BARROWS AT THE CORE OF BRONZE AGE COMMUNITIES

SUPPLEMENTARY MATERIAL

STUART NEEDHAM & GEORGE ANELAY

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Project collaborators: Historic England, University of Reading, University of Winchester and University of Sheffield

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Appendices 8.2, 9.1, 11.1, 12.3, 13.7, 16.1, 20.2, 20.5, 20.6 & 20.7 are only available online, see: http://www.peopleoftheheath.com/publications

Appendix 1.1

Detailed observations on damage to monuments and recommendations on the future management of the archaeology of Petersfield Heath

George Anelay and Stuart Needham

This report will focus primarily on damage to the monuments that was recorded within the excavated trenches, however, ground-level observations suggest that damage of a similar nature is widespread in the barrows. It needs to be borne in mind that the dimensions of the excavated trenches varied considerably, from the extensive investigation of Barrow 19 to the much more limited intrusion into Barrow 9, and much evidence for damage to those sites will not have been seen. The damage that was noted can be broken into 10 categories (summarised in Table 1) and will be described under five headings.

Site	Tree roots	Animal burrowing	Antiquarian investigation	Man-made pits	Land drains	Sewer trench	Fence posts	Cycle track	Benches	Golf green
Barrow 1	Y	Y								
Barrow 4	Y	Y	Y							
Barrow 8	Y									
Barrow 9	Y			Y					Y	
Barrow 10	Y	Y	Y?	Y						
Barrow 11	Y	Y		Y						
Barrow 12						Y				
Barrow 13	Y		Y				Y			
Barrow 14	Y	Y		Y	Y			Y		
Site 16	Y				Y					
Site 17		Y			Y					
Barrow 18	Y	Y			Y				Y	
Barrow 19		Y			Y					
Site 21	Y				Y					
Barrow 22										
Barrow 23	Y		Y?							
Site 23						Y				Y
Barrow 24					Y					

Table 1 Recorded Damage listed by monument and type

Figure 1 West section of Barrow 11 illustrating tree-root damage. The mixing of the original turf and sand layering of the mound to a light grey homogenous matrix can be seen clearly in the main upper features. Narrower sinuous continuations have penetrated much deeper, even into the buried soil profile

Figure 2 South section of Barrow 8 showing extensive tree-root damage into the shallow turf-and-sand mound from a recently felled tree

Figure 3 South-west section of Barrow 18 showing the comprehensive disruption of the barrow mound structure and any underlying deposits caused by a tree throw; the underlying geology has been lifted high out of its original plane

Categories of damage

Tree-root damage

With the exception of Barrows 12, 19, 22 and 24 and Sites 17 and 23, tree-root damage was recorded in all the monuments investigated. The depth and frequency of disturbances obviously varied according to the species, number and maturity of individual trees. The general pattern is of a zone of mixed deposits in the upper levels of any given intrusion often with much deeper penetration by individual roots (Fig 1). Where a tree has been uprooted (tree throws), extensive damage was seen, often with the complete destruction or dislocation of any stratigraphy within the resulting feature (Fig 3). Monuments of a shallow nature are particularly vulnerable to tree-root damage (Figs 2 & 3), but deeply buried deposits under even the highest of the mounds were not immune (Fig 1). It is probable that much of the tree damage has occurred in comparatively recent times as a result both of 18th or 19th century conifer planting on the mounds and then, in the latter half of the 20th century (Fig 2), scrub encroachment between the golf fairways. The monuments least affected at present lay within the areas that were previously fairways, but even these are at risk in the future if the regeneration of scrub and wood of the later 20th century is allowed to continue.

Animal burrowing

Almost half the excavated monuments had evidence for historic animal burrowing. Mostly it was the work of smaller animals, probably rabbits, to judge from the size of the burrows, but occasionally larger mammals, such as foxes and badgers, were responsible. The latter was particularly the case for Barrow 10, which was so riddled with such intrusions that large parts of this fairly sizable mound were thoroughly reworked (Fig 4). Even the smaller animals can have a significant effect, if either numbers or longevity of occupation are sufficient. This is well illustrated by Barrow 19, where a network of tunnels covered much of the northern half of the monument (Fig 5). Indeed, given this density, it is remarkable that Urn 2 remained untouched and its pit fill only a little disturbed by the burrows. Similar tunnels were apparent under the western mound within enclosure Barrow 4 (text Fig 5.11).

Land drains and utility trenches

At some stage in the late 19th or early 20th centuries, there appears to have been a systematic attempt to improve drainage across the Heath. A grid of ceramic land drains was laid across the southern part as witnessed cutting through Barrows 14, 18 and 19 and Sites 16, 17 and 21 (Fig 6). Since they were dug down well into the bedrock, any archaeological deposits in their path will have

Figure 4 Evidence of large-animal burrowing in Barrow 10 seen at an intermediate stage of excavating the mound. The burrows penetrated to the very base of the mound and left few areas of the mound's original structure undisturbed

Figure 5 Drone shot showing the complex network of small-animal burrowing in Barrow 19. There is also a land drain passing from left to right in the image on a slight diagonal. The small pit containing Urn 2 can be seen as an isolated area of undisturbed grey-buff sand towards the centre of the photograph, just below the land drain, and completely surrounded by burrows. Image courtesy of Dom Escott

Figure 6 A ceramic land drain (just to the right of the upright scale) cutting through the ditch of Barrow 14

Figure 7 The sewer trench across Barrow 12, partially re-excavated as part of this project, looking NE. The sewer trench takes up the full width of the re-excavation seen here. The surviving ditches of the monument and a larger feature to the left can be seen in the section where they have been truncated

been destroyed. In the case of Barrow 19, this narrowly avoided the pit containing Urn 2 (Fig 5). Similar drainage was found to have exploited the ditches to either side of Barrow 24 (text Fig 5.49b), and this was probably, to judge from aerial images, part of a similarly extensive network in the northern part of the Heath to improve conditions on the golf course in its early days.

The laying of a sewer main across the Heath in 1970 (text Fig 5.14) without any archaeological supervision led to a large slice being taken out of the middle of enclosure Barrow 12, despite it already being a scheduled ancient monument at the time (Fig 7). A smaller foul drain running to the old Golf Club House (now the Nursery) was found cutting through the Mesolithic site in Trench 23D (text Fig 4.7).

Antiquarian investigations and other man-made pits

Excavation has confirmed that two of the monuments, Barrows 4 and 13, received antiquarian attentions and a further two, Barrows 10 and 23, contain trenches that may have a similar origin. At Barrow 4, the intrusions were dug into the centre of the two internal mounds, the westerly one evidently a modest linear trench with a deeper sump towards the middle (text Fig 5.9), the other a fairly small pit (text Fig 5.10a). One of these probably accounts for the sketchy report of an excavation into a barrow on the Heath in 1925 (Chapter 5). By contrast, the pit dug into Barrow 13 was large and initially dug with a cruciform plan; it resulted after weathering in a

Figure 8 The large antiquarian trench into Barrow 13, cut well down into the underlying natural sands and clays, looking W. There was probably a secondary modification across the top of the partially filled crater later

Figure 9 Pit with broken bottles cut into Barrow 9

very large crater some of which had filled very slowly (Fig 8). To these must of course now be added the trenches excavated as part of this project which likewise cause total destruction; the key difference however is that in the case of the earlier interventions the fruits of archaeological investigation have not been preserved by written record.

Five of the barrows, 9, 10, 11, 12 & 14, were found to contain one or more man-made pits probably not related to antiquarian activity. It is not always clear why they were excavated, although most were back-filled with significant quantities of rubbish, mainly in the form of broken bottles (Fig 9), which suggests the disposal of picnic or party debris. Temporary military encampments or stays associated with fairs on the Heath could account for some. However, despite considerable documentary evidence for use of the Heath from time to time by the military (Chapter 3), there is no specific archaeological evidence for that occupation having caused damage to the barrows. In the case of Barrow 10, a pit contained a sizeable chunk of modern fibreboard, while that cutting through the western bank of Barrow 12 [1] contained blocks of Upper Greensand and modern sherds.

Figure 10 Large concrete block set into the edge of Barrow 9, probably the foundation for a bench, looking E

Recreational use and enclosure-related activity

The Heath's importance as a recreational area is reflected in the last category of damage to the monuments. Two of the trenches contained pits (probable post holes) or concrete pads that were associated with benches positioned around the Heath, those around Barrow 18 sited to give views of the Pond (text Fig 6.66), while that on the edge of Barrow 9 would have lent itself to watching cricket matches (Fig 10). Taking into account surviving surface evidence across the Heath, benches were generally sited beside or only marginally inside the edges of barrows. While the crater into Barrow 13 described above was still a sizable depression, its top was apparently later modified, perhaps to serve as a bandstand (Chapter 6).

The golf course has obviously had an impact, although thankfully it largely avoided the monuments themselves. Indeed, in the case of Barrow 22 and Site 17, the effect of golf has been advantageous, since they were partially buried by either sand or soil, although this had the result of modifying their surface contours. The unusually steep sides of Barrow 2 are suspected to have resulted from some trimming back early in the golfing era and the 1907 practice green terraced into the ridge at Site 23 may have cut into the edge of Barrow 23. A less official recreational use was noted recently after the clearance of scrub from Barrow 14; soil had been dug out and mounded to make a track for bicycles, leading to some damage to the monument's bank and ditch fills on the western side.

The remaining category of damage to mention comprises the holes for fence posts found running along the line of the ditch presumed to encircle Barrow 13. These are on the line of one of the boundaries laid across the Heath after the 1856/7 enclosure award (Chapter 3) and which can be seen on early Ordnance Survey (OS) maps. Road building associated with enclosure probably destroyed some barrows and clipped surviving Barrows 1 and 10 on their north and east sides respectively (Chapter 2). Barrow 10 had almost certainly been clipped on its opposite side by an earlier unmade road, a predecessor of Heath Road East (text Fig 6.40).

Charting the archaeological resource

The first key step in protecting the archaeological monuments and sites on Petersfield Heath is to recognise their existence and extent. The sites now known are summarised in Table 2 (see also text Table 2.2). The current project has contributed a great deal to this objective through the partial excavation of 18 sites and the ground-level survey of all others surviving as earthworks. Of the excavated sites 14 are Bronze Age barrows, one is a Mesolithic occupation site (Site 23), one a natural rise enhanced in post-medieval times and containing a significant flintwork assemblage (Site 21), and the remaining two are post-medieval ring-ditches interpreted as military field-kitchens (Sites 16 & 17). Two of the excavated barrows were not known prior to the project (Barrows 22 & 23) and a third was a site of uncertain type (Barrow 24).

All of the 14 unexcavated sites known to us are barrows – probably mound barrows. Four are only known from Philip Crocker's mapping and are thought to be totally destroyed, having lain beyond the present limits of the Heath (text Fig 2.3), two are largely destroyed, but minor remnants may survive and eight

Site-type	Site no	Excavated	Scheduled	Earthworks visible at ground level	Ditch present
Mound barrows	**1**	**Y**	**Y**	**Y**	**Y**
	4b[2]	**Y**	**Y**	**Y**	**N**
	8	**Y**	**Y**	**Y**	**N**
	9	**Y**	**Y**	**Y**	**N**
	10	**Y**	**Y**	**Y**	**N**
	11	**Y**	**Y**	**Y**	**N**
	13	**Y**	**Y**	**Y**	**Y**
	18	**Y**	**Y**	**Y**	**N**
	22	**Y**	**N**	**Y**	**?**
	Bw 23[2]	**Y**	**N**	**Y**	**?**
	2	N	Y	Y	?
	3	N	Y	Y	Y?
	5	N	Y	Y	Y?
	6	N	Y	Y	?
	7	N	Y	Y	?
	15	N	Y	Y	?
	20	N	Y	Y	?
	25	N	N	possible remnant	?
	26	N	N	possible remnant	?
	27	N	N	totally destroyed	?
	28	N	N	totally destroyed	?
	29	N	N	totally destroyed	?
	30	N	N	totally destroyed	?
	31	N	N	Y	?
Enclosure barrows	**4a[2]**	**Y**	**Y**	**Y**	**Y**
	12	**Y**	**Y**	**N**	**Y**
	14	**Y**	**Y**	**Y**	**Y**
	19	**Y**	**Y**	**Y**	**Y**
	24	**Y**	**N**	**Y (very slight)**	**Y**
Curved ditch	**32**	**Y**	**N**	**N?**	**Y**
Other flintwork sites[1]	**21**	**Y**	**Y**	**Y**	**N**
	Site 23[2]	**Y**	**N**	**N**	**N**
Military field-kitchens	**16**	**Y**	**Y**	**N**	**Y**
	17	**Y**	**Y**	**N**	**Y**

Table 2 Summary of all sites excavated and all barrows known to have existed on Petersfield Heath. Excavated sites are emboldened.
Notes: [1] Many of the excavated barrows also have flintwork assemblages associated, sometimes extending away from the barrow. [2] Sites 4 and 23 are each listed under two categories, hence there are 34 entries for 32 numbered sites.

are extant earthworks one of them only very recently discovered (Barrow 31).

Excavation trenches consistently went well beyond the foot of visible earthworks in order to confirm presence/absence of any hidden encircling features. However, absence in the excavated trench is no guarantee that there are no other closely related archaeological features elsewhere in its penumbra. Likewise, the absence of surface evidence for ditches around the unexcavated sites should not be taken as conclusive; excavated Barrow 13 proved to have a ditch even though there was no real sign of it at ground level. A good safety margin of some metres around each site would be a sensible precaution, as is customary in delimiting the scheduled areas for barrows.

While the extent of the barrows can be fairly closely defined, especially where there is excavated evidence, that of flintwork sites lacking earthworks cannot. Mesolithic flintwork sites regarded as *in situ* are covered in Chapter 4. Most such sites have only been discovered in the course of excavating barrows and there is clear evidence that their extent was usually much wider – most notably in the presence of comparable flintwork in the make-up of mounds comprising turves and sand probably cut from adjacent areas. The original extent of such sites could thus be considerably larger than documented through the excavations, which were directed primarily at barrows. Site 23 was, however, specifically targeted as a previously recorded flintwork site. Even here our limited trenches leave great uncertainty over the extent of this intensive occupation site (Chapters 4 & 12). Contemporary flintwork concentrations are known at a number of other locations along the northern ridge and there remains a big question as to how interconnected or otherwise they are. Mention should also be made

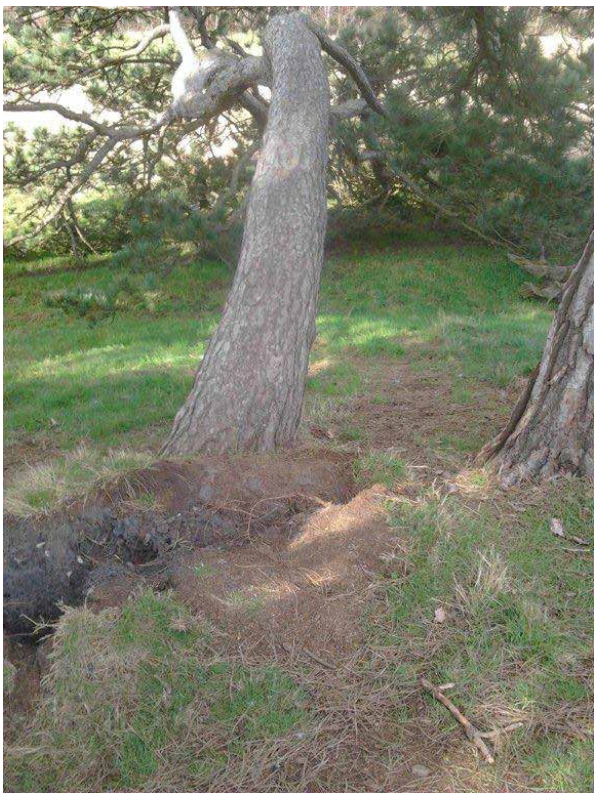


Figure 11 Tree throw on top of Barrow 5 in 2013; a much larger one had occurred on the same barrow a few years earlier, its crescentic pit still visible

of the surface-collected assemblages from trackways, especially in the northern part of the Heath (text Fig 4.1).

The question of hidden sites is not confined to occupation evidence. Even Bronze Age barrow complexes are known to contain features within their midst that are not discernible at ground surface. These can be contemporary burials or other contexts, or features of preceding or succeeding periods. Of particular note in this regard at Petersfield Heath are the indications of a buried curving ditch (Site 32) revealed by geophysics to the west of Barrow 24 and north of Barrow 11 (text Fig 6.43). This might be another prehistoric site.

Recommendations on future management

Following identification, the next step is to ensure that active measures are put in place to prevent further damage to the monuments and sites as far as is possible within the constraints of managing the Heath as a public resource. Some sites on the Heath are protected under Scheduled Monument legislation (although note the partial destruction of Barrow 12 as late as 1970; Chapter 5) and the archaeological team in the county planning department will continue to monitor planning applications that might impinge on their environs. However, the sites that are not scheduled are only so by historical accident, not because they are of lesser significance. We would therefore recommend that Petersfield Town Council attaches the same importance to *all* recognised archaeological sites. Indeed, the Council may wish to consider approaching Historic England with a view to scheduling the additional sites known. The headings below relate broadly to those listed above.

Damage from vegetation

Clearly the most effective way to prevent further tree-root damage to the monuments and sites is to ensure that no trees are allowed to grow on them. However, in many cases there are existing mature examples that contribute to the wildlife and aesthetic qualities of the Heath. It is therefore recommended that the growth of new trees is prevented by regular clearance, including the removal of non-mature trees and scrub (much has already been achieved on this front in recent years), while the existing mature trees are allowed to die off naturally and not be replaced. Regular advice should be sought from a qualified tree surgeon concerning the condition and stability of existing trees in order to forestall, if at all possible, any accidental falls, since the fall of mature trees causes the greatest damage (Fig 11).

Damage from animals

It can be seen from the evidence of Barrows 10 and 19 in particular that animal burrowing is potentially extremely destructive of archaeological deposits. It is obviously impossible to completely control the behaviour of wild animals, but the clearance of ground cover from the monuments and the increased footfall of pedestrians and dogs nearby will discourage burrowing animals. It is therefore recommended that the monuments are regularly cleared of vegetation and efforts are made to include them within the open spaces on the Heath.

Digging for utilities provision and other development

Any new ground-intrusive development within the bounds of the Heath of any kind (*e.g.* drainage, service trench, public amenity needs) should only be considered after archaeological advice and appropriate action. Aside from ensuring the avoidance of currently identified sites (any impingement on scheduled sites would require Scheduled Monument Consent), provision should be made for the recognition and necessary investigation of as-yet unknown sites. Archaeological monitoring of all ground breaking should be mandatory regardless of existing knowledge with respect to the particular location.

Excavation for archaeological, ecological or other research purposes

It goes without saying that no excavations for research or ecological maintenance purposes should be undertaken without it being clear that the appropriate archaeological expertise and support is involved. The Scheduled Monuments on the Heath obviously have strong protection under the control exercised by Historic England through their Scheduled Monument Consent procedure.

Inadvertent recreational disturbance

While the Heath is no longer a golf course, it is a space used increasingly and intensively by the public. Over-use of limited space can lead to erosion, especially in a sandy environment like this. Major track ways should be kept away from the edges of sites – for example, the broad track passing enclosure Barrow 4 currently impinges on its bank and would be better shifted a little to the west. Activities that cause accelerated erosion, such as BMX tracks are probably not permitted under the bye-laws, but steps should be taken quickly if there is any recurrence of the one impinging on Barrow 14 shortly after its clearance in 2015. Even events such as the successful *Secrets of the Heath* can cause disturbance through localised digging to secure tents etc. and appropriate advice should be given to participants, especially those using vehicles and substantial marquees.

One key instrument in protecting the archaeological remains of the Heath is through a well-informed public and, hopefully, the outputs of the *People of the Heath* campaign in their various guises will contribute to that. In particular, the sign-boarded trail that is planned to be installed across the Heath – identifying and describing some of the major archaeological discoveries – should go some way towards achieving this goal. In terms of its important archaeological resource, the ultimate aim in managing the Heath should be to work towards all monuments being grass-covered and lying within open space, visible and physically accessible to all visitors to the Heath, but at the same time free from established footpaths, benches or other intrusive structures.

Appendix 1.2

Synopsis of the People of the Heath project (2014)

Stuart Needham and George Anelay

People of the Heath: Understanding and Conserving Petersfield's Prehistoric Barrows

This four-year project is focused on a remarkable but little-known prehistoric monument complex on the edge of Petersfield Town dating to the Early Bronze Age, between 2200 and 1500 BC. Although designated as Scheduled Ancient Monuments, the large group of barrows (burial and ritual monuments) spread across Petersfield Heath has seen no active research since it was mapped in the 1930s and there is no record at all of any past excavations. Yet it is one of the most impressive and diverse barrow cemeteries to have survived in south-east England, boasting at least 21 monuments representing five or six different types. An unknown number of barrows are no longer discernible, having been lost to development, erosion and scrub growth. The size and diversity of the Heath complex invite comparison with better known barrow cemeteries in Wessex, for example, those well preserved around Stonehenge. This begs a host of questions about why the locality became important in this period and the extent to which it was influenced by developments in other regions.

Bronze Age barrows are well known to be repositories of the dead and, because burials can occur almost anywhere within and around such monuments, it is possible that we will encounter some during the project. However, finding burials is not a primary objective. The project is more generally about the *People of the Heath* – those who designed, constructed and venerated these lasting monuments; it is about how the barrows were built, in what sequence, and what they meant to the community; furthermore, it is about where the people lived, what food they grew, how they utilised their environment and what impact they had on it. In addition, though, this is a project for the benefit of the *modern People of the Heath* – the present-day Petersfield community that nurtures and enjoys this special and focal landscape.

Research goals

The main research goals of the project are as follows. Under each heading one or more questions are posed to serve as examples – there is no guarantee that we will be able to draw conclusions on all of them.

Cemetery evolution

To seek good dating evidence to build up a picture of how the barrow cemetery evolved over its duration, probably lasting some centuries; can we identify an early core from which the complex spread? Can anything be deduced about the frequency of barrow construction and whether it was evenly spread through time?

Monument type
To gain insight into the particular significance of the different forms of monument; do they relate to chronology, function or the status of the interred?

Environmental history
To chart the evolution of the environment of the Heath in terms of vegetation, soil character and hydrology; when was the land cleared of its presumed original post-glacial woodland? Was the soil more fertile in the Neolithic and Bronze Age? Was the marshy area that was converted into the pond in the eighteenth century already wet ground in prehistory? Can any relationship be observed between cemetery use and environmental change?

Constructional resources
To discover what building materials were used for the monuments; did they come from the immediate spot or from further away? Why were they chosen? Are there implications for the organisation of the labour or where people were living?

Food economy
To seek palaeoenvironmental remains from well stratified deposits that indicate the crops grown and the extent of grassland, both in the immediate environs of the Heath and further afield; were the crops chosen to suit the environment? Is there any evidence for the types of livestock kept or for grazing pressure on the environment?

Choice of location, the 'catchment' of the complex and its external relations
To research the similarities and differences between this complex and contemporary ones both within the region and beyond; factors such as size, diversity, topographic and environmental setting and spacing between barrow sites will be relevant; why did the Heath become such a special place for Early Bronze Age communities? How big a region was it serving? Is there a particular affinity with complexes in Wessex or anywhere else? If so, what was the significance of that connection?

In addition to the barrows, scatters of prehistoric worked flints are also known from the locality. While some may be contemporary with the barrows, others represent much earlier times. This is the case, for example, for the flintwork site found on the north side of the Heath during golf-green construction in 1900 which is believed to be of Mesolithic date. It too will be investigated as part of the project to see what survives.

In later history, the Heath has served many purposes, including peat digging, grazing and, more latterly, a wide range of leisure pursuits, including golfing and tennis. Since medieval times the Taro Fair has been held on the Heath, making it a focal point for the community. Today it is a much used and valued local asset, with notable activities being angling, boating, cricket, child-recreation and dog-walking. These later types of use are also relevant to our project, both in their own right and because they may have affected what survives from earlier times.

Project management
The project is hosted by Petersfield Museum and overseen by an Executive Committee of five members – Two Trustees of the Museum, the Museum's Curator and the two Archaeologists appointed to undertake the field campaign and associated research. The Executive Committee is in regular consultation with a range of interested parties who are represented on an Advisory Committee (see Project Structure Diagram). It is a four-year project (April 2014 – March 2018) supported by the Heritage Lottery Fund (£100,000) and the South Downs National Park Authority (Sustainable Community's Fund, £20,000). In addition a grant of £500 has been awarded by East Hampshire District Council (Approved-By-You Fund) towards on-site information.

The programme is full and varied and a number of components offer opportunities for interested members of the public to participate.

Getting involved – activities & research

Clearance of vegetation and habitat management
Many of the monuments on the Heath have become overgrown during the latter half of the twentieth century and it is an objective to clear these of all but mature trees and then maintain them under grass to enhance viewing and minimise further root damage. Clearance programmes are managed by *Petersfield Town Council* (the owners of the Heath, which is managed by a Trust) in conjunction with the *Friends of Petersfield Heath* who will welcome any offers of help. Most clearance is undertaken during the dormant season, from autumn onwards.

Geophysical surveys
These will take place twice a year under the guidance of experienced surveyors, Neville and Mary Haskins, using state-of-the-art instruments for resistivity surveying. Particular areas of the Heath will be targeted to clarify the nature of known sites and seek hidden, as yet unknown features. Volunteers are welcome to sign up to participate in these surveys.

Topographic survey
A detailed topographic map of the whole of the Heath will be compiled by a professional surveyor, Charles Fanshawe, using the latest surveying techniques. While the main survey does not require voluntary assistance, Charles will in the future be giving two demonstrations of the techniques involved.

Archaeological excavations

A number of the known monuments will be sampled by excavation – most of these are Scheduled Ancient Monuments and require permission from English Heritage. In addition, the project will investigate previously unknown or ill-defined sites on the Heath, as well as a known flintwork site. There will be six three-week seasons of excavation, headed by George Anelay of West Sussex Archaeology, the first in September 2014, two in each of 2015 & 2016, and the last in the spring of 2017. Excavations will be designed to find out as much as possible about the structure, dating and contemporary environment of each site with as little destruction as possible. Sites will be restored to their pre-excavation state. Volunteers, including complete novices, are encouraged to sign up for excavations, although places will be limited to 16 people on any one day.

Post-excavation analysis

Most of the post-excavation work will need to be undertaken by trained archaeologists, including specialists in various fields (*e.g.* pottery of a particular period). Opportunities for volunteer involvement will depend on what is found during the project. Any necessary conservation of artefacts will be undertaken by the Conservation Service of the Hampshire Museums Service.

Regional survey

In order to get the best understanding of this prehistoric complex, it is necessary to review comparable and complementary evidence from the period in a wider region. The review will take stock of all evidence for the Neolithic and Bronze Age periods in the Rother Valley and surrounding landscapes. This research will largely be an academic exercise undertaken by Stuart Needham in collaboration with the archaeological services of the relevant planning authorities (Hampshire, Chichester District, West Sussex, Surrey & South Downs National Park Authority); however, there may be some opportunities for assistance from those with a strong interest.

Documentary research

Although the prehistoric complex is the main focus of our research, the project also aims to collate as much information as possible about the later history of the Heath – how it was used at different times and how the landscape evolved. To complement written histories, a wide range of documentary sources are being consulted, including early maps, legal documents, photographs (ground-level and aerial), paintings and drawings, postcards, newspaper articles, town archives etc. The recollections of local people will also play a part. The end result will be a rich dossier of information available for all to consult which will also help us to determine the extent to which the prehistoric complex has been altered by later activities. If you think you may have information which is not widely known, please bring it to the attention of the Documentary Research Group, led by Robert Banbury.

Schools participation

Special sessions are being organised for school parties (by prior booking) by Amanda Harwood, the education and outreach officer at Petersfield Museum. There will be at least six sessions per excavation.

Palaeoenvironmental research

This is a concurrent programme to be funded separately from the *People of the Heath* project, but its aims are intimately linked. It will be managed by Nick Branch, a leading expert in palaeoenvironmental studies at the Department of Archaeology, Reading University. Samples taken from both the excavations on the Heath and selected other spots in the local landscape will be analysed for a range of environmental remains (*e.g.* pollen, charred plant fragments, snails) from ancient deposits. Meanwhile, the character of the soils will be investigated by Matt Canti of English Heritage. The combined results should tell us much about past vegetation and its evolution, including aspects of how prehistoric people used the Heath and its environs (settlement pattern, grazing, arable farming).

Documenting the project

In addition to systematic recording of activities and those who participate, there will be both photographic and artistic renderings of the project in progress. We welcome artists of all kinds to observe and gain inspiration from project activities. Please contact Kathrin Pieren if you need any information.

Getting informed – modes of dissemination

Bulletins and press releases

After each significant phase of the project a bulletin will be issued to the press and posted on the Museum's website.

Excavation tours

Each working day of an excavation season (Tuesday to Saturday, three weeks duration) there will be a brief tour of the excavations by George Anelay at 4.30pm. It is not necessary to book, but please consult the Museum website or the Heath notice-boards for the current rendezvous.

Site tours at other times

In each year of the project until April 2017 there will be six tours of the site complex outside of the excavation seasons, guided by either Stuart Needham or George Anelay. [Be aware that there may be similar tours organised by other bodies.]

Regional Museum visits

In collaboration with the relevant museum curators, Stuart Needham will lead behind-the-scenes museum visits – one per annum for the first three years. The museums concerned will have significant later prehistoric material from the region. Please watch the Museum website for notice of dates; it will be necessary to book places which will be limited.

Regional site visits

There will be guided tours of a selection of other archaeological landscapes with significant later prehistoric sites – two per annum, led by either Stuart Needham or George Anelay. Please watch the Museum website for notice of dates; it will be necessary to book places.

Dissemination & correspondence

All information issued by the project will appear on the Museum's website. In addition, museum staff – Kathrin Pieren & Amanda Harwood – will field any enquiries about the project using both conventional and electronic (email, facebook, twitter) media.

Lectures & conference

The ongoing progress of the project will be communicated to both general audiences and specialist academic ones at regular intervals. There will be a minimum of six lectures over three years (up to April 2017), at least one per annum being to a local venue in Petersfield or the surrounding areas. Some of these may require booking; please consult the Museum website. A multi-speaker conference is planned for the conclusion of the project in spring 2018; it will be held in Petersfield.

Notice-boards

A general poster on the project will appear on notice-boards on Petersfield Heath; this will direct the reader to the Museum's website and notice-board, both of which will be kept up-to-date with the latest information.

Exhibitions

At the end of the project Petersfield Museum will put on an exhibition presenting the overall results of the project. Any displays in the interim will depend on results at the time. [Note that there will be a relevant exhibition on the rich history of the Heath in autumn 2014 as part of Petersfield Museum's on-going exhibitions programme].

Project legacy

Improved site management

One of our main goals is to learn more about the character and condition of the archaeological remains on the Heath in order to feed back better advice on how best to manage them. In this way we hope to improve both the visitor experience and long-term conservation of this fine archaeological landscape.

Enhanced knowledge

We hope to gather much new information and, by considering other contemporary sites in the region, to translate this into an improved understanding of what these monuments meant to their builders and users. Moreover, we hope to learn something of these currently shadowy prehistoric people – where they lived and how they conducted their lives.

Enhanced public appreciation

The project is also about increasing awareness of the archaeological significance of Petersfield Heath; we want the complex to be lodged securely in the public eye.

Archaeological trail

At the conclusion of the project a sign-boarded trail will guide people around the barrow cemetery, pointing out some of the major features.

Ongoing programme of site tours

The site tours started during the project will be continued thereafter (from May 2017 onwards) using trained-up volunteer guides. Please leave your details with the Museum if you are interested in becoming a volunteer guide.

Guide leaflet

Towards the end of the programme, a leaflet will be written summarising the main features and interpretations of the Heath complex. This will be distributed via the Museum, Town Council, local visitor accommodation etc.

Schools information pack

A school information pack will be produced, suitable for consumption by youngsters (via their teachers).

Publication

The full results of the *People of the Heath* project will be drawn together in an academically rigorous, but readable text (printed book & on-line) authored by the project archaeologists and all involved specialists.

Accessible archives

Various archives will be generated over the course of the project – primary excavation records, the recovered finds assemblage, detailed analyses of findings; a compilation of documentary records, a record of the project itself (photographic, participants etc). These will all be available for on-going consultation at appropriate public institutions – notably Petersfield Museum and the Hampshire Museums Service.

Appendix 1.3

List of consulted maps showing Petersfield Heath

Robert Banbury and George Anelay

1676	Estate map; surveyor Lewis Andrewes (Magdalen College MP/1/19)
c. 1753	Undated map of pond showing two islands and boundary stones (Somerset Heritage Centre DD/HY/17/1). NB this is one of three almost identical copies held there
1791	Thomas Milne's map of Hampshire; (http://www.geog.port.ac.uk/webmap/hantsmap/hantsmap/milne1/mln74.htm)
1793	Estate map – Manor and Parish of Buriton, incorporating the manors of Weston, West Mapledurham and Durford, and the Borough and Manor of Petersfield; surveyor James Wyburd (Hampshire Record Office 56M75/E/P1).
1806-8	Philip Crocker's original survey plan for OS 1st edition 1-inch map (British Library OSD 82 pt.2)
1807	Philip Crocker's map of the barrow cemetery sent to William Cunnington, 15th May 1807 (Wiltshire Heritage Museum, Devizes MS2597.4.45)
1810	Ordnance Survey Old Series 1-inch map, 1st edition; (http://www.geog.port.ac.uk/webmap/hantsmap/hantsmap/ordnce6/oss44.htm)
1821	Estate map – East & West Mapledurham, Weston, Durford, etc.; surveyor H. Walter. (Hampshire Record Office 30M69/3)
1826	C and J Greenwood's one-inch map of Hampshire; (http://www.geog.port.ac.uk/webmap/hantsmap/hantsmap/grnwood2/grw94.htm)
1840-2	Tithe maps for Buriton (1840), Sheet (1840) and Petersfield (1842) (Hampshire Record Office 21M65/F7/41/2; 21M65/F7/203/2; 21M65/F7/187/2)
1856-7	Enclosure maps for Buriton (1856) and Petersfield (1857) (Hampshire Record Office Q23/2/19; Q23/2/109), and for Sheet (1856) (Petersfield Museum PM 2002/49.1)
1863	Nursted Estate sale map (Hampshire Record Office COPY/670/1)
1869	Ordnance Survey 1:2500 map, 1st edition
1873	Estate map for Buriton, Petersfield and Sheet, Hampshire (Magdalen College MP/3/12)
1898	Ordnance Survey 1:2500 map, 2nd edition
1909	Ordnance Survey 1:2500 map, 3rd edition
1911	The Petersfield Estates [Rt. Hon. Lord Hylton] sale catalogue & maps
1924	Stuart Piggott's notebook plan of Petersfield Heath (Institute of Archaeology, Oxford University)
1932	Ordnance Survey 1:2500 map, 4th edition
1939	Stuart Piggott's sheet plan (Institute of Archaeology, Oxford University; published in Grinsell, L. 1939, 223 fig.6)
1968	Ordnance Survey 1:2500 map; 5th edition
1971	Heath Pond depth survey by Department of Geography, Portsmouth Polytechnic for Petersfield Urban District Council (Petersfield Town Council archive)
1976	Nursted Estate Sale map (Hampshire Record Office 13M89/3)
1992	Heath bunded silt lagoons – contract drawing (Petersfield Urban District Council)

Appendix 5.1

Calculations for the area of land stripped to make the western tump in Barrow 4

Stuart Needham

Mound volume based on external measurements = *c.* 25m^3; this may be an underestimate due to weathering into the surrounding hollow. Take turf stack core to be 15m^3 (see examples below) and sand capping therefore to be 10m^3.

- If turves averaged 0.1m thick, would need to strip 150m^2
- If turves averaged 0.15m thick, would need to strip 100m^2
- If turves averaged 0.2m thick, would need to strip 75m^2

Assuming 100m^2 was stripped, examples of the average radius from the centre of the barrow are:

- An outer radius of 7.5m gives 176m^2 less the area on which mound built (assume radius 5.5m) 95m^2 ; 176 – 95 = 81m^2
- An outer radius of 8m gives 200m^2, less area on which mound built (assume radius 5.5m) 95m^2 ; 200 – 95 = 105m^2
- An outer radius of 7.5m gives 176m^2, less area on which mound built (assume radius 5m) 78m^2 ; 176 – 78 = 98m^2

The last two options conform broadly to the area needed for 0.15m thick turves. Note that the assumed mound radius given is for the full anticipated mound (5.5m) not just that of the turf core (a maximum of 4m).

In order to supply 10m^3 of loose sand for the capping, a 100m^2 area stripped would need to be lowered a further 0.1m. The resulting encircling depression would therefore average 0.25m in depth. If a larger area was stripped, say 125m^2, then the average depth would be 0.2m.

Examples of turf mound volume and height based on initial radii of 3.5m and 4m

a) Turves 0.1m thick, initial radius 4m; gives pre-compaction height of 0.5m

Turf layer (from base upwards)	Radius	Area	Volume if 0.1m thick
1	4	50	5.0
2	3.5	38	3.8
3	3	28	2.8
4	2.5	20	2.0
5	2	12	1.2
total		$148m^2$	$14.8m^3$
			rest made of sand capping

b) Turves 0.15m thick, initial radius 3.5m; gives pre-compaction height of 0.75m

Turf layer (from base upwards)	Radius	Area	Volume if 0.15m thick
1	3.5	38	5.7
2	3	28	4.2
3	2.5	20	3.0
4	2	12	1.8
5	1.5	7	1.05
total		$105m^2$	$15.75m^3$
			rest made of sand capping

c) Turves 0.1m thick, initial radius 3.5m; gives pre-compaction height of 0.5m

Turf layer (from base upwards)	Radius	Area	Volume if 0.1m thick
1	3.5	38	3.8
2	3	28	2.8
3	2.5	20	2.0
4	2	12	1.2
5	1.5	7	7
total		$105m^2$	$10.5m^3$
			rest made of sand capping

Examples a) and b) give volumes roughly corresponding to turf component of the mound.

Appendix 7.1

Modern mounds and 'enclosures' on the Heath and the islands in the Pond

Stuart Needham

Several sites on the Heath are deceptively similar to mound or enclosure barrows. Some, but not all, are associated with the golf course; their locations are shown in Figure 1.

A rectangular mound, 24m by 14m, with steep sides and a narrow top sits close to the southern edge of Sooty Field in the middle of the Heath. It was not present in 1946, appearing first on APs of the 1950s on which it was of much smaller ground plan, although already prominent. Only the northern end was constructed initially and it was not until after 1973 that it was extended into the current long rectangle (first seen on APs of 1987). This apparently served as the 4th golf tee with a vista southwards down a major fairway (text Fig 3.17), but it is unusually elevated with steep sides all round. The material was presumably imported.

Another mound raised to form a tee (the 1st) sits on the flank of the northern ridge just south of Barrow 23. This has a sub-rectangular plan 18m by 12m at its base projecting out from the slope, its flat top meeting the upslope side. It is a late addition to the golf circuit appearing between 1973 and 1987. This area had light scrub in 1925, but the cover became increasingly dense over succeeding decades and the platform has now been re-engulfed. This did not prevent it from being well recorded by Lidar (text Fig 1.7).

Also clear on the Lidar images just to the south-west on more gently sloping land is a neat round mound 26m in diameter which looks in all respects like a round barrow. However, it overlaps the northern corner of the area that had been turned into silt lagoons in 1987 (text Fig 3.9) and is not present on any earlier APs. The Lidar data may indicate another such mound at the southern corner of the silt lagoons, close to the east side of the Pond; however, it is apparently less prominent and is thickly covered with scrub. A small round mound was built in the nursery school grounds early on in the *People of the Heath* project, its purpose to provide a 'cave' for the children.

Annular and penannular banks are a feature of the golf-course archaeology. Incomplete circles bordered both the 1907 practice green at Site 23 which later became the 9th hole and the 3rd hole in the south (text Fig 3.17). However, it is the full ring of about 20m diameter around the 4th hole in the extreme south corner of the Heath which is disarmingly similar to an enclosure barrow, albeit one lacking a ditch. Other banks raised to contain bunkers tend to be obvious in being quite small and having crescentic or open-sided plans. Unbanked and un-mounded golfing platforms can still be well defined. This is usually due to either terracing into slopes, as seen particularly well for the 1st hole immediately north of Barrow 13, or the raising of a level area, as probably happened for the 8th hole on the west side of Barrow 11.

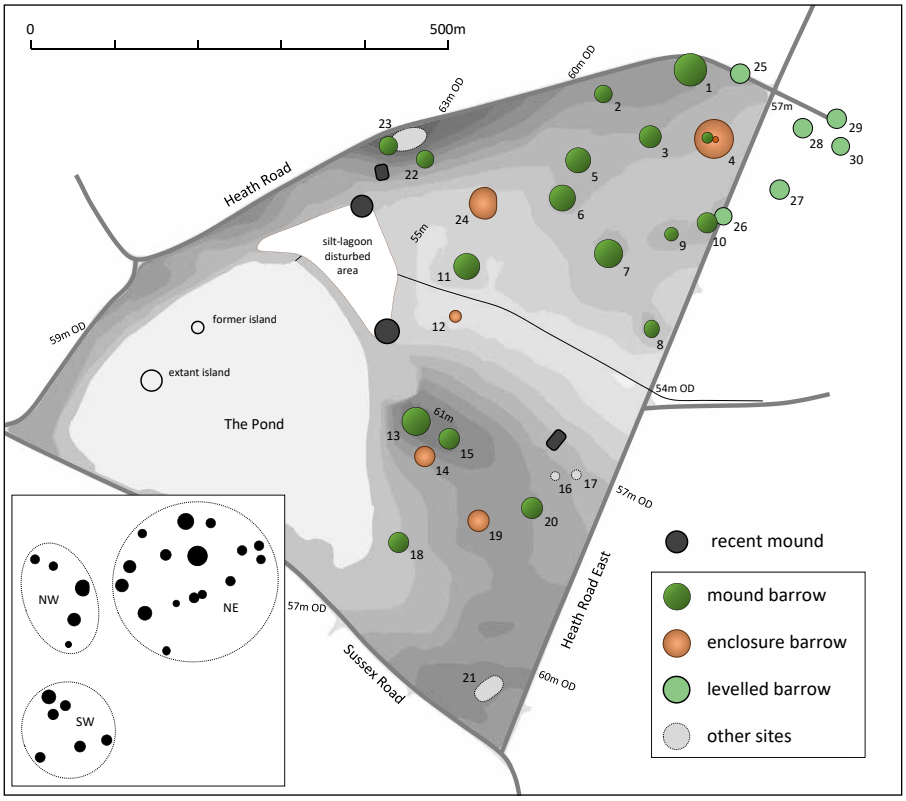


Figure 1 Recent mounds on Petersfield Heath and islands in the Pond

The golf course having been relocated in 1994 (Chapter 3), these remains are now fossilised in the Heath landscape, testament to an important phase in its recreational history.

Pond Island

Early documentary research established that the island on the west side of the Pond had probably been present since the creation of the water body (Chapter 3). It also transpired that there had been a second island to the north-east of the extant one (Fig 3.6). It was natural to wonder whether these might be barrows that had been worked around by early peat diggers and then left intact during pond creation. An unsheathed borehole was put into the middle of the extant island to assess this possibility in September 2017.

The water table was encountered at about 0.85m down. As many as 12 contexts were defined in a total depth of 1.9m. The top 0.53m comprised three layers, two of mid-brown silt and clayey-silt, the third of stiff yellowy-grey clay. There was an abrupt transition below and it is possible that this upper unit represents material dumped on the island during, for example, 20th century dredging episodes. The next unit, of four layers, comprised silts and sandy clays ranging from mid-brown with orange mottles, to yellowy-grey to light grey-brown. At 1.05m these gave way to a unit of five sands, which were damp to wet due to being below water table. The layers ranged from grey to shades of grey-brown and darker brown. At the bottom (1.75m) it graded into a pale beige sand. Within this unit there was an apparently fairly abrupt transition at 1.58m.

Interpreting this sequence is not easy from the limited samples seen, especially since regular fluctuations in the water table could have altered the character of deposits and formed some false layering. Nevertheless, it is clear that there is a highly layered structure throughout which is not what would be expected of a barrow mound and at no point was there any suggestion of turf-like lenses. Nor were any peaty deposits encountered. The depth of the borehole was not far short of the maximum depth of the Pond (text Fig 3.7) and the historically documented peat deposits would have to have lain mainly within that depth. If it is neither a barrow nor residual marsh deposits, that leaves two main options – a hump of pre-existing geology left in situ when the Pond was dug out, or a deliberate dump of material to create an island. If the whole island was make-up at the time the Pond was created, this would beg the question why it comprised such varied deposits laid in succession. Some if not all of the layers below 0.53m are reminiscent of the banded deposits of sand and clay/sandy-clay seen in the Folkestone bedrock under Barrows 18 and 19; this is pertinent since the Folkestone Formation is believed to run under the Pond (text Fig 1.9). That they are a series of lacustrine deposits laid at the bottom of a former water body within the marsh seems less likely given that the former peat body must have had a similar altitude span. The position of the second island, no longer extant, corresponds with the bulge in the pond-base contours and this might again suggest that the underlying geology rose into a knoll here.

Appendix 8.1

Matrix of micro-excavated contexts at the base of the log coffin, Barrow 19, grave [406]

Carol Hartzenberg and Stuart Needham

The fill sequence that emerged from sections and excavation records is as given in Chapter 8; the context numbers applied there cannot all be equated directly to excavated contexts, but approximate equations are:

645, mid-brown with bone – 565, 566, 576, 578, 582,
644, dark brown with much bone (showing in parts of surface under spit 1) – 556, 584, 585, 586,
643, mid-brown with much bone – 589, 591, 592, 596, part of 600?
642, light grey soil with a little bone – most of 600 & 603,
641, light grey clay layer – 583; lowest parts of 600, 603

	West end			
Sub-block:	**D**	**E**	**C**	**F**
Initial clean	551			
Spit 1 across whole block	555: mottled dk to mid-brown sand/ pale clay; dk brown coffin line and thicker inner line (2cm)	556: grey to dk brown sand with some pale clay; very dk brown oily sand(?) – part of inner line as for 555; some bone	554: very dk brown/ black areas; greyish brown to dk brown sand; bone & ?charc.; dk brown coffin line & inner line	557: mottled dk brown sand/ pale clay; bone surrounded by black oily substance
Coffin fill	590: very dk organic layer above bone deposit			
	572: brown to dk brown sand & pale clay. 621: soil sample from 572 (outside bone deposit to W).	573: brown to dk brown sand & pale clay	576: dk sand/ pale clay	578: pale clay/ brown sand 579: bone frags within 578
		582: pale 'chalky' clay containing bone frags & ?charc. 622: soil sample from 582	585: very dk brown material covering parts of deposit; (75mm above datum at grid 0.38/0.16)	
	589: no clear layers but similar mix to 588 (block G); section line at 0.22m E. 595 (D) & 594 (E): bone frags within matrix 589			.
			600: pale to mid-brown sand with small amount of pale clay; bone flecks; around 0.50m E	
	603: pale & mid-brown sand, some loose black/ dk brown material (see also 608) & small amount of pale clay; bone flecks (604-607); 0.22-0.36m E			
	606: bone frags within 603.	604: bone frags within 603.	607: bone frags within 603	605: bone frags within 603
		624: soil sample from 603 (amongst bones)	608: pocket of loose black/ dk brown material within 603; bone frags	
			617: pockets of loose very dk material, some orangey soil & small amount of pale clay; bone flecks; between 0.36 & 0.49m E. 615: bone frags within 617. 620: soil sample from 617	613: between 0.36 & 0.49m E; (no description). 616: sample of very dk ?organic/ burnt material within 613. 614: bone frags within 613
Coffin layer (640)				
	627: hardened mid-brown sand, looks organic		625: hardened mid-brown sand, looks organic; one area of smooth ?clay beneath	
Outside & beneath coffin				626: pale clay layer *c.* 5mm thick above base of grave
	638: pale to mid-brown sand, small stones, some pale clay (more than 630 & 631); very little iron pan; (beneath coffin)	637: pale to mid-brown sand, small stones, some pale clay (more than 630 & 631); very little iron pan; (beneath coffin)	636: pale to mid-brown sand, small stones, some pale clay (more than 630 & 631); very little iron pan; (beneath coffin)	635: pale to mid-brown sand, small stones, some pale clay (more than 630 & 631); very little iron pan; (beneath coffin)
Loose material at block edges	581: as 580 plus dk brown humic material; from SE corner		580: brown sand/ organic material/ bone frags; between C & F	
			611: material from cleaning of section at 0.49m E; pale & mid-brown sand; bone flecks. 612: bone frags within 611	
Loose bone from edges	609: bone frags from between C & D		609: bone frags from between C & D	
			610 Bone frags from between C & F.	

		East end		
B	**G**	**A**	**H1**	**H2**
553: mottled dk brown sand/ pale clay; dk brown coffin line 1cm wide 561: (spit 2)	558: mottled dk brown sand/ pale clay; very dk brown/ black area which appears to have N-S grain; small amount of bone and charc.	552: mottled dk brown sand/ pale clay	559: mottled dk to mid-brown sand; small very dk area as 558; contains large spatula piece	560: mottled mid- to dk brown sand
565: mottled clay/ brown sand; small amount of bone; possible edge of inner container – black oily.	566: mottled clay/ brown sand. 623: soil sample from 566	564: mottled clay/ brown sand; contains S end of spatula with associated fibres	570: dk brown sand/ pale clay; immediately around linear object. 619: soil sample from 570 (outside bone deposit, inside spatula)	569: mottled clay/ brown sand; some fibres/roots. 618: soil sample from 569 (outside spatula).
584: very dk brown material covering parts of deposit; (50mm above datum at grid 0.58/0.18)	586 very dk brown material covering parts of deposit; (60mm above datum at grid 0.60/0.32)		571: dk brown sand/ pale clay; (away from spatula)	
	591: mid-brown sand/ clay (darker than 592 & 593); diffuse transition to 592; occasional dk inclusions (?bone)			
596: mid-brown sand with a few lumps of pale clay & small pockets of dk brown ?organic material; dense bone frags & flecks; between 0.50 & 0.63m E 597: sample of organic layer within 596 (35mm above datum at 0.62/0.39m) 602: sample of ?organic material from 596.				
. 599: bone frags within 596	598: bone frags within 596.			
	592: slightly orangey-brown sand/ clay; diffuse transition to 593 below; frequent bone flecks			
			583: pale 'chalky' clay/ pale hard clay; roots/fibres and possible edge of inner container; (W edge)	
562: very dk brown oily	593: light grey-brown sand – ?coffin stain;			
628: hardened mid-brown sand, looks organic		629: hardened mid-brown sand with some darker brown to black, looks organic		
563: mottled dk brown sand/ pale clay & mineral replaced lumps; (outside coffin)				
633: pale to mid-brown sand, small stones, some pale clay (more than 630 & 631); very little iron pan; (beneath coffin)	634: pale to mid-brown sand, small stones, some pale clay (more than 630 & 631); very little iron pan; (beneath coffin)	632: pale to mid-brown sand, small stones, some pale clay (more than 630 & 631); very little iron pan; (beneath coffin)	631: pale to mid-brown sand, small stones, a little pale clay, very little iron pan; (beneath coffin)	630: pale to mid-brown sand, small stones, a little pale clay, very little iron pan; (beneath coffin)
	575: pale clay/ brown sand/ coffin stain; from N end		568: mid- to dk brown sand; from NW corner	567: dk brown sand; from NE corner
			574: pale clay/ brown sand/ iron pan; contained part D of spatula; from N end	
	588 (equates to 591-593): mixed pale clay, sand, 'sinter', charc, bone flecks; (section at 0.63m E)		577: dk brown sand/ clay/ coffin; from beneath spatula	
587: mixed clay/ sand plus black 'sinter' or charcoal; from between G & H1		587: mixed clay/ sand plus black 'sinter' or char; from between G & H1		

Appendix 8.2

Special finds (SF) associated with the base of the log coffin, Barrow 19

Carol Hartzenberg

See separate Excel spreadsheet:
http://www.peopleoftheheath.com/publications

Appendix 9.1

Special finds (SF) associated with the urn burials

Jane King

See separate Excel spreadsheet:
http://www.peopleoftheheath.com/publications

Appendix 9.2

Summary table of micro-excavated contexts for Urn 1, Barrow 8

Jane King

Notes:
S = only appears on section drawing. Some contexts were given different numbers in the four quadrants and these numbers have been grouped accordingly. FC = fire-cracked (flint).

Context	Interpretation	Plan	Colour	Description	Inclusions	Comments
Upper fills: 0-14cm below datum						
16	Sand deposit over dish (25)	S	White with mid-grey patches	Sand		W and S quadrants excavated on site
17	Slumped turf overlying the centre of the urn	S	Mid-grey	Sand with humic content		W and S quadrants excavated on site
25	Mineral-replaced dished object, possibly partially charred	1	Grey & black	Sand and charcoal; surface firm, lumpy and uneven	Charcoal throughout	Charcoal especially dense in the E quadrant, but larger pieces tending to be in centre
26	Pit fill overlapping the urn rim, charcoal rich; equates with (15)	S	Black	Loose sand and charcoal; voids between charcoal pieces	Abundant charcoal	
27	Thin layer of (16) slipping down sides of dish (25)	1	White	Sand		Below (26) and overlying (25) at the perimeter
28	Upper-urn fill, possibly re-cut to accommodate dish (25)	2	Grey & black	Sand with denser black humic areas and some charcoal pieces	Charcoal SF 9 & further pieces	Stepped layers of black and grey present in N and E
35, 36, 37, 38, 39, 41, 42	Elements of the stepped layers of grey sand and black humic material identified in (28)	2	As (28)	As (28)	As (28)	Additional context numbers for areas within (28) N & E
29	Mineral-replaced cylindrical form, with (31)	2	Grey	Sand; looser than (28)	Minimal charcoal flecks	Surrounding (28)
30	Lozenge shaped white sand form; possible MRO	2	White	Sand		Visible on CT image
31	Possible decayed organic associated with (29) *et al.*	S	Black	Humic		Thin humic band between (29) and the urn's inner surface
32 W & S 43 N	Same as (28), but below the re-cut	S	Grey & black	Sand and humic material	Occasional charcoal pieces	Similar to (28)
33	Mineral-replaced cylindrical form, with (29)	3-4	Grey	Sand; looser than (32)	Charcoal SF 19 & occasional further pieces	Surrounding (32) and (44/45); similar to (29) with more charcoal
46	Abandoned, part of (33)					
47	Minor variant of (33)	S	Grey	Loose sand and charcoal	Charcoal fragments	Slightly more charcoal content than (33)

Context	Interpretation	Plan	Colour	Description	Inclusions	Comments
Surrounding the central container: 10-32cm below datum						
44 (N&W) 45 (S&E)	Charcoal-rich fill pressed around the top of the central container	3-5	Black	Compact humic material with charcoal	Charcoal SFs 28 & 29 and charcoal throughout	
56, 55, 57-65, 67-69, 71, 73-88	'Handfuls' of different materials pressed around the central container	6-7	Black & grey	Compact, mixed fill of grey sand, charcoal and black humic material	*(56)*: Charcoal SF 39 & further pieces; FC flint fragment SF 38 *(64)*: Charcoal SFs 43, 45, 47 *(67)*: Charcoal SF 46 *(69)*: Charcoal SF 48; FC flint fragments SFs 61, 62, 63, 66 *(71)*: Charcoal SF 49 *(74)*: Charcoal SF 52; *(77)*: Charcoal SFs 53, 54, 55 *(81)*: Charcoal SF 56 *(82)*: Charcoal SF 57	All accepted as variations within basic context (56)
66	Part of (70), a raised area of layered charcoal	7-9	Black	Compact	Charcoal SFs 47, 70 & further layered charcoal	In the NW
70	Very compressed charcoal layer surrounding the central container, possibly marking a stopping point during filling of the urn	9	Black	Very compact; charcoal and black humic material	Charcoal SF 88 & further charcoal pieces compacted together Lumps of humic material FC flint fragments SFs 81, 83, 87	A hard surface, predominantly horizontal; see also (66) & (93)
93	Slightly raised area of (70)	9	Black	Compact black humic material		In the SE
99	Abandoned, part of (70)					
100-105, 109, 110, 119	Mixed fills surrounding the central container below (70)	11-13	Grey-black	Compact grey sand with charcoal and black humic material	*All*: Charcoal pieces *(103)*: FC flint fragment SF 91 *(105)*: Charcoal SFs 84, 90, 103, 104; FC flint fragment SF 102 *(110)*: Charcoal SF 105	Grouped together as elements of the same mixed fill
112	Lowest charcoal-rich layer surrounding base of the central container	14	Black	Very compact, black humic material and charcoal	Abundant charcoal pieces FC flint fragment SF 106	
120	More humic area of (112)	14				
116	Surrounding the base of the central container, but could have been part of the prior fill	14- 15	Grey-brown	Compact sand	Charcoal SFs 109, 110 & further fragments FC flint fragments SFs 98, 100, 111, 112, 115	Similar matrix to (118) but much more compacted
Central container: 14-34cm below datum						
34	Uppermost layer within the central container	3-4	Grey	Sand with occasional black humic patches	Charcoal SFs 22-27, 32 FC flint fragment	Charcoal SFs all at the base of context
48, 49	Part of (34)			Ephemeral black patches with charcoal flecks		Within (34) N & E
50	Associated with the voids that delineate the central container in the E	4	White	Very loose sand		At the interface of (34) & (45)
51	Part of (34)			Sand from around charcoal SFs at the base of (34)		
52	Distinctive humic layer within the central container	S	Black	Black humic material with some grey sand patches & charcoal	Charcoal FC flint fragments SFs 30, 31, 35, 36	Loose white sand occurs at the interface with (56)
53	Layer within the central container	5	Grey	Sand	Charcoal SFs 34, 37 & occasional flecks	Looser sand occurs at the interface with (56). Voids in the S & E join to delineate the central container
54	Associated with one of the voids delineating central container in the E	5	White	Loose sand		At the interface of (53) & (56)
89		7	Grey	Loose sand		At the interface of (53) & (56) in the W
72/90	Thin humic layer within the central container	S	Black	Compact black humic material	Charcoal flecks FC flint fragment SF 50	
91	Sand & humic layer within the central container	8	Grey with black	Sand with black humic patches	FC flint fragment SF 65	
92	Same as (94)	8				
94	Humic layer within the central container	9	Black	Humic material with some sand patches	Charcoal SFs 72, 73, 74 FC flint fragment SFs 68, 71	
95	Ephemeral sand area, part of (94)					
96	A band 1.5cm wide delineating the central container from 26-30cm below datum	9	Grey/white	Very loose sand		Between (94) & (100-105) in N, E & S
97	Layer within the central container	S	Grey	Sand with occasional patches of humic material	Occasional charcoal fragments FC flint fragment SF 76	

Context	Interpretation	Plan	Colour	Description	Inclusions	Comments
98	Associated with top of SF 78 (charcoal)	9	White	Loose sand		Surrounded top of SF 78 & merged into (96) in E
106	Layer within the central container	12		Sand with charcoal	Charcoal: SFs 78, 92-95 and further pieces	Charcoal concentrated in SE
107	Possible internal lining to the base of the central container	12	Black	Humic material		Present in N & E, sloping towards SW from 26 to 31cm below datum
108	Represents the base of the central container, with (113) & (118)	13	White & grey	Loose sand		Behind and below (107)
111	Same as (108)	S				
113	Represents the base of the central container, with (108) & (118)	14	Grey	Very loose sand, with void and cracks	Charcoal SFs 96, 107 FC flint fragment SF 97	
114	Part of (113)	14				
115	Associated with void in (113)	14	White	Loose sand	Charcoal SFs 101, 108	
118	Represents the base of the central container, with (108) & (113)	15	Grey-brown	Loose sand with cracks and voids	Some charcoal	Similar matrix to (116) but much looser
Basal fills: 32-41cm below datum						
117	Basal fill	14- 17	Black	Very compact sand with humic material and charcoal	Charcoal SFs 132, 134, 135, 137, 138, 139 and abundant further fragments FC flint fragments SFs 121, 122, 123, 124, 136	All charcoal SFs are from spit 4 at base of context. Roots in this fill were not confined to the urn wall
121	Basal fill at centre on which the central container was stood	16	Grey-brown	Very compact sand	Charcoal SF 118 FC flint fragments SFs 114, 116, 117	
122	Basal fill	16	Grey-brown	Compact sand	FC flint fragments SFs 119, 126, 127, 128	
123	Part of (117) associated with root activity at 35.5cm below datum	16		Loose sand		
124	Same as (122)	16	Grey-brown	Sand	Charcoal SF 133 FC flint fragment SFs 129, 130, 131	
125	Same as (126) but with some infiltration from (117) above	17	Black-brown	Soft silt, some sand		Increasingly brown & less sandy with depth
126	Silts possibly deriving from an earlier use of the urn	S	Mid-brown	Homogenous soft silt		
127	Same as (126)		Mid-brown	Homogenous soft silt		Looser material surrounding (125/126)
128	Mineral-replaced annular object sitting in urn base	18	Orange-brown	Homogenous soft silt		
129	Same as (126) but intermingled with root mat at very bottom	18	Orange-brown	Homogenous soft silt		

Appendix 9.3

Summary table of micro-excavated contexts for Urn 2, Barrow 19

Jane King

Notes: Sand throughout consists of sub-angular predominantly clear quartz. All percentages are visual estimates to indicate relative proportions. S = only appears on section drawing. FC = fire-cracked (flint).

