

Union Railways Limited
Channel Tunnel Rail Link

Tollgate Cropmark Complex, Gravesham, Kent

TIS 192/84-10411

Archaeological Evaluation Report

TQ 644 710



OXFORD ARCHAEOLOGICAL UNIT

October 1995

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Union Railways Limited
Channel Tunnel Rail Link

TOLLGATE CROPMARK COMPLEX, GRAVESHAM, KENT
ARCHAEOLOGICAL EVALUATION REPORT

TIS No. 192/84 - 10411

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ARCHAEOLOGICAL EVALUATION

SUMMARY

As part of a larger programme of archaeological investigation along the route of the Channel Tunnel Rail Link, Union Railways Ltd commissioned the Oxford Archaeological Unit to undertake a field evaluation of 4.6ha of land to the south of the A2 Watling Street near the Tollgate Motel, Gravesham, Kent, in July 1995. A sub-rectangular ditched enclosure, is probably a neolithic mortuary enclosure or long barrow, reinforcing the interpretation initially based only on cropmarks visible on aerial photographs; however, it has been substantially plough damaged and it was impossible to determine whether it was originally a mortuary enclosure or a long barrow. Only one possible internal feature was noted although the ditch contained an interesting sequence of mollusca, reflecting the changing local environmental conditions from the time the ditch was first dug until it finally silted up. A small dry valley, forming a sediment trap, was examined for evidence of prehistoric activity. Some signs of late Bronze Age and middle Iron Age activity were noted but no unequivocal features of prehistoric date were found. A ditched trackway to the north of the dry valley, also partially visible as a cropmark, was uncovered. Although presumed to be of later prehistoric/Roman date no dating evidence was found in the ditch fill to corroborate this supposition, and no trace of any surface had survived between the ditches. No sign of the trackway was found to the south of the dry valley. A large chalk quarry of post-medieval date was found at the east end of the site. While several trenches exposed large geological anomalies, few other significant archaeological features were noted. Only the Neolithic enclosure is considered of sufficient significance to warrant further mitigation measures, although further examination of the sediments in the dry valley, adjacent to the Neolithic ditch, would be helpful in providing a better understanding of the development of the landscape in which the monument was set.

1 BACKGROUND

1.1 Introduction

- 1.1.1 The Oxford Archaeological Unit undertook an archaeological evaluation, between the 10th and 21st July 1995 inclusive, on behalf of Union Railways Ltd (URL) on land south of the A2 at Tollgate, Gravesham, Kent (Fig. 1). The evaluation forms part of a programme of archaeological investigation along the line of the Channel Tunnel Rail Link, the aim of which is to appraise the impact of the construction of the new railway upon the cultural heritage.
- 1.1.2 The work was carried out in accordance with a Written Scheme of Investigation (WSI), detailing the scope and method of the evaluation. The area to the south of Gravesend is densely covered with cropmarks clearly visible on aerial photographs. The evaluation site includes several cropmarks, one of which is thought to be part of a prehistoric ritual monument of probable Neolithic date (OAU No. 1921¹). A major cropmark complex of

¹ OAU Nos refer to the unique sequence of numbers given to archaeological sites as reported in the Channel Tunnel Rail Link Assessment of Historic and Cultural Effects Final Report (OAU 1994) Vol 1, Route Window 15, p 106 paragraphs 5.15.1.4, 5.15.2.1; Vol 2, Route Window 15, Drawing OELK/900-1804/3014; Vol 3 Gazetteer.

enclosures and linear features (OAU No. 1562), thought to be of later prehistoric and Roman date, lies to the south of the evaluation site.

1.2 Reason for the Project

- 1.2.1 HM Government has determined that a new railway should be built to connect London mainline railway stations and the Channel Tunnel. The project involves extensive construction work, including cuttings, tunnels and embankments.
- 1.2.2 An Environmental Statement has been prepared. This examines the impact of the project on the natural and built environment. The OAU has provided detailed archaeological input to this document (OAU 1994) and a number of sites have been identified where the proposed route of the rail link will affect areas of particular known or potential archaeological sensitivity. Archaeological evaluation of these areas is necessary so that detailed mitigation strategies can be devised for the archaeology.
- 1.2.3 In the CTRL Assessment of Historical and Cultural Effects (OAU 1994, 106) the cropmark of the probable Neolithic mortuary enclosure/longbarrow was considered possibly to be of national importance. The impact of the CTRL on the cropmarks south of the A2 at Tollgate, particularly the putative long barrow, was assessed as representing a *Significant Negative Effect (Mitigable)*. The first stage 'incorporated' mitigation for this effect is the archaeological evaluation reported here, with the option for further mitigation if warranted by further investigation and reporting and/or preservation *in situ* beneath the CTRL embankment and mounding.

1.3 Construction Work on the Tollgate Site

At Tollgate the CTRL will pass 200m south of the A2 in a false cutting created by the construction of linear embankments to either side of the route. Running east from Wrotham Road the route itself will be on embankment, with a transition to grade or slight cutting at about the location of the cropmark enclosure. There will also be extensive areas of soil dispersal and planting, occupying the space between the CTRL and the A2. The Phase 1 archaeological evaluation, as reported in this document, investigated the CTRL corridor including the track alignment and false cutting embankments to either side.

1.4 Geology, Landscape and Landuse

- 1.4.1 The site is located on Upper Chalk, the weathered surface of which was found directly under the modern ploughsoil on the eastern side of the site.
- 1.4.2 A small dry valley runs south-east to north-west across the western side of the site (Fig. 2). This forms a sediment trap, sealing evidence of prehistoric activity. Silty sediments at the base of the dry valley and in colluvial deposits making up much of its fill suggest that the original soil of the site may have been a red-brown silt possibly of loessic origin.
- 1.4.3 Aerial photographs indicate a number of large roughly circular features on the eastern side of the site of probable geological origin (Fig. 2). The available geotechnical data, including a microgravity transect and a number of engineering geological logs of both geotechnical pits and trenches, has confirmed the geomorphological complexity of the area. The geological anomalies include solution hollows and linear fissures, and it has also been suggested that dene-holes may exist to the immediate east of the site (Alastair Waller pers. comm.).

1.4.4 The land rises from about 39 m OD on the western side of the site to about 60 m OD in the south-east corner. The heavily silted dry valley is clearly visible as a linear depression running down the slope.

1.4.5 The landscape of the area is now dominated by a major arterial road (A2), suburban development and intensive agriculture. At the time of the field evaluation the site, which was located within a very large arable field, was under a cereal crop.

1.5 Archaeological Background

1.5.1 The modern A2 follows the line of Roman Watling Street in the Tollgate area. Road improvements to the north of the Tollgate Motel in 1922 revealed a Roman tile-lined cist (OAU No. 1560; Jessup 1928), which may have been used as a burial chamber, and a vertical shaft (OAU No. 1559; VCH 1932, 137) filled with stratified layers including Roman pottery. This has been interpreted as a well or rubbish pit.

1.5.2 Cropmarks of archaeological features are evident except in the dry valley. A pair of parallel linear features (OAU No. 1920; RCHM AP TQ 6470/13-15), probably representing a trackway, run north-south to the east of the Tollgate Motel and appear to run into the dry valley within the evaluation site (Fig. 2).

1.5.3 A sub-rectangular enclosure (OAU No. 1921; RCHM AP TQ 6471/9) lies within the evaluation site on the lip of the dry valley (Plate 1). Morphological comparisons, prior to the evaluation, suggested that this feature may be a Neolithic mortuary enclosure, perhaps associated with a long barrow.

1.5.4 There is an extensive area of cropmarks (OAU No. 1562) to the south of the evaluation site. These include enclosures, linear features, and possible pits. The cropmarks appear, on morphological grounds, to be of later prehistoric/Roman date, indicating the remains of a settlement of that period. From the available aerial photographic coverage it is unclear as to how near this site extends toward the evaluation area. However no significant features or finds of this period were encountered in any of the eighteen evaluation trenches.

1.5.5 Although no surface collection survey has been undertaken over the evaluation site, the land to the west of Wrotham Lane has been fieldwalked. A scatter of worked flints (OAU No. 3103) has been located to the east of the Northfleet Riding School (OAU 1995b, 15) and a small scatter of Roman pottery overlies another rectilinear group of cropmarks (OAU No. 1558; RCHM AP TQ 6471/10), partially overlapping the north end of the flint scatter.

2 AIMS

2.1 The Written Scheme of Investigation (URL/OAU 1995) outlined fourteen principal aims for the evaluation. All of the stated aims, with the exception of Aim 2.4 (which is no longer relevant to the current CTRL proposals), and Aims 2.13 and 2.14 (which will be completed after final submission of this report) were successfully addressed either during the course of the fieldwork or during the preparation of the report.

2.2 The remaining thirteen evaluation aims were as follows:

2.2.1 To determine the presence/absence, extent, condition, character, quality and date of

any archaeological remains within the evaluation area.

- 2.2.2 To determine the date, character and condition of the sub-rectangular enclosure, provisionally interpreted as a Neolithic mortuary enclosure.
- 2.2.3 To assess the date and character of the parallel linear features/trackway, and to determine whether this is associated with other archaeological features and deposits (including the other cropmark complexes in the area covered by the evaluation).
- 2.2.4 To verify the reliability of the cropmarks as evidence for the extent of the archaeology.
- 2.2.5 To establish the nature of the geological features and whether sedimentary accumulation, particularly in the dry valley, has enhanced the preservation of archaeological deposits of whatever date.
- 2.2.6 To define the environmental potential of any archaeological features or deposits, and in particular to evaluate the age and preservation status of plant micro- and macro-fossils in any waterlogged deposits.
- 2.2.7 To relate all archaeological deposits found to discoveries in the locality.
- 2.2.8 To critically review the local, regional, national and (if relevant) international significance of such archaeological deposits as are revealed.
- 2.2.9 To contribute towards proposals for mitigation of impact on such archaeological deposits as are revealed and/or can be predicted from the evaluation evidence.
- 2.2.10 To make a full graphic, photographic and written record of the evaluation.
- 2.2.11 To communicate the results of the evaluation to the client (and through them to the statutory consultees) in the form of a suitably illustrated report which shall be lodged with the County Sites and Monuments Record within three months of the end of fieldwork.
- 2.2.12 To prepare an archive of the evaluation project, to be deposited in an approved museum within a timescale to be agreed with the County Archaeologist, taking due account of the potential for further fieldwork.
- 2.2.13 To deposit the finds with the archive (subject to the agreement of the landowner and, where relevant, any decisions under Treasure Trove law).

3 METHODS

3.1 General

- 3.1.1 A detailed statement of the methods used in the evaluation is contained within Section 3 of the Written Scheme of Investigation (URL/OAU 1995), the accompanying Methods Statement (OAU 1995c) and the Site Safety Plan and COSHH Statement (OAU 1995d). The following is only intended to amplify certain aspects of the evaluation methodology.

3.1.2 Access was provided to the Geotechnical Management Unit of Union Railways for the purpose of observing the trenches and undertaking minor additional exploratory excavations, of which Trial pit 1059A encountered an archaeological deposit connected with a former chalk pit or quarry (see below 5.4).

3.2 Excavation

3.2.1 The extent of the site is shown in Fig. 2 covering approximately 4.6 ha. A number of the trenches were re-positioned both prior to the commencement of the evaluation and during the fieldwork. This was undertaken to more accurately target several of the features/anomalies visible as cropmarks.

3.2.2 The evaluation took the form of an array of eighteen trenches, excavated using a 360 degree mechanical excavator equipped with a 2 m wide ditching bucket. The trenches were positioned to both examine the suspected archaeological features visible on aerial photographs and to investigate blank areas (Fig. 2). The trenches were generally, but not uniformly, 30 m long with the exception of Trenches 1050 and 1053 across the ends of the Neolithic mortuary enclosure/longbarrow, which were each 15m long. In total they represent a sample of about 2.3% of the site area.

3.2.3 In the dry valley the trenches were generally excavated to a depth not exceeding 1.2 m, although deeper *sondages* were made to a depth of up to 2.4 m in Trenches 1029, 1058 and 1052, with the trenches widened and stepped for safety reasons. The general level to which mechanical stripping was carried out was determined by the perceived archaeological significance of the horizon excavated to, with particular attention paid to the presence of prehistoric pottery and features. The deeper *sondages* were excavated to retrieve any finds and obtain a sediment profile as far as the Chalk Head deposits. The lower silts were found to be archaeologically sterile and consequently the investigation of these deposits was undertaken in a less intensive manner than that of the upper deposits.

3.2.4 All features were sampled by hand excavation. A 50% sample by volume of pits and other discrete archaeological features was excavated as a minimum, with the exception of the large probable 'Chalk Quarry' 1059/2, which was sampled on a much smaller scale. Linear features were sectioned to investigate their character and retrieve finds. Of the four sections of the sub-rectangular enclosure exposed by the trenching, ditch 1053/2 was bottomed, but 1051/13 was not bottomed due to safety consideration. There was no unequivocal pottery evidence dating these ditches, but a significant quantity of prehistoric worked flint was recovered. On-site consultation with the client and Kent County Council resulted in agreement that the sampling carried out was sufficient for the purposes of the evaluation, and the two exposed sections of ditch in trenches 1050 and 1051 were left unexcavated.

3.3 Environmental Samples

3.3.1 Environmental samples were taken with the advice of Dr Mark Robinson of University Museum, Oxford. Mollusc samples (1 kg of soil) were taken as a column from the sub-rectangular enclosure ditch (1051/13), from the colluvium in the same trench (Trench 1051), from middle and lower colluvial sediments in the dry valley (Trench 1052), from one of the parallel linear ditches (1030/6), and from the 'chalk quarry' (1059/2). Bulk samples of 40 litres, for the recovery of charred plant remains, were taken from the sub-rectangular enclosure ditch (1051/13), the 'chalk quarry' (1059/2) and from features within the dry valley (1028/5 and 1052/9). In addition to processing the soil samples by water flotation over a

0.5mm mesh sieve, the residues were also collected, dried and sorted for artefactual remains, particularly small worked flint chips, which were found to be abundant from the sub-rectangular long enclosure. A list of the samples taken and an assessment of the molluscan and charred plant evidence is contained in Appendix 3.

3.4 Sedimentological Analysis

- 3.4.1 The sections in the dry valley were examined by A J Barham and Dr M Bates of the Geoarchaeological Service Facility (GSF), University College London. A note on their observations is presented in Appendix 4.

3.5 Survey

- 3.5.1 The trench locations were surveyed by Simmons Survey Partnership for URL. The trenches have been plotted (Fig. 2) using FastCAD graphics programme. Detailed trench plans were drawn in the field at 1:100 or 1:50. The plans were subsequently digitised (Figs 3-5). The survey control points were used as bench marks.

3.6 Recording

- 3.6.1 Recording followed the standard OAU single context recording system (Wilkinson 1992), amended in respect of soil/ sediment descriptions to conform with Museum of London Field Handbook 1994 edition, in accordance with the WSI and task instruction. Each trench was given an individual sequence of context numbers starting with 1, the contexts across the site therefore being distinguished by the CTRL trench number prefix (1028/..., 1029/... etc.). All context records, finds and samples are prefaced by the site code TLG95.

4 RESULTS: GENERAL

- 4.1 Many of the trenches revealed little or nothing of archaeological interest. Features and deposits of interest were found in Trenches 1050, 1051 and 1053 across the sub-rectangular enclosure cropmark, Trench 1030 intercepting the ditched trackway, Trenches 1028, 1029, 1048, 1052 and 1058 in the dry valley, and Trench 1059 on the eastern side of the site which revealed a large pit or chalk quarry. Trenches 1040, 1047, 1054, 1055, 1056, 1061 and 1062 contained no archaeological features at all, with the modern ploughsoil directly overlying weathered chalk. The features in Trench 1060 all proved to be geological solution hollows. The seven blank trenches (1040, 1047, 1054, 1055, 1056, 1061 and 1062) and Trench 1060 will not be discussed further.
- 4.2 The remaining ten trenches of interest are described in more detail below. A summary of all the archaeological contexts and associated finds appears in the Archaeological Context Inventory, Section 9. Detailed reports on the flint, pottery and environmental remains are contained in Appendices 1, 2 and 3. A note on the dry valley sediments is included as Appendix 4.
- 4.3 The site archive and finds (subject to any necessary consents) may be deposited with a museum approved for the purpose by the Museums and Galleries Commission and the County Archaeological Officer in consultation with URL. In the meantime the site archive and finds will be transferred from OAU to URL premises pending the outcome of this consultation process.

