Channel Tunnel Rail Link
Union Railways Ltd

White Horse Stone, Aylesford, Kent

ARC WHS 97

Archaeological Evaluation Report

Contract No. 194/ 870

Oxford Archaeological Unit

July 1997

UNION RAILWAYS LTD

WHITE HORSE STONE, AYLESFORD, KENT

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ARCHAEOLOGICAL EVALUATION

OS GRID TQ 7522 6041

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REPORT

Volume 1 of 1

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WHITE HORSE STONE, AYLESFORD, KENT

ARCHAEOLOGICAL EVALUATION

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Cover illustration: H.W.Elgar's photograph of the Upper White Horse Stone taken *c.*1900. Frederick James, a former assistant of General Pitt-Rivers, provides a scale (After Ashbee 1993, plate v).

WHITE HORSE STONE, AYLESFORD, KENT

ARCHAEOLOGICAL EVALUATION

SUMMARY

The Oxford Archaeological Unit was commissioned by Union Railways Ltd to conduct a field evaluation at land adjacent to the White Horse Stone, as part of a wider programme of archaeological investigations along the route of the Channel Tunnel Rail Link. The evaluation investigated a dry valley at the foot of the North Downs escarpment, located immediately adjacent to two reputed megalithic monuments. The White Horse Stone and Smythes' Megalith are usually included in a group of megalithic chambered tombs, assumed to be of Neolithic date, known as the 'Medway Megaliths'. The evaluation discovered no evidence of Neolithic activity associated with these monuments.

The four trenches in the upper part of the valley bottom revealed a thin scatter of archaeological features. Most were boundary or drainage ditches of Late Bronze Age/ Early Iron Age date, although one ditch produced a single Roman rimsherd. There was little evidence for surviving archaeological deposits on the western valley slope, or in the central part of the valley bottom. A thick, localised deposit of flint gravel, sealing a single sherd of Neolithic pottery was identified close to the reported position of Smythes' Megalith. Although it was interpreted in the field as a possible burial mound, subsequent assessment of the composition and location of the deposit suggest that it is more likely to be a product of soil erosion.

Thick hillwash deposits were present in the bottom of the valley, becoming deeper towards the southern end, where they were banked up against the boundary formed by the Pilgrims' Way. There was no conclusive evidence that any of the numerous sarsen boulders discovered in the valley bottom had been utilised, although several occurred in close proximity to archaeological features, and many may have been visible features in the prehistoric landscape.

An extensive buried soil horizon, cut by ditches and a large, shallow pit, was identified in five trenches in the south-east corner of the site, sealed beneath as much as 1.2m of hillwash. Although the archaeological features were undated, both the buried soil horizon through which they were cut, and the overlying hillwash, yielded small quantities of Late Bronze Age/ Early Iron Age pottery.

An assessment of molluscs and plant macrofossils from the colluvial deposits and buried soil indicates a change from woodland to open country, occurring in the LBA/ EIA, perhaps as a result of human activity. Further work on these deposits has the potential to produce a well-dated palaeoenvironmental sequence with considerable regional significance. This could extend to providing an environmental context for the eastern group of Medway Megaliths, although the evidence to date suggests that the best-preserved sequences belong to the Late glacial and Late Bronze Age/ Early Iron Age periods.

The evaluation also investigated the possible line of the Roman Road between Rochester and Hastings. No evidence was found to support or disprove the identification. A deliberate deposit of animal bone and Late Bronze Age/ Early Iron Age pottery was found in a pit beside this trackway, incorporating the bones of at least two foetal or new-born lambs, as well as adult sheep bones, accompanied by the plough-truncated base of a small Late Bronze Age or Early Iron Age vessel.

SECTION 1: FACTUAL STATEMENT

1 BACKGROUND

1.1 Introduction

1.1.1 The Oxford Archaeological Unit (OAU) carried out a field evaluation at land adjacent to the White Horse Stone, Aylesford (NGR TQ 7522 6041) on behalf of Union Railways Ltd (URL), between 14/4/97 and 1/5/97 as part of a programme of archaeological investigation along the line of the Channel Tunnel Rail Link (CTRL). The purpose of the investigation is to assess the impact of the rail link on the cultural heritage of the site. An environmental assessment has been prepared (URL 1994).

1.1.2 The evaluation was conducted in accordance with a Written Scheme of Investigation prepared by URL and agreed with the County Archaeologist and English Heritage. The site lay adjacent to the A229 Maidstone to Chatham trunk road (Fig. 1), and is 9.5 hectares in area.

1.2 Geology, topography and land-use

1.2.1 The site is located at the foot of the escarpment of the North Downs, on the east side of the Medway gap, in a dry valley formed between two spurs, outcropping from the Downs below Bluebell Hill. The area affected by the rail link includes the western of the two spurs, and the southern (lower) end of the dry valley (Plate 1).

1.2.2 The site lies between 105m and 75m above Ordnance Datum, and is under arable cultivation except for the north-western corner, which is rough pasture. The site is crossed from north to south by a bridleway, which climbs towards the Downs escarpment along the top of the spur and is thought to follow the line of the Rochester to Hastings Roman Road. The bridleway forms a marked hollow way at the northern end of the site.

1.2.3 On top of the western spur the chalk bedrock lies immediately below the topsoil.

1.2.4 The geology of the valley bottom consists of a typical dry valley sedimentary sequence of variably chalky colluvial sediments, with flint clasts interbedded with silt horizons. The upper sediments, which appear to have been deposited in the LBA/ EIA period, are thicker towards the southern end of the valley, where they bank up against the boundary formed by the Pilgrims Way. The sequence is best-preserved at the bottom end of the valley, where darker horizons have been interpreted as remnant palaeosols. These recent colluvial deposits overlie coarse gravel deposits, which are present throughout the valley, and are probably solifluction sediments deposited in the late Devensian.

1.2.5 Natural sarsen boulders occur in large numbers buried under the colluvial deposits in the valley bottom. Such boulders are found in large numbers on either side of the Medway gap (Jessup 1970). They are are thought to be the product of differential hardening of the Tertiary beds which formerly covered the chalk, by infiltration of iron and silica salts in solution. As the softer sands eroded, the boulders were left stranded on the chalk plateau, from where they have tended to accumulate at the foot of the Downs escarpment. Human

activity has been responsible for the extensive redistribution of these stones, usually to remove them from farmland, where they obstruct ploughing.

1.3 Archaeological and historical background

1.3.1 A bridleway crossing the site from north to south has been identified as the line of the Roman road from Rochester to Hastings (OAU No.1054). The bridleway follows a natural chalk spur, providing a convenient route up the Downs escarpment. No other archaeological sites are recorded within the site boundaries, but a number of important monuments and ancient routeways have been identified in the immediate vicinity.

1.3.2 The 'North Downs trackways' have been identified as a major prehistoric 'dual' route: They include the ridgeway, following the top edge of the Downs escarpment, and the Pilgrims' Way, or terraceway, which follows the chalk at the foot of the escarpment (Margary 1952). The site lies between the two tracks, with the Pilgrims' Way, forming the southern site boundary. The latter track marks the parish boundary between Aylesford and Boxley at this point.

1.3.3 The site lies in the midst of a cluster of reputedly Neolithic monuments known as the 'Medway Megaliths'. The Upper and Lower White Horse Stones' (TQ 753603, TQ 750603) and Smythes' Megalith (TQ 753606), lie immediately adjacent to the site. 'Kits Coty' (TQ 745609), Little Kits Coty (or 'The Countless Stones') (TQ 745604), and the 'Coffin Stone' (TQ 740606), all lie within a 1km radius of the site. A more distant cluster of three sites, including the Addington (TQ 653591), Chestnuts (TQ 652592) and Coldrum (TQ 654607) long-barrows, lie on the opposite side of the Medway Gap *c.*10km to the west.

1.3.4 The Medway Megaliths have no parallel east of the Berkshire Downs and are virtually the only visble monuments of the first farmers in Kent (Holgate 1993). These monuments have attracted considerable literary attention, from the descriptions of antiquarians and travelers of the late 16th century onwards (Lambarde 1576, Stukeley 1776), to more recent and comprehensive archaeological and historical surveys, Jessup 1930, Daniels 1950, Evans 1950, Jessup 1970, Holgate 1981, Ashbee 1993). However, only one of the sites has been investigated to modern standards. Excavations at 'The Chestnuts', Addington, in 1959, produced sherds of Grimston, Peterborough and Beaker pottery, flint arrowheads and the cremated remains of at least ten individuals (Alexander 1961).

1.3.5 The most famous of the group, Little Kits Coty, is a scheduled ancient monument (National No. 12767), consisting of a chambered tomb and the remnants of a long barrow, located 0.5km north-west of the site. It was first described by William Lambarde in his *'Perambulation of Kent* in 1576. Trial trenching carried out in the vicinity of this monument in 1991 failed to identify any associated Neolithic remains, but did find a number of Late Iron Age features (OAU 1991).

1.3.6 The 'Upper White Horse Stone' (Scheduled Ancient Monument number KE17), which stands immediately adjacent to the site on the line of the Pilgrims Way, is commonly cited as the possible remnant of a Neolithic chambered tomb. A number of local legends attached to the stone are mostly inherited from the Lower White Horse Stone, another upright sarsen removed from close to the junction of the 'Pilgrims Way' and the

Maidstone-Chatham road in 1823. The legends appear to have no historical foundation (Jessup, 1970, Ashbee 1993).

1.3.7 As with certain others of the Medway Megaliths, the White Horse Stone has to be regarded with extreme caution. Natural sarsen boulders are very common at the foot of the Downs on either side of the Medway Gap, and it is clear from documentary sources that many have been dug out of the fields by farmers in recent centuries, often being moved to the edge of fields or dumped in convenient hollows to remove them from the ploughsoil (Ashbee 1993). Antiquarian speculation and local legends aside, the stone may have no better claim to a prehistoric origin than many of the smaller sarsens which lie beside the 'Pilgrims Way' at this point, some of which are known to have been placed there in recent years by the present farmer (A.Veitch pers. comm.).

1.3.8 There is some doubt over the precise location of Smythes' Megalith, as early editions of the Ordnance Survey marked it close to the eastern edge of the field, by Westfield Wood (OS 6 inch series 1909). This was altered on later edition Ordnance Survey maps at the instigation of J.H.Evans (Evans 1948, OS 6 inch series 1936-47), who pointed out the existence of a map by Bensted in Maidstone Museum, compiled at some time before 1863, which places the monument in the valley bottom, *c.*40m north of the evaluation area. Bensteds' source is unknown, but the depth of the overlying deposits as recorded by Smythe, supports a valley bottom location.

1.3.9 The monument was reportedly found by workmen removing sarsens from the ploughsoil on Warren Farm in 1823. When upright stones began to appear, the landowner, George Fowle, invited a local antiquarian, Clement Smythe, to observe their removal. The workmen dug out a quantity of bones while Smythe was not present, which were subsequently collected and identified by a local doctor as the remains of at least two human individuals. A small fragment of 'an unglazed urn' was reportedly found with the bones. The top of the uppermost stone was struck at 4 inches below the ground surface, and the bones were reported by the workmen to be lying on a flat stone *c.*4 feet below the surface. Smythe took measurements and sketched the stones, but some discrepancies in his records are noted by Evans The fact that Smythe was not present when the bones were excavated casts considerable doubt on their provenance. The finds from the excavation are now lost (Evans 1948).

1.3.10 Other sites recorded in the area include a LIA/ Roman building, possbly a temple, on the top edge of the escarpment, *c.*300m to the north of the site (TQ749640) (Kent Sites and Monuments Record KSMR TQ 76 SW 31). A scattered group of Roman burials were recorded to the north-west of the site in 1871, in the north-west corner of the same field (between TQ 7543 6079 and TQ 7603 6122) (KSMR TQ 76 SE 4).