Context	Interpretation	Plan	Colour	Description	Inclusions	Comments
Collapsed base and associated contexts: 1-12cm below datum						
82	Sand filling a scoop in (83)	1	Pale grey-brown with darker brown patches	Compact; 95% sand with a dusting of silt		
83	Top pit fill which collapsed into the urn at the same time as the urn base SF 300	1, 2	Dark brown	Compact in centre. Silty sand: 80% sand coated with dark grey/ black silt	Unworked flint including SFs 276 & 277	Originally overlying the intact urn
84	Blurred boundary between (82) & (83)	1	Slightly darker than (82)			
85	Modern soil filling a shallow scoop in (82)	1	Brown	Soil	Modern vegetation and seed case	
86	Part of the collapsed pit fill plugging the urn above the level of SF 300	2	Dark brown	Loose and lumpy. Similar to (83), but slightly higher proportion of silt to sand: 70% sand coated with silt	Pot sherds SFs 279-294 & small pot fragments	Surrounding and similar to (83) but less compacted and containing sherds from the fractured urn
88	Very compressed collapsed pit fill below (83) and above SF 300.	2a	Very dark brown	Very compact silty sand: 60% sand mixed with very dark silt coagulated into lumps	Small pot fragments	Originally overlying the intact urn. Similar to (83) but with higher silt content and more compacted
89	Layer of pot sherds and small fragments immediately overlying SF 300	3	Very dark brown	Same as (88)	Pot sherds SFs 295-8 & small pot fragments	More pot sherds than (88)
87	Sand which originally sat in the base of the urn	2a, 3	Grey	Loose silty sand with voids: 80% sand with black/dark grey silt particles, coagulated into lumps	Small pot fragments	Below (86) and associated with the hardened sand structure SF 275 and the voids surrounding SF 300
Lower-urn fill: 11-16cm below datum						
91	A mixed context associated with the voids surrounding SF 300 probably containing tumble and crushed parts of SF 275	4	Dark brown	Very loose and lumpy with voids. 50-60% sand mixed with black silt including lumps of dark silt as in (88)	Small pot fragments	Area of voids surrounding SF 300. Includes some of (86), (87) and (88) that fell into the voids during micro-excavation
90	*Spit 1*: Sand which originally sat in the base of the urn, mixed in with the crushed base of the organic container (93/95) *Spits 2-3*: Same as (92)	5	Grey-brown to grey	Silty sand: 80% sand with dark brown silt particles; spit 1 compacted; spits 2-3 not compacted, soft, homogenous. No voids.		Spit 1, below SF 300, contained lumps of brown material similar to (93); these not present in Spits 2-3

Context	Interpretation	Plan	Colour	Description	Inclusions	Comments
92	Bed of sand in the base of the organic container (93/95). *Spit 1* contained fine roots and separated (90 spits 2-3) and (92 spit 2) which appear to be the same	5-7	Grey (spit 2) to browner grey (spit 1)	Soft, uncompacted silty sand: 80% sand with dark brown silt particles	Small pot fragment SF 310 Insect case SF 312 Insect SF 318 Grey ?vitrified lumps SFs 316 & 317 (spit 2)	
93	Organic container which held the cremated bone package on a bed of sand	5-9	Brown to dark brown	Organic material with very little sand content forming a coherent structure within the urn. Removed in lumps which maintained their structure	Insect SF 313 Insect cases SFs 401 & 451	Surrounds and encloses (90 spit 2-3), (92) and (97). Dark brown with a hardened lighter brown surface facing the inner wall of the urn
94	Band representing a mix of (92) and (93/95) at their interface	5-7	Brown-grey	Similar to (92)	2 small pot fragments SF 311	
95	Part of the organic container (93) where surrounded by SF 275	8, 9	Dark brown	Same as the dark brown element of (93)	Insect case SF 336	Appeared as a 'lining' to SF 275, but in fact a continuation of (93)
96	Abandoned, part of 94					
Cremated bone deposit: 16-27cm below datum						
97	The cremated bone package	8, 9	Grey	Loose enough to gently brush from the bone. *Spit 1-11*: silty sand identical to (92) *Spit 12*: higher proportion of silt 30% including coagulated particles *Spit 13*: 50% silt including coagulated particles	*General:* Cremated bone (numerous SFs plus small fragments) Charcoal, mainly tiny (<1.0mm) but a few up to 20mm Insects SFs 370, 544 Insect cases SFs 328, 334, 336, 370 *Spits 6-9:* FC flint fragments SFs 375, 409, 428, 432, 486, 525 *Spits 1-2*: grey lumps including some vitrification SFs 319-324 *Spits 4-9:* unidentified small black/brown fragments (30+ SFs), possibly from bag	Spits 1and 3 have no bone, cf (98)
98	Part of the bed of sand (92) into which the bone package was nestled	9	Grey	Silty sand identical to (92) and (97 spits 1-11)	Insect SF 366	Surrounding (97 spits 2-7)
99	Abandoned					
Collar-zone fill: 26-38cm below datum						
100 spit 1	Silt originally covering and sealing the cremated bone package	10	Mid-brown	Very firm silt with <10% sand. Removed in lumps which maintained their structure	Small fragments of bone and traces of charcoal.	The surface facing the urn wall bears a thin dark brown layer or stain which is slightly striated
100 spit 2-5	Sand plugging the mouth of the organic container	11	Grey-brown	Firm silty sand: 85% sand mixed with dark brown silt	Unworked flint SFs 644, 645, 646	Gradually became annular as (102) emerged in centre by spit 3. Dark stain on outer surface, (105), and narrow void beyond
101	Organic internal lining to the inner container, tucked over its rim	11	Black-brown	Thin, hard, fragmentary organic deposit. Similar to (105)		Attached to the urn's surface in places inside the collar, the rim in the N & W, and in places to the surface of (108)
102	Mineral-replaced stopper in the urn's mouth	11	Grey	Sand with <2% dark silt particles		Surrounded by (100 spits 3-5) and (108)
103	Pit fill, equating with (20) & (22)	S	Pale grey-white	Gritty sand with <1% dark silt particles		Below the urn's mouth
104	Mixed loose fallen into the void between (100) and the urn collar	S	Mixed colour	Mixed		
105	Organic lining to the inner container	S	Black-brown	Thin hard organic residue attached to the outer surface of (100 spit 2-5)		Includes loose fragments from void between (100) & the urn collar. Similar to (101)
106	Abandoned					
107	Pit fill stained brown by leaching from (108) above	S	Grey-brown	Sand with black-brown particles		
108	Mineral-replaced wooden clamp over the urn's mouth	S	Dark brown with a very dark brown 'core'	Very firm. Sand within a fine black-brown matrix		'Core' maintained its structure after removal
109	Natural beneath pit cut-line	S	Yellow-brown	Firm		

Appendix 9.4

Summary table of micro-excavated contexts for Urn 3, Barrow 19

Jane King

Notes: Sand throughout consists of sub-angular and sub-rounded predominantly clear quartz. FC = fire-cracked (flint)

Context	Interpretation	Plan	Colour	Description	Inclusions	Comments
Above the rim: 4-5cm below datum						
502	Pit fill immediately below the urn containing burnt material and silt plaques; probably lifted with pot at time of redeposition	1	Mid-brown	Silty sand	Charcoal pieces FC flint SFs 1041, 1046 & 4 smaller fragments Unworked flint SF 1044 'Concretions' SFs 1036, 1045, 1047, 1048, 1049 & smaller fragments	
503	Darker variant of pit fill which joins with a hardened sand protrusion on the side of the collar	1	Dark mid-brown	Silty sand	Small charcoal pieces 2 very small FC flints Small fragments of 'concretions'	Bordered (502) in N & SW; extending over and outside the rim in S
508	Hardened paler area of pit fill in ENE which joins with a hardened sand protrusion on the side of the collar	2	Yellow-brown	Hard fine silty sand	Charcoal pieces Small FC flint SF 1061 'Concretions' SFs 1059, 1060 & smaller fragments	Extended over and outside the rim
505		2	Pale yellow-brown	Compacted fine silty sand; very compact above rim	Charcoal flecks Numerous white flecks	Extended over and outside the rim in WNW
Level with the rim: 5-6cm below datum						
504	Plug of silty sand in the urn's mouth overlying the bone package; in a central band WSW to ENE	2, 3	Yellow-brown	Soft fine silty sand	A few small charcoal pieces 'Concretions' SFs 1055, 1065, 1066, 1067 & numerous smaller fragments	Soft fill but with a hard surface
506	Similar to (504), some mixing with charcoal-rich deposits of (502)	2	Dark yellow-brown	Fine silty sand	Small charcoal pieces 'Concretion' SF 1052 & smaller fragments	Bordered (504) to N
507 spit 1	Similar to (504), some mixing with charcoal-rich deposits of (502)	2	Yellow-brown, becoming redder with depth	Fine silty sand	Small charcoal pieces FC flint SFs 1053 & 1062 plus one tiny fragment Unworked flint SF 1058 Very small 'concretion' fragments	Bordered (504) to S; redder colour possibly due to leaching from (507 spits 2-8)
Upper-urn pockets and the special-finds deposits: 6-12cm below datum						
507 spits 2-8	S part of the annular silt pocket surrounding (510)	2-4	Red-brown	Very fine silty sand, *c.* 50% fine silt/ 50% sand	Very few small charcoal fragments Marcasite nodule SFs 1056 & 1070/1071 Worked flint SFs 1063, 1064, 1069	Well-defined vertical boundary with (510) to the N
509	NE part of the annular silt pocket surrounding (510)	4	Yellow-brown, becoming red-brown in spits 2-3	Very fine silty sand, *c.* 50% fine silt/ 50% sand	Worked flint SF 1072 Some cremated bone	Some slippage of bone into (509) at the boundary with (510) to the SW

Context	Interpretation	Plan	Colour	Description	Inclusions	Comments
516	Part of the annular silt pocket surrounding (510)	4	Yellow-brown	Soft fine silty sand		Encircled by a crack
517	W part of the annular silt pocket surrounding (510)	5	Red-brown	Very fine silty sand		To N of (510); blended into (507) in E and SW
517a	N part of the annular silt pocket surrounding (510)	5	Red-brown	Very fine silty sand	Worked flint SFs 1078, 1085, 1093	Excavated as (518 spits 1-3), below (509), (517) & (507). Well-defined boundary with (510) to S
Cremated bone deposit: 6-25cm below datum						
510 spits 1-2	Top of the bone package, some admixture at the boundary with (504)	4, 5	Yellow-brown	Soft fine silty sand	Charcoal flecks in spit 1 FC flint fragments in spits 1 & 2 Cremated bone: *spit 1*, SFs 1075, 1076, 1077; *spit 2*, tightly packed small bone fragments	
515	Part of (510 spit 1)	4	Red-brown	Soft fine silty sand	1 small FC flint Cremated bone SFs 1073, 1074	A skim of redder soil within (510) in SW
510 spits 3-18	The bone package	6-19	Yellow-brown in spit 3, gradually becoming grey by spit 6	Silty sand, spits 3-6; sand, spits 7-18	FC flint SF 1083 (spit 3) Cremated bone: the majority of SFs plus other bone fragments	
519	Same matrix as (510 spit 6) but devoid of cremated bone – possibly contained a decayed organic deposit	7i, 8	Grey	Sand with very few silt particles		Contained a void
518 spits 4-15	Mineral-replaced organic container for the bones	6-19	Red-brown	Soft silty sand	Cremated bone: a number of SFs plus other fragments	Bone is stained reddish brown
520	Ingress from pot exterior	11, 12	Dark and mid-brown mixed fragments	Loose; silt particles mixed with (518)		Associated with a perforation in the urn wall in W

Appendix 9.5

Summary table of micro-excavated contexts for Urn 4, Barrow 14

Jane King

Notes: All percentages are visual estimates to indicate relative proportions; sand throughout consists of sub-rounded mostly clear colourless quartz predominantly <0.5mm, occasionally up to 3mm, rarely up to 10mm; all contexts have some root content, highest concentrations only are noted in the table. FC = fire-cracked (flint)

Context	Interpretation	Plan	Colour	Description	Inclusions	Comments
Above the rim: 3-10cm below datum						
1500	Compressed damp surface of (1501) & (1502)	-	Black-brown	Compact silty sand	Charcoal flecks FC flint	Initial clean to enable drying prior to micro-excavation
1501	Charcoal-rich deposit, part of (1440) in the base of the pit	1	Black-brown	Compact silty sand: 60-70% sand with dark brown silt and fine charcoal particles	Charcoal pieces FC flint SFs 50, 52-55, 58, 59 Unworked flint SFs 51, 56, 57	Charcoal pieces >10mm concentrated in a linear NW-SE band
1502	Part of fill (1466) of feature [1465] underlying urn pit	1	Mid-brown	Loose, gritty, silty sand: 80% sand with brown silt and pale clay patches	High root content Small iron pan nodule	Edge of block on E side from S to NE, bordering (1501); similar to (1506)
1503 1503s	Carbonaceous lower pit fill into which urn was rammed; same as (1509s), (1510s)	2-6	Black	Firm; 70-75% sand with fine carbon particles and charcoal fragments <3mm	Charcoal pieces FC flint SFs 60, 62, 63, 67, 69, 70, 71, 73-6	In spit 4 (1503) was subdivided into (1503s/1503h)
1503h	Carbonaceous lower pit fill into which urn was rammed; same as (1508), (1509h) and (1510h)	4-6	Black	Very firm; 40-50% sand with fine carbon particles and charcoal fragments <3mm	Charcoal pieces SFs 77, 78 FC flint SFs 79-82	The same constituents as (1503s) but with a higher carbon content
1504	Part of fill (1466) of feature [1465] underlying urn pit	2, 3	Dark grey-brown	Silty sand: 60-70% sand with brown silt and fine charcoal particles	Charcoal pieces SF 64 FC flint SFs 61, 65, 66, 68	Edge of block round NE half, bordering (1503)
1505	Part of fill (1466) of feature [1465] underlying urn pit	2	White clay with mid-brown sand	Clay with some silty sand		Localised patch on W edge of block; well-defined band similar to patches within (1506)
1506	Part of fill (1466) of feature [1465] underlying urn pit	2-11	Mid-brown sand with white clay	Mixed gritty sand & hard clay; 80% sand with brown silt and patches of whitish clay	Areas of high root content	Edge of block in SW half, bordering (1503); similar to (1502); no clay content below spit 4
1507	Pit fill containing burnt material Similar to (1501) and (1504) Equates to (1440)	3-11	Grey with black patches	Loose, soft silty sand: 60-70% sand with brown silt and patches of soft black material	Charcoal pieces FC flint SF 72	Edge of block in N quadrant, bordering (1503) at 6.5cm below datum; continued well down outside (1509)
1508	Carbonaceous lower pit fill into which the urn was rammed; same as (1503h)	3	Black	Very firm; 40-50% sand with fine carbon particles and occasional charcoal fragments <3mm	Charcoal pieces FC flint SF 67 Small iron pan nodule SF 104	Circular area in centre of (1503) spit 2 with greater concentration of fine carbon

Context	Interpretation	Plan	Colour	Description	Inclusions	Comments
Upper-urn fills and deposits immediately around the urn (in situ): 10-18cm below datum						
1509 1509s	Carbonaceous lower pit fill into which the urn was rammed; same as (1503/1503s) & (1510s)	7-14	Black	Firm; 50-60% sand with fine carbon particles and some charcoal fragments <3mm	Charcoal pieces SFs 114, 115 FC flint SF 107 Small rounded quartz SF 86 Pot sherd SF 124	(1509) is new context number given to (1503) outside the urn once the rim was fully exposed; subdivided into (1509s) & (1509h) in spit 2
1509h	Carbonaceous lower pit fill into which the urn was rammed; same as (1503h), (1508) & (1510h)	7-15	Black	Very firm; 40-50% sand with fine carbon particles and some charcoal fragments <3mm	Charcoal pieces SF 97 FC flint SFs 108, 112	The same constituents as (1509s) but with a higher carbon content
1510s spits 1-10	Carbonaceous lower pit fill into which the urn was rammed; same as (1503/1503s) & (1509s)	7-17	Black	Firm; 50-60% sand with fine carbon particles and some charcoal fragments <3mm	Charcoal pieces SFs 96, 102, 109, 118, 135 FC flint (numerous SFs) FC struck flint flake SF 130 Faience pendant fragment SF 103 Small rounded quartz pebble (12mm) SF 89	(1510) is new context number given to (1503) inside the urn once the rim was fully exposed; subdivided into (1510s) & (1510h)
1510h spits 1-9	Carbonaceous lower pit fill into which the urn was rammed; same as 1503h, 1508 & 1509h	7-18	Black	Very firm; 40-50% sand with fine carbon particles and some charcoal fragments <3mm	Charcoal pieces SFs 83, 84, 94, 98, 119, 131 FC flint (numerous SFs) Segmented faience bead SF 90 Small vitrified stone SF 93	The same constituents as (1510s) but with a higher carbon content
1511	Disturbed by root activity	7-19	Brown-black	Same constituents as (1510), but less compact	Many roots within (1511) and on internal face of urn.	Immediately inside urn around S half, bordering (1510)
1512	Intrusive	11-13	Pale grey	Sand		Associated with the packing of the damaged NE quadrant of the urn
Lower-urn fills: 18-26cm below datum						
1510 spits 11-15	Product of root disturbance	16-22	Dark grey	Very loose in places; silty sand with fine dark silt particles (non-carbonaceous)		S to SE side, associated with roots entering the urn through damaged wall
1513	Remnant of pit fill or intrusive (cf 1512)	13-15	Pale grey	Silty sand (no carbonaceous component)		Localised deposit remaining on urn exterior in E
1514	Sediment covering/filling (1517)	13-20	Pale grey	Compact; fine silty sand	Very occasional FC flint in upper spits SF 132	Although largely under (1515), a tongue projected somewhat higher in N to NE
1515	Final deposit in pot prior to turning	16-18	Dark grey	Compact; fine silty sand with some black particles		Below (1510s)
1516	Sediment covering (1518)	20-22	Pale grey	Silty sand; slightly less compact than (1514)		Looser structure may be due to settlement after inversion
1517	Mineral-replaced organic dish	20	Dark grey	Silty sand; more dark silt particles than (1514) & (1516).		Thin layer with concave profile between (1514) & (1516)
1518	Mineral-replaced organic lining	20-22	Dark grey	Looser than (1516); silty sand.		Thin layer lining urn base; loose structure may be due to settlement after inversion, rather than intrusion

Appendix 11.1

Spreadsheet for human bone identifications

Emily Carroll

See separate Excel spreadsheet:
http://www.peopleoftheheath.com/publications

Appendix 12.1

Selected drawings of Late Upper Palaeolithic (LUP) and Mesolithic flintwork

Mary Haskins

Objects are at 67% unless otherwise stated.

Figure 1 Barrow 1 context (8) LUP bruised blade; 50%

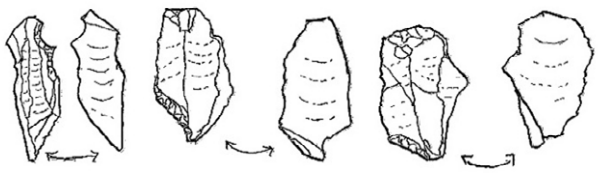


Figure 2 Barrow 11 context (14) 3 micro-burins

Figure 3 Barrow 11 context (14) Type F microlith

Figure 4 Barrow 11 context (15) Type F microlith

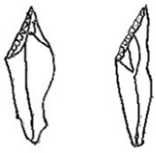


Figure 5 Barrow 11 context (14) 2 Type A microliths

Figure 6 Barrow 12 unstratified LUP blade; 50%

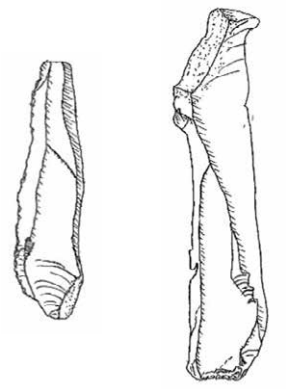


Figure 7 Barrow 13 context (100) 2 blades; 50%

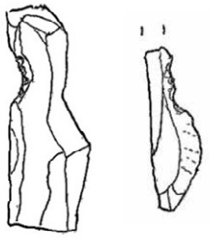


Figure 8 Barrow 13 context (5) 2 micro-burin mis-hits

Figure 9 Barrow 13 context (48) 3 micro-burins

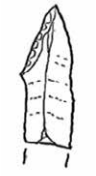


Figure 10 Barrow 13 context (66) Type A microlith

Figure 11 Type A microlith with additional basal retouch

Figure 12 Barrow 13 context (68) 2 Type A microliths

Figure 13 Barrow 13 context (5) Type D microlith

Figure 14 Barrow 13 context (9) Type D microlith

Figure 15 Barrow 13 context (48) Type F microlith

Figure 16 Barrow 13 context (48) Type E microlith

Figure 17 Barrow 13 context (105) Type E microlith

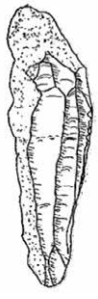


Figure 18 Barrow 19 context (6) blade; 50%

Figure 19 Barrow 19 SF 182 micro-burin

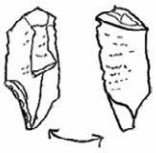


Figure 20 Barrow 19 SF 224 micro-burin

Figure 21 Barrow 19 SF 207 Type A microlith

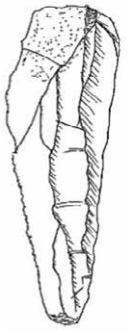


Figure 22 Site 21 context (17) blade; 50%

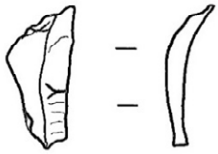


Figure 23 Site 21 context (36) scalene triangle

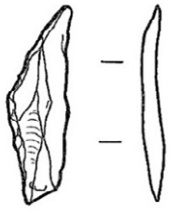


Figure 24 Site 21 context (6) scalene triangle

Figure 25 Site 21 context (2) Type A microlith

Figure 26 Site 21 context (2) Type A microlith with additional retouch

Figure 27 Site 21 context (55) Type A microlith with additional retouch

Figure 28 Barrow 22 unstratified Type A microlith with bi-directional retouch

Figure 29 Site 23 SF 310 blade; 50%

Figure 30 Site 23 SF 1846 crested blade; 50%

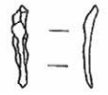


Figure 31 Site 23 SF 1342 scalene triangle

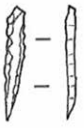


Figure 32 Site 23 SF 1132 scalene triangle

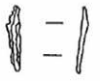


Figure 33 Site 23 SF 1251 scalene triangle

Figure 34 Site 23 SF 1131 scalene triangle

Figure 35 Site 23 SF 996 Type A microlith

Figure 36 Site 23 (175) Type A microlith

Figure 37 Site 23 SF 3101 Type C microlith

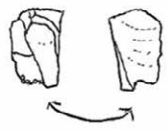


Figure 38 Site 23 SF 4939 micro-burin

Figure 39 Site 23 SF 3125 Krukowski micro-burin; 100%

Figure 40 Barrow 24 context (201) LUP blade; 50%

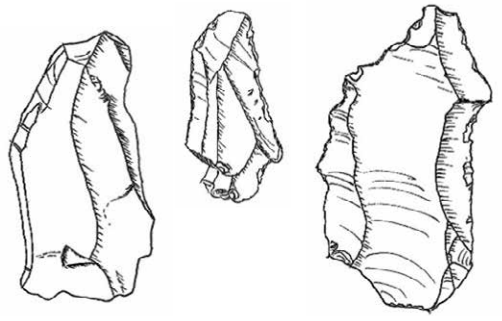


Figure 41 Barrow 24 context (201) 3 LUP flakes; 50%

Figure 42 Barrow 24 context (201) Type A microlith

Figure 43 Barrow 24 context (211) Type A microlith

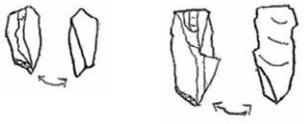


Figure 44 52 Heath Road, context (4) 2 micro-burins

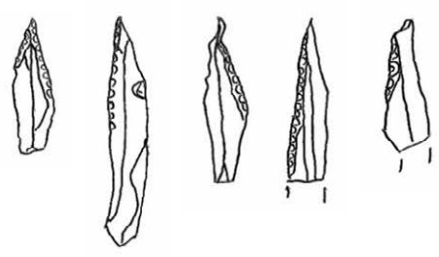


Figure 45 52 Heath Road, context (5200) 4 Type A microliths

Figure 46 52 Heath Road, context (5200) Type A microlith with additional retouch

Figure 47 52 Heath Road, context (5200) Type D microlith

Appendix 12.2

Site 23 microlithic component

Anthony Haskins

Site 23D is shaded because all of the deposits were disturbed.

Site	Context	Type A	Type B	Type C	Type D	Type G	Fragment	Micro-burin	Totals
23A	5		0	0	0	0	1	0	**1**
23A	7		0	0	0	0	0	1	**1**
23B	1	1	0	0	0	0	0	0	**1**
23B	2		0	0	0	0	1	0	**1**
23B	7	1	0	0	0	0	3	2	**6**
23B	8	1	0	0	0	0	1	1	**3**
23B	9	2	0	0	0	1	0	0	**3**
23C	3		0	0	0	0	1	0	**1**
23C	9		0	0	0	0	1	0	**1**
23C	13		0	0	0	0	1	2	**3**
23C	151/14		0	0	0	0	1	1	**2**
23C	151/15		0	0	0	0	1	1	**2**
23D	1	1	0	0	0	0	0	0	**1**
23D	2	1	0	0	0	0	1	1	**3**
23D	3	2	0	0	0	0	4	0	**6**
23D	3	2	0	0	0	0	4	0	**6**
23D	4		0	0	1	0	0	5	**6**
23D	5		0	0	0	0	0	1	**1**
23D	7		0	0	0	0	0	3	**3**
23D	8		0	0	0	0	1	3	**4**
23D	10	1	0	0	1	0	0	0	**2**
23D	11		0	0	0	0	1	3	**4**
23D	12		0	0	0	0	1	0	**1**
23D	15	1	0	0	0	0	0	3	**4**
23D	18		0	0	0	0	3	0	**3**
23D	19	2	0	0	0	0	0	0	**2**
23D	20	3	0	0	0	0	4	1	**8**

Site	Context	Type A	Type B	Type C	Type D	Type G	Fragment	Micro-burin	Totals
23D	21		0	0	0	0	0	1	**1**
23D	22		0	0	0	0	1	0	**1**
23D	23		0	0	0	0	1	0	**1**
23D	24	2	0	1	1	0	8	5	**17**
23D	25		0	0	0	0	1	1	**2**
23D	26		0	0	0	0	2	0	**2**
23D	27		1	0	0	0	5	1	**7**
23D	28		1	0	0	0	2	0	**3**
23D	29		0	0	0	0	3	1	**4**
23D	30	2	0	0	0	0	6	2	**10**
23D	31		0	0	0	0	2	1	**3**
23D	32	1	0	0	0	0	4	1	**6**
23D	41	1	0	0	0	0	0	2	**3**
23D	42		0	0	0	0	2	1	**3**
23D	43	1	0	0	0	0	3	2	**6**
23D	44		0	0	0	0	3	2	**5**
23D	45		0	0	0	0	6	1	**7**
23D	46	3	0	0	0	0	6	2	**11**
23D	47	2	0	0	1	0	4	2	**9**
23D	48		1	1	0	0	1	0	**3**
23D	50		0	0	0	0	3	0	**3**
23D	52		0	0	0	0	3	1	**4**
23D	53		0	0	0	0	2	4	**6**
23D	54	2	0	0	0	0	5	1	**8**
23D	56	1	0	0	0	0	1	2	**4**
23D	57		0	0	0	0	0	2	**2**
23D	58	1	0	0	0	0	2	0	**3**
23D	59		0	0	0	0	2	2	**4**
23D	60	1	0	0	0	0	0	0	**1**
23D	61	1	0	0	0	0	3	2	**6**
23D	62	1	0	0	0	0	6	1	**8**
23D	64		0	0	0	0	3	0	**3**
23D	163	8	1	0	0	0	49	52	**110**
23D	September 2016 school test pit 4	2	0	0	0	0	0	0	**2**
23D	Unstrat		0	0	0	0	0	1	**1**
23D	Unstrat		0	0	0	0	0	1	**1**
23E	174	3	1	1	5	0	14	9	**33**
23E	178	1	2					8	**11**
23F	175	13	6	1	2	0	14	12	**49**
Totals		**64**	**13**	**4**	**11**	**1**	**197**	**151**	**441**

Appendix 12.3

Gazetteer of Mesolithic sites within the study area

Robert Banbury

See separate Excel spreadsheet:
http://www.peopleoftheheath.com/publications

Appendix 13.1

Other post-medieval to modern finds

George Anelay, Ken Mordle and Dave Bullock

Clay pipes by George Anelay

185 fragments of clay tobacco pipes were recovered from the excavations, only four of which were datable, all being 19th century: one from the upper disturbed layers of Barrow 11 (context 57a) had the initial "G" on both sides of its spur, probably manufactured by George Goodall of Fareham, who was operating between 1847 and 1852; another was a decorated bowl embossed with the letters "RAOB" over a pair of horns, the acronym being that of the "Royal Antediluvian Order of the Buffaloes", a fraternal organisation founded in 1822; the other two were both decorated bowls, one with tendrils, the other with fish scales. The clay pipe fragments were scattered fairly evenly across the Heath, save for a marked concentration (68%) in the spoil from the robber trench and its fills in Barrow 13, and a smaller concentration (12%) over Site 23.

Ceramic building materials by George Anelay

1,185 fragments of ceramic building material were recovered from the excavations. Where identifiable, all were post-medieval to modern peg-tile or brick, with the exception of 26 fragments of ceramic land drain and one modern white glazed tile. This material was scattered across the trenches, but with particular concentrations over Site 23 (46%), Barrow 19 (11.5%) and Barrow 13 (11%). It is unlikely that any of the ceramic building material was brought to the Heath for use, rather it seems probable that it all was imported as waste, in many cases to infill unwanted holes and depressions.

Post-medieval and modern metalwork by Ken Mordle and George Anelay

592 metal objects were recovered during the course of the excavations, all of which are likely to be modern, due to the corrosive nature of the Heath soils; certainly none of those that were dateable were pre-1800, with the probable exception of the lead shot. Only those considered to be of greater interest are described below, the remainder being listed in the archive.

The metalwork assemblage included 38 modern coins, only two of which were not unidentifiable, but probably do not significantly pre-date the earliest recognisable example, a half penny of 1878. The bulk of the remainder were post-war coins, with a strong clustering, across the date range, around Barrows 13 and 14 (63%), probably reflecting a preference amongst visitors for initially its elevation, and later its seclusion.

Amongst the metalwork there was a small but significant scatter of pistol/musket balls and shotgun/rifle cartridges. The former presumably dating to an earlier period of the Heath's history, while the latter being 19th and 20th century. The 11 pistol/musket balls were not evenly distributed across the trenches, being found only over Barrows 10 (6), 11 (3) and 24 (2). Those from Barrows 11 and 24 might be associated with the hunting of the wildfowl which presumably frequented the more low-lying parts of the Heath, but the clustering around Barrow 10 is harder to explain, unless on one occasion it was the site of some target practise, perhaps during its military use during the Civil War (see Chapter 3). From this earlier period, a possible iron shot was also recovered from the upper layers of Barrow 11. The 11 shotgun cartridges are more evenly distributed, with no clear concentrations, and presumably reflect rough shooting over the Heath pre-dating the establishment of the golf course. The 12 303-rifle cartridges are almost certainly linked to the wartime infantry manoeuvres which are known to have taken place on the Heath. Barrow 4 seems to represent a concentration of activity, with nine unidentifiable examples, with only one from each of Barrows 8 (1928 Woolwich Arsenal, "RAL 28 VII"), 13 (1926 Woolwich Arsenal, "RAL 26 VII") and Site 17 (1926 Woolwich Arsenal, "RAL 26 VII").

106 of the metal objects related to modern drinking, being either aluminium cans, ring pulls or bottle tops. There was a clear preference (91%) for the area around Barrows 13 and 14 and for lager as the main drink, although cider, bitter, wine and vodka were also represented. Altogether 17 different brands were noted, suggesting that the area is not infrequently the scene of drinking parties, presumably largely illicit, due to screened nature of the location. Smaller quantities of modern drink containers were noted at Barrows 11 (8%), 18 (1%) and Site 21 (1%).

A scatter of horseshoes (one from each of Barrows 9, 13, 19 & Site 21) and two horse buckles (Barrow 11 & Site 16) testify to the riding or keeping of horse on the Heath, presumably pre-dating the arrival of the golf course in the late 19th century.

Special mention in this category of artefact should be made of the contents of Pit [8] in Barrow 11, from which came a wide range of metal work, dating to the second half of the 19th century. This included a pair of gin traps, three beer barrel spigots, a decorative cricket buckle (*c.* 1865), a Jew's harp, a large shoe buckle, an ornate box lid or clasp, a surveyor's chain link tally, two cabinet fittings, five ointment tubes and an assortment of other unidentified iron and copper alloy objects, together with a significant quantity of broken vessel glass and a ceramic ginger beer jar. The reason behind the dumping of all this assorted waste in one pit dug into the surface of the barrow is unclear.

Glass by David Bullock and George Anelay

A total of 3,780 fragments of glass were recovered from the excavations, of which 3,581 were vessel glass, 63 window glass, 5 marbles and 1 bead; 130 were unidentifiable. No datable glass pre-dates the very end of the 19th century, but there is a good representation for all subsequent decades. Spatially there is a striking shift in the distribution of vessel glass during the course of the 20th century, with all the identifiable modern glass being confined to the area around Barrows 13 and 14 and in the Barrow 9 trench. This probably reflects two aspects of the public use of the Heath, one linked to the demise of the golf course, and the other to the ongoing use of the cricket pitch. The golf club closed its course on the Heath in 1994, up to which time the area around Barrows 13 and 14 formed a busy junction between two holes and two tees. Following the closure this area became much more secluded, and it is this that seems to have resulted in an upsurge in alcohol consumption in recent years, presumably largely of an illicit nature. By contrast, modern-day drinking in the vicinity of Barrow 9 is likely to be linked more to picnicking around the edges of the cricket pitch on match days, an inherently more public activity. Alcohol consumption in earlier periods appears to have been more evenly spread around the Heath, although there is little evidence for it after the 1930s, a fact which may be linked to the increasingly overgrown nature of the Heath, which would have restricted the options for picnicking more and more to the golf fairways, with obvious drawbacks. Aside from Barrows 9 and 13, which seem to have had an enduring appeal for drinkers, Barrows 11 and 19 and Site 17 appear to have been favoured in the early years of the 20th century. Barrow 11 produced prodigious quantities of wine, beer and soft drink bottles of this period, with the empties in some cases seemingly discarded into convenient animal holes. The users of Barrow 19 appear to have followed suit, with two Gordon's gin bottles found at the base of an old rabbit hole, amidst a wider-spread background of broken wine and beer bottle glass. The significant quantities of early 20th century beer, soda water and medicine bottle glass at Site 17 may be linked to contemporary military exercises, with the larger internal pit and encircling ditch providing a suitable depository for the resulting accumulation of rubbish.

Plastic and clothing by George Anelay

As might be expected, a significant quantity of plastic rubbish was found across the trenches, including food wrappers, pens, a ruler, crayons, buttons, tobacco pouches, children's toys, bottle tops, combs, a knife and fork and a condom wrapper. In addition five fragments of shoe, a part of a leather belt, a shoelace and a sock were recovered. As with the alcohol, such finds concentrated in the secluded area around Barrows 13 and 14, and adjacent to the cricket pitch in the Barrow 9 trench, presumably for similar reasons.

Sporting equipment by George Anelay

Aside from any recreational shooting that may be reflected in the shotgun cartridges and lead shot, the excavations produced ample evidence for the Heath's past and present recreational use. This ranged from the five glass marbles mentioned above (and one additional ceramic one), to four cricket balls (all from Barrow 9, save one example from Barrow 11, which must have been a prodigious hit), a coconut shell (possibly from the Taro fair), two tennis balls and numerous golf tees (90 in total) and balls. The latter category comprised 85 examples, dating from the late 19th century through to the modern era. The aggressive nature of the Heath soils, together with the more careful and parsimonious nature of early golfers and their more limited number, means that while the club was in existence from 1891, only two golf balls from the early years were found, one a probable Gutta Percha from Barrow 13, and the second a probable Bramble from Barrow 4. The number of balls then increases through the 1920's (2 Silver King's), 30's (6, including Dunlops, Top Flite, Maxim & Penfold) and 40's (only 1, a Super) until a marked increase in number for the post-war years. The majority of the balls found lie in locations to be expected, given the layout of the course within living memory, with the exception of the relatively high number (18) found in the Barrow 9 trench, which is something of a puzzle, since it lies well away from any of the fairways and is close to the cricket pitch.

Appendix 13.2

Details of unworked stone material and daub

Unworked stone Stuart Needham, with identifications by David Bone

Note that pieces catalogued in Chapter 13 are not listed here.

Context types: bt – buried topsoil; df – ditch fill; ff – fill of feature of uncertain origin; g – soil profile of golf green, all reworked; ll – leaf litter/mulch; m – mound; mt – mound, turf stack; ml – mound leached upper parts; md – mound, disturbed contexts; me – edge of mound deposit, possibly later; ms – mound sand layer; msc – mound, sandy clay layer (upcast); n – natural, surface of; ni – natural, inside earthwork enclosure; pf – pit fill; rds – root disturbed soil; ss – subsoil; sso – subsoil outside mound or earthwork enclosure; ssi – subsoil inside earthwork; ssu – subsoil under mound or earthwork enclosure bank; t – modern topsoil.

Material: fcs – ferruginous cemented sandstone.

Note: * dimension given only for the largest piece.

Site/Barrow 23 group under bank

Six stone pieces (three catalogued, S17-S19) occurred in the part of Site 23 sealed under the bank around the golf green (contexts 175 & 176). It is hard to assess their significance and dating. They would not have been far below the ground surface prior to green construction in 1907, but still could have been associated with either the Mesolithic horizon or the talus of Barrow 23 on its eastern side.

Sites 16 and 17

The material from these modern sites is not listed in the Table below.

Site 16: Rock types present: Malmstone, Upper Greensand; fcs; burnt stone, roof slate.

Site 17: Rock types present: Malmstone, Upper Greensand (one piece with flat artificial face); fcs; burnt stone, sandstone (non-iron-rich), roof slate, coke. Also a small naturally polished sub-rectangular pebble (cf Barrow 13 context 79 and context 100).

Occurrence of Upper Greensand and Chalk

Blocks of Upper Greensand and/or Chalk came from Barrows 8, 10, 12, 13 & 24 and Sites 16, 17, 21 & 23. None is in a secure prehistoric context and much seems to be associated with areas of later disturbance.

Context	Context type	Weight (g)	Maximum dimension (mm)	Thickness (mm)	Rock type	Other dimensions and comments
Barrow 1						
2	rds (S)	-	-	-	roof slate	
2	rds (S)	150	64.5	31	light orange sandstone	fine-grained with fe-concretions on surface – probably Pulborough Sandrock
2	rds (S)	79	48	36	dark brown fcs	dense grains up to 4.5mm across
4	ml (upper slope)	15	-	-	fcs	5 flattish pieces
8	ml (lower slope)	45	50.5	33	fcs?	rather lightweight; medium-coarse grain
8	ml (lower slope)	14	-	-	fcs	3 flattish pieces
Barrow 4						
8	ms	4	-	-	fcs	2 flattish pieces
32 (F 20)	pf (lower)	8	-	-	black-coloured fcs?	2 pieces
34 (F 33)	pf (upper)	10	35	10	fcs	
35 (F 33)	pf (lower)	4	25.5	7.5	fcs	one face very flat, but dense grains are *not* ground down at all
36 (F 33)	pf (upper)	4	-	-	fcs	
37 (F 33)	pf (upper)	45	-	-	fcs	12 flattish pieces
Barrow 8						
1	ll	123	91	44	lightweight off-white siltstone	Malmstone, Upper Greensand
1	ll	19	-	-	lightweight off-white siltstone	6 small pieces; Malmstone, Upper Greensand
1	ll	20	37.5	20	slightly orangey beige medium-grained vesicular sandstone	Probably sarsen
4 (F 132)	?gully fill	-	-	-	roof slate	
5	mt	10	37	11	buff siltstone	Malmstone, Upper Greensand
5	mt	1	-	-	fcs	
Barrow 9						
1	ll	-	-	-	roof slate	
1	ll	254	99	32	fcs	naturally moulded faces; occasional large grits up to 5mm
1	ll	53	70	13.5	fcs	occasional large grits & gravel up to 11mm
1	ll	25	40.5	16.5	fcs	
1	ll	14	45	7	fcs	
2	t	20	-	-	fcs	3 small pieces
3	m (R-B pot)	211	-	-	fcs	28 small pieces – largest 55mm across
6	pf (modern)	-	-	-	roof slate	
Barrow 10						
100	ll	-	-	-	roof slate	
100	ll	307	126	58.5	buff siltstone	Malmstone, Upper Greensand
100	ll	73	-	-	fcs	4 flattish pieces
101	md	240	-	-	fcs	48 flattish pieces
101	md	18	44.5	15	fcs	finger-shaped with socket in one end
101	md	-	-	-	roof slate	
102	t	24	-	-	ferruginous siltstone	4 pieces; possibly Pulborough Sandrock
103	md	595	-	-	fcs	100 pieces
103	md	52	67	25	buff siltstone	Malmstone, Upper Greensand
103	md	43	-	-	buff siltstone	3 pieces; Malmstone, Upper Greensand

Context	Context type	Weight (g)	Maximum dimension (mm)	Thickness (mm)	Rock type	Other dimensions and comments
105	ff (modern)	55	-	-	fcs	5 pieces
105	ff (modern)	31	51.5	15.5	off-white siltstone	Malmstone, Upper Greensand
107	mt (R-B pot)	740	-	-	fcs	42 pieces, mainly flattish, some nodular
107	mt (R-B pot)	130	67	36.5	dense fine-grained light bluey-grey rock	?railway scalping
108	me (R-B & modern pot)	44	61.5	35	buff siltstone	Malmstone, Upper Greensand
108	me (R-B & modern pot)	-	-	-	roof slate chip	
Barrow 11						
13	sso	23	55	12.5	fcs	
14	ss (?under)	-	-	-	roof slate chip	
14	ss (?under)	<1	-	-	light grey sandstone	medium grained; very thin chip
51	ll & t	10	29	11.5	fcs	grains up to 4mm
51	ll & t	4	19	15	Siliceous stone?	spherical and vesicular
52	pf (modern)	255	-	-	whetstone	modern cigar-shaped whetstone fragment
52	pf (modern)	16	35	19.5	light yellow ?stone	fairly hard but scratchable – synthetic material?
111	mt (v. low)	2	-	-	fcs	small flattish piece (Quinn, Appendix 13.3)
Barrow 12						
sewer pipe trench	ff (modern)	1061	172	-	off-white siltstone	Malmstone, Upper Greensand
5(?)	t (modern pot)	340	125	72.5	off-white siltstone	Malmstone, Upper Greensand
20 (F1)	pf (lower; modern?)	1317	190	-	off-white, well-sorted, glauconitic fossiliferous siltstone	Malmstone, Upper Greensand; roughly cuboid – building block? (*or* Marehill Mudstone – Quinn, Appendix 13.3)
20 (F1)	pf (lower; modern?)	52	82	32	off-white siltstone	Malmstone, Upper Greensand
24	pf (upper)	20 11	49.5 39	18.5 17	off-white siltstone, green-tinged	Malmstone, Upper Greensand
32/33 base of E ditch <96>	df (lower)	<1	-	-	black vesicular sintered material	Intrusive?
Barrow 13						
5	md (→mod)	-	-	-	roof slate	2 pieces
5	md (→mod)	265	129	33	fcs	
5	md (→mod)	7	30	9	fcs	
5	md (→mod)	6	42	14	buff siltstone	Malmstone, Upper Greensand
6	t	-	-	-	roof slate	2 pieces and 3 chips
8	msc	53	53	21	fcs	tabular sandstone with iron-pan layer up to 6mm thick attached
10 (F 49)	md (→mod)	3	22	6.5	grey hard very fine-grained fcs pebble	highly weather-polished, which has picked out sedimentary strata
10 (F 49)	md (→mod)	333	81*	32*	fcs	8 pieces, of which 2 joining pairs; dense & granular
10 (F 49)	md (→mod)	82	74.5*	18*	fcs	7 pieces
10 (F 49)	md (→mod)	1347	106.5*	43*	chalk	18 pieces
25	mt & md (R-B & med pot)	<1	29.5	5.5	slate	pencil
25	mt & md (R-B & med pot)	348	72.5*	41*	fcs	19 pieces
25	mt & md (R-B & med pot)	513	80*	28*	chalk	32 pieces (2 join)
37	sso & ssu?	230	113.5	29	fcs	W 52.5mm; fairly regular but natural cross-section, no sign of modification

Context	Context type	Weight (g)	Maximum dimension (mm)	Thickness (mm)	Rock type	Other dimensions and comments
37	sso & ssu?	108	45.5*	27*	fcs	10 pieces
37	sso & ssu?	8	32	27	off-white siltstone	1 piece (in 3 fragments); Malmstone, Upper Greensand
44 (F 45)	md (animal)	315	114	44	chalk	Grey Chalk subgroup
48 (F 49)	md (robber)	810	173	101.5	buff siltstone	Malmstone, Upper Greensand
48 (F 49)	md (robber)	45	62.5*	20*	buff siltstone	3 pieces; Malmstone, Upper Greensand
48 (F 49)	md (robber)	161	66*	22.5*	fcs	11 pieces
52 (F 53)	md (animal)	3790	126*	79*	chalk	24 pieces, two with sharp ?tool marks
55 (F 56)	ff (gully E of mound)	19	-	-	fcs	3 small pieces
66	mt (lower)	14	-	-	fcs	2 pieces
68 (F 49)	md (robber)	412	106.5*	30.5*	fcs	22 pieces, some very small
69 (F 49)	md (robber)	249	75*	25*	fcs	12 pieces of varied forms
90	t (outside)	-	-	-	roof slate	
95	mt (above 77)	3	-	-	fcs	
103	mt (W end)	5	35	4.5	hard very fine-grained grey fcs	slate-like form but with variably rounded edges and general surface polish
Barrow 13 school test pits						
TP1		-	-	-	roof slate chip	
TP2		10	-	-	chalk lump	
TP3		4	-	-	roof slate chip fcs	
TP5		61	-	-	fcs	very gritty
Barrow 14						
1	ll (mod)	-	-	-	roof slate	
11	t	34	54	22	fcs	2 joining pieces creating a roughly wedge-shaped form; fairly friable
14	t (mod)	186	115	30	fcs	a few large grits
18	t	33	44	24	fcs	occasional large grits
30	t	179	92	28.5	fcs	one nodular face
30	t	164	111	19	fcs	one nodular face
30	t	29	59.5	13.5	fcs	one nodular face
30	t	14	55	10	fcs	one nodular face
30	t	40	54	17	fcs	one slightly nodular face
30	t	33	48	24	fcs	one slightly nodular face
30	t	30	55	20.5	fcs	
30	t	10	39	12	fcs	
30	t	5	20.5	14.5	fcs	
30	t	4	20.5	12.5	fcs	
41	t	157	89	30.5	fcs	very coarse with grits up to 4mm
65	t	1	20.5	11.5	fcs	
85	cleaning layer of interior	66	51	30	fcs	sf 324
85	cleaning layer of interior	211	98	35.5	fcs	sf 318
85	cleaning layer of interior	84	58.5	29.5	fcs	sf 317
85	cleaning layer of interior	77	57	30	fcs	sf 321
85	cleaning layer of interior	61	60.5	23	fcs	sf 323; one slightly nodular face

Context	Context type	Weight (g)	Maximum dimension (mm)	Thickness (mm)	Rock type	Other dimensions and comments
85	cleaning layer of interior	57	71.5	24.5	fcs	sf 322; one slightly nodular face; sandwiched in middle of slab is a very thin (c. 0.5mm) layer of black crumbly material
1401	t (mod)	110	65	32.5	fcs	abraded join
1401	t (mod)	35	52	26	fcs	
1401	t (mod)	28	62	15.5	fcs	rather black surfaces
1402	ss	8	32	15.5	fcs	
1402	ss	10	29	14.5	fcs	occasional larger grits up to 4mm
1409	?bank material	-	9.5	-	fe-rich pellet	sf 4
1409	?bank material	-	10	-	fe-rich pellet	sf 10
1410	charc. spread under topsoil	10	34.5	10.5	pebble of very hard light grey-brown fine-grained fcs – rather vesicular	differential weathering has brought the sedimentary laminae out as ridges
1413	spread of sandstone	4950	280	104	fcs	
1413	spread of sandstone	1498	224	73	fcs	one face nodulated
1413	spread of sandstone	824	140	43	fcs	L 129, W 112
1413	spread of sandstone	90	78		gravel flint	
1413	spread of sandstone	19	45	15.5	fcs	L 42.5, W 31
1413	spread of sandstone	3067	260	75	fcs	
1413	spread of sandstone	2716	230	70	fcs	
1413	spread of sandstone	1268	184	57	fcs	These two join to make a sub-triangular tabular block with roughly rounded edges and one face nodulated; combined L 320, W 164.
1413	spread of sandstone	2400	240	62	fcs	
1413	spread of sandstone	1950	190	81	fcs	
1413	spread of sandstone	335	127	38	gravel flint	sf 3; convex face thermally pocked with off-white patina; reverse a weathered fracture cream to pallid orange.
1413	spread of sandstone	184	102	32	fcs	
1413	spread of sandstone	145	99	38	fcs	
1413	spread of sandstone	73	67	37	fcs	
1413	spread of sandstone	60	67	25	fcs	
1413	spread of sandstone	60	68	25	fcs	
1413	spread of sandstone	34	79	26	fcs	
1413	spread of sandstone	38	50	24	fcs	
1413	spread of sandstone	15	46		fcs	
1414	?bank material	663	139	55	fcs	L 134, W 73
1417	BMX ruts	313	124	41	fcs	
1417	BMX ruts	78	68	33	fcs	part of a concretion formed round a core (now hollow)
1417	BMX ruts	35	64	20.5	fcs	
1417	BMX ruts	35	60.5	19.5	fcs	
1417	BMX ruts	33	40.5	24.5	fcs	
1417	BMX ruts	15	33	21	fcs	
1417	BMX ruts	10	24.5	-	fcs	
1417	BMX ruts	4	26	9	fcs	
1426	ni	14	42	10	fe-concretion?	contorted in a patterned way
1426	ni	35	-	-	fe-concretions	12 small pieces
1431	ss (rds?)	67	53.5	-	burnt flint	
1444	ssi	11	41	10.5	fe-concretion	contorted form

Context	Context type	Weight (g)	Maximum dimension (mm)	Thickness (mm)	Rock type	Other dimensions and comments
1460	df (lower)	23	45	17	fcs	
1460	df (lower)	10	-	-	fcs	7 small pieces
1508	inside urn	< 1	8.5	4	fe-concretion	sf 104; tiny nodule with cupped depression in one side – probably all natural form
Barrow 18						
2	t (mod)	2	38	5	slate	pencil
3	mt (upper)	91	71.5	25	fcs	2 joining pieces; very gritty, grits up to 6mm
4	mt (upper middle)	11	33.5	20	slightly soft bluey-grey mudstone	probably from underlying geology
4	mt (base)	3460	255	68	fcs; hard but surfaces rather friable; dull orangey-brown back; much of hollow grey	L c.220mm, W 195mm; a large block with a roughly convex face and the other with a large hollow up to 18.5mm deep – not obviously due to artificial shaping; layering shows in sides; (Quinn, Appendix 13.3)
Barrow 19						
16 (F 13)	pf (→mod)	-	-	-	2 roof slate fragments	
17 (F 13)	pf (→mod)	-	-	-	roof slate fragment	
20 (F 18)	pf (urn; SE)	6	38.5*	-	fcs	sieve sample 501; 3 contorted pieces
22 (F 18)	pf (urn; NW)	6	32	10.5	fcs	sieve sample 503
49 (F 42)	df (upper; S)	76	92	25	fcs with dusty surface	sf 1007
49 (F 42)	df (upper; S)	< 1	-	-	fcs	2 pieces
404 (F405)	pf (middle)	< 1	-	-	fcs	
412	ssi	3	19.5	8	quartz pebble; semi-translus-cent pale wax colour	sf 84; no sign of working, but may have been 'collected'
412	ssi	4	23	8	dark grey quadrangular pebble with high-gloss surface; very fine-grained fcs	sf 98; grooves follow natural fissures; these and flake scars precede the high, presumably natural polish
412	ssi	1	14	-	fcs	sf 133
414	pf (grave outside coffin)	416	132.5	42	fcs	sf 1018; W 86mm; double-layered block; one end has a deep hollow in one side
Site 21						
2	multi-layer slot	-	-	-	roof slate fragment	
2	multi-layer slot	111	72.5*	22.5*	off-white siltstone	3 pieces; Malmstone, Upper Greensand
2	multi-layer slot	133	57.5	39	fcs	
2	multi-layer slot	79	51*	35.5*	fcs	3 pieces
4	ss (upper)	55	55*	31*	off-white siltstone	2 pieces; Malmstone, Upper Greensand
6	ss (upper)	264	87*	22*	off-white siltstone	18 pieces; Malmstone, Upper Greensand
6	ss (upper)	1	14	-	fcs	
7	multi-layer slot	304	85*	39*	fcs – very dark brown & friable	4 pieces
8	ss (lower) (PM pot)	25	46.5*	23*	buff very fine-grained sandstone	3 pieces
13	ss (upper)	69	66	25	fcs	
13	ss (upper)	25	45*	13*	buff siltstone	Malmstone, Upper Greensand
15	under lower spits	32	47.5*	24.5*	off-white siltstone	3 pieces; Malmstone, Upper Greensand
16	ss (lower)	269	116.5*	57.5*	off-white siltstone	2 pieces; larger block with possible dressed faces especially a gently concave one; Malmstone, Upper Greensand
27	ss (upper) (mod)	3	27	-	fine-grained vesicular white sandstone	alternatively mortar? flint chip embedded
36	NE end of main trench, 1m^2	-	-	-	roof slate fragment	
47	NE end of main trench, 1m^2	12	42	18.5	off-white siltstone	Malmstone, Upper Greensand

Context	Context type	Weight (g)	Maximum dimension (mm)	Thickness (mm)	Rock type	Other dimensions and comments
49	NE end of main trench, 1m²	2	22	11	off-white very fine-grained sandstone	one face partly flat, possibly due to grinding
51	final clean	74	85*	31.5*	off-white siltstone	2 pieces; Malmstone, Upper Greensand
52	df (drain)	4	22	-	chalk	
Site & Barrow 23						
11	g (→mod)	-	-	-	roof slate fragment	
16	g (→mod)	-	-	-	roof slate fragment	
18	g (→mod)	-	-	-	roof slate fragment	
172	t (on bank; →mod)	28	35*	18*	fcs	3 pieces
172	t (on bank; →mod)	5	30.5	14.5	off-white siltstone	
172	t (on bank; →mod)	3	17.5	9.5	dark grey pebble	highly polished surfaces
172	t (on bank; →mod)	53	37.5*	21*	chalk	4 pieces
172	t (on bank; →mod)	-	-	-	roof slate fragments	4 pieces
173	g bank (upper;→mod)	-	-	-	roof slate fragment	
174	t	< 1	17	5.5	slate pencil	
175 spit 4	bt (under bank)	211	115.5	23	fcs	L 108, W 40; a very crisp rectanguloid block, but there are no signs of working, so probably entirely natural
175 spit 4	bt (under bank)	28	51	15	fcs	
176 spit 8	ss (under bank)	42	62	17.5	fcs	
Barrow 24						
262 (F 207)	df (upper)	879	173	41.5	chalk	W 120mm; sub-triangular plan with plano-convex section – possibly shaped
276 (F282)	pf (?recent)	14	-	-	fcs	10 small pieces

Daub, Stuart Needham

Context	Context type	Weight (g)	Max dimensi-on (mm)	Thickness (mm)	Fabric	Other dimensions and comments
Site 21						
6	ss (upper)	5	24.5	16.5	pale orangey-grey	
52	df (drain)	30	55.5	28	buff dusty fabric with occasional small grits	one face bears impressions of two rods and part of a third

Appendix 13.3

Petrographic analysis of eight stone objects

Patrick Sean Quinn

Thin section petrographic analysis has been undertaken on eight stone specimens excavated from the barrows on Petersfield Heath. Four of the pieces are thought to be artefacts (nos 1, 2, 4 & 5; see Chapter 13) and the others were of interest due to their contexts or material. The aim of the analysis was to characterise their lithic raw materials in detail and shed light on their origins. The thin sections prepared and analysed in this report are housed in the reference collection of www.ceramicpetrology.co.uk at the Institute of Archaeology, University College London. These can be consulted by arrangement with Patrick Quinn.

Methodology

Small pieces of all eight samples were removed with a rotating diamond blade then impregnated with epoxy resin. The impregnated subsamples were prepared as standard petrographic thin sections at the Institute of Archaeology, University College London (Quinn 2013, 23-33) and studied at magnifications of 25-400x under the polarising light microscope. They were interpreted in terms of the lithic raw materials from which they were manufactured. The samples were compared to one another to identify compositional similarities and differences. The possible sources of the raw materials were investigated based on comparison with the geology of the area around Petersfield Heath (Melville and Freshney 1982).

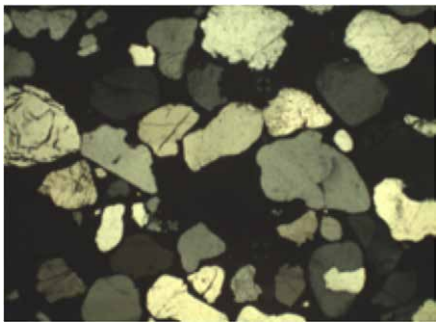
Composition and Characterisation

Seven of the eight specimens were manufactured from sandstone. They have been characterised using the standard descriptive methodology that is applied to this rock type including the abundance, composition, size, sorting, shape and roundness of the clasts, the abundance and composition of the matrix or cement and the abundance and nature of the pores in the rock.

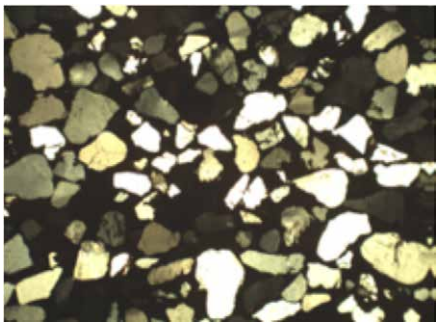
Sample 1: Barrow 11 context (31), SF 3

This object is a medium grained, well-sorted, iron cemented quartz-rich sandstone (Fig 1 sample 1). The clasts which make up 52% of the rock are composed mainly of monocrystalline quartz with undulose extinction which can be weathered and feature iron stained fractures. Rare polycrystalline quartz is also present, some with foliation. The grains are equant and elongate and generally well-rounded. The rock has a mean grain size of 0.39mm and the clasts are well-sorted. The grains are surrounded by 35% of matrix/cement, which is dark red-brown to opaque, iron-rich and homogeneous.

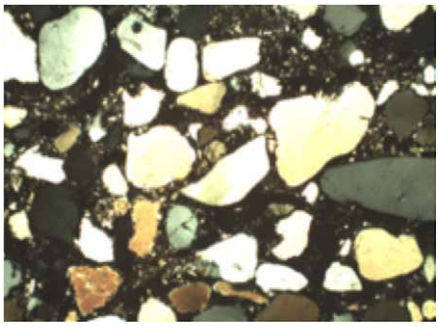
Sample 1



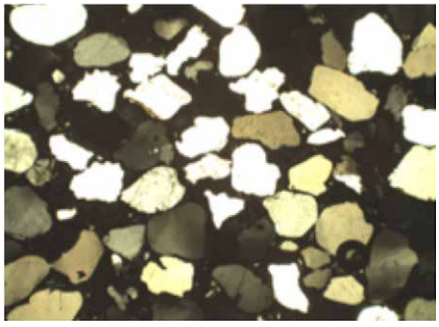
Sample 2



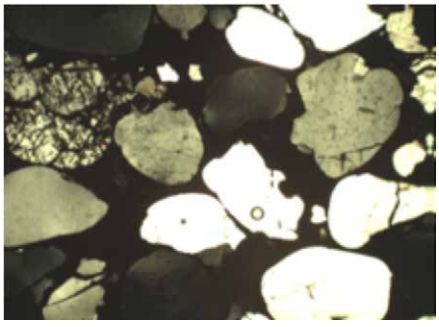
Sample 3



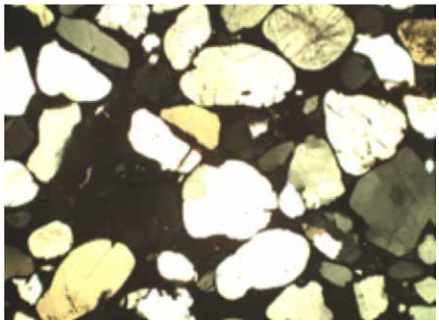
Sample 4



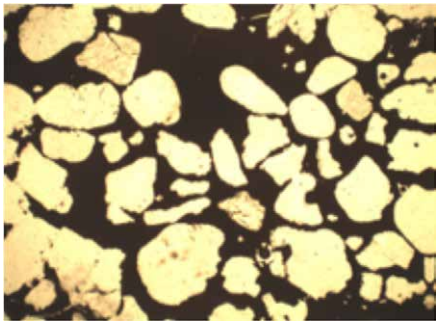
Sample 5



Sample 6



Sample 7



Sample 8

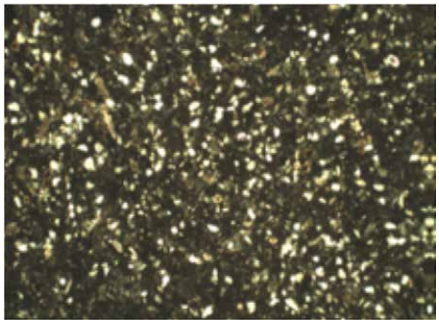


Figure 1 Thin section photomicrographs of Early Bronze Age stone samples from Petersfield Heath, Hampshire. Images taken in crossed polars; Image width = 2.9 mm

Sample 2: Barrow 11 context (31), SF 2

Sample 2 was made from fine grained, well-sorted, iron cemented quartz-rich sandstone (Fig 1 sample 2). The clasts which make up 48% of the rock are composed mainly of monocrystalline quartz with undulose extinction, which can be weathered and feature iron stained fractures. Rare polycrystalline quartz clasts are also present, some of which have foliation. The grains are elongate and equant and sub-angular to rounded. The rock has a mean grain size of 0.22 mm and the clasts are well-sorted. The grains are surrounded by 41% of matrix/cement, which is dark red-brown to opaque, iron-rich and homogeneous.

Sample 3: Barrow 11 context (105)

This piece is a medium grained, well-sorted, iron cemented quartz-rich sandstone (Fig 1 sample 3). The clasts which make up 51% of the rock are composed mainly of monocrystalline quartz with undulose extinction which can be weathered and feature iron stained fractures. Rare polycrystalline quartz clasts are also present, some with foliation. The grains are elongate and equant and sub-angular to well-rounded. The rock has a mean grain size of 0.38mm and the clasts are well-sorted. The grains are surrounded by dark red-brown to opaque matrix/cement, which is iron-rich and homogeneous.

Sample 4: Barrow 12 feature [3] context (25)

This artefact was made from medium grained, well-sorted, iron cemented quartz-rich sandstone (Fig 1 sample 4). The clasts which make up 48% of the rock are composed mainly of monocrystalline quartz with undulose extinction which can be weathered and feature iron stained fractures. Rare polycrystalline quartz clasts are also present, some with foliation. The grains are equant and elongate and sub-rounded to well-rounded. The rock has a mean grain size of 0.33mm and the clasts are well-sorted. The grains are surrounded by dark red-brown to opaque matrix/cement, which is iron-rich and homogeneous.

Sample 5: Barrow 13 context (79), SF 342

This artefact was manufactured from coarse grained, moderately sorted, iron cemented quartz-rich sandstone (Fig 1 sample 5). The clasts which make up 53% of the rock are composed mainly of monocrystalline quartz with undulose extinction which can be weathered and feature iron stained fractures. Rare polycrystalline quartz clasts are also present, some with foliation. The grains are equant and elongate and rounded to well-rounded. The rock has a mean grain size of 0.59mm and the clasts are moderately sorted. The grains are surrounded by 28% of matrix/cement, which is dark red-brown to opaque, iron-rich and homogeneous.

Sample 6: Barrow 18 context (4)

Sample Petersfield Heath 6 was made from medium grained, moderately sorted, iron cemented quartz-rich sandstone (Fig 1 sample 6). The clasts which make up 51% of the rock are composed mainly of monocrystalline quartz with undulose extinction which can be weathered and feature iron stained fractures. Rare polycrystalline quartz clasts are also present, some with foliation, as well as rare chert. The grains are elongate and equant and sub-angular to well-rounded. The rock has a mean grain size of 0.46mm and the clasts are moderately sorted. The grains are surrounded by 27% of matrix/cement, which is dark red-brown to opaque, iron-rich and homogeneous.

Sample 7: Barrow 11 context (111)

This piece is of a medium grained, well-sorted, iron cemented quartz-rich sandstone (Fig 1 sample 7). The clasts are composed mainly of monocrystalline quartz with undulose extinction which can be weathered and feature iron stained fractures. Rare polycrystalline quartz clasts are also present, some with foliation. The grains are elongate and equant and sub-angular to rounded. The rock has a mean grain size of 0.42 mm and the clasts are moderately sorted. The grains are surrounded by 31% of matrix/cement, which is dark red-brown to opaque, iron-rich and homogeneous.

Sample 8: Barrow 12 feature [1] context (20)

Sample 8 was made from well-sorted, glauconitic, fossiliferous siltstone (Fig 1 sample 8). The terrigeneous clasts which make up 18% of the rock are composed of monocrystalline quartz with significant proportion of glauconite, abundant siliceous microfossil remains and rare biotite and muscovite mica. The grains are elongate and equant and angular to sub-rounded. The rock has a mean grain size of 0.07 mm and the clasts are very well sorted. The grains are surrounded by clay-rich matrix/cement. The microfossils appear to be radiolaria and/or silicoflagellates, as well as rare sponge spicules. The raw material from which the sample was made can be classified as a muddy glauconitic siltstone, or perhaps a radiolarite given the high abundance of siliceous microfossils.

Discussion

Seven of the eight stone samples analysed (samples 1-7) have a similar petrographic composition in thin section. They are all iron-rich sandstone that is dominated by rounded quartz clasts that exhibit some weathering and iron-staining. Minor amounts of polycrystalline quartz with foliation occur in all seven prepared thin sections. The samples differ only in terms of their grain size, degree of sorting and proportion of clasts. For example, sample 5 has a considerably larger average grain size and is less well sorted than sample 2.

Sample 8 is compositionally distinct from the other seven in that it is not composed of sandstone. The sample was made instead from a finer detrital sedimentary rock, with silt sized clasts. It lacks the iron-rich cement of the sandstone artefacts and has a clay-rich matrix instead. Two striking features of the rock are the presence of glauconite and siliceous microfossils. The latter do not occur in the other seven samples. Clastic sedimentary rock that is rich in such fossils is referred to as diatomite or radiolarite. The latter label may be appropriate in this case.

The similarity between samples 1-7 suggests that they could all be from the same sandstone source. Clastic sedimentary rock types exhibit variation in grain size, texture and composition relating to differences in local sedimentation. This could account for the minor differences seen here. The bedrock of the area surrounding Petersfield Heath is dominated by sandstone of the Wealden Group (Melville and Freshney 1982). This is classified into various units including the Hythe Formation, the Rogate Member, the Pulborough Sandrock Member and the Folkestone Formation. The Pulborough Sandrock Member is described as having ferruginous sand beds at the top. This thin cemented ironstone marks the boundary between the Pulborough Sandrock Member and the overlying unit, the Marehill Clay Member. Given the presence of this rock type in the study area, it is a strong candidate for the source of Petersfield Heath samples 1-7. The younger Marehill Clay Member, which follows the Pulborough Sandrock Member is described as a dark grey, locally glauconitic, silty clay. It may therefore be a match for the raw material used to manufacture sample Petersfield Heath 8. The description of this unit, which was previously included in the Sandgate Beds, does not mention the presence of siliceous microfossils such as diatoms, radiolaria or silicoflagellates, though these are in keeping with its deposition in a marine environment in the Cretaceous period. In the type section, a sand pit near Marehill, it is described as having a blocky structure, suggesting that it was well lithified rather than being a soft sediment.

Appendix 13.4

Lipid analysis of sherds from Petersfield Heath

Julie Dunne

Molecular and isotopic analyses of absorbed organic residues from archaeological pottery, using gas chromatography (GC), gas chromatography-mass spectrometry (GC-MS) and gas chromatography-combustion-isotope ratio mass spectrometry (GC-C-IRMS), can identify biomarkers that allow us to identify a considerable range of commodities (Evershed 2008). These include terrestrial animal fats (ruminant adipose and dairy) as proxies for carcass processing and secondary product exploitation, together with marine animal fats, plant waxes and beeswax (Roffet-Salque *et al.* 2017).

Small samples of ceramic from nine objects were submitted for lipid analysis as listed in Table 1. Wherever possible they were from close to the rim of the vessel. Only the sample from P9 yielded a result, showing that the vessel had been used to process non-ruminant (pig) products.

Cat no	Barrow	Context	Description	Comments
P1	8	Urn 1	Upright Collared Urn burial	i) Good size rim sherd, unconsolidated but may be well weathered (sealed under small burial mound). ii) Detached fragment of collar base, probably also degraded.
P2	19	Urn 2	Inverted Collared Urn burial	Separate sherds from near base (where broken in situ), but these not far below modern ground surface, so weathered. More sample could be supplied from this area. Rim and body intact and not sample-able.
P3	19	Urn 3	Inverted Collared Urn burial	Some small separate sherds submitted. Main pot not sample-able, except possibly at base, where a break had to be repaired.
P4	14	Urn 4	Inverted Biconical Urn burial	Main pot not sample-able. Some small separate body sherds submitted.
P5	19	Urn 5 SF 230	Sherds of a Collared Urn cladding Urn 2	One rim sherd (SF 230) sampled.
P6	19	SF 1031	Part-pot	Only lower part of pot present. Various small sherds available & one slightly larger one removed from restored pot but has traces of glue on one side.
P8	19	SF 1034	Ceramic ladle/scoop	A very rare type. Only the bowl of it present and this is fragile and restored; however, some small rim sherds not reattached submitted.
P9	19	SF 1011	Urn sherd from ditch fill	Only a large body sherd present, but required size provided.
P11	23	'vessel 1'	LBA pot sherd (thin-walled fineware)	Smaller of two sherds available (for sub-sampling?); however, it is fractured and has been re-joined with glue (HMG). May be near rim.

Table 1 Details of samples submitted for lipid analysis

Appendix 13.5

Further details on mineral-replaced organics and other soil forms

Stuart Needham

Large lump of uncertain material

Barrow 19, Urn 2 pit: SF 251 (pit fill SE quadrant) – soil form, low-fired ceramic or decayed stone.

This large lump had split into three main pieces during excavation. Most is dark purple-brown and a small core lighter brown (Fig 1). It is riddled with fine roots and is extremely light in weight, partly presumably due to its vesicular structure, but potentially also due to decay, for example, like a calcareous rock that has been attacked by the acid environment. The fissures have allowed sand to penetrate. The main lump is the hardest part and, despite decay and damage, is quite firm with a fine-grained rather than sand fabric. Although craggy, it has four faces, a roughly flat rear and a peaked front comprising three meeting faces to give a sub-triangular section. The smaller lumps are generally more friable.

Figure 1 Lump of uncertain material SF 251 from the Urn 2 pit fill, south-east quadrant, after lifting and fragmented after soil removal

Cat no	Barrow & context	SF no & part	Object	Maximum dimension (mm)	Max. width (mm)	Max. thickness (mm)	Other dimensions (mm)	Notes
Barrow 8 Urn 1 burial								
ORG1	8: 128	-	ring	135 (diam.)	17.5	10		Fill inside urn
ORG2	8: 50 *et al*	-	flared vessel	-	180	-	height 200	Fills & voids inside urn
ORG3	8: 29, 33, 47	-	urn-lining cylinder	330 (diam.)	20	-	height 110-120	Fill inside urn
ORG4	8: 25	-	dish	300 (diam.)	-	30	height 90	Fill inside urn
ORG5	8: 16/26	-	wrap	305 (diam.)	-	-		
ORG6	8:	a	cradle of padding and rope?	280 (horiz. chord)	-	50	depth 190; lefthand part 210 x 90 x 33; righthand part 180 x 130 x 50	Still attached to urn
		b		230 (horiz. chord)	-	35	depth 180; separated piece above 57 x 51 x 12	
		c		125 (diagonal)	40.5	32	depth 102	
ORG7	8: 22	2a	cup/vessel fragment	100	54.5	9.5	Reconstructed vessel: diam. base 57, diam. at break 118, height at break 55	Attached potsherd 41.5 long
		2b		62.5	39	11		Dimensions exclude small detached fragments
		2c		44.5	30	8.5		Dimensions exclude small detached fragments
		2d		39.5	29.5	9		
	8: 20	a	vessel wall fragment?	37	31	7		Very poorly cemented, now in fragments
		b		11	8	2.8		Now largely crumbled
Barrow 11 funerary zone								
ORG8	11: 30, 33	-	burial container	1.5m	0.7m	10	depth 0.35m	Dimensions approximate due to poor definition on some sides
ORG9	11: 100	18	decayed bark piece	250	70	2		Horizontal dimensions as in-situ
ORG10	11: 101	19	vegetation on ground surface	150	130	10.8		Horizontal dimensions as in-situ
	11: 102	20		117	35	5		Horizontal dimensions as in-situ; intermittent coverage
	11: 103	21		51	34.5	4		Horizontal dimensions as in-situ
	11: 104	22		94	45	8.5		
ORG11	11: 121	23	wood lump?	174	105	54		Horizontal dimensions as in-situ
Barrow 13 grave								
ORG12	13: 80	-	cremation bag	480	260	-		Dimensions based on distribution of bones
ORG13	13: 80	343	cremation bag handle	385	89	25	minimum width of grip 15; terminal knob width 24	
ORG14	13: 80	-	burial container	>1.6m	0.65m	-	depth ≥0.35m	
Barrow 14 Urn 4 burial								
ORG15	14: 1518	-	organic lining?	150 (diam.)	-	8	height 50	
ORG16	14: 1517	-	dish?	180 (diam.)	-	10	height 50	
ORG17	14: 1454	-	pit revetment	340 (diam.)	-	-	height 100	Dimensions are of steepest part of pit wall
Barrow 19 earlier central grave [405]								
ORG18	19: 426	-	log coffin	2.0m	0.7m	-		Incompletely excavated
ORG19	19: 424	-	pit revetment	-	-	-		Incompletely excavated
ORG20	19: 407	1036	ribbed piece	22	17.5	9	length 18.5	Inside part-pot SF 1031

Table 1 (continued on next page and overleaf) Dimensions and further details of MROs and other soil forms. All dimensions in millimetres except where stated. The catalogue numbers refer to Chapter 13

Cat no	Barrow & context	SF no & part	Object	Maximum dimension (mm)	Max. width (mm)	Max. thickness (mm)	Other dimensions (mm)	Notes
Barrow 19 later central grave [406]								
ORG21	19: 416	-	log coffin	1.55m	0.65m	100	height 0.9m	
ORG22	19: 590		organic cover?	-	-	-		Very thin, but insufficient traces to be measurable
ORG23	19: 417	1019		57	46	42		
	19: 417	1021		61	44	29		Lump encloses fine-clay flakes, possible MROs
	19: 417	1022a		42	21	11		Largest of several fragments
	19: 417	1023a		59.5	39.5	17		Larger of two main fragments
	19: 417	1024		41.5	34.5	16.5		Dimensions excluding 'cupules'
	19: 417	1025a		30	22	22	radius 22.5; depth 26	Largest of 3 fragments
	19: 417	1026		53.5	38.5	25		
	19: 417	1027		62.5	40.5	23.5		Also 4 small fragments
	19: 417	1028		67	39.5	32.5		Dimensions for 2 joining fragments together
	19: 417	1029		51.5	40	34	smooth convex surface 38 x 31	
Barrow 19 Urn 3 burial								
ORG24	19: 518	-	cremation bag	190	-	30	depth 175	
ORG25	19: 507/510 509/510 516/510 517/510	-	annular band	190 (long diam.)	120 (diam.)	-	height 60	Dimensions based on strati-graphic interface
ORG26	19: 411	a	padded binding?	215 (horiz. chord)	-	30	depth 115	Still attached to pot; (b) is on collar at rim, (c) is in neck.
	19: 400	b		50	-	10	depth 20.5	
	19: 400	c		43.5	-	6	depth 35	
ORG27	19: 400	1013a	clay 'flakes' in luting round foot of urn	14.5	9.5	c. 0.8		Fine clay – ?replacing organic
		1013b		>10.5		c. 0.8		Fine clay – ?replacing organic
		1013c		108 (chord)		20.5	radial width 25	Luting/fillet
Barrow 19 Urn 2 burial								
ORG28	19: 87 & 91	275a	padding inside lower urn	95	67.5	21	tangential chord 81	Part of piece 2
		275b		39	26	13	overall depth in situ 140; max. thickness 40	Part of piece 2
		275c		29	27	6		Part of piece 1
		275d		32.5	24.5	12		Part of piece 1 or 2
		275e		26	16.5	5		Part of piece 3
		275f		49	26	12		Part of piece 3
		275g		49	39	8		Part of piece 3
		275h		34.5	29.5	18.5		Part of piece 3
		275i		35	31	14.5		Part of piece 3
ORG29	19: 90, 93, 94 & 95	-	vessel with ?lining	260 (or 250) (diam.)	-	12	height 220 (or 130)	Alternative dimensions are for shorter bowl alternative
ORG30	19: 97/92 97/100	-	cremation bag	220 (diam)	-	-	depth 110	
ORG31	19: 108	a	lid-clamp	300 (diam.)	160 (diam. of aperture)	32 → 49 (above rim)	radial width 33 → 54; depth overlapping collar 31 → 44	Portion still in situ on urn; conserved (consolidated)
		b				18 → 10	radial width 53	One of two largest detached fragments (unconserved)
		c				20 → 7	radial width 49	One of two largest detached fragments (unconserved)

Cat no	Barrow & context	SF no & part	Object	Maximum dimension (mm)	Max. width (mm)	Max. thickness (mm)	Other dimensions (mm)	Notes
		d				15.5 → 6	radial width 59; MD 70.5	Conserved (consolidated) piece; fracture towards outer edge
		e				11.5 → 6	radial width 62; MD 69.5	Conserved (consolidated) pieces; 2 joining fragments; impression of urn rim in under face
ORG32	19: 102	-	stopper	140 (diam.)	-	40?		Graded upwards into context (100)
ORG33	19: 110	-	wad supporting sherds	115	65 (depth)	25		Still attached to pot
ORG34	19: 21	232a	binding round cladding sherds	31	11	4		MRO attached to inside of pot sherd 232a
	19: 22	245		18	8	≤ 4		
		246		12	12	-		
		247		28	15	≤ 5		
		248		21	17.5	6.5		
		249		25	23	9		
	19:22	241	binding?	38.5	24.5	8.5		
		242		22	13	-		
		243		23	18.5	6		
		244		12	12	-		
ORG35	19: 21	233 & 234	encasement of Urn 5 base	130 (diam.)	-	15	full height (top & bottom) ≥ 40	Dimensions based on images
ORG36	19: 22	228a	convoluted piece(s)	59	41	15	lifted lump: length 180; width 140	
		228b		56.5	36	27		
		228c		56	43	30.5		
		228d		51	33.5	28		
		228e		30.5	26.5	16.5		
		228f		59	52.5	26		
ORG37	19: 22	238a	convoluted layered piece	76	67	35		
		238b		44	31	27		Knob; now detached
ORG38	19: 22	239a	convoluted & layered piece(s)	42.5	28.5	12.5		
		239b		35	25	14		
		239c		32	23	11.5		
ORG39	19: 22	236	thin flakes	12.5	11	c. 0.5		
		237		18	7	2		
		240		22	16	7		Thickness includes sand backing
ORG40	19: 20	252	convoluted & looped pieces	67	50.5	19		
		258		53	26	15.5		
x	19: 20	251	lump	102	63	41		see further above
Barrow 19 ditch fill, north cutting								
ORG41	19: 31	1032a	layered leather?	153	74	33		
		1032b		100.5	60	27.5	22.5 thick without rib	
		1032c		126.5	53	16.5	detached piece increases width to 86	
		1032d	rope?	33.5	15	12		
		1032e		20	7.5	7		

Cat no	Barrow & context	SF no & part	Object	Maximum dimension (mm)	Max. width (mm)	Max. thickness (mm)	Other dimensions (mm)	Notes
Barrow 19 ditch fill, south cutting								
x	19: 415	1014	concretion?	n/m	n/m	n/m		Tiny dark grey lump with slightly craggy surface – FCS?
x	19: 415	1015a	concretions?	40	28	8.5		Sudden upstand inset from one edge
x		1015b		24.5	17.5	14		Triangular cupped form
ORG42	19: 415	1016a	convoluted layered piece	96	78	44		Three flint chips within 1016, one still embedded
		1016b		97	70.5	38.5		
x	19: 415	1017	concretions?	40	-	-		Largest of several fragments
x	19: 415	-	concretion?	44.5	27	23		FCS? Irregular lump with ridges and knobs
x	19: 415	-	concretion?	37.5	22.5	12.5		FCS? Slightly curved, sherd-like piece, rough textured
Barrow 24 ditch fill, east cutting								
ORG43	24: 218	-	split log	> 2.0m	0.8m	0.35m		
Silt plaques: Barrow 19 Urn 3 burial								
x	19: 502	-	plaque fragment?	10	7	3.5	Cream; crumbly but flaky structure (at fresh break).	
P19	19: 502 SW	-	apparently whole disc plaque	18.5	17.5	5	Bi-convex profile thinning to all edges; one face light brown, hard with embedded sand, other more beige and undulating.	
x	19: 502	1036	plaque fragment?	20	15.5	5	One edge an old break showing laminations; surfaces light brown with embedded sand.	
x	19: 502 SW	1045	plaque fragment?	19.5	15	8	Surfaces light brown with embedded sand; edges thinned and rounded – ?due to weathering.	
P17	19: 502 SW	1047	sub-rhombic plaque (2 joining pieces)	55	33	9.5	Surfaces light brown with embedded sand; flaky structure visible at break (?old); one face slightly concave but uneven; thins towards edges all round.	
x	19:502 SW	1048	plaque fragment?	23	10.5	9	One face convex, hard with vesicles and a large embedded quartz sand grain (3mm); other face somewhat convoluted.	
x	19: 502 NE	1049a	oval plaque 63mm long *in situ*? Now in non-joining fragments	37	32	15	No longer reconstructable. (a) thinned to three edges & had soil-filled fissure running through from one face to the other – subsequently split into three pieces.	
		1049b		24.5	19.5	11		
		1049c		20	14.5	9.5		
x	19:506 W	1052	plaque fragments?	-	-	-	Three small chips.	
P18	19: 504/507 SW	1055	oval plaque (3 joining pieces)	61.5	38	10	Old breaks and fissures; laminar structure showing; irregularly thinned round all edges; one face flat but slightly textured, other asymmetrically convex & more uneven – both hard.	
x	19:508 E	1059	plaque fragment?	23	13	8.5	Very crumbly with attached soil – disintegrated.	
x	19: 508 NE	1060a	plaque fragments? 48mm long *in situ*	33	16	7.5	Strongly inclined *in situ*; 3 pieces and further crumbs may originally have joined. Fabric quite hard; (a) has plano-convex profile and an old break showing laminar structure.	
		1060b		20.5	17	6		
		1060c		14.5	12	4		

Cat no	Barrow & context	SF no & part	Object	Maximum dimension (mm)	Max. width (mm)	Max. thickness (mm)	Other dimensions (mm)	Notes
x	19: 504 N	1065	whole plaque?	25.5	17	7	Quite hard fabric; one face undulating, other roughly convex.	
x	19: 504 N	1066	whole plaque?	12	9.5	3	Quite hard fabric; no breaks evident.	
x	19: 504 S	1067	large fragment of plaque?	18	15.5	6.5 (4.5)	Quite hard fabric; plano-convex profile, thinning to 2/3 of circumference; flatter face has a small crescentic protrusion 2mm proud of surface.	
P16	19: 403	-	oval plaque (6 joining fragments)	60	35	10	Small areas of loss at edges; bicuspate long profile; thickest towards one long edge in cross-section.	