5 TRENCH DESCRIPTIONS

5.1 Sub-rectangular Enclosure Cropmark - Trs 1050, 1051 & 1053 (Fig. 2)

5.1.1 Trenches 1050, 1051 and 1053 were positioned to examine the sub-rectangular enclosure cropmark lying on the lip of the dry valley. A slight misplotting of the cropmark, c. 5 m south of where it should have been prior to the laying out of the trenches², meant that the trenches were not positioned precisely as intended in relation to the feature. The ditches were nevertheless revealed on four sides. Two sections were excavated by hand through the ditch and hillwash deposits to the west and south were also examined. The error has been corrected on the trench plan Fig. 2.

Trench 1051 (Figs 3, 6 and 8)

5.1.2 This trench was positioned to cross the centre of the enclosure to reveal both side ditches (1051/13 and 1051/20). Because of the slight misplotting it was extended in a northward direction to 34 m long to uncover the northern side ditch.

5.1.3 The modern ploughsoil directly overlay chalk. The only superficial stratigraphy consisted of layers of hillwash at the SW end of the trench. These were examined by hand excavation in order to explore the possibility of stratified deposits associated with the monument. Despite careful cleaning no features or layers were found in the middle of the enclosure between the side ditches.

5.1.4 Although both the north and south sides of the enclosure ditch were located in this trench (Fig. 3), it was decided (see 3.2.4 above) that it was only justifiable, owing to the surface similarity of both ditches, to excavate a section through one side.

Ditch 1051/13 (Fills 1051/3 - 12 & 21)

5.1.5 This, the southern side ditch of the enclosure, was examined by hand excavation. It was 4 m wide at the top with a composite profile showing a shallow upper slope and a steep lower slope (Fig. 6). The ditch was excavated to a depth of 1.4 m below the stripped surface but was not bottomed. Probing indicated that there was about 300 mm of relatively soft fill beneath. This probably overlay chalk rubble filling the base of the ditch to a similar depth (as in ditch section 1053/2) indicating an overall depth of nearer 2 m.

5.1.6 The sequence of deposits (Fig. 6) from the top down was as follows.

- 1 Topsoil; clear boundary.
- 2 Friable light brown silt/silt loam with c.10% coarse material consisting of small, sub-rounded chalk lumps and sub-angular flints; sharp boundary.
- 3 Friable light brown silt/silt loam with c.10% fine sub-angular chalk lumps and few flints; sharp boundary.
- 4 Friable light grey-brown silt/silt loam with 2-3% coarse material and occasional charcoal flecks; sharp boundary.

² This level of error is commonplace in plotting cropmarks from aerial photographs.

- 5 Very light brown silt with c.25% poorly sorted sub-rounded chalk; boundary with 6 unclear.
- 6 Very light brown silt with c.10% chalk. Root disturbance obscured its relationship with 5.
- 7 Light brown silt/silt loam with c.20% coarse material, mostly chalk with some sub-angular flints; sharp boundary.
- 8 Hard deposit of chalk rubble within a brown silt matrix (50:50).
- 9 Same as 8.
- 10 Relatively loose chalk rubble deposit within a brown silt matrix (60:40).
- 11 Friable reddish brown silt.
- 12 Relatively loose chalk rubble deposit within a light brown silt matrix (50:50)
- 21 Friable, relatively silty deposit, tested by probing but not excavated.
- 5.1.7 The fills mainly consisted of interleaved light reddish brown silts which varied principally in the density of chalk inclusions. However, Layer 1051/4 differed from the other layers in that it consisted of a greyish silt with charcoal flecks. The deposits on the northern side were generally more chalky, suggesting that a chalk rubble bank or mound may originally have existed inside the enclosure. There was no evidence of a recut. The large quantity of chalk rubble high up in the fill (eg. Layer 1051/5) suggests a quite rapid infilling of the ditch.
- 5.1.8 Worked flint was found throughout the ditch in relatively large quantities. Most (138 pieces) came from Layer 1051/7 in the centre of the ditch. The large quantity of unretouched flakes, including micro-flakes, many corticated, indicates that knapping was practised on the site. There was an almost complete absence of tools and cores.
- 5.1.9 Two fragments of animal bone came from Layer 1051/4, together with some charcoal flecks.
- 5.1.10 Samples were taken for snail identification from a soil column through the ditch fills (Fig. 6). Six of these samples were assessed (Appendix 3). They showed that initial silting took place in an open environment but that, after the ditch became partially infilled with chalk rubble, there was woodland regeneration. There is some suggestion from the presence of a species characteristic of old undisturbed woodland (*Acicula fusca*) that at least some of the woodland may have been long established woodland of ancient character rather than regenerated from earlier clearance. The uppermost fills are less easy to interpret, but appear to have accumulated after woodland clearance.
- 5.1.11 A 25 l. and two 40 l. soil samples (Samples 16, 17 and 29) were taken for charred remains from Layers 1051/4, 1051/7 and 1051/2 respectively (Fig. 6). These contained little of interest (Appendix 3) although a single cereal grain (not identified to species) was found towards the upper part of the ditch profile (1051/4). This need not be of Neolithic date.

Colluvium (Layers 1051/14 - 17)

- 5.1.12 A 0.8 m-wide slot was excavated to a maximum depth of 600 mm through the colluvial soils at the south-west end of Trench 1051 (Fig. 3). This colluvium represented the uppermost fill of the dry valley and showed four layers of colluvial material (Fig. 6). The upper layer (14)

was a reddish brown silt with moderate amounts of well mixed flints and chalk lumps. Some pottery and flint was recovered, the pottery being a mixture of late Bronze Age, middle Iron Age and early Medieval. This overlay a stonier layer (15) of uncertain significance, but possibly a worm-sorted horizon. Layer 16 was a lighter silt which was relatively stone-free and contained worked flint and pottery. The lowest layer (17) was a more chalky silt also containing worked flint and pottery. The pottery from these lower layers appears to be exclusively late Bronze Age. Snails were also present. Four samples (20 - 23) were taken for future reference but not assessed in detail at this stage since the presence of snails clearly shows the potential for more detailed analysis.

Trench 1053 (Figs 3, 7 and 8)

- 5.1.13 This 15 m long trench was positioned across the eastern end of the enclosure revealing Ditch 1053/2. The modern ploughsoil also directly overlay chalk. A possible gully terminal (1053/13) lay within the enclosure, but there were no other features of archaeological interest.

Ditch 1053/2 (Fills 3 - 11)

- 5.1.14 The eastern end ditch, at 4 m wide on the stripped surface (Fig. 3), gave the appearance of being similar to the side ditches but was shallower at 1.25 m deep. However, the main body of the ditch was only 2.3 m wide with steep sides and a narrow rounded base (Fig. 7). Shallower upper shelves on both sides gave this end ditch the false impression of being wider.

- 5.1.15 The sequence of fills from the top down was as follows:

- 1 Topsoil; sharp boundary.
- 3 Mid greyish brown silt/silt loam with c.10% poorly sorted coarse material, mainly sub-rounded chalk.
- 11 Friable mid greyish brown silt/silt loam with sparse inclusions of well-sorted chalk fragments.
- 4 Friable light greyish brown silt with c.5% coarse inclusions of sub-rounded chalk and angular/sub-angular flint.
- 7 Friable light greyish brown silt with occasional small chalk fragments; clear boundary.
- 5 Friable light greyish brown silt/silt loam with moderate amounts of inclusions of coarse material, mainly chalk; clear boundary with 9.
- 6 Same as 5.
- 9 Light greyish brown silt with c.10% sub-rounded chalk inclusions; clear boundary.
- 10 Light greyish brown silt with moderately frequent (<10%) chalk inclusions; clear boundary.
- 8 Chalk rubble within a light greyish brown silt matrix (70:30)

- 5.1.16 The ditch showed a moderately complex silting pattern with the drawn section showing a possible recut (not confirmed in the other section). The fills showed variations principally in the amount of chalky inclusions. Unlike the southern side Ditch 1051/13 there was no indication as to which side the bank might have been. The upper fill, 1053/3, was an ill-sorted stony soil which might represent levelling by ploughsoil long after the use of the

monument. Very few finds were found in this section.

Gully 1053/13

- 5.1.17 This shallow curvilinear feature, 0.28-0.39 wide and only 9 mm deep (Fig. 3), lies within the eastern end of the enclosure. It was clearly defined with a rounded terminal and a slightly irregular base. It contained a single flint flake and is thought to be of possible archaeological significance.

Trench 1050 (Figs 3 and 8)

- 5.1.18 Trench 1050 was positioned to examine the south-west corner of the enclosure in relation to the dry valley sediments. It was lengthened to 18 m (Fig. 3) to reveal the inner edge of the enclosure ditch (1050/6). The ditch was uncovered but not excavated.
- 5.1.19 A thin layer of reddish-brown hillwash (1050/3) overlay the ditch (Fig. 8). This was largely removed by machine, but a small section was left intact to be examined by hand-excavation. It was found to be 200 mm thick at the south-west end deepening to 350 mm down slope. The upper part of this layer (1050/3) was rather flintier and less chalky than the lower part (1054/4), but otherwise the deposit was quite homogeneous. Pottery and flint were retrieved from Layer 1050/3. The pottery appears to be of Iron Age and late Bronze Age date.

5.2 Dry Valley - Trs 1028, 1029, 1048, 1052 & 1058 (Fig. 2)

- 5.2.1 Five trenches (1028, 1029, 1048, 1052 and 1058) were positioned wholly or partly within the dry valley to examine the accumulated sediments. There was some variation in the sequences of deposits encountered, but generally equivalences could be established between trenches. To avoid the repetition of layer descriptions and to provide easy cross-referencing, a correlation of the principal deposits and their interpretation is provided in Table 1 below. This is followed by a brief summary of the stratigraphy based on archaeological observations from all the trenches. A more detailed litho-stratigraphic description of the sequence in Trench 1052, and geoarchaeological observations of Trenches 1058 and 1059 will be found in Appendix 4. Detailed plans of Trenches 1028, 1052 and 1058, all of which contained small features of possible archaeological origin, appear on Fig. 4. Stylised longitudinal sections of Trenches 1029, 1048, 1052 and 1058, indicating the individual layers referred to in Table 1 appear in Fig. 8. These provide comparative profiles and data on the relative heights OD of the sequences in the different trenches. A more detailed section drawing of Trench 1028 appears in Fig. 7. In the following description deposits are described from the top downwards.

Description	Correlation *	Thickness (mm)	Interpretation	Comments
well mixed mid/reddish brown flinty subsoil	1028/2 & /9 1029/2 1058/2 & /7 1048/5 1052/2	110-180 100 350-400 100-200 100-410	ploughed hillwash	
less flinty orange-brown silt	1028 (absent?) 1029/3 1058/3 1048 (absent) 1052/3	1100 450 300-410	gradual hillwash accumulation	possibly eroded in 1028 & 1048
orange-brown silt with a chalky/flinty concentration	1028/3 & /6 1029/6? 1058/4 1048 (absent) 1052/4	130-250 ? 250 - 140-160	hillwash following severe erosion &/or ploughing	1058; significant erosion event?. greyish hue
clean orange-brown silt, few flints	1028/7 & /8 1029 (absent) 1058/8, 10? 1048 (absent) 1052/7	100 & 250+ - 250 & 300 - 130-410	possible prehistoric soil, possibly ploughed	1058/10 with greyish hue
reddish brown clayey silt	1028 (not reached) 1029 n/d 1058/11 1048/2 1052/5	- - 450 700 650	Early Holocene? colluvium	
highly weathered chalky silt	1028 (not reached) 1029/4 1058/12 1048/3 1052/6	- 150 ? 250+ 120	Late Pleistocene Chalk Head	overties more compact Chalk/Chalk Head

* Described in trench sequence from west to east rather than in strict trench numerical sequence - See Figs 7 and 8
n/d not distinguishable

Table 1: Correlation of dry valley sediments (modern ploughsoil omitted).

5.2.2 Beneath the modern and less recent ploughsoils, the main body of hillwash in most of the trenches was an orange-brown silt with inclusions of unsorted flint and chalk. This was machine-excavated and no dating evidence was retrieved. It is likely to represent a gradual accumulation of ploughed soil up to the recent past (ie. into the post-medieval period). This deposit was thin or absent in Trench 1028, presumably because this area further down the valley was one where the processes of erosion and deposition had been more or less in equilibrium. The deposit was also absent in Trench 1048, probably for the same reason, although this trench was located higher up on the lip of the valley.

5.2.3 Beneath this relatively modern deposit a stonier layer could generally be distinguished. In Trench 1058 this contained some large flint nodules which may have been deposited through

erosion of significant quantities of material, possibly caused by land clearance or ploughing breaking up the chalk on the crest of the hill. A markedly chalkier horizon was found in Trench 1028 and to a lesser extent in Trench 1052, although in neither case were flints conspicuous. Crumbs of flint-tempered pottery (possibly though not necessarily of late Bronze Age date) were retrieved from Layer 1052/4 (Fig. 8) and from Layer 1028/6 (Fig. 7), where it was mixed with probable Iron Age pottery. Two of the very few retouched flints recovered from the dry valley sediments also came from Layer 1028/6.

- 5.2.4 The change to a cleaner, largely flint-free silt was quite clear in Trenches 1028, 1058 and 1052. This was the level at which machine excavation generally stopped. Finds of worked flint from Layers 1028/7 (Fig. 7) and 1052/7 (Fig. 8) and a few features (1028/5, 1058/9 and 1052/9 - described below 5.2.8 - 5.2.10) thought to have been cut from at least this level, suggested that it might be a prehistoric soil or at least represent a horizon of general stability. However, excavation by hand retrieved worked flint from well within this layer (below a level which worm sorting could be considered to be a reasonable explanation), and it is possible that either that soil was accumulating throughout the period of activity, or that there had been some mixing by ploughing in the valley. If the latter were true, the paucity (though not complete absence) of flint and chalk in the soil would indicate that ploughing on the hilltop had barely penetrated the chalk. In Trench 1058 (Fig. 8) a lower and appreciably greyer silt (Layer 1058/10) is suggested as being a prehistoric soil, but this was hard to authenticate.
- 5.2.5 The lowest colluvial deposit, above a chalky silt of late Pleistocene origin, was a deep deposit of very clean reddish-brown silt. This is likely to be an early Holocene sediment derived from the surrounding capping of loessic silt or indeed an *in situ* loess. A possible soil horizon was identified at the base of this layer (GSF Report, Appendix 4). The deposit was exposed in three of the trenches and no finds were retrieved.
- 5.2.6 In Trench 1029 (Fig. 8) the subsoil (Layer 1029/2) was friable light reddish brown sandy silt with 10% chalk flecks and occasional flint nodules. It overlay 1029/3, which was lighter yellowish brown sandy silt with very sparse chalk flecks. No clear distinctions were observed within this layer. Beneath this Layer 1029/4 was a layer of whitish brown sandy silt with 10% chalk flecks. Overall the variation between these deposits was no marked, and it seems likely that the same general sequence of infilling took place. Struck flints were found within 1029/3 but it was unclear as to whether there was any general level at which they were most common. A hand excavated slot into this deposit retrieved a few flints without resolving this question. There was no indication of how long a period may be represented by this sequence.
- 5.2.7 Soil samples 25 and 26 from Layers 1052/3 and 1052/7 respectively did not contain any snails (Appendix 3). This is not surprising given the chalk-free character of the lower silts, which may well have been derived from non-calcareous soils in which snail shells would not survive. In the upper colluvium, containing more chalk fragments the same may be the case, or snails may not have survived ploughing and redeposition.