1.3.11 A surface collection survey carried out in 1994 identified a small but relatively compact scatter of worked flint, tentatively dated to the Neolithic. Burnt flint occurred mainly to the north and east of the site. Two prehistoric pot sherds, including one LBA/ EIA and one IA sherd, were found in the same area as the worked flint. Only a small number of Roman sherds were collected (URL 1995).

2 AIMS

2.1 The aims of the evaluation, as set out in the Written Scheme of Investigation, are as follows:

2.1.1 To determine the presence/ absence, extent, condition, character, quality and date of any archaeological remains within the area of the evaluation.

2.1.2 To determine whether archaeological remains associated with, or in close proximity to, the Upper White Horse Stone extend into the evaluation area.

2.1.3 To determine the presence/ absence etc. of any archaeological remains associated with, or in close proximity to, other supposed Neolithic burials discovered in the 19th century.

2.1.4 To determine the presence/ absence etc. of any subsoil features or deposits of archaeological interest which may be associated with, or in close proximity to, the concentration of prehistoric flint recorded during the CTRL Environmental Assessment.

2.1.5 To examine the line of the Roman road as recorded by the Ordnance Survey and to detemine the presence/ absence etc. of any associated Roman structures, features and deposits.

2.1.6 To determine the presence and potential of environmental and economic indicators preserved in any archaeological features or deposits.

2.1.7 To establish the local, regional, national and international importance of such remains, and the potential for further archaeological fieldwork to fulfil local, regional and national research objectives.

2.1.8 Trenches 1098TT - 1100TT were located to sample the line of the Roman Road; 1113TT, 1114TT and 1118TT were located to sample the area adjacent to the plough levelled megalithic monument; Trenches 1121TT - 1124TT and 3035TT were located to evaluate the area adjacent to the Upper White Horse Stone. The remainder were located systematically.

3 METHOD

3.1 General

3.1.1 A detailed Written Scheme of Investigation (WSI) for the evaluation was prepared by URL and agreed with the County Archaeologist and English Heritage. The following summarises the archaeological aspects of the methodology and notes any deviations from the originally agreed specification.

3.2 Survey

3.2.1 The trench locations were established by P.H.Matts, Building and Civil Engineering Land Survey (Reading) based on the trench location plan provided by URL (Drawing No.400-DGH-05740-00004-AA). An additional area was opened in Trench 1118TT,

following instructions from URL. The trenches have been plotted (Fig. 2) from digital information provided by URL using AutoCAD graphics programme. All coordinates used in this report relate to the URL local project grid unless otherwise stated. A full list of Ordnance Survey National Grid trench coordinates, together with the conversion formula used to calculate them, is included in the site archive. Individual trenches were planned manually in the field at scales of 1:50 or 1:100. Sections were drawn at 1:20, unless circumstances dictated otherwise.

3.2.2 The evaluation area (Fig. 2) falls within URL's Route Window No. 20.

3.3 Excavation

3.3.1 An array of 42 trenches was planned to sample the evaluation area. However, the depth of modern land-fill in the north-west corner of the site led to the abandonment of five trenches in that area (1089TT, 1090TT, 1092TT, 1093TT, 3031TT).

3.3.2 Trench 1094TT was replaced by a test pit, excavated to a depth of 6.5m, to establish the thickness of modern land-fill.

3.3.3 Trenches 1098TT and 1099TT were excavated across the line of the supposed Roman Road. Trenches 1113TT, 1114TT and 1118TT were positioned to investigate the reported area of Smythes Megalith. Trenches 1107TT, 1121TT-1125TT and 3035TT were positioned to investigate the area adjacent to the White Horse Stone and the Pilgrims Way. The trenches to the east of the supposed Roman Road investigated the prehistoric flint scatter identified by the surface collection survey.

3.3.4 The thickness of colluvial deposits in the bottom of the dry valley required four trenches (1125TT, 1122TT, 3035TT, 1121TT) be excavated to depths exceeding 1.2m. They were wholly or partially stepped for safety reasons, to a total width of 5.2m.

3.3.5 Additions to the trench plan as set out in the WSI, in consultation with the Directors' Representative, included a perpendicular extension to Trench 1118TT, and a 12m southerly extension to 1101TT.

3.3.6 All trenches except those mentioned above were 30m long and 2m wide. They were excavated using a 360° 21 tonne Samsung mechanical excavator, with a toothless ditching bucket, under close archaeological supervision. Machine excavation was stopped at the top of significant archaeological deposits, if encountered, otherwise on reaching bedrock or late glacial hillwash deposits.

3.3.7 The trenches were hand-cleaned except where archaeological deposits were clearly absent. Sample sections were excavated through all archaeological features and possible features. Sarsen boulders and examples of suspected sarsen removal marks were cleaned and recorded. Representative sample sections through the colluvial deposits in the base and sides of the dry valley were cleaned and recorded. Artefacts from archaeological features and colluvial deposts were collected by context and submitted for specialist examination.

3.3.8 Bulk samples were recovered from selected archaeological deposits (those containing artefacts or charred plant remains).

3.3.9 A particularly well-preserved colluvial sedimentary sequence in Trench 3035TT, including two possible palaeosol horizons, was cleaned and recorded in detail, following specialist geoarchaeological advice (Appendix 5). A series of monolith column samples, (for possible pollen or micromorphological analysis) and stratified samples (for mollusc analysis) were recovered from this section. Bulk samples were recovered from the more extensive upper palaeosol horizon and wet-sieved for artefacts, charred plant and insect remains.

3.4 Recording

3.4.1 Recording followed the standard OAU single context recording system (Wilkinson ed. 1992). Because of the large area of the site, blocks of context numbers were assigned to arbitrary site areas, (*e.g.* Trenches 1089TT-1095TT and 3031TT were assigned context block 1-200). All site records were prefaced by the site code ARC WHS 97.

3.4.2 All trenches and archaeological features were photographed using colour slide and black and white print film.

4 RESULTS: GENERAL

4.1 Presentation of Results

The geology of the site was complex, resulting in excavation to variable depths. The site is therefore divided into six areas for descriptive purposes, reflecting different geological conditions and the presence or absence of archaeological features (Fig. 2):

4.1.1 *Area of modern land-fill:*
This area, in the north-west corner of the site, was found to be covered with more than 6.5m of modern land-fill material, deriving from landscape work carried out during construction of the A229 trunk road. The edge of this material was clearly recognisable as an artificially graded slope, co-terminous with a fenced area of rough pasture. A deep test pit was excavated within Trench 1091TT. The remainder of the trenches were abandoned.

4.1.2 W*est of the 'Roman Road' (Trenches 1096TT, 1097TT, 3032TT, 3033TT):*

This area, which includes the trenches cutting across the 'Roman road' (1098TT, 1099TT) were characterised by a very thin covering of topsoil (0.2m thick, compared with up to 1.6m of topsoil and colluvium at the southern end of the dry valley) over clean chalk bedrock. The chalk was cut by a small number of truncated archaeological features, including a pit and ditch of LBA/ EIA date. The trenches across the projected line of the Roman road revealed an in-filled hollow way at the southern end of the site, worn into the chalk bedrock and filled with modern chalk rubble. Road-side ditches and wheel ruts were identified in both trenches, cut into the chalk, but the only associated material was of post-medieval and modern date.

4.1.3 *Western slope of the dry valley (Trenches 1100TT-1111TT, 3034TT):*

Most of the twelve trenches in this area were archaeologically sterile, although 1104TT and 1111TT both contained undated, truncated gullies and ditches. The natural chalk and late glacial wash deposits were overlain by comparatively thin colluvial deposits, becoming gradually thicker towards the valley bottom. In Trench 1107TT colluvial sediments were seen to be banked up against the boundary formed by the Pilgrims Way. The colluvium produced LBA/ EIA pottery. No sarsen boulders were recorded in this area, although a small number of irregular features resembling tree-root holes (Trenches 1106TT and 1108TT), may indicate the location of removed sarsens.

4.1.4 *The upper valley bottom (Trenches 1101TT, 1113TT, 1114TT, 1118TT):*

These four trenches all contained LBA/ EIA ditches, located stratigraphically between two bands of colluvium. Two later ditches, one contaning a Roman rim sherd, were identified in Trench 1118TT. Trench 1118TT exposed a thick deposit of sorted flint gravel, unlike any other deposit seen on the site, sealing a single beaker sherd and containing LBA/ EIA material. This was at first interpreted as a possible burial mound, but is considered more likely to be a gravel lens resulting from colluvial erosion. The trench contained four sarsen boulders, lying within the gravel deposit.

4.1.5 *The middle valley bottom (Trenches 1112TT, 1115TT, 1116TT, 1117TT, 1119TT, 1120TT, 1123TT):*
These seven trenches were archaeologically sterile. All of the trenches revealed either sarsen boulders or the distinctive soil marks indicating their removal. The proportion of surviving boulders to removal marks increased with the depth of the colluvium in the valley bottom, presumably reflecting the removal of stones from the upper slopes of the valley, where they formed an obstruction to ploughing. In Trench 1117TT alone, seven large boulders were exposed, but there was no evidence that any of them had been utilised. The colluvial sequence thickened gradually towards the south.

4.1.6 *The lower valley bottom (Trenches 1121TT, 1122TT, 1124TT, 1125TT, 3035TT):*
This area, which lies close to the White Horse Stone, is characterised by a thick post-glacial colluvial sequence, extending to a maximum depth of 1.5m in Trench 1125TT, and by the presence of an extensive palaeosol horizon, which was present in all five trenches. The palaeosol was cut by archaeological features in Trenches 1122TT and 1125TT. Although they did not not produce pottery, the features are probably of LBA/ EIA date, since both the buried soil and upper colluvial deposits produced small amounts of pottery of that date and no earlier or later material was present in the lower valley bottom. A particularly well-preserved geological sequence in Trench 3035TT revealed an earlier, probably late glacial palaeosol horizon. Sarsen boulders were recorded in Trenches 1121TT, 1122TT, 1125TT and 3035TT.

4.2 Context and find descriptions

4.2.1 The main components of the trenches are described below. a summary of all contexts and associated finds appears in the Archaeological Context Inventory (section 6). Detailed reports on the worked flints, pottery and fired clay, environmental evidence, animal bones and soil sediments are contained in Appendices 1-5.

4.3 Site Archive

4.3.1 The site archive has been compiled in accordance with the specification prepared by URL and agreed with English Heritage and the County Archaeologist. It includes six electronic datasets for the Fieldwork Event, Contexts, Bulk Finds, Finds, Environmental Samples and Graphical Output.

5 TRENCH DESCRIPTIONS

5.1 Area of modern land-fill

Trench 1091TT (Fig. 2)

5.1.1 A deep test pit was dug by machine in the location of Trench 1091TT, to test the depth of the modern land-fill deposits. Excavation continued to a depth of 6.5 metres without reaching chalk bedrock. The upper part of the landfill (*c.*1.2m deep) consisted of compacted chalk rubble including large concrete blocks. Below the capping was a slightly less compact greyish white chalk rubble, containing occasional fragments of tarmac, brick and wood. Because of the depth of the pit it was only recorded photographically from the top.

Trenches 1094TT and 1095TT (Fig. 2)

5.1.2 These two trenches were dug into the upper layers of the land-fill deposit in the north-west corner of the site, which consisted of compacted chalk. The presence of occasional brick fragments from the chalk fill in Trench 1094 proved that this material was land-fill. Excavation was not continued and these trenches were not recorded in detail.

Trenches 1089TT, 1090TT, 1092TT, 1093TT and 3031TT (Fig. 2)

5.1.3 These trenches were abandoned due to the depth of land-fill and the likelihood that any archaeological deposits in this area would have been destroyed.