Appendix 13.6

Report on the compositional analysis of the Bronze Age beads

Lore Troalen

The beads' chemical composition was determined qualitatively by X-ray fluorescence spectrometry (XRF). It was undertaken using an Oxford ED 2000 air-path instrument, with a rhodium target X-ray tube and the beam collimated to a point of *c.* 2 by 1.5mm, coupled to a Si(Li) detector, without any surface cleaning or preparation. Spectra were collected under the conditions 'Old XRF'. This uses an operating voltage of 46kV and a current of up to 1000μA (set automatically for a 45% dead time) without a primary beam filter to ensure detection of all elements of atomic number 19 or above. Analytical time was typically of 300 seconds.

Regarding the two faience beads (B1 & B2), the analysis shows that a copper-based colorant – possibly bronze, given the presence of tin – had been used to produce the original turquoise colour of the glaze. It was not possible, with the equipment used, to determine the composition of the core, or to detect all the elements present in the bead; for information on the 'recipe' used to make faience in Britain, see Sheridan *et al.* 2005.

Appendix 13.7

Virtual model of the Barrow 13 cremation-sack handle

Marta Diaz-Guardamino

A 3D rotatable virtual model of the Barrow 13 cremation-sack handle can be accessed in a separate folder. It was created by photogrammetry of the two faces which had to be undertaken on separate occasions and then 'stitched' together. This is a faithful record of the object's form soon after excavation and before consolidation by the conservator, Claire Woodhead. However, at the time of the photogrammetric recording there was still some soil on the reverse as indicated on text Figure 13.57.

See separate folder:
http://www.peopleoftheheath.com/publications

Appendix 13.8

Processing, recording and conserving the mineral-replaced wooden handle, ORG13

Stuart Needham

Given the fragility of the material, the process of lifting, cleaning and turning the object was complicated. In summary, it involved 12 stages:

1. object lifted on a block of soil with a board beneath;
2. wrapping of the soil plinth beneath the object to ensure no collapse or subsidence and tidying of its surface surrounding the object;
3. removal of any residual loose sediment from the upper surface and sides of the object;
4. recording of that face of the object, including 3D-photogrammetry stage 1;
5. covering top and sides with a cling-film separator and then the application of a thick layer of plaster, this making contact with the remaining soil of the plinth supporting the object;
6. a board was placed on the plaster while still damp; this provided a firm base for the object once turned and also allowed the whole unit to be taped for security whilst turning it over;
7. unit turned over;
8. tapes cut and under-board, now on top, removed;
9. soil plinth excavated to reveal the underside of the mineral-replaced object, which sits in its plaster cradle;
10. recording and 3D-photogrammetry stage 2;
11. soft-packing of any gaps, covering of object and plaster cradle with cling-film separator, followed by application of thick layer of plaster on top, to form a removable lid;
12. transportation of the object in its plaster 'box' to Winchester, where it was conserved by Claire Woodhead, Hampshire Cultural Trust.

When turned, the underside still had a little grave fill and underlying orange natural attached (Fig 1). The fill was a mid-brown soil compared to the dark brown and slightly firmer surface of the object. Crossing the middle was a diagonal band of brown soil which proved to contain a complex shape of compact soil within softer material, possibly resulting from a decayed root or other organic component (Fig 2). Also removed were the soft fills of two runnels cutting into the otherwise flat object surface. 90mm from the broad end a 'rib' crossed slightly obliquely, whilst the knob end had an amorphous hump of blackish crumbly material a few centimetres long (Fig 3). These upstanding features are present in the 3D-model, but were then removed as being extraneous to the object. The final form of the underside is seen in Figure 4. Some fractures had developed during lifting and processing, but the object was still essentially intact and was successfully conserved.

Figure 1 Soil on the underside of the wooden handle, ORG13, after turning and cleaning; the hand-grip end is to the right

Figure 2 Underside part-excavated showing the compact part of the diagonal band still *in situ*; the hand-grip end is to the left

Figure 3 Underside after removal of all soil except for a possible root cast (foreground) and a small amount at the hand-grip end (far end)

Figure 4 Underside fully excavated

Appendix 13.9

Further details of wood from Barrows 19 and 24

Stuart Needham

Degraded wood object

W1	19: 559 & 570	1212 [1211a]	spatula	-	-	-	full reconstructed dimensions: length 201; width 29; terminal width 10.5; thickness 4	No fragment found; GR for centre 0.73E/0.19N
		1211b		28	(29)	2.5		
		1211c		137	26	4		
		1211d		42	14	5.5		centre at 0.76E/0.41N of micro-excavation grid

Table 1 Detailed dimensions of the wooden spatula, W1 (text Fig 13.66)

Waterlogged wood

Table 2 gives details of all significant waterlogged wood pieces; the catalogued examples (Chapter 13, W2-W18; text Figs 13.67 & 13.68) are listed briefly here to facilitate correspondence with species identifications.

Object no	Object	Dimensions (mm)	Description	Identifications (see text Tables 14.5 & 14.6)
Barrow 19 south ditch cutting, context (61)				
61A	*Trimmed wood slice;* see text catalogue no **W2**			*Alnus glutinosa* rw
61B	*Bark sliver with cut facet;* see text catalogue no **W3**			*Alnus glutinosa* rw
61C	*Flattish piece – possible offcut;* see text catalogue no **W4**			61C-O: *Alnus glutinosa* rw (6); indeterminate (3)
61D	*Curved twig segment or withy fragment, possibly cut*; see text catalogue no **W5**			
61E	*Curved twig segment or withy fragment, cut;* see text catalogue no **W6**			
61F	*Slender twig segment*	L 67, D 2.5-3.0	Thin straight twig with bud nodes at upper break and 17mm from lower break.	
61G	*Slender twig with possible cut facet*	L 70, D 3.2-3.5	Gently curving thin twig with bud nodes at 15 and 50mm from lower break; there is a short (L 8mm) oblique cut or tear from the upper end and a very long one (L 39mm) from the lower end.	
61H	*Twig segment with possible cut facet*	L 36.5, D 3.5-4.0	Twig with one bud node; an oblique facet at the lower end may be a cut.	
61I	*Twig segment*	L 24, D 3.5-4.0	Slightly curving twig with a shallow slice (L 13.5mm) removed from convex side – possibly a tear.	
61J	*Twig segment*	L 16, D 3.5	Short twig segment.	
61K	*Probably worked splinter;* see text catalogue no **W7**			
61L	*Twig segment*	L 22, W 6.5, T 5	A rather gnarled twig segment, probably weathered and without obvious working.	
61M	*Amorphous lump*	L 11.5, W 7, T 3.5	Small weathered lump.	
61N	*Possible bark sliver*	L 18, W 5, T 2.5	A small sliver, possibly of bark.	
61O	*Flat probably worked sliver;* see text catalogue no **W8**			
61P	*Five small fragments or splinters*	-	-	-
Barrow 24 east ditch cutting, context (221/224), sample <47>				
47.A	*Twig segment with probable cut facet and notch;* see text catalogue no **W9**			*Cytisus/Ulex* rw
47.B	*Twig segment*	L 36.5, D 7-8	Slightly curved and weathered with no signs of working.	47.B-H: *Cytisus/Ulex* rw (7)
47.C	*Twig segment with possible cut facet*	L 25, D 7-8	Weathered piece with possible oblique cut at one end.	
47.D	*Twig segment*	L 36.5, D 5 x 6.5	Very weathered at both ends with no signs of working.	
47.E	*Twig segment*	L 24.5, D 5.5	Weathered with no signs of working.	
47.F	*Twig segment*	L 25.5, D 2.5 x 4.5	Weathered and distorted with no signs of working.	
47.G	*Twig segment*	L 22.5, D 4	Very weathered with no signs of working.	
47.H	*Twig segment just below bifurcation*	L 20, D 3 x 3.5 & 4.5 x 6	Greater diameter at upper break with beginnings of bifurcation; weathered with no signs of working.	
Barrow 24 east ditch cutting, context (221/224), sample <46>				
46.A	*Ribbed piece of wood with perforation;* see text catalogue no **W10**			*Quercus sp.* hw
46.B	*Probable worked piece;* see text catalogue no **W11**			*Quercus sp.*
46.C	*Ribbed piece with perforation;* see text catalogue no **W12**			Quercus hw
46.D	*Twig segment with cut facet and notch;* see text catalogue no **W13**			*Cytisus/Ulex* rw
46.E	*Flat-wood piece with possible cuts;* see text catalogue no **W14**			46.E-L: *Quercus* sp. hw (7); *Corylus avellana* (1)
46.F	*Flat-wood piece with cuts;* see text catalogue no **W15**			
46.G	*Flattish piece with possible groove;* see text catalogue no **W16**			
46.H	*Flattish piece with possible cut*	L 20.5, W 13, T 6.5	Small fragment with one near-flat face; the other face is more convex at one end, where it is possibly partially truncated by a transverse cut.	
46.I	*Flattish piece with possible cut*	L 31, W 12.5, T 8.3	Rather amorphous piece with sinuous edges; inset at one end are two slightly curved steps which might be weathered cuts.	
46.J	*Flattish piece with possible cut*	L 34, W 17.5, T 6	Slat-like piece, roughly flat on one face; the other has a marked slightly oblique step which is slightly overhung.	
46.K	*Flattish piece with possible cut*	L 17.5, W 12; T 7.5	Small approximately rhombic piece which is generally rather weathered; it has a rounded step towards one end.	
46.L	*Possibly ribbed piece*	L 26.5, W 15.5, T 10	Small piece with rounded edges from weathering and one flattish face; the other face carries a longitudinal rib which may be original shaping rather than a product of differential decay.	

Object no	Object	Dimensions (mm)	Description	Identifications (see text Tables 14.5 & 14.6)
46.M	*Piece of sub-oval section with possible chop facet;* see text catalogue no **W17**			
46.N	*Amorphous faggot*	L 80.5, W 31, T 24	A generally amorphous piece of complex form, partly due to various notches and grooves; however, it is too weathered to be sure whether any were original working features.	
46.O	*Flattish piece*	L 79, W 23.5, T 6.5	A rather slat-like piece, possibly due to original shaping; the growth-ring boundaries are parallel to the faces and one face retains parts of a ring that has otherwise flaked off.	46.M-Q: *Quercus* sp. hw (4); *Corylus avellana* (1)
46.P	*Flattish piece*	L 53, W 17, T 6.7	A piece with a thin, sub-triangular section and uneven faces.	
46.Q	*Sub-rectangular piece*	L 46, W 21.5, T 14.5	A well-rounded lump with various facets, steps and furrows of uncertain origin.	
46.R	*Rib-like piece*	L 61.5, W 18, T 7.0	Rib-like long piece with biconvex section, possibly split along the growth rings.	*Quercus sp.* hw
46.S	*Ovoid piece*	L 39.5, W 12.3, T 8.8	Highly rounded from weathering.	*Quercus sp.* hw
46.T	*Amorphous piece*	L 34.5, W 19.5, T 9.0	One face flattish, the other slightly convoluted; one end in particular looks strongly weathered.	*Quercus sp.* hw
46.U	*Sub-trapezoidal piece*	L 34.5, W 16.5, T 8.3	Sub-trapezoidal in plan and sub-oval in section.	*Quercus sp.* hw
46.V	*Small amorphous piece*	L 27, W 14.2, T 6.2	Well-rounded with biconvex section.	*Quercus sp.* hw
46.W	*Small amorphous piece*	L 24, W 15.2, T 5.5	Well-rounded with approximately plano-convex section.	*Quercus sp.* hw
46.X	*Small sub-triangular piece*	L 29, W 19, T 11.5	The piece has split into two laminae along a growth ring; there is no certain working.	*Quercus* sp. hw
46.Y	*Twig-like segment with bifurcation and possible working*	L 51, W 8.3, T 6.7	A roughly cylindrical shaft, but one face is flatter and possibly pared down; the opposite face has an out-turning branch at one end, presumably a natural bifurcation.	
46.Z	*Tapered piece*	L 23.5, W 7.7, T 4.7	Tapered piece with oval cross-section, the taper due to an oblique split, possibly artificial.	
46.AA	*Rib-like piece*	L 37, W 9.2, T 6.2	Piece with sub-oval section.	46.Y-AC: cf. Ericaceae rw (5)
46.AB	*Twig-like segment*	L 38, W 7.5, T 5.3	Twig-like with growth swelling towards one end; a ragged longitudinal groove along one face is probably due to natural erosion.	
46.AC	*Rib-like piece*	L 25, W 7.3, T 4.7	Oval cross-section; half of length on one side has longitudinal groove, probably due to erosion.	
46.AD-AM	*Flattish slivers of wood;* see text catalogue no **W18**			46.AD-AM: *Quercus* sp. (8); indeterminate (2)
46.AN-BA	*Small amorphous pieces*	length range 11-56	14 small pieces of various forms and lacking any definite working evidence.	*Corylus avellana* (5); *Quercus* sp. hw (8); cf. *Cytisus/Ulex* rw (1)
46	-	-	-	-

Table 2 Details of waterlogged wood from Barrows 19 and 24

Appendix 14.1

Further aspects of the excavated soils

Stuart Needham

Particle size comparisons across the Heath

The particle-size analyses, while not undertaken for every site excavated, do give an important indication of variability in the grade of the sand even across the small area of the Heath. This is most easily summarised by the peaks in the distributions (Table 1), although these do not cover some of the nuances that have been noted in Chapter 14. The finest sand occurs around Barrows 4 and 9 on the north-east side of the Heath and some of the samples here had significant sub-components of silt and clay. The coarsest sand was in the central basin under Barrow 11, with more intermediate grades in the far south (Barrow 19) and far north (Barrow 1).

Site	Broad context(s)	Peak particle range (µm)
Barrow 4 enclosure	Bedrock (cut by ditch) and bank material	70-150
Barrow 4 mound	Mineral-enriched bedrock, leached E-horizon, turf stack, outer mound	70-150
Adjacent to and under Barrow 9	Bedrock	60-250 (weak peak) 50-500 (very weak peak)
	Subsoil (E/B-horizon)	60-250 70-400
Barrow 1	Bedrock (cut by ditch), outer mound, ditch fills	100-500
Barrow 19	Bedrock	150-300
	Subsoil (E/B-horizon) & bank material (base of)	200-350
Barrow 11	Bedrock and blown-sand infill of pockets	250-600

Table 1 Peaks in particle-size distributions (in order of fineness)

Chronology of leaching of soils

One important question of the soils is the extent of leaching and podzolisation that occurred before and after the Early Bronze Age. With up to 14 sites yielding buried soils under either mounds or enclosing banks, the information might seem to be good. However, in many cases the covering earthwork is only slight – a low bank, low mound, or mound edge – and there is the likelihood of leaching of the underlying profile having continued, albeit at a slower rate, after burial. While in theory a thicker covering earthwork with a

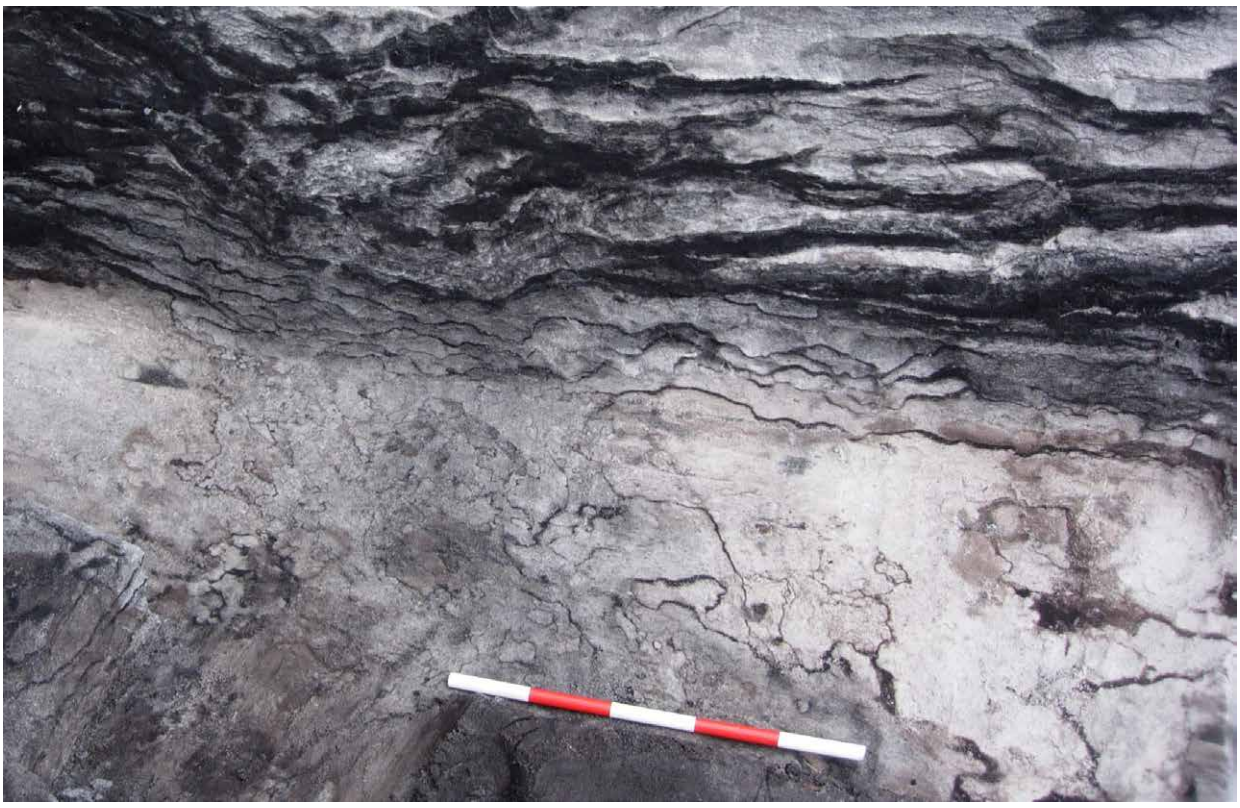


Figure 1 Iron-enrichment filaments in the white sand subsoil under the centre of Barrow 11

strong turf component would impede free drainage and thus limit the amount of downward migration, Barrow 11 serves as a cautionary tale. Although it is one of the larger mounds, there has clearly been significant leaching since construction as can be seen in the gradual colour fading of the turves from the bottom to the top (text Fig 6.45). Moreover, the fine iron-enriched filaments that must have formed after construction (Chapter 1) were present right through the mound and into the subsoil (Fig 1). Other complications arise from later disturbance; for example, the enormous crater dug into the middle of Barrow 13 and in part allowed to fill up naturally through weathering would have potentially re-exposed the buried soil nearby to greater leaching than would otherwise have been the case. The turves in the mound of Barrow 10 were generally faint, leaching here perhaps having been exacerbated by the amount of animal tunnelling and a large crater in the top. Evidence from Site 23 revealed how rapidly leaching can take place; there had been clear downward translocation of minerals in the soil profile on the golf green since it was made or re-laid in 1907. The speed with which this perceptible change took place may, however, have been due to regular sprinkling during the golfing era. All these difficulties are on top of the question as to whether white/pale sands or silts are necessarily leached (Chapter 1).

Generally therefore, while leaching appeared to be widespread and often pronounced in the soil profiles under barrows, it is not possible in most cases to say that it preceded barrow construction. Ironically, enclosure Barrows 14 and 19, both involving low banks, may give some indication of an early date to leaching however; the leaching seen in the buried soil is not replicated in the bank material, thus strongly suggesting it was mainly due to its pre-burial phase. Only in two locations was there more limited leaching in the buried soil: under the bank of Barrow 14 and under that of Barrow 4 in the south-west cutting (but not in the west one). Interestingly pollen from the former site suggests a more wooded environment (*c.* 50% arboreal pollen) than in virtually all of the other buried soils and early ditch fills (Chapter 14; pollen was not preserved at Barrow 4). The lack of much conclusive evidence for pre-Bronze Age leaching does not mean it was not already a feature of the soil profile; it is strongly suspected that it was already well developed in many parts of the Heath.

Appendix 15.1

Quartz optical dating report

Mark Bateman

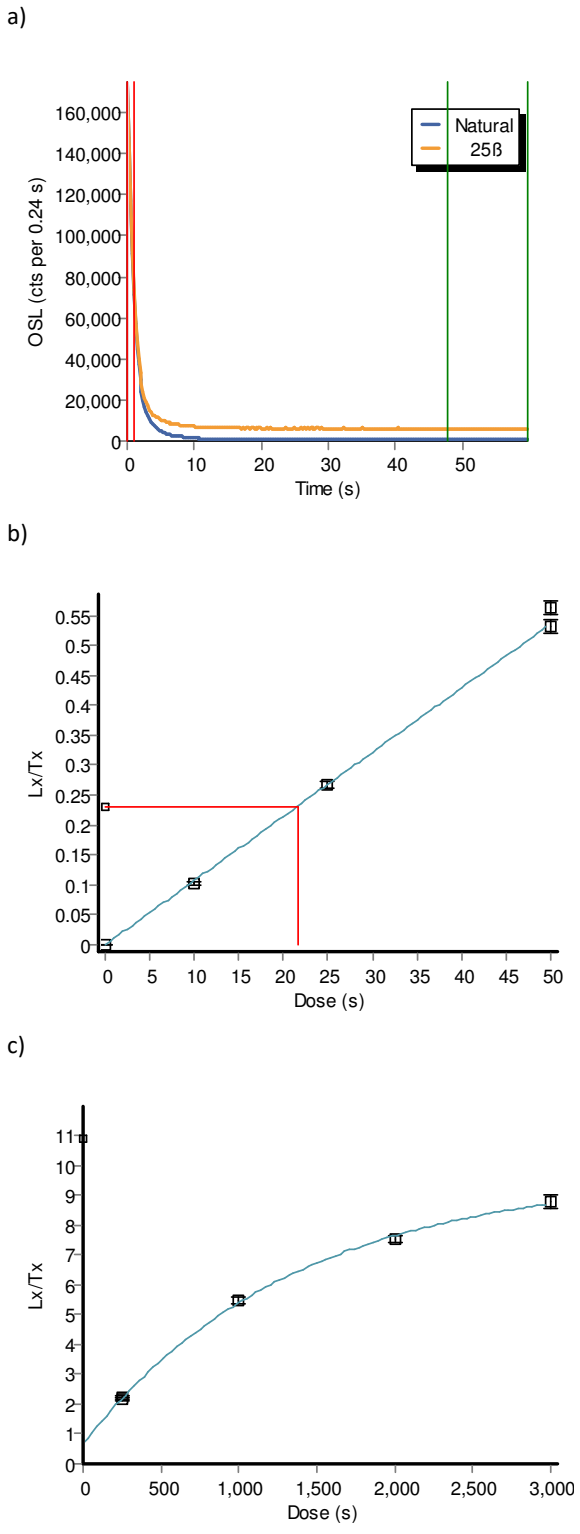
Introduction

Ten samples from various excavations on Petersfield Heath were collected for luminescence dating as part of the *People of the Heath* project. All luminescence work was carried out at the Sheffield luminescence laboratory. The sample was assumed not to have been exposed to sunlight during sampling or transportation to the laboratory. Upon arrival, the sample was allocated a Sheffield laboratory number (Table 1). This report provides a summary of procedures and results for the sample.

Lab No.	Field Reference	Barrow or Site	Sampling Depth (cm below surface)
Shfd17134	PET17_1_1	1	90
Shfd17135	PET17_1_2	1	195
Shfd17136	PET17_1_3	1	65
Shfd17137	PET17_4_1	4	50
Shfd17138	PET17_4_2	4	100
Shfd17139	PET17_8_1	8	85
Shfd17140	PET17_12_1	12	28
Shfd17141	PET17_12_2	12	52
Shfd17142	PET17_23_1	23	60
Shfd17143	PET17_24_1	24	75

Table 1 Sample descriptive data

In order to derive an optically stimulated luminescence (OSL) age both the palaeodose (De – the amount of absorbed dose since the sample was buried) and the dose rate (the estimated radiation flux for the sedimentary bodies) have to be determined. Aitken (1998) gives a detailed explanation of both these parameters. To calculate an age, the palaeodose (expressed in Grays) is divided by the annual dose rate (Grays/yr). An inherent assumption in these age calculations is that the sediment was fully reset or 'bleached' by exposure to sunlight during the last transport event or whilst *in situ* prior to burial and that no post-depositional sediment disturbance has occurred. As part of this investigation, efforts have been taken to establish if the sediments sampled have been bleached or disturbed by, for example, bioturbation.



Dose Rate Analysis

Naturally occurring potassium (K), thorium (Th), rubidium (Rb) and uranium (U) are the main contributors of dose to sedimentary quartz. The concentrations of these elements were determined by inductively coupled plasma mass spectrometry (ICP) at SGS laboratories Ontario Canada (Table 2). Elemental concentrations were converted to the beta dose rates using data from Adamiec and Aitken (1998), Marsh *et al.* (2002), and Aitken (1998). The gamma dose received by each sample was determined in the field using a Micronomad field gamma spectrometer (Table 2). Final annual dose rate took into account attenuation factors relating to sediment grain sizes used, density and palaeomoisture. Attenuation of dose by moisture assumed present day values were representative with a ± 5% error to incorporate seasonal and longer-term fluctuations in moisture which the samples may have endured since burial (Table 2). The contribution to dose rates from cosmic sources were calculated using the expression published in Prescott and Hutton (1994; Table 2).

The dose rates as calculated are based on analyses of the sediment sampled at the present day. This assumption is only valid if no movement and/or reprecipitation of the four key elements has taken place since sediment burial. It is noted that in general many samples had extremely low values of K and some had low U relative to other UK sites and average crustal values. This may reflect the purity of the parent material from which the sand derived or may indicate the sands have undergone chemical weathering/ leaching during for example pedogensis. Further analysis would have to be undertaken to establish whether radioactive disequilibrium is present in the dose rate.

Palaeodose Determination

The samples were prepared under subdued red lighting following the procedure to extract and clean quartz outlined in Bateman and Catt (1996). No feldspar contamination was found when it was tested for. Prepared aliquots of each sample were taken from within a maximum size range of 90-250 µm to ensure sufficient material for measurements. All samples then underwent measurement at the single aliquot level using a Risø TL DA-20 luminescence reader with radiation doses administered using a calibrated 90strontium beta source. For measurement purposes, quartz grains were mounted as a ~5 mm diameter monolayer on 9.6 mm diameter stainless steel using silkospray. An array of blue/green LEDs

Figure 1 Example of single aliquot OSL data for sample Shfd17137 (top) and Shfd17135 (bottom): a) OSL decay of naturally acquired and Beta dose regenerated signal; high initial signal above background which rapidly decays away to background within 2 seconds of stimulation show good characteristics for OSL dating; b) SAR growth curve showing good growth was laboratory dose and interpolation of the naturally acquired OSL; c) SAR growth curve showing sample in saturation meaning that derived palaeodose will be an under-estimate of true dose sample has been subjected to whilst buried

Table 2 Summary of results – Dosimetry related data.
Notes: + Cosmic dose is calculated as a linear decay curve at depths below 50 cm. Above this depth, errors in calculation may lead to an under-estimation of the cosmic dose contribution.
† Total Dose is attenuated for grain size, density and moisture.

Lab Code	U (PPM)	Th (PPM)	K (%)	Gamma Dose (µGy/a-1)	Dcosmic + (µGy/a-1)	Moisture (%)	Dose rate† (µGy/a-1)
Shfd17134	1.3	2.8	0.20	166 ± 8	188 ± 9	10	719 ± 30
Shfd17135	0.44	2.3	1.20	280 ± 17	163 ± 8	15	1298 ± 76
Shfd17136	0.89	3.1	0.60	260 ± 13	194 ± 10	8	1064 ± 49
Shfd17137	1.17	2.4	0.20	236 ± 13	199 ± 10	16	755 ± 29
Shfd17138	2.18	4.5	0.40	333 ± 19	185 ± 9	15	1135 ± 50
Shfd17139	0.23	0.5	0.01	48 ± 3	189 ± 9	6	291 ± 11
Shfd17140	0.25	0.5	0.01	68 ± 3	205 ± 10	2	325 ± 13
Shfd17141	0.75	1.5	0.005	47 ± 3	198 ± 10	6	417 ± 18
Shfd17142	0.75	1.5	0.10	204 ± 9	196 ± 10	2	622 ± 22
Shfd17143	0.17	0.5	0.005	52 ± 3	192 ± 10	7	320 ± 12

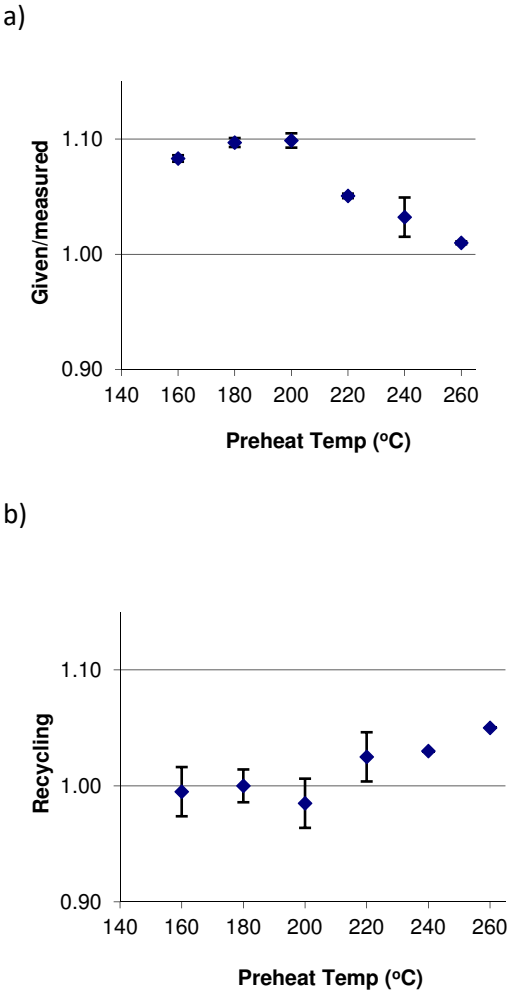


Figure 2 Results of different preheat temperatures in recovering a ~20 Gy beta radiation dose from sample Shfd17138: a) Given to recovered dose ratio at different preheat temperatures; b) recycling ratio (ratio between the first and last dose point) at the different preheat temperatures. Data points in both plots are the averages of three measurements performed for each preheat temperature

provided the stimulation and luminescence detection was through a Hoya U-340 filter. Samples were analysed using the single aliquot regenerative (SAR) approach (Murray and Wintle 2000; Fig 1), in which an interpolative growth curve is constructed using data derived from repeated measurements of a single grain which has been given various laboratory irradiations (Fig 1). The last irradiation dose within the SAR protocol replicated the first to check if sensitivity changes cause by repeated measurement of the same aliquot had been correctly monitored and corrected for (known as the recycling ratio). All aliquots where the ratio of first and last dose point exceeded ±10% of unity were excluded from further analysis. The most appropriate preheat temperature for the samples was selected using a dose recovery preheat plateau test (Fig 2). This resulted in selection of preheat temperatures of 180 °C for 10 seconds which was applied prior to each OSL measurement to remove unstable signal generated by laboratory irradiation. Multiple replicates were measured to better understand sample variability. The samples appeared to have good OSL characteristics with fast OSL signal depletion with stimulation (Fig 1a), data well fitted with an exponential function (Fig 1b) and good recycling.

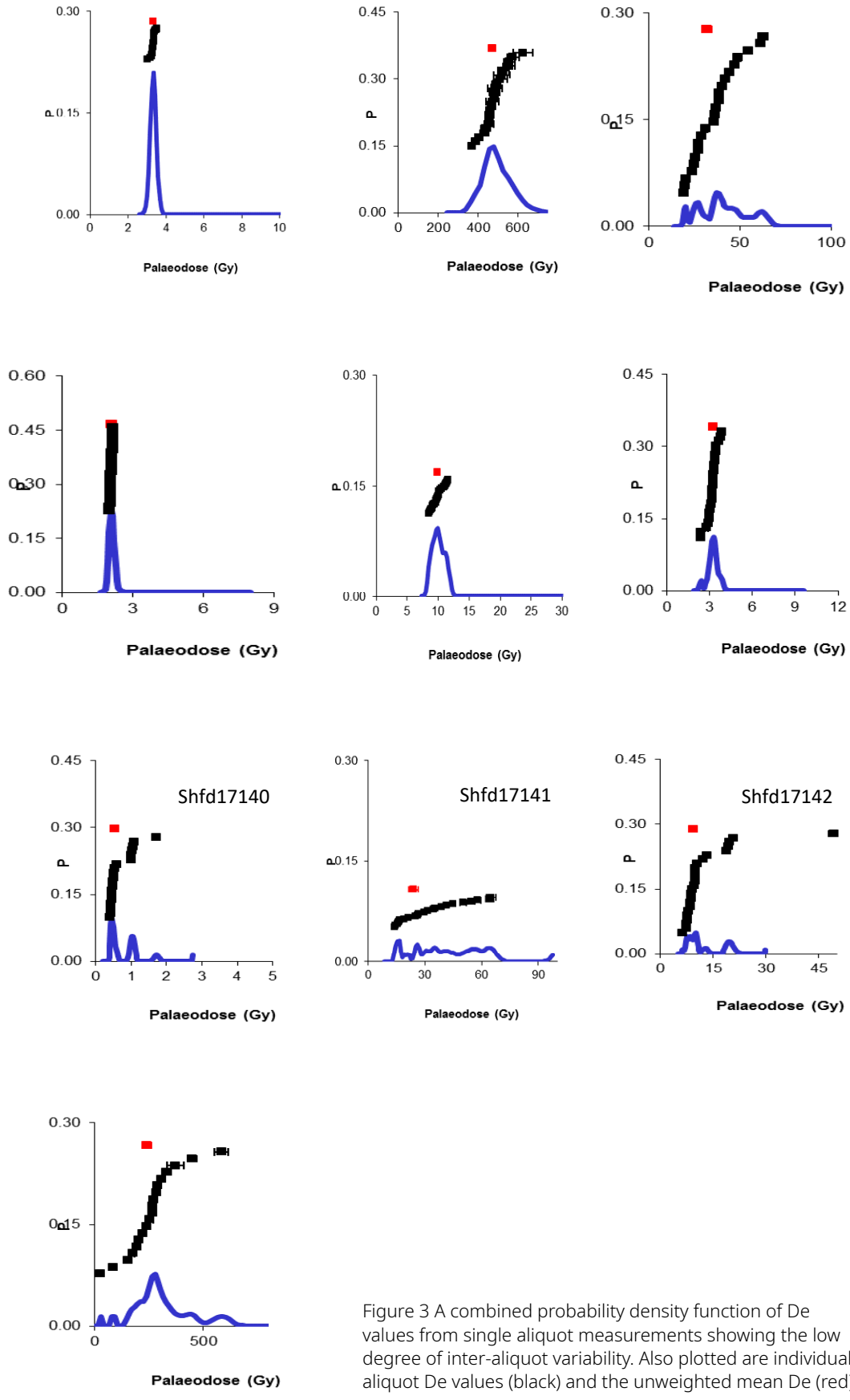


Figure 3 A combined probability density function of De values from single aliquot measurements showing the low degree of inter-aliquot variability. Also plotted are individual aliquot De values (black) and the unweighted mean De (red)

Lab Code	Field Ref.	Depth (cm)	De (Gy)	OD (%) [1]	Dose rate (μGy/a-1)	Age (ka)	Reset prior to burial?
Shfd17134	PET17_1_1	90	3.33 ± 0.06	1 (0)	719 ± 30	4.6 ± 0.2	Yes
Shfd17135	PET17_1_2	195	>473	11 (8)	1298 ± 76	>364	Yes but saturated
Shfd17136	PET17_1_3	65	23.9 ± 0.6	34 (32)	1064 ± 49	22.5 ± 1.2	Probably
Shfd17137	PET17_4_1	50	2.09 ± 0.06	0 (0)	755 ± 29	2.8 ± 0.13	Yes
Shfd17138	PET17_4_2	100	9.94 ± 0.2	9 (9)	1135 ± 50	8.8 ± 0.4	Yes
Shfd17139	PET17_8_1	85	3.20 ± 0.08	12 (6)	291 ± 11	11.0 ± 0.5	Yes
Shfd17140	PET17_12_1	28	0.48 ± 0.01	63 (35)	325 ± 13	1.45 ± 0.06	Probably
Shfd17141	PET17_12_2	52	15.9 ± 0.8	58 (49)	417 ± 18	38.1 ± 2.5	Probably
Shfd17142	PET17_23_1	60	8.36 ± 0.36	45 (17)	622 ± 22	14.5 ± 0.8	Probably
Shfd17143	PET17_24_1	75	249 ± 14	66 (22)	320 ± 12	>776	Yes but saturated

Table 3 Summary of OSL results for the Petersfield Heath samples.
Note: [1] Overdispersion of De data with overdispersion excluding outlier in parenthesis.

Sedimentary bleaching behaviour

The effects of incomplete bleaching of the sediment during the last period of transport or exposure *in situ* can be profound. Typically, poorly bleached sediments retain a significant level of residual signal from previous phases of sedimentary cycling, leading to inherent inaccuracies in the calculation of a palaeodose value. By plotting the replicate data for the sample as a probability density function some assessment of whether older or younger material has been included in the sample measurements can be made (Fig 3). In principle a well bleached unpost-depositionally disturbed sample should have replicate palaeodose (De) data which is normally distributed and highly reproducible (See Bateman *et al.* 2003, Fig 3; Bateman et al 2007a). Where post-depositional disturbance or incomplete bleaching prior to sample burial has occurred skewing of this distribution may occur and/or replicate reproducibility may be lower (Bateman et al 2007a; Bateman *et al.* 2007b). In the case of poorly bleached material skewing should be evident with a high De tail (*e.g.* Olley *et al.* 2004). It should be pointed out that by making OSL measurement of samples as a 5 mm diameter aliquot with approx. 600 grains any heterogeneity in De that individual grains have may be partially masked. This could be overcome by analysis at an even smaller aliquot size or at the single grain level.

As Figure 3 shows (see also aliquot data below), the single aliquot De data distribution for some samples are normally distributed and reproducible with low overdispersions (OD). These samples are Shfd17134, Shfd17135, Shfd17137, Shfd17138. These are considered to have had their OSL signal reset (bleached) prior to burial. Once outliers are excluded the overdispersion (OD) for samples Shfd17142 and shfd17143 also fall within the range of what would be expected for a well bleached sand (15-25%). Based on this, the De value used for age calculation purpose for all these samples was calculated using the Central Age Model (CAM) of Galbraith and Green (1990). The De distributions of the remaining 3 samples were multimodal, with poor reproducibility and high OD. These are considered poorly bleached. As a result, De values for age calculation purposes have been extracted using the Finite Mixture Model (FMM) of Galbraith and Green (1990). This model attempts to extract the different components contained within De distributions. FMM extracted 2 components for samples Shfd17140, 3 components for sample Shfd17136 and 4 components for Samples Shfd17141. In all cases the lowest extracted component was assumed to be the best bleached and was used for age calculation purposes. Whilst mitigating for the effect of poor bleaching prior to burial these samples may still over-estimate true burial age. One final factor should also be noted which affected both samples Shfd17135 and Shfd17143. Some aliquots for both these samples were saturated (Fig 1c) indicating that the dose received whilst buried had exceeded the capacity of the quartz grains to store them. Assuming these samples were originally bleached on deposition the derived OSL ages therefore can only be considered as minimum estimates of burial age.

Age Calculation and Conclusions

Given the measurement data some samples are considered bleached and the ages should therefore relate to the sediment burial age. For others steps have been taken to reduce the impact of incomplete bleaching at deposition but the ages may still be over-estimates. Finally the ages for two samples, based on their saturated signals are minimum ages only. All ages are quoted in years from the present day (2018) with one sigma confidence intervals which incorporate systematic uncertainties with the dosimetry data, uncertainties with the palaeomoisture content and errors associated with the De determination. Table 3 show the final age estimates. Aliquot-specific data for the sample is included below. The best estimate of ages for the samples range from 1.45 ± 0.06 ka to 38.1 ± 2.5 ka.

Single aliquot data and plots

Sample specific data including:-

- list of De's derived from small aliquots
- calculated statics for De distribution (Skewness, kurtosis and sorting)
- calculated means based on a range of statistical models
- histogram plot of distribution of De within a sample
- probability density plot (curve) with ranked De data (black points) and probability mean (uppermost red point).

PET17/1/1, Shfd17134, aliquot size 5mm

Aliquot	Palaeodose (Gy)	error
1	3.512	0.097
2	3.387	0.084
3	3.455	0.089
4	3.282	0.081
5	3.033	0.085
6	3.365	0.088
7	3.272	0.085
8	3.378	0.084
9	3.364	0.085
10	3.323	0.082
11	3.379	0.084
12	3.321	0.083
13	3.297	0.084
14	3.350	0.084
15	3.261	0.086
16	3.522	0.093
17	3.293	0.082
18	3.276	0.082
19	3.334	0.087
20	3.329	0.081
21	3.380	0.086
22	3.242	0.080
23	3.367	0.085
24	3.178	0.085

	De (Gy)	error
Minimum	3.03	0.09
Maximum	3.52	0.09
N	24	

Unweighted		
	All Data	Minus Outliers
Mean (Gy)	3.33	3.33
SD	0.10	0.05
SE	0.02	0.01
N	24	20

Weighted		
	All Data	Minus Outliers
Mean (Gy)	3.32	3.33
SD	0.11	0.08
SE	0.02	0.01
N	24	20

Probability		
	All Data	Minus Outliers
Mean (Gy)	3.33	3.33
SD	0.13	0.12
SE	0.03	0.03
N	24	20

Central Age Model		
	All Data	Minus Outliers
Mean (Gy)	3.33	3.33
SD	0.06	610.43
OD (all data)	1.00%	0%
N	24	20

De Distribution	**All Data**	**Minus Outliers**
Skewness	-0.53	0.05
Kurtosis	2.56	-0.13
Median	3.33	3.33
Sorting	0.02	0.01

Common Age Model		
	All Data	Minus Outliers
Mean (Gy)	3.33	3.33
SD	0.06	0.06
N	24	20

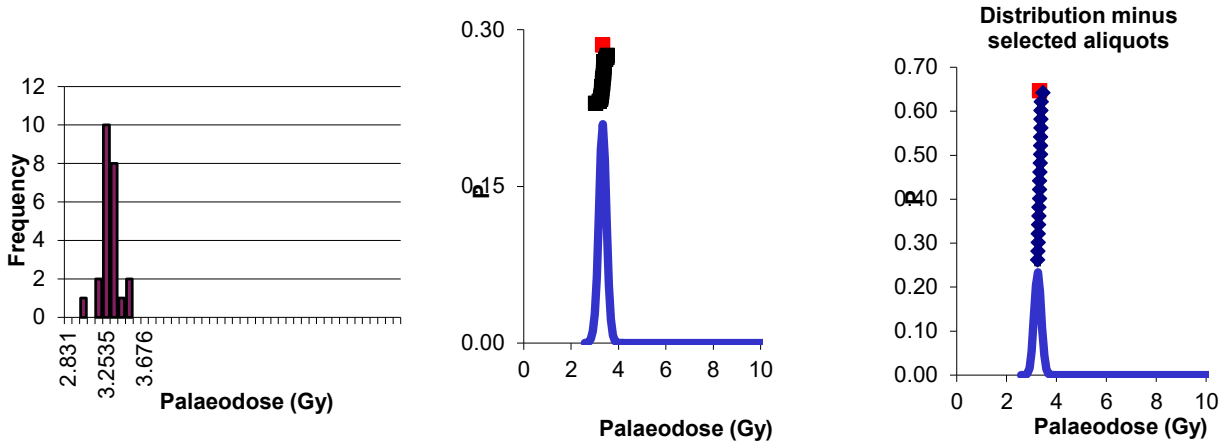


Figure 4 Palaeodose distributions for PET17/1/1, Shfd17134, Barrow 1 mound make-up

PET17/1/2, Shfd17135, aliquot size 5mm

Aliquot	Palaeodose (Gy)	error
1	492.721	22.184
2	387.670	20.304
3	529.412	27.608
4	439.338	23.019
5	368.665	16.130
6	556.258	31.027
7	454.834	24.434
8	468.571	19.908
9	482.302	17.398
10	485.271	35.073
11	461.019	17.257
12	558.245	27.476
13	457.451	19.355
14	433.356	21.829
15	457.586	20.908
16	484.060	24.978
17	512.792	34.920
18	404.983	18.260
19	470.912	31.833
20	576.533	29.470
21	518.541	41.008
22	626.594	48.041

	De (Gy)	error
Minimum	368.67	16.13
Maximum	626.59	48.04
N	22	

Unweighted		
	All Data	Minus Outliers
Mean (Gy)	483.05	476.60
SD	61.86	45.42
SE	13.19	9.68
N	22	19

Weighted		
	All Data	Minus Outliers
Mean (Gy)	460.81	464.98
SD	54.53	41.60
SE	11.63	9.54
N	22	19

	All Data	**Minus Outliers**
Mean (Gy)	474.41	471.90
SD	45.82	37.89
SE	9.77	8.69
N	22	19

Central Age Model		
	All Data	Minus Outliers
Mean (Gy)	477.12	472.89
SD	12.52	10.11
OD (all data)	11.09%	7.71%
N	22	19

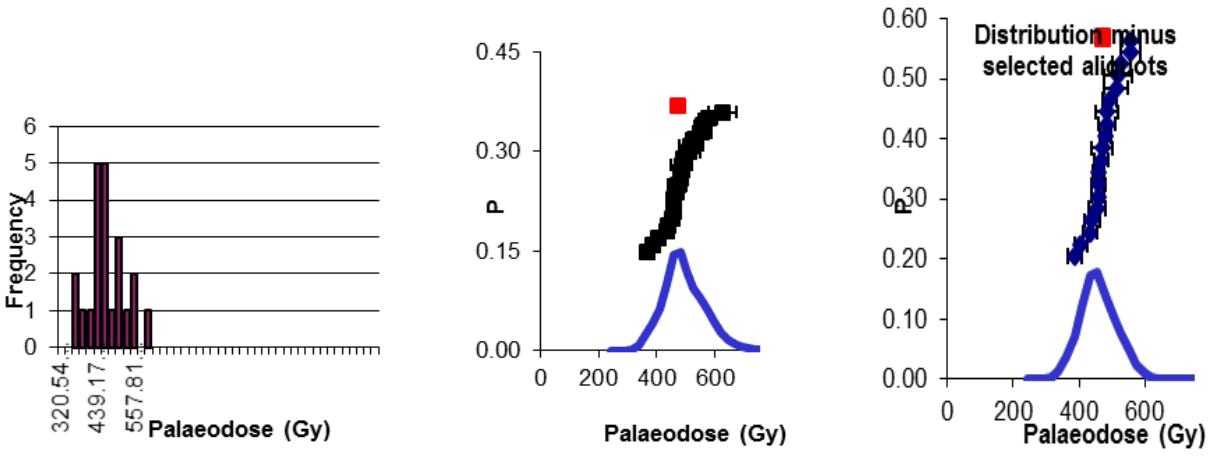


Figure 5 Palaeodose distributions for PET17/1/2, Shfd17135, Barrow 1 ditch fill

De Distribution	All Data	Minus Outliers
Skewness	0.06	-0.14
Kurtosis	0.29	-0.07
Median	476.61	470.91
Sorting	0.12	0.09

Common Age Model		
	All Data	Minus Outliers
Mean (Gy)	470.51	470.57
SD	5.00	5.33
N	22	19

PET17/1/3, Shfd17136, aliquot size 5mm

Aliquot	Palaeodose (Gy)	error
1	44.395	1.412
2	19.371	0.484
3	31.330	0.889
4	19.948	0.537
5	62.713	2.419
6	48.737	1.550
7	27.103	0.739
8	54.198	1.843
9	23.528	0.633
10	25.378	0.693
11	20.004	0.527
12	35.713	1.056
13	36.831	1.126
14	61.325	2.201
15	38.572	1.115
16	46.804	1.566
17	36.198	0.998
18	38.338	1.142
19	41.983	1.361
20	28.860	0.829
21	40.093	1.342
22	27.098	0.777
23	25.085	0.675

	De (Gy)	error
Minimum	19.37	0.48
Maximum	62.71	2.42
N	23	

Unweighted		
	All Data	Minus Outliers
Mean (Gy)	36.24	35.04
SD	12.63	11.50
SE	2.63	2.40
N	23	22

Weighted		
	All Data	Minus Outliers
Mean (Gy)	27.48	27.29
SD	8.89	8.52
SE	1.85	1.82
N	23	22

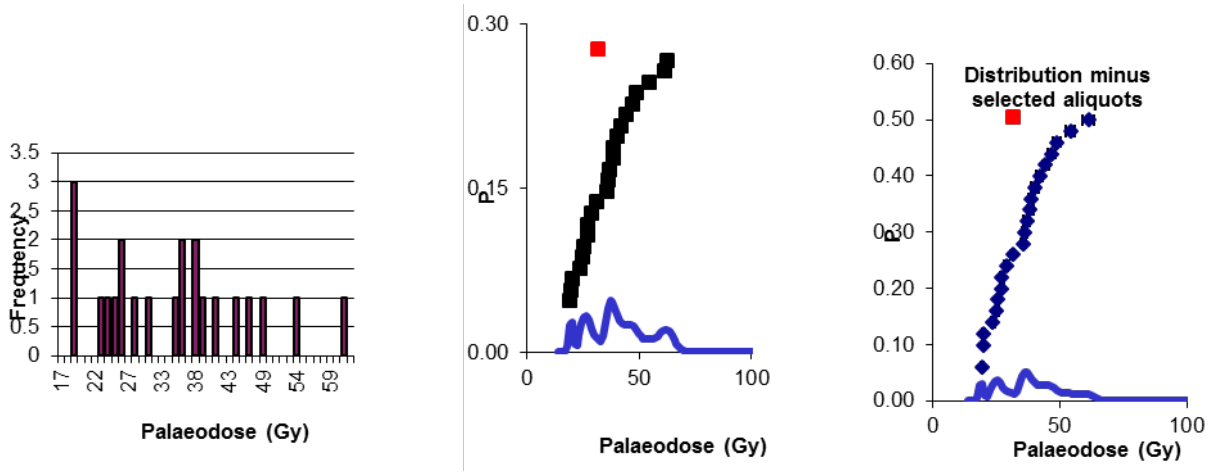


Figure 6 Palaeodose distributions for PET17/1/3, Shfd17136, Barrow 1 mound make-up

Probability		
	All Data	Minus Outliers
Mean (Gy)	31.94	31.40
SD	9.91	9.12
SE	2.07	1.95
N	23	22

Central Age Model		
	All Data	Minus Outliers
Mean (Gy)	34.19	33.26
SD	2.44	2.30
OD (all data)	34.04%	32.22%
N	23	22

De Distribution	All Data	Minus Outliers
Skewness	0.29	-0.02
Kurtosis	-0.34	-0.27
Median	36.20	35.96
Sorting	0.33	0.29

Finite Mixture Model			
Component	De	error	prop (%)
1	23.90	0.92	40
2	38.94	1.99	43
3	56.09	4.78	0

PET17/4/1, Shfd17137, aliquot size 5mm

Aliquot	Palaeodose (Gy)	error
1	2.167	0.069
2	2.150	0.070
3	2.165	0.173
4	2.035	0.059
5	2.129	0.061
6	2.082	0.077
7	2.123	0.074
8	2.160	0.076
9	2.107	0.073
10	2.135	0.065
11	2.010	0.061
12	2.061	0.071
13	2.138	0.064
14	2.091	0.065
15	2.054	0.064
16	2.148	0.064
17	2.092	0.054
18	2.029	0.054
19	2.065	0.059
20	2.069	0.065
21	2.069	0.053
22	2.076	0.064
23	2.071	0.056
24	2.036	0.055

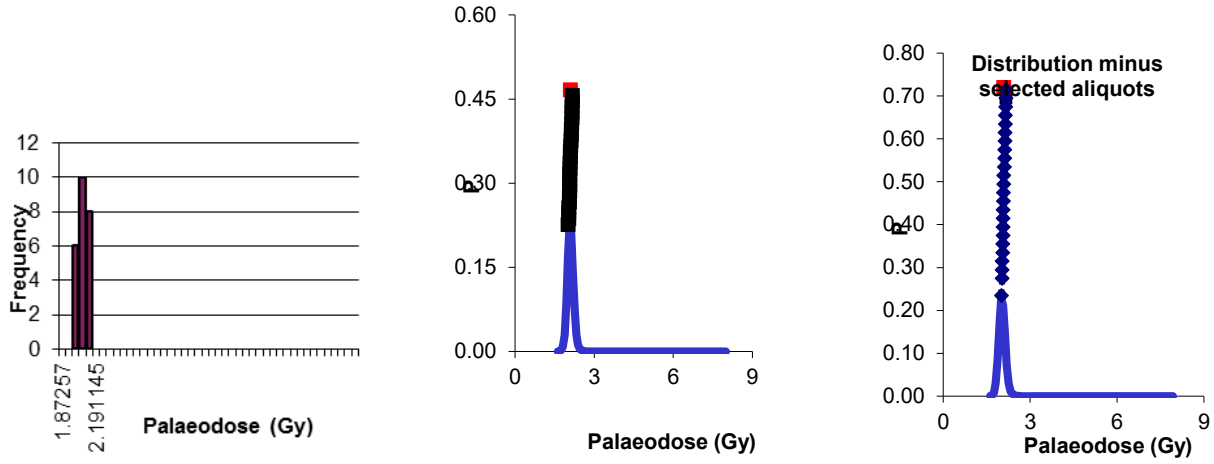


Figure 7 Palaeodose distributions for PET17/4/1, Shfd17137, Barrow 4 ditch fill

	De (Gy)	error
Minimum	2.01	0.06
Maximum	2.17	0.07
N	24	

Unweighted		
	All Data	Minus Outliers
Mean (Gy)	2.09	2.09
SD	0.05	0.05
SE	0.01	0.01
N	24	24

Central Age Model		
	All Data	Minus Outliers
Mean (Gy)	2.09	2.09
SD	350.13	350.13
OD (all data)	0%	0%
N	24	24

Weighted		
	All Data	Minus Outliers
Mean (Gy)	2.09	2.09
SD	0.07	0.07
SE	0.01	0.01
N	24	24

De Distribution	**All Data**	**Minus Outliers**
Skewness	-0.11	-0.11
Kurtosis	-1.12	-1.12
Median	2.09	2.09
Sorting	0.02	0.02

	All Data	**Minus Outliers**
Mean (Gy)	2.09	2.09
SD	0.10	0.10
SE	0.02	0.02
N	24	24

Common Age Model		
	All Data	Minus Outliers
Mean (Gy)	2.09	2.09
SD	0.06	0.06
N	24	24

PET17/4/2, Shfd17138, aliquot size 5mm

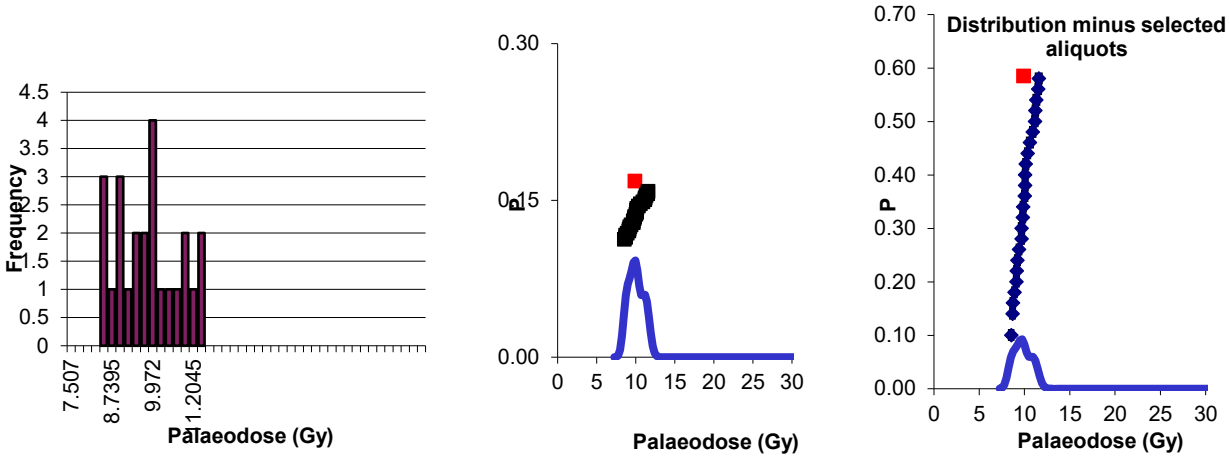


Figure 8 Palaeodose distributions for PET17/4/2, Shfd17138, Barrow 4 ditch fill

Aliquot	Palaeodose (Gy)	error
1	11.200	0.269
2	11.517	0.268
3	11.138	0.268
4	9.793	0.242
5	9.394	0.231
6	8.890	0.218
7	9.222	0.239
8	10.017	0.258
9	9.665	0.261
10	10.135	0.248
11	10.335	0.252
12	10.071	0.232
13	9.662	0.241
14	10.064	0.245
15	11.568	0.298
16	8.704	0.220
17	9.854	0.248
18	10.902	0.264
19	10.594	0.299
20	9.092	0.240
21	9.123	0.234
22	8.522	0.216
23	8.671	0.231
24	11.306	0.291

	De (Gy)	error
Minimum	8.52	0.22
Maximum	11.57	0.30
N	24	

Unweighted		
	All Data	Minus Outliers
Mean (Gy)	9.98	9.98
SD	0.94	0.94
SE	0.19	0.19
N	24	24

Weighted		
	All Data	Minus Outliers
Mean (Gy)	9.84	9.84
SD	0.90	0.90
SE	0.18	0.18
N	24	24

	All Data	**Minus Outliers**
Mean (Gy)	9.87	9.87
SD	0.82	0.82
SE	0.17	0.17
N	24	24

Central Age Model		
	All Data	Minus Outliers
Mean (Gy)	9.94	9.94
SD	0.20	0.20
OD (all data)	8.82%	8.82%
N	24	24

De Distribution	All Data	Minus Outliers
Skewness	0.22	0.22
Kurtosis	-1.01	-1.01
Median	9.94	9.94
Sorting	0.10	0.10

Common Age Model		
	All Data	Minus Outliers
Mean (Gy)	9.96	9.96
SD	0.08	0.08
N	24	24

PET17/8/1, Shfd17139, aliquot size 5mm

Aliquot	Palaeodose (Gy)	error
1	3.124	0.078
2	3.387	0.080
3	3.221	0.075
4	2.773	0.069
5	3.440	0.082
6	3.613	0.080
7	3.455	0.088
8	3.842	0.095
9	3.025	0.075
10	3.287	0.079
11	3.202	0.075
12	2.342	0.056
13	3.396	0.085
14	2.958	0.074
15	3.202	0.079
16	3.801	0.091
17	2.887	0.069
18	3.228	0.075
19	3.327	0.080
20	2.992	0.071
21	3.176	0.075
22	3.232	0.078
23	2.395	0.055

	De (Gy)	error
Minimum	2.34	0.06
Maximum	3.84	0.09
N	23	

Unweighted		
	All Data	Minus Outliers
Mean (Gy)	3.19	3.21
SD	0.37	0.21
SE	0.08	0.04
N	23	19

Weighted		
	All Data	Minus Outliers
Mean (Gy)	3.09	3.18
SD	0.40	0.22
SE	0.08	0.05
N	23	19

	All Data	Minus Outliers
Mean (Gy)	3.21	3.21
SD	0.25	0.18
SE	0.05	0.04
N	23	19

Central Age Model		
	All Data	Minus Outliers
Mean (Gy)	3.17	3.20
SD	0.10	0.08
OD (all data)	11.61%	6.06%
N	23	19

De Distribution	All Data	Minus Outliers
Skewness	-0.53	0.02
Kurtosis	0.88	-0.15
Median	3.22	3.22
Sorting	0.11	0.06

Common Age Model		
	All Data	Minus Outliers
Mean (Gy)	3.16	3.20
SD	0.06	0.06
N	23	19

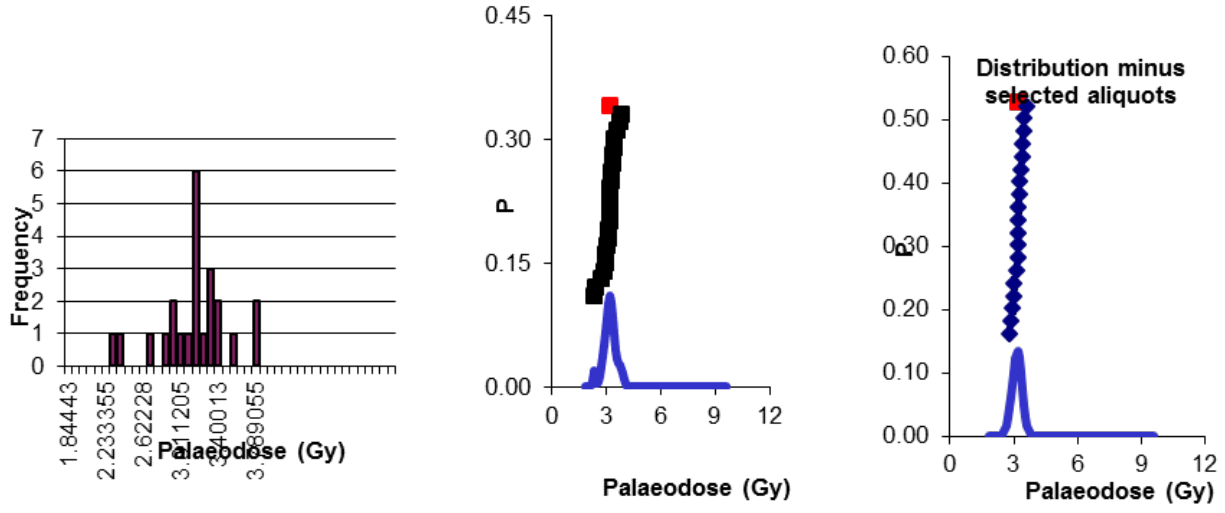


Figure 9 Palaeodose distributions for PET17/8/1, Shfd17139, Barrow 8 sand beneath mound

PET17/12/1, Shfd17140, aliquot size 5mm

Aliquot	Palaeodose (Gy)	error
1	0.999	0.042
2	0.451	0.014
3	0.518	0.026
4	1.052	0.039
5	0.471	0.026
6	0.438	0.011
7	0.489	0.026
8	0.443	0.019
9	0.417	0.014
10	1.083	0.033
11	0.600	0.026
12	0.993	0.028
13	5.673	0.122
14	1.721	0.044
15	0.435	0.028
16	0.454	0.026
17	0.493	0.017
18	0.554	0.030
19	0.511	0.017
20	1.033	0.032

	De (Gy)	error
Minimum	0.42	0.01
Maximum	5.67	0.12
N	20	

Unweighted		
	All Data	Minus Outliers
Mean (Gy)	0.94	0.64
SD	1.17	0.26
SE	0.26	0.06
N	20	18

Weighted		
	All Data	Minus Outliers
Mean (Gy)	0.55	0.53
SD	0.31	0.19
SE	0.07	0.04
N	20	18

	All Data	**Minus Outliers**
Mean (Gy)	0.54	0.53
SD	0.21	0.19
SE	0.05	0.05
N	20	18

Central Age Model		
	All Data	Minus Outliers
Mean (Gy)	0.70	0.59
SD	0.12	0.08
OD (all data)	62.92%	35.20%
N	20	18

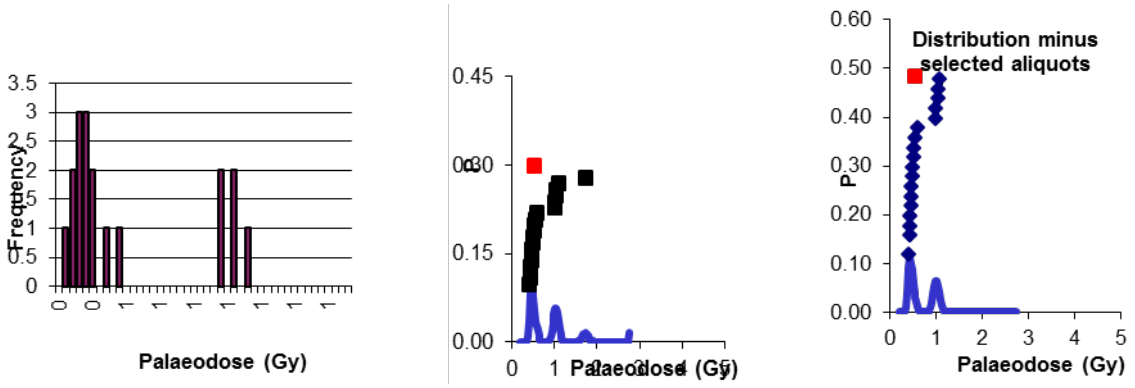


Figure 10 Palaeodose distributions for PET17/12/1, Shfd17140, upper sand deposit beneath Barrow 12

