

ENVIRONMENTAL SAMPLING OF ONE OF A PAIR OF MOUNDS ON SLAB COMMON, BORDON

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ABSTRACT

The excavation of a narrow trench into one of a pair of probable Bronze Age barrows, was aimed at obtaining environmental samples from any turves or buried soils within or beneath the mound. The barrow was found not to cover a buried soil level but did contain a layer of turves and a number of possible pits from which samples were taken. The stratigraphy was complex and seems to indicate that the barrow was of an unusual construction, of a number of distinct phases, some possibly intended to enhance the visual appearance of the monument.

INTRODUCTION

In April 2008, members of the Woolmer Forest Heritage Society under the direction of the

authors, opened a single narrow trench into the northern of a pair of probable Bronze Age barrows situated at SU 78517 35832 some 1.3km north west of the centre of Bordon (Fig. 1). The barrows lie within what is now Slab Common, an area of pine woods used by the Army as a training ground for the recovery of military vehicles. The mounds, which appear to be bowl barrows, are scheduled (monument number 12156). There are a large number of other similar barrows in and around Bordon and several hoards of Bronze Age metalwork have been found in the general area. The common is also well known for the large Mesolithic sites, discovered and excavated by Rankine, concentrated at the edge of the boggy ground around the local stream systems (see below).

The excavation was carried out by the kind permission of the MoD and the Secretary of

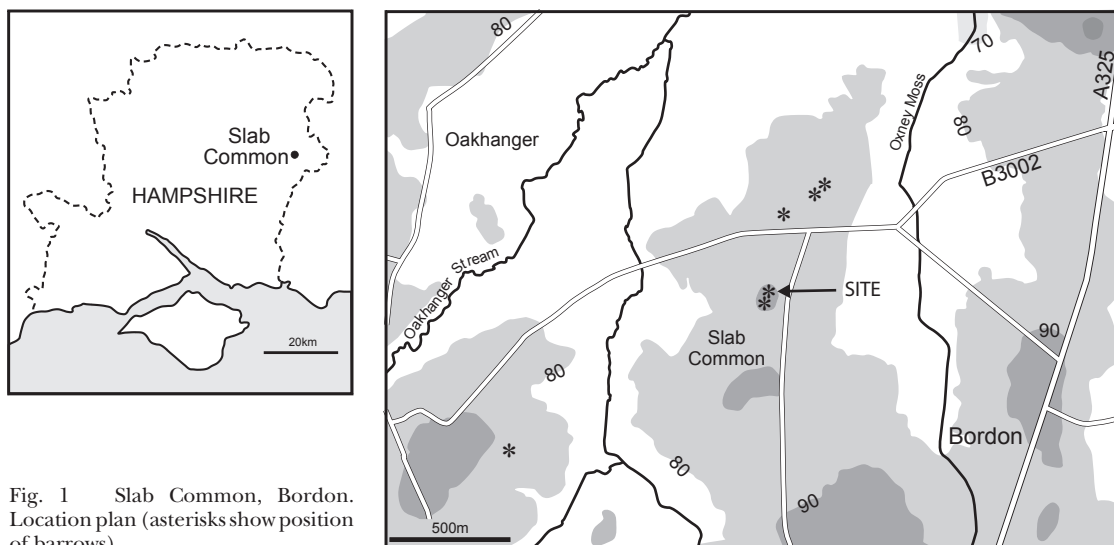


Fig. 1 Slab Common, Bordon. Location plan (asterisks show position of barrows)