5.2 West of the 'Roman road'

Trench 1098TT (Fig. 3)

5.2.1 The topsoil (209) and the surface of the modern bridleway (208) were removed by machine to a depth of 0.48m. A continous section was dug by hand across various features forming the track. The earliest recognisable surface of the track is a slight hollow way, (222) worn into the natural chalk bedrock, which was cut by wheel ruts. There was evidence for an earlier, shallow roadside ditch (218), whose western side was cut away by erosion of the hollow way (222). No finds were recovered from the fills (216, 217) of the ditch.

5.2.2 The hollow way (222) was filled by a series of thin, compacted, flint and chalk gravel metalling deposits (212, 213, 214, 215). The earliest of these layers (215), contained a piece of clay pipe. The latest of the metalling deposits (212) was cut by a small roadside gully (211), whose fill (210) contained modern pottery and tile.

5.2.3 A continuous layer of topsoil (209) sealed the post-medieval metalled surfaces and roadside gullies, indicating that the bridleway has been ploughed out in the recent past. The modern bridleway surface (208) is merely a compaction of the topsoil, set slightly to the east of the original track.

Trench 1099TT (Fig. 3)

5.2.4 This trench was the southernmost of two cut across the line of the supposed Roman road. Topsoil (209), and the surface of the modern bridleway (208), were removed by machine to a depth of 0.30m. A section was dug by hand, from the eastern edge to halfway across the width of the track.

5.2.5 The earliest surface (222) was worn into the chalk bedrock as in Trench 1098TT, and was similiarly cut by wheel ruts. However, unlike Trench 1098TT, the surface was located at the base of a substantial hollow-way, lying 1.6m below the modern bridleway surface. There was a silty layer of buried soil extending across the sides (231) and base (215, 234) of the hollow way, cut by later wheel ruts (232). The soil material produced 19th and 20th century pottery and tile fragments.

5.2.6 The hollow-way was filled by a 1.2m thick layer of very coarse chalk rubble (236), becoming noticeably coarser towards the top of the section. This is very likely to represent a recent levelling episode, as the rubble seals the 19th/20th century soil deposit (215). A continuous topsoil layer (209) covered the chalk rubble fill, indicating, as in Trench 1098TT, that the trackway has been ploughed out, and re-established, in recent times. The present bridleway surface consists of compacted topsoil (208), and in this trench is set slightly to the west of the original track.

Trench 3033TT (Fig. 4)

5.2.7 This trench was excavated parallel to, and 10m west of, the bridleway. Topsoil was removed to a depth of 0.3m by machine, to plough-scored chalk bedrock. Two archaeological features were revealed: A north-south aligned linear gully (206) at the north end of the trench is on the same alignment, and has a similiar profile, to the modern roadside gully (211) seen in Trench 1098TT. The two gullies are likely to be sections of the same feature. Gully 206 has moderately steep sides and a concave base, and is 0.5m wide x 0.2m deep.

5.2.8 A small, severely truncated, regular oval pit (203) was cut into the chalk at the southern end of the trench, orientated north-west to south-east. The feature, which was at first expected to be a crouched inhumation, measured 1.5m long x 0.95m wide and survived to a depth of only 0.05m. The fill (204) produced the plough-truncated base of a small LBA or EIA vessel (Appendix 2), accompanying a deposit of fragmentary animal bones (Appendix 4), including the remains of at least two foetal or new-born lambs, as well as adult sheep bones. The pot was placed at the south-east end of the pit, the bone at the north-west end. Cleaning Layer 205, from the top of the feature, produced similiar flint-tempered pottery and bone fragments.

Trench 3032TT (Fig. 4)

5.2.9 Topsoil (223) was removed to a depth of 0.35m, to chalk bedrock. Two plough-truncated, inter-cutting linear features were identifed (225, 227). Ditch 225, which was the earlier of the two, extended 1.0m from the south side of the trench, on a north-south

alignment, terminating in a shallow rounded end. It is either a plough-truncated ditch, or a ditch terminal. The cut was 1.0m wide and survived to depth of 0.25m. The fill (226) was a mid greyish-brown silty clay containing several sherds of LBA/ EIA pottery.

5.2.10 Ditch 227 ran across the trench diagonally on a north-east to south-west alignment. It was shallow (0.35m), with a flat base, and was filled with a dark greyish brown silty clay fill (228) with no finds.

Trenches 1096TT and 1097TT

5.2.11 Both trenches were archaeologically sterile. Topsoil was removed by machine, in each case, to a depth of 0.30m, to chalk bedrock.

5.3 Western valley slope

Trench 1111TT (Fig. 5)

5.3.1 The 0.19m thick topsoil (618,) and a 0.22m thick colluvial depost (619) were removed by machine, to chalk bedrock. Three features (610, 612, 614) were identified cutting the chalk, none of which produced any artefacts.

5.3.2 Pit 610 was a small oval pit, only partly within the trench, measuring 0.8m wide x 0.3m deep. The lower of the two fills (616) was distinguished from the upper (611) by being more chalky.

5.3.3 Gullies 612 and 614 appeared to be aligned perpendicular to one another, but had markedly different profiles. Gully 612 was a well-defined feature, 0.25m deep, with comparativley regular, moderately sloping sides. The lower fill (617), which was a dark yellowish-brown silt, was distinguished from the upper (613) by the presence of a higher proportion of chalk fragments. Both fills contained large numbers of snails.

5.3.4 Gully 614 was an extremely shallow (0.02m), irregular feature, aligned north-west to south-east. The single fill (615) was a dark greyish-brown silt.

Trench 1104TT (Fig. 5)

5.3.5 The 0.3m thick topsoil (603,), and two colluvial layers (606, 0.48m thick; 607, 0.22m thick) were removed by machine, exposing a broad, irregular linear ditch (609). The ditch cut a lower colluvial deposit (607), and was sealed by another deposit (606). It was between 0.9m and 1.25m wide, 0.31m deep, with moderately steep sides and an irregular base. No finds were recovered from the single fill (608).

Trench 1107TT

5.3.6 No archaeological features were identified in this trench. However, a gradually thickening wedge of colluvium could be seen in section at the southern end of the trench, banked up against the the boundary formed by the Pilgrims Way. A small quantity of probable LBA/ EIA pottery was recovered from the colluvium.

Trenches 1100TT, 1102TT, 1103TT, 1105TT, 3034TT, 1106TT, 1108TT, 1109TT, 1110TT

5.3.7 No archaeological features or finds were recorded in these trenches, all located on the western slope of the dry valley. The western valley slope was characterised by *c.*0.25m-0.30m thickness of topsoil, overlying a thin covering of colluvial calcareous silt, becoming gradually deeper towards the valley bottom. The composition of the silt varied, often comprising numerous thin, interleaved bands. The natural chalk was exposed at various points on the upper part of the valley slope, but generally the trenches were excavated to the top of a mid orange silt with chalk and flint gravel, interpreted as a late glacial colluvial deposit.

5.4 Upper valley bottom

Trench 1101TT (Fig. 6)

5.4.1 The trench was excavated to a depth of 0.65m. The 0.26m thick topsoil (831) and 0.39m thick colluvium (832, 836) were removed by machine to a late glacial wash deposit, consisting of alternating narrow bands of orange silt and chalk.

5.4.2 The only archaeological feature identifed was a broad, shallow-sided ditch (835), aligned north-east to south-west, sealed by the upper colluvial deposit (832) and cutting through the lower (836). It was 0.36m deep and 1.85m wide, with two fills (834, 833). Both fills were calcareous silts, similiar in appearance and composition to the overlying colluvium, and both contained LBA/ EIA pottery.

Trench 1113TT (Fig. 6)

5.4.3 The trench was excavated to a depth of 0.8m. The 0.3m deep topsoil (801) and two post-glacial colluvial deposits (803, 805) were removed by machine to a chalky wash deposit with flint gravel, at a total depth of 0.63m. Two linear features were identified (808, 816).

5.4.4 Gully 808 was very shallow and irregular in plan, cutting through the lower of the two post-glacial colluvial layers (805). The fill (807) contained no finds and was very difficult to distinguish from the overlying colluvium. The feature is best interpreted as a natural erosion gully.

5.4.5 Ditch 816 had a well-defined V-shaped profile (0.6m deep). It cut through the lower post-glacial colluvium (805), and was sealed by the upper (803). The single light brown calcareous silt fill (817), was almost indistinguishable from the overlying colluvium but produced two small sherds of LBA/ EIA pottery.

Trench 1114TT (Fig. 7)

5.4.6 Topsoil and colluvium were removed to a depth of 0.55m and 0.95m at the western and eastern ends respectively to expose a chalky hillwash containing coarse flint gravel. Two linear features (840, 842) were exposed of which only one (842) is likely to be of archaeological origin.

5.4.7 Gully 840 was a broad, shallow, flat-based feature, 0.06m deep, 2.7m wide, with irregular edges, orientated north-west to south-east. No finds were recovered from the single fill (841). The alignment and profile of the gully suggest that it may be a continuation of Gully 808 in Trench 1113TT, which was interpreted as a natural erosion feature.

5.4.8 Ditch 842 had a steep-sided, V-shaped profile, 1.2m wide, 0.5m deep, with a concave base, and was orientated from north-west to south-east. It ran parallel to, and 2.5m west of, Gully 840 and was recut on the same alignment by Ditch 844. Its single surviving fill was a mid yellowish-brown calcareous silt containing chalk gravel and two small sherds of LBA/ EIA pottery. The recut (844) had a similiar profile but was not as deep or wide as the original ditch, being only 0.9m wide and 0.45m deep. No finds were recovered from the two identified fills of the recut (845, 846).

Trench 1118TT (Figs 8 and 9)

5.4.9 This trench was extended by 12m to the south, to a total length of 42m. A further trench was subsequently excavated to east and west of the centre point, forming a cross. Both extensions were intended to define the extent of the anomalous gravel deposit described below (group number 811).

5.4.10 Topsoil (809) and colluvium (810, 819), were removed by machine to a maximum depth of 1.05m.

5.4.11 In the central part of the trench, colluvium (819) overlay a thick spread of flint gravel, composed of well-sorted, medium-sized cortical flint nodules (comprising up to *c.*60-70% of the deposit), in a fine dark brown silt matrix (layers 811, 812). Machine trenches were excavated through this deposit at selected locations. The deposit was at its thickest (up to 0.5m) and densest in the centre of the trench, where the top of the gravel rose to immediately below the topsoil. The full extent of the deposit was established as *c.*24m from east to west and *c.*22m from north to south. It directly overlay a coarse chalky flint gravel (839) of probable late Devensian origin. The shape of the deposit could not be determined with any certainty.

5.4.12 The northern and eastern extents of the gravel deposit were marked by sarsen boulders, which the gravel appeared to be banked against. To the south and west, the edges of the deposit were not so well-defined, but occurred in distinct bands (826, 829) separated by layers of clean, fine, mid-brown silt (815, 827). Its shape could not be determined with any certainty. The gravel bands gradually tapered away to the south and west, disappearing entirely in both directions before the end of the trench. One sherd of Beaker pottery, and a small fragment of possible LBA/ EIA pottery were recovered from a layer within the gravel deposit (857) itself, while one prehistoric feature (814) (containing burnt flint, struck flint and a bone fragment), was found to be sealed by it.

5.4.13 Ditch 825 was a broad, comparatively shallow ditch orientated from east to west, cutting the top of the gravel deposit (811) and sealed by the upper colluvial layer (810). Of the three fills recognised, the upper (822) and lower (824) fills consisted of dense flint gravel deposits, very similiar in appearance and composition to 811, except for a slight reddish brown colour to the fine silt matrix. The middle fill (823) was a layer of reddish brown silt with very few flint inclusions. No finds were associated with this ditch, but its stratigraphic position, cutting the gravel deposit (811) indicates a later date than the other features in Trench 1118TT.