De Distribution	All Data	Minus Outliers
Skewness	5.63	-0.04
Kurtosis	16.12	-0.94
Median	0.51	0.50
Sorting	0.40	0.25

Finite Mixture Model			
Component	De	error	prop (%)
1	0.480	0.010	65.000
2	1.44	0.06	35
3			

PET17/12/2, Shfd17141, aliquot size 5mm

Aliquot	Palaeodose (Gy)	error
1	35.498	1.014
2	26.546	0.716
3	34.704	1.055
4	26.158	0.648
5	152.025	8.104
6	29.698	0.882
7	19.195	0.520
8	14.231	0.386
9	38.861	1.057
10	15.586	0.380
11	16.910	0.416
12	57.806	1.753
13	41.536	1.119
14	31.725	0.900
15	15.956	0.382
16	45.050	1.421
17	14.652	0.366
18	54.760	1.915
19	65.080	2.419
20	50.401	1.789
21	16.436	0.413
22	21.355	0.559
23	25.068	0.608
24	64.282	2.097

	De (Gy)	error
Minimum	14.23	0.39
Maximum	152.03	8.10
N	24	

Unweighted		
	All Data	Minus Outliers
Mean (Gy)	38.06	33.11
SD	29.13	16.47
SE	5.95	3.36
N	24	23

Weighted		
	All Data	Minus Outliers
Mean (Gy)	20.32	20.29
SD	8.95	8.71
SE	1.83	1.82
N	24	23

	All Data	Minus Outliers
Mean (Gy)	23.90	23.89
SD	12.44	12.44
SE	2.54	2.59
N	24	23

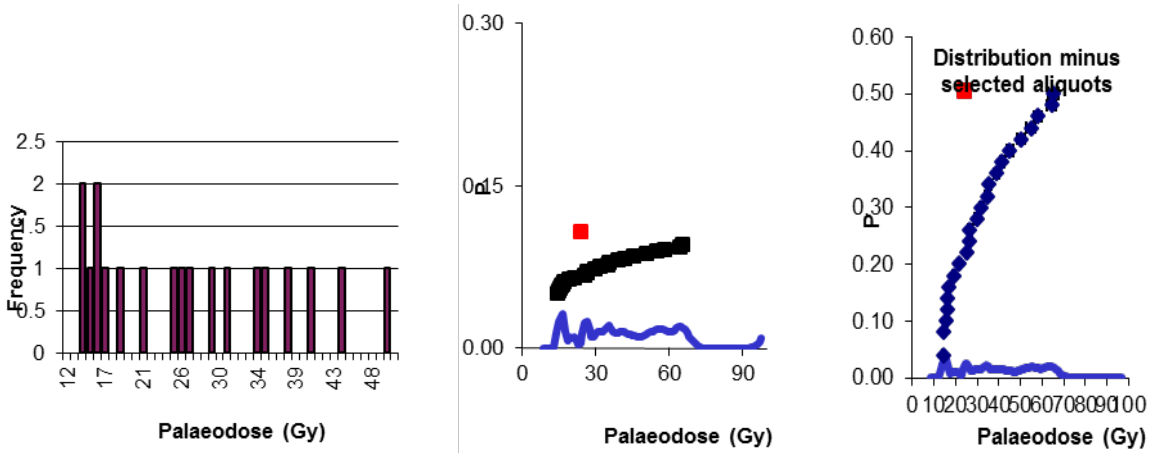


Figure 11 Palaeodose distributions for PET17/12/2, Shfd17141, lower sand deposit beneath Barrow 12

Central Age Model		
	All Data	Minus Outliers
Mean (Gy)	31.44	29.36
SD	3.74	3.02
OD (all data)	58.22%	49.21%
N	24	23

De Distribution	All Data	Minus Outliers
Skewness	1.24	-0.09
Kurtosis	10.03	-0.75
Median	30.71	29.70
Sorting	0.46	0.43

Finite Mixture Model			
Component	De	error	prop (%)
1	15.900	0.800	27.000
2	27.47	2.07	20
3	38.40	2.67	22
4	57.84	3.13	21

PET17/23/1, Shfd17142, aliquot size 5mm

Aliquot	Palaeodose (Gy)	error
1	8.719	0.218
2	13.199	0.342
3	9.971	0.251
4	49.288	1.464
5	10.523	0.275
6	8.514	0.195
7	7.935	0.186
8	9.936	0.250
9	9.966	0.243
10	7.603	0.289
11	8.391	0.200
12	19.422	0.591
13	7.385	0.178
14	18.834	0.464
15	20.615	0.545
16	8.959	0.222
17	7.634	0.310
18	7.424	0.164
19	8.883	0.219
20	12.205	0.320
21	6.408	0.164
22	9.836	0.248
23	19.687	0.547
24	9.658	0.242

	De (Gy)	error
Minimum	6.41	0.16
Maximum	49.29	1.46
N	24	

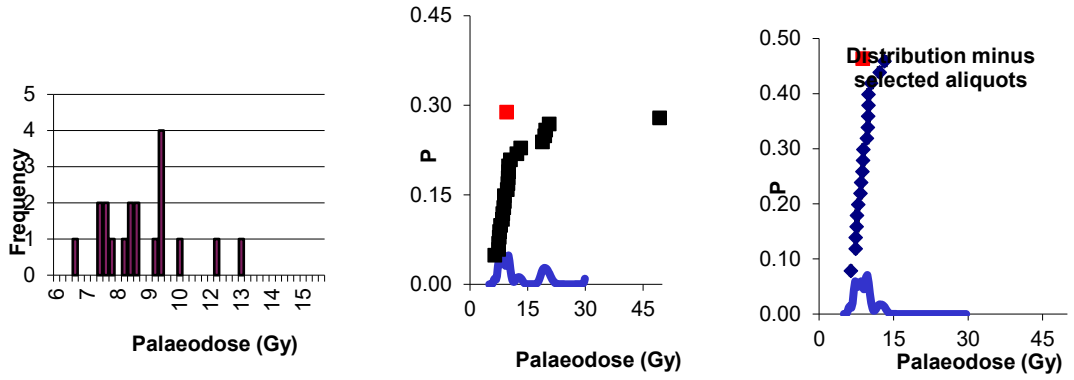


Figure 12 Palaeodose distributions for PET17/23/1, Shfd17142, Site 23 sand deposit

Unweighted		
	All Data	Minus Outliers
Mean (Gy)	12.54	9.11
SD	8.92	1.69
SE	1.82	0.34
N	24	19

Weighted		
	All Data	Minus Outliers
Mean (Gy)	9.06	8.62
SD	2.84	1.45
SE	0.58	0.33
N	24	19

	All Data	Minus Outliers
Mean (Gy)	9.46	8.83
SD	2.77	1.17
SE	0.57	0.27
N	24	19

Central Age Model		
	All Data	Minus Outliers
Mean (Gy)	10.97	8.98
SD	1.02	0.36
OD (all data)	45.37%	17.25%
N	24	19

De Distribution	All Data	Minus Outliers
Skewness	2.57	-0.07
Kurtosis	13.01	0.81
Median	9.75	8.88
Sorting	0.39	0.11

Common Age Model		
	All Data	Minus Outliers
Mean (Gy)	10.68	8.99
SD	0.08	0.08
N	24	19

PET17/24/1, Shfd17143, aliquot size 5mm

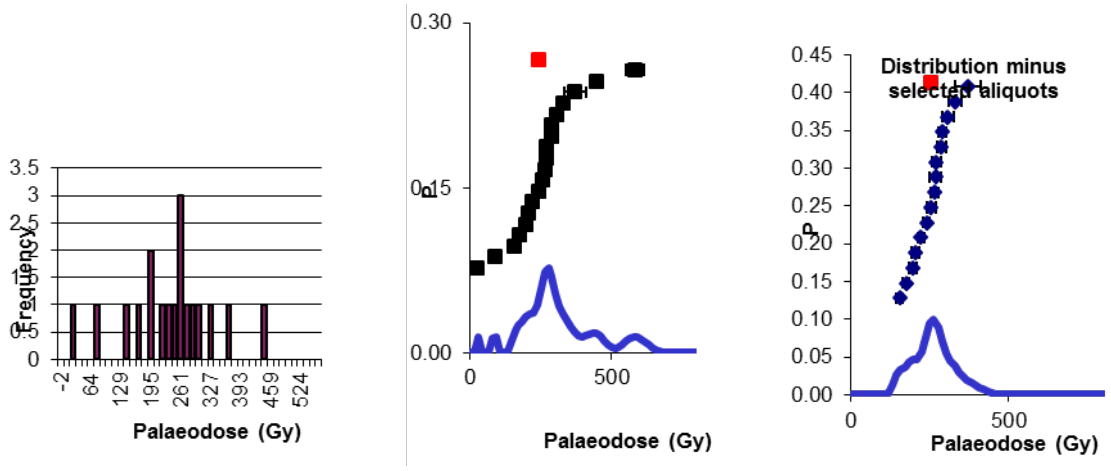


Figure 13 Palaeodose distributions for PET17/24/1, Shfd17143, sand deposit beneath Barrow 24

Aliquot	Palaeodose (Gy)	error
1	155.279	9.727
2	240.396	10.267
3	204.679	12.872
4	196.349	11.661
5	85.635	2.472
6	584.887	31.994
7	270.626	14.050
8	174.973	8.842
9	265.771	13.169
10	330.841	18.868
11	268.049	16.858
12	307.975	18.051
13	286.555	14.426
14	449.300	21.554
15	24.626	0.557
16	255.243	12.760
17	221.551	9.992
18	289.724	13.386
19	371.171	39.562

	De (Gy)	error
Minimum	24.63	0.56
Maximum	584.89	31.99
N	19	

Unweighted		
	All Data	Minus Outliers
Mean (Gy)	262.30	255.95
SD	123.77	58.81
SE	28.40	13.49
N	19	15

Weighted		
	All Data	Minus Outliers
Mean (Gy)	33.45	230.42
SD	38.76	49.74
SE	8.89	12.84
N	19	15

	All Data	**Minus Outliers**
Mean (Gy)	241.30	254.05
SD	80.32	43.76
SE	18.43	11.30
N	19	15

Central Age Model		
	All Data	Minus Outliers
Mean (Gy)	224.86	248.61
SD	33.97	14.49
OD (all data)	65.62%	21.80%
N	19	15

De Distribution	**All Data**	**Minus Outliers**
Skewness	-0.08	-0.03
Kurtosis	1.92	-0.24
Median	265.77	265.77
Sorting	0.38	0.20

Common Age Model		
	All Data	Minus Outliers
Mean (Gy)	139.09	246.37
SD	1.46	3.42
N	19	15

Appendix 16.1

Register of barrows and potential barrows in the Rother Region

Stuart Needham and Sabine Stevenson

See separate Excel spreadsheet:
http://www.peopleoftheheath.com/publications

Appendix 16.2

Barrow register fields: definitions and notations

Stuart Needham and Sabine Stevenson

General notations in database: n/a = not assessable; n/m = not measurable or not measured.

Site no: *Regional Barrow Survey* barrow number based on the kilometre-square within which the barrow lies.

Site name: *Regional Barrow Survey* applied name (previously applied names have been retained where they were appropriate to the immediate locality); this brings together close-set barrow groups even when they straddle parish boundaries, grid squares etc.; it also distinguishes smaller groups within larger complexes. The preferred name may be followed by any useful qualifications or past names.

Parish: present day civil parish.

County: H – Hampshire; S – Surrey; W – West Sussex.

Easting: Full Ordnance Survey grid easting, usually to six figures; when only known accurately to five a zero has been added.

Northing: Full Ordnance Survey grid northing, usually to six figures; when only known accurately to five a zero has been added.

Zone & group: Fourteen numbered major Zones (text Fig 18.1); each barrow group/pair or singleton is given a unique lower case letter, hence for example '2d' for group d in Zone 2. The overriding principle in defining the Zones and grouping is the relative spatial clustering of the recorded sites, see Appendix 17.4.

Community: Interpreted Early Bronze Age community that the site falls within – see Chapter 21.

Judgement: Each site is graded according to our confidence in it being a barrow. The grading system devised is as follows (discussed more fully in Chapter 16):

1) *Certain* – reserved for excavated sites which have produced uncontentious evidence for artificial construction and/or use for burial during the Bronze Age; if an excavation shows a site to have been man-made but did not yield good evidence for Bronze Age construction or use, the site remains in the appropriate lower grade.
2) *Good* – the site conforms (or conformed prior to destruction) well to established round barrow forms and is not easily explained as having another function or cause; there is thus little reason to doubt it being an ancient barrow. Examples of 'good' sites are:

- Mounds/enclosures that survive as discernible monuments in reasonably good condition.

- Mounds/enclosures for which earlier records give good description, but which have since been mutilated, denuded or wholly erased.
- Mounds/enclosures never recorded as earthworks, but which are picked out by strong distinctive crop- or soil-marks; *i.e.* mainly complete ring-ditches with or without internal marks representing mound or other associated features.

3) Less certain – one or more aspects of the site's condition, morphology, known history and environment make identification as a barrow rather less certain; while other origins are feasible, however, no obvious one presents itself; examples are:

- Mound/enclosure already in heavily denuded or otherwise badly damaged condition at the point of first observation.
- Ring-ditch which is not unambiguously annular and may not be a ditch encircling a barrow.
- Soil-mark (*e.g.* circular patch of distinctive soil) which may be the last vestige of a barrow mound, but could have other explanations.
- The site is no longer traceable and early descriptions are not detailed enough to justify grade 2.
- A barrow-like site recorded in early sources, but without a close location; nothing detected in the area today.

4) Unlikely – usually a mound or rise exists or is known to have existed, but there are positive grounds for doubting that the site was a round barrow (of any period), *i.e.* another activity or cause can be inferred from any, or a combination, of the form of the site, its setting, or documentary evidence. Typical explanations are a natural rise in a geological terrain prone to such features, quarry spoil, or an ornamental feature. Another reason for this grading is that there are good grounds for suspecting it is a duplicate record for another site in the register.

Grade 4 sites are colour coded in PINK or BROWN. The former are previously recorded sites which have been dismissed by this project; they are listed in the zone breakdown tables (Chapter 18). The latter are newly recognised potential sites for which the judgement is against them being barrows; they are listed in the register for future reference. No grade 4 sites are plotted on any maps or used in analyses.

5) No judgement possible, or *insufficient evidence* – site not locatable or not observable by the *People of the Heath* survey team and there is no adequate earlier description to allow a judgement to be made. Alternatively, insufficient evidence survives to merit grade 3. In both cases sites may subsequently prove to be additions to the corpus when new evidence comes to light or new observation or fieldwork is possible.

Grade 5 sites are colour coded in BLUEY-GREY. Although not used for analysis and not plotted on regional or zonal maps, as potential additional sites they are listed in the zone breakdown tables (Chapter 18) and shown on barrow-group maps (text Figs 17.13-17.26).

6) Possible Neolithic barrow – a strongly oval or elongate rise, the shape of which is not obviously due to lateral truncation or other modification; length more than 1.4 times the maximum width.

Grade 6 sites are colour coded in YELLOW. They are plotted together on text Figure 20.1 and also on barrow-group maps where they fall within the frame.

Intermediate grades have been kept to a minimum, but a few sites are graded 3/4, for example, good looking round rises for which there is still concern that they may be natural in origin, or that there is some feature or aspect of condition that prevents a straightforward grade 3. These are included as 'acceptable' sites and therefore contribute to analysis and plots. Sites which no longer survive or could not be visited, but for which adequate records exist to grade them 2 or 3 are distinguished by an asterisk in the register, hence 2* and 3*.

***General class**:* see Chapter 16 for fuller details.

- **M**: Mound barrow, upstanding earthwork when first recorded.
- **E**: Enclosure barrow, upstanding earthwork when first recorded.
- **L**: Very low mound when first recorded (generally less than 0.35m maximum height).
- **R**: Ring-ditch or other crop-mark/soil-mark when first recorded.
- **U**: Unclassified: mound (UM), low mound (UL), enclosure (UE), or unknown (U); unclassified sites are those not accepted as barrows on current evidence, grades 4 and 5 above; they do not contribute to analysis.

***Classification of details**:* see Chapter 16 for fuller details.

Additional features of mound barrows:

- s: *skirt*; rather than the mound meeting the ground surface in a single slight angle or smooth curve, a double-inflexion is discernible in the lower slope. This is generally subtle for the obvious reason that angles are anyway becoming slight towards the edges of mounds.
- s*: *step*; this is similar to the 'skirt', but instead of being gently sloped, the outer mound levels off before stepping down again to the external ground surface.
- d: encircling *ditch*, either at the foot of the mound or further out.

- b: encircling *bank*, normally but not invariably outside a ditch.
- b*: *embanked slope* – an annular bank sits on the sloping sides of the mound, rather than lying beyond its foot.
- f: a *flat*, near-level annular zone – or *berm* – encircling the foot of the mound and enclosed by a ditch and/or bank.
- w: *walling*: drystone masonry or stone blocks built into or around the edge of the mound.

Additional qualifications for enclosure barrows:

- d: *ditch*, no bank discernible;
- b: *bank*, no ditch discernible;
- e: both present, bank *external* to ditch;
- i: both present, bank *internal* to ditch;
- g: interior is basically the *ground surface*;
- p: interior is a raised *platform*, roughly flat or very gently domed;
- r: interior is *recessed* into ground surface, wholly or in part; this may be dished or a flatter terrace cut into slope;
- t: one or more small mounds – *tumps* – present within interior; a berm arises by default between tump edges and the enclosure.

***Description**:* Description of the morphology of the site including measurements/orientations obtained by the *Regional Barrow Survey*.

***Condition**:* Systematic assessment of the condition of sites. The assessment for mounds does not include encircling ditches as these will always tend to have poor visibility relative to the mound. A key purpose of this assessment is to judge whether the mound volume now present is likely to be a reasonably good approximation to its original volume. However, one cause of imprecision even for very well preserved sites arises where there was originally a ditch (which may or may not be detectable), since its fill is in part likely to have derived from erosion off the mound. In such cases the now-extant mound volume will be an underestimate of initial (compacted) volume.

The assessment for enclosure barrows is scaled differently from mound barrows in keeping with their more ephemeral starting profiles.

Excellent: Affected by normal natural weathering processes and minor disturbances from small animals and vegetation only. Dimensions and form modified accordingly, but volume of soil considered to be little changed from original earthwork.

Good: In addition to normal natural weathering processes, there is evidence for more invasive intrusion by larger animals or humans and/or limited truncation of an edge. Barrow form and some dimensions may thus be modified, but the overall volume of soil is considered to be little changed.

Mutilated: In addition to normal natural weathering processes, there is evidence for significant re-distribution of soil by, for example, major antiquarian or military intrusion. Barrow form and some critical dimensions may be altered, but the overall volume of soil is considered likely to be little altered despite being re-distributed. However, depending on the shape resulting from re-distribution, there may be greater imprecision in the estimation of volume. Small intrusions do not result in this categorisation.

Partially buried: The barrow seems to be generally in good condition, but part is buried (for example, by a later lynchet), so that one or more dimensions has to be reconstructed on the assumption that the site was rotationally symmetrical.

Truncated (laterally): In addition to normal natural weathering processes, there is evidence for part of the mound having been removed by, for example, quarrying or downslope erosion due to impinging traffic or long-term ploughing; the measurable volume of soil is therefore thought to be less than the original volume. The barrow's pre-truncation form, dimensions and volume can be reconstructed providing over half survives unaffected by the attrition, but they have to be based on the assumption of original rotational symmetry.

Denuded: A combination of profile, proportions (low height relative to large diameter), associated features and historic/recent land use suggest the site has suffered denudation, most often caused by ploughing. Edge definition and barrow profile are good enough to suggest that the current soil volume may still represent *most* of the original volume.

Heavily denuded: A very low rise which may be associated with a disproportionately large diameter, where this is definable, plus evidence from associated features and historic/recent land use that is consonant with significant plough denudation. The definition of edges is especially poor leading to great uncertainty as to whether a calculated soil volume would fairly represent the original one.

Levelled: A site documented through past recording or aerial photographic (AP) evidence for which there is no longer any detectable surface morphology, either on the ground or on Lidar imagery. Subsurface features may, nevertheless, survive. There is no longer any possibility of assessing original volume unless a good earlier description exists.

Destroyed: A site *and* its immediate landscape have been destroyed through quarrying, scalping or excessive erosion; no subsurface features are expected to have

survived. There is no longer any possibility of assessing original volume unless a good earlier description exists.

For the purposes of the analysis conducted in Chapter 16, some of these condition codes were combined. Although the main purpose of this assessment was to qualify volume estimates, it is also useful in terms of barrow morphology; those in excellent or good condition are most likely to reflect their original form, whilst those partially buried or laterally truncated may do so depending on the extent of the impingement.

***Intrusions**:* Summary of significant intrusions including recorded excavations; small hollows caused by animals and vegetation are ignored here.

RE – recorded excavation (reference cited).

OE – other excavation surmised from features such as craters, linear trenches, scalloping, these qualified if necessary by: 'A' if thought most likely to be due to antiquarian intrusion, 'M' for military operations, 'Q' for quarrying.

Others include, for example, significant tree-throws or boundary earthworks cutting across the site.

***Proximate features**:* Examples of proximate features are:

Contiguous barrow (must be touching or overlapping);

Linear ditch and/or bank; relationship and orientation given;

Encircling ditch and/or bank which is not obviously part of the monument and may encircle more than one barrow;

Platform: presence of a platform of level or gently sloping ground between mound edge and a steeper slope nearby; width of platform given;

Other features – e.g. military, quarry holes, footpaths.

***HER record**:* Cross-reference to record number on the relevant county Historic Environment Record.

***HER extract**:* Relevant text extracts from the HER.

***PotH notes**:* Useful details not entered in other fields, including any explanation of the judgement grade given or problems relating to barrow measurement, identity, location etc.

***Past references**:* Any past reference specific to the individual site.

Gr = Grinsell; for Hampshire see Grinsell 1939, and Sussex see Grinsell 1934; 1940; 1941. References to Grinsell's lists may not be comprehensive due to his recording of location by longitude and latitude for Hampshire, and distance from the margins of Ordnance Survey sheets for Sussex.

***First recorded**:* Date of the first record which recognised the site to be a potential barrow; the record may be a published article, a dated HER record, an archaeological archive or an early map on which the site is labelled 'tumulus' or similar. Followed by mode of discovery where known, *e.g.* aerial photograph; on ground; on Lidar image.

***New site**:* All sites additional to those on the respective Historic Environment Records as at the beginning of the *People of the Heath* project, 2014. In a few cases these are sites discovered or recorded first by other fieldworkers, as acknowledged in the register entries.

***Mound diameter**:* Best diameter for the purpose of volume calculation (actual measurements are given in the Description field), usually the average of RBS measurements, or best estimate based on incomplete measurements, rounded down to nearest 0.5m rather than up. Where a shallow 'skirt' is present (see below, 'encircling diameter'), this is excluded for the purpose of volume calculation so as not to exaggerate the estimates. Earlier recorded measurements have been used if there is seen to have been a significant change and they seem likely to be reasonably accurate.

***Mound height**:* Best maximum height for the purpose of volume calculation; based on the average of our measurements, or best estimate based on incomplete measurements; value sometimes reduced to make allowance for convexity of ground surface beneath. Earlier recorded measurements have been used if there is seen to have been a significant change and they seem likely to be reasonably accurate. The question of relevant height to use for calculations when the mound has a significant crater in its top is addressed in Appendix 16.3.

***Top diameter**:* Average diameter of flat tops of mounds.

***Cone volume**:* Calculated volume of a cone based on figures in 'mound diameter' and 'mound height' fields; see Chapter 16 for formula.

***Cap volume**:* Calculated volume of the cap of a sphere based on figures in 'mound diameter' and 'mound height' fields; see Chapter 16 for formula.

***Trunconic volume**:* Calculated volume for a truncated cone based on figures in 'mound diameter', 'mound height' and 'top diameter' fields; see Chapter 16 for formula.

***Volume estimate**:* Best estimate of approximate volume based on previous two or three calculations.

***Relative height**:* Ratio of 'mound height' to 'mound diameter'.

***Mound plan**:* The plan is categorised regardless of condition, in order to evaluate the possibility of distortion caused by attrition.

Circular: Larger of two measured diameters (usually orthogonal to one another) is ≤5% greater than the smaller.

Circular, near: Larger of two measured diameters is between 5 and 10% greater than the smaller.

Oval, slightly: Larger of two measured diameters is between 10 and 20% greater than the smaller.

Oval: Larger of two measured diameters is >20% greater than the smaller.

More unusual shapes are described individually.

***Mound profile**:* The profile is only categorised if the mound is judged to be in excellent or good condition, or if truncation or mutilation is not thought to have altered it; otherwise, see Description. Some very small mounds

have not been categorised because they are less likely to show any subtle distinctions in shape in profile.

Domed: More or less even convex curve in elevation, regardless of height and steepness of sides.

Trunconical: A distinct flattening of the top with a brow or angle at the top of the sloping sides.

Sub-trunconical: Tendency towards trunconical.

Bell: A distinctly sinuous profile, more so than just due to natural erosion.

Hub-cap: A convex top gives way to concavity as it approaches a cusp (sometimes due to annular bank on slope), then sides fall away again.

Dished mound: A neat and large dishing in the top of the mound which is not obviously the product of antiquarian or other intrusion.

More unusual profiles are described individually.

***Encircling diameter**:* Outermost diameter (outer edge) of encircling feature(s) or platform/skirt of mound.

***Other diameters**:* Diameter averages and/or ranges for critical features inside the 'outermost diameter'.

***Encircling plan** (= plan of encircling features):* Notations as for mound plan above, followed by any necessary qualification.

***Encircling profile**:* Description of profiles of encircling earthworks.

***Ditch depth**:* Maximum depth (or depth range) as measured.

***Bank height**:* Maximum height (or height range) as measured.

***Finds**:* Includes finds both excavated (E) and picked up from surface (S), hence *flint scraper (E)* or *flint scraper (S)*.

***Vegetation cover**:* That of the site itself at the time of the survey.

***Current land use**:* A categorisation of the land use of the close environs of the site (cf. the vegetation cover of the site itself, above); this will not always correspond exactly to the land use shown in the Zonal land use maps in Chapter 18 because of the need to simplify the latter.

***Height OD**:* Interpolated from OS Terrain 5 Digimap mapping.

***Ground slope**:* As measured in the field.

***Slope orientation**:* Compass direction (16 points) as established in the field.

***Geology (immediate)**:* Surface geology on which site sits, either solid or superficial, as recorded by the British Geological Survey; the entry is sometimes simplified, for example, it does not distinguish between different strata of the Chalk, or different terraces of River Terrace Deposits.

***Bedrock**:* Detailed British Geological Survey categorisation of bedrock at the site's location; based on 1:50,000, Edina Geological Map Data BGS & Digimap data Geological Map Data BGS © NERC 2018.

***Soil Group**:* Drawn from the 1:50,000, Soil Parent Material, Edina Geological Map Data BGS © NERC 2018:

Loam; Loam>Clay; Loam>Clay>Sand; Sand>Loam; Sand; All

***Texture**:* 'Estimated texture' drawn from the 1:50,000, Soil Parent Material, Edina Geological Map Data BGS © NERC 2018:

Medium to heavy; Medium to light (silty) to heavy; Medium (silty) to light (silty) to heavy; Medium to light (silty); Light (sandy) to medium (sandy); Light (sandy); All textures present

***Soilscape**:* Using the Cranfield Soil and Agrifood Institute classification system.

3 – shallow lime-rich soils over chalk or limestone

5 – freely draining lime-rich loamy soils

6 – freely draining slightly acid loamy soils

8 – slightly acid loamy and clayey soils with impeded drainage

10 – freely draining slightly acid sandy soils

14 – freely draining very acid sandy and loamy soils

18 – slowly permeable, seasonally wet, slightly acid but base-rich loamy and clayey soils

22 – loamy soils with naturally high groundwater

Land use term	Definition
Built environment	In amongst or covered by urban and other built-up areas including communication lines such as roads and railway tracks.
Downland	Essentially open unimproved grassland; scattered trees and shrubs accepted.
Fieldscape	Part of the modern fieldscape, irrespective of current type of use.
Garden	Currently within a plot maintained as domestic garden.
Heathland	Essentially open unimproved heather- or grass-heath; scattered trees and shrubs accepted.
Heath-woodland	Either a small-scale mosaic of open heathland and more wooded areas, or former open land which is in the process of regenerating, but is not yet mature woodland.
Landfill	Currently or recently used for landfill.
Parkland	Grazed grassland with scattered or clumped mature trees.
Quarry	Within actively or recently quarried area.
Rhododendron scrub	Predominantly rhododendron scrub.
Sportsground	Within boundary of sportsground (cricket, golf etc.)
Woodland	Tree cover is fairly consistent, irrespective of origins.
Woodland glade	Limited open area (grass etc.) within woodland, including rides.

Appendix 16.3

Field methods and database creation for the Regional Barrow Survey

Stuart Needham

An A4 proforma was designed at the beginning of the survey and filled out in the field for every site worthy of recording, including some grade 4 sites. Sites were located with the assistance of GPS devices. Where grid references were already recorded previously, these were checked using GPS at the centre of the site. Given typical error margins of a few metres in GPS readings, grid references for sites were not corrected unless they deviated by more than about 10m on one or other axis. Each site was measured (see further below) and described in terms of its extant morphology with judgements being made as to whether it had suffered any damage beyond natural compaction and weathering; this involved describing any obvious intrusions – including animal holes or tree-throw pits – and any unusual features of the surface morphology. Where it was obvious from surface exposures that a mound or bank contained a particular material component, notably flint nodules, sandstone, chalk or ironstone, this was noted. The vegetation on the site itself was recorded, as were a range of observations about the site's position in relation to the local topography and its outlook: the angle and direction of ground slope at the spot; the character and magnitude of the terrain of the site and that which it overlooks, and the extent and range of the viewshed where this could be ascertained (woodland frequently blocked views). Most sites were photographed to serve as a record of their current state. The altitudes of sites were obtained later by interpolation from the OS Terrain 5 Digimap because this proved to be more precise than could be got by GPS on site.

Most of the data recorded in the field was then entered on a database (Excel spreadsheet – App 16.1) reconfigured as necessary to facilitate anticipated modes of analysis. A range of additional data was added at this stage by consulting maps, notably base geology, soil type and character, past references, recorded interventions, finds made, or previous researchers' measurements and observations. A detailed explanation of the database fields is provided above in Appendix 16.2.

Measurement techniques used

Since the base measurements of each site are crucial to reconstructing both linear and volumetric sizes, upon which much interpretation hangs, the techniques used need to be described. The scope of the survey and the time available meant that it was not practicable to set up surveying equipment at each of the many sites and more basic methods were used. Given the frequent roughness of the ground surface and frequent problems of definition,

measurement by tape is probably actually no less accurate than by high-tech devices. Indeed, where definition of an edge is poor, its best position is often better determined on the ground than by reference to, say, a contour plot. A frequently used technique was for one member of the team to walk a radial line across the edge in question, with another watching from a vantage point at right angles. The combination of the onlooker's observation of where the ground inflected and the walker's sense of change underfoot gives a good guide as to where an earthwork finally merges back into the ground surface (itself usually sloping to some degree). Determining the full reach of the 'talus' of the earthwork is important for minimising inaccuracy in the all-important volume calculations (see Chapter 16).

Unless prevented by obstructions, mounds were measured on two orthogonal axes, radial measurements being taken from a central or near-central datum whenever this was feasible. Typically one axis was aligned with the contour and the other with the maximum slope, but this was deviated from if it was obvious that the mound had a longer axis on a different alignment. At each of the four radial extremes a horizontal and vertical measurement were recorded. The vertical measurement was made by establishing a horizontal line between the datum and a ranging rod at the end of the line; this horizontal was gauged by eye from a point offset at right angles using a long builder's level. The four vertical measurements were therefore independent of one another and often, where the slope was appreciable, ranged widely; upslope measurements were sometimes negative. The best height of the mound was thus the average of the four, although allowance sometimes has to be made for a convex-profile buried land surface, for otherwise estimated volume would be exaggerated. The heights of mounds with craters in the top were taken to the crater rim. The relationship of this height to the original mound height will depend on a variety of parameters, but the former will generally underestimate the latter (see next section).

In a few cases, mounds were so large that vertical and horizontal measurements had to be built up by relaying in two steps down each slope. This process will have increased potential errors a little. Less frequently an alternative method of measuring vertical height was used for low to modest height mounds. This involved taking the heights at each end of a sight-line taken across the mound more or less parallel to the ground surface. Where feasible, this was done for two orthogonal diameters and again an average was taken for the best estimate of height, unless it was clear that the ground surface was convex on one orientation and not the other, in which case the latter measurement was favoured.

For enclosure barrows, it was considered important to establish with more clarity the extent to which they described a circle or not, hence eight radial sets of measurements were taken whenever possible. In addition, the slightness of these earthworks means that the various points being measured – *e.g.* inner edge of bank, crest of bank, outer edge etc. – can meander to some degree simply because of the vagaries of erosion and disturbance; the more radial measurements taken, the more representative the average will be. The vertical dimensions, height of banks and depth of ditch, were felt to be less important since they will not closely reflect the full volume of spoil originally extracted and only representative measurements were taken to give reasonable maximum values.

Approximations for the volume of crater rims relative to original mound cap

For sites with craters in the top, the main permanent change is the re-distribution of soil which had formed the cap of the mound above the crater, to the outside, where it now forms an annular rim. In order to see the effects on original barrow height the following formulas can be applied for soil volumes *above a horizontal plane through the crater base*.

The original cap volume, approximated as a cone, is: $\pi hr^2/3$, where h is the height of the cap above crater base, not the whole mound.

The annular rim volume (V), approximated as having a triangular cross-section, is: $V = \pi WHD/2$, where W is the width of the rim at its base, H is its height above that plane, and D is the diameter midway across the rim. In fact, $D = 2r - W$, therefore $W = 2r - D$.

Hence: $V = \pi(2r\text{-}D)HD/2$, and this should be roughly equivalent to the original cap volume

Hence: $\pi hr^2/3 = \pi(2r\text{-}D)HD/2$

$3\pi hr^2/3 = 3\pi(2r\text{-}D)HD/2$

$\pi hr^2 = 3\pi(2r\text{-}D)HD/2$

$hr^2 = 3H(rD - D^2/2)$

Hence: $\mathbf{h = 3H(Dr - D^2/2)/r2}$

Examples:

Conditions	Calculation	
D = r	$h = 3H(r^2/2)/r^2$	= 1.5H
D = 1.2 x r	$h = 3H(1.2r^2 - 0.72r^2)/ r^2$	= 1.44H
D = 1.4 x r	$h = 3H(1.4r^2 - 0.98r^2)/ r^2$	= 1.26H
D = 1.5 x r	$h = 3H(1.5r^2 - 1.125r^2)/ r^2$	= 1.125H
D = 1.6 x r	$h = 3H(1.6r^2 - 1.28r^2)/r^2$	= 0.96H
D = 1.7 x r	$h = 3H(1.7r^2 - 1.445r^2)/ r^2$	= 0.765H
D = 1.8 x r	$h = 3H(1.8r^2 - 1.62r^2)/ r^2$	= 0.54H

It can be seen that the height of a cap of hypothetical conical form (h) would always be greater than the average height of the rim (H) when D is <1.6r. When D is >1.6r, the crater base is wide relative to the cap's diameter, ≥60%; in practice, this is rarely the case. The calculated increases shown above would be ameliorated to some degree by the fact that the cap would not originally have been conical, but instead domed or trunconical, but in most circumstances the average height of the rim would still approximate to, or *underestimate*, the original height. There are other complications in making detailed calculations, such as how much spoil had tipped down the sides of the mound and the profile of the crater rim, which would be rounded rather than triangular.

It needs to be remembered that for the full predicted height of a crater-indented mound, h needs to be added to the base-mound height, that below the crater base.

Appendix 16.4

Summary table of the landscape relationships of potential enclosure barrows

Stuart Needham

Site	Proximity to other barrows	Proximity to landscaped grounds, grand houses or possible rides. Landscape position.
Zone 1		
Passfield Common 8133/1	Isolated; 1.22km from nearest mound barrow.	None known. Middle of low plateau.
Longmoor Woolmer Road 7931/7	Part of a tight cluster of three within a dispersed barrow constellation; conjoining a second enclosure barrow & immediate proximity to a third; 370m S of mound barrow group.	None known. Top of a low W-E ridge.
Longmoor Woolmer Road 7931/8	Part of a tight cluster of three within a dispersed barrow constellation; conjoining a second enclosure barrow & immediate proximity to a third; 370m S of mound barrow group.	None known. Top of a low W-E ridge.
Longmoor Woolmer Road 7931/9	Part of a tight cluster of three within a dispersed barrow constellation; immediate proximity to 2 other enclosure barrows; 370m S of mound barrow group.	None known. Top of a low W-E ridge.
Longmoor Camp East Gate 8031/4	Within a dispersed barrow constellation; conjoining another enclosure barrow; 350m S of mound barrow pair.	None known. Slight spur at foot of dip slope & on edge of stream valley head.
Longmoor Camp East Gate 8030/3	Within a dispersed barrow constellation; conjoining another enclosure barrow; 350m S of mound barrow pair.	None known. Slight spur at foot of dip slope & on edge of stream valley head.
Weavers Down East 8030/2	Within a dispersed barrow constellation; part of fairly dispersed group of 8 barrows, mound and enclosure, the nearest lying 230m to S.	Langley Court/Bohunt? Mid dip slope facing NW.
Weavers Down East 8130/4	Within a dispersed barrow constellation; part of fairly dispersed group of 8 barrows, mound and enclosure, the nearest lying 260m to SSE.	Langley Court/Bohunt? Mid dip slope facing NW & on brow of steep erosion scarp.
Weavers Down East 8130/3	Within a dispersed barrow constellation; part of fairly dispersed group of 8 barrows, mound and enclosure, the nearest lying 240m to SW.	Langley Court/Bohunt? Nose of ENE-pointing ridge, perched above steep slopes to SE & N.
Weavers Down West 8030/4	Within a dispersed barrow constellation; part of a fairly dispersed group of four, the closest mound lying 530m to SSW.	Langley Court/Bohunt? Mid dip slope facing NW.
The Mint, Liss 7928/2	Part of a rather dispersed group of three; 300m SE of possible mound barrow; group otherwise isolated (1.2km to next group).	?The Wylds lies 500m to NNE. Fairly level ground on brow overlooking stream.
Chapel Common 8128/1	140m from nearest mound barrow and 425m from a tight cluster of 3 enclosure barrows.	None known. W-facing flank of tiny dry valley incising dip slope.
Chapel Common 8128/3	Part of a tight cluster of three with two other group members 425m to SSW.	None known. Gentle N facing spur between dry valleys.
Chapel Common 8128/4	Part of a tight cluster of three with two other group members 425m to SSW.	None known. Gentle N facing spur between dry valleys.
Chapel Common 8228/1	Part of a tight cluster of three with two other group members 425m to SSW.	None known. Gentle N facing spur between dry valleys.

Site	Proximity to other barrows	Proximity to landscaped grounds, grand houses or possible rides. Landscape position.
Zone 2		
Farther Commons 7826/1	Isolated; 2.4km S of nearest mound barrow. Deduced landscape sequence in immediate area of site suggests it has greater antiquity than well-developed hollow-way alongside.	None known. Mid dip slope facing NW.
Petersfield Heath (4) 7523/10	Within clustered cemetery of mound and enclosure barrows. Secure excavation evidence for Bronze Age use.	None known. Many regular route ways crossed the Heath. Gentle S-facing flank of low ridge.
Petersfield Heath (24) 7523/2	Within clustered cemetery of mound and enclosure barrows. Secure excavation evidence for Bronze Age construction.	None known. Many regular route ways crossed the Heath. Valley edge at foot of S-facing gentle slope.
Petersfield Heath (12) 7522/12	Within clustered cemetery of mound and enclosure barrows. Excavation evidence suggests a Bronze Age feature is present internally and pollen from monument-associated contexts is consistent with BA.	None known. Many regular route ways crossed the Heath. Valley bottom, close to stream head.
Petersfield Heath (14) 7522/10	Within clustered cemetery of mound and enclosure barrows. Secure excavation evidence for Bronze Age use.	None known. Many regular route ways crossed the Heath. Gentle SW-facing flank of low ridge.
Petersfield Heath (19) 7522/5	Within clustered cemetery of mound and enclosure barrows. Secure excavation evidence for Bronze Age construction & use.	None known. Many regular route ways crossed the Heath. Top of low ridge curving from S towards NW.
Zone 3		
Iping Common 8522/1	Part of a fairly dispersed barrow sub-group within wider constellation; 190km N of nearest mound barrow pair.	None known. A W-E route way apparently truncates the site. Middle of low plateau-topped ridge.
Pound Common 8624/4	Part of a fairly dispersed barrow group; a second potential enclosure barrow lies 190m to NE; nearest mound barrow pair 450m to N.	Woolbeding House lies 1.3km to SSE – unlikely to be inter-visible. Dip slope & W brow of small steep-sided dry valley.
Pound Common 8624/7	Part of a fairly dispersed barrow group; a second potential enclosure barrow lies 190m to SW; nearest mound barrow pair 380m to NNW.	Woolbeding House lies 1.3km to SSE – unlikely to be inter-visible. Dip slope & E brow of small steep-sided dry valley.
Zone 4		
Petworth Gate, Cowdray Park 9021/1	Isolated, although there is an unexplained sub-circular earthwork alongside (see text Fig 18.17c); 2.25km S of nearest mound barrow & 2.5km N of nearest mound barrow group.	Situated just inside Petworth Gate of Cowdray Park (S); one side is clipped by a drive (not currently the main entrance route) to the house which lies 500m to SW. No feature is shown here on early OS maps. Gently inclined, mid dip slope.
Starve Acre Copse 8919/7	Part of a barrow group, juxtaposed against the N side of a mound barrow.	None known. Plateau edge, on brow of steep W-facing bluff to (dry?) valley head.
Ambersham Common 9119/3	Part of a fairly dispersed group, except close to another enclosure barrow (50m); 380m W of nearest mound barrow.	Graffham Court lies 650m to SE. Gentle flank of plateau facing River Rother, 1.1km to N.
Ambersham Common 9119/4	Part of a fairly dispersed group, except close to another enclosure barrow (50m); 390m W of nearest mound barrow.	Graffham Court lies 650m to SE. Gentle flank of plateau facing River Rother, 1.1km to N.
Zone 5		
Brinksole Heath 9921/2	140m from a second enclosure barrow; 100m E of nearest mound barrow & 650m E of nearest mound barrow group.	Lies beside a woodland ride passing E through Goanah Lodges, outlying buildings to Petworth House; site is 1.65km E of the House and view would be blocked by one Lodge. High on gentle SW-facing dip slope.
Brinksole Heath 9921/3	140m from a second enclosure barrow; 240m E of nearest mound barrow & 790m E of nearest mound barrow group.	Lies beside a woodland ride passing E through Goanah Lodges, outlying buildings to Petworth House; site is 1.8km E of the House and view would be blocked by one Lodge. High on gentle SW-facing dip slope.
Zone 6		
Bramshott Common 8533/1	380m from another enclosure barrow; a possible mound barrow impinges; this group otherwise fairly isolated (>2km).	Ludshott Manor lies 1.4km to WNW, but site not intervisible with house. Brow of plateau overlooking steep dry valley to N.
Kent's Hill, Bramshott Common 8533/2	380m from another enclosure barrow with associated possible mound barrow; this group otherwise fairly isolated (>2km).	Ludshott Manor lies 1.7km to W, but site probably not intervisible with house. Steep SW-facing slope of modest dry valley, at a kink.
Zone 7		
Planted Field, Valewood 9030/1	Fairly isolated; 770m NE of nearest mound barrow, but nearest group 1.8km to SSE.	200m N of Valewood House, but not intervisible. Bench overlooking steeply incised stream valley to WSW.
Castle Copse, Black Down 9129/1	Westerly one of group of three enclosure barrows spanning 400m; group of mound barrows 220m to N.	Visible on backdrop hillside from Black Down House (400m S) which has early formal landscaping (text Fig 16.11). Overlooks well-cut hollow way to S. Steep slope at top of S-facing scarp overlooking west end of Weald.
Black Down 9129/2	Central one of group of three enclosure barrows spanning 400m; group of mound barrows 175m to WNW.	Black Down House lies 550m to SSW. Brow of steep S-facing scarp overlooking west end of Weald.
Temple of the Winds, Black Down 9229/1	Easterly one of group of three enclosure barrows spanning 400m; group of possible mound barrows 290m to W.	Black Down House lies 650m to SSW. S brow of very prominent hill-plateau overlooking west end of Weald.

Site	Proximity to other barrows	Proximity to landscaped grounds, grand houses or possible rides. Landscape position.
Zone 10		
Chalton Down 7117/1	Part of a dispersed barrow group with mound barrows 525m to NE and 450m to S.	None known. Lies beside the A3 trunk road and was evidently one of a few tree-planted features along the route around AD 1800 (see text Table 16.2). Gentle S-facing mid dip slope.
Zone 12		
The Devil's Jumps 8217/7	Within tightly clustered cemetery of mound barrows.	None known. Gentle SW-facing rounded spur coming off ridge top, and just above head of a dry valley.
Zone 13		
Linchball Wood 8416/7	Part of a fairly dispersed barrow group; nearest mound barrows lie 320m to E.	None known. SSW-sloping spine of spur coming off ridge top.
Westdean Woods 8515/2	One of an outlying pair of a barrow group; juxtaposed against the E side of a mound barrow.	None known. Head of small S-pointing spur on mid dip slope.
Zone 14		
Heyshott Down 9016/9	Within tightly clustered cemetery of mound and enclosure barrows.	None known. Ridge top, very close to edge of NE-facing scarp combe.
Heyshott Down 9016/10	Within tightly clustered cemetery of mound and enclosure barrows.	None known. Ridge top, very close to edge of NE-facing scarp combe.
Heyshott Down 9016/11	Within tightly clustered cemetery of mound and enclosure barrows.	None known. Ridge top, very close to edge of NE-facing scarp combe.
The Scrubs, Graffham Down 9116/7	Part of a rather dispersed barrow group; 200m SW of nearest mound barrow.	None known. High on SSE-facing slope near dry-valley head.

Appendix 16.5

Further aspects of barrow morphology

Stuart Needham

Circularity of the mounds

The measurements taken by the Regional Barrow Survey allow an assessment of the degree of circularity of 'round' barrows; this can only be broad brush because of the logistical difficulties with establishing maximum and minimum diameters (see Appendix 16.3). Table 1 summarises the results. One would not expect barrows to be built circular with any great precision, but it is of interest to ascertain what tolerance there was of any oval tendency. More strongly oval mounds lacking any evidence of lateral truncation would be suspected of being Neolithic. 'Oval' with respect to round barrows means one axis is more than 20% longer than the other; for 'circularity' definitions see Appendix 16.2.

Circularity is best assessed from the better preserved sites. Those of condition codes 1 and 2 have not dissimilar figures for the four defined categories so it is reasonable to combine them for a better sample size. In the penultimate column of Table 1 it can be seen that there is a steady decline from 41.5% circular to 29.5% near-circular, 17.5% slightly oval and 7.5% oval. This can be taken to be a fair estimate of the circular-to-oval gradation. Oval sites are not numerous and one cannot exclude the possibility that some have suffered truncation that is not apparent. Nevertheless, it seems likely that there genuinely was a tail of the distribution extending to proportions a little over 20% different. The fact that there is a clear fall-off profile suggests that the more oval shape was not sought as such, but was merely the by-product of there being no imperative to achieve precise circularity, perhaps supplemented in some cases, especially on slopes, by asymmetric weathering processes.

Mound circularity	Code 1	Code 2	Code 3 & 3? & 2/3[1]	Code 4 & 4?	Code 5 & 5?	Code 6	Totals	*Codes 1 + 2 %*	*Codes 4 + 5 %*
Circular	51	48	3	20	9	1	**132 (38.2%)**	*41.5*	*33.5*
Near-circular	41	30	2	11		3	**87 (25.2%)**	*29.5*	*13*
Circular or near-circular	*5*	*4*	*3*	*5*	*22*	*5*	***44 (12.8%)***	*4*	*31.5*
Slightly oval	26	16	1	13	3		**59 (17.1%)**	*17.5*	*18.6*
Oval	13	5		1	2	2	**23 (6.7%)**	*7.5*	*3.5*
Totals	**136**	**103**	**9**	**50**	**36**	**11**	**345**	239	86

Table 1 Circularity of mounds with respect to condition.
Note: [1] Most laterally truncated sites have been excluded because circularity cannot be assessed.

Mound circularity	Condition codes 1 & 2	Condition codes 4 & 5
Circular and near-circular	179 (75%)	67 (78%)
Slightly oval	42 (17.5%)	16 (18.6%)
Oval	18 (7.5%)	3 (3.5%)

Table 2 Simplified data for mound circularity comparing un-denuded mounds with denuded mounds

A second question arising from this data is the extent to which denuded mounds (condition codes 4 & 5) might be distorted by greater soil movement in one direction relative to another. One effect of the poorer edge definition implicit in denuded mounds is that a large number cannot be attributed specifically to circular or near-circular and a good proportion (31.5%) are placed in a less precise combined 'circular or near-circular' category (cf. 4% for codes 1 & 2 combined). By combining all the figures for circular and near-circular a more comprehensible comparison can be made with codes 1 and 2 (Table 2). This shows, albeit at a slightly coarser resolution, that there is little difference in the circular-to-oval profile for denuded mounds; indeed, the more patently oval examples are proportionally fewer.

Mound profiles

Observable variation in the profile of the mounds is rather limited. The term 'bowl' to describe the most basic mound shape has been avoided because of its connotations in relation to past classification schemes; instead we have adopted the term *domed*. Very few barrows in their weathered state are true cap-of-a-sphere segments, which the term might imply, and in practice the typical profile unaffected by any impingement or intrusion is that of a convex top grading into slopes that flatten out and may become a little concave lower down; examples can be seen in text Figure 16.24. The great majority of upstanding mounds have domed profiles,[1] whether low domes or high domes (distinguishing between proportions is left to the dimensional analysis below). Where domes are a little asymmetric, this can usually be put down to disturbance or the possible truncation of one side.

Five mounds present a more bell-shaped profile (text Fig 16.14), but this differs from some domed mounds only in having a more exaggerated concavity in the lower slopes. They are scattered across the region. A tendency towards bell-shaped profile can also be caused by shallow 'steps' or 'skirts' at the foot of mounds, 12 examples of which were observed; these are discussed below under encircled mounds.

In contrast to the continuously curving top of the domed mound, there is a significant minority of mounds that have a distinctly flattened top with a sub-angular break to the sloped sides (text Fig 16.14). These are termed *trunconical* mounds. Excluded here are examples where there appears to have been an intrusion into the top which is largely backfilled; however, surface morphology may not always betray the presence of such past intrusions if thoroughly backfilled. The flat, or marginally convex, top can be of any diameter relative to the base diameter and this ratio plus relative height will govern how steep the sides are. This means that quite different looking mounds are lumped together as trunconical (text Fig 16.14). The sides will tend to be fairly evenly sloped, but weathering will still have tended to cause the slope to lessen as it meets the ground surface. Two sites in Zone 14 (9116/6, 9216/3) have such a wide and low flat top that they have been distinguished as having *platform* profiles. Two very low sites in the Duncton Common cemetery (9618/11 & 12, Zone 5) may be similar, but their full shape in plan is concealed by the fact that they are wedged in between more prominent mounds. Other low sites may have had similar profiles prior to disturbance. Thirty-nine mounds have a more or less trunconical profile. They are widely distributed through the region, but disproportionately represented in the west (see text). One seemingly undisturbed mound amongst The Devil's Jumps (8217/6, Zone 12) is sub-conical. Its steep, evenly sloped sides rise to a narrow slightly convex rather than flat top, but this might just be a variant on the trunconical theme. Two other mounds in that cemetery have been classified as trunconical.

A few mounds have a pronounced dishing of the top that is neat and large and not obviously the product of antiquarian or other digging (text Fig 16.15). Indeed, in the case of the pair on Graffham Down (Zone 14; 9116/3 & 4), there is a secondary depression cutting into the centre of the dished top that is more obviously a later intrusion. We cannot rule out some form of later modification, but these seem worthy of separate classification to draw attention to them – *dished mounds*. The other examples occur in Zone 13 (8416/1) and Zone 1 (8030/1), and possibly amongst the Heyshott Down cemetery (Zone 14; 9016/3). The dishing in this last one is crossed by a linear trench. The Zone 1 example on Weavers Down East may be part of a different phenomenon as two other mounds here have annular banks atop their lower slopes (b*; 8029/1, 8130/1). This gives rise to a *hub-cap* profile, otherwise seen only in a barrow in Zone 13 (8615/4). Such profiles may well be due to the superimposition of two earthworks of different phases.

In summary, it is difficult to be sure of much significant variation amongst mound profiles. The difference most likely to be an intended distinction is that between domed and trunconical, although one cannot rule out some blurring due to different degrees of erosion

1 Domed profiles are also virtually ubiquitous for plough-denuded barrows due to smoothing and there can be no assumption that they were originally domed.

or other *ad hoc* movements – for example, the collapse of a large internal wooden chamber,[2] which might cause a domed top to flatten. Other variations may be largely due to idiosyncratic construction, multi-phase construction, or unusual weathering or disturbance. There may be a case for the discreteness of low platform mounds but, if so, they rarely survive in a recognisable form for obvious reasons. Equally rare are dished mounds and the validity of this as a constructional form needs to be confirmed through excavation.

Encircled mounds (supplement)

At Gallows Hill in addition to the mound with encircling earthwork (9319/9; text Table 16.4), there is another for which a ditch-and-bank enclosure is instead appended (9319/4). This is described in Appendix 18.1 (group 4h).

Shallow skirts (s) or steps (s*) were noted around the foot of 10 and 2 mounds respectively. In 6 cases a skirt is associated with a ditch and may result from slippage of its up-cast from the slope of the mound onto a berm: Petersfield Heath Barrow 1 (7523/9, Zone 2) and the five Devil's Jumps (8217/2-6, Zone 12). Such barrows have accordingly been classified in the past as bell barrows. The excavated evidence for Barrows 1 and 13 on the Heath raise important questions about how a 'berm' arises in different situations; this is examined in Chapter 19. The two slight steps around barrows (8421/8, Zone 3; 9917/4, Zone 5) are unlikely just to be an unusual erosion feature and could suggest an early phase or construction stage that created a low platform which was not entirely covered by the subsequent mound. These hypothesised low platforms would add to the four examples discussed above.

Summation of enclosure barrow details

Due to the importance of the region's series of enclosure barrows, all key information on dimensions, form and condition is brought together in Table 3. For topographic positions, see Appendix 16.4.

2 Even the collapse of a large void could really only account for relatively small flat tops.

Site	Average diameters (m)					Slope	Facing	Notes
	Interior	Max/min	Between	Max/min	Outermost edge			
Zone 1								
Passfield Common 8133/1	9.5	11.5 (b)	13.5	15.3 (d)	16.5	0°	0	Circular ring-bank with external ditch, probably complete circuit allowing for variable denudation by overlying track; bank about 3.6-4.5m wide and up to 0.3m high (N), ditch about 3m wide and up to 0.25m deep (possibly enhanced by vehicle track); interior area 9.8m (W-E) x 9.2m (N-S) and domed in the centre to *c.* 0.2m height and approximately 7m diameter (ill-defined).
Longmoor Woolmer Road (E of) 7931/7	13.4	16.0 (d)	n/m	19.6 (b)	22.8 & 26.0	4°	S	Near circular bank with internal ditch. E side abuts, or slightly overlaps 7931/8; bank has double-inflection on outer side giving two possible outer edge measurements; maximum of less than 0.2m between bank top and ditch base.
Longmoor Woolmer Road (E of) 7931/8 (text Fig 16.16e)	10.9	13.9 (d)	n/m	19.9 (b)	23.5	1°	W	Near circular bank with internal ditch. W side abuts, or slightly overlaps 7931/7; maximum of *c.* 0.25m between bank crest and ditch base.
Longmoor Woolmer Road (E of) 7931/9	10.85	13.9 (d)	n/m	19.7 (b)	23.0	5°	S	Near circular bank with internal ditch. Maximum of *c.* 0.4m between bank crest and ditch base.
Longmoor Camp East Gate 8031/4	*10.4*	*12.0 (d)*	*n/m*	*14.4 (b)*	*16.0*	0.5°	NE	Less than half of presumed annular earthwork comprising very slight ditch with traces of external bank only clear in northerly segment from WNW to ENE. Lies immediately to N of barrow 8030/3 – ditch may cut that monument; dimensions based on single transect (N) from estimated centre; maximum of *c.* 0.15m between bank crest and ditch base.
Longmoor Camp East Gate 8030/3	17.0	20.4 (b)	24.7 28.4 (d) 32.4	*c. 36 (b)*	40.4	0.5°	NE	Near circular ring bank with external ditch and traces of second slighter bank outside; maximum of *c.* 0.4m between bank crests and ditch base. 8030/3 is appended to N side.
Weavers Down East 8030/2 (text Fig 16.16d)	23.5	26.6 (b)	29.0	30.4 (d)	33.0	2°	W	Generally well preserved near circular ring bank with external ditch intermittently discernible, mainly from S to E to NE. Maximum of *c.* 0.5m between bank crest and ditch base.
Weavers Down West 8030/4	17.6	21.0 (b)	23.4	25.7 (d)	27.8	1°	WSW	Near circular ring bank with external ditch. Maximum of *c.* 0.9m between bank crest and ditch base.
Weavers Down East 8130/3	10.8	13.1 (d)	n/m	17.0 (b)	20.2	4°	W	Near circular ring bank, reasonably consistent but probably removed in SE; slight depression inside suggests internal ditch; bank/ditch height difference not measured.

Table 3 (continued overleaf) Enclosure barrow details (n=45 sites, including the Fittleworth Common example, just outside the intensive study area). Abbreviations: b = bank; d = ditch.

Note: Figures in italics have been reconstructed from Lidar or interpolated from survey measurements to aid consistent representation in diagrams, notably text Figure 16.18.

Site	Average diameters (m)					Slope	Facing	Notes
	Interior	Max/min	Between	Max/min	Outermost edge			
Weavers Down East 8130/4	21.8	25.4 (b)	29.7	- (?d)	*32.5*	4°	NW	Near circular ring bank with possible trace of external ditch in W-NW sector, elsewhere damaged by tracks? Bank/ditch height difference not measured.
Chapel Common 8128/1 (text Fig 16.16g)	18.2	21.6 (b)	-	-	27.3	6°	W	Off-circular, bank only – maximum height *c.* 0.9m above external ground surface; interior a raised platform, by *c.* 0.4m.
Chapel Common 8128/3	17.6	20.0 (d)	21.0	23.0 (b)	25.0	2°	N	40% segment only is well preserved (S to W), possible traces elsewhere on circuit. Maximum of *c.* 0.4m between bank crest and ditch base.
Chapel Common 8128/4	17.0	19.0 (d)	21.0	23.0 (b)	26.0	2°	N	35% segment only is well preserved (NE to E), possible traces elsewhere on circuit. Maximum of *c.* 0.4m between bank crest and ditch base.
Chapel Common 8228/1	33.0	34.0 (d)	36.0	38.0 (b)	41.6	2°	N	30% segment only is well preserved (W to N), possible traces elsewhere on circuit. Maximum of *c.* 0.6m between bank crest and ditch base.
The Mint, Liss 7928/2	36 x 31	48 x 43 (d)	-	-	52 x 58	n/m	n/m	Uncertain site, ?ditch only; oval feature comprising a broad (*c.* 8-10m) shallow depression with no evidence for a bank; not certainly a complete circuit; the enclosed area includes a pronounced mini-valley.
Zone 2								
Farther Commons 7826/1 (text Fig 16.16b)	13.8	16.3 (b)	18.9	*c. 19.5* (d)	*20.6*	5°	NW	Approximately half of enclosure circuit (SW) survives later truncation by hollow-way and other localised disturbances; ditch only definable in short W sector – bank/ditch height difference *c.* 0.4m; internal tump, diameter varying from 3.9 to 4.8m (probably damaged on NE side) approximately central.
Petersfield Heath (12) 7522/12	6.7	8.0 (d)	10.4	*c. 12* (b)	14.0	2°	N	No longer discernible in slightly undulating ground; surface morphology dependent on Piggott & Grinsell's descriptions and sewer-pipe trench section (Chapter 5). Measurements taken from excavated transect & outermost diameter from Grinsell.
Petersfield Heath (14) 7522/10 (text Fig 16.16f)	12.7	14.3 (d)	16.5	19.3 (b)	23.0	6°	S	Slight annular earthworks: traces of ditch inside asymmetrically profiled bank, steeper on inside; indeed, in places (*e.g.* in E) there appears to be no fall from bank top to external ground surface. Excavation evidence suggests ditch may be slightly pear-shaped. A slight hump in ENE sector probably due to tree disturbance (excavated). Maximum bank/ditch height difference *c.* 0.35m.
Petersfield Heath (19) 7522/5 (text Fig 16.16c)	13.3	16.4 (b)	19.9	22.2 (d)	25.0	1.5°	SW	Still fairly prominent circular bank with slight but clear external ditch unaffected by footpaths for about half circuit; interior roughly level except for hummocky ring around central depression; inner face of bank gently sloped. Maximum bank/ditch height difference *c.* 0.5m.
Petersfield Heath (24) 7523/2	17 x 13 ave: 15	n/m (b) *c. 24*	32 x 26 29	n/m (d) *c. 32.5*	39 x 33 36	2°	SSE	Oval (long axis N-S) with flattened E side; ditch with very low (?spread) internal bank. Approximately half of ditch circuit (W side) evident in tussock grass, rest evident in geophysics plot. Possible very low mound (0.2m) in middle. Dimensions based on combined ground evidence and geophysics survey. Maximum ditch depth 0.25m.
Petersfield Heath (4) 7523/10 (text Fig 16.16a)	28.5	35.0 (b)	40.2	42.5 (d)	47.5	1°	SE	Large circular enclosure marked by well upstanding bank and slight depression for external ditch discernible around most and occupied by footpath skirting NW; hummocky interior at old ground level with vestigial tump near centre and larger eccentric tump to W. Maximum bank/ditch height difference *c.* 0.4m.
Zone 3								
Iping Common 8522/1	13.8	15.9 (d)	n/m	20.4 (b)	25.2	0°	-	Semi-circular bank with hint of internal ditch, N half probably later truncated by E-W drove-way; bank between 0.2 and 0.5m high.
Pound Common 8624/4 (text Fig 16.16i)	14.5	20.1 (b)	-	-	23.9	3°	S	Slightly oval, bank only (stony); interior is slope-cut terrace making upslope bank seem much higher from inside; small off-set tump to N; bank height between *c.* 0.4 and 0.6m.
Pound Common 8624/7 (text Fig 16.16j)	*c.* 6-7	16.1 (b)	-	-	21.5	5.5°	W	Near circular embanked ring sitting in corner of a plot defined by lynchets to N and E; bank does not run orthogonally into impinging boundaries but curves in as if forming a pre-existing circuit; bank is of greater magnitude (up to 0.9m) on downslope side than upslope making its crest nearer horizontal than would be (3° cf 5.5°). In the plot corner upslope the bank top is oversailed by lynchet. Interior is deeply dished, cutting into subsoil and presumably providing at least some of bank material, but central area is relatively flat. No sign of any entrance.
Petworth Gate, Cowdray Park 9021/1	33.4	36.3 (d)	n/m	41.5 (b)	46.8	3°	SSE	Bank with internal ditch, possibly slightly oval (longer E-W); most of circuit present but localised damage, especially to N and S due to boundary truncations. Maximum of *c.* 0.25m between bank crest and ditch base.
Zone 4								
Starve Acre Copse 8919/7	13.5	*c.* 17.5 (b)	-	-	*c.* 22	3.5°	N	A slightly oval depression which may be an enclosure barrow of the 'pond' variety; the depression is fairly evenly dished and roughly 14m (N-S) x 13m (SW-NE). A possible enclosing bank survives in the NE sector and there may be a tiny trace of it to the WSW between the later linear bank (?woodbank) and mound barrow talus; if so, its diameter crest to crest is *c.* 17.5m, and outer edge *c.* 22m; depth of main dished area (excluding bank) *c.* 0.65m (N-S) & 0.55m (W-E); bank probably 0.2m maximum.
Ambersham Common 9119/3	n/m	29.8 (b)	n/m	33.3 (d)	n/m	0.5°	ESE	Very slight circular earthworks under thick heather – thus edges not possible to define; maximum bank/ditch height difference *c.* 0.3m.
Ambersham Common 9119/4	18.8	21.5 (b)	-	-	25.2	1°	E	Near circular, bank only? Slight bank under thick heather; no ditch discernible, but Google Earth image taken when heather was stripped suggests multiple concentric features; bank height not measured but probably close to 0.2m.

Site	Average diameters (m)					Slope	Facing	Notes
	Interior	Max/min	Between	Max/min	Outermost edge			
Zone 5								
Brinksole Heath 9921/2	14.1	17.4 (b)	n/m	21.1 (d)	24.1	2.5°	S	Near circular bank with external ditch. Slight dishing near centre of interior; maximum bank/ditch height difference *c.* 0.25m.
Brinksole Heath 9921/3	11.7	17.2 (b)	n/m	22.3 (d)	*26*	5°	SW	Near circular bank with external ditch. Bank very stony; outer bank edge based on only three reliable measurements; maximum bank/ditch height difference *c.* 0.35m.
Zone 6								
Bramshott Common 8533/1	*44*	*52 (d)*	*57*	*61 (b)*	*68*	2.5°	N	Just under a half-circuit (N) of bank and internal ditch has evidently survived disturbance by Canadian Army encampment; maximum of *c.* 0.25m between bank crest and ditch base; a low mound (8533/3) overlies W side of bank.
Kent's Hill, Bramshott Common 8533/2	17.7	20.9 (b)	22.6	24.2 (d)	26.0	22°	SW	Well preserved circular bank with external ditch except where eroded away on downslope side. Bank/ditch height difference varies from 0.45 to 0.95m.
Zone 7								
Planted Field, Valewood 9030/1	16	18.6 (b)	-	-	22	?1°	N	May not be quite full circuit – overlain by modern 'roundhouse' on SSW side; no ditch discerned so possibly bank only; inner and outer edge averages based on only three measurements, crest based on four; maximum height of bank *c.* 0.25m.
Castle Copse, Black Down 9129/1	17.6	20.8 (b)	23.0	24.5 (d)	27	29°	SSW	Circular ditch with internal bank which is not discernible in upslope half; last two averages revised slightly upwards due to particular missing measurements; evidence for stone rubble in bank; bank/ditch height difference not measured, but very slight, probably 0.25m maximum.
Black Down 9129/2	15.1	17.6 (b)	19.6	21.2 (d)	23.2	9°	S	Near circular bank with external ditch; partial excavation by George Anelay 2014. Bank/ditch height difference *c.* 0.35m on N side (Anelay's section drawing).
Temple of the Winds, Black Down 9229/1	14.8	17.2 (b)	19.5	21.3 (d)	23.3	2°	SSE	Circular bank with external ditch; between SE and W ditch becomes a ledge before steep slope, which has presumably encroached due to later erosion; maximum bank/ditch height difference *c.* 0.5m.
Zone 10								
Chalton Down 7117/1	50	*c. 55* (d)	-	-	62	?	?	Ditch only now evident, perhaps slightly oval, long axis N-S, but extreme W and E edges may be truncated by roads; ditch up to 0.45m deep; no mound survives, nor is one clear from early mapping, although site described as 'tumulus'.
Zone 12								
The Devil's Jumps 8217/7	*c. 9*	*c. 14* (b)	-	-	17.8	5°	S	A low and uneven 'mound' with significant dishing in the middle – previously assumed to be due to disturbance; edges poorly defined but still roughly circular, 17.8m (NNW-SE) x 17.7 (SW-NE); measured height at middle only 0.2m, but some of higher points around are up to 0.3m higher; difficult to assess under the vegetation, but the Lidar reveals a fairly regular annular bank suggestive of an enclosure barrow rather than a mutilated mound barrow.
Zone 13								
Westdean Woods 8515/2	n/m	12.4 (b)	-	-	15.1	3.5°	S	A circular depression with encircling bank, external diameter 15.1m N-S, crest diameter 12.4m N-S x 12.3m W-E; on the W side the bank runs up over the edge of adjacent mound 8515/1. Centre of depression 0.4m below bank crest, which is 0.15m above exterior GS. Profile mainly gentle but with steeper internal slopes to N and W. Base of depression very stony close to surface.
Linchball Wood 8416/7	*< 7.3*	*7.3* (d?)	n/m	10.1 (b)	13.3	1.5°	SSW	Semi-circular bank with possible traces of inner ditch; a little over half (E) survives in reasonable condition; W side badly disturbed by machinery, but bank still evident in NW; flint-rich material.
Zone 14								
Heyshott Down 9016/9	13	16 (b)	-	-	19.5	3°	NE	Uncertain enclosure barrow; a disturbed mound *c.* 8m diameter and 0.4m high lies inside a very slight bank describing between a quarter and a third of a circuit; if this was originally a complete ring bank, projection of its line suggests the mound was offset to N of centre. Diameters gauged from Lidar: bank outer lip 19-20m; bank crest *c.*16m; interior *c.* 13m.
Heyshott Down 9016/10 (text Fig 16.16h)	*9*	13.2 (b)	-	-	16.8	2°	NE	Bank only(?); very slight depressions on some sides do not obviously form an encircling ditch; interior appears to be raised by minimum of 0.2m.
Heyshott Down 9016/11	*5.5*	9.5 (b)	-	-	14.3	2°	NNE	Bank only – approx. three-quarters of circuit, missing in SE; small tump *c.* 3.5m diameter and 0.4m high offset to ENE.
The Scrubs, Graffham Down 9116/7	-	-	-	-	*c. 25*	6°	SSE	Curving segment of ditch with external bank survives to SE of forest track; part of a complementary NW segment may just be discernible on Lidar, but is under bramble scrub; insufficient to establish internal dimensions or be sure of full annular circuit.
Fittleworth Common TQ 01595 18945	5.5	8.4 (b)	11.6	13.8 (d)	16.4	-	-	Near circular bank inside ditch; S side crossed by footpath, N side (ditch) crossed by hollow way. Interior up to 0.2m higher than external ground, but may be due to convexity of original land surface.