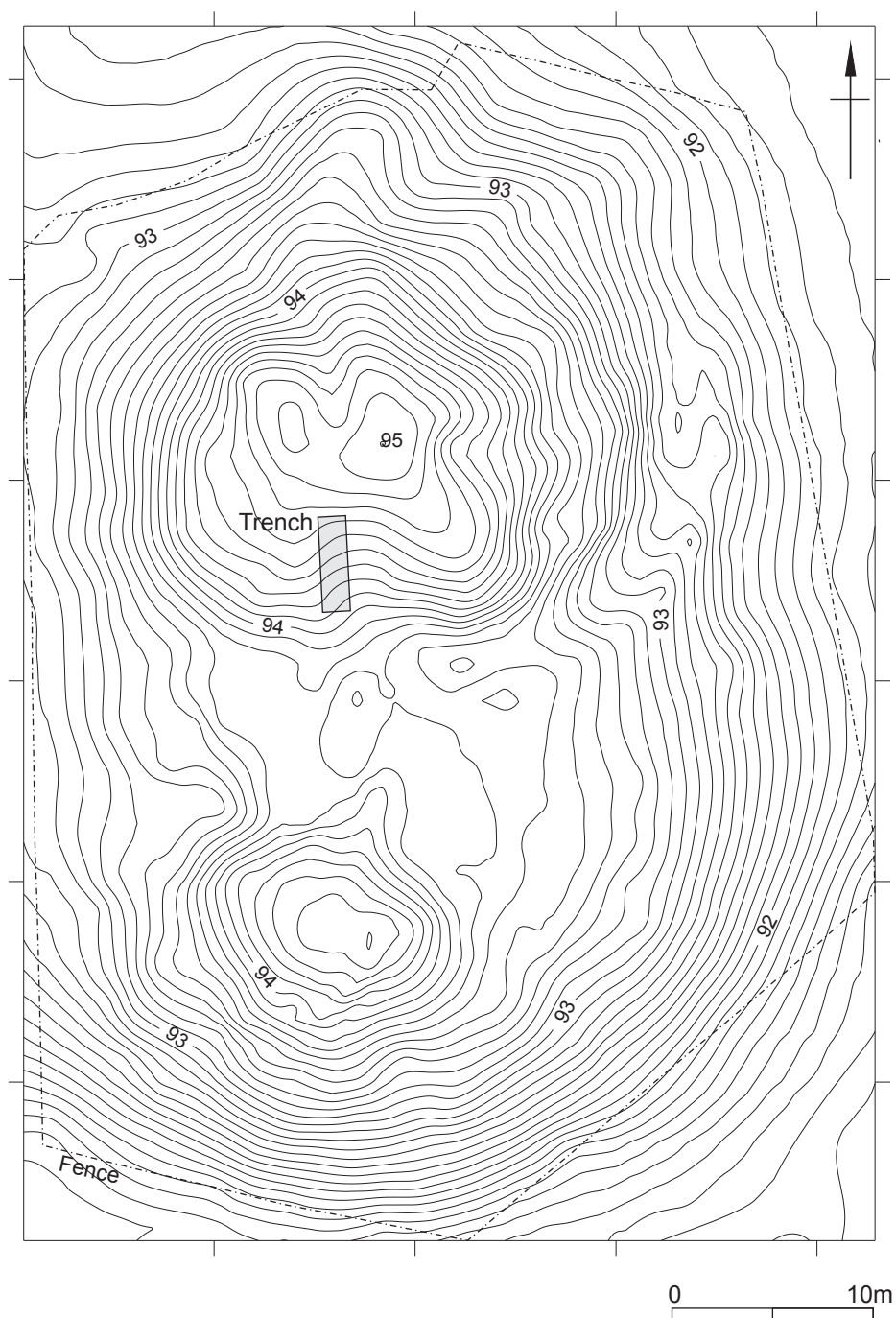


Fig. 2 Slab Common, Bordon. Contour survey of barrows showing location of trench

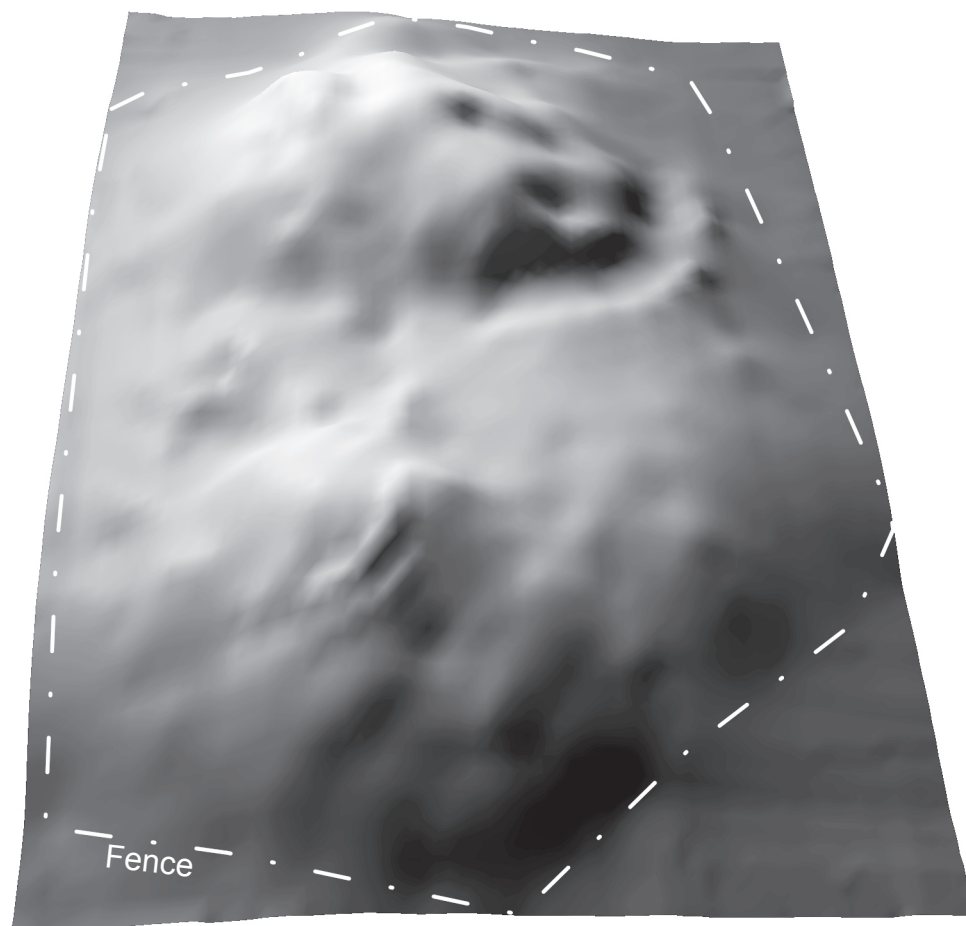


Fig. 3 Slab Common, Bordon. Digital terrain survey of barrows showing damaged by military vehicles. North at top. For scale see Fig. 2

State at the DCMS. The project was one of a series of similar investigations designed to obtain environmental samples from buried soil levels preserved under barrows on the Surrey/Hampshire greensand heathlands (Graham & Graham 2002; Graham *et al* 2004; Graham *et al* 2008; Graham & Graham 2009). The aim is to improve understanding of the vegetational history of the greensand at the time the barrows were constructed in the early to middle Bronze Age. The study is a co-operative project between Surrey Archaeological Society, Royal Holloway College and various Hampshire bodies.

TOPOGRAPHY AND GEOLOGY

Slab Common is relatively level and lies slightly to the east of a number of small streams that run northwards to join the eastward flowing Oakhanger and Kingsley streams, which in turn join the River Slea, the River Wey and ultimately the Thames. The barrows occupy a slight north/south ridge with an average of height of 94m OD, and would have overlooked the waterlogged ground around the streams about 550m to the west and further boggy ground to the east, if the area had been clear of trees (Figs. 1 and 2). Today the mounds are fenced

off from the Common and are covered, as is the surrounding land, by mature Scots Pines. The underlying geology consists of the Folkestone Bed series of the Lower Greensand.

THE MOUNDS

The mounds lie on a north/south axis, the southern of the two being the smaller. It is approximately 20m in diameter and about 1m high while the northern mound is just over 30m in diameter and about 2m high (Fig. 3). Both have been damaged by military vehicles which have, on different occasions, driven over and around them leaving noticeable wheel ruts. It also appears that a number of foxholes have been dug into the north east quadrant of the northern mound. There is no visible evidence for the presence of ditches associated with the barrows, though these may have been obscured by soil slumping.

THE TRENCH

The trench (5 × 1.5m) was located roughly centrally on the southern flank of the northern mound (Figs. 2 and 4), largely because this was one of the few areas relatively clear of pine trees. No attempt was made to extend over any possible surrounding ditch, or to reach the centre of the mound – in both cases to minimise disturbance to the monument, while still obtaining the environmental samples which were the object of the exercise.