5.4.14 Cut 814, which was sealed by the gravel deposit (811), appeared to be a linear feature prior to excavation, but when excavated had a very irregular profile, comprising a steep-sided pit at the east end, and becoming extremely shallow to the west. It could be

interpreted as a socket for the immediately adjacent sarsen boulder (838), which partially overlies the feature. The primary fill (813) was a black, organic silty soil containing flint gravel and a small quantity of burnt and worked flint and a bone fragment. The upper fill (830), which was partially covered by the sarsen (838), was a yellowish-brown clayey silt also containing flint gravel, but with no associated finds.

5.4.15 A north-east to south-west aligned linear ditch (850) was identified, sealed beneath the upper colluvium (810), at the extreme west end of the trench. It had moderately sloping sides and an irregular, flattish base. The alignment of the feature suggests that it may be a continuation of Ditch 825. However, the profiles of the two features are very different, and 850 appears to be cut from a lower level in the colluvium than 825. The ditch edges were not clearly defined (the fill of the feature, and the colluvium sealing it, were very similiar in appearance and consistency). Four fills were recognised (851, 852, 853, 854), consisting of slightly varying deposits of mid to dark greyish-brown colluvial silt. A single sherd of Roman pottery was recovered from the fill of the ditch (853).

5.4.16 Six sarsen boulders and two removal marks were recorded in this trench. One of the removal marks was investigated and proved to be an arc of de-calcified gravel, rather than a pit. It is possible that such marks, which were common in the upper valley bottom, were formed by rainwater running off the sarsen boulders reacting with the chalk in an arc surrounding each stone (M.Bates, pers.comm.).

5.5 Middle valley bottom

Trenches 1112TT, 1115TT, 1116TT, 1117TT, 1119TT, 1120TT, 1123TT (Fig. 2)

5.5.1 No archaeological features or finds were recorded in these seven trenches. The area was characterised by a thick accumulation of colluvial silts overlying coarse chalky flint gravel wash deposits of probable late glacial origin, and the presence of large numbers of sarsen boulders. The buried soil horizon observed in the lower valley bottom, further to the south, was not preserved in this part of the valley.

5.5.2 The thickness of colluvial silts gradually increased to the south. In Trench 1115TT, the total depth of topsoil and post-glacial colluvium was 0.85m at the north end of the trench, and 1.15m at the south end. In Trench 1117TT, the total depth was a consistent 1.4m.

5.5.3 Trench 1116TT was excavated across the valley axis. The axis was marked by a band of decalcified flint gravel *c.*13m wide and 0.4m thick at its deepest point, observed at the western end of the trench. This natural deposit lay beneath a 0.8m thickness of post-glacial colluvial silt and 0.2m of topsoil.

5.5.4 Twenty sarsen boulders and twelve soil marks indicating their removal, were noted in these trenches. The ratio of boulders to removal marks increased with the depth of the colluvium. This suggests that boulders were formerly present in similiar numbers further up the dry valley, but have gradually been cleared from the ploughsoil, except in those areas where the thickness of colluvium prevented them from interfering with cultivation.

5.6 Lower valley bottom

Trenches 1121TT, 1122TT, 1125TT, 1124TT, 3035TT (Figs 10, 11 and 12)

5.6.1 This group of trenches was characterised by the presence of an extensive buried soil horizon, preserved beneath thick deposits of colluvial silt. The buried soil extended across the whole of Trenches 1122TT and 1125TT, and parts of Trenches 1121TT, 1124TT and 3035TT. It was cut by archaeological features in Trenches 1122TT and 1125TT. Ten sarsen boulders were recorded in this area.

Trench 1121TT (Fig. 10)

5.6.2 No archaeological features or finds were recorded in this trench. Five sarsen boulders were present, resting directly on the natural chalky flint gravel (604). The buried soil (628) overlay the late glacial chalky flint gravel, partially covering the sarsen boulders. It was only preserved to a significant depth (0.3m) at the western end of the trench and was not as thick as the equivalent deposits in Trenches 1122TT, 1124TT, 1125TT and 3035TT. The buried soil was directly overlain by a thin (0.05m) layer of well-sorted flint gravel (627, 408), which was also noted in Trenches 1122TT and 1125TT.

5.6.3 *Trench 1122TT* (Fig. 10)

The topsoil (405), and two layers of post-glacial colluvial silt (406, 407) were removed by machine to a depth of 1.2m at the north end of the trench and 1.7m in the middle. A test pit was excavated at the south end to a depth of 2.0m, cutting into the late glacial colluvium, but without reaching chalk bedrock. In the northern half of the trench, machine excavation was stopped at the top of the buried soil horizon (449). This deposit extended along the full length of the trench, but changed gradually from a black silty loam with chalk flecks, 0.3m thick at the north end of the trench, to a dark greyish-brown silt up to 0.37m thick, at the southern end. The latter material extended into Trench 1125TT.

5.6.4 Ditch 450 was a well-defined linear feature, with steep, almost vertical sides and a slightly concave base, measuring 0.9m wide and 0.7m deep. It was orientated from south-east to north-west, being cut into the top of the buried soil horizon (449) and sealed by the upper colluvium (407). The three fills were clearly distinguishable in section. The primary fill (451) was a friable black silty loam, very similiar in appearance and composition to the buried soil, suggesting that the ditch was open when the soil formed the ground surface. The secondary fill (452) was a mid greyish-brown silt with occasional chalk fragments and frequent blotches and lenses of silt, in various colours. The tertiary fill (453) was a mid-light greyish-brown silt with chalk inclusions. None of the fills produced any finds.

5.6.5 Cut 448 was a large, somewhat irregular feature, 0.45m deep, with moderately sloping sides, cutting the buried soil horizon (449). The full plan of the feature could not be determined as it was only partly within the trench. However, it may be part of a roughly rectilinear pit, or the terminal of a broad, shallow ditch, orientated from north-east to south-west. The feature had a minimum length of *c.*8m, and a minimum width of *c.*2m. It was filled with a uniform mid greyish-brown calcareous silt, similiar in appearance and consistency to the overlying colluvium. The north-western edge of the feature was marked by a thin line of flint gravel, apparently equivalent to the thin stony layer (408) recorded elsewhere overlying the buried soil. The feature produced no finds, but appears to have been open when the buried soil formed the ground surface.

Trench 1125TT (Fig. 11 and Plate 2)

5.6.6 This trench was located adjacent to the Pilgrims Way. The topsoil and colluvium were removed by machine to a depth of 1.6m, as far as the buried soil horizon 409/ 413. A test pit was excavated at the east end of the trench to a total depth of 2.0m, down to a late glacial chalky flint gravel. Sections were excavated by hand through the buried soil horizon along the northern edge of the trench, producing several sherds of LBA/ EIA pottery. The consistency and colour of the layer was similiar to the equivalent deposit (449) at the west end of Trench 1122TT.

5.6.7 The trench contained two linear ditches (410, 443). Ditch 410 was a 1.55m wide, north-south aligned ditch, with a shallow (0.3m deep), U-shaped profile, cut into the top of the buried soil (409). The ditch profile was marked by a thin band of flint gravel, equivalent to Layer 408, which had apparently washed into the bottom of the ditch while it was still open. The ditch was otherwise filled with a dark orange brown silt (411) with chalk flecks, similiar in appearance and composition to the overlying colluvium.

5.6.8 Ditch 443 had a shallow U-shaped profile, similiar to Ditch 410, measuring 3.2m wide and 0.4m deep. However, it was cut through the gravel layer (408), and is therefore thought to be of a later date. The single fill (412) was unlike any other material seen on the site, being a uniform bright orange silty sand with occasional chalk and flint clasts. No artefacts were recovered.

5.6.9 Two sarsen boulders were recorded in this trench. There was no evidence to suggest that they had been utilised, but one of the boulders (421) had the LBA/ EIA buried soil (413) banked against it and may have been a visible landscape feature when the buried soil formed the land surface.

Trenches 1124TT and 3035TT (Fig. 12)

5.6.10 Neither of these trenches contained archaeological features, although a fragment of LBA/ EIA pottery was recovered from the upper colluvium (630) in Trench 3035TT. The buried soil horizon was well preserved, except at the south end of 1124TT and the extreme east end of 3035TT, where the valley slope rose sharply to the east. The sedimentary sequence in these trenches is described and discussed in Appendix 5 (Table 3, Fig. 12), but can be summarised as follows.

5.6.11 A deep section in Trench 3035TT provided a key geological sequence, from which mollusc samples were taken to assess environmental changes on the site. The earliest deposits in the base of the dry valley (640, 338, 637) consisted of coarse flint gravel in a calcareous silt matrix, chalky silt and coombe rock wedges, which were interpreted on site as Late Devensian solifluction deposits (Appendix 5). This was confirmed by the presence of cold climate indicators among the mollusc species (Appendix 3). In the majority of trenches, excavation was stopped at the top of these late glacial deposits.

5.6.12 The lower of two buried soil horizons, which was only present in Trench 3035TT (636), and the silt wash deposit sealing it (635) also produced cold climate indicators, suggesting a late glacial date.

5.6.13 The upper buried soil, which was present in five trenches in the lower valley bottom, produced mixed results. In Trenches 3035TT and 1124TT, the soil (631, 418) produced

woodland indicators, which may provide the context for a tree root hole (632-4) in trench 3035TT, immediately below the buried soil. In Trenches 1122TT and 1125TT, where the soil was cut by archaeological features of probable LBA/ EIA date, the molluscs from the buried soil included a rich open country fauna. It is possible that, as the soil is very disturbed, it may represent a ploughsoil shortly after clearance.

5.6.14 The upper buried soil was sealed by a thick colluvial deposit (630) which produced a mollusc fauna typical of later prehistoric or Roman dry valleys on the chalk, consisting of mainly open country species.

6 ARCHAEOLOGICAL CONTEXT INVENTORY

SECTION 2: STATEMENT OF IMPORTANCE

7 CONCLUSIONS

7.1 Extent of archaeological deposits (Fig. 13)

7.1.1 Archaeological deposits, mostly of LBA/ EIA date, survived in three discreet areas: To the west of the 'Roman road', the upper valley bottom, and the lower valley bottom (Fig. 13).

7.1.2 Archaeological features were notably absent from the western slope of the dry valley and the middle part of the valley bottom.

7.1.3 The majority of trenches in the north-west corner of the site were abandoned when test-pitting demonstrated that the area was covered by modern land-fill to depths exceeding 6.5m.

7.2 Date and character of archaeological deposits

7.2.1 There is no clear evidence for Neolithic activity associated with the megalithic monuments adjacent to the site. Although deposits of this date may have been lost to slope erosion, it is also noticeable that there is very little early prehistoric flintwork or pottery. The majority of features identified appear to be of LBA/ EIA date, but the range of features and density of finds present does not definitely suggest settlement activity (but see below 7.3.1).

7.2.2 A single Roman rim sherd was recovered from a ditch in Trench 1118TT, but the site produced no other material of this date. Features directly associated with the supposed Roman road produced only post-medieval and modern material.

7.3 Late Bronze Age/ early Iron Age deposits

7.3.1 The area to the west of the Roman road produced some evidence for LBA or EIA activity, although the two features identified were severely plough-truncated. Pit 203 (Trench 3033TT) is of particular interest: This regular oval pit contained a deliberate deposit of animal bones and the truncated remains of a small pottery vessel of probable LBA/ EIA date. Apart from a linear feature of similiar date in trench 3032TT, the pit appears to be isolated, although the very shallow topsoil suggests that the scarcity of features in this area could be the result of erosion by plough action.