Features within the Dry Valley

Pit 1028/5 (Figs 4 and 7)

- 5.2.8 This shallow circular feature (Fig. 4) with a single charcoal-rich fill (Fig. 7) was sealed by Layer 1028/3. It was completely excavated and finds of worked flint and fired clay were retrieved from both the hand excavation and during wet sieving of the sample (Sample 24) taken for charred plant remains. The charcoal sample contained exclusively oak (Appendix

3). The date of this feature remains uncertain.

Ditch 1058/9 (Figs 4 and 8)

5.2.9 A linear feature, 1.3 m wide and 0.45 m deep with a U-shaped profile, was located running approximately north-south across Trench 1058 in the dry valley (Fig. 4). It was sealed by Layer 1058/3 (Fig. 8) but it was difficult to be sure of its precise course within the limits of the trench. The fill was slightly greyer than the surrounding silt, but it was extremely difficult to follow the edges of the feature and it is not certain that it was completely excavated. A single sherd of Roman Black Burnished Ware was retrieved from the fill (Layer 1058/5). The feature is possibly the eastern ditch of the trackway located to the north in Trench 1030.

Tree-hole? 1052/9 (Figs 4 and 8)

5.2.10 This irregular feature was only partially exposed in the south side of Trench 1052. It had been sealed by Layer 1052/4 and contained a greyish fill with charcoal flecks of oak. Its interpretation is uncertain, but it is either a small prehistoric pit or perhaps more likely a tree-hole (Moore and Jennings 1992, 13 and fig. 6).

5.3 Ditched Trackway - Tr 1030 (Fig. 2)

5.3.1 Both ditches of the presumed trackway were exposed in Trench 1030 (Fig. 4) and sampled by excavation (Ditches 1030/3 and 1030/6). They were 7.5m apart and both were sealed by modern ploughsoil, although a thin layer of colluvium was present at the extreme western end of the trench. There was no trace of a surface or smaller features between the ditches.

5.3.2 The eastern ditch (1030/3) was the smaller of the two being only 1.2 m wide and 500 mm deep. The two fills (Fig. 6) consisted of a reddish brown upper silt (1030/4) over a chalky lower fill (1030/5). The more substantial western ditch (1030/6) was 2 m wide and 740 mm deep. Its sequence of fills (Layers 1030/7 - 11) showed alternate lenses of greyish brown silt and chalkier deposits. No trace of any upcast from the ditches was noted, though the asymmetrical filling of the ditch, notably Layer 1030/10, might suggest that material from the ditch had been placed close to its inner edge (ie between the ditches).

5.3.3 There was no dating evidence from either of the ditches. Snails from the upper and lower fills of Ditch 1030/6 (Samples 27 and 28) showed a broadly open environment (Appendix 3). Examples of the genus *Hellicellinae* which are regarded as medieval introductions, which came from the upper fill, suggest that the ditch survived as an earthwork into the middle ages, though there is nothing to say whether by then it still marked a track or boundary.

5.3.4 The trackway was not reliably traced through the dry valley. The eastern ditch might be represented by Ditch 1058/9 in Trench 1058, but this is uncertain and, in any case, there is no trace of a western ditch in this trench. Despite extending Trench 1047 no trace of the trackway could be located to the south of the dry valley.

5.4 'Chalk Quarry' (Tr 1059)

5.4.1 Trench 1059 (Fig. 5) revealed a large feature (1059/2) at least 17 m across. A machine-excavated trial-pit (1059A), excavated for geotechnical purposes showed it to be 3.5 m deep about 5 m to the west of the trench. The possible interpretation of the feature as geological, a dew pond, dene hole or chalk pit was discussed on site with the client and Kent County

Council, when it was agreed that limited machine and hand dug sondages were to be used to clarify its character.

- 5.4.2 A machine dug *sondage* within the trench indicated that it was shallower at only 1.5 m deep. A hand-excavated slot (Fig. 5), 1.2 m deep, against the northern edge indicated a roughly hewn vertical edge (Fig. 7) and a succession of layered deposits (Layers 1059/3 - 6). These were all fairly loose greyish brown clayey silts with varying quantities of chalk rubble, lumps and flecks.
- 5.4.3 Air-photographic evidence shows the feature to be roughly circular in shape. The only pottery recovered was a single rim sherd of Roman Black Burnished Ware from the uppermost fill. However, charcoal from Sample 30, taken from well within the fill (1059/6), was identified as a softwood, strongly suggesting a post-medieval date (Appendix 3). Snail samples from the upper (Sample 31) and lower fills (Sample 32) contained a mixture of species not closely indicative of date (Appendix 3).
- 5.4.4 The Ordnance Surveyor's Drawings (1797), Muges Map of Kent (1801), 1st ed 1" OS map (1816-19), Northfleet Tithe Map (1836) and 1st ed 6" OS map (1869) were studied as possible documentary sources providing evidence of the pit, but the feature is not shown on any of these, nor is it suggested by the field name, unless indicated by the next field to the east was called North Pond Field. More recent OS maps were not checked.

5.5 Miscellaneous Features

Gully 1040/4

- 5.5.1 Apart from the features described above, the only other feature of possible anthropogenic origin within the other trenches was a shallow linear feature in Trench 1040. This 0.8 m wide and 150 mm deep gully (Fig. 6) ran WNW-ESE across the trench and was possibly slightly curved. The excavated fill (Layer 1040/3) contained no finds. This gully was the only likely archaeological feature from a number of silty patches in this trench, the remainder of which were demonstrated to be natural hollows.

6 DISCUSSION

6.1 Sub-rectangular Long Enclosure

Form

- 6.1.1 The full extent of the enclosure was not seen, but from the evidence of the cropmark plot and Trenches 1050, 1051 and 1053 it has been possible to ascertain that it would have been about 42 m long by 13 m wide internally. There was no trace of a surviving mound or bank, and no clear internal features could be detected from the evaluation trenches. The detailed examination of the two excavated sections of the ditch at the east end and south side gave little indication of purpose of the enclosure, although an internal mound or bank seemed likely. The ditches were not particularly substantial and, if these sections are typical, the quantity of chalk removed in their excavation would not have produced a very impressive mound. However, a mound augmented with turf and soil could be a possibility, as at Julliberrie's Grave, Chilham, the only record of an excavated long barrow in Kent (Kinnes 1992, 34). In many ways the Tollgate long enclosure is more typical of a long barrow

(Kinnes 1992, 66-78), rather than a mortuary enclosure as originally interpreted from the evidence of the aerial photographs. Although most long barrows are defined by a pair of flanking ditches, a continuous ditch circuit is by no means uncommon, particularly in eastern England, although (as at Tollgate) the side ditches are invariably more substantial than those at either end. At 42 m long it is only slightly shorter than the average length of such long barrows at 47 m (Kinnes 1992). Like 78% of long barrows, it is situated on calcareous upland and like 75% it is orientated between NE and SE. Long barrows are also normally positioned along a slope at or near a crest when viewed from below. Monuments defined as mortuary enclosures tend to be found on gravel terraces, although these probably include examples of ploughed out long barrows. Unfortunately there is no easy way to distinguish between the two types of monument on plough truncated sites and from only a limited evaluation exercise.

Ditch Sediments

- 6.1.2 There is possible evidence of ditch recutting in the eastern end ditch (1053/2), although it is equivocal and impossible to phase. While the difference in the dimensions of the ditch in the two excavated sections may originally have been intentional, it might also indicate later recutting or cleaning out. It is also possible that the ditch was originally dug in segments resulting in considerable variation around the enclosure's perimeter. Segmental ditch digging is common on long barrows and other Neolithic monuments (Drewett, Rudling and Gardiner 1988), and while the aerial photographic evidence at Tollgate does not appear to support this suggestion, this could be obscured by the spread of the upper lip of the ditch and final infilling. The ditch sections and the mollusc analysis indicate a relatively rapid infilling of the ditch after the enclosure went out of use with the erosion (or perhaps destruction) of the internal mound or bank. Abandonment was followed by woodland regeneration. There is some indication from the presence of a particular snail species that the woodland may have been previously undisturbed (see Appendix 3), which implies a considerable period of abandonment unless the original clearance for the construction of the monument was quite limited, which is possibly more likely.

Finds and Dating

- 6.1.3 No pottery was found either in the excavated sections or on the ditch surface after stripping and the worked flint, although prolific in the southern side Ditch 1051/13, is not particularly diagnostic of date or function. The flint is certainly consistent with a Neolithic/Bronze Age date, and there is nothing to suggest that the enclosure is any later than this. Loveday and Petchey (1982) draw attention to enclosures of very similar form which are Iron Age in date. These, too, lack many associated finds, but the quantity of worked flint in 1051/13, much of which is quite fresh, and the range of knapping debitage, strongly suggest an earlier date. The snail evidence also suggests a Neolithic date since the regeneration of an ancient woodland fauna, of which there are indications, would have been most unlikely in the later prehistoric period. There is an absence of worked flint from the primary fill of the eastern end Ditch 1053/2 and from any of the fills below Layer 1051/11 in the southern side ditch. It is therefore possible that the activity represented by most of the flintwork is of a date later than the use of the enclosure. The flint assemblage, which comprises a great many waste flakes, many of them corticated, suggests a site of initial core preparation but this may be related to nearby domestic activity rather than to functions carried out within the enclosure. A cursory comparison suggests that the quantity and composition of the flint assemblage is similar to that recovered from the Rivenhall mortuary enclosure in Essex (Buckley *et al.* 1988, Table 2). The Rivenhall material was suggested to be a flake-dominated later Neolithic

assemblage, although this appears to be contradicted by a sherd of earlier Neolithic Mildenhall style vessel from the ditch.

Colluvial Deposits

- 6.1.4 A thin deposit of hillwash overlay the western corner of the enclosure (Trench 1050), and extended down the slope on the western and south-western sides. This was not associated with any protected Neolithic surfaces. Small fragments of prehistoric pottery of probable late Bronze Age and Iron Age date were recovered from the colluvium in Trench 1050. In Trench 1051 the lower colluvium (Layers 1051/16 and 1051/17) contained pottery of exclusively late Bronze Age type. Higher up the late Bronze Age pottery was mixed with Iron Age and early Medieval types. The evidence suggests that ploughing around, and perhaps over, the enclosure started as early as the late Bronze Age.

6.2 Dry Valley

- 6.2.1 The dry valley sections show an accumulation of sediments with relatively large quantities of chalk and flint inclusions overlying finer loess or loess-derived sediments with fewer inclusions. The trenches in the upper and middle sections of the valley (Trenches 1052 and 1058) showed the deepest deposits of the coarser material, while lower down (Trenches 1028 and 1029) these deposits had presumably been truncated by erosion. There is some indication that the flintier deposits were more pronounced on the eastern side of the valley. It is unclear what time-span is indicated by these coarser upper deposits. It is possible that a number of major erosive events are represented. The sediments are likely to be plough related and began accumulating when ploughing on the hill top had disturbed bedrock.
- 6.2.2 Finds of worked flint and pottery fragments were recovered from the base of the coarser sediments. Most of the pottery is probably of Iron Age and late Bronze Age date. The pottery is very fragile and unlikely to have travelled far. It seems likely that this represents later prehistoric activity in the dry valley, and in Trench 1028 a charcoal-rich pit sealed by the coarse colluvium was located. It contained burnt clay but, unfortunately, no diagnostic finds. A probable ditch in Trench 1058, also sealed by the coarse colluvium, yielded a Roman sherd. This ditch may be a continuation of Ditch 1030/3 which was the eastern ditch of the trackway. A probable tree-hole was examined in 1052.
- 6.2.3 These features appear to indicate a relatively stable horizon within the dry valley sediments. Below this the finer loessic deposits were not examined extensively, but collections of flints were recovered from machine excavation and hand dug slots. It was unclear whether this represented an *in situ* accumulation during the prehistoric period, or whether these deposits could have been disturbed by ploughing within the valley. The flintwork was certainly not diagnostically earlier, but much of it was quite sharp and did not appear to have moved far.
- 6.2.4 The possibility of an inverted stratigraphy should also be mentioned in relation to redeposited artefacts which have eroded from the silts on the hill top (see Appendix 4). There was no clear indication of this, but the redeposition of older flints together with the deposition *in situ* of flint within the valley may account for mixing of material within the valley.
- 6.2.5 The lowest deposits, above silty Chalk Head, were a redder and more clayey loess silt. This was a very clean deposit without inclusions except for fresh flint nodules towards the base. It was probably an early Holocene sediment. It was exposed to some degree in all the trenches except Trench 1028. Detailed sedimentary inspection suggested the possibility of

a soil horizon above the Chalk Head (Appendix 4). No finds were recovered, but the deposit would have some potential for *in situ* early prehistoric occupation of Mesolithic or perhaps early Neolithic date.

- 6.2.6 The recovery of prehistoric material from well down in the colluvial infill of the dry valley is not surprising, especially given the proximity of the neolithic enclosure, the Bronze Age settlement and fields recorded north of the A2 and the cropmarks to the south of the evaluation area. Such deposits are common on the chalk in southern England with examples in Kent from the Medway Valley, Wye and the Channel Tunnel Terminus.

6.3 Ditched Trackway

- 6.3.1 The course and date of the ditched trackway, visible as a trackway between the northern edge of the evaluation area and the A2 Watling Street in Trench 1030, was not established. It seems clear that it did not run through the dry valley, at least not in a straight line, since it did not appear in Trench 1047 (despite a lengthening of the trench). It may have run up, or down, the valley. One of the ditches may have been found in Trench 1058 in the dry valley (1058/9), although the other was not. The absence of the other ditch may not be altogether surprising given the difficulty of defining features within the colluvial silts, but it is also possible that the trackway was turning rather more than was appreciated from the excavated section (and also widening?) so that the western ditch did not appear in the trench.
- 6.3.2 The snail assemblages from Ditch 1030/6 are unremarkable. The possible medieval introduction in the upper fill of the ditch is not considered a reliable guide to the origin of the trackway, which could have been finally filled by medieval ploughing. A Roman date seems the most likely although the trackway has no obvious relationship to the probable Roman period occupation to the south. If one of the ditches were equivalent to 1058/9 in the dry valley, the sherd of Roman pottery from this feature would add weight to the suggestion of a Roman date for the trackway.

7 CONCLUSIONS

- 7.1 The evaluation has established that the long enclosure, whether a long barrow or 'mortuary enclosure', is fairly certainly of Neolithic date. It is not well preserved and the only deposits which might provide evidence for its construction and use are to be found within the enclosure ditch and any other, as yet undiscovered, features which might have been cut into the chalk (Aim 2.2.2 above).
- 7.2 The monument, whether interpreted as a long barrow or 'mortuary enclosure' is one of a class of nationally important and regionally very rare sites. According to Kinnes (1992, 13) only two other non-megalithic long barrows are known from Kent (Boughton Aluph and Julliberrie's Grave), although Drewett *et al.* cites a group of three overlooking the Stour Valley. However, to date no 'mortuary enclosures' have been identified in Kent, and only Julliberrie's Grave, Chilham, has been examined by excavation in the 1930's (Jessup 1939). Kinnes (1992, 112) considers that only 25 of the 300 or more long barrows known nationally have been excavated to a reasonable standard, and cites the lack of extensive modern excavation as a major factor retarding the understanding of these monuments.
- 7.3 The parallel linear cropmark features interpreted as a trackway are poorly preserved. They were not securely traceable within the dry valley and their course beyond what is visible on

aerial photographs was not discovered. No good dating evidence was obtained, although nothing was found to alter the original assumption that they are of later prehistoric or Roman date. The trackway does not have any clear association with the other cropmarks (Aim 2.2.3).