In the event the construction sequence revealed in the section (Figs. 5 and 6) was by far the most complex of any of the barrows so far sampled. To compound matters, while some contexts were distinct, many others blended into each other without clearly defined boundaries – particularly when viewed from above. Despite this, and in spite of the limited size of the trench, a number of phases of construction can be suggested making this a most unusual barrow, quite unlike the typical turf stack construction of a 'normal' greensand tumulus (e.g. Drewett 1985).

Starting from the lowest level reached by the trench, the natural sand of the underly-

ing ridge was exposed in one deeper cut and consisted of pure white sand (18) with at least one band of iron pan being visible. At the north end of the trench, a layer of bright yellow sand with a curving edge (19, Figs. 4 to 6) had been laid on the natural. This may have originally been mounded as in the northern section it was slightly higher on the west side than on the east and sloped more obviously from north to south on the west side of the trench (Fig. 6). Into this had been dug a long, narrow pointed slot – almost sword-like in shape (21) and filled with grey sand (21a). Subsequently a pit (22) had cut this feature and the yellow sand (19). The pit was again filled with grey sand (22a) but also contained a scatter of charcoal and ash. While the slot (21) may have been caused by a root or be an animal burrow, this seems improbable as, in the former case, it would imply a substantial interlude between the deposit of the yellow sand (19) and the cutting of the pit (22). No attempt was made to empty either feature other than to establish that the slot (21) did not actually contain any metal object. The pit (22) may possibly contain the remains of a secondary burial but, as stated, was left largely undisturbed.

Above these features a layer of yellow/brown mottled sand containing a scatter of charcoal (14) had been deposited and possibly associated with this was a cut (15). This was filled with soft white sand with dark banding (15a) and the feature may be a pit, a tree throw hollow or a ditch surrounding the first phase of the barrow. If it was a ditch, it was not continuous as it did not appear in the opposite western section of the trench. This and the adjacent layers had been disturbed by an animal burrow (labelled 'ad' on the section). There was a band or fill of light yellow sand (16a) between feature 15 and the underlying natural white sand (18) of the ridge itself. Towards the centre of the section a narrow band of alternating grey and black layers (10) overlay the natural. Subsequently, a thicker layer of grey sands (8 & 9), again containing charcoal and ash, had been deposited over the top of 10 and the now filled in 15. At the southern end of the trench, and probably contemporaneously, a mix of pale grey/buff and white sands (7) had also been deposited. From the section it appeared that this had