7.3.2 The location of the pit beside the supposed Roman road may be significant, perhaps indicating that the track is prehistoric in origin. The route runs up a chalk spur, linking the prehistoric 'Ridgeway', on the top of the Downs escarpment, with the 'Pilgrims Way', at the foot of the escarpment.

7.3.3 In the dry valley bottom, two discreet groups of mainly linear, LBA/ EIA features were identified at the northern and southern ends of the site.

7.3.4 The northern group consists of six definite, and two possible, linear features (Fig. 13), with varying profiles and on various alignments. Where dating evidence was recovered, a LBA/ EIA date was suggested, except in the case of Ditch 850 (Trench 1118TT), which produced a single undiagnostic Roman rim sherd.

7.3.5 The features present probably represent boundaries or drainage features rather than settlement activity. They are therefore unlikely to be particularly informative about LBA/ EIA society or economy when considered in isolation, but may be of considerable importance when considered in conjunction with other environmental evidence.

7.3.6 The second group of features, located in the lowest part of the dry valley, close to the 'Pilgrims Way', included three linear features and a large irregular pit. None of the features produced any finds, but all were sealed beneath thick colluvial deposits and were cut through the buried soil horizon. There is good evidence to indicate that the pit, and at least two of the ditches, were open when the buried soil formed the land surface. Since both the buried soil and the overlying colluvium produced LBA/ EIA pottery, with no later material, this group of features is likely to be of a similiar date.

7.3.7 The features in this area, although not dated themselves and of little intrinsic interest, are definite indicators of a human presence, which occur at a well-defined and datable horizon in the colluvial sequence. The site may well prove useful for determining the degree to which human activity has been responsible for post-glacial vegetational changes in the region.

7.3.8 The build-up of colluvial sediment at the southern end of the valley, apparently banked against the boundary formed by the Pilgrims' Way, may provide corroborative evidence that the trackway is prehistoric in origin, since the colluvium produced no pottery later in date than the LBA/ EIA. A trench through the Pilgrims Way would be necessary to confirm this interpretation.

7.3.9 An anomalous gravel deposit in Trench 1118TT, originally interpreted as a possible burial mound deposit because of its highly localised character and location close to the reported position of Smythes' Megalith, has been re-interpreted as a 'gravel lens' (of the type defined by Allen 1992), produced by colluvial erosion. It is discussed in detail in section 7.8 below.

7.4 The Roman road

7.4.1 The trenches across the bridleway produced no evidence to support its identification as a Roman road, although the depth of the hollow way suggests that the track may been established for considerably longer than the artefactual evidence indicates. Wheel ruts and road-side ditches were identified, cutting a thin metalled surface overlying the chalk bedrock, but the only associated artefacts were of post-medieval and modern date. The section in Trench 1099TT showed that the track formerly ran in a 1.45m deep hollow way at the south end of the site, at the point where it rises onto the top of the spur. This was filled with chalk rubble in the late 19th or 20th century, presumably to level the field for agricultural purposes. There was evidence from both trenches that the track has been ploughed over, probably in recent decades, and subsequently re-established.

7.5 Extent, date and archaeological significance of palaeosol horizons (Fig. 13)

7.5.1 An extensive buried soil horizon was seen in the lower valley bottom, buried beneath thick hillwash deposits. The eastern edge of the horizon was located in trenches 3035TT and 1124TT. The northern edge was seen in Trench 1121TT. The western edge falls between Trenches 1107TT and 1125TT. To the south, it can be assumed that the horizon extends as far as the boundary formed by the Pilgrims' Way. The area covered by the deposit thus measures *c.*50m from east to west and *c.*80m from north to south (Fig. 13).

7.5.2 In Trench 1125TT, the deposit produced a number of prehistoric pottery sherds of LBA/ EIA date. It was cut by four archaeological features in Trenches 1122TT and 1125TT. None of the features produced closely datable artefacts, but all were sealed by colluvial wash from which LBA/ EIA pottery was recovered. It therefore seems likely that the soil horizon represents a buried land surface of LBA/ EIA date, sealed beneath rapidly deposited colluvial sediments of a similiar age. The buried soil produced mollusc species indicating a woodland environment, with some open country species present. The environmental evidence is discussed in more detail below (Section 7.4, and Appendix 3).

7.5.3 The angle of slope of the palaeosol indicates that the eastern valley slope was substantially steeper in the LBA/ EIA than the modern land surface (Figs 12 and 14).

7.5.4 A second, earlier buried soil, which survives only in the vicinity of Trench 3035TT, at the foot of the eastern valley slope, was not associated with archaeological deposits. The mollusc species include cold climate indicators, suggesting a late glacial date.

7.6 Archaeological significance of colluvial deposits and palaeoenvironmental evidence

7.6.1 The dry valley bottom was covered by extensive colluvial deposits. The sediments are divided into lower deposits of late glacial origin, which are considered to have little or no archaeological but considerable palaeoenvironmental and geological, interest, and upper deposits, which date from the LBA/ EIA onwards. The upper deposits reach a maximum depth of 2.0m at the bottom end of the dry valley, and thin out gradually further up-slope. The extensive LBA/ EIA palaeosol horizon described in 7.3 above, lies between the upper and lower colluvium. Assessments of the palaeoenvironmental and geological evidence can be found in Appendices 3 and 5 respectively.

7.6.2 The upper colluvium produced a number of later prehistoric pottery sherds, mostly of LBA/ EIA date. The depositional processes in operation in the dry valley mean that pottery dating cannot be considered a reliable indicator of the date of deposition. Nevertheless, the preponderance of pottery of LBA/EIA date, and the absence of later pottery, may indicate that the upper colluvium is the result of erosive events occurring within a comparatively short time-span, perhaps as a result of human activity, such as woodland clearance.

7.6.3 The mollusc evidence from Trench 3035TT supports this hypothesis (Appendix 3, Fig. 12): The upper palaeosol, which seems to be LBA/ EIA in date, produced mainly woodland indicators, and a feature recorded in Trench 3035TT at the level of the palaeosol has been identified as a probable tree-root hole. In contrast, the upper

colluvium, while also producing LBA/ EIA pottery, produced predominantly open country indicators, including plough-tolerant species.

7.6.4 However, Trench 1118TT produced some evidence that the colluvium may have been laid down at intervals over a longer period of time. One beaker sherd was sealed beneath the thick gravel deposit (811) in Trench 1118TT, close to the bottom of the colluvial sequence, although the same context (857) produced a small sherd of possible LBA/ EIA material. A single Roman sherd was found in a ditch, cut at a higher level in the sequence in the same trench, and sealed by further colluvial deposits.

7.6.5 The southern boundary of the dry valley, marked by the 'Pilgrims Way', has acted as a barrier to sediments washed from further up-slope. The consequent build-up of more recent deposits at the lower end of the valley has undoubtedly contributed to the extensive preservation of palaesol horizons in the south-west corner of the site, and to the number of sarsen boulders remaining in the dry valley bottom.

7.6.6 In conclusion, preliminary evidence suggests a rapid accumulation of colluvial sediments in the valley bottom in the LBA/ EIA, possibly as a result of woodland clearance. This has resulted in the burial of a prehistoric land surface beneath thick colluvial deposits at the bottom end of the valley. The buried soil is cut by well-preserved but undated archaeological features.

7.7 Sarsen boulders, the Upper White Horse Stone, and Smythes' Megalith (Fig. 13)

7.7.1 The present evaluation has recorded 33 sarsen boulders, the largest up to *c.*1.9m in length, and sixteen of the distinctive marks indicating their removal. The boulders all occurred in the valley bottom, within an area c.2.1ha in extent. The fifteen trenches in this area represent 4.57% of the area producing boulders. This suggests that if the colluvium was stripped from the whole valley bottom, more than 700 boulders, and c.350 marks indicating their removal, might be found.

7.7.2 There is no convincing evidence that any of the boulders recorded on the site have been utilised, although some occurred in close proximity to LBA/ EIA features and many may have been visible landscape features in the later prehistoric period. There is ample evidence, both archaeological and documentary, that numerous boulders have been removed from the field by farmers, probably over many centuries, as an obstruction to ploughing (Ashbee 1993, Evans 1948, A.Veitch pers.comm.).

7.7.3 Boulders removed from fields have been disposed of in a number of ways in recent times: They have often been incorporated into buildings, used as park or garden decorative features, or dumped in convenient holes (Ashbee 1993).

7.7.4 A provisional list of sarsen boulders recorded in Kent (Ashbee 1993), indicates a close correspondence between the distribution of the Medway Megaliths and that of natural concentrations of sarsen boulders. The latter are recorded exclusively at the foot of the North Downs escarpment, with the vast majority occurring in concentrations on either side of the Medway Gap (Ashbee 1993). This suggests that the occurrence of megalithic monuments in the area owes more to the ready availability of suitable boulders than to cultural factors. The interpretation of the White Horse Stone as the remains of a

megalithic tomb (rather than a boundary marker) is debatable (Evans 1950, Holgate 1981, Ashbee 1993).

7.7.5 Smythes' Megalith must also be considered doubtful, since the association of human bones with the monument is extremely suspect, and the single associated sherd from an 'unglazed urn' (now lost) could well have derived from the overlying colluvium. Finally, groups of natural sarsen boulders have often been mistaken for megalithic tombs when dug out of fields in isolation (Ashbee 1993). Smythes' sketches do depict a deliberately built structure, but it is not clear whether this is a record of the monument as found or an imaginative reconstruction (Evans 1948, Ashbee 1993, Plate IV).

7.8 Significance of anomalous gravel deposit in Trench 1118.

7.8.1 Trench 1118TT exposed a 0.5m thick gravel deposit, with a diameter of *c.*22m. This was at first interpreted as an archaeological deposit. It was unlike any of the other natural deposits initially encountered on the site, and was located *c.*40m south of the reported position of Smythes' Megalith (Evans 1948). The depth of colluvial deposits suggested that burial mound deposits associated with Smythes' Megalith, or other monuments undiscovered in the same area, might be expected to survive. The deposit both contained and sealed prehistoric artefacts, and four sarsen boulders were located at the north and east limits of the gravel deposit, in a manner reminiscent of kerb-stones in a barrow.

7.8.2 A thorough investigation of the deposit failed to discover any further conclusive evidence that it was the remnant of a burial mound. However, it both contained and sealed prehistoric artefacts, and four sarsen boulders were located at the north and east limits of the gravel deposit, in a manner reminiscent of kerb-stones in a barrow.

7.8.3 In the absence of sound evidence to the contrary, the deposit could also be interpreted as a natural gravel lens of colluvial origin. Examples of such localised, artefact-bearing, flint gravel deposits are well-documented in post-glacial colluvial sequences on the chalklands of south-east England, particularly in Wessex (Allen 1992). They typically consist of

> 'medium to large flints, often representing up to 70% of the sediment. They are predominantly nodular with a number of smaller fractured flint pieces. Although several scenarios have been invoked for deposits of flint nodules, including their accumulation as a result of rolling downslope aided by cattle or sheep, it is evident that the majority of these deposits are the result of gullying events.....Gullying upslope results in large volumes of soil and stones being stripped from the slopes and washed away; the stones are dropped at breaks of slope while the finer material is transported further down the valley.' (Allen 1993, 43).

7.8.4 The composition of the deposit in trench 1118TT (well-sorted nodular flints), its highly localised distribution, and its position at the edge of the valley bottom, are all typical features of this type of deposit.

7.8.5 The shape of the deposit in plan could not be determined, but it was clear from the sections that the gravel formed a thick wedge to the north and east and thinned out downslope, to the south and west, separating into alternate stony and stone-free horizons. Such layers are a well-known feature of chalkland colluvial sequences, and are similiarly explained by the sorting of eroded soil prior to deposition (Allen 1992).