Appendix 16.6

Comparative analysis of enclosure barrows in Wessex

Stuart Needham

Comparison is here made with the dimensions recorded by Leslie Grinsell for a range of barrows belonging to the enclosure barrow family across Wessex. In the Wessex-specific classification, these are disc barrows, saucer barrows and pond barrows. However, even within Wessex there are variations around a theme. In particular, there is a problem of accommodating a small group of sites in Dorset which Grinsell has distinguished as the 'Dorset' type of disc barrow (Grinsell 1974, 79, 80, 83). His criteria for differentiating them are not entirely consistent; while they are 'normally just over half the diameter of the average disc-barrow' (*ibid.*, 83), one included site has an interior diameter of 31m and an external diameter of about 50m (Winterborne Came 6). Otherwise, the group is fairly coherent in dimensions and was allowed to have alternative earthwork formats: five with bank internal to ditch, three with it external and five 'uncertain on this detail' (*ibid.*, 80). Given that his primary criterion therefore seems to be size rather than format, it is curious that he does not also include five examples with comparable external diameters which are instead placed within the 'normal' type of disc barrow, totalling 19 examples. The relatively modest sized enclosure barrows of 'Dorset' type are of obvious interest in the context of the Rother Region norm (text Figs 16.17 & 16.18), so it is worth looking afresh at the Dorset situation.

In fact, by plotting all Dorset disc barrows according to their outermost diameter, they give a very strongly bi-modal distribution (Fig 1). This strengthens the case for a separate smaller series, but also makes a case for these being rather eclectic in their morphology. Eclectism might be reinforced by other enclosure barrow types. Grinsell recognised only two 'saucer' barrows in Dorset, but a good group of pond barrows is known and these have a diameter distribution very much in line with the smaller disc barrows (Fig 2). The combination of these makes a good comparison with the Rother Region assemblage documented here, with the one difference that in Dorset there are a higher proportion with tumps inside.

The larger Dorset disc barrows belong to a size range that is the norm in Wiltshire, Hampshire and Berkshire, with most examples having diameters between 30 and 60m, and a minority between 60m and 85m (Fig 3). This is the classic disc barrow as recognised by Grinsell, but the type becomes less frequent in Dorset and is supplemented by the smaller size range just discussed. Intriguingly, this apparent contra-distinction may have led to classic disc barrows in Dorset tending on average to be *larger* than their parallels in the heart of Wessex except for the small number of exceptionally large ones (>60m) in Wiltshire (Figs 1 & 3). The juxtaposition of the two ranges in Dorset may also account for the higher proportion of tumps within the Dorset type.

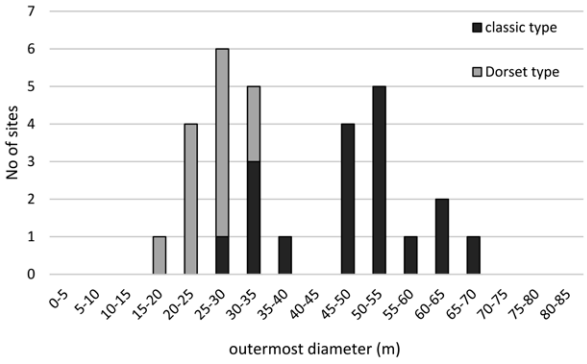


Figure 1 Distribution of outer diameters of Dorset disc barrows based on data in Grinsell 1974

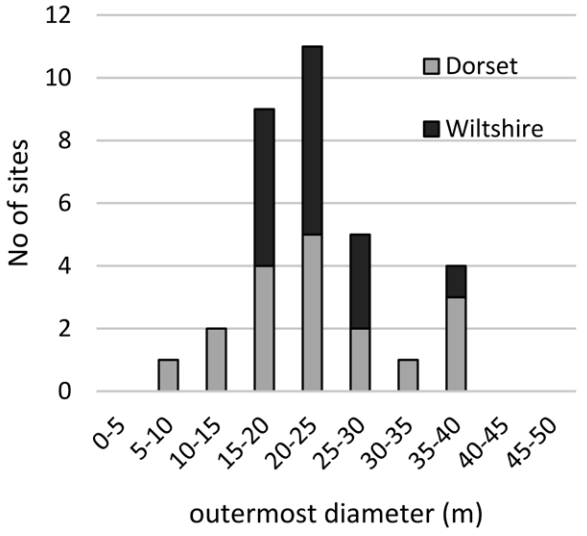


Figure 2 Distribution of outer diameters of Dorset and Wiltshire pond barrows based on data in Grinsell 1959 & 1957

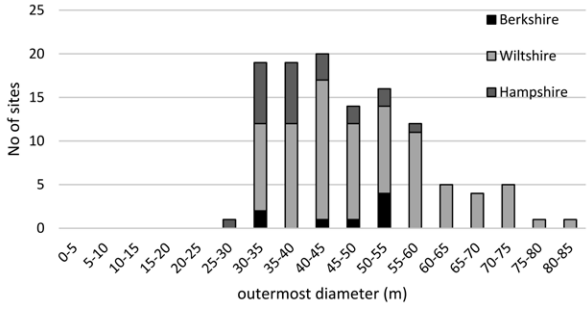


Figure 3 Distribution of outer diameters of Wiltshire, Hampshire and Berkshire disc barrows based on data in Grinsell 1974

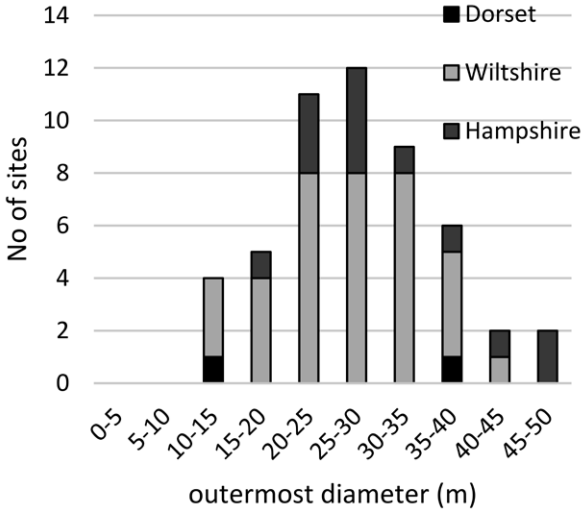


Figure 4 Distribution of outer diameters of Dorset, Wiltshire and Hampshire saucer barrows based on data in Grinsell 1959, 1957 and 1939

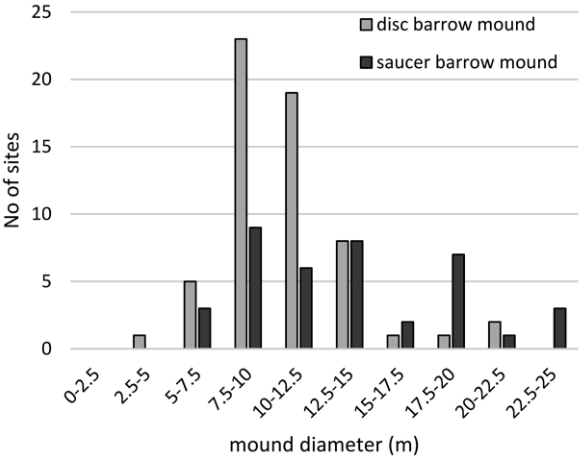


Figure 5 Distribution of mound diameters for disc and saucer barrows in Wiltshire based on data in Grinsell 1957

So, how do Wessex 'saucer' barrows fit into this pattern? The good number in Wiltshire and the lesser number in Hampshire show reasonable agreement in their outermost diameters with most between 15 and 40m, and peaking between 25 and 30m (Fig 4). There are a few larger sites, but in general the size range is comparable to the smaller sized Dorset disc barrows, the Dorset pond barrows and, indeed, the Wiltshire pond barrows (Fig 2). Detailed comparison cannot be made for Sussex outside the Rother Region because Grinsell only gives dimensions in paces, but his records make it clear that the various possible barrows listed as of 'saucer', 'platform' or 'ring' type were almost universally small. With one uncertain exception, the maximum is 36 paces and actually the vast majority do not

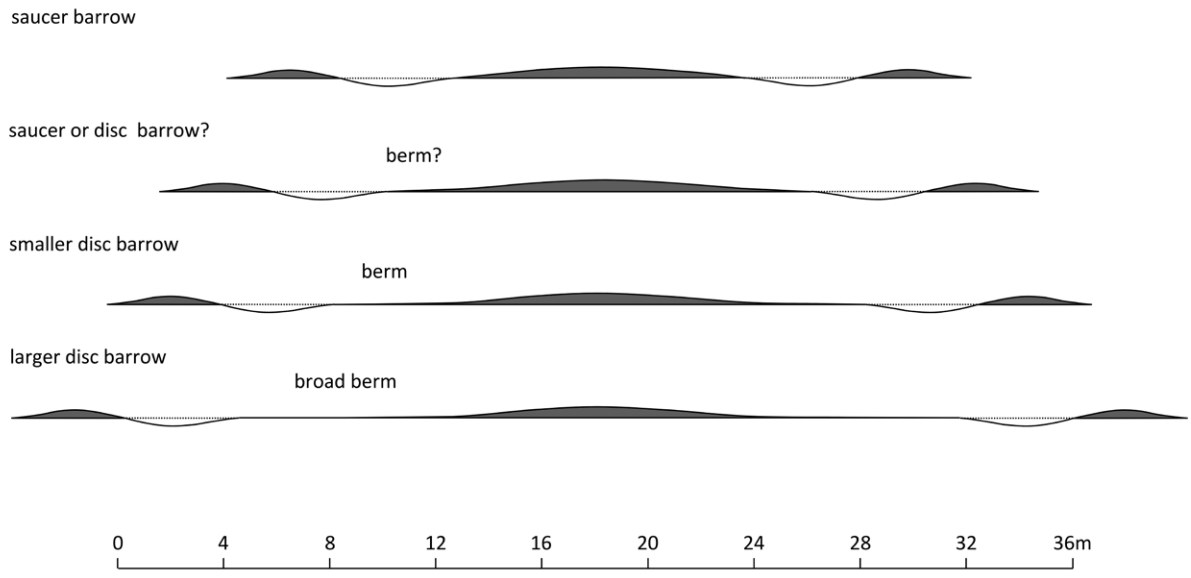


Figure 6 Typical profiles of saucer and disc barrows showing the possibility of a gradation in form

exceed 25 paces – around 20m. The peak of the diameter distribution for these sites would thus appear to correspond well with that for Rother Region enclosure barrows.

There are indications that even the inland-Wessex sites were not quite as formulaic in morphology as is often supposed. In particular, it is not clear how often sites defined as saucer barrows actually have a raised interior, or pond barrows a depressed interior (McOmish *et al.* 2002, 34-9). Two of three potential saucer barrows in the extensively excavated central Wessex cemetery on Snail Down (Wiltshire; Thomas 2005, CD3, CD6, CD6b) were excavated. Site V had no sign of mounding inside the enclosing earthwork, and it was debatable whether any was present for Site II (Thomas 2005, 28, 50). Regarding 'pond barrows', when he originally defined them Colt Hoare stated that the interior was 'perfectly level' (Hoare 1812, 22) and while there is no doubt that some examples are depressed in the centre (including some excavated examples), this may not be invariable. Variant 'disc barrow' designs are defined according to the number and position of their tumps and in some cases lack a tump altogether (Grinsell 1974, 82). Unmounded 'saucer barrows', level-interior 'pond barrows' and tump-lacking 'disc barrows' are all essentially the same thing – simple enclosure barrows.

Further discussion on the degree of homogeneity or otherwise amongst enclosure barrow types in parts of Wessex is beyond the scope of this work. Doubtless there are more standardised modes within the spectrum and these may be to some extent regionally specialised variants within the general theme. This is particularly the case for 'classic' disc barrows, which are aggrandised relative to almost all other enclosure barrows and which may well have a genuinely restricted distribution in parts of Wessex with a focus on Salisbury Plain. There is overlap in the geographical distributions of the larger and smaller disc barrows, but the smaller ones are more prevalent in the south, in Dorset, Hampshire and the Isle of Wight (whose five examples are all under 40m).

A final point is worth making about the relationship between disc and saucer barrows. They may have very different outer diameter ranges, but mound diameters are similar – most in both categories falling between 7.5 and 15m (Fig 5). There is a greater proportion of saucer barrows with larger mound diameters, but there could well be issues with regard to identifying berms around such low mounds and it needs to be examined whether this could have skewed the distribution of supposed saucer-barrow mounds a little. Based on Grinsell's height estimates, there may be some difference in the distribution of mound heights, these rarely exceeding 0.6m in saucer barrows, but extending up to 1.0m in disc barrows, with a few higher still. Nevertheless, conceptually, the two 'types' are linked by their modest mounds and a saucer barrow is turned into a disc barrow simply by drifting the ditch and outer bank away from the mound's edge (Fig 6). The amount of separation, constituting the berm, is itself very variable. Again, it is the extreme separation seen in the larger series of disc barrows that really stands out.

Appendix 16.7

Effects of denudation and damage on dimensions, including volume

Stuart Needham

The gross change in dimensions between un-denuded and denuded sites is obvious from text Table 16.14 and text Figure 16.23. While it is true that this result is to some extent self-fulfilling – relatively low height and relatively wide spread being amongst the factors leading to classification as 'denuded' – this is far from the whole picture. Corroborative evidence comes from denuded sites (condition codes 4 & 5) being frequently under active cultivation or on land that shows signs of former cultivation. In contrast, those sites classified as un-denuded (condition codes 1-3) are generally in environments where there is no such evidence and which can be reasonably expected not to have seen any long-term or heavy (*e.g.* mould-board plough) cultivation – notably infertile land or long-term woodland.

It can be seen from text Table 16.14 that average diameters for sites of codes 1-3 are virtually identical and that heights are not greatly discrepant either. The slightly elevated figure for the height of code 2 barrows is unlikely to be due to the redistribution of soil from antiquarian digging (see Appendix 16.3) and may have more to do with bigger mounds being more attractive to antiquarian diggers on the supposition that they were more likely to contain the most interesting finds. Lateral truncation (code 3) seems to have led to slightly less wide diameters, which could mean that the values logged as best diameters for these sites err on the low side. The slightly lower height average for these sites and the consequent effect on volume is less easy to explain. Only where truncation is significant (perhaps one-third of the mound or more) would one expect to start losing some of the original height to post-truncation slippage.

Appendix 17.1

Barrow occurrence in relation to geology

Stuart Needham and Sabine Stevenson

The quickly changing geology of the Rother Region gives scope for seeing if barrows favour particular substrates (text Table 17.1; text Fig 17.2). Correlation may partly reflect original barrow building, but will also relate strongly to patterns of destruction due to the fact that some geologies support soils that have suffered more heavily from cultivation over the past 3,500 years than others. The incidence of levelled sites showing as crop-marks or soil-marks in relation to upstanding sites can be a valuable, but incomplete indicator of the latter process (text Table 16.1). Sites which had no encircling ditch, probably the majority in this region (Chapter 16), will, when totally levelled, leave either no crop- or soil-marks, or more ambiguous ones (text Fig 16.13). A second factor is that different soil types have different capacity to yield crop- or soil-marks.

The familiar geological settings for Bronze Age barrows in this region have always been the Chalk and the Folkestone Formation sandstone, and these environments now have totals of 229 and 135 sites respectively (Table 1; text Fig 17.2). However, 184 sites are now known on other geologies and the diversity of these has been significantly augmented by new discoveries. 87 sites are on superficial deposits ('drift'), either Head (39) or Alluvial/River Terrace Deposits (48; only one being on alluvium *per se*). Some Head will have derived from more limited base geology, notably those up on the Chalk uplands (25 sites), but still may have benefitted in terms of agricultural potential from the weathering process and the incorporation of the loess believed to have been present in the region (Catt 1978, 14). A major change is the addition of 37 sites to a previous total of 10 on the Hythe Formation sandstone. Small numbers of sites occur on three less frequently recorded geologies for Bronze Age barrows: 11 (8 being new sites) on the Upper Greensand, whose fertility has made swingeing destruction almost inevitable, 13 (5 new) on the Clay-with-flints on the western Chalk and 18 (11 new) on mudstones. Ten of the last are actually on the Marehill Clay which is interleaved with the predominantly sandstone lithology of the Lower Greensand. The other eight, on Gault Clay, are arguably a bigger departure from expectation, but are from a limited area with two barrow groups – Latchett's Copse and Ryefield Cottages (Zone 2).

Geology	Zones represented	Mound barrow	Mound or Low mound	Low mound	Crop-mark/ soil-mark	Enclosure barrow	Totals
Alluvium (over Marehill Clay)	4	1	0	0	0	0	**1**
River Terrace (over Marehill Clay)	2	1	0	0	0	0	**1**
River Terrace (over Fittleworth Member)	5	0	0	2	0	0	**2**
River Terrace (over Folkestone Formation)	1, 3, 4, 5	33	1	2	5	2	**43**
River Terrace (over Sandgate Formation)	1	0	0	0	0	1	**1**
All alluvial deposits combined	***1, 2, 3, 4, 5***	***35***	***1***	***4***	***5***	***3***	***48***
Head Deposits (over Atherfield Clay)	7	1	0	0	0	0	**1**
Head Deposits (over Upper Marehill Clay)	2	6	0	0	0	1	**7**
Head Deposits (over Folkestone Formation)	1, 2	3	0	0	0	1	**4**
Head Deposits (over Pulborough Sandrock)	1, 2	2	0	0	0	0	**2**
Head Deposits (over Chalk)	9	12 + 2?	2	8	1	0	**25**
All Head Deposits combined	***1, 2, 7, 9***	***26***	***2***	***8***	***1***	***2***	***39***
Clay-with-Flints (over Chalk)	8, 9, 10	6	5	1	1	0	13
Chalk (CkH)	8, 10, 11	5	1	1	4	0	**11**
Chalk (CKLe)	10, 11, 12, 13, 14	69 + 5?	3	15 + 2?	3	0	**97**
Chalk (CkNP)	8	2	0	0	1	0	**3**
Chalk (CkS)	9, 10, 11, 12, 13, 14	49	1	26	2	4 + 4?	**86**
Chalk (CkWM)	10	6	0	2	2	0	**10**
Chalk (CkZZ)	8, 10, 11	7	3	3	9	0	**22**
All Chalk combined	***8, 9, 10, 11, 12, 13, 14***	***138 + 5?***	***8***	***47 + 2?***	***21***	***4 + 4?***	***229***
Upper Greensand	8, 10, 12	3	1	4	3	0	11
Gault Clay	2	0	0	8	0	0	**8**
Marehill Clay (Upper & Lower)	2, 4	7 + 2?	0	0	0	1	**10**
All Mudstones combined	***2, 4***	***7 + 2?***	***0***	***8***	***0***	***1***	***18***
Bargate Sandstone Member	6	1	0	0	0	0	**1**
Folkestone Formation	1, 2, 3, 4, 5	115 + 1?	1	2	3	12 + 1?	**135**
Hythe Formation	1, 2, 3, 4, 5, 6, 7	25 + 2?	1	4	0	14 + 1?	**47**
Pulborough Sandrock	1, 4	3	0	0	0	0	**3**
Rogate Sandstone Member	1	0	0	0	0	1?	**1**
Selham Ironshot Sands Member	4	0	0	0	0	1	**1**
Sandgate Formation	1, 6	1	0	0	1	0	**2**
All Lower Greensand sandstones combined	***1, 2, 3, 4, 5, 6, 7***	***145 + 3?***	***2***	***6***	***4***	***27 + 3?***	***190***

Table 1 The relationship between broad categories of site and immediate geological substrate

Overview figures:

Geology	Zones represented	Mound barrow	Mound or Low mound	Low mound	Crop-mark/ soil-mark	Enclosure barrow	Totals
Alluvial deposits	1, 2, 3, 4, 5	35	1	4	5	3	**48**
All Head Deposits	1, 2, 7, 9	26	2	8	1	2	**39**
Clay-with-Flints	8, 9, 10	6	5	1	1	0	**13**
All Chalk	8, 9, 10, 11, 12, 13, 14	138 + 5?	8	47 + 2?	21	4 + 4?	**229**
Upper Greensand	8, 10, 12	3	1	4	3	0	**11**
Mudstones (Gault Clay & Lower Greensand Marehill)	2, 4	7 + 2?	0	8	0	1	**18**
Lower Greensand sandstones	1, 2, 3, 4, 5, 6, 7	145 + 3?	2	6	4	27 + 3?	**190**
Totals		**370**	**19**	**80**	**35**	**44**	**548**

Appendix 17.2

Further detail on soils in the Rother Region

Stuart Needham

Agricultural land classification

The modern agricultural potential of the soils can be seen in the Agricultural Land Classification's detailed mapping.[3] This has obvious limitations for understanding ancient agricultural systems since the classification is concerned with modern productivity using modern technology and crops; older systems had different crops, livestock and equipment. For example, in the Bronze Age there were no true ploughs, only ards which scratched a furrow in the soil. Secondly, there could have been significant changes to the productive potential of soils over the past 4000 years due to human management/mis-management and natural processes. The Rother Region is not a rich environment in terms of modern food production although it does have some productive pockets. The land considered to have the highest agricultural potential today (Grade 2 – very good) is largely confined to limited strips just north of the river in the Middle to Lower Rother Valley. Much larger areas are of Grade 3 (good to moderate), essentially comprising soils overlying Weald and Gault Clays, the Upper Greensand, the Clay-with-flints, parts of the lower slopes of the Hythe ridge and areas with significant Head and Terrace Deposits. Grade 4 land (poor) and Grade 5 (very poor) are seen to dominate high Chalk areas, parts of Woolmer Forest and ribbons through the Rother valley, but in fact are far more extensive than shown because the heathlands and much woodland, not in current agricultural use, are left unclassified.

Regional soils in terms of the UK Soil Observatory's classification[4]

The UK Soil Observatory's classification (see text Table 17.2) is probably already a simplification in terms of distributions at the local scale. Nevertheless, it emphasises the variability of soil environments as they stand at present, from clayey to sandy, from strongly alkaline to highly acidic, from freely to poorly draining and from base-rich to nutrient-poor. One feature that does stand out as being common to seven of the classes

3 http://publications.naturalengland.org.uk/publication/141047?category=5954148537204736 – accessed October 2020.

4 http://mapapps2.bgs.ac.uk/ukso/home.html – accessed February 2020. Note that although hosted by the British Geological Survey website, this is an independent classification system.

is the presence of loamy soil, although in four cases this is only one aspect of a range (*e.g.* 'clayey to loamy', or 'loamy to sandy'). In terms of areas covered, the greatest expanses are of classes VII, VI and III (as defined by us) – these already supporting contrasting environments from highly acidic freely draining sands, through more mildly acidic freely draining loams, to base-rich seasonally wet clayey soils. Classes X, VIII, IX and II occur across more modest areas, and classes V, IV and I are increasingly limited in extent.

While there is a reasonable degree of correlation between soil character and underlying geology, there are also some elements of less good correlation worth noting. The soils on and between the two sandstone ridges, Hythe and Folkestone, supported by sandstones interleaving mudstones and various superficial deposits, have three main aspects (text Table 17.2: classes VI, VII & VIII) that cut across the main geologies. The most widespread, unsurprisingly, is class VII: 'strongly acidic' soils which are a mix of loam and sand and these show no particular preference between Hythe and Folkestone Formation sandstones. The more loamy soils (VI) tend to be associated with either the Easebourne Member, in the Middle to Lower Rother Valley, or a complex mix of solid and drift geologies around the Bend of the Rother. The most consistently sandy soils on the sandstone ridges (VIII) are associated with some Folkestone exposures and Selham Ironshot Sands Member in the south, but primarily with the Bargate Sandstone Member in the north, where it is also shown spreading onto the Hythe Formation sandstone.

The Upper Greensand[5] is thickest at the western end of The Weald and is complicated both in bedrock and derived soils. It is generally arenaceous (dominated by sand-sized particles) and comprises three broad rock-types (Gallois 1965, 35-8). At the base of the sequence, and of little concern here due to limited exposure at the ground surface, are poorly consolidated siltstones. Then comes the main bed known as 'Malmstone', predominantly of siliceous, calcareous sand but with some clay or silt.[6] Uppermost are usually found clayey sandstones speckled with glauconite and it is presumably these which largely account for an apparent contradiction, the predominantly slightly acid rather than calcareous nature of the Upper Greensand soils (V & VI). Variations in the amount of clay present may explain the better drainage properties of these soils on the western flank of the valley (VI) compared to the southern flank (V).

The Clay-with-flints that dominates the geology of the East Hampshire Uplands may be 'clay' in name, but the soil supported is described as loamy and freely draining (VI). So too is soil class IV, limited in occurrence to the Upper Tisted Valley and differing only in being base-rich. The loamy and free-draining characteristics are likely to be due to the significant presence and integration of loess – periglacial deposits of wind-blown silt-dominated material which give rise to mineral-rich, relatively well drained and yet moisture and oxygen retentive soils owing to their structure (Catt 1978, 13 fig 1, 14, 17; Gardiner & Shennan 1985, 54). Although these are excellent soils for arable agriculture, Catt nevertheless warns against supposing they were well suited to long-term prehistoric cultivation (*ibid*, 17-18). Where the Chalk uplands in the study area have no covering of later (superficial) deposits, today they support thin, well-drained and nutrient-poor soils (IX & X) which are only sustainable for arable agriculture if well fertilised. Better quality soil occurs on the Chalk dip slopes of the South Downs to the south of the study area.

5 Upper Greensand is *not* closely related to the Lower Greensand.

6 Malmstone is itself split into two varieties mainly distinguished by the degree of consolidation.

Appendix 17.3

Further aspects of topographic siting

Stuart Needham

Distribution of altitudes

The distribution of altitudes occupied by barrows overall is the full range available, from the floodplain in the Lower Rother Valley at 10m OD to almost the highest point of the highest hills, 272m OD. The detail is best considered by sub-region (as defined for slope orientations; text Fig 17.7), since this will obviously constrain the possible ranges (Table 1). In the sandstone uplands and Low Weald (B), sites range from 45-267m OD. Despite the heights reached by the Hythe ridge, relatively few barrows lie above 175m OD, eleven in all (25%); most of these are in the Black Down group. Otherwise, most are on dip slopes or scarp promontories between 45 and 150m OD.

The distribution in sub-region A, 75-218m OD, is bimodal due to it embracing two major topographic zones. All but one of the 66 sites between 75 and 153m OD are on the Lower Greensand, whereas all between 162 and 218m OD are on the high Chalk. The full distribution in sub-region C is even wider, 36-223m OD, again due to covering multiple major topographic zones. Again it splits neatly into separate ranges with very few exceptions: 36-68m OD for Middle Rother Valley; 74-107m OD for Upper Greensand bench; 110-155m OD for the Chalk valleys; 158-223m OD for the Chalk hills and spurs. The more important point is that in most cases the full altitudinal range of the landform is represented. Sub-region D is entirely a valley environment, hence a relatively restricted range of 10-65m OD, but this again takes up the full amplitude available.

Sub-region E, being focused on the southern Chalk upland, is restricted to higher elevations, above 109m OD and extending right up to 272m OD. However, although most sites are between 125 and 245m OD there is a bimodal distribution splitting at around 180m OD. The higher range obviously catches all the sites close to ridge or hill tops, whilst the others are focused on the dip slope and its pronounced spurs and dry valleys, but there is no obvious topographic reason for a slight break in the distribution overall and it is possible this reflects a real, albeit inexact, conceptual break between a group of high-level sites and another of dip-slope sites. There is little difference in the average volume of sites in these two groups – 95m^3 and 75m^3 respectively – and both are distributed widely from west to east.

Sub-region: m OD	A	B	C	D	E	Totals
0 – 25	0	0	0	13	0	**13**
26 – 50	0	2	14	48	0	**64**
51 – 75	2	10	64	19	0	**95**
76 – 100	50	4	3	0	0	**57**
101 – 125	10	7	21	0	10	**48**
126 – 150	7	6	15	0	37	**65**
151 – 175	14	4	8	0	41	**67**
176 – 200	3	2	2	0	25	**32**
201 – 225	8	1	5	0	48	**62**
226 – 250	0	4	0	0	31	**35**
251 – 275	0	4	0	0	7	**11**
Totals	**94**	**44**	**132**	**80**	**199**	**549**

Table 1 Distributions of altitudes of sites according to sub-regions

Definition of topographic categories and its application to all barrows in the region

This section provides definitions for the fine topographic positioning of individual barrows summarised in the text. A-G are the main alternatives regarding the particular topographic position:

A. Ridge or spur top – site lies on or close to the spine of a ridge or spur; [*ridge/spur definition:* significantly steeper slopes on two long sides of an elongate elevated piece of land; there may be a steeper slope also at one or both ends]. Where the spine undulates, the site may lie at any point in the undulation, but it should be on gentle slopes at most to qualify here. Different ridge/spur amplitudes have been distinguished because the less pronounced ones tend to have a different character from the prominent ones in our region:

- A1. Prominent ridge/spur top
- A2. Less prominent ridge/spur top

B. Promontory – site lies on or close to the spine of a prominent promontory [*promontory definition*: a specialised form of spur projecting from a hill or ridge but semi-detached with a step(s) or saddle in the descent].

C. Hill top – site lies on top of a hill, either on the summit or on gentle slopes before significant steepening; [*hill definition*: significant rise above surrounding land with good slopes on all sides; not very elongate and rarely more than one summit, but shape in plan may be varied and sometimes even convoluted; the top is relatively small in area, flat or gently domed relative to sides; includes hillocks but not small knolls].

D. Plateau-hill or plateau-ridge top – site lies within or at edge of plateau-hill or plateau-ridge; [*plateau-hill definition*: slopes on all sides; top relatively flat over a reasonable area and may be level or slightly inclined; shape in plan may be convoluted; can be high or low in absolute elevation; a plateau-ridge is elongate relative to a plateau-hill].

E. Other raised level ground – site lies on elevated and fairly level ground which is not locally a summit, therefore benches or flat-bottomed saddles in particular.

F. Flank-slope – site lies on relatively planar slope which is not close to a hill-, ridge- or spur-top, nor on a promontory (A-C above), nor on the 'edge of valley bottom' (G below); on sculpted dip slopes it includes only the flanks between spur tops and valley bottoms.

G. Valley bottom – site lies in the very bottom of a valley (near the thalweg), or on very low slopes at the valley's edge; this definition includes low flattish interfluves within the main valleys.

In addition, there are other more specialised aspects of topography that are deemed to be of potential interest to the siting of barrows, but which cannot easily be incorporated into the above because they either cut across categories or give supplementary information. These categories are chosen for investigation because informal observation or studies in other regions suggests they may have been regarded as of particular significance by barrow builders. They are not exclusive of one another, nor need all sites be attributed to one. The features to be considered are:

H. Summit – the site is specifically on or very close to the highest point of a hill or a significant rise in a ridge (cf. the wider 'hill top' above).

I. Ridge-end or spur nose – the land falls away on three sides of the site; the slope increases away from the site but need not be particularly steep; this category and 'brow' are strict alternatives, but are comparable sitings in principle.

J. Brow – on or close to a brow, immediately beyond which the land falls away (as scarp, smaller bluff or steep valley side); this is not used in situations where two sides of a narrow ridge are equally steep.

K. Steep slopes – site lies on steep to very steep slopes, generally more than 9.5°. This includes scarp slopes and any other steep hill/ridge side.

L. Saddle – site is on or beside a saddle in a ridge.

M. Valley head – site lies close to the point at which valley can first be discerned. Defined to include both spring-heads and dry heads at any altitude, and the sites may lie within or beyond the first perceptible dishing of the contours.

N. Close to spring, stream or river (<200m away). There are obvious problems concerning possible changes in the water table since the Early Bronze Age (cf. Dunkin 2016) and the distance threshold is arbitrary; it cannot

be set too high in a region such as this, much of which is laced with a dense network of streams (text Fig 17.3).

O. Overlooking/beside wet area – either beside or closely overlooking low ground which today includes wet patches, ponds etc. Precision is impossible given the ill-defined boundaries of wetlands diachronically, but sites categorised thus are mostly within 300m, and not beyond 400m of a present-day wet area.

Table 2 applies this classification to all sites individually (see App 17.5 Table 1 for the prevailing topography of barrow groups).

Zone & Group	Total no of sites	A1 High ridge/spur top	A2 Low ridge/spur top	B Promontory	C Hill top	D Plateau top	E Raised level ground	F Flank-slope	G Valley bottom	H Summit	I Nose	J Brow	K Steep slopes	L Saddle	M Valley head	N Spring/ stream/ river	O Wet area/pond
1a Passfield Common	**1**					1											
1b Hollywater Clump	**1**				1					1						1	
1c Whitehill	**5**		4		1					1	1						1
1d Cranmer Pond	**6**		6									5					6
1e Woolmer Pond	**12**		9					3			1						9
1f Woolmer Down W	**9**		9									3				9	
1g Woolmer Down E	**6**		5						1							6	
1h Longmoor Camp	**4**		2						2							4	
1i Weavers Down E	**8**	5						3		2	1	2					
1j Weavers Down W	**4**		1	2				1			2						
1k Longmoor Inclosure	**2**								2							2	
1l Palmer's Ball	**1**				1					1							
1m Chapel Common	**5**		3					2									
1n The Mint	**3**								3							3	
1o Berry Grove	**1**								1								
2a Farther Commons	**1**							1									
2b Borough Hill	**2**		1					1			1					2	
2c Petersfield Heath S	**6**		4					1	1		1					4	5
2d Petersfield Heath NW	**5**		1					1	3							5	5
2e Petersfield Heath NE	**16**		6					9	1							6	
2f Latchett's Copse	**5**								5							2	
2g Ryefield Cottages	**3**							3									
2h West Heath Common	**13**				2	5		6		1		6				2	13
3a Goldrings	**3**					1		2				1				2	
3b Trotton Common	**6**		6									6					4
3c Fitzhall Heath	**6**		6								1						6
3d Fitzhall North	**3**		2			1					2						2
3e Fitzhall Rough	**5**		5									2					
3f Mitchell's Common	**4**								4								
3g Midhurst Common	**2**							2									
3h Pound Common	**7**							7				5					
4a Grevatt's Common	**1**							1							1		
4b Sowter's Gate	**1**							1									

Table 2 Details of topographic position for all sites of grades 1-3

Zone & Group	Total no of sites	A1 High ridge/spur top	A2 Low ridge/spur top	B Promontory	C Hill top	D Plateau top	E Raised level ground	F Flank-slope	G Valley bottom	H Summit	I Nose	J Brow	K Steep slopes	L Saddle	M Valley head	N Spring/ stream/ river	O Wet area/pond
4c Cowdray Park	**1**							1									
4d Heyshott Common	**9**					8			1		2	3				3	
4e Hoyle	**3**							2	1							1	
4f Ambersham Common E	**4**					3		1								2	
4g Graffham Common W	**3**					2			1		1	2	1			1	
4h Gallows Hill	**10**		5		4			1		2		5					7
4i Lavington Common	**14**		12			1		1				1				13	
5a Petworth Park	**2**							1	1						1		
5b Goanah Farm	**11**			11						2		2	1			5	
5c Brinksole Heath	**3**							3									
5d Shoveltree Hanger	**2**		2									2				2	
5e Duncton Common	**14**		12		1				1	1	2					3	
5f Tooth's Plantation	**5**							1	4		1					4	
5g Coates Park	**8**					3			5		3					6	
5h Sutton Common	**8**		2			4		2				5			1		
6a Wheatsheaf Common	**2**								2							2	
6b Sunnyside Farm	**1**							1									
6c The Pool House	**1**								1							1	
6d Bramshott Common	**4**							4				3	1			1	
6e Hammer Ridge	**1**		?1														
7a Valewood	**1**						1					1				1	
7b Wadesmarsh Farm	**1**						1							1		1	
7c Black Down	**9**					3		6				3	6			1	
8a Bush Down	**1**	1									1						
8b Selborne Common	**1**	1									1						
8c Goleigh Farm	**1**	1															
8d Manor House Ridge	**6**	5						1					1	5			
8e Manor House Vale	**10**							2	8						8		
8f Tubb's Farm	**1**						1									1	
8g Wheatham Hill	**1**			1							1						
9a War Hill	**8**							1	7								
9b Tigwell Farm	**3**	3										2					
9c Lower Bordean	**7**								7					1	1		
9d Bower Farm Cottages	**1**								1								
9e Broadway	**5**	5															
9f Crabtree Farmhouse	**2**								2					2	2		
10a Holt Down	**3**		1					2					2				
10b Gravel Hill	**3**							3									
10c Oxenbourne Down	**4**							4							3		

Table 2 continued

Zone & Group	Total no of sites	A1 High ridge/spur top	A2 Low ridge/spur top	B Promontory	C Hill top	D Plateau top	E Raised level ground	F Flank-slope	G Valley bottom	H Summit	I Nose	J Brow	K Steep slopes	L Saddle	M Valley head	N Spring/ stream/ river	O Wet area/pond
10d Hyden Wood	**15**		7					8							3		
10e Hyden Cross	**9**	6						3				6		6	2		
10f Hyden Hill	**6**	1						5				5		1			
10g Stonylands Farm	**2**							2									
10h Parsonage Farm	**9**							1	8				1			2	
10i Church Farm	**6**							2	4							5	
10j Barrow Hill	**3**				2				1	1		1			1	1	
10k Harroway Farm	**7**			1			6			1							
10l New Barn Farm	**1**							1									
10m Butser Hill	**9**			3	5			1		1	3	2	4		1		
10n War Down	**5**				3			2		2			2				
10o Ludgersham Copse	**1**							1									
11a Forty Acre Lane	**1**	1										1		1			
11b Foxcombe	**9**	2		1				3	3	1		1		1			
11c W Harting Down N	**6**	5			1					1		3		2			
11d W Harting Down S	**3**		2					1									
11e Ladyholt Park	**4**	2	del					2				1					
12a Harting	**5**						5									3	
12b The Bosom	**1**	1								1		1					
12c Sixteen Acre Plain	**2**							2									
12d Handle Down	**3**		3							1					1		
12e Padswood Bottom	**5**		3					2									
12f N Marden Down	**20**	2	7					6	5				6				
12g Beacon Hill	**1**	1															
12h Penn Hill	**1**	1								1		1					
12i Buriton Farm	**1**	1															
12j Philliswood	**10**		7					3									
12k Devil's Jumps	**13**	13													1		
12l Treyford Hill	**1**	1								1		1					
12m Monkton Copse	**1**		1														
12n Monkton Farm	**1**		1														
13a Didling Hill	**1**	1										1		1			
13b Linchball Wood	**9**		6					3					2				
13c Colworth Down	**3**		1					1	1								
13d Linch Ball	**8**	8								3		2		1			
13e Hacking/Stubbs Copse	**12**	5	2					5				7					
14a Manorfarm Down	**5**	4							1		1						
14b Heyshott Down	**15**	14						1		1		12			13		
14c Graffham Down	**8**	5						3		1		3	1	3	1		
Total	**553**	**95**	**145**	**19**	**21**	**32**	**14**	**139**	**88**	**26**	**26**	**107**	**28**	**25**	**40**	**107**	**58**
%	100	17.2	26.3	3.5	3.8	5.8	2.5	25.0	15.9	4.7	4.7	19.4	5.1	4.5	7.3	19.4	10.5

Table 2 continued

Appendix 17.4

Definition of barrow groups, subgroups, pairs and singletons

Stuart Needham and Sabine Stevenson

The spatial terms applied in Chapter 17 are illustrated diagrammatically in Figure 1.

Group: a group comprises three or more barrows lying in reasonably close proximity. Most sites are no more than *c.* 420/450m from their nearest neighbour and often some or all members are much closer together, hence average inter-barrow distances within a group are only occasionally above 250m and can be as little as 30m (Table 1).[7] However, more distant and apparently isolated sites are included as *group outliers* providing they are no more than *c.* 700m from the nearest member.

Clusters of barrows separated by 420m or more are treated as separate groups, with the exception of the Linch Ball group (Table 1: 13d) where two small clusters are separated by a gap of 485m.

Dispersed groups have been defined in four instances (Table 1: 1j, 4e, 9b, 10a), each comprising just three or four barrows; one or more inter-barrow distances being a little larger than for groups, up to 600m. These are broadly equivalent to outliers that lack any group core.

Subgroup: subgroups may be defined where a group definable on the above guidelines contains two or more tighter clusters, each with a minimum of four sites. In practice this has been restricted to fairly large groups – Petersfield Heath (2c-e), Fitzhall (3c-f) and Manor House (8d-e).

Pair: if two sites are less than *c.* 300m apart and the next-nearest site is greater than 700m away, they are treated as a 'pair'. If they are more than 300m apart, they are treated as two singletons. There are nine such pairs in the region.

Singleton: available evidence shows 29 sites to be well separated from any others, the distance to the nearest neighbour usually being greater than 700m. However, six sites closer than 700m to the nearest neighbour have been treated as singletons, these occurring in zones of overall closer barrow spacing (Zones 11 & 12) where they can be less clearly linked to any one group.

The discovery of new sites or the confirmation of grade 5 sites currently excluded from this analysis would obviously have the potential to change any of the defined groups, pairs or singletons. Those with grade 5 sites in close enough proximity are asterisked in Table 1 and the sites in question are plotted in text Figures 17.13-17.26.

Having defined groups, it is of interest to explore the distribution of their sizes in terms of numbers of barrows; groups range up to 20 barrows, with the exception

7 All distances are from centre to centre of the relevant barrows so include the combined radii of the two sites.

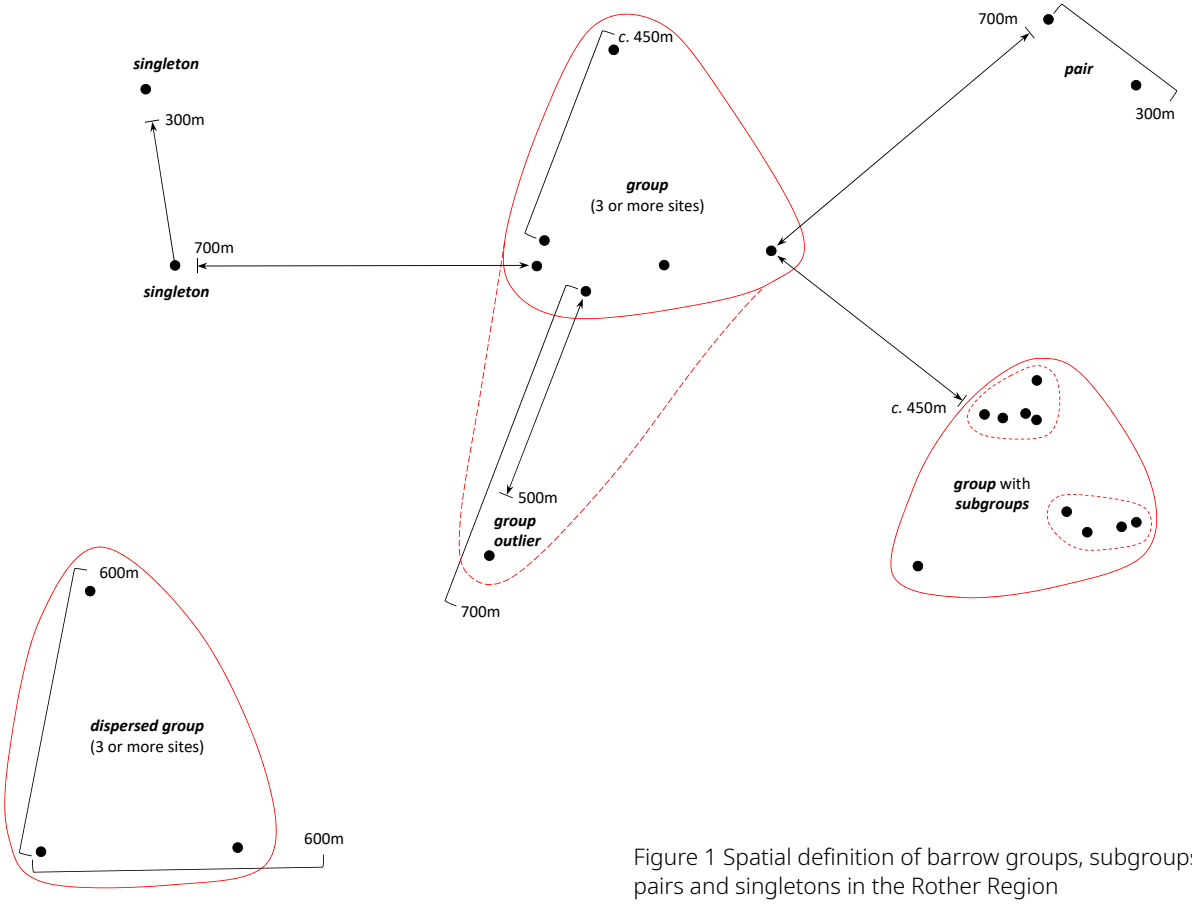


Figure 1 Spatial definition of barrow groups, subgroups, pairs and singletons in the Rother Region

of Petersfield Heath which has 27 sites. The distribution is shown in Figure 2, where it can be seen that in general they fit a fall-off curve (polynomial to the power of 4), especially if consecutive numbers are taken together (Fig 2b). Not unexpectedly, therefore, cemetery frequency declines rapidly as the number of barrows contained goes up. Deviations from the best-fit curve are mainly small and most can probably be attributed to random historical variability and/or errors in the numerical counts due to some sites not yet having been detected and others (hopefully few) having been accepted as barrows when they are actually not. In general the errors would tend to shift some of the sites throughout the distribution upwards rather than downwards on the X-axis. Smoothing the histogram further (Fig 2a, red boxes), small groups of between 2 and 5 barrows (total 37 groups) have an average of 9.25 groups per unit number, medium groups of 6 to 9 barrows (total 23 groups) have an average of 5.75 groups per unit number, and larger groups of between 10 and 16 barrows (total 12 groups) have an average of 1.7 groups per unit number, leaving just three still larger, average 0.27. This shows a steady decline at a coarse-grained scale. However, there may be grounds for a step in the steady decline based on the strong over-representation of groups with 8 or 9 barrows compared to the under-representation of those with 10 to 11 barrows (Fig 2b). If some of the 8- or 9-barrow groups were originally larger (some sites not being recognisable), this might potentially smooth the distribution, but only if such an increase applied significantly more to that numerical range than to any others, which is statistically unlikely. For example, it is likely that some of 2- to 3-barrow groups originally had 4, 5 or more barrows, and so on.

In conclusion, barrow groups in the Rother Region were most often small, numbering between two and five barrows (representing 49.5% of all pairs/groups), while a reasonable number came to be enlarged to up to a maximum of about nine barrows (30.5%). However, nine barrows appears to be something of a threshold, beyond which further enlargement was perhaps only permitted or appropriate for certain cemeteries. The low-frequency distribution above nine barrows (20%) is fairly evenly spread up to 16 barrows and more erratic beyond, implying that there was no single desirable total for the cemeteries that saw the greatest growth. These cemeteries are well distributed through the Zones defined in Chapter 18 (Table 2) and, allowing for the imprecision of the totals and historical vagaries outlined above, it is reasonable to conclude that the largest

Barrow group/ pair/ singleton	No of sites	Inter-barrow distances within group			Maximum span of group (m)	Polygonal area of group (km²)	Distance to nearest group, pair or singleton (m)
		Minimum (m)	Maximum (m)	Average (m)			
1a Passfield Common singleton	1						1220
1b Hollywater Clump singleton	1						920
1c Whitehill group	5	20	575	220	860	0.02	700
1d Cranmer Pond group	6	15	135	45	225	<0.01	700
1e Woolmer Pond West group	12	10	335	90	615	0.09	630
1f Woolmer Down West group	9	15	375	75	500	0.03	630
1g Woolmer Down East group	6	40	420	195	855	0.09	500
1h Longmoor Camp group	4	15	345	170	360	0.03	500
1i Weavers Down East group	8*	35	240	170	560	0.11	600
1j Weavers Down West dispersed group	4	25	535	275	690	0.14	600
1k Longmoor Inclosure pair	2*	50					630
1l Palmer's Ball singleton	1						1000
1m Chapel Common group	5	35	425	160	585	0.02	1580
1n The Mint group	3	300	385	345	585	0.05	1170
1o Berry Grove singleton	1						1780
2a Farther Commons singleton	1						2400
2b Borough Common pair	2*	140					1330
2 Petersfield Heath group	27	35	130	60	750	0.18	1330
2c Petersfield Heath – southwest subgroup	6	35	100	50	175	0.01	130
2d Petersfield Heath – northwest subgroup	5*	45	90	70	220	0.01	70
2e Petersfield Heath – northeast subgroup	16	10	100	65	355	0.06	70
2f Latchett's Copse group	5	85	285	150	600	0.01	590
2g Ryefield Cottages group	3	110	120	115	235	<0.01	590
2h West Heath Common group	14	30	280	85	670	0.07	1600
3a Goldrings group	3	115	335	225	430	0.01	480
3b Trotton Common group	6	20	330	90	445	<0.01	460
3 Fitzhall group	18	15	270	75	840	0.35	460
3c Fitzhall Heath subgroup	6	25	80	50	250	<0.01	260
3d Fitzhall north subgroup	3	15	190	100	190	<0.01	260
3e Fitzhall Rough subgroup	5	30	85	70	210	<0.01	270
3f Mitchell's Common subgroup	4	35	240	105	315	<0.01	270
3g Midhurst Common pair	2	220	n/r	n/r	n/r	n/r	1940
3h Pound Common group	7*	20	450	245	1225	0.23	2960
4a Grevatt's Common singleton	1						1170
4b Sowter's Gate singleton	1*						1170
4c Cowdray Park singleton	1						2250
4d Heyshott Common group	9	15	440	165	950	0.15	570
4e Hoyle dispersed group	3	475	605	540	610	0.13	570
4f Ambersham Common East group	4	55	425	290	810	0.04	560
4g Graffham Common West group	3*	190	230	210	345	0.02	710
4h Gallows Hill group	10	30	410	130	685	0.16	470
4i Lavington Common group	14	20	430	185	1430	0.49	470
5a Petworth Park pair	2	130					1330
5b Goanah Farm group	11	45	80	90	510	0.06	550
5c Brinksole Heath group	3	100	145	120	245		550
5d Shoveltree Hanger pair	2*	35					790
5e Duncton Common group	14	5	650	85	1065	0.08	790
5f Tooth's Plantation group	5	30	565	285	980	0.13	560

Table 1 Critical inter-barrow and inter-group distances, and the area covered by groups. Distances are from barrow centre to barrow centre and are rounded to the nearest 5m. Burials without barrows are excluded.

Note: * One or more sites currently graded 5 are in close enough proximity to affect spatial definitions if subsequently confirmed as barrows.

Barrow group/ pair/ singleton	No of sites	Inter-barrow distances within group			Maximum span of group (m)	Polygonal area of group (km²)	Distance to nearest group, pair or singleton (m)
		Minimum (m)	Maximum (m)	Average (m)			
5g Coates Park group	8	35	385	130	790	0.14	560
5h Sutton Common group	8	80	200	125	460	0.09	580
6a Wheatsheaf Common pair	2	140					1750
6b Sunnyside Farm singleton	1						1330
6c The Pool House singleton	1						1330
6d Bramshott Common group	4	25	690	365	875	0.14	2340
7a Valewood singleton	1						770
7b Wadesmarsh singleton	1*						770
7c Black Down group	9	40	655	220	1295	0.20	1450
8a Bush Down singleton	1						1490
8b Selborne Common singleton	1						1490
8c Goleigh Farm singleton	1						1140
8 Manor House group	16	25	280	100	865	0.25	1140
8d Manor House Ridge subgroup	6	25	220	90	300	0.03	280
8e Manor House Vale subgroup	10	35	205	105	470	0.06	280
8f Tubb's Farm singleton	1						1240
8g Wheatham Hill singleton	1						1850
9a War Hill group	8	25	240	75	465	0.02	580
9b Tigwell Farm dispersed group	3	175	600	390	740	0.04	580
9c Lower Bordean group	7	20	205	105	525	0.04	1010
9d Bower Farm Cottages singleton	1						1140
9e Broadway group	5	20	90	30	175	<0.01	1230
9f Crabtree Farmhouse pair	2	100					1230
10a Holt Down dispersed group	3	55	525	290	555	0.01	890
10b Gravel Hill group	3	95	150	125	185	<0.01	890
10c Oxenbourne Down group	4*	?	?	?	?	?	770
10d Hyden Wood group	15	45	510	160	1205	0.40	450
10e Hyden Cross group	9	15	315	130	670	0.12	550
10f Hyden Hill group	6	10	455	180	615	0.10	460
10g Stonylands Farm pair	2	3					730
10h Parsonage Farm group	9*	45	545	140	945	0.07	730
10i Church Farm group	6	70	165	110	475	0.04	890
10j Barrow Hill group	3	65	385	225	445	<0.01	810
10k Harroway Farm group	7	20	660	260	1135	0.24	540
10l New Barn Farm singleton	1						700
10m Butser Hill group	9*	20	560	175	870	0.27	540
10n War Down group	5	20	190	140	400	0.04	1090
10o Ludgersham Copse singleton	1						1190
11a Forty Acre Lane singleton	1						580
11b Foxcombe group	9*	70	450	270	1535	0.47	530
11c West Harting Down North group	6*	30	385	125	525	<0.01	530
11d West Harting Down South group	3	45	125	85	155	<0.01	790
11e Ladyholt Park group	4	105	655	340	760	0.11	1080
12a Harting group	5	65	710	390	1300	0.23	1550
12b The Bosom singleton	1*						1010
12c Sixteen Acre Plain pair	2	280					1030
12d Handle Down group	3	150	170	160	185	0.01	650
12e Padswood Bottom group	5	130	330	210	500	0.08	530
12f North Marden Down group	20	25	455	205	1630	0.98	420
12g Beacon Hill singleton	1						420

Table 1 continued

Barrow group/ pair/ singleton	No of sites	Inter-barrow distances within group			Maximum span of group (m)	Polygonal area of group (km²)	Distance to nearest group, pair or singleton (m)
		Minimum (m)	Maximum (m)	Average (m)			
12h Penn Hill singleton	1						560
12i Buriton Farm singleton	1						530
12j Philliswood group	10*	50	390	165	825	0.18	430
12k Devil's Jumps group	13	30	165	65	395	0.05	430
12l Treyford Hill singleton	1						630
12m Monkton Copse singleton	1*						530
12n Monkton Farm singleton	1						810
13a Didling Hill singleton	1*						1080
13b Linchball Wood group	9*	15	425	250	890	0.35	780
13c Colworth Down group	3	160	220	190	245	0.02	910
13d Linch Ball group	8	20	485	155	1025	0.06	690
13e Hacking Copse/ Stubbs Copse group	12	20	585	185	1580	0.44	690
14a Manorfarm Down group	5	220	635	375	1065	0.26	650
14b Heyshott Down group	15	5	585	90	915	0.20	590
14c Graffham Down group	8*	30	385	180	815	0.15	590

Table 1 continued

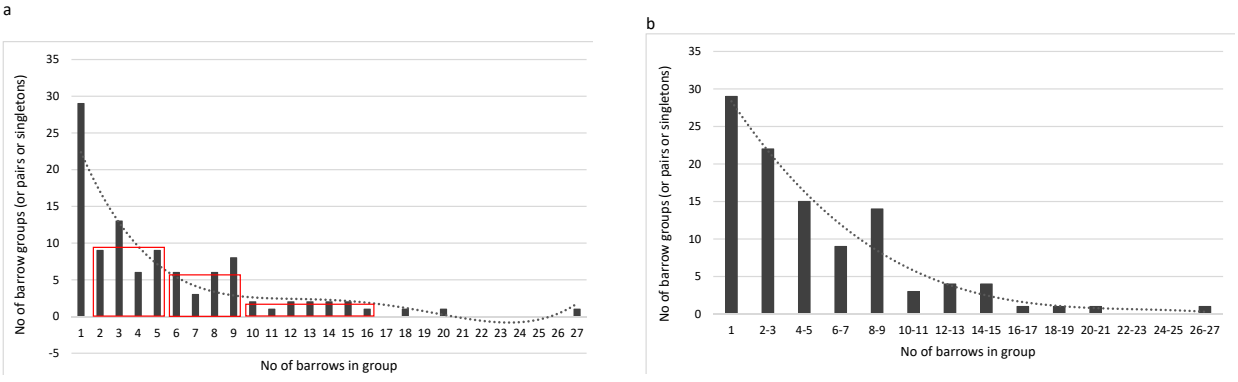


Figure 2 Histograms for the frequency of sites containing barrows of a given number; subgroups have been combined for the Petersfield Heath, Fitzhall and Manor House groups: a) individual barrow number; b) consecutive barrow numbers combined. The trendline is polynomial to the power of 4

cemeteries were restricted for any given region. Four Zones have no known complex as large as 10 barrows, two of these being on the sandstone upland of the Inner Weald (Zones 6 & 7), while that at Foxcombe (9 accepted barrows, Zone 12) may well have originally been larger. Of the remaining ten Zones, six have a single large cemetery, three have two, and one has three.

Zone	Number of barrows in group							Totals (groups)
	1-2	3-4	5-6	7-9	10-13	14-19	20-27	
1	5	3	4	2	1	0	0	**15**
2	2	1	1	0	0	1	1	**6**
3	1	1	1	1	0	1	0	**5**
4	3	3	0	1	1	1	0	**9**
5	2	1	1	2	1	1	0	**8**
6	3	1	0	0	0	0	0	**4**
7	2	0	0	1	0	0	0	**3**
8	5	0	0	0	0	1	0	**6**
9	2	1	1	2	0	0	0	**6**
10	3	4	3	4	0	1	0	**15**
11	1	2	1	1	0	0	0	**5**
12	8	1	2	0	2	0	1	**14**
13	1	1	0	2	1	0	0	**5**
14	0	0	1	1	0	1	0	**3**
Totals	**38**	**19**	**15**	**17**	**6**	**7**	**2**	**104**

Table 2 Summary of barrow-group numbers according to Zones

Appendix 17.5

Barrow-group formations and their topographic setting

Stuart Needham

Barrow group (total sites)	Aggregate formation (minimum of 7 sites)						Element formation (minimum of 4 sites)				Topography on which group is mainly centred; predominant sitings (see Appendix 17.4 Table 2 for detailed listing for individual sites)	Comments
	Linear plus	Nucleated	Loosely structured	Axial	Circumfer-ential	Outliers to formation	Linear	Angled line	Clustered	Contiguous (close set)		
Petworth Community												
5b Goanah Farm (11)				9 (80°)		2			5 t	0	Promontory (or ridge end) off high ridge; ranging from hill summit to lower slope	
Woolbeding Community												
3h Pound Common (7)				7 (20°)		0	none defined			2	Dip slope, valley centred; on slopes and brows lining both sides of small, sharp dry valley	
Black Down Community												
7c Black Down (9)			9			0	5 t(-m) (110°)			0	Plateau-hill; mainly brow to high slopes on S & E sides	
Weavers Down Community (including Bramshott enclave)												
1i Weavers Down E (8)			8			0	?4 m (55°)		4 m(-t)	0	High ridge; ridge spine & S brow, plus high dip slope	
1j Weavers Down W (4)	none defined									2	Medium-high ridge end; spurs and mid-slope	
1m Chapel Common (5)	none defined									2 (+ 1)	Dry-valley sculpted dip slope; flat-topped spur & slopes of small dry-valley	
6d Bramshott Common (4)	none defined									2	Centred on deeply cut valley system; on brows & high slope	
1h Longmoor Camp (4)	none defined									2	Straddling valley bottom near its head: low ridge to N, very low spur to S	Split between Whitehill and Weavers Down Communities
Whitehill Community												
1c Whitehill (5)	none defined									2	Diffuse medium-high ridge descending westwards from hill: hill summit brow, ridge spine or offset to brow	Linear pattern overall but easternmost site too far away
1d Cranmer Pond (6)	none defined						4 t (50°) *(or 5 t(-m) (40°)*			2	Low spur at end of ridge; on spine or marginally offset	

Table 1 Details of 58 barrow-group formations and their topographic setting (minimum four barrows). A few duplicate entries cover alternative combined groupings. The groups are listed according to the Communities defined later in Chapter 21. Grade 5 sites, shown in text Figures 17.13-17.26, are not included here.

Notes: Combined groups or subgroups, or alternative groupings are shown in italics. Spacing within linear and clustered elements: t – tight, m – medium, w – wide. Topographic detail: b – brow, n – nose.

Barrow group (total sites)	Aggregate formation (minimum of 7 sites)						Element formation (minimum of 4 sites)			Contiguous (close set)	Topography on which group is mainly centred; predominant sitings (see Appendix 17.4 Table 2 for detailed listing for individual sites)	Comments
	Linear plus	Nucleated	Loosely structured	Axial	Circumfer-ential	Outliers to formation	Linear	Angled line	Clustered			
1e Woolmer Pond (12)	9					3	9 t (50°)			2 & 3	Low spur at end of ridge; most on spine; 3 on gentle flank slope to NW	
1f Woolmer Down W (6, excluding 3 to S)	none defined						5 t (155°)			2	Low ridge end; most on or close to brow	Linear element is trans-verse to main ridge axis; 3 southern sites attributed to Weavers Down Community
1g Woolmer Down E (6)	none defined						4 t(-m) (70°)			0	Low ridge end plus adjacent valley bottom; most on ridge spines, one on low slope	
Prior's Dean Community												
8d Manor House Ridge (6)	none defined						5 t(-m)			(2)	High ridge; on or close to spine & straddling slight saddle	
8e Manor House Vale (10)		9				2	5/6 t(-m) (30°)		9 t-m	0	Valley bottom, near to its scarp-truncated head; low slope to bottom	
8 Manor House (16)				*14 (40°)*		*2*	*5 t(-m) (30°)*		*5 t(-m) & 9 t-m*	*0*		
War Hill Community												
9a War Hill (8)				7 (115°)		0			7 t(-m)	2	Dry-valley bottom; low slopes to valley bottom	
9c Lower Bordean (7)			7			2			?5 t(-m)	2	Dry-valley bottom, towards scarp-truncated head; low slopes to valley bottom	
9e Broadway (5)	none defined								5 m	0	High rounded spur off hill to E; on or close to spur spine	
Meon Source Community												
10c Oxenbourne Down (4)	none defined						?4			?	Very high on dip slope	Exact locations not known
10d Hyden Wood (15)					11	4		none defined		0	Dry-valley sculpted dip slope; on spur spines & high slopes surrounding double dry-valley head	The 4 outliers could be regarded as a subgroup
10e Hyden Cross (9)				7 (105°)		2			4 t-m	(2)	High ridge straddling saddle; ridge spine and very high on slopes	
10f Hyden Hill (6)	none defined						4 t (95°)			4	High ridge; brows and ridge spine	
10h Parsonage Farm (9)				8 (170°)		1	?4 t-m (180°)		?5 t-m	2	Valley bottom head, level interfluve between River Meon sources; very gentle slopes except one to S	
10i Church Farm (6)	none defined							6 t-m (50 & 175°)		0	Low slope of valley; from hillock brow to very low slope	Nestles in angle between tiny tributary and first bend of Meon
Petersfield Community (including Butser enclave)												
2c Petersfield Heath S (6)	none defined								6 t-m	0	Low ridge end; most on or close to ridge spine, also mid- to low slopes	
2d Petersfield Heath NW (5)	none defined							5 m (15 & 120°)		0	S flank slope of low ridge; spanning ridge top to valley base	Grade 5 site broadly fits alignment
2e Petersfield Heath NE (16)		16				0			16 m (-t)	2 & ?2	S flank slope of low ridge; spanning ridge top to hillock in valley base	All but one of mound barrows form oval around the one enclosure barrow
2 Petersfield Heath combined (27)		*25*				*2*		*5 m (15 & 120°)*	*6 t-m & 16 m(-t)*	*2 & ?2*		
2f Latchett's Copse (5)	none defined						5 m(-w) (115°)			0	Valley bottom; on level interfluve between streams	Middle gap wide for linear definition
2h West Heath Common (13)		10				3			10 m-t	(2)	Angular apex of plateau-hill & subsidiary low hill; spanning brow to mid-slope; outliers on hill summit	
10k Harroway Farm (7)			7			0	4 m-w (95°)			2	Raised slightly undulating bench; around incised stream valley; level ground to gentle slopes, with one on promontory summit to S	

Table 1 continued

Barrow group (total sites)	Aggregate formation (minimum of 7 sites)						Element formation (minimum of 4 sites)				Topography on which group is mainly centred; predominant sitings (see Appendix 17.4 Table 2 for detailed listing for individual sites)	Comments
	Linear plus	Nucleated	Loosely structured	Axial	Circumfer-ential	Outliers to formation	Linear	Angled line	Clustered	Contiguous (close set)		
10m Butser Hill (9)			9			0		none defined		3	Hill top with attendant spurs; on summit, brows & high slopes	
10n War Down (5)					none defined					(2)	Hill top with attendant spur; near summit, on brow & spur spine	
Harting Community												
11b Foxcombe (9)				8 (180°)		1			4 m	0	Expanded dry-valley head with saddles to Rother Valley; from ridge spine to valley bottom & one on promontory summit	The axial group is widely spread with gaps of up to 450m
11c W Harting Down N (6)			none defined						5 t-m	3	High spur off hill to NW; most on or close to spine, one on hill summit	
11e Ladyholt (4)					none defined					0	Long dip-slope spur; from spur spine to mid-slope	
12a Harting (5)					none defined					0	Raised slightly undulating bench, around two incised stream valleys; ranging from brow to stream head	
Treyford Community												
12e Padswood Bottom (5)					none defined					0	Dry-valley sculpted dip slope; on spur spine and flank	
12f N Marden Down (20)		12				8			5 m	(2)	Dry-valley sculpted dip slope; most on flanks and bottoms around tiny dry valley	Remainder form outer 'circuit' in or on flanks of surrounding small valleys (6) and on a spur (2)
12j Phillis wood (10)				8 (45°)		2			4 t-m	0	Dry-valley sculpted dip slope; on spur spine and flank slopes	A further barrow outside ISZ (8115/1) belongs to group; also 2 possible oval barrows within axial zone
12k Devil's Jumps (13)				11 (120°)		2	6 t(-m) & 4 t (120°)			3	High on dip slope on rounded spur, close above dry valley heads; mainly high slope, but crossing spine	
Iping Community												
3b Trotton Common (6)			none defined				4 t (50°)			0	2 low ridges at obtuse angles; ridge spines, brows and very high on slope	NE pair on same axis, but fairly large gap from others
3e Fitzhall Rough (5)			none defined				5 t-m (80°)			0	Low spur off ridge to W; all on spur spine	
3c Fitzhall Heath (6)			none defined				6 t-m (95°)			3	Valley bottom, on very low ridge within; all on spine	
3f Mitchell's Common (4)			none defined				4 t-w (105°)			0	Valley; on low S slope which becomes slight spur towards E	
Linch Community												
13b Linchball Wood (9)					9	0				2	Dry-valley sculpted dip slope; on spur spines & flank slopes around triple dry-valley head	
13d Linch Ball (8)				8 (120°)		0			4 t	(2)	High ridge, in two subgroups straddling saddle; ridge summit & spine, & high slope	All sites conform to axial group, but a large gap in middle
13e Hacking/Stubbs Copse (12)				9 (160°)		3	none defined	2 & 2			Dip slope; all on high slopes, most on brows overlooking deeply incised saddle	
Graffham Community (including Heyshott enclave)												
4d Heyshott Common (9)				7 (100°)		2		none defined		2	Multi-spurred plateau-hill; mainly along S brow; one in valley bottom to E	
4f Ambersham Common E (4)					none defined					0	Straddling incised stream valley; varied mid-slope positions	
4e/f Hoyle & Ambersham Common E (7)			*7*		*?*			*none defined*		*0*	*Plateau-ridge; six sites on mid- to low slopes surrounding ridge top, verges on circumferential formation*	*Sites are widely spaced*

Table 1 continued

Barrow group (total sites)	Aggregate formation (minimum of 7 sites)						Element formation (minimum of 4 sites)					
	Linear plus	Nucleated	Loosely structured	Axial	Circumfer-ential	Outliers to formation	Linear	Angled line	Clustered	Contiguous (close set)	Topography on which group is mainly centred; predominant sitings (see Appendix 17.4 Table 2 for detailed listing for individual sites)	Comments
14a Manorfarm Down (5)					none defined					0	High ridge; ridge spine including nose, except for one near valley bottom	
14b Heyshott Down (15)	13					2	13 t (120°)			2, 2, 3 & 4	High ridge; all on ridge spine except one on high slope to S	
14c Graffham Down (8)			8			0	none defined			2	High ridge, including 2 saddles; ridge spine and high slopes	
Lavington Community (including Sutton enclave)												
4h Gallows Hill (10)				8 (115°)		2	5 m (120°)			0	Medium-high ridge & subsidiary hill; on spine, brows & high slopes	
4i Lavington Common (14)					13	1			4 t	0	Valley centred: 3 low ridges around tiny stream valley; varied from hill summit & ridge spines to brows & high to mid-slopes	
5e Duncton Common (14)	12					2	11 t (70°)			5	Medium-high ridge; most on or close to ridge spine, one on low slope and outlier to E on low hill summit	
5f Tooth's Plantation (5)					none defined					(2)	Valley: slightly undulating stream interfluve; low slopes and one on hillock summit	
5g Coates Park (8)				7 (40°)		1			5 t-m	2	Valley bottom; very low slope & overlooking spur noses	Nestles in angle of confluence of Sutton End stream with Rother
5h Sutton Common (8)					8	0	4 m-w (75°)			(2)	Valley centred: 2 low ridges forming angle around tiny dry valley; mainly ridge spines, 2 on low slope	
Total groups (excluding combined) = 58	**3**	**4**	**6**	**13**	**4**	**-**	**18 + ?3**	**2**	**17 + ?2**	**26 + (8)**		
Combined groups	***0***	***1***	***1***	***1***	***?1***	**-**	***1***	***1***	***2***	***1***		

Table 1 continued

Relative elevation of sites	Barrow group centred on:					
	hills & plateau-hills	ridges & spurs	dip slopes	flank slopes	valleys	benches
Summit positions dominant	-	23	3	-	5	-
Brow and slopes dominant	6	-	-	2	-	-
Low positions dominant	-	-	4	-	9	-
Unspecific/mixed	-	-	4	-	2	2

Table 2 Correspondence between topographically centred categories and main features of relative elevation

Appendix 18.1

Descriptions of barrow groups, pairs and singletons by Zone

Stuart Needham and Sabine Stevenson

To facilitate broad-scale analysis a series of 14 zones have been defined within the intensive study area (text Fig 18.1), each embracing a concentration of monuments surrounded by a sparser distribution. Isolated sites are generally accommodated in the zone of the nearest concentration. Except where there are large blank areas in between, zones have been butted up to one another so that the thinning of distributions towards their edges is apparent in analysis and visual portrayals. The zones start with the Rother Valley itself, from the headwaters area (including the Wey headwaters) down to the Arun floodplain (Zones 1-5), then work round the periphery: the northern sandstone uplands (Zones 6-7), the western Chalk rim (Zones 8-9) and the southern Chalk rim (Zones 10-14).