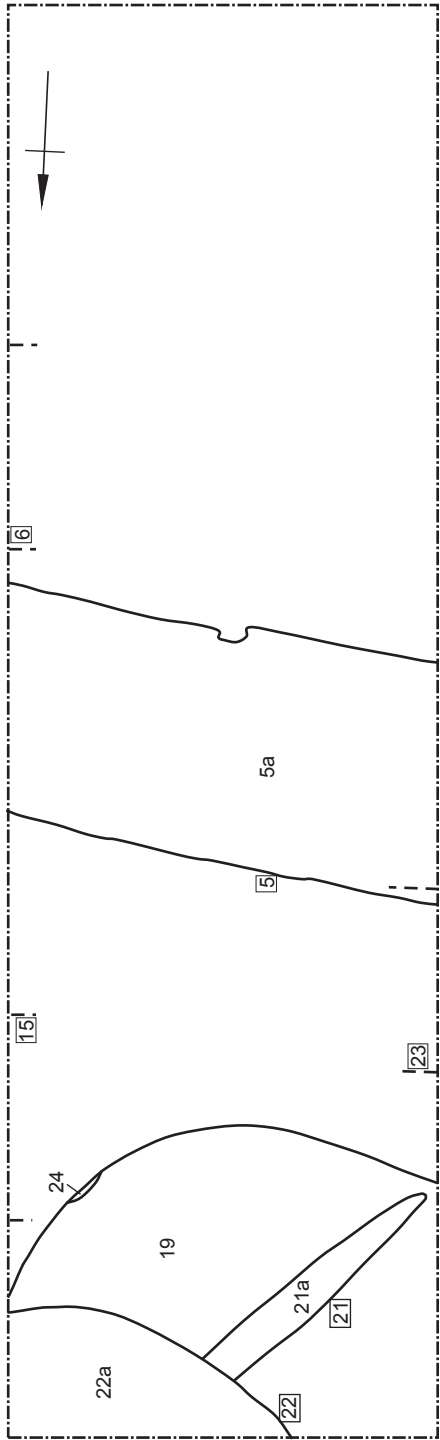


Fig. 4 Slab Common, Bordon. Plan of main features

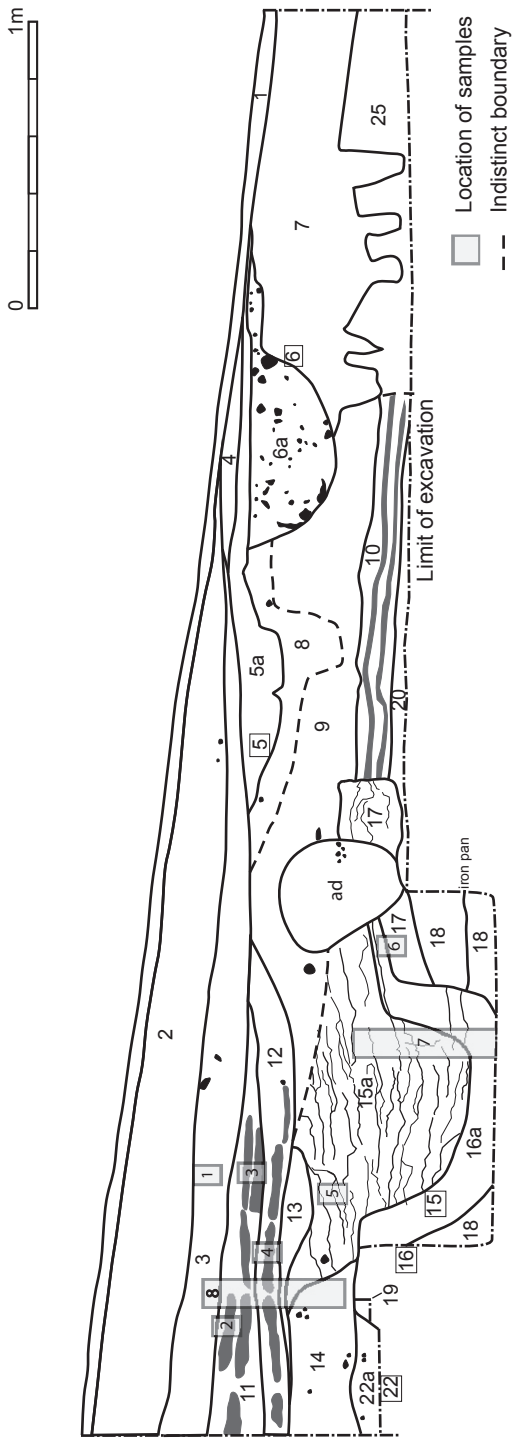


Fig. 5 Slab Common, Bordon. East section

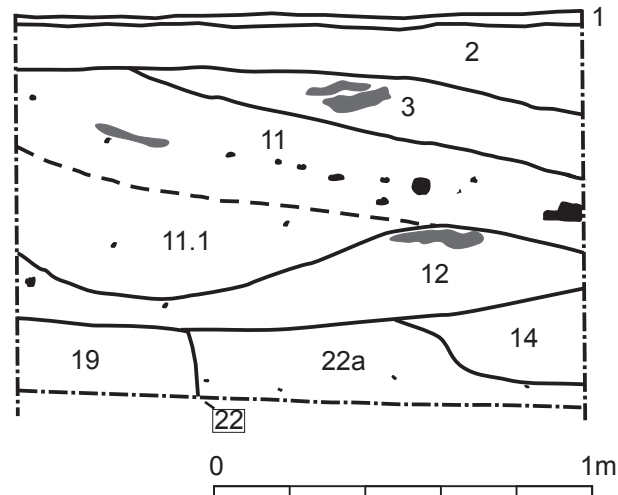


Fig. 6 Slab Common, Bordon. North section

Key to the plan (Fig. 4) and east and north sections (Figs. 5 & 6)