7.8.6 The interpretation of this deposit as a remnant burial mound cannot be entirely discounted, given the presence of associated artefacts. However, there is no source of gravel immediately adjacent to the site, and it seems unlikely that such material would have been transported from elsewhere in preference to using locally available material.

7.9 Environmental evidence

7.9.1 The environmental evidence from the site is perhaps its most significant aspect (Appendices 3 and 5).

7.9.2 The five trenches in the lower valley bottom all revealed thick colluvial sedimentary sequences, including Late glacial and post-glacial deposits. The archaeological evidence suggests that much of the latter sequence dates from the LBA/ EIA.

7.9.3 The extensive post-glacial buried soil horizon identified in the lower valley bottom produced predominantly woodland mollusc species in trenches 3035TT and 1124TT, and mainly open country species from trenches 1122TT and 1125TT, where it was cut by features presumed to be of LBA/ EIA date. The disturbed nature of the buried soil suggests that it could represent a ploughsoil formed shortly after woodland clearance. The colluvium overlying the buried soil produced mainly open country species.

7.9.4 The direct association of archaeological features and artefacts with this buried land surface and the overlying colluvium, suggests that further study could shed considerable light on the impact of man on the landscape of the region in the later prehistoric period. This will be particularly important if local variations in vegetation cover can be discerned within the same buried soil horizon.

7.9.5 Pit 203 produced rich assemblages of animal bones and plant remains, the former including two new-born or foetal lambs and the latter various grain species. The very large concentration of grain suggests a deliberate deposit, perhaps placed in the small pottery vessel which was also found in the pit. The composition of the deposit strongly suggests a 'ritual' function. Further study of the surrounding area could shed light on the context and function of such deposits.

7.9.6 Little information is available about the Bronze Age or Iron Age archaeobotany of Kent. Any samples from the area of this period are therefore of great interest. The present evidence suggests that emmer wheat continued in cultivation into the Iron Age in the region. It is not yet known when spelt wheat was introduced. Any samples from the Late Bronze Age and Early Iron Age which may help to establish when spelt wheat was introduced, and to further explore how long emmer wheat continued to be cultivated would therefore be of interest.

8 IMPORTANCE OF ARCHAEOLOGICAL DEPOSITS

8.1 Survival/ condition

8.1.1 The survival of archaeological deposits is variable across the site. Table 1 summarises the degree of preservation, and the type of deposits represented, by geographical area, as defined in Section 4.1 above.

Table 1: Survival/ condition of archaeological deposits

Area	Trenches	Archaeology present	Condition/ survival
Area of modern land-fill	*1091TT, 1094TT, 1095TT*	none	destroyed by modern landscaping
West of the 'Roman Road'	*1096TT-1099TT, 3032TT, 3033TT,*	two LBA/ EIA features including pit with deliberate deposit of animal bone and pottery.	severely truncated by ploughing
Western valley slope	*1100TT, 1102TT-1111TT, 3034TT*	two undated features	truncated by erosion and ploughing
Upper valley bottom	*1101TT, 1113TT, 1114TT, 1118TT*	four LBA/ EIA ditches present. One Roman or later ditch. One undated ditch. Two possible ditches	truncated by erosion and ploughing
Middle valley bottom	*1112TT, 1115TT-1117TT, 1119TT, 1120TT, 1123TT*	none	no features present
Lower valley bottom	*1121TT, 1122TT, 1124TT, 1125TT, 3035TT*	four probable LBA/ EIA features cutting palaeosol.	well-preserved beneath thick colluvial deposits.

8.2 Period

8.2.1 In spite of the proximity of the site to a cluster of megalithic monuments, the only evidence for earlier prehistoric activity on the site was a single sherd of Beaker pottery from Trench 1118TT, and a very small quantity of worked flint, which although not closely datable appeared to be soft-hammer struck, suggesting an early date (Appendix 1). The evaluation has thus provided little corroborative evidence that the nearby megalithic monuments are Neolithic in date. Although soil erosion in the LBA/ EIA may explain the absence of Neolithic deposits, the evidence from the evaluation remains largely negative.

8.2.2 Most of the pottery recovered is of LBA or EIA date (Appendix 2). Some of this material derives from features sealed by the upper colluvium, and some from the colluvium itself. There is little to suggest settlement activity within the evaluation area in this period, but the quantity of pottery from some features suggests settlement in the near vicinity.

8.2.3 The scarcity of Roman material is surprising (only a single sherd was found), considering the presence of two significant Roman sites and a possible Roman road, adjacent to the site.

8.2.4 No Saxon or medieval artefacts were found. The only post-medieval material collected was from features associated with the bridleway. Unusually large quantities of post-medieval and modern pottery were noted in the ploughsoil, probably arising from manuring of the fields.

8.3 Rarity

8.3.1 A small but growing number of sites of LBA/ EIA date are known in Kent, mostly from evaluations (Barclay 1994). This site is unexceptional in terms of preservation and the range of artefacts and features present. However the site represents a rare opportunity to examine a potentially well-dated post-glacial environmental sequence in direct association with archaeological features. The presence of a well-defined LBA/ EIA land surface, cut by archaeological features, is particularly unusual and potentially very significant.

8.3.2 Considerable work has been carried out on post-glacial colluvial sites in Wessex (Allen 1992), but in Kent, such studies have normally been concerned mainly with the late glacial sequence. Notable exceptions which have produced important post-glacial environmental data include Holywell Combe, near Folkstone, where two post-glacial buried soil horizons, in a deep colluvial sequence, produced Bronze Age and Iron Age artefacts respectively (Preece 1993). However, radio-carbon dating and mollusc analysis both produced considerably older dates than the Early Bronze Age date indicated by the archaeology. Preece suggests that the palaeosols represent periods of scrub regeneration and consequent retardation of slope erosion (Preece 1993).

8.3.3 At the Devils' Kneadingtrough, near Brook, another scarp-face combe, mollusc analysis indicated that clearance of the primary woodland had taken place by 2590±105bc. Pollen analysis of organic valley deposits from Frogholt and Wingham showed the presence of cleared land and agriculture by the Bronze Age (Kerney 1963, Holgate 1993).

8.4 Fragility/ vulnerability

8.4.1 The truncated state of the archaeological features on the higher valley slopes, and the comparatively shallow depth of topsoil and colluvium, suggests that they would be destroyed by any groundwork's associated with the rail link. They are already under threat from active slope erosion and ploughing. Features to the west of the Roman road are particularly vulnerable, and would be under threat from the initial topsoil stripping.

8.4.2 Although the archaeological features in the lower valley bottom are deeply buried, the potential palaeoenvironmental significance of the palaeosols and overlying colluvial deposits suggests that this area should also be treated as vulnerable to any ground disturbance. Although these are quite extensive, the differences in molluscan faunas suggest horizontal as well as vertical variation in their character.

8.5 Diversity

8.5.1 Unless the anomalous gravel deposit in Trench 1118TT proves to be artificial, the surviving archaeological deposits are largely restricted to the LBA/ EIA and the features represented are almost all boundary or drainage ditches. The limited range of archaeological evidence is offset by the diversity of palaeoenvironmental evidence, with palaeosols, colluvium and archaeological deposits all present in well-preserved sequences, having regional implications for all archaeological periods. The evidence for horizontal as well as vertical variation in the character of the palaeosols is noteworthy.

8.6 Documentation

8.6.1 No excavations have previously been carried out on the site. Prior to the evaluation, the site was the subject of a surface collection survey. Aerial photgraphs, and the Kent Sites and Monuments Record were also consulted. The Medway Megaliths as a group are very well-documented, although only 'The Chestnuts' long barrow, Addington, has been excavated to modern standards (Alexander 1961). Clement Smythes' manuscript notes on the discovery of Smythes' Megalith was published in 1948 by J.H.Evans. The most recent general survey of the megaliths, includes a provisional list of naturally occurring and utilised sarsen boulders in Kent (Ashbee (1993).

8.6.2 No detailed palaeoenvironmental studies have been carried out in the immediate area.

8.7 Group value

8.7.1 The main interest of the site lies in the conjunction of prehistoric features with an artefact-bearing colluvial sequence, with high palaeoenvironmental potential. The contribution of the site to studies of the Medway Megaliths to date comprises mainly negative evidence, with less group value than had been expected.

8.8 Potential

8.8.1 At White Horse Stone, the presence of artefact-bearing colluvial silts and an extensive palaeosol horizon, cut by archaeological features, greatly enhances the potential for establishing a securely dated late- and post-glacial environmental sequence for the area.

8.8.2 The presence of datable features and horizontal variation in the palaesol sequence in relation to possible clearance and cultivation activity is of particular potential interest.

8.8.3 A more intensive, multi-disciplinary study, considering the archaeological, geological and palaeoenvironmental evidence, would potentially have regional, and possibly national significance, allowing comparison with other sites in Kent and elsewhere in south-east England. While this could provide an environmental context for the important archaeological sites in the vicinity, not least the eastern group of the Medway Megaliths, the assessment suggests that the best-preserved sequences at the White Horse Stone site belong to the late glacial and LBA/ EIA periods. It is none the less of interest for the light that could be cast on later prehistoric clearance and land-use in the region.

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APPENDIX 1

WORKED FLINT

by P.Bradley, Oxford Archaeological Unit

1 Introduction

1.1 Twenty-six pieces of worked flint and four pieces of burnt unworked flint were recovered from the evaluation. No retouched pieces were recovered; the potential for dating the collection is therefore hampered by its size and composition. The flint was generally very heavily corticated but where the original colour of the flint could be seen it was dark brown to black. The flint was generally heavily abraded and worn.

Table 2: Distribution of worked flint by context

Context	Type
204	4 flakes, 1 piece of irregular waste, 2 chips, 2 pieces of burnt unworked flint
409	7 flakes
413	2 flakes
447	1 flake
451	1 flake
601	1 flake
611	1 flake
812	5 flakes
813	1 flake, 2 pieces of burnt unworked flint

2 Discussion

2.1 Dating this small group of flint is difficult given the lack of retouched forms. Both soft and hard hammers have been used but generally there did not appear to be much platform preparation.

2.2 The flint is derived from colluvial and other natural deposits (contexts 601, 812) a buried land surface (409, 413) and various features such as pits and ditches (204, 447, 451, 611, 813). Single possible soft-hammer struck flakes were recovered from two features cutting the buried soil (447, 451). Little may be said of them although a relatively early date may be indicated by the fact that they seem to be soft-hammer struck.

2.3 The majority of the flint was heavily worn indicating that they had been lying around for some time prior to deposition. The flint from Contexts (447) and (451) did not differ in appearance from the rest of the material. Five flakes were recovered from a gravel deposit (812, a layer within 811). Most of these were probably soft-hammer struck and may again indicate a relatively early date. Context (204) produced seven pieces of flint and two pieces of burnt unworked flint. This material is probably redeposited as the feature also produced LBA/ EIA pottery. Any dating must be regarded as tentative given the small size of the assemblage and the lack of diagnostic retouched pieces.

2.4 A small but relatively compact scatter of worked flint and a more dispersed spread of burnt flint was identified during fieldwalking (OAU 1994).

APPENDIX 2

POTTERY AND FIRED CLAY

by A.J.Barclay, Oxford Archaeological Unit

1 Introduction

1.1 The evaluation produced a total of 133 sherds weighing 1181 g. The assemblage, which is dominated by mostly plain LBA/ EIA pottery also contains a small number of Beaker sherds. Small quantities of Roman, medieval, post-medieval and modern material were also recovered. The prehistoric material includes a small number of featured sherds. Table 3 gives a breakdown of material by context and an overall quantity.