- 7.4 The dry valley has preserved sediments which suggest late Bronze Age to middle Iron Age activity in, and possibly adjacent to, the valley. It is suggested that the most intensive deposition of plough derived colluvium was initiated in the late Bronze Age. No features demonstrably related to this activity were found. However, the valley sediments have some importance in containing evidence of activity, environment and land use not obtainable in the area outside the valley (Aim 2.2.5).
- 7.5 The evaluation trenches revealed virtually no unexpected archaeological features outside the dry valley, indicating that the aerial photographic evidence was generally a good indication of the presence of archaeological features in those areas. However, it could not distinguish between geological features and morphologically similar anthropogenic ones (Aim 2.2.4).
- 7.6 The 'chalk quarry' in Trench 1059 is probably of post-medieval date and as such is of only minor interest. The feature was visible on aerial photographs, but could not be distinguished from natural solution hollows on that basis.
- 7.7 The environmental evidence was unexceptional. Molluscan evidence was of prime importance in interpreting the Neolithic enclosure, but the potential for further information is not particularly high. The colluvial sediments were less conducive to the deposition/survival of molluscs, but there would be potential for clarifying the sedimentary and soil development through soil micromorphology and more detailed laboratory analyses of the sediments. The charred plant remains provided little information as regards economic plants, but are clearly of some potential in reflecting the wood used in fires, and hence provide another strand of evidence for the natural environment. It is possible that other isolated features might provide more useful samples of this type. There was a total absence of deposits suitable for the preservation of waterlogged material and the potential for any such conditions on this site would seem to be minimal (Aim 6).

8 IMPLICATIONS FOR CTRL

8.1 The Probable Neolithic Enclosure

Significance

- 8.1.1 On account of its form and rarity in the region, and in spite of the lack of superficial stratigraphy, this monument may be considered to be of national significance. It is certainly of sufficient importance to warrant further measures to mitigate any impact, however slight, from the construction of the Channel Tunnel Rail Link.

Impact of CTRL

- 8.1.2 Even works of a shallow nature would damage ephemeral features contemporary with the monument and also the upper levels of the enclosure ditch itself owing to the shallow topsoil cover - unless specific measures were taken to minimise the impact. The reference design of the CTRL (long section, Section 3, ref 3310AAHM 13 July 1994) indicates that on the

centre line of the route at chainage 202370-202412, the location of the enclosure the rail level would be approximately 4-2.5m above ground level. The enclosure is actually situated 10-30m north of the centre line (ref. route reference landscaping and mitigation plan A-OELK/412-7205/3014) about 1.5-2.5m up the hill, potentially leaving little scope for preserving the enclosure beneath the railway. This will need to be reviewed in the light of more detailed ground modelling and engineering detail since at present there appears to be some discrepancy between the long section and surveyed levels from the excavation.

- 8.1.3 From this it would appear that the enclosure might be capable of preservation beneath the CTRL embankment if very careful construction methods were employed. But until detailed engineering design is available it may be more prudent to assume that it will unavoidably be disturbed, and that there might be little scope for preserving it beneath the embankment without slightly raising the alignment, which would have significant knock-on effects along the line.

Further Mitigation

- 8.1.4 Burial of the site beneath CTRL without further investigation might be a potential means of preservation, but this would render it inaccessible for research for the foreseeable future, and this would in itself be a significant adverse effect, given the explicit research interest in monuments of this type, since the main rationale of preservation of subsoil archaeology is to conserve it for future investigation with improved techniques.
- 8.1.5 Burial of the site with some excavation (ie *full* but not *total excavation* as defined by OAU 1994, section 6.2.2.7, p.200) would partly overcome the impact of rendering the monument inaccessible for research in the foreseeable future by ensuring that current research questions were at least partly addressed, while leaving some viable archaeology capable of investigation in the very long term future (ie. after CTRL has ceased to be operational).
- 8.1.6 If the impact of the CTRL on the enclosure results in its total destruction it would be appropriate that mitigation should take the form of an excavation of the whole of the enclosure ditch, the interior and a significant area round the exterior of the monument to identify all associated features (ie *total excavation* as defined by OAU 1994, section 6.2.2.7, p.201). While the monument is not sufficiently well preserved to answer many of the questions concerning its original form, function and development, the excavation should be undertaken to elucidate some of the outstanding problems associated with this type of monument, as defined by Kinnes (1992) and reiterated below.
- *The date of the construction and use of the monument.* This is frequently difficult to establish because of a lack of chronologically sensitive artefacts found on excavated sites (perhaps partly a reflection of the small scale of many investigations), and the reliance on dating evidence from ditch fills which might post-date the original construction of the monument. There is a need to identify deposits which are truly contemporary with the monument's use. Non-megalithic long barrows tend to be associated with Plain Ware Neolithic bowls which are thought to date before 2900 BC (radiocarbon years), whereas radiocarbon dates from ditch fill material are often a few centuries later.
 - *Possible status and use as a funerary monument.* The location and investigation of any funerary deposits, either within the enclosure, in its ditches or in the immediate surroundings would be of particular importance for the understanding of the

monument.

- *The nature and date of reuse.* The re-digging of ditches is not uncommonly found. Burials and other deposits may be original or later insertions.
- *The date of abandonment.* There is some suggestion that the monuments were used for only a short time span, although their enduring nature as a symbol is often stressed.

8.2 The Dry Valley Colluvial Deposits

Significance

- 8.2.1 The dry valley is not by itself of exceptional intrinsic archaeological interest so far as this evaluation has been able to investigate it. Its main value is as a catchment of soils and sediments which reflect landuse in the immediate vicinity, which, given the Neolithic enclosure, nearby Bronze Age activity and later prehistoric or Roman cropmarks is of undoubted interest. However, this potential is somewhat limited by the apparently decalcified nature of much of these deposits. On the other hand the pit in Trench 1028 and possible trackway ditch in Trench 1058, suggest some additional archaeological potential. Overall however while the deposits can reasonably be assessed as being of regional interest, they are not on a par with exceptionally rich colluvial sequences of national significance such as that found at the Channel Tunnel Terminal.

Impact of CTRL

- 8.2.2 The CTRL will cross the dry valley on embankment, with graded out false cutting mounds, mainly on the south side. The foot of the valley by the Wrotham Road will be bridged by a viaduct, the eastern abutment of which will be not far east of the pit located in trench 1028. An access road will cross beneath the viaduct, which will otherwise span the base of the valley and the Wrotham Road. The southeastern end of the dry valley will remain undisturbed in the area south of Trench 1052.

Further Mitigation

- 8.2.3 In view of the results from trench 1028, the area of the viaduct abutment would warrant further investigation, while at the higher end of the valley any further investigation of the Neolithic enclosure should be accompanied by fuller investigation of the adjacent colluvial deposits to provide more evidence of the monuments landscape context and its subsequent development. The evaluation has suggested that the most extensive deposition of plough-derived colluvium was initiated by late Bronze Age activity (probable late Bronze Age sherds from colluvial deposit 1051/17 and crumbs of possibly late Bronze age origin from 1052/4), but this needs to be established more conclusively. The material from Trench 1051 suggests that this could be achieved by a trench excavated in the valley adjacent to the enclosure. Soil micromorphology should be used to identify relict soil profiles.
- 8.2.4 On the basis of the evaluation results and the impact of the CTRL, it would not obviously be appropriate to conduct an extensive search for prehistoric settlement within the dry valley though its presence cannot be entirely ruled out. Since the construction of the CTRL is unlikely to damage the more deeply stratified deposits within the valley significantly, any future archaeological work should be carefully weighed against the engineering design.

8.3 Other Features

- 8.3.1 The other features examined, including the late prehistoric or Roman trackway and post-medieval 'chalk quarry' are of only minor importance and no further work is considered justified within the evaluation area. The trackway could have more potential further north near Watling Street, but this was beyond the scope of this investigation.

Andrew Mudd and Robert J Williams
Oxford Archaeological Unit
October 1995

9 ARCHAEOLOGICAL CONTEXT INVENTORY

<i>Trench</i>	<i>Ctxt</i>	<i>Type</i>	<i>Width (m)</i>	<i>Thick. (m)</i>	<i>Comment</i>	<i>Finds</i>	<i>No.</i>	<i>Period</i>
1028	1	layer		0.28	modern ploughsoil			
1028	2	layer		0.18	hillwash			
1028	3	layer		0.25	chalky hillwash			
1028	4	fill		0.13	charcoal-rich fill of 5	flint	12	
1028	4	fill		0.13	charcoal-rich fill of 5	fired clay	23	
1028	5	pit	1.00	0.13	pit			
1028	6	layer		0.13	stony hillwash	flint	14	
1028	6	layer		0.13	stony hillwash	pot	3	mia
1028	6	layer		0.13	stony hillwash	pot	1	eia
1028	6	layer		0.13	stony hillwash	pot	2	lba
1028	7	layer		0.10	prehistoric soil?	flint	3	
1028	8	layer		0.00	prehistoric soil?			
1028	9	layer		0.11	chalky hillwash			
1029	1	layer		0.30	modern ploughsoil			
1029	2	layer		0.10	stony hillwash			
1029	3	layer		1.10	undifferentiated hillwash	flint	28	
1029	4	layer		0.15	Chalk Head			
1029	5	layer			solid Chalk			
1029	6	layer			chalky hillwash			
1030	1	layer		0.33	modern ploughsoil			
1030	2	layer		0.16	hillwash			
1030	3	ditch	1.44	0.50	E trackway ditch			
1030	4	fill		0.18	fill of 3	flint	1	
1030	5	fill	0.00	0.32	lower fill of 3			
1030	6	ditch	2.20	0.74	W trackway ditch			
1030	7	fill		0.20	upper fill of 6			
1030	8	fill		0.24	fill of 6			
1030	9	fill		0.20	fill of 6			
1030	10	fill		0.20	fill of 6			
1030	11	fill		0.10	lowest fill of 6			
1030	12	layer			solid Chalk			

Trench	Ctxt	Type	Width (m)	Thick. (m)	Comment	Finds	No.	Period
1040	1	layer		0.35	modern ploughsoil			
1040	2	layer		0.20	hillwash			
1040	3	fill		0.10	fill of 4			
1040	4	gully	0.60	0.10	gully			
1040	5	layer			solid Chalk			
1047	1	layer		0.35	modern ploughsoil			
1047	2	layer			natural Chalk			
1048	1	layer		0.30	modern ploughsoil			
1048	2	layer		0.70	hillwash			
1048	3	layer		0.25	Chalk Head			
1048	4	layer			solid Chalk			
1048	5	layer		0.20	hillwash			
1050	1	layer		0.30	modern ploughsoil			
1050	2	fill			upper fill of 6			
1050	3	layer		0.24	hillwash	flint	7	
1050	3	layer		0.24	hillwash	pot	5	ia
1050	4	layer		0.12	hillwash			
1050	5	layer			solid Chalk			
1050	6	ditch			Neolithic enclosure			
1051	1	layer		0.28	modern ploughsoil			
1051	2	fill		0.15	upper fill of 13	flint	107	
1051	3	fill		0.15	fill of 13	flint	9	
1051	4	fill		0.10	fill of 13	flint	82	
1051	4	fill		0.10	fill of 13	bone	2	
1051	5	fill		0.44	fill of 13	flint	3	
1051	6	fill		0.26	fill of 13	flint	15	
1051	7	fill		0.40	fill of 13	flint	138	
1051	8	fill		0.25	fill of 13			
1051	9	fill		0.13	fill of 13			
1051	10	fill		0.20	fill of 13			
1051	11	fill		0.10	fill of 13	flint	7	
1051	12	fill		0.20	fill of 13			
1051	13	ditch	4.00	1.40	Neolithic enclosure			

<i>Trench</i>	<i>Ctxt</i>	<i>Type</i>	<i>Width (m)</i>	<i>Thick. (m)</i>	<i>Comment</i>	<i>Finds</i>	<i>No.</i>	<i>Period</i>
1051	14	layer		0.20	hillwash	flint	23	
1051	14	layer		0.20	hillwash	pot	2	med
1051	14	layer		0.20	hillwash	pot	1	lsax/ med
1051	14	layer		0.20	hillwash	fired clay	1	
1051	14	layer		0.20	hillwash	pot	4	lba
1051	14	layer		0.20	hillwash	pot	1	mia
1051	15	layer		0.06	stony hillwash			
1051	16	layer		0.15	hillwash	flint	4	
1051	16	layer		0.15	hillwash	pot	1	lba
1051	16	layer		0.15	hillwash	pot	1	lba
1051	17	layer		0.10	hillwash	flint	3	
1051	17	layer		0.10	hillwash	pot	1	lba
1051	18	layer			solid Chalk			
1051	19	fill			fill of 20 (unexc.)			
1051	20	ditch	4.00		Neolithic enclosure			
1051	21	fill			lowest fill of 13 (unexc)			
1052	1	layer		0.30	modern ploughsoil			
1052	2	layer		0.40	hillwash/ ploughsoil			
1052	3	layer		0.40	hillwash	pot	1	mia
1052	4	layer		0.16	hillwash	flint	3	
1052	4	layer		0.16	hillwash	flint	6	
1052	4	layer		0.16	hillwash	pot	5	lba
1052	5	layer		0.65	hillwash			
1052	6	layer		0.12	Chalk Head			
1052	7	layer		0.41	prehistoric soil?	flint	18	
1052	7	layer		0.41	prehistoric soil?	flint	2	
1052	7	layer		0.41	prehistoric soil?	flint	5	
1052	8	fill		0.16	fill of 9			
1052	9	tree hole?	0.60	0.16	sealed by 4			
1053	1	layer		0.31	modern ploughsoil			
1053	2	ditch	4.20	1.55	Neolithic enclosure			

Trench	Ctxt	Type	Width (m)	Thick. (m)	Comment	Finds	No.	Period
1053	3	fill	0.00	0.30	upper fill of 2	flint	1	
1053	4	fill		0.40	fill of 2			
1053	5	fill		0.22	fill of 2			
1053	6	fill		0.22	fill of 2			
1053	7	fill		0.17	fill of 2			
1053	8	fill		0.34	fill of 2	flint	1	
1053	9	fill		0.25	fill of 2			
1053	10	fill		0.17	fill of 2			
1053	11	fill		0.15	fill of 2			
1053	12	layer			solid Chalk			
1053	13	gully	0.39	0.09				
1053	14	fill		0.09	fill of 13	flint	1	
1053	15	tree hole?	0.68	0.20				
1053	16	fill		0.20	fill of 15	flint	2	
1054	1	layer		0.40	modern ploughsoil	flint	2	
1054	2	layer			solid Chalk			
1054	3	layer			weathered Chalk			
1054	4	fill		0.20	fill of 5	flint	1	
1054	5	gully?	1.00	0.20	doubtful feature			
1054	6	fill		0.15	fill of 7			
1054	7	gully?	0.41	0.15	probably natural			
1054	8	fill		0.12	lower fill of 7			
1055	1	layer		0.30	modern ploughsoil			
1055	2	layer			weathered Chalk			
1056	1	layer		0.35	modern ploughsoil			
1056	2	layer			weathered Chalk			
1058	1	layer		0.35	modern ploughsoil			
1058	2	layer		0.40	ploughsoil/ hillwash			
1058	3	layer		0.45	hillwash			
1058	4	layer		0.25	stony hillwash			
1058	5	fill		0.60	fill of 9	pot	1	c2 rom

<i>Trench</i>	<i>Ctxt</i>	<i>Type</i>	<i>Width (m)</i>	<i>Thick. (m)</i>	<i>Comment</i>	<i>Finds</i>	<i>No.</i>	<i>Period</i>
1058	6	layer		0.30	greyish hillwash			
1058	7	layer		0.15	ploughsoil/ hillwash			
1058	8	layer		0.25	early soil/hillwash			
1058	9	ditch	2.00	0.60	Roman? feature			
1058	10	layer		0.30	greyish hillwash			
1058	11	layer		0.45	hillwash			
1058	12	layer			Chalk Head			
1059	1	layer		0.38	modern ploughsoil			
1059	2	pit	17.20	3.50	chalk quarry?			
1059	3	fill		0.64	upper fill of 2	flint	2	
1059	3	fill		0.64	upper fill of 2	pot	1	c2 rom
1059	4	fill		0.19	fill of 2			
1059	5	fill		0.22	fill of 2			
1059	6	fill		0.27	fill of 2			
1059	7	layer			solid Chalk			
1059	8	fill			lowest fill of 2			
1060	1	layer		0.35	modern ploughsoil			
1060	2	layer			weathered Chalk			
1061	1	layer		0.35	modern ploughsoil			
1061	2	layer			weathered Chalk			
1062	1	layer		0.28	modern ploughsoil			
1062	2	layer			weathered Chalk			
1062	3	fill		0.19	fill of 4			
1062	4	gully?	0.21	0.19	probable plough rut			
1062	5	gully?	0.21	0.19	probable plough rut			
1062	6	fill		0.15	fill of 5			

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APPENDIX 1

WORKED FLINT

by Philippa Bradley

Introduction

A substantial flint assemblage, comprising 457 pieces of struck flint and 43 pieces of burnt unworked flint, was recovered from the evaluation. The assemblage is summarised in Table 2 and in more detail by trench in the Archaeological Context Inventory following the main text. Flint was recovered from the upper fills of both excavated sections of the sub-rectangular enclosure ditches, the colluvium within Trenches 1028, 1029, 1051, and 1052 and from pits and ditches in Trenches 1028, 1030, and 1059.