- 1 Pine needle litter
- 2 Dark grey sand – light charcoal
- 3 Mixed deposit, predominantly light grey sand with some yellow sand – light charcoal
- 4 Dark grey sand
- 5a Yellow sand
- 6a Mottled grey sand – much charcoal
- 7 Pale grey/buff/white sand
- 8 Pale grey/buff sand – some charcoal
- 9 Grey sand – light charcoal
- 10 Light grey sand separating two darker bands
- 11 White/light grey sand with turves – moderate charcoal
- 11.1 Mid-grey sand – light charcoal
- 12 Yellow-grey mottled sand with turves
- 13 Brown sand
- 14 Grey/brown mottled sand with interrupted band of white sand – moderate charcoal
- 15a Soft white sand with thin dark banding – some charcoal
- 16 Light yellow sand
- 17 Soft white sand
- 18 White sand with iron pan band
- 19 Clean yellow sand
- 20 Soft white sand
- 21a Grey sand with charcoal
- 22a Grey sand with charcoal
- 23 Pit/ditch (visible on west section and location shown on plan)
- 24 Reddened sand
- 25 Hard black sand

been subject to root disturbance at some stage leaving an irregular band of hard black sand (25).

The next phase seems to have been a cut into these sand deposits by a pit or interrupted ditch (6), which was filled with mottled grey sand containing a large amount of charcoal

and ash (6a). Closer to the centre of the mound and probably slightly later, the sand (8 & 9) had been partially removed, possibly as a result of a natural slippage, and the resulting concave depression infilled with a number of layers of turves and with some charcoal (11 & 12). The curve of this cut and deposit could

also be seen in the northern section (Fig. 6) where it appeared to rise upwards towards the west. This perhaps implies that only a portion of the barrow was affected by whatever event caused the concavity. Possibly at approximately the same time a continuous and very slightly curving ditch (5) had been cut, which ran approximately across the centre of the trench. This had been filled with bright yellow sand (5a) which contrasted vividly with the grey and buff coloured sands into which it had been cut. If this feature had been continuous it would have been visually striking, forming a bright ring around the centre of the mound itself.

Finally, either cutting into the turves and ditch (11, 12, 5a) or raising what would otherwise have been a strangely concave surface, three layers of sand (2 to 4) with occasional lumps of charcoal were deposited heightening the mound to form a more conventional 'barrow' shape. Various other deposits (e.g. 13, 17, 20), have not been previously mentioned as they presumably result from minor incidents associated with the more significant events during the construction of the mound.

To complicate matters even further the western section of the trench showed yet another pit, ditch or tree-throw hollow (23 on plan). Once again this did not show in the eastern section and, though it was of similar dimensions, was not obviously a continuation of feature 15 as the fill consisted of plain grey sand with a scatter of charcoal.

GEOARCHAEOLOGY, by Nicholas Branch

Introduction

The aims of the research were:

- 1) to ascertain whether the materials forming the barrow mound were derived from a local source (sand and gravel, and soil, of the Folkestone Beds), or were a mixture of local and regional material (e.g. chalk downland soil);
- 2) to establish the probable age of the structure by radiocarbon dating.

In order to achieve these aims, the project had several objectives:

- 1) To record the pedo-sedimentary succession within the mound, noting the colour and composition, to reconstruct the stages of mound formation
- 2) To radiocarbon date fragments of charcoal recovered from key archaeological contexts to establish the age of the mound
- 3) To reconstruct the vegetation history using pollen analysis and, in particular, to highlight the presence of pollen indicators of non-local plant taxa, especially those suggestive of chalk downland
- 4) Depending upon the results of objective 2, to conduct a soil/sediment micromorphological study and mineralogical analysis to confirm the presence of non-local soil/sediment.