1: Woolmer Forest Zone

Altogether 11 groups of barrows and four isolated examples can be defined on spatial grounds in this 48km^2 block. These are described from north to south, as labelled in text Fig 18.2 and tabulated in text Table 18.1.

1a Passfield Common singleton (1)

Bramshott and Liphook parish; National Trust; 8133/1

In the north-east and apparently isolated a small enclosure barrow lies on a low plateau (91m OD) between two tributaries of the Wey (Fig 1). It is crossed by a broad track that has caused some damage, but otherwise seems complete. Its low bank is internal to a ditch and there is an equally low tump in the interior.

1b Hollywater Clump singleton (1)

Whitehill parish; MoD land; 8033/1

An isolated possible barrow lies on the summit of a natural knoll rising to 98m OD (Fig 2). It overlooks a confluence of three feeders into the Dead Water. Charles Budgen's 1808-9 survey plan for the Ordnance Survey (British Library, OSD Midhurst 8) shows 'Holy Water Clump' with an encircled tree cluster, but this is large enough to have covered the whole hill top rather than just the barrow.

1c Whitehill group (5)

Whitehill parish; former MoD land – 7834/1; Urban public space – 7934/1-3; Deadwater Valley Nature Reserve – 7934/4 (Fig 3; text Fig 17.15c)

Figure 1 Enclosure barrow 8133/1 on Passfield Common; arrows indicate the line of the ditch

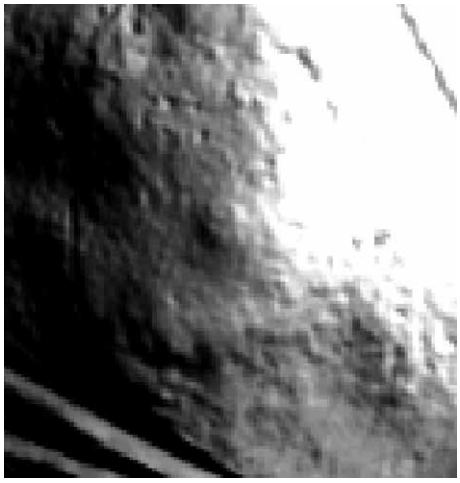


Figure 2 Barrow on summit of Hollywater Clump, 8033/1. Lidar image lit from NE. EA data, Open Government License

Four of the five sites lie on a gentle spur projecting west from Wall Down Hill at altitudes of between 93 and 100m OD. The westernmost barrow, 7834/1, on the north side of a hillock, has suffered much mutilation in the past from army exercises (Fig 3a). 260m to the east, three mound barrows on the ridge crest have been engulfed by housing. The most western of these (Fig 3c; 7934/1) has been trimmed on its north-east edge by the playground of a nursery school. Limited excavation in 2015 revealed a ditch (Graham 2015). The other two in this cluster are almost contiguous, but the northern one is very small, previously unrecognised and rather uncertain (7934/3; grade 3) given its location alongside the Village Hall car park (Fig 3b). If this is a barrow, it was probably always small, hence escaping the notice of earlier barrow recorders. The adjacent one is substantial with indications of a ditch.

On the highest point of Wall Down, 580m to the east, a more outlying mound, 7934/4, overlooks the Dead Water stream to the east and one of its feeders to the south (Fig 3d). Internal to a Civil War enclosure, there must be a possibility of it being an associated feature or at least having been modified at that time, especially since a terrace largely encircles the mound.

1d Cranmer Pond group (6)

Whitehill parish; private land; 7833/1-6; (text Fig 17.15d)

Six mound barrows run along the rounded spine of a low SW-NE oriented ridge at 90-95m OD (Fig 4b), overlooking the wetland of Cranmer Pond immediately below and the wider basin beyond to the south-east (Needham & Stevenson 2016). 'Gunsite', the largest and most southerly barrow (Fig 4a; 7833/1), is slightly oval and may once have served as a gun emplacement, possible evidence of which can still be observed in a trapezoidal breeze-block lined slot cutting into the top from the north-east. The mound is encircled by a bank with traces of an external ditch generally believed to be of later date; the enclosure follows the barrow's oval shape but is not entirely concentric, the berm ranging between 1.5 and 4m wide. The next barrow in line, 135m

Figure 3 Whitehill barrow group: a) Hogmoor Inclosure 7834/1; b) Hogmoor Lodge, small mound 7934/3 with 7924/2 behind; c) Hogmoor Lodge 7934/1; d) Walldown 7934/4

Figure 4 Cranmer Pond barrow group: a) 'Gunsite' 7833/1; b) Lidar image lit from north-west; c) 7833/4 with 7833/5 behind. b) EA data, Open Government License

to the north-east is truncated on the north-west side by the Whitehill/Selborne parish boundary bank and ditch. Next come three more evenly spaced barrows approximately 30m apart (Fig 4c), all on the high slope marginally offset south-east from the ridge crest. Whereas 'Gunsite' is 2.1m high, these four are between 0.45 and 1.1m high. The final mound (7833/6), abutted to the fifth, is even smaller and only 0.2m high and consequently grade 3. Four of the six barrows are damaged a little by vehicle tracks.

1e Woolmer Pond group (12)

Whitehill and Selborne parishes; private estate – farmland (pasture) and woodland; SU7832/1-12; (text Fig 17.13c)

Nine of this group form a close-set linear cemetery running along the crest of a low SW-NE ridge of around 95m OD (Fig 5). Nearest neighbours are between 11m and 60m apart (centre to centre). Three outliers are scattered to the north-west on gently undulating ground between 88 and 98m OD one of which has now been destroyed by a landfill site and the other two (one very uncertain) are only recorded from APs. One of the linear array has also disappeared and the others have very smoothed profiles suggesting denudation by ploughing or similar surface disturbance. The linear group has views over Woolmer Pond just to the east and it is noteworthy that it was not set on the slightly higher ridge (up to 105m OD) a short distance to the west.

1f Woolmer Down West group (9)

Whitehill parish; MoD firing ranges; 7931/1-6, 7931/7-9; (text Fig 17.15a)

Nine barrows lie to the south-east of Woolmer Pond, six of them at one end of a WSW-ENE oriented ridge (at 100m OD) and three on a separate W-E ridge (at 102m OD) beyond a stream head (Fig 6). The former ridge, known as Woolmer Down, is almost completely encircled by drainage channels which ultimately feed into Dead Water by way of Woolmer Pond and the surrounding marshes. At its southern end and perpendicular to its axis is a linear group of five mound barrows spanning 140m, nearest neighbours between 13 and 40m apart. The sixth barrow is set back 85m to the north-east. These barrows overlook the stream head feeding Woolmer Pond and

Figure 5 Woolmer Pond barrow group: a) 7832/1 at SW end of the linear-plus group, which runs through the open field in the background and into the wood beyond; b) Woolmer Pond at dusk, from N; much of the current pond is believed to be due to past peat cutting; the ridge on which the barrows stand runs to the right

also have windows into the Upper Rother Valley to the south-west.

To the south of the encircling stream three enclosure barrows all with low bank external to the ditch are marginally offset, south and south-south-east, from a ridge crest running west-east. Two are contiguous, their banks touching, and the third is 40m to the east.

1g Woolmer Down East group (6)

Whitehill parish; MoD firing ranges; 7932/1-4, 8031/2-3; (text Fig 17.15b)

Four mound barrows sit at the north-eastern end of the Woolmer Down ridge described above (Fig 7). They form a WSW-ENE line along the slight spine of the ridge (98-100m OD) which is actually plateau-like here. Mound spacing is between 39m and 139m (centre to centre). Two further mounds flank the valley to the south-east, one being 325m away low on the west side (88m OD; Fig 7d), the other a further 425m and on the east side and on the south-west nose (93m OD) of a parallel ridge (Long Down). In between is a marshy bottom around the south-easterly of the encircling streams.

1h Longmoor Camp group (4)

Whitehill parish; MoD training land; 7931/10, 8031/1, 8030/3, 8031/4; (text Fig 17.25d)

Four sites straddle the headwaters of a drainage channel running east-north-east out of Longmoor Camp. On the north side are two mound barrows, set 150m apart on a small ridge at altitudes of 97 and 100m OD (Fig 8a). 350m away on the south side, lying at 96m OD on a mini-spur at the foot of the Weavers Down dip slope, are two contiguous enclosure barrows (Figs 8b-c). Whilst the larger, southern one is marked on OS maps as a circular

Figure 6 Woolmer Down West barrow group: a) 7931/1; b) 7931/2; c) 7931/5 with view W across the Upper Rother Valley to the Hangers; d) 7931/6

Figure 7 Woolmer Down East barrow group: a) 7932/1; b) 7932/2 with 7932/3 behind; c) 7932/4; d) 8031/3, on the edge of the stream valley to E

Figure 8 Longmoor Camp barrow group: a) mound barrow 7931/10; b) enclosure barrow 8030/3; c) enclosure barrow 8031/4, its slight ditch marked by the ranging rod, with 8030/3 behind and a hollow way in the foreground

feature, it had not hitherto been identified as an ancient monument. There is a ditch external to the main bank and a probable second bank outside, modified by later disturbance in the south-west and east. The double bank, otherwise unknown in the region, raises the possibility of this being a two-phase monument. The northern and much smaller annular monument is visible only as a partial circuit (WNW to ENE; Fig 8c), possibly having been truncated or overlapped by 8030/3; it is a slight ditch with hints of an external bank.

1i Weavers Down East group (8)

Whitehill parish; MoD training land (Open Access); 8030/1-2, 8130/1-4; (text Figs 17.22a & 18.4)

Weavers Down has twelve barrows in all, which might perhaps be treated as a single group, but a gap of 590m in the middle has led to two groups being defined. The east group of eight barrows occupies the highest land of the Rother/Wey watershed zone, their elevations lying between 139 and 153m OD. Five lie on or near the WSW-ENE crest with a steep south-east facing scarp,

Figure 9 Weavers Down East barrow group: a) 8030/1, mound barrow with slightly dished top (see also text Fig 16.15b); b) 8030/4, segment of enclosure barrow; c) 8130/2, mound barrow with slope-encircling bank; d) 8130/3, enclosure barrow

the other three part way down the north-west facing dip slope. Three are enclosure barrows and five mound barrows. Three of the latter are specialised in some way and lie at higher elevations along the ridge (Fig 9). The remaining two were probably smaller mound barrows (8130/5-6) but have been strongly reconfigured, probably by military activity. The two enclosure barrows in the north-east sit above a steep slope leading down to a Wey feeder. Indeed, the most eastern barrow (8130/3) sits on the nose of the ridge with steep falls round 180°. This one probably has an external bank, whereas the other two are internally banked. These latter two have not hitherto been recognised as potential ancient sites despite having been plotted as circular features on early OS maps.

The westernmost and easternmost of the mound barrows (8030/1, 8130/2) show intermittent evidence of a revetment wall of ironstone around their outer edges or low on the mound slope, and 8130/1 has an annular

Figure 10 Weavers Down West barrow group: a) mound barrow 8029/1 showing drystone walling on south-east side; b) probably contiguous barrow 8029/3, truncated on one side by the track dividing it from 8029/1

bank which could also contain hidden walling (text Fig 18.4). These annular features all create a concave profile immediately inside; in the case of 8030/1 the mound remains below the rim of the bank by an average of about 0.25m (Fig 9). It has not been established by excavation whether the ring-banks are ancient or more recent additions (see Chapter 16), but if all are Bronze Age, this is an interesting set of rather specialised barrow forms perhaps arising from multi-phase construction. Needless to say, without trees the views from these barrows would be extensive, especially from the crest positions.

1j Weavers Down West dispersed group (4)

Whitehill parish; MoD training land; 8030/4, 8029/1-3; (text Figs 17.22a & 18.5)

This group of three mound barrows and one enclosure barrow occupies the slightly lower south-western end of the Weavers Down ridge. Two were probably originally contiguous, a vehicular track now separating them (Fig 10), but the other two are fairly distant, the three locations forming a triangle with sides of about 520, 530 and 660m. The pair sits on the nose of an elongate promontory projecting south-east (130m OD), while the other two are mid-slope, but still in elevated positions (118 & 120m OD). The outlook of this barrow group is more towards the Rother Valley than the Wey, although the contiguous pair joins the higher Weavers Down East sites in overlooking Folly Pond and a springhead for a Wey tributary.

The enclosure barrow (8030/4) is the northernmost of the group and has an internal bank. The mound barrows all have additional ring-bank features. The westerly one (8029/2) is enclosed by a not quite concentric bank with a possible external ditch (text Fig 18.5a). The northern mound barrow of the pair (8029/3) is similarly enclosed. Its southern counterpart (8029/1) is instead revetted externally by drystone walling visible at intervals all round and apparently supporting a ring-bank on the lower slopes of the mound (Fig 10a). This is probably the site labelled 'Irons Barrow' on the edge of Charles Budgen's 1808-9 survey drawing (British Library, OSD Midhurst 8) for the 1st edition OS (text Fig 18.5d). These continue the pattern of potentially specialised forms seen in the East group.

1k Longmoor Inclosure pair (2)

Whitehill parish; MoD training land; 7929/3, 7930/1

Two uncertain round mounds lie at the east end of a WSW-ENE sandstone ridge characterised by 'nodulation' (text Figs 16.7 & Fig 11). Understanding the landform is made more difficult by considerable modifications caused during military use over the past century or so. In particular, the area is criss-crossed by

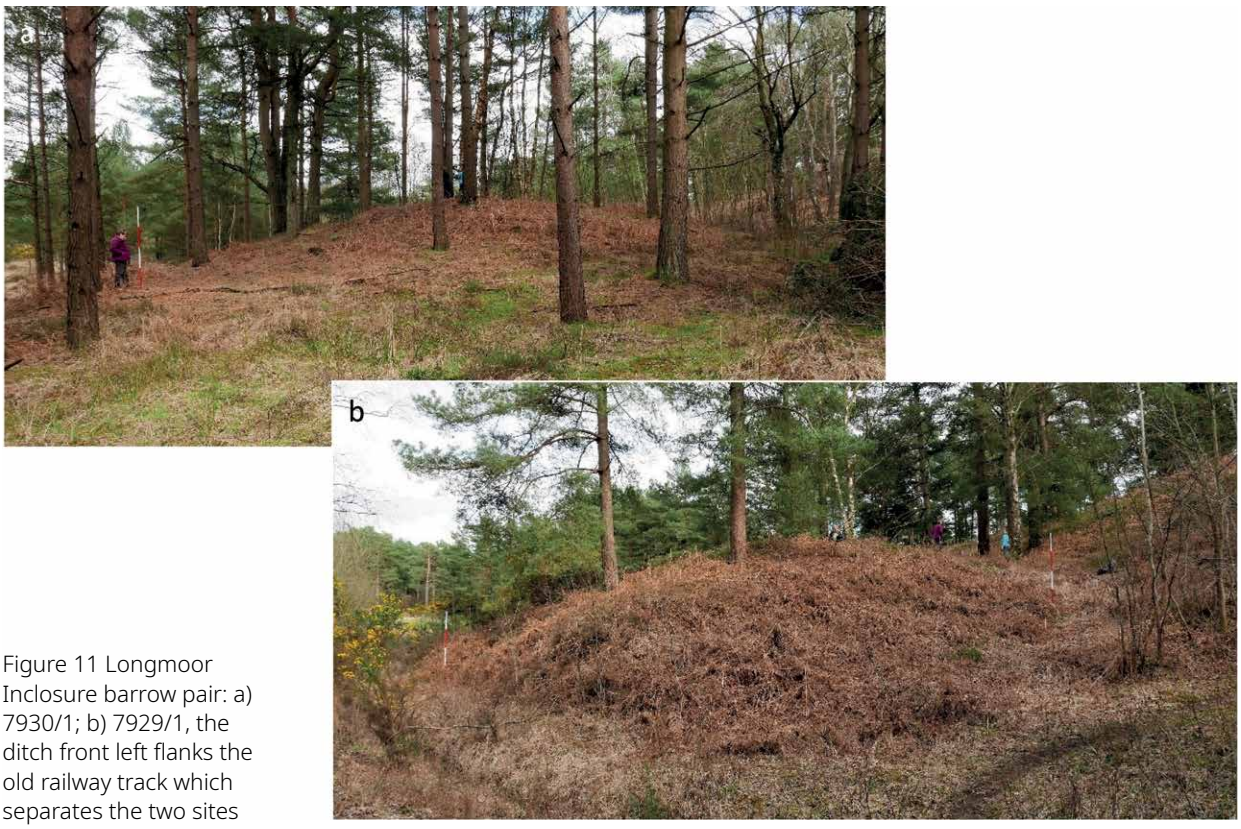


Figure 11 Longmoor Inclosure barrow pair: a) 7930/1; b) 7929/1, the ditch front left flanks the old railway track which separates the two sites

Figure 12 Barrow on summit of Palmer's Ball, 7830/1

deeply incised tracks, some vehicular, and dug ditches. There is also a made-up route way running between the barrows that used to carry a military railway. The two mounds may thus be natural hillocks that just happen to be round. However, they are within the range of round barrow sizes and do not appear to have bedrock close to their surface, even at the top where erosion might be expected to have left the topsoil rather thin. In addition, an exposure on one edge of 7930/1 showed a possible buried soil. In contrast, two other roundish mounds in the area resisted deep probing and are likely to be hillocks.

These sites lie on the edge of flatter land which forms the head of the valley carrying the Longmoor Stream, a small tributary of the Rother. They are about 100m south of the springheads and lie at 90-95m OD. They are 630m from the most westerly of the Weavers Down West group, so could alternatively be regarded as part of that group. A third possible site (grade 5) is that shown by Budgen in 1808-9 (British Library, OSD Midhurst 8) towards the head of a coombe that can be identified as Little Dean Bottom (7929/1); this lies just to the south of the nodular ridge. If this was correctly located by Budgen, it appears to have been destroyed subsequently, but it might have been 8029/2.

Figure 13 Chapel Common barrow group: a-b) enclosure barrow 8128/1, including Lidar lit from NNW; c) mound barrow 8128/2. b) EA data, Open Government License

1l Palmer's Ball singleton (1)

Whitehill parish; MoD training land; 7830/1

An isolated barrow lies on the 98m OD summit of Palmer's Ball, a hill set between the Rother and the Longmoor Inclosure Stream (Fig 12). It is badly mutilated by concentric arrangements of army slit trenches and a deeply incised track crossing NNW-SSE, but darker soil exposed in the track over the top correlates with the apparent mound.

1m Chapel Common group (5)

Rogate and Milland parish; common land (Open Access Land); 8128/1-4, 8228/1; (text Fig 17.26b)

A group of up to five newly recognised sites lies on Chapel Common 1.75km south-east of Weavers Down and on the opposite side of Folly Pond. An enclosure barrow sits on the east slope of a small, sharply defined dry valley within the NNW-facing dip slope of the Rake Ridge (Figs 13a-b). It appears to have no ditch and the bank encloses a slightly raised interior (text Fig 16.16g). A little to the south, on the same side of the valley is a small mound (Fig 13c), but the remaining three sites form a close-set group to the north-north-east and are all possible further enclosure barrows. Only a segment of each survives, so if they are barrows it must be assumed they have each suffered partial levelling. As a group they would be very similar to that within the Woolmer Down West group (1f).

1n The Mint group (3)

Liss parish; private gardens – 7828/1, 7928/2; private woodland – 7928/1

Three sites are distributed around the upper courses of the two Mint Streams, very short tributaries of the Rother. The northern two are mound barrows, 380m apart but both close to the 75m OD contour on slight terraces raised just above the valley base (Fig 14). 7828/1 has a broad flattish top and lies just to the north-north-east of a large dished feature, probably a natural formation (Fig 14b). 7928/1 may be an artificial mound sitting on top of a natural rise, assuming it is not entirely natural and fortuitously barrow-shaped (Fig 14c). 280m to the south-east, on a small promontory between the two streams, is an uncertain enclosure barrow; all that remains is a broad shallow annular ditch and there may be other explanations for it.

Figure 14 The Mint barrow group: a-b) 7828/1, including Lidar lit from NNW; a large dished feature is apparent SSW of the barrow (arrowed); c) 7928/1, Lidar lit from S. Both images have the Mint Stream running diagonally across the bottom right. b & c) EA data, Open Government License

Figure 15 Barrows at: a) Berry Grove 7628/1, a rare survival in the Upper Rother Valley; b) Fern Hill 7932/5, viewed from the steep slope on the east side

1o Berry Grove singleton (1)

Liss parish; private garden; 7628/1

The Berry Grove mound (Fig 15a), now oval in plan due to truncation by a linear ditch on the west side, is situated at 75m OD on a very gentle north-east facing slope within the Upper Rother Valley.

1p Fern Hill singleton (1)

Whitehill parish; MoD land – firing ranges; 7932/5

A late discovery on a north-south ridge lying between two wet basins and a little south of Fern Hill (part of the ridge). Although not measured accurately, this is a good sized mound around 22m in diameter with a flattish top about 7m across (Fig 15b).

2: Rother Bend Zone

This block covers 40km^2 around the bend of the Rother. Two main cemeteries are joined by three smaller groups or pairs and one singleton barrow. They are described from west to east, starting with an outlier in the north, as labelled in text Fig 18.6 and tabulated in text Table 18.2.

Figure 16 Enclosure barrow at Farther Commons, 7826/1. The ranging rods are on the bank and the team member is standing on the tump. Behind left is the hollow way

2a Farther Commons singleton (1)

Liss parish; private garden; 7826/1

This seemingly isolated enclosure barrow lies at 115m OD on the dip slope of the Rake Ridge, part of the prominent ridge of Hythe Formation sandstone. It sits on a north-west facing spur between dry valleys, thus looking out across the Upper Rother valley towards the Hampshire Hangers. The enclosure has an external ditch and contains a more or less central tump (Fig 16). A much larger enclosure surrounding the site is one of two close together and is almost certainly of later date, perhaps a woodbank. The enclosure barrow was evidently eroded on its north-east side by a hollow way, and the latter is crossed lower down the slope by the earthwork of the large enclosure.

2b Borough Common pair (2)

Petersfield borough; lost to railway and quarrying; 7323/2, 7423/1

Little can be said about this group since neither of the sites survive and the same is true of a third, grade 5 site (7323/1; Banbury 2014). The 'two large tumuli to the W. of the town' noted by Richard King (1865) were situated on sandstone from the Folkestone Formation at 64-67m OD; 7323/1 was probably on River Terrace Deposits at the foot of the ridge. They lie at a narrow corridor between the streams forming the Petersfield Heath peninsula. While elevation may be low, the ridge top, and therefore Barrow 7323/2 in particular, would have had a fine outlook to the enclosing Chalk scarps.

2c-e Petersfield Heath group (27)

Petersfield borough; managed by Petersfield Heath Trust with assistance from the Friends of Petersfield Heath; 7522/1-13; 7523/1-19; 7623/1-2; (text Fig 17.20a)

The Lidar image for the whole group is shown in text Figure 1.7 and photographic images can be found in Chapters 5-6. Of the 32 sites listed in the register, three have been shown not to be barrows, one is grade 5 and one a very late addition. The last two and eight others were not previously on record (Chapter 2 & Appendix 1.1 Table 2). Two main ridges provide the frame for the Bronze Age cemetery (text Fig 2.9): the north ridge is aligned close to west-east and reaches a height of 63m OD, while the southern one (61.5m OD) runs in a south-easterly direction from Music Hill eventually curling round to the south-west. Trapped between these ridges is a shallow valley occupied by the Pond and its outflow and bottoming out at 54m OD within the current extent of the Heath. Three subgroups of barrows have been defined on spatial grounds: a large group in the north-east and two smaller groups in the north-west and south-west (text Fig 2.9; but see also late addition Barrow 31 – text Postscript).

2c Petersfield Heath South-western subgroup (6)

7522/4-6 & 9-11 (Barrows 13-15 & 18-20)

This group of six sites is well separated from barrows to the north; the nearest neighbours between groups are Barrows 13 and 12, 130m apart and for the most part distances are somewhat greater. In contrast, nearest neighbour distances within the subgroup are between 40 and 100m. Excluded from the barrow group now are two small annular enclosures, Sites 16 and 17, which proved on excavation to be relatively modern and an outlying oval mound in the south-east corner of the Heath, Site 21, which has been shown to be natural with probable enhancement in the last two centuries (Chapter 7).

This subgroup has two enclosure barrows relative to four mound barrows. Topographic settings are varied. Barrows 13, 15, 19 and 20 (7522/5, 6, 9 & 11) are on the southern ridge top, although 19 and 20 are on brows to west and east respectively. Barrows 14 (7522/10) and 18 (7522/4) are high and low respectively on the west-facing slope, the latter only a little above the modern lake level. Although the ridge is of very modest altitude, its sudden termination at the north-west end, Music Hill, gives Barrow 13 (7522/9)

in particular a striking situation overlooking the former marshland. This is a substantial mound, its estimated volume second only to Barrow 1.

2d Petersfield Heath North-western subgroup (5)

7522/12, 7523/1-3 & 14 (Barrows 11, 12, 22, 23, 24)

This group of five sites is not especially discrete spatially, but only Barrow 24 (7523/2) is nearer than 100m to a barrow in the North-eastern subgroup (Barrow 6). A possible additional site was revealed by the geophysical survey (7523/19) but remains to be verified. Internally, nearest surviving neighbours are between 45 and 90m apart. The barrows span the whole topographic transect from ridge crest (Barrow 23) to valley bottom, just across the stream (Barrow 12). Barrow 11 (7523/3) sits on a diminutive rise, part of an intermittent ribbon-rise close to and parallel with the stream.

Two of the five sites in this group are enclosure barrows, Barrow 24 being unusual in having a flattened east side facing the North-east subgroup. Meanwhile, limited excavations into Barrow 22 suggest it started as a natural outcrop on the flank of the northern ridge and was then enlarged as a barrow during the Early Bronze Age.

2e Petersfield Heath North-eastern sub-group (16)

7522/13, 7523/4-13 & 15-19, 7623/1-2 (Barrows 1-10 & 26-31)

Eleven sites survive in the north-eastern corner of today's Heath and Phillip Crocker's 1806-8 survey map (text Fig 2.2) would suggest as many as six additions just beyond (Barrows 25-30), presumably all being mounds or otherwise prominent barrows (Chapter 2). Of those surviving, there is just one enclosure barrow amongst 10 mounds and thus it may have been one amongst 16 mounds. Although the cricket pitch sits amongst this group, geophysical survey by the *People of the Heath* project gave no hint of any barrows having once stood there (text Fig 6.14). It is more likely therefore that an open patch amongst the barrows of large enough size was opportunistically chosen for this sporting activity.

The 'Monarch' (Barrow 1; 7523/9), a large flat-topped mound, lies astride the northern ridge and visually dominates the surviving cluster. Slightly truncated by Heath Road to the north, it has a talus encircled by a ditch just discernible in its western sector; excavation found no evidence for an external bank. Equally impressive due to its diameter is the enclosure barrow just to the south (Barrow 4; 7523/10-11). Piggott detected a very slight central tump, but it also contains a more obvious mound eccentrically placed in the western sector; this is treated as a separate, juxtaposed monument and may indeed be later than the enclosure (Chapter 5). All the barrows are fairly close set with limited variation; nearest neighbour distances amongst the extant barrows are between 45 and 100 metres apart and one of the lost barrows was probably contiguous with Barrow 10; if the enclosure and the eccentric mound of Barrow 4 are accepted as two distinct monuments, they are closer still since they are superimposed. Barrow 8 (7522/13) in the south is the most detached of the group, and this is not changed by inclusion of the lost barrows (text Fig 2.9).

This group occupies varied micro-topographic positions ranging from the crest of the northern ridge, at its east end, the gentle slope southwards and a very low eminence close to the valley floor (Barrow 8). The mid-slope mounds (Barrows 5-7, 9-10; 7523/4-6 & 12-13) have also been set on very slight, almost imperceptible rises projecting from the ridge. These rises, or mini-spurs, enclose the area now occupied by the cricket pitch, part of which holds water in wet weather.

2f Latchett's Copse group (5)

Buriton and Harting parishes; private farmland; 7621/1-3, 7622/1, 7721/1; (text Fig 17.14c)

Five potential barrows at Latchett's Copse and Goose Green have not previously been recorded. Four were found on Lidar three of them at least still being discernible on the ground, the fourth (7621/3) being less certain (text Fig 18.8a-b). The easternmost site (7721/1) was spotted on a 1959 AP (NMR 4371) implying a surviving low mound but it is now totally levelled. The three better examples to the west can also be discerned on this photograph. This linear array spans just under half a kilometre running west-north-west to east-south-east across the narrowest isthmus between the Criddell Stream and the Nursted Stream. They sit in the middle of the Gault Clay belt (text Fig 17.2), these and the Ryefield Cottage group being the only examples on this geology in the study area. The land has been agricultural since at least the 1870s, although not necessarily cultivated. The diameters of the barrows, between 20 and 40m, seem reasonably large, but their low height suggests spreading by ploughing, perhaps in early historical times; they were probably therefore of relatively modest size originally. North-south drainage gullies at *c.* 30m intervals also show in the Lidar data, but do not appear to have disturbed the mounds.

2g Ryefield Cottages group (3)

Harting parish; private farmland; 7722/1-3

Three further likely barrows occur on the Gault Clay to the north-east of the Latchett's Copse group, the inter-group distance being a minimum of 560m. They too form a line crossing the isthmus NW-SE at a point where there is a 10m rise in the land above the flanking valleys. They were first noticed on Lidar (text Fig 18.8c), but two at least are also discernible on the 1959 AP, the third possibly so under a hedgerow that has since been removed. Only one site now has clear evidence for a rise on the ground (7722/2).

Diameters measured on Lidar are about 30m, but again these were probably only ever small-volume mounds.

2h West Heath Common group (13)

Harting parish; land owned by Cemex UK, now lost to sand quarrying – SU 7822/1-10, 7822/13; private farmland – SU 7822/11-12; (text Fig 17.20c)

Thirteen barrows are known to have lain on West Heath Common, eleven having been destroyed by quarrying since the 1970s. They spanned 670m east-west and 220m north-south, occupying a block of Folkestone Formation sandstone, at the heart of which was a plateau-topped hill a little above 68m OD. Ten of the barrows formed a nucleated group which covered an approximately triangular area of about 220 by 200m at an angular apex on the south-east side of the plateau; they were at altitudes of between 68m OD and 60m OD. Peter Drewett and the Sussex Archaeological Field Unit excavated nine prior to destruction between 1973 and 1980 (Drewett 1976; 1985; see Chapter 19); two more were destroyed before 2001 but not excavated. The two surviving mounds are easterly outliers of the nucleated group (text Figs 17.20c & 18.9); they are close-set, one on the summit and one on the southern slope (at 50m OD) of a hillock separated from the main plateau by a shallow coll between two springheads. Although not fully mapped until Peter Drewett's excavation campaign, five of the barrows seem to be represented on Harting Parish Map 1821 (West Sussex Record Office, Par 98/21/1); five distinctive tree or tree clump symbols occur in a pattern that matches quite closely that of the five largest mounds – Barrows I, III, IV, VI and VIII.

The plateau and surrounding undulating lower land are almost encircled by watercourses. The resulting peninsula is delimited by the River Rother to the north, the Criddell Stream to the north-west and the Nursted Stream to the south and east. The Nursted Stream emerges from the foot of the South Downs to the south-west, and now has a string of ponds along its course eastward which probably originally powered water mills. All the recorded barrows overlook it, and perhaps more specifically Blackrye Pond, today partially dried up; their outlook is not north to the River Rother. The land-bridge to the west-south-west is less than a kilometre across and is straddled by the barrow groups just covered (above).

The centre of this peninsula was traditional, unimproved common-land comprising West Heath Common, Downpark Common and Wenham Common, although there were two enclosed fields (presumably pasture) on the plateau top as early as 1808 (Budgen's 1808-9 survey plan; British Library, OSD Midhurst 8). Small-scale quarries existed by the late nineteenth century, the modern quarry having got underway in or before the 1950s starting from the northern edge where the railway line used to run. OS maps up until the 1938 survey (6-inch) only mapped two mounds in the main cluster; at about the same time Stuart Piggott identified most of the others (Piggott 1929-32 notebook, 55-8; Grinsell 1934, 244). It is possible therefore that some barrows had already been destroyed without record, especially if they were low-profile monuments or sited away from the then known sites.

3: Iping Zone

This block of 39km^2 contains four barrow groups and a pair, but one of the groups comprises four subgroups. They are described from west to east, as labelled in text Fig 18.10 and tabulated in text Table 18.3.

3a Goldrings group (3)

Trotton with Chithurst parish; private woodland and farmland; SU 8321/1-3; (text Fig 17.14a)

Three sites, two of them new, lie at the western end of the Iping constellation. The previously known site in Goldrings Warren lies at 65m OD near the southernmost point of a horseshoe ridge open towards the north. The small plateau behind has been a regimented coppice since at least the 1870s and it cannot be ruled out that other barrows were levelled when it was laid out. 8321/1 is a large mound, 35m across and 2.7m high and is estimated to be the largest in the group (text Fig 18.12c). A wide dished top suggests antiquarian attentions. It is set right on the brow where the ridge gives way to a steep south-west-facing slope and looks out towards a minor stream and the two new sites in and beside Goldrings Plantation. The one inside the plantation is now a very broad low mound about 46m across west-east and less north-south having been clipped by ploughing in the adjacent field to the north; it survives up to about 0.9m high. (text Fig 18.12b). The whole mound was probably under agriculture until sometime between 1808 and 1869. The overall profile is consonant with it having been denuded by early cultivation before being fossilised under the plantation. It sits astride a slight west-pointing spur under the escarpment of Goldrings Warren. The second site is nearby on the same spur, but is still under cultivation and now so reduced as not to be measurable.

3b Trotton Common group (6 or 7)

Borders of Trotton with Chithurst & Stedham with Iping parishes; land owned by the Sussex Wildlife Trust; SU 8421/1-5, 8422/1-2; (text Fig 17.14a)

Four barrows form a compact line on the brow of a SW-NE ridge – the eastern arm of the above-mentioned horseshoe ridge – and a pair lies 325m to the north-east where the same ridge has turned to the east. All lie close to 60m OD. Although the ridges do not block views in the opposite directions, the group of four barrows are offset south-eastwards seemingly to overlook the central basin of the common, whereas the pair is offset northwards as if to face the River Rother. However, the alignment of the foursome is skew to the ridge and lines up with the pair. The largest of the foursome has been considerably altered in shape, its top now forming

Figure 17 Barrows in the Iping constellation: a) Fitzhall Heath 8421/15; b) Fitzhall North 8521/2, showing scallop into one side and view south-west to the Downs; c) enclosure barrow Iping Common 8522/1 after clearance; d) Fitzhall Rough 8521/3

an approximate horseshoe. The eastern barrow of the pair, 8422/2, was sampled for pollen analysis without any accompanying excavation (Keatinge 1983, Site 2).

A further site may belong, 8421/1, having initially been graded 5 because it lies on the line of a bank alongside a deep ditch/hollow way. However, later re-evaluation suggested it merits grade 3. This would extend the close-set group into a slightly curving line.

3c-f Fitzhall group (18)

This set of 18 sites presents four obvious clusters, but since none are more than 265m from another they are treated as subgroups. The maximum gap *within* any subgroup is 235m, but most nearest neighbour distances are considerably smaller, down to 30m. Four previously recorded sites within this area have been rejected (8421/7, 9, 10 & 14).

3c Fitzhall Heath subgroup (6)

Stedham with Iping parish; land owned by the Sussex Wildlife Trust; 8421/6, 8, 11-13 &15; (text Fig 17.14a)

The six accepted sites, one newly suggested, are spread over 250m along a low west-east ridge lying in the middle of the central basin, its highest point just over 50m OD. Although the ridge barely exceeds 5m above the surrounding land, the barrows look surprisingly elevated from the low areas around. The easternmost site (8421/15), at the eastern end of the ridge, is low and not especially well defined (Fig 17a). It is of note that the far western end of the ridge terminates in a very low rounded knoll, in this case judged to be entirely natural. Nevertheless, there may have been an element of intended symmetry in this respect.

The Roman road from Novium (Chichester) to Calleva Atrebatum (Silchester) crosses the middle of the Common north-south and passes directly between two close-set barrows in this group (8421/11 & 13). The flanking ditches and banks may just impinge on the edges of those mounds, but a curious feature of the agger in between is that it is much enhanced relative to elsewhere and what would be considered normal in Roman road building (text Fig 18.12a). Since this enhancement is at the crest of the ridge and is relatively local, it could hardly be explained by the need for drainage. The conclusion must be that the road runs over a pre-existing mound that the Roman engineers saw no reason to totally level (8421/12). Instead they appear to have trimmed the sides with their ditches and partially spread the mound along the line of the road in order to grade out the inclines. The result is a long oval and ill-defined raised area constituting part of the agger.

3d Fitzhall North subgroup (3)

Stedham with Iping parish; land owned by the Sussex Wildlife Trust; SU 8521/1-2, 8522/1; (text Fig 17.14a)

A close-set pair of small barrows is set at 55m OD on the end of a spur projecting south from a plateau-like end to the main west-east ridge. They thus overlook the central basin and the Fitzhall Heath subgroup (Fig 17b). A newly discovered earthwork (8522/1) occupies the middle of the plateau, above 55m OD. It survives as a semi-circle, a bank external to a probable ditch and the interior at ground level (Fig 17c). The as-yet unproven northern half of the monument is deduced to have been erased by a later road-/drove-way running west-east across the heath.

3e Fitzhall Rough subgroup (6)

Stedham with Iping parish; private land; SU 8421/16-17, SU 8521/3-5, 8521/10; (text Fig 17.14a)

Five barrows form a curving west-east line on an east-pointing spur coming off a SW-NE ridge which lacks known barrows although it is mainly improved land within the Fitzhall Estate (since at least the 1870s). The spur reaches 55m OD, a little lower than the main ridge, and its end has been truncated by Minsted Quarry. The Fitzhall Rough barrows (Fig 17d) are ambiguous in their outlook since the sites lie on or very close to the asymmetrically profiled ridge crest. A late-discovered but probably good small barrow lies on the lower ground to the south (8521/10).

3f Mitchell's Common (Minsted Quarry) subgroup (4 or 5)

Stedham with Iping parish; land now lost to Minsted Quarry; SU 8521/6-9, 8521/11; (text Fig 17.14a)

Four or more barrows, not all certain, were recorded in the area of the quarry prior to progressive destruction. Original ground surface morphology can only be deduced from early OS maps. The contours on the 1958 edition 1:25000 map show that this string of barrows occupied a small west-east stream valley, but were on a slight east-pointing spur at about 45-50m OD. The barrows appear to have been two close-set pairs separated by about 235m. The last barrow to be destroyed (8521/6) was fully excavated by Peter Drewett and the Sussex Archaeological Field Unit in 1973 (Drewett 1975; see Chapter 19).

Surviving just outside the north-west edge of the quarry is a non-circular but fairly substantial mound (8521/11; medium volume). This has been graded 5 because of its shape, but might well be a barrow modified on two sides. If so, it would form a link between this subgroup and those of Fitzhall Heath (3c) and Fitzhall North (3d).

3g Midhurst Common pair (2)

Midhurst parish; common land and quarry edge; SU 8721/1-2

Two barrows are recorded on Midhurst Common, 280m apart and 2km from the easternmost of the Mitchell's Common subgroup; neither survives, although one appears to have been quarried away as recently as 1973-79. The quarry has altered the landform locally, but the sites nevertheless had lain on low ground at about 45-50m OD beneath a 74m OD ridge to the north and above a SW-NE stream valley to the south-east which feeds into the Rother at Midhurst. In detail, they appear to flank a small embayment showing on the 1958 edition of the 1:25000 map where lies Midhurst railway station and associated rail yards (hence possible implications for topographic modification).

3h Pound Common group (7)

Woolbeding parish; National Trust; SU 8624/1-2, 4, 6-7; 8725/1-2

Seven sites have been recognised in recent years on Pound Common, part of a prominent upland block of Hythe and Easebourne sandstones jutting into The Weald just north of the Rother. They are all on the unimproved land which has a ragged shape due to the encroachment of medieval stone-walled fields (the 'Pounds') from different sides. Three of the sites were surveyed by Tom Dommett shortly after their recognition (Dommett 2013) and four more have been added by the Regional Barrow Survey. There is also a grade 5 site (8724/1), which would make eight in total. One of two possible enclosure barrows had previously been tentatively identified as a medieval stock pound (Mayes 1999), but we consider this to be unlikely.

From a steep scarp at its northern end, the land descends steadily from 207 to 54m OD over a distance of three kilometres before reaching the Rother. The sites occupy the middle part of the ridge between 165m and 90m OD and are spread over 1.25km. The northernmost (8725/1) is convincing as an artificial mound, but the location is said to be shown on a 1724 estate map as a Beacon site (West Sussex

Record Office Add Mss 13,419 & 13,420 ff.5-6; not seen); the position is considerably below the summit, but if it was that of a beacon, this could have been opportunistic use of a pre-existing barrow. This site lies on the east side of a dry valley running SSW. A further four mounds lie on its west side, the last two a close-set pair (8624/1-2). A third site surveyed by Dommett next to this pair is extremely low, probably less than 0.1m (8624/3) and, given an environment that has probably seen little cultivation, if any, it cannot have been much higher. An extremely low barrow cannot be ruled out, but cannot be considered likely on surface evidence alone. Nevertheless, it was picked out in the geophysical survey and could alternatively be the vestige of some other ancient structure such as a decayed and collapsed roundhouse.

Still lower down the dry valley and flanking either side are two rather unusual sites, both circular enclosures without any break and therefore potential enclosure barrows (text Fig 18.14). That on the west bank (8624/4) has a stone-rich bank conformable with the slope, but its interior is terraced into the slope, resulting in the back (N) wall being much higher than elsewhere (text Fig 16.16i). There is a small tump offset to the north. The east-bank site (8624/7) is different in that the bank crest is not as sloping as the falling ground, hence the bank is more substantial on the downslope side; it encloses a flattish centre which may also be terraced into the slope a little (text Fig 16.16j). The diameter of the bank crest is smaller than the complementary site, averaging 16.5m rather than 20m. This one might have been dismissed as a pond were it not for the fact that it is perched on the edge of a plateau-like dip-slope above a steep-sided dry valley. Its north side appears later to have been incorporated into a field wall and a lynchet partially overlies the east-north-east side. Two mature oaks growing on the bank are estimated to be approaching 200 years and 250 years old.

4: Graffham Zone

The defined zone covers 29.25km^2, but two outlying sites (4a & 4b) lie well to the north (2.5km & 1.65 km respectively). There are three singleton barrows, all north of the River Rother, and six groups, all south of it. They are described from north to south and then west to east, as labelled in text Fig 18.15 and tabulated in text Table 18.4.

4a Grevatt's Common singleton (1)

Easebourne parish; private woodland; 9125/1

This new site is apparently very isolated sitting high on the Hythe dip slope at 185m OD, not far from the ridge top (Fig 18a). It sits at the head of a long dry valley initially flowing south-westwards. It is broad but not high (32m x 0.9m) and this could be due to plough-denudation prior to the area being turned over to chestnut coppice; Lidar shows clear evidence for a pre-afforestation field system immediately to W and SE of the site, so it is possible that agriculture once extended this far from Verdley Farm (lies to W) and Vining Farm (to SE). Sizable mounds nearby to the north and east are judged instead to be natural knolls.

4b Sowter's Gate singleton (1)

Easebourne parish; private farmland; 9024/1

This new site also seems rather isolated, 1.25km from that on Grevatt's Common and 2.25km from the next nearest site to the south (Cowdray Park), except that there is a grade 5 site nearby (9024/2). 9024/1 looks good as a plough-denuded site, the land having been within fieldscape since at least the 1870s. The remnant mound is about 0.5m high and a relative concentration of sandstone blocks was noted on its surface. It may have been better preserved in earlier agricultural times due to lying at a field junction that has since been removed; Lidar suggests three ploughed out boundaries met at or near the mound (Figs 18b-c). 9024/2 lies 80m to the NNW, a concentration of sandstone associated with a very slight rise; no shape could be defined, hence grade 5, but it may be the last remains of another barrow.

9024/1 sits on the middle part of the Hythe dip slope at 125m OD, a comparable position to the Pound Common sites to the west (Zone 3). However, it contrasts in being placed within a shallow dry valley, rather than on a flanking ridge.

4c Cowdray Park singleton (1)

Easebourne parish; private estate; 9021/1

The site at Cowdray Park Petworth Gate is an enclosure barrow with bank external to ditch (text Fig 18.17c). At around 46-47m maximum diameter it is one of the largest in the region (text Fig 16.18). It sits tightly within a triangular plot with recently planted trees, its southern edge having been clipped by the fence-line and the segment of earthwork in the now ploughed field beyond having been almost erased. The land was traditionally parkland associated with Cowdray House and is shown as such on OS maps until at least the 1:25000 1958 edition (though not fully revised). The triangular plot had been fenced off by 2001 (Google Earth), seemingly to create a plantation; young trees in grid pattern are visible in places. In the field to the south Lidar data shows ridge-and-furrow in two parcels with different alignments, but these traces do not reach the triangular plot. The current regime of cultivation had presumably not been long in operation here when the Lidar data were captured for otherwise the ridge-and-furrow would have been totally levelled.

The triangle of land also holds a larger but penannular broad ditch, the circuit of which is interrupted on the west-south-west by a gently dished area (text Fig 18.17c). Its ditch has been overlaid by a roadside boundary on the north-north-west side and the implication is that this too is

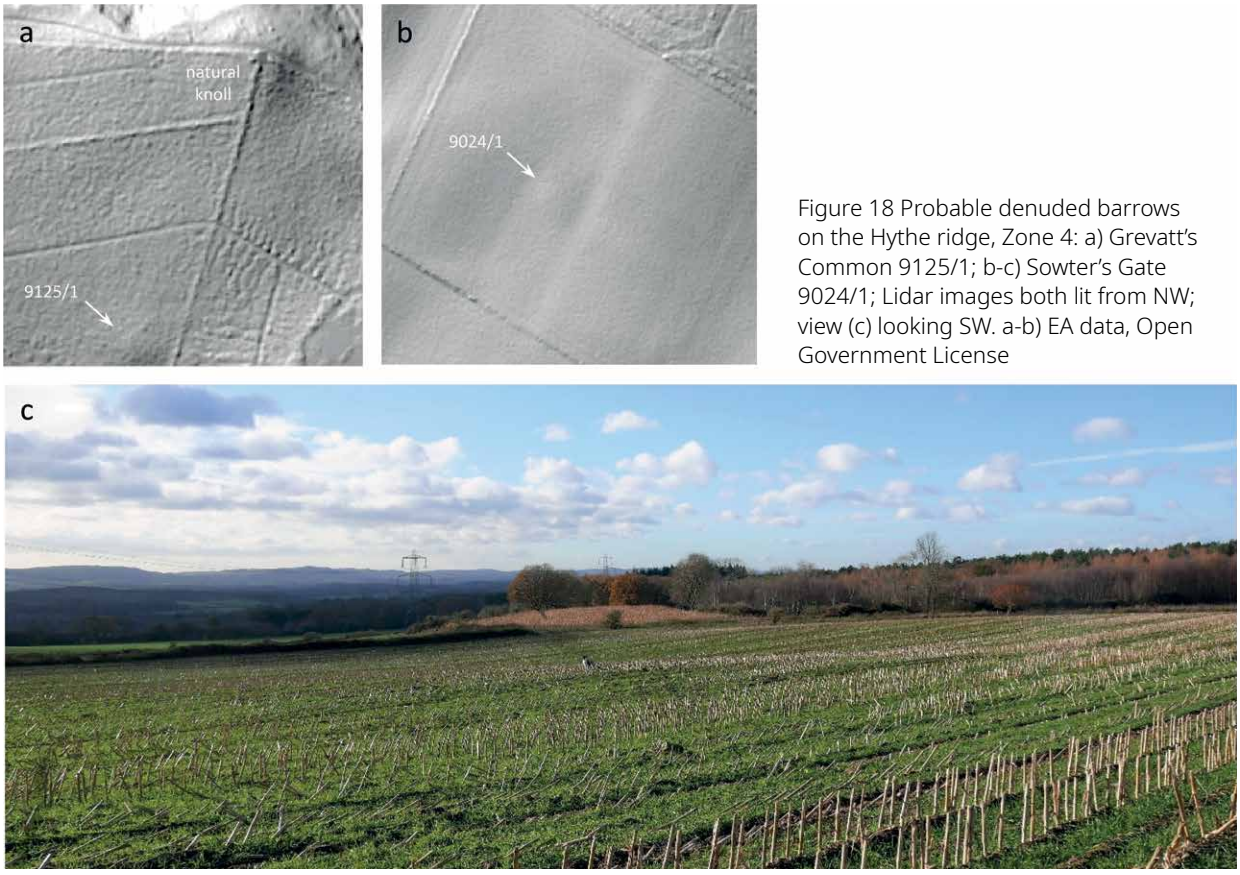


Figure 18 Probable denuded barrows on the Hythe ridge, Zone 4: a) Grevatt's Common 9125/1; b-c) Sowter's Gate 9024/1; Lidar images both lit from NW; view (c) looking SW. a-b) EA data, Open Government License

not a recent feature. The penannular ditch is egg-shaped rather than circular and its outer lip is about 80m diameter maximum. This does not seem to be a conventional barrow, but may well be an ancient site. Neither enclosure is shown on any maps or plans known to us.

4d Heyshott Common group (9)

Heyshott parish; private heathland – 8919/4-5 & 7; private woodland and heathland (Access Land) – 8919/1-3, 9019/1-3; (text Fig 17.16c)

Eight sites form a fairly tight cluster on the plateau of Heyshott Common, the ninth being in the valley a little to the east. A further 'Tumulus' recorded on early OS maps has been discounted (9019/4); ground inspection suggests there is unlikely to be a round barrow amongst the various raised areas of linear banks in this location. All but one of the accepted sites are mound barrows, the exception being, potentially, an enclosure barrow with recessed interior (Starve Acre Copse, 8919/7) similar to Wessex pond barrows. This last identification must remain tentative, but one edge of the 'pond' is overlain by a wood-bank already shown on the earliest 6-inch OS maps (Fig 19). The site is contiguous with a mound barrow (8919/5), a relationship repeated at Hacking Copse (Zone 13) where the 'pond barrow' identification is more secure. Of further interest at Starve Acre Copse is a long, low and gently curving causeway running north-east from the barrow pair; this might well be natural, but still gives the sense of an approach route (Fig 19).

The higher elevation sites are concentrated towards the southern edge of the plateau atop a steep bluff and therefore appear to look across the Gault vale towards the Chalk, but one lies on the eastern brow (9019/2) and instead overlooks the head of a small tributary feeding quickly into the Heyshott Stream. A new mound barrow about 16.5m in diameter and 0.9m high was discovered right alongside the upper reaches of that stream in Cockrell's Pond Copse (9019/3; Fig 20b) and may at one time have sat on an island within a bifurcated channel.

4e Hoyle dispersed group (3)

Heyshott and Graffham parishes; private equestrian land – 9018/1; Open Access land – 9119/1-2; (text Fig 17.25c)

Three uncertain sites (grade 3), all potential mound barrows, are loosely grouped around the hill on the opposite side of the stream head from Heyshott plateau. They have been treated as a 'dispersed group', lying in a triangle with sides of 475m, 605m and 605m; however, the Heyshott and Ambersham Common East groups are only 560m and 570m away from one or another member of this group. Least certain is the south-westerly site at Hoyle Farm (9018/1); it is one of two adjacent knolls on an oval hillock, the other of

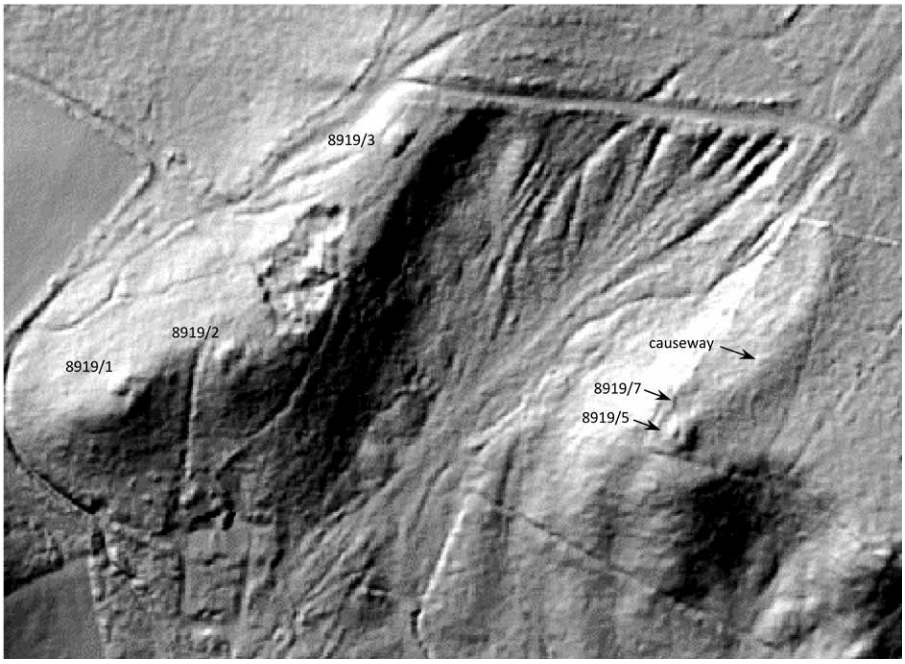


Figure 19 Part of the Heyshott Common group, Lidar lit from NW, showing a probably natural causeway running N from barrow pair 8919/5 & 7. EA data, Open Government License

Figure 20 Barrows at: a) Hoyle Farm 9018/1; b) Cockrell's Pond Copse 9013/3, beside a stream (to right); c) Ambersham Common 9119/1, a steep bluff to the stream is to the right

Figure 21 Barrows on Graffham Common West: a) 9218/1; b) 9218/2; c) 9218/1-3, Lidar lit from NW, EA data, Open Government License

which looks natural; however the site listed seems to have a slight inflexion which might define a built mound (Fig 20a).

The easterly site (9119/1) is a substantial and slightly oval mound, *c.* 27 x 21m and 3m high, that is difficult to explain as the result of past earth movement (there is no major quarrying in the immediate vicinity) and, if it is geological, it is unusual for the area. On the other hand, if it is a barrow, it is unusual in its high relative height (0.125; text Figs 16.4b & 16.23). It is perched above a steep bluff of several metres running down to the Selham Stream (Fig 20c). A ditch-and-bank approaching from the north-east curls to run up onto the mound. Three smaller swellings (not on the register) can be seen on Lidar images in a cluster to the north on Heyshott Common; they are under thick heather but seem quite diffuse in an area that is unlikely ever to have been ploughed.

4f Ambersham Common East group (4)

Graffham parish; Cowdray Trust & the Dickinson Trust; 9119/3-4, 9219/1-2; (text Fig 17.25c)

Four sites, all newly discovered, lie in a spaced west-east line spanning 800m. The two in the west are close together and are both enclosure barrows with very slight earthworks (9119/3 & 4); the southerly one would not have been detected other than it showed clearly on Google Earth images in 2012 and 2013 after heather cutting (text Fig 18.17a). These lie high on a gentle slope running north-eastwards into the Rother Valley. The two mound sites instead appear to frame the middle part of the Selham Stream valley. That on the west bank (9219/1; text Fig 18.18a) in fact sits close to a spring feeding a very short tributary stream. That on the east bank (9219/2; text Fig 18.18b) occupies a slight promontory pointing west towards the Selham Stream. These are the two largest mounds by volume in the Lower Rother Valley (text Fig 17.33).

4g Graffham Common West group (3)

Graffham parish; private woodland – 9218/1 & 3; private garden – 9218/2

This small cluster of three mounds was previously unknown. Two are grade 2, the uncertainty regarding the third (9218/2) being because its existence is dependent on report from a former house owner; a current sizable mound, enlarged by spoil from the excavation of an ornamental pond in front of it, is said to conceal a pre-existing mound (Fig 21b). Both this one and 9218/1 (Fig 21a) are placed towards the edge of a plateau with a steep scarp slope to the south-east; in both cases they are set back a little from the brow (Fig 21c), a detailed position seen for other mounds in this zone.

The third site (9218/3) is instead set low on the slope above which the other two sit. It is a small but distinct circular mound (Fig 21c) unlikely to be related to outbuildings of Wiblings Farm (probably barns) that once stood nearby. It is only about 50m from a small tributary of the Graffham stream. It is possible there was once a second small mound alongside (grade 5, 9218/4) – as reported by the gardener of the property – but if so only a small elongate hump has survived recent forestry operations.

Figure 22 Barrows and enclosures in the Gallows Hill group: a) 9319/5 in a small-scale quarried zone; a larger quarry cuts in on the left; b) 9319/4 with bank of appended enclosure running up to or under the mound edge; c) the bluff below 9319/4 on which are eroded traces of the enclosure bank marked by the ranging poles

4h Gallows Hill group (10)

Graffham and Lodsworth parishes; private woodland – 9319/1-3 & 6-9, 9419/1; Sussex Wildlife Trust – 9319/4-5; (text Fig 17.16d)

Gallows Hill is probably the best known barrow cemetery in Zone 4. They were actually first depicted on the Mitford Estate map of 1629 (West Sussex Record Office, Mitford Ms 998). All are mound barrows and all but one assessed as grade 2. The grade 3 site (9319/5) lies in a quarry-scarred area. Most of the craters are of only modest size, with spoil heaps in between (Fig 22a). A larger quarry cut into the ridge crest from the north-east probably truncates the very edge of a near-circular mound – the proposed barrow. Most of the spoil from the quarry has clearly been

Figure 23 Barrows in the Lavington Common group: a) Lavington Common 9418/2; b) three of a cluster of four, Lavington Common 9418/1-3; c) Lavington Common 9418/10; d) Barnett's Wood 9418/6

shovelled downslope. Two more sites are new, one having been discovered not long before our survey by Chichester District Archaeological Society (unpublished report).

Eight sites are strung out along the WNW-ESE aligned Gallows Hill ridge; five are perched on the brow of the steep north-east scarp, whilst a tight cluster of three at the western end sits at the top of the more moderate south-west slope. The scarp slope overlooks a basin containing patches of wetland today (and since at least 1629) and the remaining two sites in Fitzlea Wood (9319/9 & 9419/1) sit on the brow of a hill opposite, facing south-west. The basin forms a corridor between the Selham Stream to the north-west and the Graffham Stream to the south-east. The range of altitudes is between 40 and 65m OD.

Two sites are of interest in having enclosures around or appended to them. That they are connected to one another is suggested by common internal banks, similar earthwork scale and similar dimensions, although one is oval the other near circular. In the case of Gallows Hill 9319/4, an oval enclosure formed of a bank with outer ditch *c.* 60m (WNW-ESE) by 40m incorporates the mound into its east end; the bank butts up to, or runs beneath the east edge of the mound (Fig 22b). Most of the enclosure (30m N-S) occupies the level land on the ridge top, but it had not previously been recognised that the bank can just be traced running over the brow onto and along the 30° scarp slope (Fig 22c). There is no obvious entrance, but the earthwork has been destroyed by machinery alongside the ridge crest at either end. It is possible that the earthwork enclosed the gallows site enshrined in the hill's name, but that would not explain the second example which rings around the mound of Fitzlea Wood 9319/9 on the opposite side of the basin. That mound has a spur projecting south-eastwards which is lower than the mound where they meet and 13.5m broad here; it tapers out some 20m away. Whether this is an addition to the round mound or

Figure 24 Possible low barrow under the road leading into Petworth Park from the south-west gate, 9621/1 (edges indicated by arrows)

a pre-existing feature cannot be determined. The enclosing earthwork, bank inside ditch, is close to circular, largely taking in the combined mounds but seemingly cutting off the last 4.5m of the spur. It was not traceable throughout the whole circuit, the bank in particular disappearing towards the spur side (SE). The bank was separated from the mound base by a berm of variable width, narrowest at the north-west end; here the bank crest was about 3.5m from the round mound base. If the spur is the earliest feature/monument, then the enclosure could have been contemporary with the round mound and designed to take in the spur but in the process clipping the almost imperceptible tail end.

These two enclosure sites flank the broad north-west end of the basin facing 'Selham House'. However, this was an 18th-century watermill rather than a grand house and the enclosures should not necessarily be regarded as romantic-era landscaping features. The Fitzlea Wood enclosure is depicted as an annular line on the OS 6-inch map of 1880, but it is surrounded by woodland already at that date, whereas Budgen's 1808-9 map (British Library, OSD Midhurst 8) shows only the boundary between a field and heathland crossing this spot, so it is hard to know whether there was ever a free-standing clump of trees here.

4i Lavington Common group (14)

East Lavington parish; National Trust – 9418/1-5 & 9-11, 9519/1; private woodland – 9318/2-3, 9418/6-8; (text Fig 17.21a)

The largest Zone 4 group, 14 barrows (one site having been rejected, 9318/1), lies on and around Lavington Common on land between the Graffham Stream and the Kilsham Stream (Fig 23). They tend to occur in small clusters of two to four barrows or singly, but gaps in between are never more than *c.* 400m. The most north-westerly barrow, in Barnett's Wood (Fig 23d), is just half a kilometre from the Gallows Hill group. Only one of the sites is newly discovered (9318/3). All are mound barrows and all but four of grade 2.

The sites survive on ridges and spurs, but at modest elevations between 32 and 46m OD. Most form a horseshoe around a tiny tributary valley. The site at Little Bury (9318/1) would have added to this arrangement, but this prominent and asymmetric little knoll (text Fig 16.6a) shows no inflexion indicative of having an artificial addition. Only one accepted site (9519/1) lies outside the horseshoe to the north-east, but is high on a slope descending into the valley. In the valley itself, close to the stream is a curious low, broad and near circular knoll, about 65 by 55m across and 1.5m high (SU 94180 18630; text Fig 16.6d); it is probably natural, but may have seemed to be an ancient barrow to Bronze Age people.

5: Barlavington Zone

Fifty-three sites are now recorded for this block of 29.25km^2 flanking the lowest reaches of the Rother. They are described from west to east north of the River Rother, then again to its south, as labelled in text Fig 18.19 and tabulated in text Table 18.5.

5a Petworth Park pair (2)

Petworth parish; National Trust; 9621/1-2

The large area of parkland associated with Petworth House, landscape designed by Capability Brown in the mid-18th century, contains just two grade 3 sites despite the stability of land use since then. One (9621/1) is now a very low platform-like mound, but since this is crossed by the road entering the SW gate, it would appear to be earlier and could have been modified by its construction (Fig 24). The other has a more conventional domed profile, but is small and low.

Figure 25 Barrows in the Goanah Farm group: a) 9822/3, on north slope; b) 9822/4, on summit; c) 9822/5, on summit

Although these are less certain sites, it may be significant that they occupy middling slopes (54 and 59m OD) of the Hythe dip-slope near the head of a dry valley, a position seen for sites on Pound Common in Zone 3 and the Sowter's Gate outlier to Zone 4. The Petworth Park sites, just 140m from one another, are relatively isolated from other barrows in the zone.

5b Goanah Farm group (11)

Petworth parish; private farmland (equestrian); 9821/1-5, 9822/1-6; (text Fig 17.17d)

A tight cluster of up to 11 mound barrows have been identified amidst a surviving ancient field system on a prominent promontory projecting towards the Haslingbourne Stream as its valley penetrates the scarp slope of the Hythe ridge. Some occupy the summit of the promontory at 75m OD and others spread west-south-west down its long axis to 45m OD; two are on the northern slope (Fig 25). The stream is a short distance beyond at 25m OD and, although it starts 3km further north, springs issue from all sides of the promontory. Nearest neighbour distances are up to 140m, there is a larger gap of 240m in the middle and the span of the whole group is 520m.

The fossilised field system (text Fig 20.13), which includes some sizable lynchets (Figs 26a-b), has evidently engulfed some presumably earlier barrows in those lynchets. These are deduced from the combination of a distinct upward swelling of the lynchet top (text Fig 20.14a) and a convex projection forwards, with support coming from geophysical survey of one (text Fig 18.21). It is possible that others in comparable positions have been totally engulfed and thus are not discernible on the ground. A few sites are close to boundaries, but at least two are within fields. In addition to the lynchet-defined field system, there are traces of what appears to be overlying ridge-and-furrow which suggests that there has been little cultivation since medieval times. Indeed,

Figure 26 Goanah Farm lynchets and slope-cut platform: a) lynchets on the promontory viewed from the west; b) a large lynchet which runs obliquely through the hedge-line; the figures are at top and bottom; c) slope-cut platform (marked by ranging poles) looking west across Goanah stream valley; the summit of the promontory is on the near skyline

the ridge-and-furrow may not have been in use for long. There are possible Neolithic oval barrows both within the group (9822/6) and to the south-east across the tiny Goanah Valley (9821/7) (Chapter 20). Possible slope-cut house platforms are present both on the promontory and in the valley on the opposite side of the stream (Fig 26c; text Figs 20.13 & 20.14b).

5c Brinksole Heath group (3)

Petworth parish; Open Access land; 9921/1-3; (text Fig 17.17d)

550m to the east of the Goanah Farm group and separated from it by an upward step in the ridge is a group of three sites. The nearest is a long-suspected mound barrow immediately alongside Goanah Lodges (Fig 27a); at short successive intervals to the east are two potential enclosure barrows, both with bank internal to ditch (Fig 27b). This line of three lies high on the Hythe dip slope between 106 and 114m OD (locally the summit is at 133m OD). The line is oblique to the contours and aligns instead with the head of the Goanah Valley to the west just discussed. The alignment of these three sites along the west-east route-way that passed between the two Goanah Lodges in the late 19th century could suggest wider landscaping associated with Petworth House and Park; the house can be seen looking west through the gap between the lodges. However, the mound (9921/1) is tucked immediately behind one of the lodges and would not have been visible from the house or to those

Figure 27 a) Brinksole Heath mound barrow 9921/1; b) Brinksole Heath 9921/1 and enclosure barrow 9921/2, Lidar lit from NW (the third site does not show under vegetation); c-d) Shoveltree Hanger barrows, 9619/2-3; Lidar lit from NE. b-c) EA data, Open Government License

journeying out from Petworth until they passed between the lodges. Other factors relating to this alignment are discussed in Chapter 16.

5d Shoveltree Hanger pair (2)

Petworth parish; private farmland; 9619/2-3

Two circular swellings noted on Lidar are observable on the ground in a field lying above Shoveltree Hanger, a steep bluff descending to the River Rother (Figs 27c-d). They look plausible as heavily denuded barrows. While they lie close to the cutting for the Petersfield to Pulborough branch railway (disused), there is no evidence otherwise for flanking dumps of upcast from that cutting, nor is their shape easily explained thus. There is a third, even more gentle rise just to the west (9619/1) which has been graded 5 because of its slightness and evidently having been truncated by the cutting, but it too might be the last vestige of mound. These sites lie at 36m OD.

Figure 28 Barrows in the Duncton Common group: a) Duncton Common 9618/1; b) 9618/4; c) 9618/10; d) denuded bank flanking barrow group on north side; e) outlying barrow in Burton Park, 'Mother Bucler's Grave', 9718/1

5e Duncton Common (Heath End) group (14)

Duncton and Barlavington parishes; private sandpit – 9618/1-13; private farmland (equestrian) – 9718/1; (text Fig 17.13d)

Twelve of these sites form a closely set linear group along a west-east ridge at altitudes of between 38 and 46m OD, one (9618/13) was located before destruction about 250m SE on lower ground and the last (9718/1) is an outlier on the summit of a low hill (47m OD) 650m further east. The main group includes ten long-known mound barrows spanning a total distance of only 200m (Fig 28a-c). However, this survey noted two low platform-like rises (9618/11-12) between two pairs of mounds; while these might be later features, it is hard to attribute a function to them and they should be considered as potentially associated with the

Figure 29 Barrows in the Tooth's Plantation group: a) Tooth's Plantation 9816/2 from the east; b) Tooth's Plantation 9816/2 from the west with 9816/3 behind left; c) Welchs Common 9817/1, truncated by deep ditch behind; d) The Warren 9817/4, truncated by ditch emerging from behind left

barrow cemetery. A high-resolution topographic survey might illuminate their form better. The ridge occupied by this cemetery is now enhanced by sand extraction to south, east and north and contours are taken from earlier OS maps (text Fig 17.13d). The northern part of the quarry has been re-landscaped and re-vegetated post-extraction. Although these sites form a line, it is somewhat wiggly. The group is at least partially enclosed by an extremely denuded earthwork (Fig 28d).

The site lying under this ridge (9618/13) was discovered during an archaeological evaluation by Southern Archaeology ahead of sand extraction and survived only as sub-surface features, in particular a ring-ditch and a near-central rectangular pit aligned

Figure 30 Barrows in the Coates Park group: a) Lidar lit from NW showing the positions of Coates Park 9817/2-3 at the ends of promontories overlooking the confluence of the Sutton End Stream with the Rother; b) 9817/2. a) EA data, Open Government License

NW-SE (Johnson 2002, 10; text Fig 19.3; see also App 19.2). There was evidence, in the form of a rise in the subsoil, to suggest there had once been a mound, the loss of which could be due to past cultivation as the site lay in a field prior to sand quarrying. The field had existed since at least 1875, but was not yet present in 1837 when the Duncton Tithe map was drawn up (Johnson 2002). The pit (feature 13) contained three barbed-and-tanged arrowheads, a denticulated implement, a notched flake and eight unretouched flint flakes (Priestley-Bell in Johnson 2002, 14-5 table 1; text Fig 19.3); some if not all of these finds are likely in this context to be grave goods; a totally decayed inhumation is entirely feasible in these acidic conditions. It is possible that further burial sites once existed off the ridge in areas that had not received archaeological evaluation.

The outlying mound barrow (9718/1; Fig 28e) can probably be identified as the site once known as 'Mother Bucler's grave' (HER entry CD1938). It is the only site recognised within the former parkland of Burton Park.