Trench	Flakes and blade-like flakes	Irregular waste	Chips	Cores, core fragments	Retouched forms	Totals	Burnt unworked flint
1028	14	1	3	-	1 notch , 2 miscellaneous retouched pieces	21	8
1029	14	2	-	1 opposed platform flake core + core fragments	1 piercer	22	6
1030	1	-	-	-	-	1	-
1050*	7	-	-	-	-	7	-
1051*	278 (inc. 1 core rejuvenation flake - tablet)	17	73	1 keeled core	1 serrated flake	370	21
1052	24	-	2	-	-	26	8
1053*	5	-	-	-	-	5	-
1054	2	-	-	1	-	3	-
1059	1	1	-	-	-	2	-
Totals	346	21	78	7	5	457	43

* Trenches across sub-rectangular enclosure

Table 2: Summary of flint assemblage

Method

The flint was rapidly scanned and limited recording was undertaken. The numerous pieces of flint from the wet-sieving of the soil samples (Section 3.3) was included, although the unsorted residues were simply scanned for struck flint and only basic recording was undertaken.

Raw Materials

The flint is generally very heavily corticated, with the colour of the material only visible in fresh breaks. It is generally a dark brown to black colour with a thin white or grey cortex. Cherty and crystalline inclusions were noted. The material has good flaking properties and would appear to be chalk flint which would have been available locally. A few flakes of Bullhead flint (Shepherd 1972) were also noted, and again this material would have been available locally. The majority of the flint is very heavily encrusted with a deposit of calcium carbonate. In some instances this hampered the identification of individual pieces or technological aspects of the material. The flint from the sub-rectangular enclosure ditch was in relatively fresh condition, albeit heavily corticated and encrusted. The condition of the flint from other contexts was more varied, many pieces being battered and iron-stained.

Technology and Dating

The retouched component is rather limited, the pieces recovered being fairly unspecific types in terms of dating. A serrated flake (Trench 1051/3) is made on a carefully produced blade and both edges are worn. A piercer from Trench 1029/3 showed two stages of retouch, an old heavily corticated blank being reused, perhaps in the Bronze Age. The remaining pieces include a notch and two miscellaneous pieces, one of which may be an end and side scraper. These forms would not be out of place in either a Neolithic or Bronze Age context. Limited attributes (hammer mode, butt type, incidence of core preparation etc) were noted to aid the understanding of the technological aspects of the assemblage.

The bulk of the assemblage was recovered from Trench 1051, with Layers 2, 4 and 7 from Ditch 1051/13 being the most productive (the upper fills of the enclosure ditch producing 107, 82 and 138 worked flints respectively). Smaller quantities of material were recovered from the lower layers of the enclosure ditch, although no flint was found in the primary fills. The flint from the lower layers of the enclosure ditch was not markedly different from the material in the upper fills.

In general both hard and soft hammers had been used. There was little evidence for platform preparation, and only one core rejuvenation flake (tablet) was recovered from Trench 1051/7. There was a relatively high incidence of side and distal trimming flakes (Harding 1990, 218-9) and wholly cortical flakes (preparation flakes) were also well represented, for example from Layers 1051/4 and 1051/7. The worked flints from Layer 1051/7 were examined for refits and although none appeared to refit further work may be productive. The two cores recovered (Trench 1029/3 - opposed platform flake core and a keeled core from Trench 1051/4 Sample 16) both have flake removals. Keeled cores have been shown to be slightly more common in later Neolithic assemblages (Healy 1985).

The assemblage seems to represent the initial decortication of nodules and the initial stages in the preparation of cores. The relatively low numbers of cores recovered would perhaps indicate that partially prepared cores were removed from the site for further reduction elsewhere. This material was quite carefully produced with many soft-hammer struck flakes and some evidence for platform edge preparation. Very few blades or blade-like flakes were recovered (c. 6 from Trenches 1051/2-3, 1051/7, 1028/6, 1030/4, 1050/3).

There were few chips (defined as pieces with a maximum dimension of 10 mm) from the hand-retrieved assemblage (c. 5), while approximately 73 were recovered from the soil samples and more were noted in the unsorted residues. The chips recovered were mostly broken flakes and the few complete micro-flakes present were not diagnostic. However, they do provide evidence for *in situ* knapping.

The assemblages from the remaining trenches was in broad terms comparable to that from Trench 1051. However, in some instances the numbers of flints recovered was rather low. One or two heavily corticated and worn pieces suggested that some material had been lying around for some time.

Discussion

The upper fills of the sub-rectangular enclosure ditch produced the greatest quantity of flintwork. This material is not readily dateable, however, given its general character and the few retouched pieces recovered, a Neolithic or Bronze Age date would be appropriate. The recovery of a keeled core *may* suggest a later Neolithic date (*cf* Healy 1985), although this is quite speculative. The retouched forms recovered would agree with this general date range. The material in the upper fills of the enclosure ditch seems to represent initial core preparation, perhaps exploiting the locally available raw material.

APPENDIX 2

POTTERY AND FIRED CLAY

by Alistair Barclay with comments by Paul Booth and Cathy Underwood-Keevill

Introduction

Six of the evaluation trenches (1028, 1050, 1051, 1052, 1058 and 1059) produced a total of twenty-six sherds of pottery and two trenches (1028 and 1051) produced a total of twenty-four fragments of fired clay. Pottery of late Bronze Age, Iron Age, Roman and late Saxon/Medieval date is present and is summarised in Table 3 below. The sherds are all quite small and include only one featured sherd, a Roman rim from Trench 1059. In the absence of featured sherds dates are assigned by fabric analysis. No pottery was recovered from the sub-rectangular enclosure.

DATE\TRENCH	1028	1050	1051	1052	1058	1059	Totals
Late Bronze Age	2		7	1+ crumbs			10
Iron Age	4	5	1	1			11
Roman					1	1	2
Late Saxon/ medieval			3(1)				3(1)
Indeterminate	(23)						(23)
Total	6(23)	5	11(1)	2	1	1	26(24)

Table 3: Number of sherds and fired clay fragments (*) from each trench by period

Fabrics, Forms and Decoration

Ten sherds, tempered with fine and abundant flint, are most likely to be late Bronze Age in date, although some could be early Iron Age. The relative abundance of the flint, its sorting and small size probably indicate that it is not of an earlier date (ie. Neolithic). Eleven sherds, tempered with either sand, shell or an admixture of the two, are thought to be of an Iron Age date. The shell fabrics are more likely to be of an early Iron Age date, while the sandy fabrics are probably middle or late Iron Age in date.

Two sherds are identified as Roman and include a rim from a Black-burnished type vessel and a sherd of BB1 with typical lattice decoration.

Four body sherds in hard fired fabrics tempered with shell or sand are thought to be late Saxon/medieval and medieval.

The fired clay is amorphous in character and consists of clay with no added temper.

Discussion

The late Bronze Age pottery derives from Trenches 1028, 1051 and 1052. Two layers (1051/16 and 1051/17) of the colluvium near to the southern side ditch of the sub-rectangular ditch, produced only pottery of this date. In addition, five small crumbs of flint tempered pottery were recovered from Layer 1052/4. The remaining sherds from Layers 1028/6 and 1051/14 occur alongside later material. Three contexts, 1028/6, 1050/3 and 1052/3, produced pottery of Iron Age date as well as some ?redeposited late Bronze Age sherds. The two Roman sherds, probably of 2nd century date, are from the fill of Ditch 1058/9 and the Chalk Quarry 1059/2. Layer 1051/14, the uppermost colluvial deposit near to the southern side ditch of the sub-rectangular enclosure, contains a wide and mixed range of material including late Bronze Age, middle Iron Age and late Saxon/Medieval.

The fired clay, from Layers 1028/4 and 6 and 1051/14, is all of indeterminate character, although it does provide further evidence of domestic activity.

APPENDIX 3

CHARRED PLANT REMAINS AND LAND SNAILS

by Mark Robinson

Introduction

During the course of the evaluation six soil samples for charred plant remains and twenty-six samples for land snails were taken for laboratory assessment. For the purposes of this assessment, all of the samples taken for charred plant remains were floated in water onto a 0.5mm mesh and the flots dried. A representative selection only of the molluscan samples were processed, with the residues sieved over a 0.5mm mesh and dried to await full analysis. Sample contexts and volumes are given in Tables 4 and 5 below.

The flots were scanned under a binocular microscope and the remains present were noted. The results are given in Table 6 for charred plant remains and Table 7 for land snails. The charcoal identifications could be taken further using high power microscopy and the species list of molluscs is not exhaustive although the majority of species in each sample has been recorded. The occurrence of the mollusc *Cecilioides acicula* was ignored because this species burrows deeply.

<i>SAMPLE NO.</i>	<i>CONTEXT NO.</i>	<i>FEATURE NO.</i>	<i>VOLUME</i>
1	1052/8	1052/9	10 l
16	1051/4	1051/13	25 l
17	1051/7	1051/13	40 l
24	1028/4	1028/5	40 l
29	1051/2	1051/13	40 l
30	1059/6	1059/2	2 l

Table 4: Samples for Charred Plant remains

<i>SAMPLE NO.</i>	<i>CONTEXT NO.</i>	<i>FEATURE NO.</i>	<i>WEIGHT</i>
2	1051/2	1051/13	1 kg
3	1051/2	1051/13	1 kg
4	1051/4	1051/13	1 kg
5	1051/4	1051/13	1 kg
6	1051/6	1051/13	1 kg
7	1051/6	1051/13	1 kg

<i>SAMPLE NO.</i>	<i>CONTEXT NO.</i>	<i>FEATURE NO.</i>	<i>WEIGHT</i>
8	1051/6	1051/13	1 kg
9	1051/7	1051/13	1 kg
10	1051/7	1051/13	1 kg
11	1051/10	1051/13	1 kg
12	1051/10	1051/13	1 kg
13	1051/11	1051/13	1 kg
14	1051/12	1051/13	1 kg
15	1051/21	1051/13	1 kg
18	1053/3	1053/2	1 kg
19	1053/8	1053/2	1 kg
20	1051/17	colluvium	1 kg
21	1051/16	colluvium	1 kg
22	1051/15	colluvium	1 kg
23	1051/14	colluvium	1 kg
25	1052/3	colluvium	1 kg
26	1052/7	colluvium	1 kg
27	1030/7	1030/6	1 kg
28	1030/11	1030/6	1 kg
31	1059/6	1059/2	1 kg
32	1059/8	1059/2	1 kg

Table 5: Samples for Mollusca

Charred Plant Remains

The three samples from the sub-rectangular enclosure ditch (Samples 16, 17 and 29) only contain very small quantities of charcoal. The amounts are so small that it is uncertain whether it represents residual material from woodland clearance, or whether it relates to the use of the enclosure. The only other charred item recorded from the ditch was a single indeterminate charred cereal grain from the upper fill. It is not even necessarily Neolithic.

Sample 24, from an undated pit (1028/5), yielded a large (c. 250g) quantity of oak charcoal but no other remains. A possible tree-throw hole, Sample 1, produced a smaller quantity of oak charcoal.

Sample 30, from the earliest fill of a possible chalk quarry (1059/2, contains much (c. 50g) softwood

charcoal. This would make a post-medieval date most plausible for the feature although pine would probably have grown in the region during the early Post-Glacial, and yew would probably never have been entirely absent throughout the Flandrian.

Sample		Neolithic Ditch 1051/13			Pit 1028/5	Pit 1052/8	Quarry 1059/6
		17	16	29	24	1	30
conifer	charcoal	-	-	-	-	-	+
cf. Pomoideae (hawthorn etc)	charcoal	-	+	-	-	-	-
<i>Alnus</i> or <i>Corylus</i> (alder or hazel)	charcoal	-	+	+	-	-	-
<i>Quercus</i> (oak)	charcoal	+	-	-	+	+	-
cereal indet.	grain	-	-	+	-	-	-

+ present

Table 6: Incidence of charred plant remains from samples

Mollusca

Well-preserved land snail shells are present in all the samples that were assessed from the sub-rectangular enclosure ditch (Fig. 6), although concentrations are higher in the upper samples. The assemblage from Sample 15, the lowest sample from the ditch, mostly comprises an open-country fauna, with *Pupilla muscorum*, *Vallonia costata* and *V. excentrica*. They had probably been derived from an area of grassland ditch. The next sample investigated, Sample 11, contains a rather sparse fauna appropriate to chalk rubble, with species such as *Vitrea* sp. and *Nesovitrea hammonis*. These species were presumably living in the ditch as unstable chalk sediment began to accumulate in it. Although the remaining sediments in the ditch do not show evidence of any very stable phases during its infilling, Samples 9, 7 and 5 have closed woodland faunas. *Carychium tridentatum*, *Discus rotundatus* and various Zonitidae are all well-represented. *Acicula fusca*, a species characteristic of old, undisturbed woodland is present in Sample 9. The continuing unstable conditions in the ditch are reflected by many examples of *Pomatias elegans*, which requires a shaded friable substrate into which it can burrow. (It is not a deeply burrowing species.) Woodland recolonisation presumably occurred following the abandonment of the monument, the presence of *A. fusca* suggesting that there were refugia of uncleared woodland close to the site from which this species could spread. Sample 2, the top sample from the ditch, contains numerous shells of the open-country snails *Vallonia costata* and *V. excentrica* in addition to the woodland species. It is uncertain whether this represents an early stage of the re-clearance of the site or whether the assemblage is mixed and includes more recent shells from the open landscape, which have been incorporated into the ditch sediments.

Shells other than *Cecilioides acicula* are absent from Samples 26 and 25, a buried soil and colluvium sealing it in Trench 1052, confirming the belief that at least some of the soil of the site had experienced a non-calcareous phase.

Sample 28, from the bottom of trackway Ditch 1030/6, contains a sparse open country fauna of *Pupilla muscorum*, *Vallonia excentrica* and *Helicella itala*. Sample 27, from the upper fill of this ditch, contains a much larger assemblage, with open country and woodland species, but including examples of Helicellinae which are regarded as medieval introductions.

Samples 31 and 32 from the upper and lower layers of the possible chalk Quarry 1059/2 contain both shade-loving and open country species. It is possible that coarse vegetation became established in the bottom of the quarry. The occurrence of *Discus rotundatus* suggests that the deposits are not early Post-Glacial.