Methods

The pedo-sedimentary succession was described in the field, noting the colour and composition, namely gravel, sand, silt, clay and organic matter. Samples for pollen analysis were collected in two monolith tins (<7> and <8>), taken through pedo-sedimentary units broadly representative of the main archaeological contexts. Kubiena tins were collected for soil/sediment micromorphology (<1>, <2>, <3>, <4>, <5>, <6>) from selected main archaeological contexts (location of samples shown on fig.5). 5cm³ sub-samples for pollen analysis were extracted from monolith samples <7> and <8> using a volumetric sampler. The pollen was extracted as follows:

- 1) Deflocculation of the sample in 1% Sodium pyrophosphate
- 2) Sieving of the sample to remove coarse mineral and organic fractions (>125µ)
- 3) Acetolysis to remove unwanted organic matter
- 4) Removal of finer minerogenic fraction using Sodium polytungstate (specific gravity of 2.0g/cm³)
- 5) Mounting of the sample in glycerol jelly.

Table 1 Results of the radiocarbon dating – University of Waikato

Context Number	Material Dated	Laboratory Code	Conventional Age (BP)	$\delta^{13}\text{C}$	Calibrated Date (BC) 95.4%
11	Charcoal (<i>Quercus</i>)	WK-27225	3715 $\pm$ 46	-26.5 $\pm$ 0.2‰	2210–1960 BC
22a	Charcoal (<i>Quercus</i>)	WK-27226	3735 $\pm$ 73	-26.0 $\pm$ 0.2‰	2450–1900 BC

Each stage of the procedure was preceded and followed by thorough sample cleaning in filtered distilled water. Quality control was maintained by periodic checking of residues, and assembling sample batches from various depths to test for systematic laboratory effects. Pollen grains and spores were identified using the University of Reading pollen type collection and the following sources of keys and photographs: Moore *et al* (1991); Reille (1992). Plant nomenclature follows the *Flora Europaea* as summarised in Stace (1997). A total of 300 pollen grains (excluding aquatics and spores) was attempted for each sample.

Charcoal from contexts 11 and 22a was collected by hand, and identified using a hand lens. The samples were submitted for radiocarbon dating to the University of Waikato (New Zealand). At the laboratory, visible contaminants were removed and the sample washed in hot 10% HCl, rinsed and treated with hot 1% NaOH, and the NaOH insoluble fraction treated with hot 10% HCl, filtered, rinsed and dried. The radiocarbon ages were calibrated using Reimer *et al* (2004).

Pedo-sedimentary record

Field investigations revealed a complex pedo-sedimentary sequence with visible turves, organic-rich horizons and charcoal-rich layers. These units were suggestive of a heavily disturbed stratigraphy, with disturbance caused by natural (e.g. bioturbation) and possibly human activity. In the area subject to sampling for environmental archaeological analysis, the stratigraphy comprised organic-rich dark grey sand with some charcoal (2), overlying light grey sand with charcoal (3). These two contexts, respectively, represent the Ah and Eh horizons of a podzol

soil profile. Contexts 11 and 12 were grey sand with dark greyish brown turves (redeposited topsoil). These contexts are highly significant because they provide good evidence for the construction of the barrow monument. Contexts 13 and 14 are broadly similar, composed of redeposited mottled grey, yellow and brown sand. Context 14 is possibly cut by feature 15, which is infilled by context 15a, composed of white sand with dark (organic-rich) banding. Context 16 is cut by feature 15, and is composed of light yellowish-grey sand. The presence of re-precipitated iron within context 18, underlying context 15a, suggests incipient iron pan formation, which may indicate the base of the original soil profile. Underlying context 14 is a highly significant horizon, context 22a (cut 22), composed of redeposited grey sand with abundant charcoal.

Radiocarbon dating

Charcoal from contexts 11 and 22a was submitted for radiocarbon dating (Table 1). The results provide internally consistent dates, with no evidence for geological carbon or biogenic carbonate contamination. Only *Quercus* (oak) wood was available for dating, and slow-growing *Quercus* may provide naturally older and therefore less accurate dating. Nevertheless, the results suggest that both contexts are Bronze Age in date, which is entirely consistent with the archaeological interpretation of the monument.

Pollen-stratigraphic record

Unfortunately, the pollen preservation and concentration in monolith samples <7> and <8> was very poor. Those pollen taxa present in each sample are listed in Table 2.