2 Methodology

A rapid assessment and quantification (number of sherds and weight) of the evaluated assemblage was undertaken to provide spot dates. No detailed record was made of fabrics during the assessment, although fabric group (e.g. flint tempered) was used as a broad chronological indicator. The incidence of featured and, or decorated sherds was noted.

3 Condition and quality of assemblage

3.1 Featured sherds were notably scarce amongst the prehistoric material. Only one significant group of pottery was recovered, and with this exception, sherds were on the whole small and abraded.

4 Fabrics

4.1 The Beaker sherds were principally grog tempered although the fabrics also contained rare flint and sand. The LBA material was recognised by its manufacture from a range of fabrics that were principally flint-tempered, but also contained black glauconitic sand and/ or quartz sand. The flint-tempered fabrics ranged from ill-sorted coarse and often calcined flint to better sorted finer flint-tempered fabrics. The date of some of these finer flint-tempered fabrics could be transition LBA/EIA or EIA. Sandy fabrics containing pure glauconitic sand are of indeterminate Iron Age date (either early or middle). A sherd manufactured from a grog and ironstone tempered fabric could be LIA.

5 Date and range of material

5.1 *Beaker sherds*

Context (857) contained two Beaker sherds of EBA date, including part of a base and a decorated body sherd. The base is from a small vessel and the body sherd is decorated with an incised lattice pattern. These sherds are relatively large (22 g in total) and probably derive from the same pot. Stylistically they can be placed in Clarke's late Southern group and Case's late style (1970; 1977).

5.2 *Late Bronze Age/ early Iron Age and Iron Age*

The assessment has identified pottery of a wide date range, although a high proportion of this material is flint-tempered and is likely to be either of LBA or EIA date. Other

fabrics include sand-tempered (either quartz, glauconite or a mixture of the two) and these fabrics are more likely to be of IA date. However, the small groups of material from individual contexts, the general lack of both featured sherds, decorated sherds and relatively complete profiles makes dating with any great precision difficult.

5.3 Pit fills (204) and (205) produced a significant group of mostly flint-tempered LBA/ EIA material (39 sherds, 710 g) that includes the lower part of a small vessel, a simple shouldered rim, and the shoulder from a large jar. Also, present in this group are two sherds with vertical finger-wiping on their exterior surfaces. This type of surface treatment is often recorded on LBA pottery and may be taken to indicate an early date within the first millennium B.C.

5.4 From elsewhere other featured sherds include angular shoulders, an expanded rim fragment and base sherds. Context (228) contained a base sherd, an angular shoulder sherd and a possible ?combed/ incised decorated sherd. Context (403) produced a burnished neck sherd from a fineware vessel, while 413 contained a shoulder sherd from a similar type of vessel. Context (811) contained part of a simple incurving rim and 836 produced an angular shoulder.

5.5 Possibly later in date are the ?base/shoulder fragment in an unusual ironstone and grog tempered fabric from Context (833) and some of the sand and glauconitic sand tempered sherds. Apart from the pit deposit (204), sherds of this date were recovered from a number of ditch fills and colluvial layers (see Table 3).

6 Discussion of prehistoric pottery

6.1 The assessment has identified pottery of a wide date range, although the vast majority can be assigned to the LBA/ EIA (cf. Barrett 1980). The Beaker sherds indicate the earliest activity and significantly these were found beneath colluvial deposits. LBA/ EIA pottery was recovered from a variety of deposits that include colluvium, ditch fills and the fill of a pit (203). The latter produced the largest group of pottery from the entire site.

6.2 The small assemblage from the White Horse Stone site is an important addition to an increasing number of LBA/ EIA sites recorded from the northern part of Kent. A number of small assemblages have now been recovered, mostly from evaluations, from this part of Kent, and from near the Thames estuary (cf. Barclay 1994). The character of these assemblages is in direct contrast to what has been found in the north-east part of the county (Macpherson-Grant 1994, fig.19).

7 Romano-British pottery

7.1 Context (853) produced a single Roman rim sherd that cannot be precisely dated.

8 Medieval, post-medieval and modern pottery

8.1 Context (224) produced a shell-tempered sherd of probable medieval date and Context (212) produced a glazed post-medieval sherd. A sherd of modern pottery was recovered from Context (231).

9 Fired clay

9.1 Context (204) produced two refitting fragments from a flat edged object, possibly a loomweight.

Table 3: Quantification of all pottery by context (Sherd count, weight)

Context	**Date**							**Count/ Weight**
	Beaker	LBA/EIA	IA	Roman	Medieval	Post-Medieval	Modern	
204		21, 499g	3, 15g					24, 516g
205		18, 211g						18, 211g
212						1, 64g		1, 64g
224					1, 9g			1, 9g
228		8, 25g	2, 7g					10, 32g
231							1, 13g	1, 13g
403		14, 27g	1, 2g					15, 29g
409		8, 26g						8, 26g
413		6, 10g	1, 6g					7, 16g
416		1, 6g						1, 6g
451		1, 3g						1, 3g
613		1, 2g						1, 2g
811		1, 3g						1, 3g
817		2, 3g						2, 3g
833		27, 157g	3, 6g					30, 163g
834		1, 13g						1, 13g
836		2, 18g	1, 2g					3, 20g
843		4, 16g						4, 16g
853				1,15g				1, 15g
857	2, 22g	1, 1g						3, 23g
Total	**2, 22g**	**116, 1020g**	**11, 38g**	**1, 15g**	**1, 9g**	**1, 64g**	**1, 13g**	**133, 1181g**

APPENDIX 3

ENVIRONMENTAL REMAINS

By Dr. M.Robinson and R.Pelling, Oxford University

1 Carbonized plant remains and charcoal

1.1 Introduction

1.1.1 Nine samples were submitted for the assessment of their charred plant content. One sample (Layer 204) was taken from a Late Bronze Age/Early Iron Age pit (203). A further eight samples were from a range of LBA/ EIA or undated features, such as ditches and buried soils (Layers 418, 428, 447, 449, 451, 613, 813, 815). Sample volumes ranged from 5 to 40 litres.

1.1.2 The purpose of the assessment was to evaluate the quality of the preservation of the charred material and the potential for further sampling and analytical work.

1.2 Methods

1.2.1 Soil samples were processed by bulk water separation and floated onto a 0.5mm mesh. Flots were then allowed to slowly air dry before being submitted for assessment.

1.2.2 Each flot was put through a stack of sieves and scanned under a binocular microscope at x10 to x20 magnification. The quantity and quality of charred plant material was noted. Material was provisionally identified and estimates were made of the abundance of grain, chaff, weed seeds, charcoal and other charred items. Abundance was recorded on a four point scale, (+ = 1-10 items, ++ = 10 - 100, +++ = 101 - 1000, ++++ = >1000 items). This information is recorded in Table 4 below.

1.3 Results

1.3.1 The sample taken from a Late Bronze Age/Early Iron Age pit deposit, with a possible ritual function (Layer 204), contains useful quantities of material with approximately 1000 cereal grains. Grains of hulled *Triticum* sp. dominate with *Hordeum* as a second crop. *Triticum spelta* (spelt wheat) appears to be the principle wheat species present although some *T. dicoccum* (emmer) was also noted. Glume bases are very rare and were mostly not identified to species during the assessment. Very well preserved gains of *Hordeum* sp. indicate that the grain is hulled, while asymmetrical grains indicate the presence of *H. vulgare* (six-row barley). The cereal grains are generally plump and large and are exceptionally well preserved. Weed seeds are very infrequent in the sample and appear to be dominated by grasses including *Bromus* seeds (brome grass). The assemblage is characterisitc of clean grain in which the occasional glume base and weed seeds are minor contaminents.

1.3.2 Of the remaining samples one sample taken from a buried soil (Layer 449) of unknown date contained a single *Hordeum* sp. rachis internode. There was no discernable charcoal in any of the samples.

1.4 Summary of Scanning Results

Number of samples assessed for charred remains 9; Number of samples with seeds and chaff 2.

Abundance was recorded on a four point scale, (+ = 1-10 items, ++ = 10 - 100, +++ = 101 - 1000, ++++ = >1000 items).

Table 4: Summary of Plant macro-fossils present in samples

Feature type		**LBA/EIA Pit (203)**	**Other LBA/ EIA/ undated features**
Number of samples		-	9
Samples with 1-10 items		-	1
11-100 items		-	-
101-1000 items		-	-
1001 +		1	-
Triticum spelta	spelt wheat grain	+++	-
T. spelta	spelt glume base	+	-
T. dicoccum	emmer wheat grain	++	-
T. spelta/dicoccum	spelt/emmer grain	+++	-
T. spelta/dicoccum	spelt/emmer glume	+	-
T. sp.	wheat grain	++	-
Hordeum sp.	barley grain	+++	-
Hordeum sp.	barley rachis	-	+
Legume large		+	-
Linum usitassimum	flax seed	+	-
Weeds		+	-

1.5 The Potential for Further Work

1.5.1 No published information is available about the Bronze Age archaeobotany of Kent and very limited evidence for the Iron Age. Any samples from the area of this period are therefore of great interest. The present evidence suggests that emmer wheat continued in cultivation into the Iron Age in the region. It is not yet known when spelt wheat was introduced. Any samples from the Late Bronze Age and Early Iron Age which may help to establish when spelt wheat was introduced, and to further explore how long emmer wheat continued to be cultivated, would be of interest.

1.5.2 The quality and quantity of the material in the Late Bronze Age/ Early Iron Age pit sample is such that the potential for useful further sampling is very high. Given the absence of published records, any such sampling should be profitable.

2 Mollusca

2.1 Introduction

2.1.1 Two sequences of samples were taken for molluscan analysis from a trench excavated at right angles partly across the dry valley (Trench 3035TT). Additional samples were taken from archaeological features and buried soils encountered in other trenches on the site. These samples were assessed in order to help determine the date of the dry valley fills and to establish the potential of the site for molluscan analysis. In total 20 samples were assessed.

2.2 Methods and Results

2.2.1 For assessment, the samples were floated in water onto a 0.5 mm mesh and the flots dried. The residues were also sieved over a 0.5 mm mesh and dried to await full analysis. Samples of 0.5 kg were assessed from the dry valley section (Fig.12) from Trench 3035 and 2.0 kg from the other trenches. The samples were scanned under a binocular microscope and an estimate of the number of each species of mollusc was made. The results are given in Table 1. Shells are absent from Samples 8/5, 8/11 and 8/12. The occurrence of the mollusc *Cecilioides acicula* has been ignored because this species burrows deeply.

2.3 Interpretation

2.3.1 *Trench 3035TT (Fig.12), West Sequence*
Shells are absent from Samples 11 and 12 from Context (638), the earliest deposit sampled in Trench 3035TT. Sample 10 from the colluvial layer above, Context (637), contains a typical Late Devensian assemblage of shells dominated by *Pupilla muscorum* and *Punctum pygmaeum*. The shells of *P. muscorum* are of the typical Late Devensian tall form. Other species characteristic of this period include *Abida secale* and *Euconulus fulvus*.

2.3.2 *Trench 3035TT, East Sequence*
The two lowest samples from this sequence, Sample 8 (Context 636) a palaeosol overlying Sample 10 and Sample 7 (Context 634), from colluvium sealing the palaeosol, contain similar cold-tolerant assemblages to Sample 8/10 other than that *P. pygmaeum* is absent. The shells of *P. muscorum* are again of the tall form. These results show that the lower sediments in the dry valley were Late Devensian in origin, as had been suspected from the field observations of the sediments.