Sample	Neolithic Enclosure Ditch 1051/13						Ditch 1030/6		Quarry 1059/2	
	15	11	9	7	5	2	28	27	31	32
<i>Pomatias elegans</i>	+	-	++	++	++	++	-	++	+	+
<i>Acicula fusca</i>	-	-	+	-	-	-	-	-	-	-
<i>Carychium tridentatum</i>	+	+	++	++	++	+	-	++	+	++
<i>Cochlicopa</i> sp.	-	-	-	-	+	+	-	+	-	-
<i>Pupilla muscorum</i>	++	-	-	-	-	+	+	++	+	+
<i>Vallonia costata</i>	+	+	-	-	-	++	-	++	-	+
<i>V. excentrica</i>	++	-	+	-	-	++	+	+	-	-
<i>Acanthinula aculeata</i>	-	-	-	+	+	+	-	-	-	-
<i>Discus rotundatus</i>	-	+	++	++	++	++	-	+	+	+
<i>Vitrea</i> sp.	-	+	+	+	+	+	-	+	+	+
<i>Nesovitrea hammonis</i>	-	+	-	-	-	-	-	-	-	-
<i>Aegopinella pura</i>	-	-	+	+	+	+	-	+	+	+
<i>A. nitidula</i>	-	-	+	+	-	+	-	+	+	++
<i>Oxychilus cellarius</i>	-	-	+	+	+	-	-	-	-	-
<i>Clausilia bidentata</i>	-	-	+	-	+	-	-	+	+	+
"alien" <i>Helicellinae</i>	-	-	-	-	-	-	-	++	-	-
<i>Helicella itala</i>	-	-	-	-	-	+	+	+	-	-
<i>Trichia hispida</i> gp.	-	+	+	-	-	+	-	-	-	+
<i>Cepaea</i> sp.	-	-	-	-	+	+	-	-	-	-

+ several, ++ many

Table 7: Incidence of mollusca from samples

Discussion

The paucity of charred plant remains from the Neolithic monument is unsurprising. The environmental sequence derived from the snails from the Neolithic ditch is useful and shows that the site followed the pattern characteristic of Neolithic sites on the Sussex Chalk, with small-scale clearance, perhaps followed by woodland regeneration rather than the Wessex Chalk pattern of Neolithic sites remaining open after large-scale clearance (Thomas 1982). The combination of charcoal and molluscan evidence suggests that the possible quarry pit is likely to be post-medieval.

Recommendations if further excavation occurs

Further sampling for charred plant remains ought mainly be directed towards the fills of archaeological features in which charred remains are evident to the excavator, and is unlikely to be very productive unless occupation deposits (or later cremations) are found. The molluscan sampling

has proved particularly useful, but full analysis of the sample sequence as already collected ought to suffice unless a different sequence of sediments is found elsewhere in the ditch. Further sequences of molluscan samples ought to be taken if other archaeological features are found. It is recommended that sample sizes should remain the same (1 kg for molluscs, c. 40-50 litres for charred plant remains).

APPENDIX 4

GEOARCHAEOLOGICAL OBSERVATIONS

by Martin R. Bates and Anthony J. Barham

Introduction

A field visit was made by staff of the Geoarchaeological Service Facility (GSF) on 21st July 1995 during the Oxford Archaeological Unit's (OAU) field evaluation stage. The field visit followed the production by the GSF of a desk-top based evaluation of the area prior to the commencement of the trenching programme by the archaeological field team (Bates 1995).

The objective of the visit was to view and undertake preliminary interpretations of key sequences identified in three trenches during the evaluation stage.

During the site visit, undertaken by GSF Director, Mr A.J. Barham and Deputy Director Dr. M.R. Bates Trenches 1052, 1058 and 1059 were examined. A further extension to the Trench 1059 was made at the request of the GSF staff using the available machinery on site.

No samples were taken during the site visit but detailed observations made in Trench 1052 are reproduced below.

Field Observations

Trench 1059 lay on the higher flatter ground towards the eastern end of the site. Trench 1052 lay on the northern side of a small dry valley running across the middle of the site area and deepening towards the north west. The trench lay across the edge of the valley feature. Trench 1058 lay at the bottom of the small dry valley to the north-west of Trench 1052.

TRENCH 1059

This trench was under excavation during the visit and a small *sondage* was being cut at the base of the trench. A large steep-sided feature, c.2.0 m deep, cut into chalk had been identified by OAU staff. A machine cut on the southern side of the trench revealed that the feature was filled with a red-brown silt or clay-silt that contained discrete chalk rubble lenses. These units, where identified, were clearly dipping towards the centre of the feature. These units were significantly different to those observed in Trenches 1052 and 1058.

The chalk bedrock edge of the feature was formed of loose angular chalk. The base of the feature consisted of hard chalk overlain by a thin bed of yellow-brown putty chalk. Within the northern section under excavation by the OAU thin spreads of charcoal, dipping towards the central area of the feature were noted.

The features observed were not consistent with natural features such as solution hollows. It is likely that this feature may have a man-made origin. Infilling of this feature was likely to have, in part, occurred naturally.

TRENCH 1052

This trench lay across the edge of the small dry valley extending across the site to the north-west.

The stratigraphy recorded here dipped toward the west, towards the valley axis. A number of points of importance were noted:

- 1 The base of the excavated trench, onto a chalky gravel, did not appear to have been bottomed onto chalk. This deposit, a probable late Pleistocene soliflucted deposit, could potentially contain both Upper Palaeolithic artefacts and palaeoenvironmental material and overlie older buried stratigraphy.
- 2 The basal part of the observed sequence (Layer 1052/6), equivalent with the zone of tubules infilled with micrite ? (see below), may represent a buried soil of early Holocene date.
- 3 The flint free sediment lying between c. 1.0m and 1.60m deep (equivalent to Layer 1052/5) is likely to represent hillwash and may have been derived from a fine grained sediment that possibly capped the adjacent chalk downland (possibly a loess). The processes responsible for the erosion and redeposition are not known but clearance and farming during the later prehistoric period has been a causative factor elsewhere in SE England (Bell and Boardman, 1992).
- 4 The upper part of the profile containing the flint clasts is likely to represent the stripping of the exposed chalk surface after removal of the fine grained cover deposits (see 3 above).
- 5 This indicates that there is potential for an inverted sequence within the valley fill.

The following stratigraphic sequence was logged from the surface to trench base.

0.00 - 0.30m.

10YR 6/3 7.5 YR 6/4 fine sandy silt with large white flint pebbles (sub-angular, 3-6cm in diameter) and some well rounded chalk pellets (2-4mm). Some 3-4cm green patinated rounded to sub-rounded Tertiary flints. Massive and poorly sorted. Some pot, tile and occasional burnt flint.

0.30 - 1.00m.

7.5YR 6/4 to 7.5YR 7/6 fine sandy silts (with well sorted matrix) containing a decreasing frequency of large clasts with depth. Predominantly angular/sub-angular white-grey flint pebbles (4-6cm), randomly orientated. Heavily bioturbated by vertical rooting canals (0.5-1.0cm diam.) with silt coatings to canal.

1.00 - 1.56m.

Context 1052/5

7.5YR 6/6/ to 10YR 7/4 well sorted fine to medium sandy silts with some clay. Hard and compact when dry with 0.5-1.0mm tubules (bioturbation) throughout. No clasts except very rare sub-angular flints (1-2cm) and occasional 1-2mm chalk pellets. With depth some tubules are partially filled. Incipient bedding dipping to west visible as 2-4cm thin beds within unit. On broken faces there are clearly incipient infilled voids.

1.56 - 1.60m.

Context 1052/6

As above but total infilling of tubules with micrite?

1.60m. -

Sharp contact onto very compact chalk (sub-angular clasts) shattered gravel with flints. Occasional very well rounded chalk clasts. Base of observed trench 1.60m

TRENCH 1058

The stratigraphy observed in Trench 1058 appeared similar to that observed in Trench 1052. Flint rich silts were present below the topsoil and were seen to thin and wedge out towards the deeper parts of the sequence, ie. towards the centre of the dry valley. This implies a source for the flints upslope rather than up-valley. These deposits overlay bedded silts similar to those recorded between 1.0m and 1.6m depth in Trench 1052.

The base of the trench again may not have been bottomed onto chalk bedrock and a periglacial solifluction origin for the chalk rubble at the base of the trench is likely.

Within the base of the trench a probable solution pipe, containing well rounded Oldhaven/Tertiary flint pebbles was noted.

Discussion and Conclusions

The observations made during the GSF visit to the site at Tollgate indicate that a sequence of stratigraphic units exist within the partially infilled and currently dry valley. In both Trenches 1052 and 1058 it was not clear whether chalk bedrock was encountered and it is likely that a chalky solifluction deposit was present at the base of the trench.

In Trench 1052 evidence for a soil or weathering profile, developed in the chalky gravel at the base of the sequence, was noted. This soil may be of early Holocene age. The sediments overlying this deposit, in both trenches, consisted of a lower flint free silt overlain by a flint rich silt. These units are likely to have derived from the stripping of the adjacent chalk downlands of a fine, perhaps loessic cover (basal part of sequence) followed by the removal of parts of the chalk bedrock (the flint rich silt) resulting in the inclusion of large quantities of flint in the sequence. If this interpretation is correct an inversion in the stratigraphic order may be noted in any redeposited finds (i.e. any artefacts originating within the fine grained sediment originally overlying the chalk would be removed and deposited prior to any, older, artefacts lying beneath the fine grained cover deposit).

The large feature examined in Trench 1059 does not appear to have formed naturally and a human origin is likely.

These observations confirm predictions made in the previous desk-top evaluation produced by the GSF where colluvial deposits were considered likely within the dry valley system (Bates, 1995 points 2.3 and 2.4, page 3) and the presence of an early Holocene landsurface beneath the colluvial deposits predicted (Bates, 1995 point 2.7, page 3).

Any further work in the area should be focused on the nature of the relict soil noted at the base of Trench 1052. Clearance of over-burden down to this level may reveal evidence for Mesolithic or Neolithic activity associated with the soil. Further, detailed examination of the nature of the sediments infilling the dry valley, and their faunal content (molluscs) may provide clues as to the nature of the processes taking place prior to, during and following the erosion/deposition episode recorded in the stratigraphic sequence. Given the proximity to the large Neolithic monument recorded in Trench 1051, the landuse history of the area during this time period may be elucidated from a careful study of these sediments.



Plate 1 Aerial photograph showing cropmark of the probable Neolithic enclosure (©RCHME)

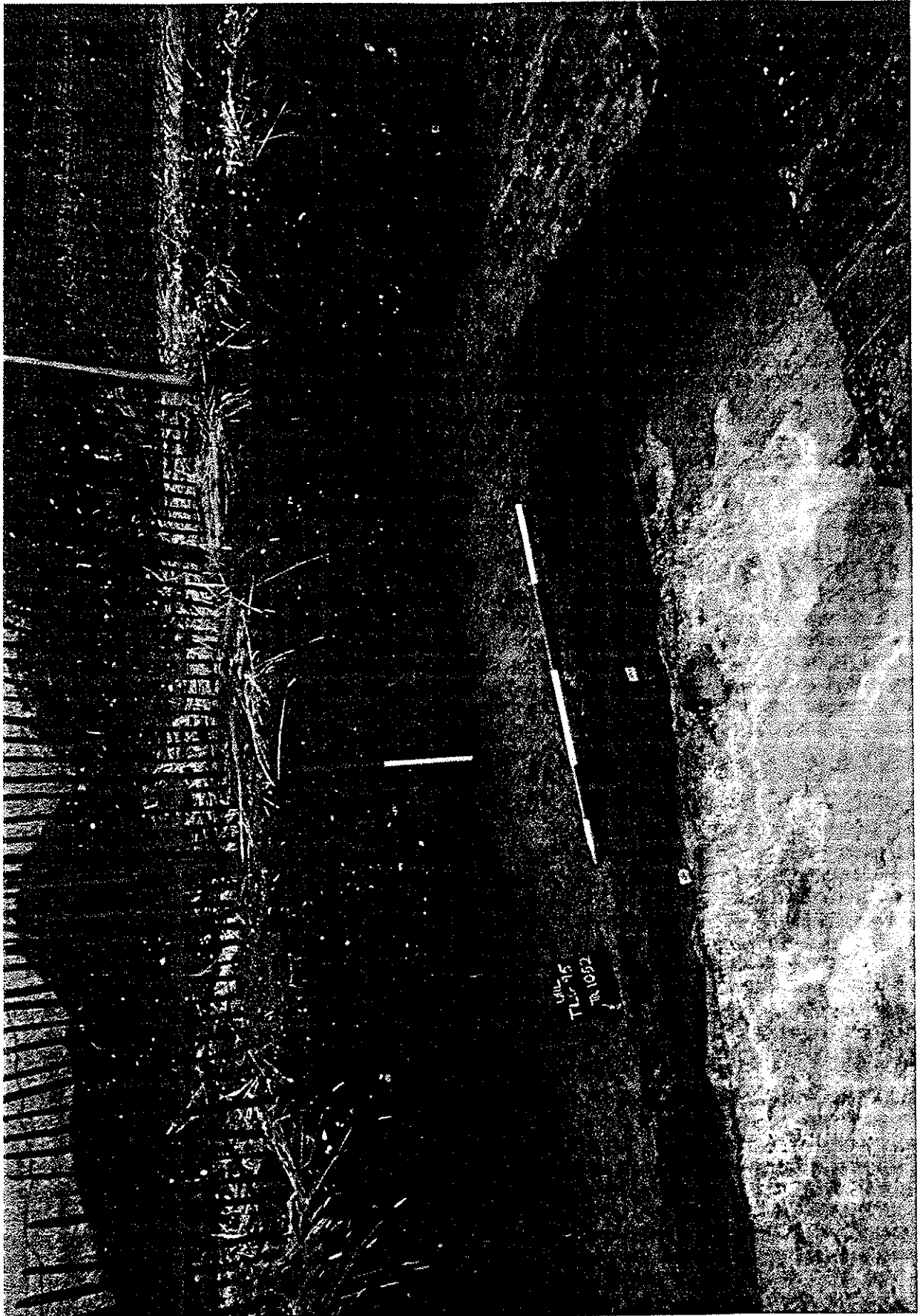
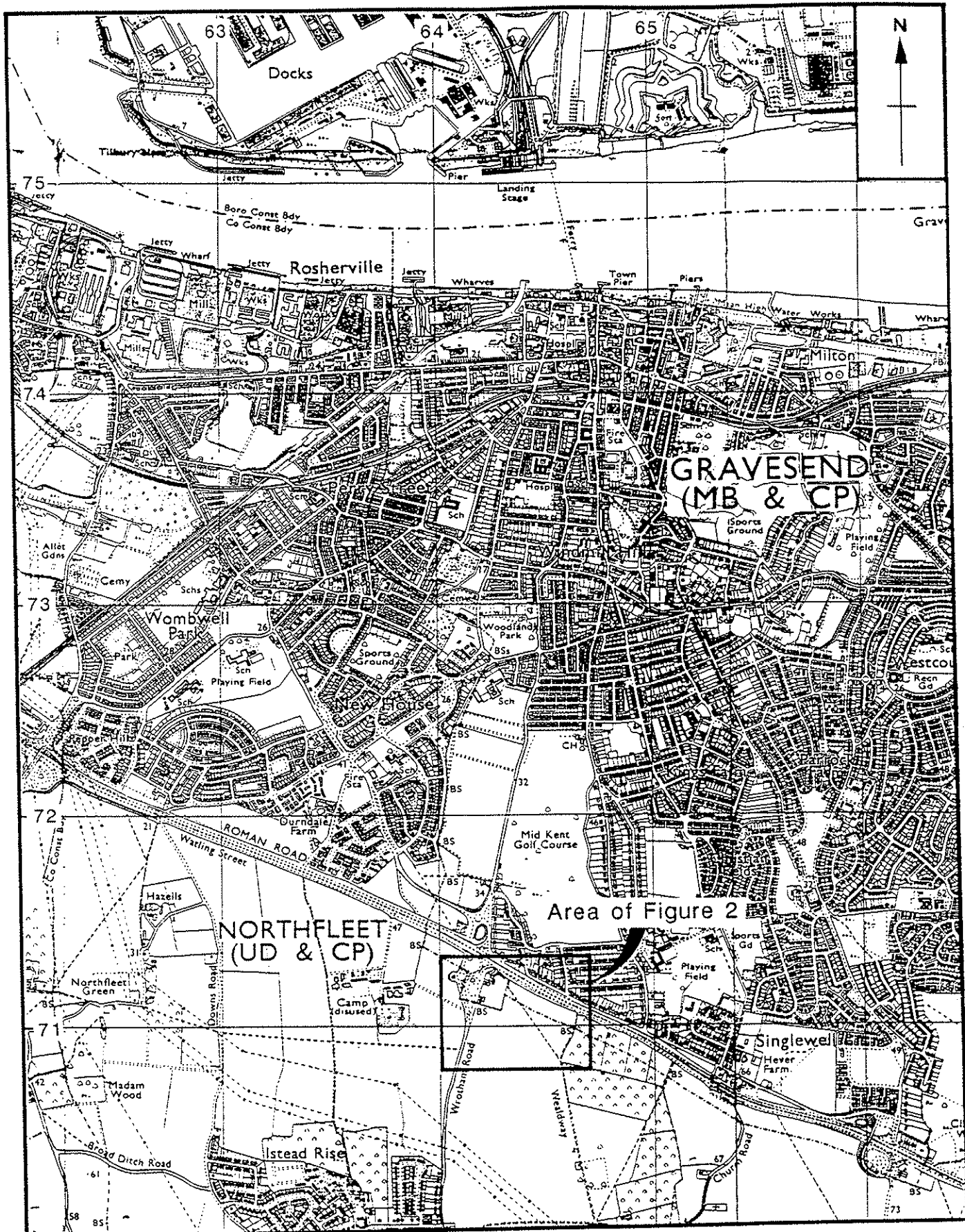