5f Tooth's Plantation group (5)

Sutton and Barlavington parishes; private farmland (ex-woodland) – 9816/1-3; Sussex Wildlife Trust – 9817/4; private heathland – 9817/1; (text Fig 17.25a)

All five sites in this group are new, the two more northerly ones being of grade 2, the others grade 3, but all conform well in shape and dimensions to Bronze Age barrows. Two of the latter (9816/2-3; Figs 29a-b) have an interesting relationship to the local topography and might conceivably be unusual natural mounds. They sit side by side at the foot of a small bluff forming an embayment close to the Sutton End Stream; their sides run into gullies to east and west and the north side of each is defined by a saddle before the ground rises. In the direction of the stream (SE) the westerly mound has a short spur of c.6m which distorts its otherwise near-circular form. If these are man-made round mounds, they appear to have been built on top of two low spurs running out from the bluff towards the stream.

A third site at Tooth's Plantation also lies close to the stream and all three are at around 20m OD (text Fig 17.25a). The other two are more detached, that at The Warren (9817/4; Fig 29d) 390m north-west and that at Welch's Common (9817/1; Fig 29c) 565m further north and thus an 'outlier'. These last two sites lie on the interfluve between the Sutton End and Burton Streams, but are nevertheless on low-ground (19m and 26m OD respectively) flanking a low belt linking the two tributaries. The Welch's Common site is actually a similar distance (560m) from the nearest member of the Coates Park group.

5g Coates Park group (8)

Fittleworth parish; private farmland – 9817/5, 9818/1, 9917/5, 9918/1-3; private former parkland – 9817/2-3; (text Fig 17.16b)

East of the Welch's Common mound is the Coates Park group of eight sites with a total span of 900m, all again previously unrecorded; three are mounds and five ring-ditches. The latter group of five, identified recently from the air by Damian Grady (Historic England), is well clustered and occupies the valley floor (10-13m OD) just south of the River Rother (text Fig 16.1). A little to the south the land rises suddenly by 15m or more, this bluff being notched by dry-valleys to create a series of mini-promontories. The two westernmost promontories (28m

Figure 31 Barrows in the Sutton Common group: a) 9916/1, small mound in the valley; b) 9916/3, on the E ridge; c) 9917/4, at the apex of the valley

and 30m OD) each have a grade 2 mound on top (Fig 30), and one at the east end (24m OD) has a mound of grade 3. There appear to be none in the middle part of the bluff directly overlooking the ring-ditches, and the western two promontory-nose sites in fact overlook the Sutton End Stream more than the River Rother (text Fig 17.16b).

5h Sutton Common group (8)

Sutton, Bury and Fittleworth parishes; heathland and heath-woodland; 9916/1-4, 9917/1-4; (text Fig 17.21b)

This is a reasonably tight cluster of sites, maximum span of 465m, separated from the Coates Park group by some 600m. Six sites were previously recorded but two more (9916/1-2) have been found on the same triangular block of marginal land. The topographic focus of this group is a dry valley (albeit containing a small pond) opening south-westwards (text Fig 17.21b). One barrow lies more or less on the axis of the valley at its head (9917/4), three lie on the plateau edge on the north side and two on the spine of a ridge on the east side (Fig 31). These are all at elevations close to 35m OD, whereas the two new sites lie on lower ground, 23-24m OD, on the south-east slope of the valley and seem to close off the 'V' formation in this direction.

6: Liphook Zone

Just eight sites are dispersed across this 27.5km^2 zone crossed by River Wey headwaters and a ninth, a possible burial without evidence for a barrow, lies just

Figure 32 Wheatsheaf Common barrow 8330/2, laterally truncated to W (behind trees to the right)

outside to the east (6e). They comprise a group, a pair and three singletons, and are described from south-west to north-east, as labelled in text Fig 18.22 and tabulated in text Table 18.6.

6a Wheatsheaf Common pair (2)

Bramshott and Liphook Parish; Liphook Golf Club; 8330/1-2

A long-known and fairly substantial mound accepted as a barrow but modified to serve as a golf tee (text Fig 18.24b) is now joined by a grade 3 site in a scrub margin of the golf course (Fig 32; 8330/2). The additional mound, 140m away, is currently D-shaped, but has plausibly been truncated by trackways on the north-west side leaving a little over half extant. A 1949 observation (HER entry) on the larger mound says it was surrounded by a drystone wall, but this is no longer in evidence. These sites lie amongst springheads flowing north-west off the Hythe dip slope into the Wey catchment.

6b Sunnyside Farm singleton (1)

Bramshott and Liphook Parish; private land – 8232/1

This destroyed or levelled site was previously recorded as a roughly circular mound. It is unclear from the HER entry whether a mound remnant or ring-ditch was observed on AP; nor can it be known whether anything still survives beneath the made-up landscaping next to a Motel.

6c The Pool House, singleton (1)

Bramshott and Liphook Parish; private garden – 8333/1

Overlooking the Passfield headwater of the Wey, 280m downstream from the confluence with the Cooper stream, a steep-sided, flat topped mound is integrated into a formal garden. It has been marked on maps since 1869 (1st ed. 25-inch OS) and the top is planted with a ring of mature yew trees. The current garden was designed by Gertrude Jekyll early in the 20th century, but there may have been a preceding formal garden. The mound stands at the narrow south-east end of a long rectangular plot made into a terrace with a high wall down to the river; it is more or less on the terrace's long axis and is up against a stone wall which has an apsidal recess to skirt its foot. This could all suggest an integrated design. Outside to the south-east is a fairly steep slope descending to the river and, although its steepness must have lessened north-eastwards towards the house, the creation of a level terrace would almost certainly have needed to cut away some material from the upslope side of a pre-existing mound and deposit some on its downslope side. If the mound was already present, its foot would thus have been modified to be consonant with the new terrace profile. These uncertainties lead to it being graded 3.

6d Bramshott Common group (4)

Bramshott and Liphook Parish; MoD – 8533/1-3; National Trust – 8634/1; (text Fig 17.25b)

2.25km east of the Pool House singleton, four sites were discovered during the *People of the Heath* survey in 2017 on and around Bramshott Common. All are close to the deeply incised Cooper Stream valley, today home to the string of ponds known as Waggoners Wells. Two of three sites on the south side are together at 148m OD on a plateau edge above a tributary dry valley. A low mound (8533/3) impinges on the west bank of the potential enclosure barrow (8533/1), only the northern half of which survives as a very weathered bank with internal ditch; it suggests an enclosure of *c.* 70m outermost diameter with an interior of *c.* 45m diameter. Truncation of the southern half is likely to have been caused by the Canadian Army stationed on the common during WWI and WWII. On the opposite side of the dry valley 380m east-north-east, a well-defined ring bank with external ditch is perched on a steep slope of 22° (Kent's Hill 8533/2; text Fig 18.24a). The ditch is more pronounced on the upside of the barrow possibly having suffered erosion from the run-off of water diverted to either side, with soil being deposited further downslope. Indeed, both bank and ditch lose definition on the downslope side. The barrow overlooks a route-way shown on the 1860s

Figure 33 Zone 7 barrows: a) Black Down mound 9229/2 amidst small-scale quarrying; b-c) Abesters Copse 9229/3; d) enclosure barrow at Planted Field, Valewood 9030/1; the prominent mound-like feature impinging on it is modern

25-inch OS map leading from Bramshott Chase to Coopers Stream valley.

690m to the north-east on Ludshott Common is a low rise (8634/1) about 10m in diameter with diffuse edges and 0.4m high. It is situated at 162m OD on the edge of a plateau directly overlooking the Cooper Stream. A further two barrows lie on Ludshott Common (8435/1; 8535/1) outside the intensive study area and 1.5km from 8634/1.

6e Hammer Ridge burial without barrow (1)

Linchmere parish; private housing; 8732/1

A Collared Urn was found in 1954 during the digging of house foundations 1 foot (0.3m) deep (Lowther 1957; Longworth 1984, 276 no 1561, pl 20d; text Fig 19.7a). Although no bones were noted at the time, Haslemere Museum records suggest some were associated.

7: Black Down Zone

A small area of 16km^2 in the centre-north of the study area has been defined to contain a modest number of sites relatively isolated from all others. They comprise one group and two singletons and are described from north-west to south-east, as labelled in text Fig 18.25 and tabulated in text Table 18.7.

7a Planted Field, Valewood singleton (1)

Lurgashall parish; private woodland; 9030/1

This is a potential enclosure barrow, adding to the three examples on the southern edge of Black Down. Only a well denuded bank can be clearly discerned (Fig 33d), its crest averaging 18.5m diameter, thus similar in size to the Black Down sites. It sits on a small west-facing and slightly elevated lobe on the edge of a narrow bench in the Hythe dip slope and overlooks a steep descent into the Valewood headstream valley of the Wey.

7b Wadesmarsh Farm singleton (1)

Fernhurst parish; private farmland; 9030/2

On the opposite side of the Valewood valley and 800m to the south-west of 9030/1 is a grade 3 mound barrow. An apparently near-circular mound has been incorporated into an old north-south field bank, mainly projecting from the east side (text Fig 18.28a). In fact, there is another rise of similar size, but far more disturbed, a short distance to the south and attached to the same boundary; this has been graded 5 (9030/3) because of its poor condition, but might be the remains of a second barrow.

These sites lie in a narrow saddle within the ridge flanking the west side of the Valewood Valley (text Fig 18.25). The ridge rises above the saddle by 45m to the north and 65m to the south. To the west of the saddle the land descends to an interfluve between the headwaters of two further streams, one flowing north the other south. This could therefore be seen as a strategic interface between three valley heads.

7c Black Down group (9)

Lurgashall parish; National Trust – 9129/1-6, 9229/1-2; private garden – 9229/3; (text Fig 17.22c)

Although four of the nine sites are graded 3, this is now a significant group which could have as many as three enclosure barrows (text Figs 18.28b & c) and six mound barrows. Most are focused on the southern end of the hill, but even so, there are two distinct landscape positions. The three enclosures line the southern edge of the plateau and even here there is variation – the easterly one (Temple of

the Winds) being perched just above the steep scarp (267m OD), the middle one on a moderate slope on the brow (259m OD) and the westerly one (Castle Copse) actually set on the scarp slope (238m OD). The last site occupies the steepest ground slope for any of the potential barrows in the study region (29°). This extreme variation in such a limited area suggests that ground inclination was not particularly relevant to function. It is noteworthy that these sites roughly follow the line of a deep hollow way ascending the hill from the south-west and it should not be ruled out that this route-way has prehistoric origins (text Fig 18.27). The Castle Copse site (9129/1) was depicted in a sketch of 1790 by S.H. Grimm. At this date the area around it was open heathland and no trees are shown growing on the site itself (text Fig 16.11).

The four mound sites are instead tucked away in a small dry valley on the west side of this southern end of the hill; they form a line on the north slope of the valley parallel to its thalweg at heights of between 237 and 253m OD (Fig 18.27). The dry valley is one of two forming the very head of the Valewood Stream catchment and is the one that leads towards the southern edge of the Black Down summit with its enclosure barrows.

The remaining two sites, both grade 3, lie on the eastern flank of Black Down, one right on the crest at 263m OD, the other towards its foot at 143m OD (text Fig 17.22c). That on the crest (9229/2) lies amongst a cratered area and might be quarry spoil, but if so, it is surprisingly circular (Fig 33a). That at Asbesters Copse (9229/3) is of small diameter but nevertheless a prominent mound beside a stream (Figs 33b-c). It is also just behind a house which saw an extension in the 1960s, but the associated landscaping has its own, regular terracing and the mound is thought unlikely to be derived from it.

8: Priors Dean Zone

Zone 8 covers 32km^2 taking in the western upland rim of the Upper Rother Valley. The sites include nine new discoveries and are interestingly distributed: five singletons and just one group, although it is large and has two subgroups. The sites are described from north to south, as labelled in text Fig 18.29 and tabulated in text Table 18.8.

8a Bush Down singleton (1)

Selborne parish; private farmland; 7234/1

A ring-ditch of 23.5m diameter lies on a step towards the east end of a ridge at 155m OD; nevertheless, the level area of the step still lies above the scarp slope.

8b Selborne Common singleton (1)

Selborne parish; National Trust; 7333/1

A fairly prominent, albeit damaged, mound on Selborne Common had escaped attention until a recent detailed archaeological survey of the hill top (Webb 2016; Fig 34a). It again sits on the east end of a ridge, this time right on the nose at about 200m OD just before the scarp slope begins to plunge to the Upper Greensand bench between north-east and south-east.

8c Goleigh Farm singleton (1)

Colemore & Priors Dean parish; private farmland; 7231/1

A ring-ditch of 17m diameter is recorded towards the north-west end of the Manor House ridge where the top broadens a little. Although not placed on the crest of the scarp, nor on the local summit itself (220m OD), its high position at 218m OD overlooks a noteworthy embayment in the scarp face, including a likely access route over a saddle below to the north-east.

8d-e Manor House group (16)

Sixteen potential sites are now known at and near to the tiny settlement of Manor House, nine of them newly discovered. Their total span is 860m, but they fall into two subgroups with a current gap of 270m in between.

8d Manor House Ridge subgroup (6)

Colemore & Priors Dean parish; private farmland; 7329/1-3, 7330/1-3; (text Fig 17.20d)

At least six sites form a cluster towards the south-east end of the Manor House ridge, but not close to the nose which juts into the Rother Valley. Instead they sit astride a gentle saddle, five to the north-west, one the south-east. Most lie close to 210m OD with one a little lower at 197m OD and high on the slope leading down to the other subgroup. All six accepted sites were previously on record, four being upstanding and two as cropmarks. Two further records each describe 'an amorphous bank and ditched cropmark… visible on aerial photographs' (7330/4-5) at locations only a short distance east of 7330/1 & 2 and therefore potential duplicates (grade 4); there is no sign of further denuded barrows in this group and the records are regarded as being too unspecific for acceptance at present.

8e Manor House Vale subgroup (10)

Colemore & Priors Dean parish; private farmland – 7229/1-4 & 8; private paddock – 7229/6-7 & 9-10; churchyard – 7229/12; (text Fig 17.20d)

Only two of these ten sites had been identified before, both being cropmarks – probably ring-ditches of 27m and 23m diameter (7229/1-2). Of the new sites, four are more confidently interpreted as denuded barrows, three being under active cultivation (Fig 34b), the fourth lying under pasture but appearing to have suffered past ploughing (7229/6; text Fig 18.31b). The same pasture field has three lower rises

Figure 34 Zone 8 barrows: a) Selborne Common 7333/1; b) Manor House Vale 7229/4; c) Manor House Vale 7229/12

which are less certainly the vestiges of barrows and the fourth grade 3 site lies under the small 13th-century church (7229/12; Fig 34c). Ancient churchyards are notorious for humps and bumps, but the presence of a gentle rise up to the church walls on both the north and south sides in close proximity to more clear-cut barrows merits the site being registered.

These eight upstanding sites form a relatively tight cluster around the small settlement and also around an occasional spring which today only rises in very wet weather close to site 7229/10. They are at altitudes of 162 to 167m OD, whereas the two ring-ditch sites lie a little up the slope to the south-west (171 and 174m OD), but still on very gently inclined land within the valley bottom. The group is in the very head of the dry valley just before a saddle to the scarp slope, which breaks a little over 400m to the south-east (text Fig 17.20d).

8f Tubb's Farm singleton (1)

Hawkley parish; private farmland; 7428/1

This is an uncertain site picked up on APs and noted as being a low mound. Lidar data does reveal a low mound close by, which is probably the site in question. It is potentially important in being a rare barrow survival on the Upper Greensand bench, indeed, the only example on the western side of the Rother Valley within the intensive study area. A small group of six, however, has been identified just to the north at Wick Hill, Worldham (7535/1-6).

8g Wheatham Hill singleton (1)

Steep parish; Ashford Hangers National Nature Reserve; 7427/1

A fine and fairly large mound with evidence for a partial enclosing ditch sits on the Wheatham Hill promontory jutting into the Rother Valley (text Fig 18.31a). It is a long, slightly winding and somewhat stepped promontory; the barrow is some distance from the highest point of 244m OD, lying instead at 199m OD on a more shelving bit of the spine after a steep drop. The length of the promontory makes this a gentler ascent than can be found elsewhere in this stretch of the Hangers and it is probably a long-standing route-way up on to the high Chalk.

9: Bordean Zone

Most of this zone is undulating chalkland behind the southern part of the Hangers; it covers 20km^2.

Four groups, a pair and a singleton are described from west to east, as labelled in text Fig 18.32 and tabulated in text Table 18.9.

9a War Hill group (8)

East Meon parish; private woodland and farmland; 6825/1-8; (text Fig 17.18b)

The War Hill sites, all potential mound barrows, occupy the Bordean-Bramdean dry valley just inside the intensive study area boundary. Four were on previous record and four have been added during this survey, two of them with the help of Phillip Crocker's 1806-8 survey plan (Fig 35a), the other two being given further support by it. Overall, Crocker depicts eight barrows in locations corresponding tolerably well to those now on record. However, since our locations for three are not necessarily absolutely correct because of plough denudation and interacting lynchets, they have been graded 3 rather than 2.

Overall the group spans 465m. Two of the well preserved sites are large and also contiguous with one another (text Fig 18.35). Five more cluster fairly tightly around them (up to 100m distance), all lying on the south-west slope close to the base of the valley (130-135m OD) at a point where a tributary dry valley conjoins. The eighth barrow is a short distance (240m) to the east on the opposite slope at 140m OD (Fig 35c). Although much smoothed by ploughing, the field it lies in has traces of quarry pits, ponds and lynchets. This area (and the whole of the zone) were already fieldscapes by the time of the first 6-inch OS maps (*c.* 1870), but may not have been used for arable until more recently.

9b Tigwell Farm group (3)

East Meon parish; private farmland; 6824/1-3

These three sites are set on a pronounced spur projecting towards the War Hill group from high ground to the south. Two (of grade 3) are fairly close together (175m) but on opposite flanks of the spur, both close to the 175m OD contour. The third, of grade 2, is something of an outlier, 610m to the south and slightly west of the spur's spine at 188m OD. Only one site (6824/3) overlooks the Bordean-Bramdean dry valley, the other two instead facing onto the tributary that lies to the west and conjoins at War Hill. This tributary dry valley in fact links through to the upper Meon Valley and is overlooked by three further sites outside the intensive study area (text Fig 18.34).

9c Lower Bordean group (7)

Langrish parish; private paddock – 6924/1-2; private farmland – 6924/3-6; private garden – 6924/7; (text Fig 17.23c)

Of seven potential barrows in this group, five had previously been recorded. Three are graded 2 (Fig 35d) and four graded 3, including the new sites, both being very low. One of the original sites is a ring-ditch (6924/4) whose grid reference is only 25m from a surviving mound (6924/3), so these might be the same site. The others are or, in the case of 6924/2 was when first recorded, mounds or low mounds. Phillip Crocker surprisingly failed to note any barrows in this locality.

The element of uncertainty regarding the Bordean House mound (6924/7) derives from the fact that it lies within an area of formal garden landscaping. It is very flint-rich on the surface and well within the size range for Bronze Age barrows, but is rather oval (*c.* 23 x 17m). It is shown on the 1871 edition of the 6-inch OS map, where it can be seen close to a cusp in a double-bowed terrace wall facing the main road. It is not recognised as a 'tumulus' there, but it is conceivable that it was a pre-existing mound accommodated within, and perhaps modified by, the landscaping.

These six or seven sites have an overall span of 530m and cluster around the head of the Bordean-Bramdean dry valley just before it is truncated by the scarp slope. The Bordean House site lies right at the valley head some 80m short of the steep descent into the Rother Valley. The others lie on the low slopes to either side of the valley thalweg and altitudes range from 148 to 154m OD.

9d Bower Farm Cottages singleton (1)

Froxfield parish; private farmland; 6926/1

This was already a low mound when first noticed. It does, however, have a good circular shape and is picked out by an orangey-brown soil distinct from the rest of the field. It sits at 172m OD at the head of a dry valley which at first runs north-west, but quickly curves round towards the south to meet the Bordean-Bramdean dry valley just beyond War Hill.

Figure 35 Zone 9 barrows: a) Detail of Phillip Crocker's survey plan, 1806-8, for the War Hill group; b) War Hill 6825/7, a low rise which is probably the westernmost of Crocker's barrows; c) War Hill 6825/8, the easternmost of Crocker's barrows; d) Lower Bordean 6924/1; e) Crabtree Farmhouse 7226/1. Image a) reproduced courtesy of the British Library, OSD 82 pt.2

9e Broadway group (5)

Froxfield parish; private farmland and paddocks; 7125/1-5; (text Fig 17.24c)

All of these were rather low mounds (marginal M/L) when first observed and two are no longer discernible on the ground (7125/1 & 5). Two of those still visible have been graded 2. This is a tight cluster of sites spanning just 175m. They sit at a little over 220m OD on the flattened spine of a spur running west from the highest hill in Zone 9 (240m OD). They have extensive views towards the western hemisphere, but are set too far back from the scarp crest to look into the Rother Valley. Nevertheless, they are intervisible with much of the South Downs crest and this may be significant (Chapter 22).

9f Crabtree Farmhouse pair (2)

Froxfield parish; private farmland; 7226/1-2

A pair of mound barrows 100m apart sit at around 205m OD at the head of a dry valley that runs sinuously west for some 5km before turning abruptly to the north-west. Although evidently not sited to look into the Rother Valley, they are just inside the saddle which carries a key route up onto the Chalk massif from the valley at Steep via Lutcombe Bottom.

Both have been excavated, the northern one (Fig 35e) having yielded a cremation burial accompanied by a bronze riveted knife, a bronze chisel and fragments of two grooved stones (Fig 19.10; Anon 1925; Gerloff 1975, 167 no 302, pl 53F). The stone objects are considered in Chapter 13 and the whole burial in Chapter 19.

10: Butser Zone

A block of 40km^2 centred on Butser Hill has as many as 83 sites of which 32 were previously unrecorded. They are described in a clockwise loop from south round to east, as labelled in text Fig 18.36 and tabulated in text Table 18.10.

10a Holt Down dispersed group (3)

Clanfield and Buriton parishes; Queen Elizabeth Country Park – 7117/3, private farmland – 7117/1 & 4

These sites form a small group straddling the dry valley running south from the A3 notch between Butser Hill and War Down. On the east side are two grade 2 mounds, neither previously having been recorded. They are close together and sit on a fairly steep slope (12.5 & 16°) at 110 and 114m OD.

Half a kilometre across the valley is an annular ditch on more level ground at 132m OD (Chalton Down, 7117/1) which was depicted and labelled as a 'Tumulus (remains of)' on the 1870-80 6-inch OS map (text Fig 16.10); traces of it can still be identified in a small pasture field alongside the A3, but the east edge was lost when the road was improved and its surface may be generally somewhat disturbed. Early maps do not show an obvious mound inside the ditch, but a low

Figure 36 Detail from Phillip Crocker's survey plan, 1806-8, showing three clear barrows on Oxenbourne Down (7019/1-3) with fainter circles of uncertain intent immediately above. Reproduced courtesy of the British Library, OSD 82 pt.2

mound should not be ruled out. The ditch evidently had a large diameter, *c.* 50m internally and 65m externally. The site is probably depicted on two even earlier maps, though not specifically as a mound or tumulus; Milne (1791) marks it as a 'Clump of Trees' and Crocker (1806-8) as 'Fir trees'. This tree clump is in fact one of six (Milne) or five (Crocker) shown at intervals along the road that is now the A3 discussed in Chapter 16, some at least of which seem to have taken advantage of pre-existing barrows (text Table 16.2).

10b Gravel Hill group (3)

Clanfield parish; private farmland; 7117/2, 7118/1-2

None of this tightly clustered group of three sites is visible on the ground today and since early documentation is poor and at times equivocal about their status as barrows, all are graded 3. Nevertheless, one (7118/2) was depicted and labelled 'Tumulus' by Crocker (1806-8) to the east side of the lane from Hogs Lodge to Butser Hill; this may add some confidence. The other two, to the west of that road, were first noted in the mid-20th century, when they were already low mounds. It would appear that Crocker's mound had already been levelled by this date, unless he placed it on the wrong side of the road. The group occupies a south-pointing spur between 155 and 167m OD on the west side of the dry valley that runs through the Holt Down group.

10c Oxenbourne Down group (4)

East Meon parish; private farmland; 7019/1-4

Phillip Crocker depicted at least three 'Tumuli' on Oxenbourne Down on his 1806-8 map (Fig 36); they are close together in a small island between trackways at a location that can be equated with the modern road

Figure 37 Zone 10 barrows: a) Hyden Wood 6918/4; b) Leydene House 6818/15; c) Detail from Phillip Crocker's survey plan, 1806-8, for Hyden Cross (the cross is depicted at the cross-roads bottom right); the barrow closest to the 'i' of 'Tumuli' on a wood/field boundary appears to partially survive in front of Leydene House, 6818/15; the most northerly tumulus shown is the long barrow on Salt Hill; d) Hyden Cross 6818/1, in a garden; shortly to the north the slope increases dramatically; e) Hyden Hill 6918/1. Image c) reproduced courtesy of the British Library, OSD 82 pt.2

junction between North Lane, Harvesting Lane and Hogs Lodge Lane. Some hummocks in the field corner to the west may be the remains of one, but a pond is shown in this corner on late 19th century maps. To these three we can add a low mound (7019/4) which lies alongside a field boundary which Crocker also shows and which is well west of the barrows he depicts. All are grade 3 sites, the first three due to lack of description, the fourth due to its low height. To the north of the three 'Tumuli' on Crocker's map are three fainter drawn circles, but since it is possible that these are partially erased symbols initially wrongly placed, they have been graded 5.

These four sites lie roughly along the contour just south of the ridge top at between 217 and 225m OD. While they have a stunning viewshed to the whole southern horizon, the northern one is blocked by the ridge top, which is a mere 100-250m away.

10d Hyden Wood group (15)

East Meon and Clanfield parishes; private woodland – 6818/13, 6918/2-12 & 16-17, private farmland – 6817/1; (text Fig 17.21c)

This is the largest group in the zone numerically and has a total span of 1.2km including an outlying ring-ditch (6817/1) 500m to the south of any others. Nine are grade 2 and six grade 3; six are new additions. None of the mounds is large and most are very modest in size (Fig 37a). Eleven are more clustered (span 470m) and form a horseshoe enclosing the head of a small dry valley well below the ridge top. The other four lie on a spur beyond a second dry valley to the west. The altitudinal range is 150-185m OD, except for the outlier at 127m OD.

10e Hyden Cross group (9)

East Meon parish; private woods and gardens – 6818/1-5, 12 & 14-15, Open Access Land – 6819/1; (text Fig 17.18a)

This group is separated by 570m from the Hyden Wood group and is a little smaller even with the addition of two sites just outside the intensive study area (6719/1-2). Six previously suggested sites have been dismissed as swellings in undulating ground which has possibly seen small-scale extraction. These are only partly offset by two new sites, although one (6818/15) was actually spotted long ago by Crocker (1806-8; Fig 37c); he showed it straddling a field/wood boundary which can now be identified as running just to the east of subsequently built Leydene House; a mound survives here, but has probably been truncated on one side (Fig 37b). All 12 sites lie in the altitudinal range 193-206m OD, sitting on or close to the ridge top at a point where it curves strongly round a steep coombe in the scarp face (Fig 37d). They thus overlook the Meon-Ramsdean passage.

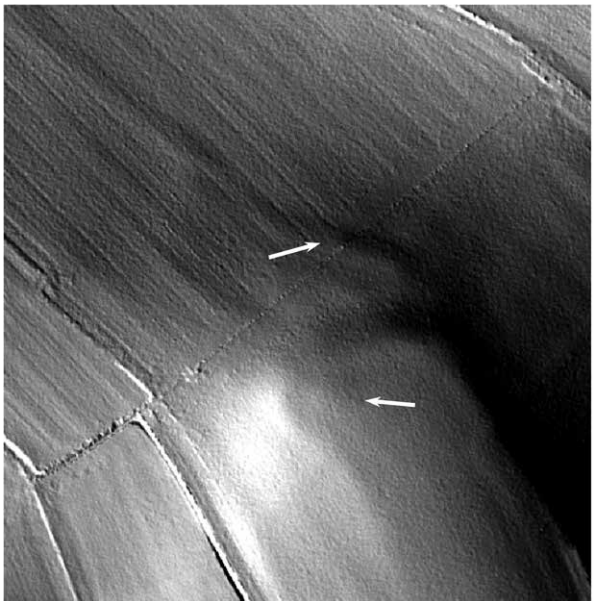


Figure 38 Lidar image, lit from SW (240°), showing a complex of denuded linear earthworks at Stonylands Farm around the location of two ring-ditches, 6920/2-3, marked by the upper arrow; the lower arrow indicates a slight circular rise within a plot corner. EA data, Open Government License

10f Hyden Hill group (6)

East Meon parish; private farmland – 6819/2-5, 6919/1; private woodland – 6918/1; (text Fig 17.23a)

545m to the east along the ridgeway is a group of six sites, four of them more or less contiguous with one another, the other two more widely spaced to give a total span of 620m. These continue the topographic siting of the previous group, enclosing another coombe. The sites on the two flanking promontories are placed where the ground is beginning to dip away and are probably on a false crest as viewed from the valley below. In contrast, the middle site (Hyden Wood NE, 6918/1) is set back a little from the head of the coombe; this would only have come into view as ascenders got to the top of the scarp; this is a fairly substantial barrow and is graded 2 (Fig 37e), as is a ring-ditch with a central pit showing on Tegdown Hill (6919/1). The cluster on Hyden Hill itself are grade 3, all having been levelled over the past half-century. All in the group lie between 205 and 210m OD.

10g Stonylands pair (2)

East Meon parish; private farmland; 6920/2-3

Two ring-ditches are briefly described in the HER entries and apparently lie very close together. The location recorded lies on or close to a denuded linear earthwork seen on Lidar images. The earthwork, probably a lynchet,

runs northwest-southeast but at the ring-ditch location there is a kink just before a field corner, while there is at least one circular rise to the south (Fig 38). They lie at 134m OD on a moderate north-facing slope of the skirt at the base of the Hyden Hill escarpment.

10h Parsonage Farm group (9)

East Meon parish; private farmland; 6820/1-5, 6821/7-8, 6920/1 & 4; (text Fig 17.16a)

Of the nine sites in this group only a ring-ditch (6821/7) was known previously; the survey has added at least eight mounds in varying states of denudation, only two of them well enough preserved to merit grade 2 (6820/1, 6920/1). Nevertheless, the circularity of these rises as revealed by Lidar combined with their clustered disposition is compelling evidence for a new cemetery (text Fig 18.38b). In addition there is a grade 5 site which shows on the Lidar image but could not readily be detected on the ground (6920/5). The main cluster lies on some of the lowest land in the Meon-Ramsdean passage, mostly between 115 and 122m OD, and spans 420m NNW-SSE. They occupy the eastern flank of a very gentle spur which sits between the two main sources of the River Meon, one to the north-east, the other to the south-west (text Fig 17.16a). There is an outlier 650m to the south where the ground is beginning to rise (6820/5; 137m OD). 700m to the west beyond one of the Meon source springs is another grade 5 site (6820/6); although there is a clear low rise present, its shape is difficult to determine.

The context of the better preserved sites is instructive regarding the historical attrition of barrows. They lie in a field that has been permanent pasture for as long as the farming family can remember because it is rather damp. However, their extremely large diameters and proportionally low heights suggest past plough denudation. In fact, the field also retains undulations of ridge-and-furrow cultivation and these run right over the two prominent mounds (text Figs 18.38 & 18.40). It can be deduced that medieval cultivation managed to smooth the mounds to profiles easily traversed by ox-drawn ploughs, but that attrition progressively lessened and may even have ceased. At some point during or shortly after the ridge-and-furrow system the field was put to permanent pasture, at which point the mounds were still 1.5 and 1.35m high. Most of the other sites have seen cultivation continuing to the present, hence their highly denuded state.

Volumes could only be estimated for three mounds in the cemetery, and these are obviously the larger ones that have survived best. Nevertheless, it is significant that two are over 1000m^3, one of them being a colossal *c.* 2600m^3, probably the largest in the whole study area. This mound had been spread by the early ploughing to a diameter of 75m, but by way of example it could have started with dimensions of 45m diameter and 4.25m high. If 35m in diameter it would need to have been 7m high to accommodate this volume of soil.

10i Church Farm group (6)

East Meon parish; private farmland – 6821/2-6; village cricket ground – 6821/1; (text Fig 17.14b)

Less than a kilometre north-west of the Parsonage Farm group and just south of Church Farm a second new cemetery has emerged. Here all six sites are new, five of them being of grade 2. Three of the mounds (6821/2-4; Fig 39) may be deduced to have had a similar landscape history to the two just detailed at Parsonage Farm. The field is believed to have been pasture for at least a century. Ridge-and-furrow is less evident on the ground, but is clear from the Lidar images. Again, it runs over at least some of the mounds, yet these survive to heights of 1.0, 0.9 and 0.75m. The poorer survival of the ridge-and-furrow suggests more cultivation in a subsequent phase thus causing more smoothing than at Parsonage Farm. The northernmost barrow may have experienced the same land-use history until it became incorporated into a cricket pitch; in fact, what remains of the mound, 0.75m, serves to level up the north-east corner of the wicket on the otherwise gently sloping ground. The remaining two sites (6821/5-6) are under modern cultivation.

A north-south line of four sites, spanning 220m, lies at between 110 and 113m OD, parallel to the River Meon on its west bank. The other two sites veer off to the south-west climbing gently towards the easterly nose of a small hill; they lie at 117 and 125m OD and, with 6821/4, form a line parallel to a tiny tributary (text Fig 17.14b). While the Parsonage Farm group lies between the convergent spring-feeder streams, the Church Farm group is sited within the angle of the river as it bends abruptly to the west. Although the Church Farm group does not have the super-large mounds seen at Parsonage Farm, it nevertheless has five of impressive size, estimated to be between 550 and 900m^3.

10j Barrow Hill group (3)

East Meon and Langrish parishes; private farmland; 6922/1, 7022/1-2

A barrow (7022/1) has long been known on Barrow Hill, the prominent knoll blocking the Meon-Ramsdean passage. It is marked as a Tumulus on the earliest 6-inch OS map and is almost certainly depicted by Crocker in 1806-8 by a small circular symbol. Although on the summit, at 158m OD, it lies within the modern fieldscape and the mound appears to have suffered past ploughing (Fig 40a). A second barrow is probably indicated by a ring-ditch lying a short distance to the east-north-east on sloping ground *c.* 10m lower.

In the valley to the south-west, 385m away, is a roughly circular rise of large diameter (50-60m) but only about 0.45m high (6922/1). This is likely to be a

Figure 39 Large barrows in the Church Farm group, plough smoothed and crossed by ridge-and-furrow: a) 6821/2; b) 6821/3; c) 6821/4

plough-denuded barrow and lies alongside a possible long barrow, similarly plough-denuded (text Fig 20.3e). Beside this pair of sites is a seasonal spring feeding westwards into the Meon.

10k Harroway Farm group (7)

Langrish parish; private farmland; 7022/3, 7121/1-6; (text Fig 17.23d)

Four of the seven sites in this group are newly discovered. Only one site is graded 2 (7022/3) but even this has apparently been denuded or modified as it is asymmetric with its highest point being well east of centre. Of the grade 3 sites, three are based on poorly described crop-marks. The other three are now low mounds, but the depiction of a 'Tumulus' on Rakefield Hanger by Crocker strongly suggests that 7121/5 was a more prominent mound two hundred years ago.

Figure 40 Zone 10 barrows: a) Barrow Hill 7022/1; b) Ramsdean Down 7120/1-3; c) Butser Hill summit showing pond feature 7120/11, Lidar lit from SW; d) Butser Hill summit 7120/9; e) detail from Phillip Crocker's survey plan, 1806-8, showing Tumuli on War Down; no barrow has since been located in the position of the mark in the south; f) War Down 7219/2. Image c) EA data, Open Government License; d) reproduced courtesy of the British Library, OSD 82 pt.2

Five of these sites form a west-east line on the Upper Greensand bench at close to 105m OD, while the Rakefield Hanger site occupies the summit of a prominent promontory (146m OD), also of Upper Greensand and overhung by the steep north slope of Butser Hill. The seventh site, at Butser House (7022/3), is outlying to the north-west and separated from the main group by the head of the Criddell Stream which is part of the Rother catchment. The Rakefield Hanger mound, although at a considerably lower altitude, lies only 550m from the barrows on the brow of Ramsdean Down in the Butser Hill group.

10l New Barn Farm singleton (1)

Buriton parish; private farmland; 7221/1

This is an uncertain ring-ditch seen only on an RAF AP. The site lies at about 98m OD on a gentle slope at the north-east foot of Butser Hill.

10m Butser Hill group (9)

Langrish and Buriton parishes; Open Access Land (National Nature Reserve); 7120/1-9, 7220/1; (text Fig 17.23b)

Up to nine barrows can be documented on Butser Hill and there is also a grade 5 site. They are widely distributed across the main summit and on two spurs with a maximum group span of 870m. Even up on this high hill ploughing has taken its toll; at least four of the sites have been levelled or reduced in height since first recorded. Three of the sites are graded 3, including a possible ring-ditch (7120/8) and a mound recorded as very low but which is no longer extant (7220/1). All but one were previously on record, but the new site (7120/9) is a surprising omission in this barrow-zone given it survives to a height of 0.5m (Fig 40d). The grade 5 site (7120/11) is a depression that Grinsell thought might have been a pond barrow, although Piggott noted that it still had a damp base in summer (1930, 199) so might well once have held water. Having since been plough smoothed it is even less easy to distinguish pond from pond barrow (Fig 40c).

The near-contiguous group of three barrows on Ramsdean Down (7120/1-3; Fig 40b) and the isolated, probably levelled site near Whiteland Copse (Piggott 1930) lie high on scarp slopes (244m and 174m OD respectively), already at a good slope angle; these echo the 'false-crest' position of barrows in the Hyden Hill group. The other five form a loose grouping on the summit plateau between 258 and 272m OD, but even so they only occupy the north-western half which is approached by the long sinuous dry valley of Rake Bottom, its flanking spurs and the isthmus to the main Chalk ridge in the south-west. There appears to be little interest in overlooking the less steep slopes to the south and east on which lie the remains of ancient field systems.

10n War Down group (5)

Buriton parish; Open Access Land (Queen Elizabeth Country Park); 7219/1-5; (text Fig 17.24a)

Six potential barrows have long been recognised on the next prominent hill east from Butser, four or five of them being noted by Crocker in 1806-8. However, it is questionable whether one of the barrow-like symbols on his survey plan was really intended to denote a mound even though it was thus interpreted on the printed map (OS 1-inch, 1810). The four in the north are clear circular rings and have the annotation 'Tumuli' in their midst (Fig 40e). That to the south (7219/6) is an ink mark of similar size and roughly circular. It appears to sit low in the deep dry valley running south from the summit of War Down and is close to a track that can be identified today. However, no subsequent fieldworker has been able to identify a mound in this approximate location despite the likelihood of little or no cultivation. It may be that Crocker's mark represents another feature, for example, a pond. The sixth site, a small mound (7219/1), was first noticed much later.

The five accepted sites are not especially concentrated; two are close to the main summit (241 and 243m OD) but offset to the west (Fig 40f) and a third is on its north-eastern nose (236m OD) overlooking the Rother Valley. The final pair, close-set, are on a spur descending obliquely to the south-east (at *c.* 205m OD) and overlook instead the saddle at Fagg's Farm which provides the easiest route onto the chalk from this part of the Rother Valley.

10o Ludgersham Copse singleton (1)

Buriton parish; Open Access Land (Forestry Commission); 7319/1

This new site, although only of modest height (0.7m) has been graded 2. It sits at 126m OD on an ENE-facing slope overlooking the forked head of a dry valley that now carries the mainline railway. It appears to be a relatively isolated site.

11: West Harting Zone

This zone covering 15km^2 now contains 23 sites and three possible grade 5 additions. There are four groups and a singleton, described here from north to south, as labelled in text Fig 18.41 and tabulated in text Table 18.11.

11a Forty Acre Lane singleton (1)

Harting parish; private farmland; 7619/1

This site, a 'partial ring ditch' (HER entry) is 580m away from the nearest neighbour and could alternatively be regarded as an outlier of the Foxcombe group. It sits at about 141m OD in the middle of a gentle saddle in the ridge top, perched at the top of the scarp (text Fig 17.17b). This marks one of two obvious routes into Foxcombe from the Rother Valley.

Figure 41 Zone 11 barrows: a) Forty Acre Lane 7718/8; b) Hemner Hill 7719/1, Lidar lit from NW; denuded lynchets are also visible; c) West Harting Down South 7617/3. Lidar data courtesy of Fugro Geospatial & South Downs National Park Authority

11b Foxcombe group (9)

Harting parish; private farmland; 7718/1-5 & 7-8; 7719/1-2; (text Fig 17.17b)

This is the largest group in the zone, but they are quite spread out with a total span of 1.5km, the two northern sites being at intervals of 450m and 435m from the main group. Despite the extent of arable cultivation in recent times, five of the sites are still upstanding to some degree. The main group sits in and around the eastern half of Foxcombe Bottom, altitudes ranging from 114 to 136m OD, the highest site of which sits in a saddle just like the Forty Acre Lane singleton and marks another crossing from Rother Valley to the Bottom (Fig 41a). Four sites are concentrated on the western slopes where a gentle spur projects into the Bottom and a fifth occupies another gentle spur projecting from the ridge top to the north (text Fig 18.43). This last site is one of the largest on the Chalk in the Rother Region (1050m^3). The northern outliers run out to Hemner Hill, 7719/1 (Fig 41b) being on its summit (161m OD) with commanding views across all parts of the Middle Rother Valley, the adjacent stretches of ridge, and into Foxcombe Bottom.

Five sites in the group were first recorded as ring-ditches or other crop-/soil-marks and there are a further three less conclusive traces, hence graded 5, these lying very close to the main cluster in the Bottom itself.

11c West Harting Down North group (6)

Harting parish; Forestry Commission; 7618/1-6; (text Fig 17.17b)

A tight cluster of five sites lies on the ridge top of West Harting Down and directly overlooks the main Foxcombe group, the distance between being 530m. A more detached site (7616/6) lies further west on the summit of the highest hill locally at 216m OD. The cluster lies between 197 and 202m OD on a spur running south-eastwards and two of the sites (7618/3-4) sit close to another gentle saddle, potentially a crossing point from Foxcombe to the dry-valley system to the south-west. The other three are contiguous, or almost so, forming a line running east from near the spur spine. Curiously, two of these are only known as cropmarks while the other (7618/1) still stands to a moderate height (0.65m) although it might have suffered some ploughing if the pottery brought up by ploughing in 1957 was indeed specifically from this mound. It is possible that the two now-level sites never had more than low mounds, if any at all.

To the south-west of 7618/6 are two grade 5 sites, possible small rises showing on Lidar that are currently inaccessible under undergrowth (7618/7-8).

11d West Harting Down South group (3)

Harting parish; Forestry Commission; 7617/1-3

These three fairly tightly clustered sites (span 155m) are all new, having been discovered by the High Woods project team. Despite not having been noticed before,

they are all mounds of moderate size (Fig 41c). They lie at 172-175m OD part way down a long spur running south-south-west from the West Harting Down ridge; two are close to the spur's spine, the other just on the east flank.

11e Ladyholt Park group (4, plus 1 outside intensive study area)

Harting parish; private farmland; 7516/1-3 & 5

The spur occupied by the last group leads down to Ladyholt Park, where three very low circular to oval rises are discernible on both Lidar and the ground in arable fields; without investigation, they can only be highly uncertain sites. One site (7516/3) lies close to the spur's spine just after it has levelled out at just over 140m OD (it runs for another kilometre to the south-west). The other two sites run directly west from the first, more or less along an offshoot spur which overlooks a sharp bend in the steep dry valley to the north. The fourth site (7516/5) is an outlier to the south (655m away) and is better preserved evidently due to having been in a long-standing reservation within the modern field system. It sits at 143m OD on the very spine of the ridge.

All are newly discovered sites and they span 760m, but the group may extend outside the intensive study area for a ring-ditch is recorded 325m further south (7515/1). Further away, nearly a kilometre to the west at Barnett Copse, a Collared Urn burial with associated ornaments was found accidentally in 1964 (7416/1; Chapter 19; App 19.1 Fig 1).

12: Beacon Hill Zone

A 25km^2 block centring on Beacon Hill has a dense distribution of barrows comprising seven groups, one pair and six singletons. They are described starting in the north then from west to east along the chalkland, as labelled in text Fig 18.44 and tabulated in text Table 18.12. As discussed in Chapter 17 the spacing of sites in this zone is generally closer than in most others and, had the spatial definitions been kept unchanged (App 17.4 Fig 1), most barrows in the zone would have coalesced into one group.

12a Harting group (5)

Harting parish; private farmland – 7819/1, 7919/1-3; private garden – 8019/1; (text Figs 17.26a & 18.46)

Of five sites around East and South Harting villages only one was known previously, a 'burial-without-barrow' (7919/1). All lie on the Upper Greensand, a zone of probable high destruction for barrows. All the more remarkable therefore is the new recognition of four mounds, although at least three of them are interpreted as having been plough-denuded. The outlying site south of Pays Farm (7819/1) is a little over 700m from the next site. It is now extremely low, but was still clearly defined as a circular rise when the EA Lidar data were captured (text Fig 18.46d). The pair of sites near Marden Farm, East Harting (7919/2-3), lies in a field of long-term pasture that issues a spring in wet seasons; one sits in the very head of the shallow valley carrying this outflow, the other is less well preserved but just to one side (text Figs 18.46a-b). Traces of lynchets are detectable in the field and this presumably relates to a phase of past agriculture which led to the putative denudation. The site at Ladymead (8019/1; text Fig 18.46c) a little to the north has only been observed from outside the grounds, but it may be a more intact albeit small barrow.

The 'burial-without-barrow' was a casual discovery to the north of Turkey Island in 1982 (Aldsworth 1983a); since this is a Bucket Urn of Middle Bronze Age date it does not necessarily signify the site of a ploughed out barrow, but such burials were extremely frequently inserted into earlier mounds and less frequently associated with small newly created barrows.

The Harting sites occupy the Harting amphitheatre, a part of the Upper Greensand bench semi-enclosed by the projecting chalk spur of Torberry Hill to the north-west and the mass of Beacon Hill to the south-east (text Fig 18.44). They might have been placed with reference to the headwaters of the Harting Stream and a small tributary rising in East Harting. The altitudinal range of the sites is 75-85m OD.

12b The Bosom singleton (1)

Harting parish; private estate (farmed); 7818/1

This appears to be a relatively isolated site, the nearest site being almost 1.3km away (in the Padswood Bottom group); however, there is a grade 5 site only 370m to the east. The mound lies beneath the Daedalian (alternatively 'Vandalian') Tower in Uppark estate (Fig 42a). Fred Aldsworth suggested it could be a pre-existing Bronze Age barrow (Aldsworth 1983b) and this can be supported by three points: i) it would explain why the tower was not sited on the summit of the hill; ii) it is questionable that there was a need for a mound as a foundation when the vantage offered by the hill is superb anyway; iii) the original mound excluding the entrance ramp is close to circular, yet the overall plan for the tower-plus-ramp needed to be egg-shaped. The encircling ditch has a relatively sharp profile and, if originally Bronze Age, was probably re-dug in the 18th century.

12c Sixteen Acre Plain pair (2)

Harting parish; private estate (farmed); 7816/1-2

Just two sites have been recognised on a gentle spur pointing south-west and lying just below the 135m OD contour. Both are likely to have suffered denudation, but it is the lower of the two (7816/1) that is judged to be the more certain barrow because of evidence for a high flint-nodule content.

Figure 42 Barrows in and near the Uppark Estate: a) mound under the 1780 Tower on The Bosom 7818/1; the rise on the right is the end of the ramp that took visitors straight up to the first floor; b) Padswood Bottom 7917/1; c) Belt Plain 7917/3 surviving within an arable field; d) Handle Down 7916/1. Image a): Ineke Allez

12d Handle Down group (3)

Compton parish; private land (wooded strip & farmland); 7916/1-3

Two of three accepted sites on Handle Down are upstanding (Fig 42d); the third, a levelled site, can be accepted with some confidence as it was still *c.* 0.75m high when seen by Grinsell. A fourth site suggested by the recent HW/NMP project is evaluated by us to be more likely part of a field boundary system (7916/4) and another, just outside the intensive study area, is very uncertain because the raised area in question is complicated by a linear earthwork.

The group occupies a gently domed spur projecting southwards and lies between 156 and 162mOD. A short distance to the south (outside the intensive study area)

Figure 43 Barrows in the North Marden Down group: a) 8016/1; b) 8017/6, which has a scalloped side on the left; the linear bank under the tree-line behind is the south side of the possible cursus; c) 8016/3; d) 8017/7

are the Neolithic long/oval barrows of Bevis' Thumb and North Marden (Chapter 20), but these do not appear to have served as foci for later round barrows.

12e Padswood Bottom group (5)

Harting parish; private estate (farmland & woodland); 7916/5, 7917/1-4; (text Fig 17.24b)

Most of these are grade 3 sites owing to past denudation (Fig 42b); only 7917/3 is regarded as more certain, although even this has probably been edge-clipped by ploughing (Fig 42c). These five potential barrows make a fairly loose group (span of 500m) spreading down a slope flanking the south-east side of a dry valley at altitudes of 158 to 191m OD. One mound at least is rich in flint nodules.

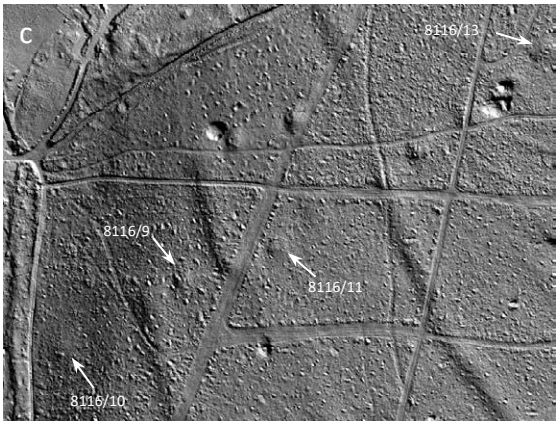


Figure 44 Barrows in the Philliswood group: a) Bushy Piece 8116/4; b) Lidar lit from NE showing mounds in relation to field boundaries for part of the Philliswood group; the numbered rises are grade 5 sites (see also text Fig 17.18c); c) Phillis Wood 8216/6. Lidar data courtesy of Fugro Geospatial & South Downs National Park Authority

12f North Marden Down group (20)

Marden and Harting parishes; National Trust – 8017/1-5; private estate (Open Access Land; woodland and farmland) – 8016/1-7, 8017/6-10, 8116/2; private farmland – 8116/3, 8117/1; (text Figs 17.20b & 20.10)

This group comprises a fairly concentrated core of 12 sites surrounded by eight more spaced ones. The maximum span of the core is 760m and that of the whole group is 1.62km. The maximum nearest-neighbour distance for the core is 230m and for the peripheral sites, 440m. Only two sites (8016/1, 8017/1; Fig 43a) had been recognised prior to the High Woods Lidar survey and our evaluation programme; nevertheless, most are judged to be grade 2 rather than grade 3.

These barrows occupy moderately steep slopes with a southern to western aspect and have a wide altitudinal range, 134 to 209m OD. All lie east of Bramshott Bottom dry valley and the focus appears to be a tiny tributary dry valley which aligns on midwinter sunset (text Fig 20.11). The north-westerly outlier (8017/3), a very low mound, in fact sits right in the valley bottom at the junction of Bramshott and Whitcombe Bottoms. Well preserved ancient field systems surround the barrows and there may be a cursus monument within them (text Figs 20.10 & 20.11). Several of the barrows show signs of being rich in flint nodules and five have a rather asymmetric cross-contour profile in which the downslope side is steeper and potentially scalloped by later disturbance such as ploughing (Fig 43b).

12g Beacon Hill singleton (1)

Elsted & Treyford parish; National Trust; 8018/1

A now levelled mound on the spine of the long south-pointing tail of Beacon Hill is only 420m north of the nearest barrow in the North Marden Down group and it could alternatively be regarded as an outlier of that group. It sits at 222m OD, 20m lower and 340m south of the hill's summit. The site was excavated after it had already been plough-levelled and revealed an egg-shaped enclosure ditch and a probably disturbed central grave (Bedwin 1977, 229-30 fig 3). Although there is evidence that it was used in Saxon times, based on a radiocarbon date on probably redeposited bones, this is unlikely to relate to the monument's construction. The date of 1150 ± 70 BP (Bedwin 1979, 31) calibrates to AD 685-1025 (95% probability) with a high probability that it post-dates AD 800 and it is thus too late for Anglo-Saxon burial practices. A more likely explanation is that the bones derived from a late Saxon execution on a pre-existing barrow site (of unknown date).

12h Pen Hill singleton (1)

Elsted & Treyford parish; private farmland; 8117/2

This is a rather uncertain site very near the summit of the hill and 560m from the Beacon Hill site. Lidar shows a slightly oval rise, *c.* 26m (N-S) by 23m; while a slightly raised area can just be discerned on the ground, it is impossible to define due to it sitting on a rounded hill.

12i Buriton Farm singleton (1)

Elsted & Treyford parish; private land (farmed); 8118/1

A spur running south off Pen Hill has its own summit and this grade 3 site lies on its southern brow at 174m OD. The nearest barrow is 625m to the west.

12j Philliswood group (10, plus 1 outside intensive study area)

Elsted & Treyford parish; private estate (woodland); 8116/4-7, 8216/3-7; (text Fig 17.18c)

To the ten barrows inside the intensive study area one outside can be added to this group (8115/1). There are also as many as five grade 5 sites and two possible oval barrows within the ambit of the group (Chapter 20). Some of the mounds, including grade 5 sites (8116/9-11), lie in positions conforming to the field system alignment (Fig 44b), but they are rather large in diameter to be simply mound-defined boundaries (cf. text Fig 20.7) and may deserve consideration as additional barrows.

As with the North Marden Down group and other groups in this zone, the Philliswood barrows lie on south- to west-facing slopes, in general looking towards the Hooksway dry valley. Most of the sites sit on a south-west pointing spur with just two on the opposite side of a minor dry valley to the north. Their altitudinal range is 128 to 161m OD. The largest inter-barrow distance is 390m and the overall span, including 8115/1, is 900m. Over half in this group show surface evidence for dense flint nodules.

12k The Devil's Jumps group (13)

Elsted & Treyford parish; private land, but permitted access (rough pasture; formerly in woodland edge); 8217/1-13; (text Fig 17.19)

This is for the most part a tightly clustered complex. It is also remarkable for containing extremes of barrow size – amongst both the largest and smallest recorded in the whole study area (Fig 45a). A further point of distinction is that it contains the only (probable) enclosure barrow in Zone 12 (Figs 45b-c). The group straddles the round-topped south-west pointing dip slope of Treyford Hill at altitudes of 203 to 222m OD.

The cemetery is dominated by a line of five large ditch-encircled mounds, these being *The Devil's Jumps* (Fig 45d). They consistently have a sloping skirt between the main mound edge and the inner lip of the ditch and have hence been classified in the past as bell barrows (Fig 45e); however, there are no external banks. They range in height from 2.25 to just over 4m; indeed the three most easterly are all close to 4m while the westerly two are less high. This distinction is reflected in diameters, the larger mounds being 22-24m across, the smaller, 19.5m each; there is a corresponding difference in ditch diameters as well. The three apparently unexcavated Jumps have profiles that differ from the prevalent domed form, two being trunconical with a small flattish top, the other being sub-conical (Fig 45f).

The surrounding barrows, evidently including a totally levelled one to the west of the Jumps (8217/1), are all much smaller. None is now higher than 0.6m and diameters are mainly below 12.5m, with one at 20m (8217/8). Four of the smallest form a row more-or-less parallel to the Jumps on the south-west side; these were under woodland in the late 20th century but although probably disturbed by forestry activities, it is unlikely they have been significantly reduced in bulk as their edges can be determined to some degree.

The suggested enclosure barrow (8217/7) has not been recognised as such previously, probably because it was assumed to have been extensively disturbed by excavation (see below). Its edges are poorly defined but it still has a more or less circular plan, 17.8m in diameter; indeed, the Lidar data reveals a fairly regular annular bank at the perimeter (Fig 45c). The height measured at middle is only 0.2m, whereas the perimeter is up to 0.3m higher. Since the total volume of soil is rather small this seems to be a rather excessive and surprisingly regular re-distribution of spoil originating in a small mound that was dug into. It is consequently interpreted as a little-disturbed enclosure barrow with a slightly raised centre, not unlike those at Heyshott Down (Zone 14) and Chapel Common (Zone 1).

The significance of the alignments embedded within the large barrows are discussed in Chapter 17.

The small barrows in a parallel row seem to be strategically placed so as to align transversely with the gaps between the Jumps (text Fig 17.19) but this does not necessarily demonstrate that they were constructed later. An alternative is that they were marking out or testing the alignment required for the more monumental constructions. They seem to relate more to the three massive barrows than to the longer alignment. Whatever the sequence, this is an intriguing juxtaposition of contrasting scales of barrows.

If the cemetery's alignments suggest the marking of significant axes for the community, its topographic position suggests other concerns. The barrows cross the round-topped spur of Treyford Hill just before the start of two dry valleys (text Fig 17.19). The Philliswood group lies on the intervening spur below and the two nearest sites, both somewhat outlying to their respective groups (8216/7, 8217/13), are only 435m apart.

The excavation of four sites in the Devil's Jumps complex took place in 1853, two of the Jumps themselves and two 'smaller' ones (Franks 1853). The former two can readily be identified as 8217/2 and 8217/5 as these are the only two with substantial craters in their tops (text Fig 18.47c); Franks noted that the barrows of this group showed no evidence of earlier intrusion. It is probable that the first barrow opened, which was described as 'about the same dimensions as those at Bow Hill, but more conical', was 8217/5. Despite a substantial cutting, the excavators were disappointed

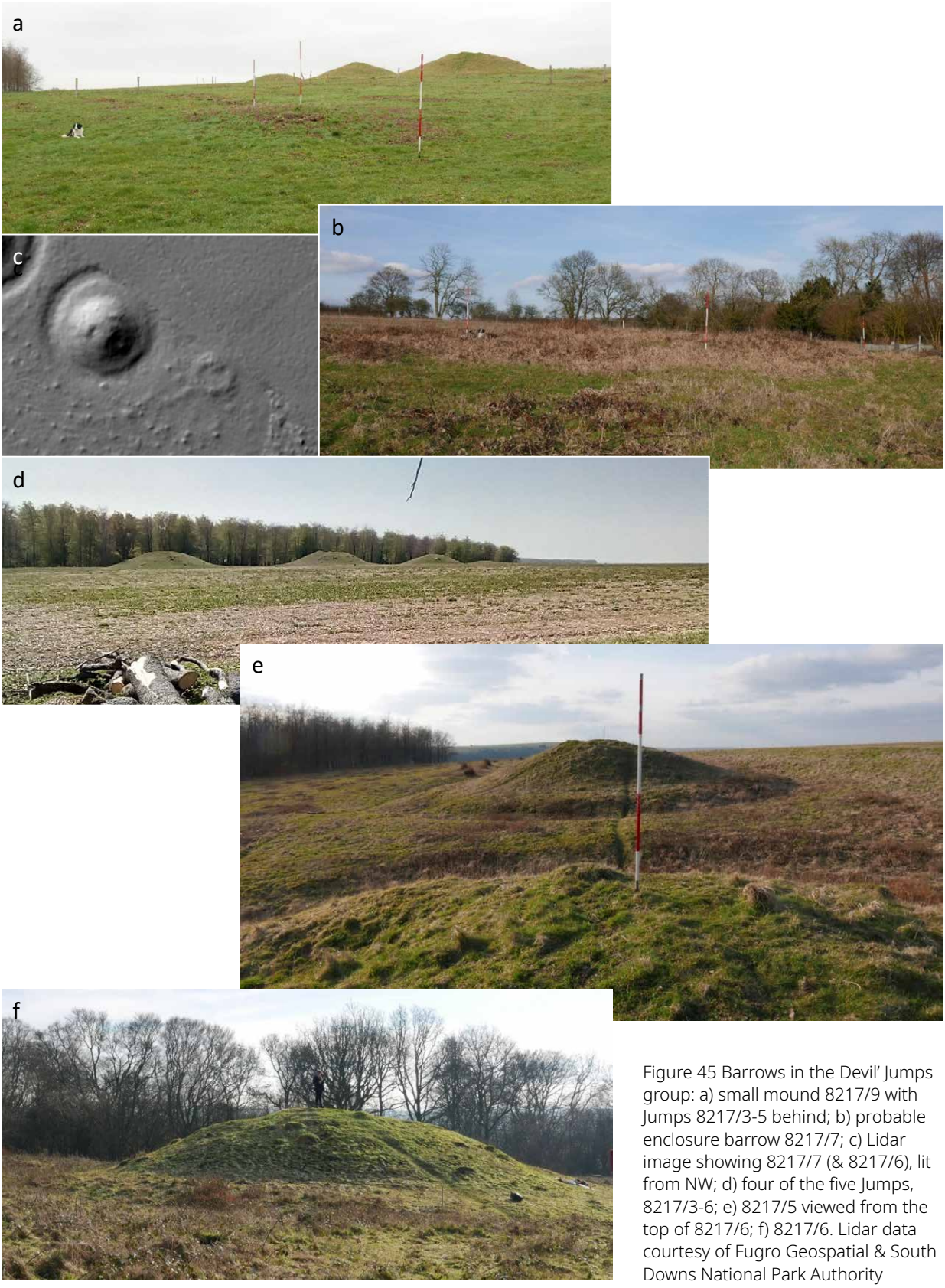


Figure 45 Barrows in the Devil' Jumps group: a) small mound 8217/9 with Jumps 8217/3-5 behind; b) probable enclosure barrow 8217/7; c) Lidar image showing 8217/7 (& 8217/6), lit from NW; d) four of the five Jumps, 8217/3-6; e) 8217/5 viewed from the top of 8217/6; f) 8217/6. Lidar data courtesy of Fugro Geospatial & South Downs National Park Authority

to find just 'a deposit of burnt bones, which appeared to have been placed on the natural turf, and at some distance from the centre' (*ibid*., 356). The second opened was thus presumably barrow 8217/2 (text Fig 18.47a) and it yielded another deposit of burnt bones this time near the centre, but again without accompaniment. The covering mound was noted to comprise a five-layered structure comprising from bottom upwards: fine earth, thick course of flints, mixed earth and flints, thin course of flints and earth. It is noteworthy that no chalk was mentioned in this excavation into the centre, so the chalk dug from the ditch may have been formed into an annular earthwork, either a skirt around the sides of the mound if this was primary, or an internal bank if the ditch was primary.

The two smaller mounds excavated were found to be 'mere heaps of earth' (*ibid*., 357) and have usually been taken to be barrows 8217/7 & 8217/8 (HER records). This is probably an assumption based on the fact that for some time only two smaller mounds were known close to the five large 'Jumps'. Indeed, Grinsell was only aware of one of these (8217/7), so 8217/8 was presumably already rather plough-smoothed, although was still 1.1m high when first recorded; there is no record of it showing any signs of intrusion. Barrow 8217/7 is now better interpreted as an enclosure barrow than a much modified mound barrow (above). In fact, there is no record of where the smaller barrows tackled were in relation to the Jumps and they need not have been right alongside. Franks himself was not present in the later stages of excavation due to illness (Franks 1853). The now lost barrow just to the west, 8217/1, was described by Grinsell as about 0.75m high but 'dilapidated' and this could well suggest it had suffered antiquarian attentions. Meanwhile, one of the newer discoveries of small mounds, 8217/13, has a slightly dished top which could equally suggest an intrusion. There are, then, alternative identifications for the two small barrows excavated in 1853.

12l Treyford Hill singleton (1)

Elsted & Treyford parish; private farmland; 8217/14

This small barrow is close to the summit of Treyford Hill, just on the scarp side. It is 510m from and not intervisible with The Devil's Jumps group. There are slight linear bank-and-ditches immediately to west and east which suggest a small square enclosure was put around it at some point.

12m Monkton Copse singleton (1)

West Dean parish; private woodland; 8216/8

An ill-defined mound up to 9m across and only 0.3m high is, however, flint nodule rich and likely to be a small barrow/cairn. It lies on a south-facing slope overlooking Monkton Vale where, 280m south, there may be a second low mound (grade 5, 8216/10) currently not verifiable due to undergrowth.

12n Monkton Farm group (1, plus 2 outside intensive study area)

West Dean parish; private farmland; 8216/1

A very ill-defined rise on the ground is indicated by Lidar to be circular and about 16m in diameter; its estimated height is around 0.2m. It lies on a gentle SSE-pointing spur, as do a better preserved barrow and a ring-ditch, both outside the intensive study area but only 100m and 140m away.

13: Linchball Zone

The Linchball zone, an area of 18km^2, now has 33 accepted barrows in four barrow groups and a singleton; these are described from west to east, as labelled in text Fig 18.48 and tabulated in text Table 18.13.

13a Didling Hill singleton (1)

Elsted & Treyford parish; private farmland; 8317/1

This is now a well denuded mound. It sits astride the crest of the ridge top, but not on one of the eminences, instead being on a gentle slope running eastwards down into a saddle (Fig 46a). There may actually be a second site 225m to the south-west in private grounds (8317/3; grade 5); it looks promising on Lidar and lies in an area with apparent traces of ancient field boundaries (Fig 46b).

13b Linchball Wood group (9)

Bepton and West Dean parishes; private woodland; 8316/3-4, 8416/1-7; (text Fig 17.21d)

Only one of these possible nine sites was known prior to 2014 (8416/1; Fig 46c) and only two of the additions are graded 3 rather than 2. A grade 5 site is a possible addition (8416/8). The group lies on the dip slope at widely varying altitudes between 132 and 193m OD, yet is coherent in enclosing the tri-lobate head of a dry valley which runs south-west to meet the Chilgrove Valley. Two and three sites are in tight clusters, but otherwise the group is fairly evenly distributed around an oval circuit spanning 900m west-east by 625m north-south, the nearest-neighbour distances being between 300m and 420m. Despite this apparent coherence, the three easterly sites are in prominent positions on spur spines while the others are on much lower, less obtrusive ground (Figs 46d-e).

Most sites are mound barrows, although one is very low, not necessarily due to past reduction. The two easternmost sites, however, are different. One is a very small and damaged annular bank rich in flint nodules with possible internal ditch – a possible enclosure barrow (8416/7). The other is a substantial mound but with an unusually regular and large dishing in its top (8416/1; Fig 46c; text Fig 16.15c); this has been discussed in the context of similar 'dished mounds' in Chapter 16.

Figure 46 Barrows on Didling Hill (a-b) and in the Linchball Wood group (c-e): a) Didling Hill 8317/1 looking S towards the coast; b) Didling Hill grade 5 site 8317/3, Lidar lit from NW; c) Linchball Wood dished mound 8416/1; d) Winden Wood 8316/3; e) Linchball Wood 8416/4. Lidar data courtesy of Fugro Geospatial & South Downs National Park Authority

13c Colworth Down group (3, plus 1 outside intensive study area)

West Dean parish; private woodland; 8415/1-3

A cluster of three unrecorded mounds with a maximum span of 245m lies alongside the southern border of the zone. Another unrecorded site lies 350m away outside the intensive study area and can be assigned to this group (8514/1). The land to the south suddenly becomes predominantly agricultural, so the former existence of a larger group cannot be ruled out. All three mounds are graded 3; one lies in the base of a dry-valley head at around 110m OD, while the other two are higher on its eastern flank, *c.* 130m OD (Fig 47a).

Figure 47 a) Colworth Down 8415/3; b) the best preserved of the barrows on Linch Ball, 8417/5; c) two barrows on Bepton Down, 8516/2 with 8516/1 behind left

13d Linch Ball group (8)

Bepton parish; private farmland; 8417/1-5, 8516/1-2, 8517/1; (text Fig 17.18d)

A fairly linear group of sites is strung out NW-SE along the ridge top where it is locally at its highest from Linch Ball to Bepton Down (Fig 47b-c); the sites range in altitude between *c.* 230 and 250m OD and span just over a kilometre. A cluster of up to four are on or close to the summit of Linch Ball, two are off-summits but close to the ridge crest, and two are just on the dip-slope side of the crest thereby losing any view into the Rother Valley. Nevertheless, this is the first group of barrows east of Butser Hill and War Down (Zone 10) to occupy the ridge top.

All eight sites had been recorded previously. Five are grade 3, in most cases because they were insubstantial mounds at the time of first recording. Miss P.A.M. Keef excavated four barrows in this area in 1955, but it is not known which, nor are any results published.

13e Hacking Copse/Stubbs Copse group (12)

Cocking, West Dean and Singleton parishes; private woodland – 8515/1-2, 8615/1-5, 8616/2-5; private farmland – 8616/1; (text Fig 17.17c)

This is an impressive linear group strung out, not along the ridge top, but instead along the sinuous north-south brow overlooking the Cocking Gap. Altitudes therefore descend with the dip of the Chalk from 200m to 145m OD. The two southernmost sites are 585m adrift from the nearest of the main group and the northernmost is 475m adrift (Fig 48a). The nine more concentrated sites in between span 900m (Figs 48c-d). The minimum distance to the Linch Ball group is 690m.