2.3.3 Samples 6 (Context 634) and 4 (Context 632) are from a localised deposit cut into the top of the Late Devensian colluvium. The shells from them include *Discus rotundatus*, which is absent from Britain during the Late Devensian and Early Flandrian, and the short form of *Pupilla muscorum*. Although *P. muscorum* is an open country species, the majority of the shells are from shade-loving species including *Pomatias elegans*, *Carychium tridentatum* and *Aegopinella nitidula*. *Acicula fusca*, an old woodland species, is also

present. It is most likely that these contexts are the fill of a mid Flandrian tree-throw hole, indeed *P. elegans* favours unstable substrates.

2.3.4 Sample 3 (Context 631) is from a palaeosol above the probable tree-throw hole. It also contains an assemblage of largely shade-loving species including *Carychium tridentatum*, *Discus rotundatus* and *Aegopinella nitidula* although a very few open country molluscs from the genus *Vallonia* are also present. The palaeosol had obviously been disturbed because it contains many chalk flecks and possibly represented a ploughsoil shortly after clearance.

2.3.5 Samples 2 and 1 (Context 630) are from colluvium overlying the palaeosol. The shells from them are mostly open country species, particularly *Pupilla muscorum*. Such faunas are typical of later pre-historic or Roman dry valley fills on the Chalk, species regarded as medieval introductions being absent.

2.3.6 *Other Samples*
Samples 1 (Context 418, Fig. 12) and 9 (Context 449, Fig.10) are from buried soils assumed to be the equivalent of the upper palaeosol in Trench 3035TT (Context 631, Fig. 12). Sample 1 does indeed just contain shade-loving species, particularly *Carychium tridentatum* and *Discus rotundatus* but Sample 9 contains a rich open-country fauna dominated by *Pupilla muscorum*, *Vallonia costata* and *V. excentrica*. It is possible that the soil was not buried until a later date at the locality of Sample 9, by which time a full open country fauna had developed.

2.3.7 Conversely, Sample 7 (Context 815) from colluvium has a mixed assemblage of woodland and open country molluscs, so is not necessarily the equivalent of Context (630) in Trench 3035TT.

2.3.8 Samples 2 (Context 428) and 6 (Context 613) are respectively from a tree throw hole and a LBA/ EIA gully and contain mixed woodland and open country molluscan assemblages. In contrast, Samples 3 (Context 204) and 11 (Context 451) are respectively from a LBA/ EIA 'special' deposit, and a ditch cutting the upper palaesol which mostly contain open-country species. Shells are very sparse in Sample 5 (Context 813, a ditch sealed by Gravel deposit 811).

3 Potential for Further Work

3.1 The dry valley section yielded a useful molluscan sequence which confirmed and extended the field interpretation of the sediments. The other contexts sampled also mostly contain high concentrations of shells and although their interpretation is at present hampered by the small scale of excavation, they have the potential to give useful information on environmental change on the site.

APPENDIX 4

ANIMAL BONE

By A.Powell, Centre for for Human Ecology, University of Southampton

1 Introduction

1.1 The evaluation produced a total of 272 bone fragments, including fragments recovered by wet-sieving. The entire bone assemblage was examined and the total number of identified and unidentified bones for each context was recorded. The presence of burnt and gnawed bone in the assemblage was recorded, as were butchery marks.

1.2 *Condition of the bone*
The condition of the bone is graded on a scale of 1 to 5, and assessed by context. Bone graded as 1 is in excellent condition with little post-depositional damage, and that graded as 5 cannot be identified to either species or element. The assemblage from White Horse Stone was retrieved by hand and by sieving, with the majority being recovered from a single pit (context 204) of LBA/ EIA date. The condition of the bone is summarised in Table 6.

Table 6: Condition of animal bone

Condition	1	2	3	4	5
No. of contexts	0	0	6	1	0

1.3 *Species representation*
A total of 136 fragments of bone were retrieved by hand, 52% of which could be identified to species. 136 fragments were recovered by sieving, 34.5% of which could be identified to species. The three main domesticates made up the identified assemblage, with sheep/ goat dominating both the hand retrieved and sieved material, with lesser frequencies of cattle. The proportion of pig was extremely low, with only three fragments being identified.

Table 7: Number of fragments divided by species

	Cattle	Sheep/ goat	Pig	Unidentified
Hand retrieved	23	39	3	71
Sieved > 10mm	3	15	0	13
Sieved 10-4mm	0	29	0	76

1.4 A single pit (Context 204) produced a total of 225 fragments of bone, and included some interesting material. Both hand-retrieved and sieved assemblages contained a number of bones identified as foetal or neonatal lamb. These included fragments of skull, limb bones, scapula, metapodials and vertebrae as well as a number of smaller unidentified fragments. An MNI (minimum number of individuals) was calculated from this material and gave a value of two.

1.5 The presence of articulating sheep bones was also noted, with an axis and two cervical vertebrae of a single animal. Other sheep bones were identified in the pit, but are not necessarily of the same animal.

1.6 A pig tibia (with fused fibula) was identified as having severe osteomyelitis on the distal portion of the shaft. The infection had probably set in as the result of a break, the advanced stage of the disease suggesting that the animal had continued to live for some time afterwards.

2 Discussion

2.1 There is a lack of sites dated to the Iron Age from Kent, although a number of assemblages have been studied in the south of England in general.

2.2 It is possible that whole animals were originally deposited in Pit (204), and that much of the skeleton has been destroyed by post-depositional processes. Bones from very young animals are more susceptible to taphonomic processes. Extensive root damage was noted on much of the bone, and during the excavation it was noted that plough action and natural erosion had removed much of the deposit.

APPENDIX 5

SOILS AND SEDIMENTS

By Dr.M.Bates, Geoarchaeological Service Facility, University College, London

1 Introduction

1.1 The site was visited by Dr. M. Bates of the Geoarchaeological Service Facility (GSF) of the Institute of Archaeology, University College London during the evaluation fieldwork.

1.2 The observations made during the visit are described below and were the result of a brief visit in which no detailed observations and recordings were made by the staff of the GSF. At two locations staff of the GSF requested that trenches opened by the OAU were extended and deepened in order to view the underlying or adjacent stratigraphy (3035TT and 1125TT).

1.3 The observations made in this report are preliminary and may require modification in the light of future excavations at the site.

1.4 No geotechnical data was consulted as part of these works.

2 Aims and Objectives

2.1 The purpose of the visit was to view and consider the nature of the stratigraphy present in the OAU trenches and to advise field staff regarding the nature of the field sections.

2.2 To make and report preliminary observations from trenches where appropriate.

2.3 The objectives of the study were to inform OAU staff of the nature of the stratigraphy and the archaeological significance of any 'natural' sediments present within the trenches.

3 Field Observations

3.1 Trench 3035TT (Fig. 12) contained, at the eastern end, two darkened horizons that are probable palaeosols or sedimentary units containing possible redeposited relict soil material (631, 636).

3.2 The palaeosols thinned out to the east against a dipping, chalk rich sediment (a soliflucted chalk deposit) of probable periglacial origin (Ballantyne and Harris 1994).

3.3 The lower (older) palaeosol was restricted in extent and thinned and disappeared rapidly to the west towards the valley axis (Fig. 12).

3.4 The upper (younger) palaeosol was extensively preserved and continued to the western end of the trench (Fig. 12).

3.5 The presence of extensive quantities of chalk pellets in both palaeosols suggests that some degree of reworking, and possible incorporation of colluvium, may have contributed to the formation of these horizons.

3.6 The evidence suggests that these possible palaeosol/reworked palaeosol units are interbedded within colluvial sediments originating from higher up-slope.

3.7 Within Trench 1125TT a sequence of colluvial sediments was noted overlying dark brown sediments possibly equated with the upper palaeosol recognised in trench 3035TT (Fig. 12). These sediments sealed a coarse flint gravel probably deposited by solifluction processes.

3.8 A dark brown sediment, similar in appearance to the upper palaeosol is present in Trench 1124TT, where the unit could be seen to dip into the valley and thin/wedge out against a lobe of coombe rock towards the southern end of the trench.

3.9 The palaeosol sequences were only seen in the south-east area of investigation.

3.10 Trenches within the valley floor area commonly contain thin sequences overlying coarse flint gravels. Flint gravels appear to become coarser up-valley.

3.11 A complex sequence of flint gravel units were seen in Trench 1118TT. Coarse flint gravels, comparable to those thought to be solifluction gravels elsewhere on site, were present at the base of the trench. Higher in the profile a 'flint nodule bank' was observed that thinned out across the trench. This deposits may represent a gravel lag deposit (derived from areas up-slope) that has subsequently been subjected to slope wash resulting in the removal of finer grained sediments.

4 Discussion

4.1 The stratigraphical sequences observed during the site visit indicated that typical dry valley sedimentary sequences were present within the area of the site studied (Bell 1992; Preece 1992).

4.2 Sediments within the trenches consisted of variably chalky sediments with flint clasts interbedded with dark grey-brown silt horizons containing chalk pellets (Fig. 12).

4.3 The darker horizons have been interpreted as possible remnant palaeosols or sedimentary units derived from eroded and re-deposited palaeosol sequences possibly originating at higher elevations in the valley catchment. These sediments are only well preserved on the eastern side of the valley.

4.4 The sediments containing the soils/re-deposited soils are banked against coarse gravels that are probably solifluction sediments deposited in the later Devensian (Ballantyne and Harris 1994). These coarser sediments are present throughout the valley.

4.5 Sedimentary sequences are thin in the valley axis and this is a probable result of continued fluxing, along the axis of the valley, of sediment by high energy erosive events.

4.6 The area of the highest palaeoenvironmental potential exists in the south-eastern part of the site where the stratigraphy is most complete.

5 Conclusions

5.1 The field investigation illustrated the main stratigraphical elements in the valley (Fig. 12).

5.2 The deposits are interpreted as being deposited during the late-Devensian and the later Prehistoric period.

5.3 Further trenching would be required in order to determine the three-dimensional relationship of the sediments and the relationship between the stratigraphical units and the archaeology.

Table 5: Description of colluvial sediments in key geological sequence in Trench 3035TT (Fig.12).

Context	Thickness (m)	Description	Interpretation
603	0.45	Loose, dark greyish-brown calcareous silty loam with common chalk flecks and some flint gravel.	Topsoil.
630	0.50	Friable, mid greyish-brown calcareous silt with common chalk flecks.	Colluvial wash.
631	0.25	Friable, very dark greyish-brown (almost black) calcareous silty loam with common chalk flecks.	Upper palaeosol (lateral equivalent of 418, 628, 449, 413).
632	0.25	Friable, very dark greyish-brown (almost black) calcareous silty loam with common chalk flecks.	Lower element of 631, filling a natural hollow (tree root?).
633	0.07	Compact, light yellowish-brown calcareous silt with occasional chalk flecks.	Wash deposit, confined to natural hollow (tree root?), separating two palaeosol horizons.
634	0.15	Friable, very dark greyish-brown (almost black) calcareous silty loam with common chalk flecks.	Middle palaeosol confined to natural hollow.
635	0.38	Compact, light yellowish-brown calcareous silt with occasional chalk flecks.	Colluvial wash. Probably deposited rapidly.
636	0.25	Friable, very dark greyish-brown (almost black) calcareous silty loam with common chalk flecks.	Lower palaeosol. Not preserved elsewhere on site.
637	0.35	Compact, mid yellowish-brown calcareous clayey silt.	Colluvial wash.
638	1.50	Compact, mid orange-brown clay silt with very common chalk fragments, interleaved with wedges of 'Coombe Rock'	Colluvial wash, possibly of late Devensian origin.
640	> 0.67	Fairly compact, light yellowish-brown calcareous silt, with common coarse flint gravel. The flint becomes more common towards the base of the trench.	Colluvial wash deposit. Lowest deposit excavated.