Plate 2 *View of the sediment accumulation in Trench 1052 across the dry valley*



scale 1:25 000

Reproduced from the Ordnance Survey's 1:25 000 map of 1983 with the permission of the Controller of Her Majesty's Stationery Office
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Figure 1

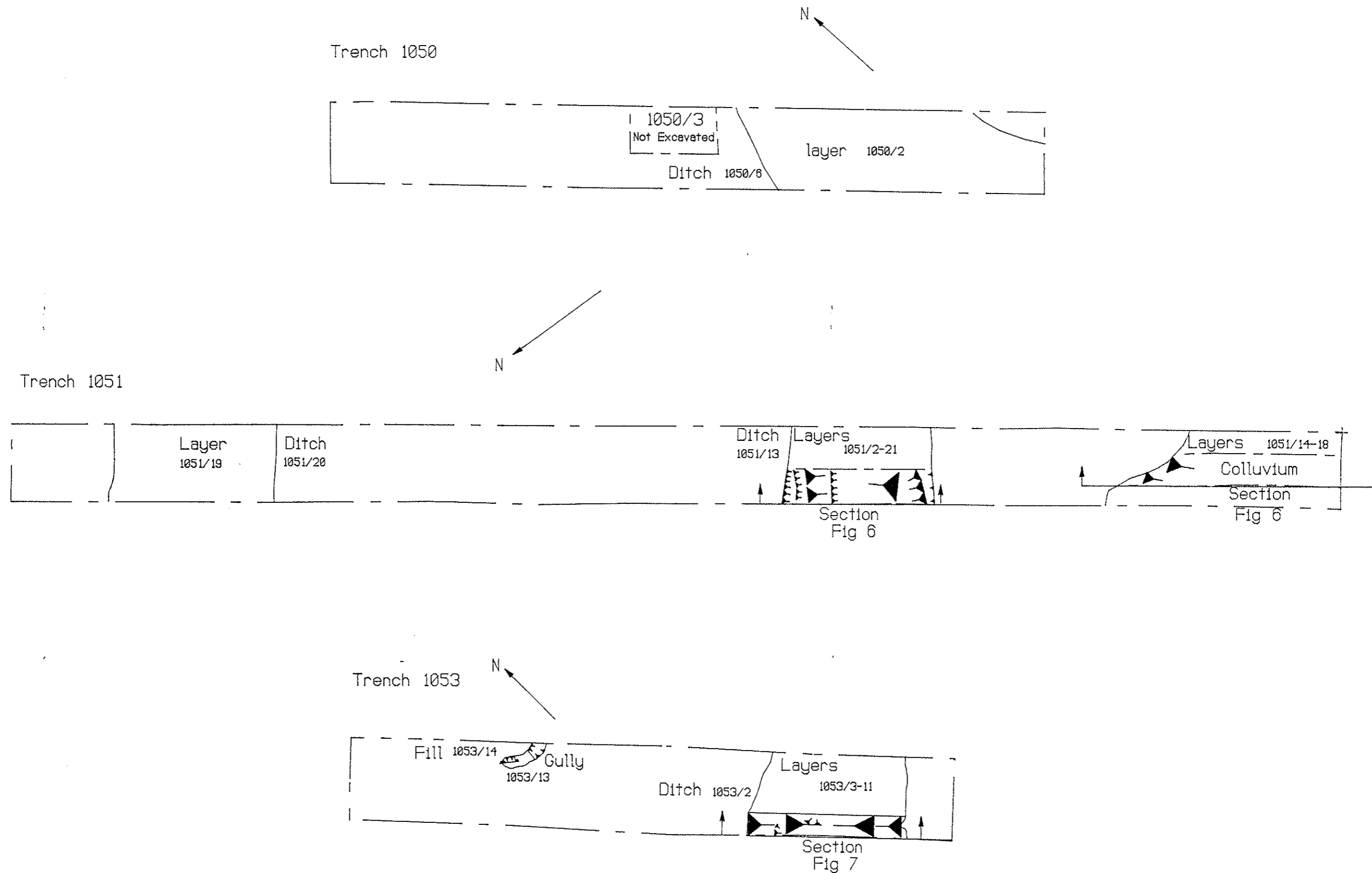


Fig 3 Plans of trenches across sub-rectangular enclosure Scale 1:100

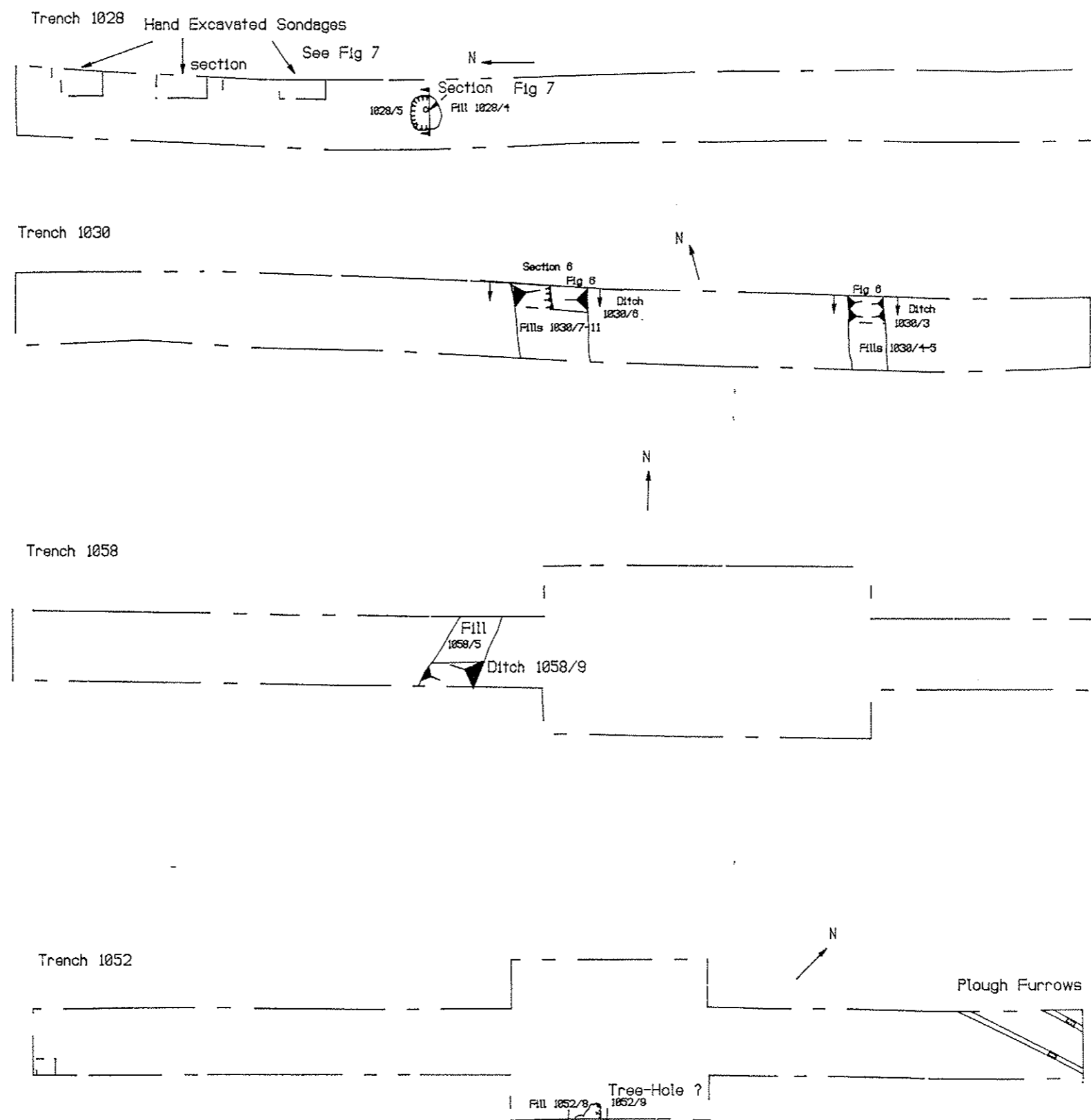


Figure 4 Plans of trenches across dry valley Scale 1:150

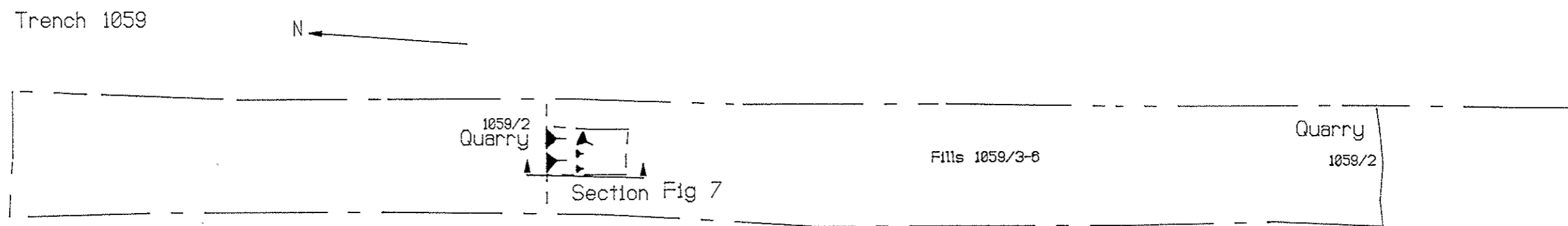
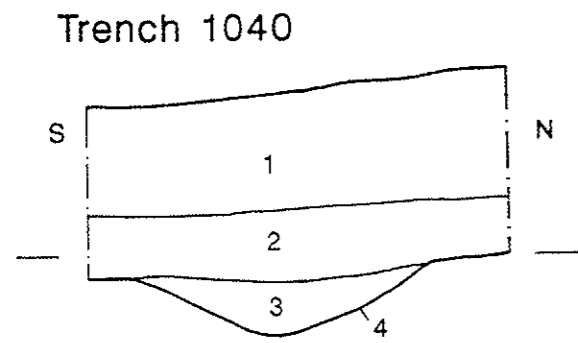
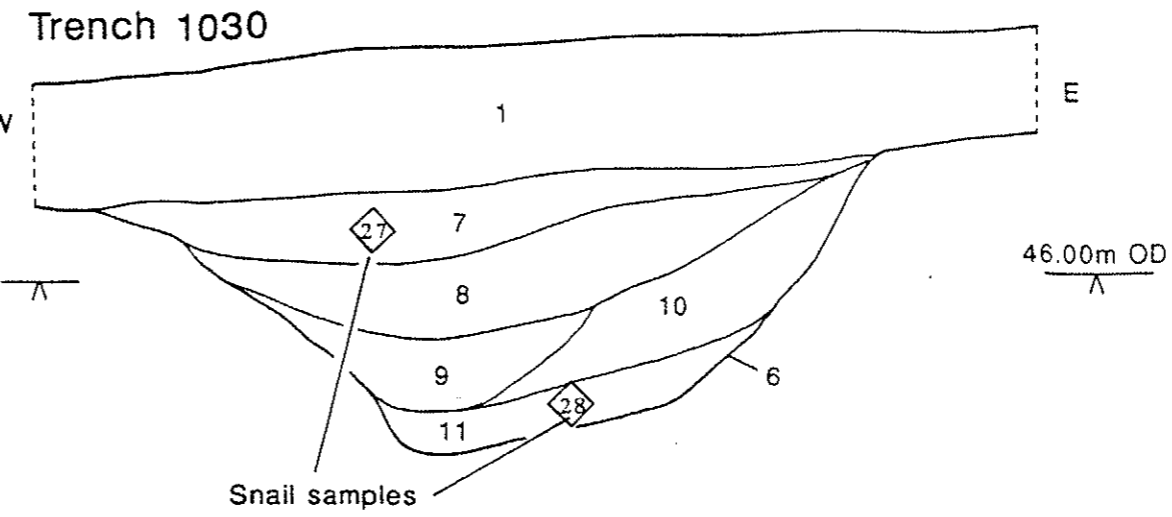
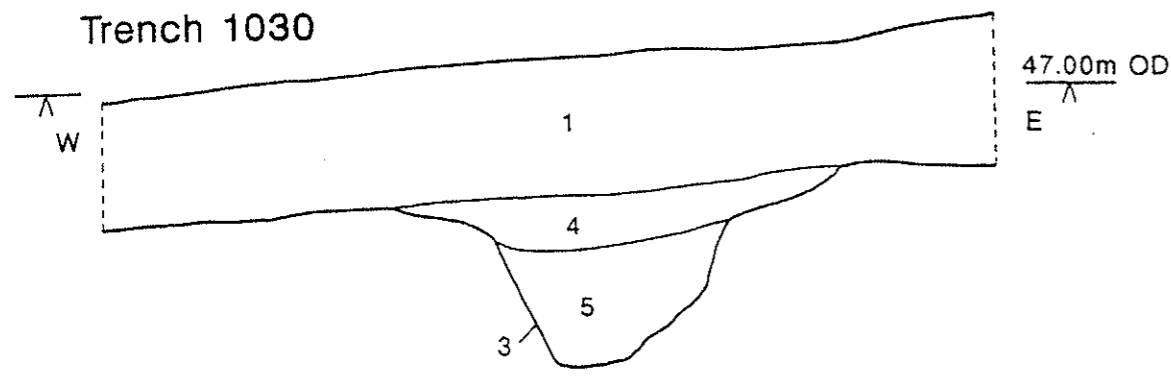