Table 2 Results of the pollen analysis on monolith samples <7> and <8>

Monolith Number	Depth (cm below top of monolith)	Pollen Taxa (common name)						
7	0–24	<i>Corylus</i> type (hazel)	<i>Tilia</i> (lime)	<i>Ulmus</i> (elm)	<i>Polypodium</i> (polypody fern)	<i>Erica</i> (e.g. cross leaved heath)	<i>Calluna</i> (heather)	<i>Alnus</i> (alder)
7	21–24	<i>Tilia</i> (lime)						
7	24–28	<i>Polypodium</i> (polypody fern)	<i>Alnus</i> (alder)	<i>Poaceae</i> (grass)	<i>Corylus</i> type (hazel)			
7	28–34	<i>Corylus</i> type (hazel)	<i>Betula</i> (birch)	<i>Calluna</i> (heather)				
7	34–39	<i>Tilia</i> (lime)	<i>Corylus</i> type (hazel)					
7	39–44	<i>Corylus</i> type (hazel)	<i>Alnus</i>					
7	44–49	<i>Corylus</i> type (hazel)						
7	49–50	<i>Calluna</i> (heather)	<i>Corylus</i> type (hazel)	<i>Tilia</i> (lime)				
8	0–21	–						
8	24–29	–						
8	29–30	<i>Tilia</i> (lime)						
8	30–34	<i>Corylus</i> type (hazel)						
8	34–39	<i>Plantago</i> sp (plantain)	<i>Corylus</i> type (hazel)					
8	34–41	<i>Corylus</i> type (hazel)						
8	40–41	–						
8	42–45	<i>Corylus</i> type (hazel)	<i>Tilia</i> (lime)					
8	46–58	<i>Tilia</i> (lime)	<i>Corylus</i> type (hazel)	<i>Calluna</i> (heather)				

This was extremely disappointing because it prohibits a precise reconstruction of the local and regional vegetation cover, and does not permit an accurate assessment of the presence of non-local plant taxa. Those pollen taxa preserved suggest the presence of mixed deciduous woodland, comprising lime, elm, birch and hazel. Heathland is indicated by the presence of ling (heather) and other ericaceous taxa. Nearby wetland (e.g. river,

stream or pond) is suggested by the identification of alder pollen. It is possible that the presence of lime and elm may be indicative of non-local plant taxa, but without supporting evidence from a range of shrub and herbaceous taxa, this interpretation remains uncertain. Given the poor pollen preservation, it was deemed unnecessary to carry out the micromorphological and mineralogical analyses.

Conclusions

Owing to the poor pollen preservation and low concentrations, the main aim of the environmental archaeological investigation could not be achieved. However, the pedo-sedimentary record supports the archaeological interpretation for a series of redeposited sand and organic-rich horizons, sometimes containing turves, overlying cut features. The turves provide evidence for the constructional fill of the barrow monument. The results of the radiocarbon dating indicate that the mound is Bronze Age in date.

DISCUSSION

The sequence of construction of the mound is complex and unusual and is therefore hard to interpret with any degree of certainty. Nor is it clear that the various phases are contemporary or nearly so. Indeed it is perfectly possible that the upper levels of the mound are the result of relatively recent activity – perhaps repairing antiquarian damage, though there was no particular evidence that this was the case. On the other hand the fact that most of the levels from the base upwards contained ash and charcoal in varying amounts perhaps indicates that the deposits are associated with one another and therefore are all probably of Bronze Age date. If so, the primary mound must have been small

and may have been surrounded by an interrupted ditch. Over time the mound was further expanded with further associated ditches and the insertion of visually striking features such as the band/ditch of bright yellow sand. It is also possible that, given the odd concave or ‘dished’ nature of some of the upper deposits, they represent repairs to the barrow that took place in the Bronze Age – perhaps after a part of the mound had slumped leaving a depression. Alternatively, these layers may be the result of a highly erratic construction process though, if this is the case, it must have been structured to some extent, given the layers of turves in some of the deposits. Much further work, and on a larger scale, would be required to clarify the actual sequence of events at this unusual barrow.

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