Fig 5 Plan of trench across 'chalk quarry' Scale 1:100



Ditch 1051/13

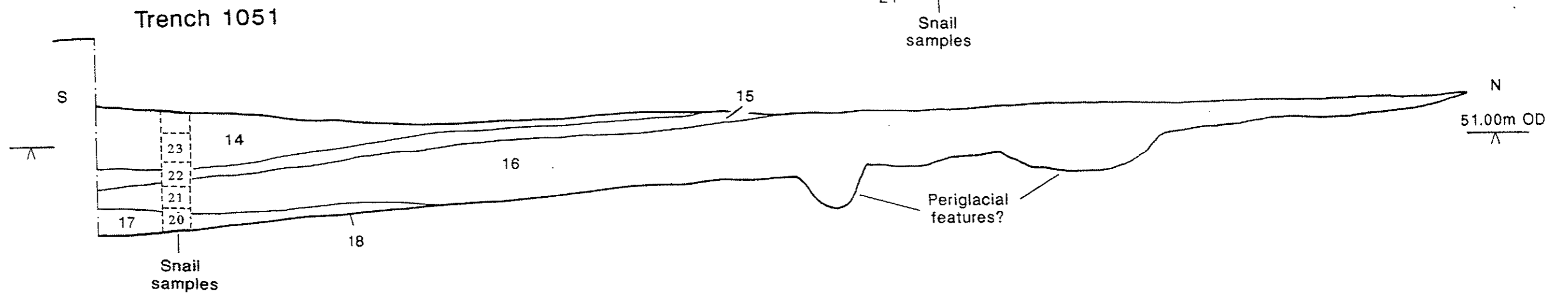
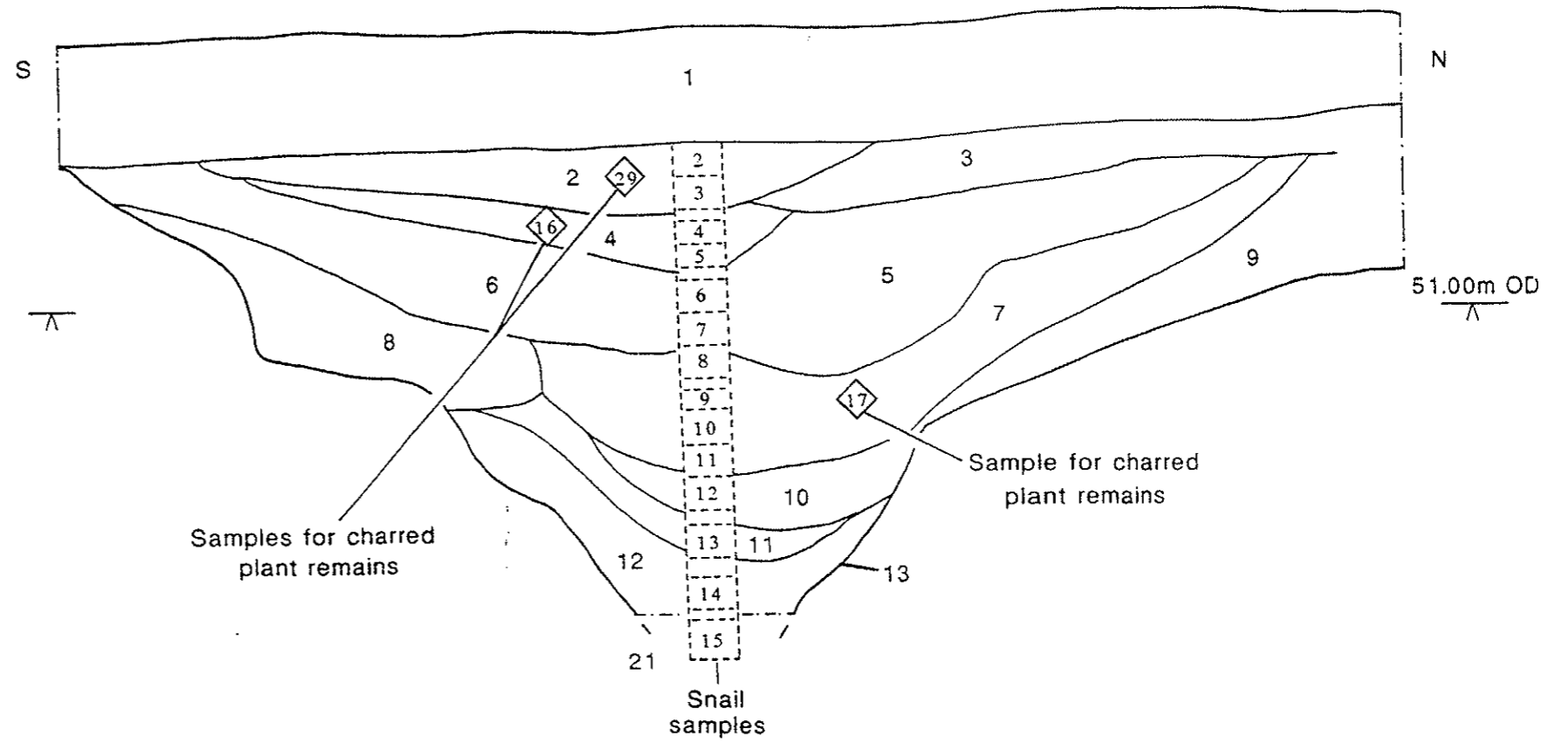
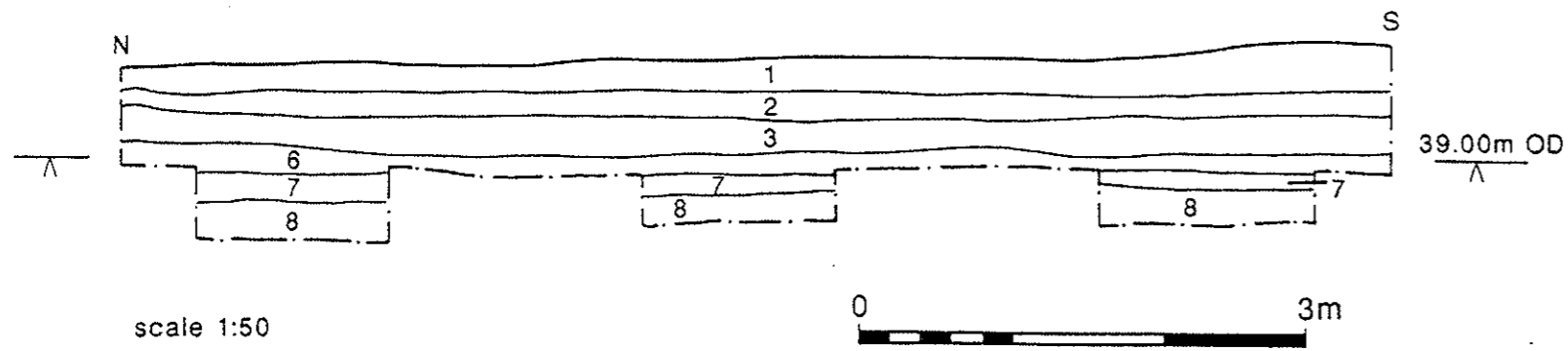
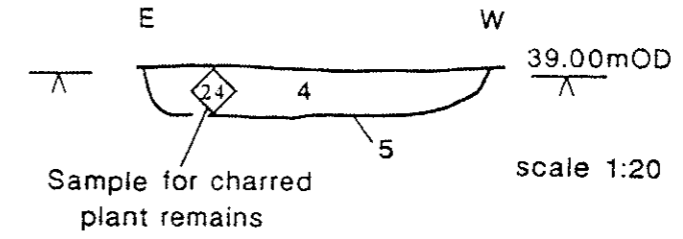


Figure 6 Sections

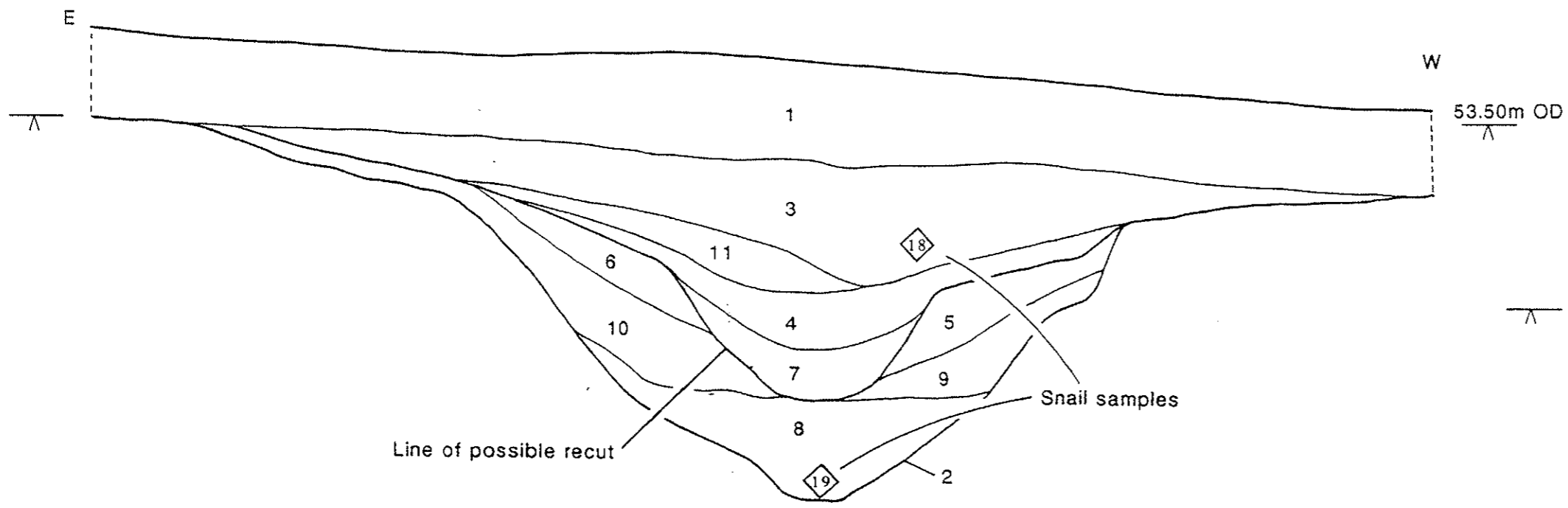
Trench 1028



Pit 1028/5



Ditch 1053/2



'Chalk quarry' 1059/2

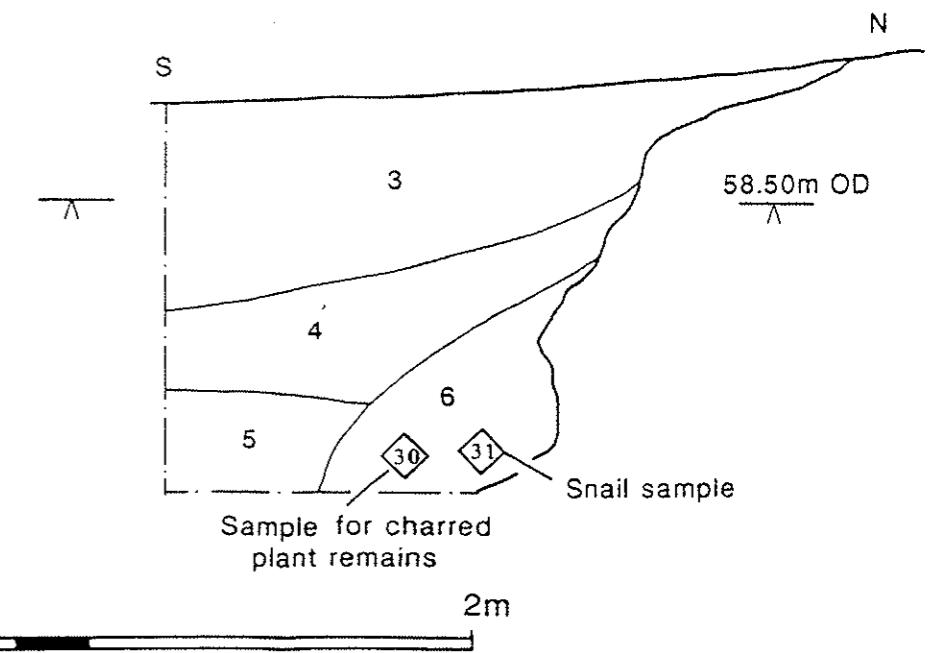


Figure 7 Sections

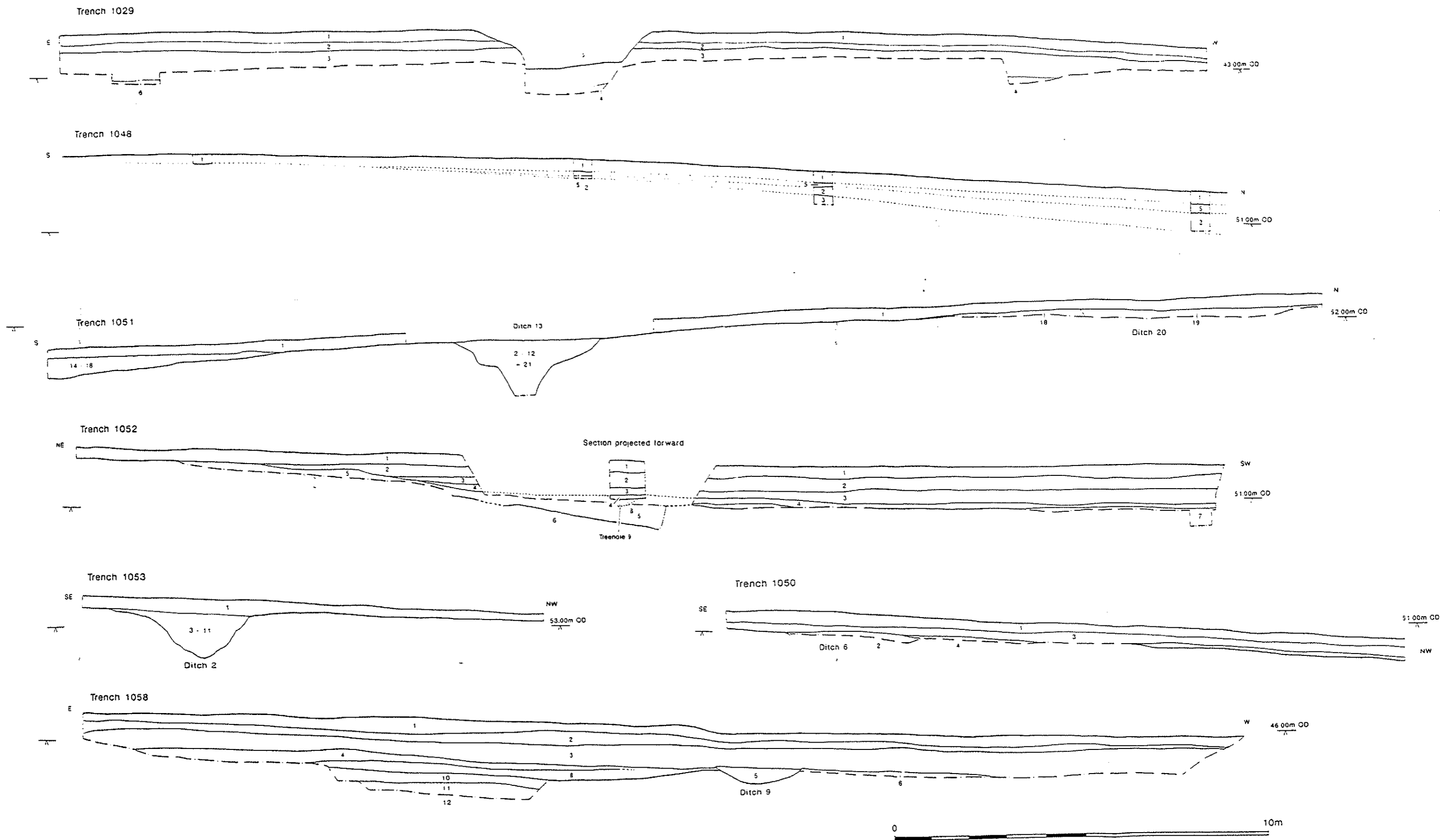


Figure 8 Longitudinal sections of trenches



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