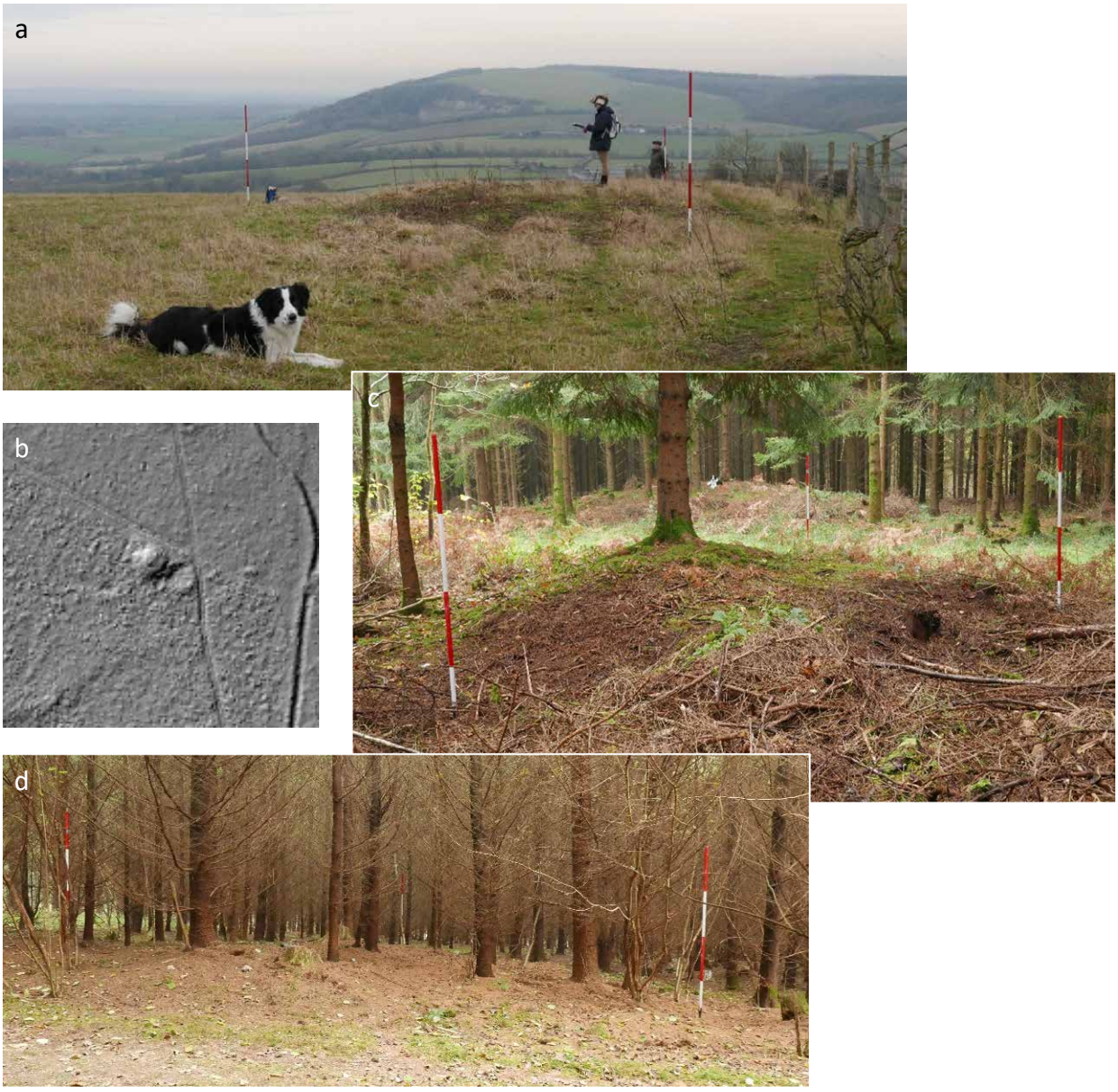


Figure 48 Barrows in the Hacking/Stubbs Copse group: a) Cocking Down 8616/1, view eastwards across the Cocking Gap; b) Westdean Woods, mound barrow 8515/1 and contiguous 'pond' barrow 8515/2, Lidar lit from NW; c) Hacking Copse 8516/3 with 8516/4 behind (see text Fig 18.50); d) Stubbs Copse 8616/2. Lidar data courtesy of Fugro Geospatial & South Downs National Park Authority

Half of the group are grade 2, half grade 3, but only one had been known prior to 2014. Two of the eleven mound sites are now very low, but of unusual importance morphologically is a probable pond barrow (8515/2) abutting a mound barrow (Fig 48b). This pairing is possibly repeated on Heyshott Common (Fig 19; Zone 4) as well as outside the region, as discussed in Chapter 16.

14: Heyshott Down Zone

This zone is narrow north-south due to the curtailment of the intensive study area, thus excluding a good number of recorded and suspected barrows to the south (text Fig 16.20). It covers 14km^2 and has 28 accepted barrows, eight being new discoveries. All are attributed to one of three groups separated from one another by slightly larger gaps of 655m and 590m. However, these defined groups should not necessarily be regarded as being entirely discrete given the continuous if erratically spaced distribution focused

Figure 49 Barrows in the Manorfarm Down and Heyshott Down groups: a) the last vestige of Manorfarm Down 8816/1, looking NNE with Black Down on the horizon; b) the Heyshott Down cemetery just on the scarp side of the ridge top, looking NW from 9016/11 to 9016/3 (just going out of view on the right); c) Heyshott Down 9016/12 with cross-ridge dyke immediately behind; d) the row of small contiguous mound barrows viewed from 9016/4 SE towards 9016/7, the most prominent one; 9016/8 is behind to the left

Figure 50 Barrows in the Heyshott Down group: a) 'Heyshott Barrow' 9016/3; b) 9016/2; c) 9016/14 marked by the ranging rods between 9016/6 (left) and 9016/7

on the ridge top. They are described from west to east, as labelled in text Fig 18.51 and tabulated in text Table 18.14.

14a Manorfarm Down group (5)

Cocking parish; private farmland – 8816/1-2, 8916/1, private woodland – 8816/4, 8916/2; (text Fig 17.24d)

The three of these sites now under cultivation on Manorfarm Down itself have been totally levelled, or almost so (Fig 49a). The two in woodland are well preserved. Four sites are fairly evenly spread along the crest of the ridge, spanning a distance of 850m, over which the altitude declines gently from 228 to 208m OD.

The fifth site, in Herringdean Wood (8816/4), is an outlier some 630m south of the ridge top and situated instead in a deep coombe which runs out west to the Cocking Gap. It sits at 145m OD beneath a 4m-high WNW-ESE lynchet, its southern edge probably in fact buried under the talus of the lynchet (text Fig 18.53b). There was obviously considerable and sustained soil movement upslope to create such a massive lynchet. However, there can have been relatively little soil movement on the downslope side: the mound is only 0.75m high and cannot have had much soil removed from around its base. A second small mound in Herringdean Wood (8816/3, grade 4) is attached

Figure 51 Barrows in the Graffham Down group: contiguous dished barrows, a) 9116/2 looking W and b) 9116/3 looking E; c) low platform 9116/6, its edges arrowed; d) mound barrow 9116/5

to the end of a linear bank forming part of the ancient field system and thought unlikely to be a barrow due to its non-circular shape; however, it is possible that a mound was modified as a result of being incorporated into the field system. The span of the whole group is 1.06km.

14b Heyshott Down group (15)

Heyshott and Singleton parishes; private farmland – 9016/1-14; private woodland – 9016/16; (text Fig 17.13a)

This group mainly comprises the concentrated cemetery of 13 sites on the ridge top of Heyshott Down above Combe Bottom. 580m to the west is an outlying and possibly isolated site (9016/1), separated by a gentle saddle 15m lower than the summits to either side, while 440m south is a site on the dip slope in Forest Hanger (9016/16). The last site is a low mound probably truncated by a forest ride. The total span of the group is 910m.

The main cemetery is linear in plan, running WNW-ESE for 215m marginally on the scarp side of the ridge crest (Fig 49b). The ridge here is in fact at around 230m OD having descended gently from a 235m OD summit just beyond the cemetery to the east. More important in the siting may have been the heads of Combe Bottom and Gadd's Bottom and/or the promontory between them, for the last is the least steep route up to the ridge top in this stretch of scarp. A hollow way runs slightly obliquely up the promontory (interrupted part way by a quarry) leading towards its neck on the east side, where a cross-ridge dyke stops short to allow passage through (text Fig 18.54). The cross-ridge dyke is presumed to be later, but this may have merely consolidated, monumentalised and controlled a longer standing route of access.

The cemetery has two small mounds at its south-east end, pear-shaped and D-shaped (9016/12-13; Fig 49c), both with a flatter side facing an intervening cross-ridge dyke (text Fig 18.54); although that earthwork does not directly impinge on the mounds, it may be suspected that its construction or use led to their truncation. Next in line are two pairs including three enclosure barrows (9016/9-11), all of modest diameters and two with traces of an internal tump, and a mound barrow (9016/8). Next comes a string of five equally small mound barrows possibly of varied forms, although the exact morphology of some is debatable due to past disturbance (9016/4-7 & 14; Fig 49d). At the north-west end are two larger barrows (Figs 50a-b), the penultimate one (the 'Heyshott Barrow', 9016/3) in fact being large with a neatly dished top (text Fig 16.15d). This is an interesting set of sites, diverse and yet mainly comprising rather small barrows, only two being more than about 80m^3 (text Fig 18.54). The 'Heyshott Barrow' is the largest in Zone 14 at close to 400m^3. It may be significant that the two larger barrows stand at the head of the possible spur route-way just mentioned; the smaller ones meanwhile outline the sudden bluff to the head of Combe Bottom. Not previously recorded is a not entirely smooth rise (9016/14; Fig 50c) wedged between 9016/6 and 9016/7. It may have been assumed to be excavation spoil from one or both of those adjacent barrows and this cannot be ruled out, but the topography in this sub-group is curious, with two shallow depressions at the foot of the threesome on either side (text Fig 18.54). Moreover, 9016/14 is intermediate in height between flanking 9016/6 and 9016/7.

14c Graffham Down group (8, plus 2 outside intensive study area)

East Dean and Graffham parishes; private woodland (Open Access Land) – 9116/1 & 6-7; private woodland – 9116/3-5 & 9216/1-2; (text Fig 17.22b)

The next group lies 590m east of the Heyshott cemetery and past a slight summit. Five sites sit on or close to the ridge top over a span of 780m and crossing another gentle summit which is occupied by a barrow (9116/5). Two sites lie a little distance down the dip slope, while the final site (9216/3; text Fig 18.53a) is unusually placed high on the scarp slope, although the slope steepens significantly just below it. Three merit comment on their morphology. The pair of mounds at the head of Golden Combe Bottom (9116/2-3) are extremely similar to one another, with enclosing ditches and neat dished tops which are not certainly the product of antiquarian attentions (Figs 51a-b; text Fig 16.15a & e; see *dished mounds* Chapter 16). One of the dip-slope sites (9116/7) is a possible enclosure barrow of small diameter (grade 3) of which less than half an annular, flint nodule rich bank survives. The second on the dip slope is a broad low platform 9116/6 (Fig 50c). A single mound barrow sits in the middle of the group on the highest ground (9116/5; Fig 50d). Total group span is 825m, or a little more allowing for two sites to the south outside the intensive study area (9115/1-2), these lying on the west flank of Brockhurst Bottom which runs south from the ridge at the western end of this group. A grade 5 site was evidently seen by Grinsell, but has not been located since (9216/2).

Appendix 18.2

Details on the mapping of land-use categories

Stuart Needham

Heath and common

Unimproved heathland of heather or grass including downland; may include *small* interspersed patches of woodland, either planted or naturally regenerated, or ribbons of trees/hedges, or boggy areas/ponds. Some areas are relatively recently restored to heath or downland from woodland or fieldscapes.

Woodland

Wooded blocks or ribbons of significant scale (usually over about 400m on the maximum dimension) including developed scrub; the woods may be either planted or naturally regenerated; recently cleared plots are included as are any interlinked non-agricultural patches of grass with some scrub; small wooded plots within fieldscapes are not shown.

Estate grassland

Managed and semi-managed 'estates' which are largely well tended grassland, such as traditional parkland, deer estates and large recreational areas (*e.g.* golf courses, playing fields, polo estates); hedgerows and limited stands of trees are likely to be present.

Fieldscapes

All areas of enclosed fields regardless of particular land use (arable, pasture, horse paddocks, orchards); farm complexes and low-density rural housing up to small villages are incorporated; may also include small woods in field-like plots or ribbons.

Built-up areas

Zones of continuous housing, industry and military complexes, usually over about 700m on the maximum dimension, including small to medium garden plots; larger sized garden plots extending beyond the built zone are excluded and treated as either fieldscapes or woodland as appropriate; railways, roads and major road junctions bordering built-up areas are included, but are not depicted if surrounded by countryside.

Quarries

Medium to large-scale quarrying which will have totally destroyed the archaeological landscape.

Appendix 19.1

Bronze Age burial evidence from the Rother Region

Stuart Needham and Sabine Stevenson

The following table details recorded burials or possible burials dating to the Bronze Age, or potentially so, within the mapped frame: OS grid SU66-TQ02 East, SU14-SU37 North (text Figure 19.1).

The Barnett Copse burial merits some discussion due to its potentially important relationship to a well-developed lynchet. In an archive drawing in Portsmouth Museum the urn is drawn in its own pit and a separate drawing records the layers in the lynchet (Fig 1); the urn is projected onto the latter, but the distance between the two sections is not recorded, nor is whether the urn pit cut through any of the same layers or was sealed by some of them. On current evidence it cannot be ruled out that the lynchet built up against a small mound. Two depressions shown in the chalk bedrock are intriguing, but there was apparently no break or change in the buried turf-line above. The section drawing records a grid reference of SU 745 159 under the lynchet.

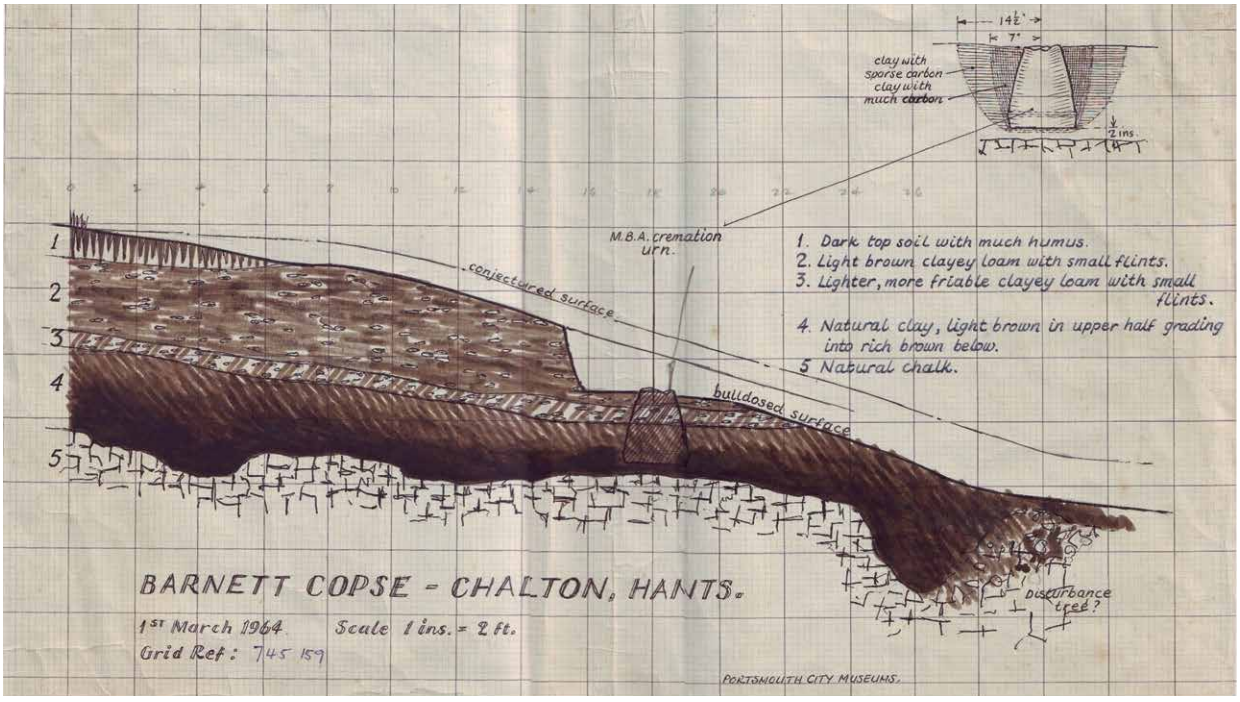


Figure 1 Archive drawing made at the time of discovery of the Barnett Copse urn burial. Reproduced courtesy of Portsmouth Museum.

Site & NGR	Context and finds	Collection & references	Circumstances of recovery & notes
Sandstone Upland & Low Weald			
1. 'Goldhorde Barrow', Gostrode Farm (9633/1), Chiddingfold, Surrey SU 9619 3335	The remains of a skeleton with a vessel of 'unbaked clay' and 'trifling fragments of corroded brass, probably the remains of a clasp or buckle', lying on 'a circular hearth of ironstone, the diameter of which extended about 10ft'; it was covered by a stratum of wood ash.	Whereabouts of finds unknown; Douglas 1793, 162	Excavated by Rev J Douglas in 1790. The platform of ironstone *c.* 3m across suggests a Bronze Age date rather than, say, Anglo-Saxon, but the finds cannot be identified to type from the descriptions.
2. Three Gates Lane, Haslemere, Surrey SU 91 33	Bucket Urn; restored but probably near complete; no context known, but possibly from a burial deposit.	Haslemere Museum, record no 698	Found before 1924, when presented to the museum by Sir A. Lowes Dickinson (according to old display label).
3. Hammer, Linchmere, West Sussex SU 872 320	Complete (or near) Collared Urn; 'found lying down with calcined bones (Haslemere Museum records).	Haslemere Museum 54026; Lowther 1957; Longworth 1984, 276 no 1561, pl 20d	Found 1954, 1 foot deep during digging for house foundations at The Ridge.
Wey/Rother headwaters			
4. Slab Common ('Woolmer Forest'), Hants c. SU 78 35	Collared Urn (or Biconical Urn), a cylindrical 'small white bead' and 'quantities of charcoal and burnt bones' (Skinner); found 'In the fifth [barrow] (being the smaller of two upon "Cold-down Hill, not far from Hogmoor Pond and Binn's Pond"), an urn was found, placed on the original level of the ground, covered by a flat stone, and containing (as I infer), calcined human bones or ashes.' (Selborne, based on information from a Mr Prettejohn, present at the opening of five tumuli in the Woolmer Forest area instigated by Mrs Barlow of Midhurst.	Whereabouts of finds unknown; Selborne 1875, 566; Tomalin 1985 (citing J. Skinner); Pastscape.[1]	Found 1829 and finds shown by Mrs Barlow of Midhurst to the Rev. John Skinner in June 1830. Unknown which barrow on Slab Common was investigated (7835/1-3). Pastscape wrongly associates this find with one of two barrows in the Woolmer Pond area.
5. Brimstone Lodge Inclosure c. SU 79 32	'... some small fragments of an urn, "old, rotten, decayed and crookey," and seeming to have been sun-dried...'	Whereabouts unknown	Found during Mrs Barlow of Midhurst's 1829 campaign of excavation of five barrows in the Woolmer Forest area. Not known from which of the many barrows in Brimstone Inclosure this came.
6. Weavers Down (8130/1?), Whitehill, Hants c. SU 80 30	Tree-trunk coffin burial; 'In one barrow... was a portion of a hollowed tree-trunk, probably the remains of a coffin, in which was black hair. This hair when found was like a hard black ball, but after some time it uncurled itself into black hair much to everyone's horror. The British Museum authorities pronounced it to be human hair. Some red hair was also found which probably belonged to an animal whose skin had been worn by the person buried in the barrow. This barrow was half-a-mile N.E. of The Wylds.' (Grinsell 1939, based on an account from Cardew's son).	Whereabouts of finds unknown; Grinsell 1939, 195; Parker Pearson et al. 2013, 62 no 56	Found c. 1883 by Rev G Cardew: Unsure which barrow on Weavers Down, but 8130/1 most likely given the shape and size of its crater; this barrow is actually 2.4km north-east of the house 'The Wylds', but less far from the boundary of its grounds.
7. Weavers Down, Whitehill, Hants c. SU 80 30	Cremation in a cist of large stones. 'Some curious pipes of sandstone...'	Whereabouts of bones unknown ('pipes' in Haslemere Museum?); Bashford 1922; Grinsell 1939, 195-6.	Unsure which barrow on Weavers Down. The 'curious pipes of sandstone' may have been ferruginous cementation forms.
Middle & Lower Rother Valley			
8. Petersfield Heath Barrow 4, Hants SU 7585 2317	Apparently an unaccompanied cremation deposit.	Whereabouts of bones unknown. Newspaper article (Chapter 5)	Found by an un-named excavator in 1924 in one of the two tumps.
9. Petersfield Heath Barrow 8 Urn 1, Hants SU 7577 2295	Urn 1 'burial' under mound, probably north of centre of; no bones present; several MROs associated.	See Chapters 6 & 9	People of the Heath campaign.
10. Petersfield Heath Barrow 11, Hants SU 7555 2302	Probably a totally decayed inhumation in coffin slightly dug into old ground surface at centre of mound; flint and stone artefacts, plus bronze dagger fragment.	See Chapters 6 & 8	People of the Heath campaign.
11. Petersfield Heath Barrow 13, Hants SU 7549 2283	Cremation in handled bag within grave-pit under centre of mound; flint and stone artefacts.	See Chapters 6 & 8	People of the Heath campaign.
12. Petersfield Heath Barrow 14 Urn 4, Hants SU 7550 2279	Urn 4 'burial' in north-west quadrant of enclosure barrow; no bones present; accompanied by three faience ornament fragments, flint flake and MROs.	See Chapters 5 & 9	People of the Heath campaign.
13. Petersfield Heath Barrow 19 [405], Hants SU 7556 2272	Probable log-coffin burial at centre of enclosure barrow – contents unknown (not fully excavated); part-pot group placed high in grave fill.	See Chapters 5 & 8	People of the Heath campaign.
14. Petersfield Heath Barrow 19 [406], Hants SU 7556 2272	Cremation deposit in log coffin set in deep grave-pit at centre of enclosure barrow; accompanied by wooden spatula.	See Chapters 5 & 8	People of the Heath campaign.
15. Petersfield Heath Barrow 19 Urn 3, Hants SU 7556 2272	Cremation deposit in bag in inverted Collared Urn within small pit at centre of enclosure barrow; accompanied by 7 flints and marcasite nodule.	See Chapters 5 & 9	People of the Heath campaign.

Site & NGR	Context and finds	Collection & references	Circumstances of recovery & notes
16. Petersfield Heath Barrow 19 Urn 2, Hants SU 7556 2272	Cremation deposit in bag in inverted Collared Urn within small pit in north-east quadrant of enclosure barrow; associated with sherds of second Collared Urn and several MROs.	See Chapters 5 & 9	People of the Heath campaign.
17. Petersfield Heath Barrow 22, Hants SU 7550 2315	Charred-log 'burial' near centre of mound above natural outcrop; no bones found (but not fully excavated); 1 lithic and 1 pottery bead.	See Chapters 6 & 10	People of the Heath campaign.
18-22. West Heath Common Barrow VI (7822/6), Harting, West Sussex SU 7862 2260	At about the centre of the barrow was a patch of carbonized oak chunks (25) with a Collared Urn alongside (20); it was placed on the OGS and was enveloped by turves of the mound. Context (8), a pit c. 5m S of barrow's centre, 1.5m across and 1.1m deep, with central conical fill of black sandy clay, likely a decayed post; 2 upright Collared Urns (23, 24) in upper part of fill 17, one (23) containing cremated remains of mature adult male. Context 13, the upper fill of pit 8, a firm black sand layer containing 2 Collared Urns (21, 22); 21 with cremated remains of adult male, 22 with a few cremated bone fragments including one unfused suture suggesting a child; overlain by turves (context 14). A small hollow (context 5) about 6.5m SE of centre and 3m E of context 8 contained a small Biconical Urn; a patch of disseminated charcoal was nearby (6). Incorporated in the turf stack (SW quadrant) a Collared Urn (15) containing a few cremated bone fragments, possibly of an immature individual.	Chichester Museum; Drewett 1985, 37-42 & microfiche	Complete excavation of nine barrows ahead of destruction by sand quarrying. Pot 20 implied to be upright or inverted, but orientation not specified. Pot 24 not illustrated, '... 104 sherds... from a plain urn'. The absence of any skull bones in Urn 21 may suggest the head had been removed before cremation. Pot 22 not illustrated, 'crushed base and body sherds from plain Collared Urn'. 'Top two thirds of a small pot with base missing'; orientation not specified. Pot orientation not specified. Vessel has 'potter's signature'.
23. West Heath Common Barrow VII (7822/7), Harting, West Sussex SU 7858 2261	Central oval pit with sherds of at least 2 Collared Urns and abraded, unidentifiable fragments of cremated bone.	Chichester Museum; Drewett 1985	Excavator thought the pit's contents were probably all redeposited by earlier excavators and possibly also disturbed by rabbits.
24. Turkey Island (7919/1), Harting, West Sussex SU 7948 1947	Bucket Urn containing cremated bones, inverted in a pit c. 0.4m in diameter and up to 0.15m deep into the bedrock.	Chichester Museum; Aldsworth 1983a	Found by John Hosking in September 1982 whilst ploughing 200m west of East Harting Farm.
25. Heath End (9618/13), Duncton, West Sussex SU 9641 1858	Presumed totally decayed inhumation; at centre of ring-ditch, a NW-SE aligned rectangular pit contained three flint barbed-and-tanged arrowheads and two further retouched flints at NW end.	Chichester Museum; Johnson 2002; Appendix 19.2	Excavated 2002 by Caspar Johnson, Archaeology South-East
26. Fitzleroi Farm, Fittleworth, West Sussex TQ 0103 1987	A pit containing the base of a prehistoric (Middle Bronze Age?) pot and several small fragments of burnt bone, not inside the vessel.	Chichester HER CD2905; Kenny 1995; Needham 2017, Appendix 1.	Excavated 1995 by Southern Archaeology on the site of an area find of MBA goldwork. The bone appears not to have been identified definitively as human.
Western Chalk Downs			
27. Lower Farringdon, Farringdon, Hants SU 7040 3548	Long-Necked Beaker; no burial noted by gravel workers.	Curtis Museum, Alton; Waterman 1947; Clarke 1970, 482 no 301 (not illustrated)	Dug up September 1938 in a gravel-pit at Lower Farringdon; possibly associated with an unrecognised burial deposit. Cruciform design on the base.
28. Manor House, Colemore & Priors Dean, Hants SU 732 300	'Bucket Urn'; no burial noted.	Whereabouts of vessel unknown; Hants HER 17372	Found in an unspecified barrow on Manor House Ridge in the 1930s; thought to be one of 7329/2, 7330/1 and 7330/2.
29. Crabtree Farmhouse (7226/1), Froxfield, Hants SU 7249 2689	At the centre of the barrow, probably on old ground surface... 'was found a heap of bones... which... appear to have been broken up after having been burned... Around the bones and other articles was a good deal of much blackened earth' Cremation burial with bronze knife, bronze chisel, 2 whetstones, flint flake.	Winchester Museum; Anon 1925; Gerloff 1975, 167 no 302, pl 53F	Excavated *c.* 1888 by Mr Sylvester.
Southern Chalk Downs			
30. Snell's Corner, Horndean, Hants SU 7077 1540	Crouched inhumation of female, head south facing east, placed slightly east of centre under low mound enclosed by ditch; no associations.	Whereabouts of bones unknown; Knocker 1955-56; Hants HER 26545	Excavated in 1947; see also text Table 16.2. Most likely to have been Bronze Age in date; the lowness of the mound at time of excavation may have been due to previous cultivation.
31. Clanfield Down (A3), Clanfield, Hants *c.* SU 711 161	Urn burial said to have been secondary to a barrow.	Whereabouts of finds unknown; Hants HER 26676	Excavated ahead of road widening, 1968; no report known. See also text Table 16.2
32. Barnett Copse, Rowlands Castle, Hants SU 7448 1620	Inverted Collared Urn containing cremated bones, 7 faience beads, 5 amber beads, 1 amber button/terminal & 1 jet annular pendant.	Portsmouth Museum; Hants HER 26628; Cunliffe 1973, 180; Longworth 1984, 202 no 620, pl 159c; Beck & Shennan 1991, 151-2 ('Chalton')	Found when forestry operations bulldozed a lynchet, February 1964; stated that the burial urn was inserted into the lynchet, but equally possible that the lynchet incorporated a pre-existing small mound. A section drawing of the lynchet in Portsmouth Museum does not clarify (see above, Fig 1).

Site & NGR	Context and finds	Collection & references	Circumstances of recovery & notes
33. West Harting Down (7618/1), Harting, West Sussex SU 7666 1841	Sherds of Globular and Bucket Urns and traces of burnt bone recovered from the barrow are likely to have been disturbed burials deposits.	Portsmouth Museum 61/57 & 62/57; Chichester HER CD235 & 236	Brought to the surface by ploughing in 1957 preparatory to forestry planting.
34. Apple Down, Compton, West Sussex SU 7945 1495	Collared Urn, upper portion, associated with cremated bones; in a pit cut into the chalk.	Chichester Museum A20101.182; Raymond 1990; Seager Thomas 2008, 27	The burial was probably associated with one of three or four barrows that had previously existed on the hill top, but had since been destroyed and levelled by the construction of reservoirs. Vessel has 'potter's signature'.
35. Beacon Hill (8018/1), Elsted & Treyford, West Sussex SU 8072 1804	An oblong W-E aligned feature within a small ring-ditch contained a heap of bones of an adult male at the W end.	Chichester Museum; Bedwin 1977, 229-30 fig 3; 1979, 31	Uncertain date. Excavated 1976 by Owen Bedwin, Sussex Archaeological Field Unit. It was suggested that the bones had been redeposited by an earlier excavation. A radiocarbon date indicates that at least one bone dates to the later Saxon period.
36. The Devil's Jumps (8217/5?), Elsted & Treyford, West Sussex SU 8251 1729	Unaccompanied cremation deposit: 'a deposit of burnt bones, which appeared to have been placed on the natural turf, and at some distance from the centre'.	Franks 1853	Excavated 1853 by A.W. Franks during the Archaeological Institute's meeting at Chichester.
37. The Devil's Jumps (8217/2?), Elsted & Treyford, West Sussex SU 8237 1737	Unaccompanied cremation deposit, near centre of mound.	Franks 1853	Excavated 1853 by A.W. Franks during the Archaeological Institute's meeting at Chichester.
38. Heyshott Down (9016/12?), Heyshott, West Sussex SU 9074 1650	Inverted Collared Urn containing cremation; secondary to mound?	Worthing Museum 57/361; Longworth 1984, 276 no 1557 (not ill.)	According to Longworth, from Grinsell's Heyshott Down barrow 9 and probably thus 9016/12 (CD1763).
39. Duncton Down, Duncton, West Sussex SU 9550 1585	Inverted Collared Urn containing cremation on old ground surface under a barrow *c.* 4ft high on Duncton Down. It was covered with 'blocks of chalk with shreds of charcoal now and again; flint flakes and scrapers in loose earth above the chalk blocks'.	Privately owned (1984); Chichester HER CD1961; Longworth 1984, 276 no 1553, pl 131c; Garwood 2003, 50	Excavated 1899. Given as 'Littleton End' as well as 'Duncton Down' in the HER entry, but the original site description matches the latter: hence HER northing is probably 2km too far south (typographic error?).

[1] http://www.pastscape.org.uk/hob.aspx?hob_id=243624

Appendix 19.2

Re-assessment of the Heath End Duncton ring-ditch (9618/13)

Stuart Needham

A ring-ditch was excavated ahead of sand extraction at Heath End, Duncton parish in March 2002 by Archaeology South-East. The excavation was written up by Casper Johnson, but remains as an unpublished archive report (Johnson 2002; available from the archaeological service at Chichester District Council).[8] Due to time constraints, not all features exposed could be examined as fully as would be desirable and a number of small features were not investigated at all (Johnson 2002, 3) and this probably explains why the conclusions reached in the report were quite tentative and limited. Nevertheless, some aspects of the site are worthy and capable of re-assessment in the light of both the evidence presented in the report and comparative knowledge (text Fig 19.3).

The site lay on the Folkestone Formation of the Lower Greensand, although hard sandstone was apparently not reached. Instead the subsoil was a 'pure orange sand', perhaps Head deposits derived from the parent rock. This acidic free-draining sand is notoriously susceptible to leaching and attendant podsolization, the effects of which on archaeological features are well recognised in the report. Indeed, Johnson talks specifically about 'micro-podsolisation' – the movement and aggregation of minerals in response to small-scale soil variations. As often on acidic sand sites, these processes complicate the recognition of archaeological features.

Implications of topography and recorded profiles through site

The site sat on a gentle slope of about 3.5° facing south; the micro-topography is not recorded. The subsoil in the interior of the ring-ditch was a little higher than that outside, by up to *c*. 0.2m (Johnson 2002, 7); there are two obvious explanations. Either the monument was situated on a slight spur within the slope, or a mound covering the interior had survived for long enough to protect the underlying subsoil here from erosion during a phase of reduction of the land surface around it. The very shallow survival of the ditch in the south (section 1) and its asymmetric profiles in the south-west and south-east (sections 3 & 4) suggest the latter explanation is most likely the correct one. In all three of these ditch sections there is a significant step down in the subsoil surface from inside to outside the ditch. A slighter step occurs to west and east (section 2). On this interpretation, the surrounding ground surface round the southern half of the site at least suffered reduction by up to 0.25m while the interior of the monument was protected, most obviously by a mound. Ploughing would be

8 I am also grateful to Casper Johnson for his personal recollections; the excavation was initially allowed only five days, this being extended to eight days.

the most likely cause of such reduction and need not have been particularly long-lived to cause this amount of soil movement given loose, erodible sandy soil. As far as can be determined from the symmetrical upslope ditch profile, this side of the monument was not reduced in this process. This could mean that the mound lay on a cultivation boundary, approximately west-east, which would have developed as an almost imperceptible lynchet. However, it is equally possible that cultivation took place all round, and possibly over, the mound, but that the obstacle of the mound initially allowed soil to build-up rapidly on the upslope side, thus protecting the underlying deposits. In either variant scenario, a phase of later cultivation satisfactorily accounts for the profiles observed. Two possible periods can be suggested for the cultivation: firstly, soon after clearance and mound construction when soil fertility was still good enough for crop growing – for example, during the Middle Bronze Age – or much later when the land was taken into the fieldscape during the later-19th century AD. In the latter phase persistent manuring might have alleviated the by-now highly degraded soils and more efficient ploughs would have caused the observed subsoil attrition much more quickly.

Original size of ditches and mound form and size

Allowing for the sub-surface reduction just deduced and the homogenisation of the upper soil profile across the whole site, it is clear that only the bottoms of the ditch profiles survived. The maximum depth of survival on the north side was 0.6m reducing to less than 0.2m in the south (*ibid*, 7). Assuming a ground surface at a similar level to that when excavated, the actual maximum depth to which the ditch was originally dug could have been *c.* 0.75 or more, probably varying a little around the circuit. The width of the ditch at the top would have been greater than the recorded dimensions, although not in proportion to the additional depth because ditch sides normally steepen towards the top; reconstruction suggests between 5.5 and 6.5m wide. A wider ditch would reduce the already quite small interior area, whilst its outer-lip radius might have been nearer 11m than 10m. The volume of turf and sand produced by such a ditch would have been in the order of 75-100m^3 (assuming an *average* ditch depth of 0.3-0.4m). This would make a small mound by volume even if all the spoil was used; however, given an interior space only 10m across, it would have produced a domed mound of at least 1.8m height after compaction. One alternative would be the retention of the edges behind a vertical revetment, thus forming a lower more cylindrical mound, and another is that some of the ditch spoil was placed elsewhere, for example as a bank around the outside.

The question of the 'inner ditch'

Inside the main ring-ditch the excavators found '… a series of complex bands of variably stained sand, particularly around the northern and north-eastern side of the monument. To the south it was less clear and it remains uncertain whether this "feature" ever continued around the full circumference.'(*ibid*, 9). These soil marks were initially regarded as the fills of an 'inner ditch', but subsequently re-interpreted as the effects of 'concentrated leaching caused by ground-water collecting against the northern side of the barrow mound' (*ibid*, 27). Wiltshire also argued the case for it being 'some part of the original pre-construction soil profile' which was subject to 'in situ pedogenesis' due to drainage flowing off the mound (*ibid*, 21).

Where this annular or penannular feature survived to greatest depth, in the north, it was excavated with a distinct trapezoidal profile and with steeply pitched fills (especially sections 1 and 5). Its maximum depth was 0.4m. Despite Johnson's doubt as to whether it ever existed elsewhere, the excavated sections consistently show a secondary dip or a ledge inside the main ditch and contiguous with it, these features being between 0.15 and 0.25m deep in the subsoil. Such relatively shallow depths are to be expected given the apparent truncation of features in the southern half of the monument by up to 0.25m, as deduced above. The doubt over there being an inner ditch seems to have led to these features having been subsumed into the main ditch in some sectors, hence the ditch width being given as *c.* 7m in the south-east (*ibid*, 7) a measurement contradicted by the maximum stated in other parts of the text. While enhanced leaching and podsolization could certainly occur around a mound's edges, the recorded form and fills are entirely consistent with the existence of a discrete (pen-)annular feature just inside the main ditch with a small amount of overlap in some sectors.

This was evidently a relatively narrow and steeply cut feature, and the steeply pitched fills would be consistent with immediate backfill around vertical members, so it is possible that this was a palisade slot. That micro-podsolisation processes were at work can be taken as read, but redeposited minerals frequently aggregate at the stratigraphic boundaries delimiting and within cut features. Had these 'complex bands' been the result of a simple flow of water off the mound without any underlying structure, one might have expected a more homogeneous and amorphous zone of mineral redeposition flowing into the ditch. Where the ring-slot is best preserved it does not impinge on the inner lip of the main ditch and the relationship between the two elsewhere is fraught with difficulties, given shallow survival and post-depositional soil processes. However, in the east (section 2) the excavators clearly thought that the slot fill had been cut by the main ditch, and this is the only empirical evidence for sequence. Its diameter ranges from *c.* 8.7-9.5m internally and 10.8-11.7m externally.

Burial zone

A little north of the centre of the interior was another area of complex soil marks (*ibid*, 11); if there had been a mound, as argued above, this area would have been protected from the degree of leaching normal in the soil profile. A triangular area (F.28) with an apex pointing north-west was 3.1m on this axis and 2.5m across the base (SW-NE). The depth of the main fills here (contexts 20, 26, 28 & 29) is not given, but section 1 shows 28 on the north-east side to be rather shallow and 20 on the south-west to be deeper, 0.3m or more. It is possible that the latter was the foundation trench for a line of posts along the south-west side, this being complemented by a second line along the north side; these met at a single feature, F.40. This last and two other similar features (F.39 & F.23) were shown by excavation to have the form of post holes, but conditions on site unfortunately did not allow all to be examined carefully (*ibid*, 11). Nevertheless, Johnson tentatively suggested that 'the other features in this group [were] of similar type' and that 'the regular shape and NW-SE orientation of this feature suggests that it might just represents [sic] the remains of a structure' (*ibid*, 11, 28). Certainly, the coherence of the pattern of these features, and the obvious relationship to the triangular zone and the contained probable grave (below) argues strongly for two post lines in V-formation pointing north-west. These outline F.28, but the soil marks representing that feature may be in part staining from disturbance rather than actual cuts.

Approximately axially placed within the triangular zone was a sub-rectangular cut 2.3m long and between 0.6 and 0.8m wide; it survived to a maximum depth of 0.15m becoming shallower to the south-east where it seems to have projected a little beyond the triangular zone after a zone of disturbance caused by a probable animal burrow (context 21). On the base of this shallow cut were five retouched flints, three arrowheads, a denticulated implement and a notched flake. The denticulated and notched pieces, and two of the arrowheads were at the north-west end, the projectile points pointing north-west; the third arrowhead was 0.5m to the south-east and it pointed south-east instead. These are interpretable as grave goods and it is likely that the feature was an inhumation grave in which the bones had decayed without trace. The flint specialist, Priestley-Bell, records eight further struck flints, all unretouched, from this feature (*ibid*, 14-5 table 1) and these too should be treated as part of the grave assemblage.

The probable grave appeared to cut fill or stain F.28 and it is possible that the triangular zone was defined first by erecting two lines of posts, with or without some internal hollowing, and that the rectangular grave was dug shortly after. The grave would have been dug to a depth of around 0.5m below ground surface.

Other features in the interior

Another area of heavy staining (F.54), *c.* 2.4 by 1.0m, lay to the south of the burial zone, but after excavation was dismissed as 'primarily the result of complex soil staining' (*ibid*, 12). In the north, five circular to oval soil marks (F.32-F.36) most of which overlay the ring-slot were thought to be natural (*ibid*, 10); however, these and a sixth feature to the west, F.49, form a fairly even arc, the centre of which would have lain a little east of that for the ring-ditch and ring-slot. Three of the features contained waste flint flakes (*ibid*, 28). It is noteworthy that three more similar features occur in a similar position at intervals around the southern circuit (F.55-F.57). Further similar soil marks are shown in the northern sector, including a more closely set row of smaller features which is curved at the west end, its line echoing the northern wall of the burial structure. There are also stake-sized features shown in approximate linear formations, three radiating from the burial zone between north and north-east, and a fourth just outside and parallel to its south-west side. Finally, two features were excavated on the east side of the interior, one sub-triangular and rather shallow (0.06m), the other much larger, of irregular shape and possibly 0.42m deep (over-dug?); neither fill yielded any finds.

Site sequence and interpretation

There is clearly a sequence involved in the various features excavated. Stratigraphic relationships are (Fig 1):

- the ring-slot is probably earlier than the ring-ditch;
- the ring-slot was backfilled before the northern post arc was created;
- the central triangular fill or stain is probably earlier than the cutting of the grave;
- the grave and all other humanly dug features in the interior are earlier than the deduced mound.

While the 'palisade' interpretation for the ring-slot could be seen to tie in with the need to hold back a more cylindrical mound, thus making it effectively contemporary with the main ditch, this would cause problems for the northern arc of post holes some of which cut into the ring-slot fill; these would have to have been dug down through whatever thickness of mound was present after decay of the revetment and collapse of the mound edge. Moreover, there are grounds for connecting this post setting to other interior settings including the central mortuary structure and its contained grave, all of which would have to have preceded a mound of the height that has been estimated.

The suggestion that all or most of the interior features belong broadly to a single phase is based on spatial relationships and particular alignments. Aside from a possible stake line flanking the south-west side

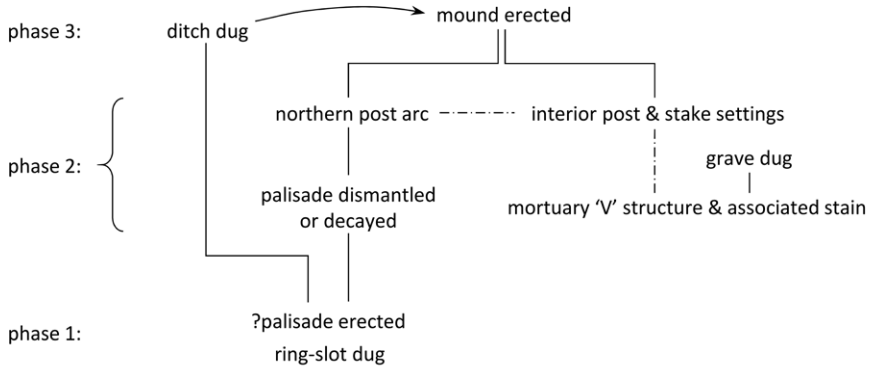


Figure 1 Stratigraphic matrix for Heath End, Duncton, ring-ditch; based on information in Johnson 2002

of the mortuary structure, virtually all of the features are concentrated to its north. In fact, they fill a northern 'quadrant' as seen from the grave. As already noted, other possible stake lines radiate away from the mortuary structure. These interconnections are strengthened by some significant alignments. Firstly, the axis of the grave and more broadly that of the mortuary structure conforms to the midwinter sunrise/midsummer sunset solstitial axis (currently at 129° from OS grid north; text Fig 19.3). The 'V' structure points towards the midsummer event, while it is open to the midwinter one. The two post arcs to the north both stop just short of this line. The opposite solstitial axis, for midwinter sunset/midsummer sunrise, also seems to be enshrined in this arrangement: it is exactly coincident with the line from the east end of the northern post arc and the front of the mortuary structure. Virtually all of the potential post and stake holes lie within the northern sector thus delimited, the sector where the sun is never present. Even if there were some additions over time, it would appear that all these elements were interrelated.

If the palisade interpretation of the ring-slot is correct, it could no longer have been standing, not only because it was overlain by the northern post arc, but also because it would have blocked observation along the crucial sightlines. Even if the slot was instead just the narrow base of a steeply cut ditch and had a bank associated with it, this would have to have been at least partially silted/backfilled (*i.e.* up to at least the truncation level found in excavation) before the northern post arc was erected. Either way the ring-slot would have been earlier than the ditch and mound, a sequence supported by the pollen and spore evidence (App 20.1), although the time interval need not have been great.

Phase 1 is therefore the ring-slot. If holding a palisade, this was apparently free-standing and if the gap in the south is an original entrance, then this could have been lintelled to give rigidity to the circular structure. It is therefore not impossible that this is the foundation trench for the wall of a covered building of 10m diameter.

In *phase 2*, the V-shaped mortuary structure is likely to have been erected first. F.28 coincided so completely with the internal floor area that it must be due to disturbance or staining during its use, for example, through trampling during construction and while a corpse was on view. The grave was then dug and a body presumably interred with accompanying goods. The V-structure is not only a pointer towards midsummer sunset, but appears also to be a symbolic arrowhead; its alignment is echoed by two of the three arrowheads in the grave. The various structures in the 'dark' quadrant may relate to screens and rituals aimed at warding off malign forces from this direction. The detailed chronology of these relative to the main mortuary events at the centre cannot be determined.

Phase 3: at some point after the cessation of the funerary passage, the mound was constructed from an annular ditch dug all around. The ditch, as projected up to the contemporary ground surface, would have been broader than in its truncated excavated form and its inner edge would probably therefore have overlapped the ring-slot more than was apparent in excavation. Given that nothing of the mound survived, there is no evidence as to whether any of the internal structures were still standing, the mound being erected around them.

Unfortunately there is no dating evidence for this site other than the form of the arrowheads. Barbed-and-tanged arrowheads are frequently placed in graves of Chalcolithic and Early Bronze Age date, most often in the earlier half (*c.* 2450-1950 BC), although later examples occur too. The finely worked arrowheads are attributed by Priestley-Bell to the Conygar Hill type (*ibid*, 15), but they actually have in-sloped barb ends which are instead characteristic of Stephen Green's Green Low type (Green 1980, 118-20); the Conygar Hill type has out-sloped barb ends. The Green Low type is primarily associated with Long-Necked Beakers (Clarke's Southern series) when accompanied by pottery (Green 1980, 140), suggesting a most likely date of the earliest Early Bronze Age, *c.* 2200-1950 BC), although that pot type may continue a little later. The small size of the barrow is not inconsistent with this period.

Appendix 19.3

Evaluation of radiocarbon dates from West Heath Common

Stuart Needham

The series of radiocarbon dates obtained for material excavated from the West Heath Common cemetery is listed in Table 1.

At least half of the determinations are of little value for understanding the dating of the barrows, their burial contexts and cemetery evolution. The main points to draw are as follows:

- A pit under Barrow I (Table 1 date 1) proved to be Mesolithic.
- All three dates with standard deviations greater than ±100 can be disregarded as being far too imprecise (dates 2, 4 & 9).
- The Barrow VII date (12) is not useful – it has a wide calibrated span and is also from a disturbed context, so it is not known what event is being dated.
- Two of the dates from Barrow VI suggest incorporation of Late Neolithic charcoal (dates 9 & 11): one has already been set aside above, and the other (date 11) from high in the fill of post-pit [8] is certainly too early to be explained as being the heartwood of a tree felled in the Early Bronze Age.
- The second Barrow III date (3) is for bulked charcoal (from flotation) from the old land surface. The charcoal used need not necessarily all derive from a single phase of burning and it can only be a rather general *terminus post quem* for mound construction; it is also rather imprecise.
- Two dates from Barrow VI post-pit [8] (dates 8 & 10) are consistent with one another and suggest the deposits should pre-date 1700 cal BC providing there was no significant age to the wood dated.
- The remaining dates for Barrow VI (dates 5-7) are reasonably consistent with one another and can be taken to date late pre-mound activity: pit [7], burial [15] and the subsequent construction of the mound. Dates 6 & 7 in particular suggest the mound dates to *c.* 1700-1500 cal BC, and date 5 (strictly speaking a *terminus post quem*) is not inconsistent with this.

In conclusion, the only useful information yielded by the radiocarbon dates is that there may have been Late Neolithic activity in the area (as well as Early Mesolithic) and that two phases can be identified for Barrow VI: phase 1) the post-pit [8] and its multiple urn deposits before 1700 cal BC; phase 2) a charcoal filled pit and probably two further urn deposits all sealed under the mound, plus an urn incorporated within the mound after 1700 cal BC. The latter ties in well with the fact that one urn was of Biconical type.

No	Barrow	Context	Sample material	Radiocarbon date (BP)	Calibrated date (cal BC; 95%)	Laboratory reference	Comments/problems
1	I	Pit sealed under barrow	charcoal	8100 ± 70	7320 – 6820	Har-645	Presumably a Mesolithic feature
2	II	Old land surface	charcoal	3110 ± 160	1740 – 930	Har-646	Far too imprecise to be useful
3	III	Old land surface	quantities of charcoal obtained by flotation	**3630** ± 100	2290 – 1740 (probably 2200 – 1800)	Har-647	Date gives just a *terminus post quem* for mound construction.
4	III	Lens in top of phase 1 ditch fill, sealed by upcast from phase 2 ditch	charcoal	3220 ± 180	1940 – 1020	Har-648	Too imprecise to be useful
5	VI	2, turf stack	?charcoal	**3400** ± 70	1885 – 1530 (probably 1850 – 1600)	Har-5281	Sample could be just a *terminus post quem* for mound construction.
6	VI	7, sub-rectangular pit fill	charcoal, predominantly oak	**3330** ± 70	1860 – 1850 & 1770 – 1445 (probably 1700 – 1500)	Har-5282	Sample could include old wood.
7	VI	15, Collared Urn incorporated into turf stack containing a few cremated bones	?associated charcoal	**3310** ± 70	1750 – 1435 (probably 1700 – 1500)	Har-5283	
8	VI	17, upper fill of post-pit 8	?charcoal	**3650** ± 100	2335 – 1745 (probably 2200 – 1900)	Har-5322	
9	VI	20, Collared Urn on OGS at centre of barrow	presumably the 'carbonized oak chunks' nearby (25)	4240 ± 120	3325 – 2490 (probably 3100 – 2600)	Har-5323	Date is rather imprecise and far too early (Middle to Late Neolithic); sample material not specified.
10	VI	21, Collared Urn containing cremated bones, in upper fill of post-pit 8	?associated charcoal	**3560** ± 100	2200 – 1645 (probably 2150 – 1700)	Har-5321	
11	VI	22, Collared Urn containing a few pieces of cremated bone, in upper fill of post-pit 8	?associated charcoal	4340 ± 70	3330 – 2775 (probably 3100 – 2900)	Har-5285	Date is far too early (Middle to Late Neolithic); unclear what sample material was dated.
12	VII	29-35: central 'burial' pit, previously disturbed	?charcoal	3620 ± 100	2285 – 1695 (probably 2200 – 1750)	Har-5320	

Table 1 West Heath Common radiocarbon dates; emboldened dates are those that are of most use

Appendix 20.1

Summaries of palaeo-environmental evidence from sites in the Rother Region

Stuart Needham

Latin names for species given in English in the following text:

Alder (*Alnus*); ash (*Fraxinus*); beech (*Fagus*); birch (*Betula*); elm (*Ulmus*); ferns (*Pteridium*); grasses (Poaceae); hazel (*Corylus*); heather (*Calluna*); ivy (*Hedera*); lime (*Tilia*); oak (*Quercus*); pine (*Pinus*); willow (*Salix*)

Barrow Zone 1: Woolmer Forest

A deep pollen core was obtained from palaeo-channel sediments of the Holly Water stream at Conford, on the edge of Woolmer Forest (Groves *et al.* 2012). A more or less continuous pollen record runs from about 6000 cal BC to the present. During the earlier Neolithic the vegetation seems to have changed little from the final Mesolithic (all in pollen assemblage CON-3) – a lime-dominated dry woodland with oak and hazel, a little elm and ash, and alder-dominated wetland. There is an interruption during the Late Neolithic period, equating with CON-4, which has much redeposited pollen in it, but thereafter a similar pattern resumes (CON-5), albeit with higher oak and lower lime levels. Groves *et al.* (2012, 458) suggest this changed balance could be due simply to expansion of the wetland area so that lime trees tended to be pushed further away from the sampling site. However, lime does decline significantly from about 1000 BC (beginning of CON-6). Oak and hazel also decline close to that horizon, but the alder carr was seemingly unaffected. Meanwhile, there is a modest increase in heather pollen suggestive of the establishment or expansion of heathland nearby and the beginnings of a strong expansion in grasses (a peak in the later Iron Age to Romano-British period may be artificially enhanced by clearance of much alder carr at this time). Charcoal and other indicators suggest some burning off of vegetation. No cereal pollen was recorded, but there was an increasing variety of weeds and herbs. The opened up land was presumably used as pasture, although grazing pressure was light to judge from consistently high fern values (*ibid*, 460).

Heathland apparently did not expand more dramatically in the immediate vicinity until very late, around the time of the Norman Conquest, although Simmonds *et al.* (Chapter 14) suggest this might be due to heather pollen having been screened out earlier by the alder carr. If the screening effect was significant, then the slight apparent increase in heather around 1000 BC could be indicative of more substantial heathland development locally.

Barrow Zone 2: Rother Bend

Seven of the nine excavated barrows in the West Heath Common cemetery were sampled for pollen analysis (Baigent 1976; Scaife 1985). They give a relatively consistent picture of the environment at the time of barrow construction, although there are variations between barrows. In some cases there are also small but potentially significant differences between the buried soil profile and cut turves laid immediately above (Scaife 1985). These differences show that the vegetation where the turves came from was not identical to that at the barrow site, but they are not so marked as to indicate that the turves come from more than a short distance away or from a different environment. The area of the cemetery was dominated by hazel and also had significant heather, which Scaife suggested may have been understorey to the hazel as much as pure heathland (*ibid*). However, fluctuations in those two species are not particularly well correlated in the pollen diagrams. Other tree species documented – notably lime, oak, birch and elm – were either a lesser component of the *in situ* cover or, more likely, growing a bit further away. Likewise, alder carr is attested from a little further afield, perhaps in the area of Blackrye Pond (text Fig 17.20c) and alongside the Nursted Stream.

Grasses are not especially abundant, but there is a clear regressive relationship with heather; for example, in Barrow V heather is present in greater percentage in the turf stack than in the buried soil profile, for grasses the converse is the case. In Barrow IX these two trends are reversed with more emphatic differentiation. It would seem therefore that the more open elements of the local landscape included alternating patches of grassland and heathland, the latter perhaps dominant. The soil profile under Barrow V has consistent heather frequency of around 7% for some 20cm beneath the land surface, this suggesting a stable heather population for some time prior to construction to allow time for the downward migration of the pollen. There is also heather pollen at depth under Barrow VIII, prior to an intervening (imported?) block of sand with totally different pollen spectrum, but these might be late barrows in the group (Chapter 19). The profiles beneath Barrows I to IV all tend to show heather increasing from their deepest respective samples up to the old ground surface, which suggests that heathland was increasing during the pre-barrow period assuming no taphonomic skewing.

The buried soil with the greatest frequency of grass pollen relative to heather lies under Barrow III, hypothesised to be the 'founder' barrow. This might suggest that grasses were in general overtaken by heather over time (Baigent 1976, 146), but the Barrows V and IX evidence given above makes it unnecessary to seek a chronological sequence in the heather/grass balance. Moreover, the hypothesis requires that the open land seen under Barrows III and IV (NAP/AP ratio of 180%) later closed in to some degree (Barrows I and II; 125%).[9] This seems to run counter to the fact that the hazel profile almost universally declines a little in the upper part of sequences sealed by the respective barrow mounds. It is certainly possible to reverse Baigent's sequence and see Barrows I and II on the edge of the plateau as earlier than Barrows III and IV, woodland having receded further in the meantime. The radiocarbon dates do not help with this conundrum (App 19.3). Cereal pollen is consistently sparse, but some turves have several herbaceous species represented.

For Petersfield Heath, Simmonds *et al.* report in full in Chapter 14 on pollen from eleven of the barrows investigated: seven mound barrows and four enclosure barrows. Some summary points are useful here. The evidence is complex because it combines temporal changes with likely spatial variations across the Heath. Nevertheless, most of the contexts are fairly homogeneous in pollen composition: there was still much woodland somewhere nearby dominated by hazel, lime and oak, with alder in damper patches, but there were already significant clearances dominated by heather with a little grass as well. It is against this Early Bronze Age 'norm' that variations can be considered. The earliest environmental evidence is from the lower buried soil under Barrow 12 dating to *c.* 5000 cal BC. This already shows a 'climax' woodland environment with hazel, oak, ash and lime, but what stands out from the Bronze Age 'norm' is the high proportion of oak pollen. The only other sequence in which comparable levels occur is the base of the ditch in Barrow 14 (also distinguished by higher than usual grass pollen) but the temporal sequence of pollen-bearing sediment is insufficient to be sure of interpretation here. Lime trees are consistently represented in Early Bronze Age contexts, but then totally disappear in the higher, slow-silt deposits in the ditches of Barrows 19 and 24. The implication here is that it was largely removed from the local landscape late in or shortly after the Early Bronze Age.

Two further features deserve recapitulation. Four sites in the west of the cemetery have higher than normal levels of ash and/or willow[10] in at least part of their sequences – Barrows 11, 13, 18 and 19. The sequential evidence from Barrow 13 suggests that this may have been a temporal development occurring late in the Early Bronze Age – samples from its buried soil, mound material and primary ditch fills have 'normal' ash/willow levels (<12%). This sequence is also important in

9 Unfortunately, for Barrows V, VIII and IX Scaife does not give TAP/AP percentages and they cannot be easily reconstructed.

10 These two species should not ideally be combined as they do not imply the same habitat; however, some pollen is difficult to distinguish between the species.

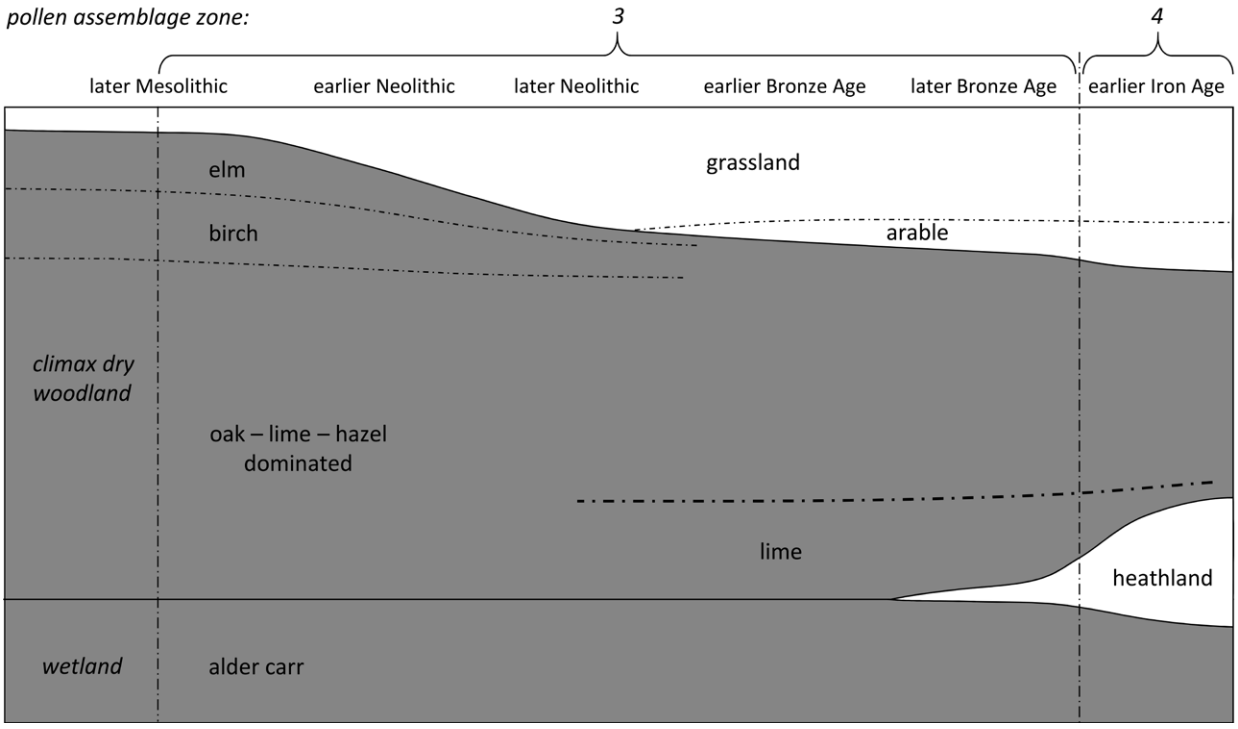


Figure 1 Diagrammatic interpretation of the Midhurst New Pond pollen data for the later Mesolithic to earlier Iron Age

showing a local shift in the balance of these two species. Those same early contexts have willow pollen counts higher than or at least similar to those of ash, whereas ash dominates the later contexts. This would suggest that later on ash regenerated at the expense of willow, but this pattern may have been specific to the western side of the cemetery since in Barrow 8 ash actually declines in the stage 2 mound material relative to stage 1 and the buried land surface (text Fig 14.4).

A more isolated anomaly is the high level of grass in the west ditch section of Barrow 24. The pollen column only covers the higher part of the ditch sequence and may therefore date to well after the use of the Early Bronze Age cemetery; however, there is nothing comparable high in the east ditch and this could suggest that during the post-use phase a marked difference emerged in the vegetation between one side of the enclosure and the other. The strong representation of grasses to the west could include damp-loving species, as is seen today. Meanwhile, land to the east saw a modest growth in heathland as well as a rather erratic maintenance of oak/hazel woodland. Grassland was not ubiquitous on the Heath until the 20th century. Even post-medieval dated Site 17 has plenty of heather pollen until the top sample, when grass pollen suddenly takes precedence. This will have been connected partly to the intake and improvement of Sooty Field alongside, partly to the vegetation requirements of the golf course.

Barrow Zone 3: Iping

This zone is relatively well provided for evidence of prehistoric vegetation. There is a long sequence from a pollen column at New Pond, Midhurst Common (Scaife 2001), results from a barrow excavated at Minsted Quarry (Dimbleby 1975a) and a set of five closely spaced short columns on Iping Common (Keef *et al.* 1965; Keatinge 1983). Interestingly, although the Zone 3 sites span a distance of only 4km, they give very different pictures of Bronze Age environment and change.

Midhurst New Pond gives the best long-term framework. Scaife's pollen assemblage zone 3 is most relevant, being bracketed by radiocarbon dates of the late Mesolithic at the base and the Late Bronze/Earliest Iron Age at the top. A diagrammatic interpretation of the changes during the Neolithic and Bronze Age is shown in Figure 1, where it can be seen that the first incursions into the climax woodland resulted in open grassland during the course of the Neolithic.[11] It is most likely that this early clearance focused on the River Terrace Deposits, a good expanse of which lies immediately south-east of the site, and the fact that much grass pollen reached the sampling site suggests that the alder carr was not a continuous

11 Some of the Poaceae pollen (grasses) could be from wet-loving species.

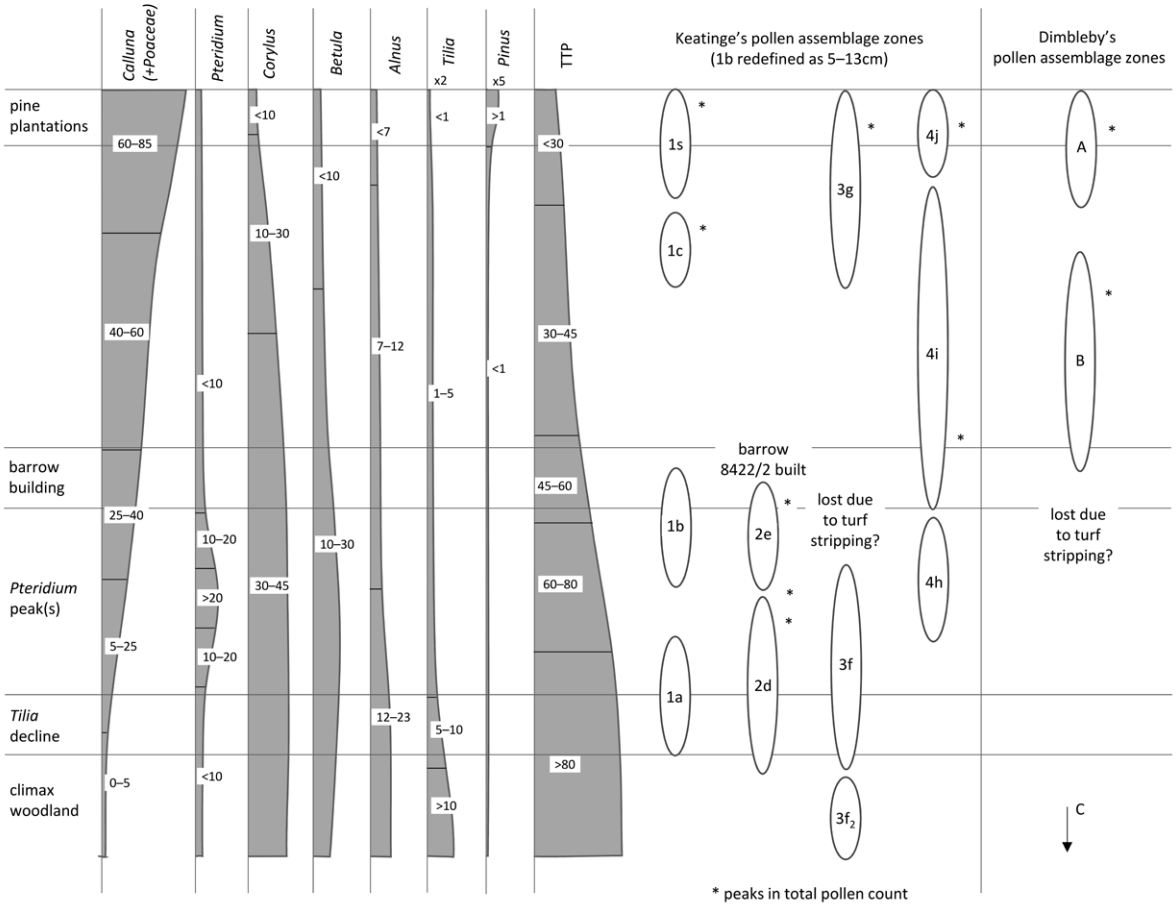


Figure 2 Diagrammatic interpretation of the Iping Common pollen data for the main taxa from the Neolithic to present day. Figures overlying the curves give percentage ranges within which the great majority of values in the corresponding pollen assemblage zones fall

barrier. This clearance particularly hit the elm[12] and birch populations and had less impact on the oak-lime-hazel component. Evidence for cultivation came a little later, possibly not until the beginning of the Bronze Age. Despite the fact that nutrient poor sandstone lies right alongside the sampling site, there is no evidence for the development of significant open heathland until late in the Bronze Age, this perhaps resulting from new woodland clearances on that bedrock. There are very low frequencies for heather earlier in the column, although it is possible these under-represent the actual frequency due to the screening effects of the alder carr (Simmonds *et al.* – Chapter 14).

Further west, the environment before the construction of the barrow at Minsted (8521/6) within the large Iping constellation was largely wooded with oak-lime-hazel on drier land and alder carr nearby. There was negligible grassland and the only significant open areas were already heather-clad and presumably on the local Folkestone Formation sandstone. This appears to have emerged steadily over a period before construction, heather expanding from negligible levels to about 18% (of total pollen plus spores); at the same time lime declines but the other tree species do not. In the barrow's immediate locality hazel seems to have been dominant and the progressive addition of heather would have resulted by the Early Bronze Age in a similar vegetation to that on West Heath Common in Zone 2.

The third site is less than a kilometre further north-west, on the north side of Iping Common overlooking the River Rother. A total of five columns through soil profiles have been analysed from a small area of only 200m across, one of them being sealed beneath barrow 8422/2 and another associated with a Mesolithic flint spread (Keef *et al.* 1965 – Site 0; Keatinge 1983 – Sites 1-4). These columns are in the same geological/pedological environment and so close together that any major variations in vegetation are

12 In practice, the elm decline may have been a secondary effect of the clearance due to the impact of disease from introduced insects (*e.g.* Scaife 2001, 101).

likely to be due to chronological rather than spatial factors (assuming no significant taphonomic biases). While the exact depth of pollen in any given column is not directly related to its age, the identified *pollen assemblage zones* are related by Keatinge to stages of earthworm ecology and 'should still be in chronological order' (1983, 9). In fact, the strong variations found in the sequences, including the original one (Dimbleby in Keef *et al*. 1965), argues strongly against any wholesale mixing; however, where sequences begin with mull soils, that part of the sequence will have been well bioturbated by earthworms. Both Dimbleby and Keatinge recognised that there were probable hiatuses in columns, although the cause is not always understood.

Using these general points, trends in the main taxa represented can be interpreted (Fig 2). The most consistent trend is, as often, a steady reduction in overall woodland/scrub cover (TTP) and a corresponding increase in open-ground species – here mainly heather, but supplemented on the lower ground by grasses. There is, as would be expected, some variation in the species within the woodland/shrubland component, but lime, oak, birch, alder and hazel tend all to be present; the lower ground (Sites 0 and 1) is distinguished not only by significantly higher levels of oak than on the ridge (Sites 2-4), but also by the presence of a little beech.

In addition to the woodland/openland trend, relatively fixed points help establish a broad chronology: the building of the barrow which curtails the Site 2 column, the lime decline and the rise of pine due to the plantations of the last two hundred years or so. Peaks in ferns, seen to some degree in all four of Keatinge's columns, may not be such a good chronological marker but do seem to occur in a specific phase fairly early on, before the Bronze Age. They may mark the transition between woodland and heathland, mull soils and mor soils. Another distinctive and very high peak is that for hazel in Site 0 zones C and D, between 82 and 92%. Dimbleby interpreted this as a Boreal assemblage supported by its association with the Early Mesolithic flint assemblage; the hiatus he identified at the transition to zone B was therefore evidently long-lived (Fig 2). This seems most likely to have been caused by the truncation of an upper profile prior to the formation of soil/pollen B and, given the correlations made, this could well have occurred at the time of barrow building. No barrows are known particularly close by, but if open ground was still in limited supply, there may have been times when the barrow builders needed to obtain turf at some distance. This presupposes that the Mesolithic site occupied a small clearing in the hazel scrub that remained open after occupation ceased, or that the plot was fortuitously cleared at some later date prior to the Bronze Age.

Although heather had already reached about 35-40% before barrow 8422/2 was built (Site 2), this might be due to it having been placed in a clearing, so the general level at the beginning of the Bronze Age could have been lower (although not in the proximate column, Site 3). Another implication of the Site 0 zone B/C truncation horizon is that the mineral soil above (A and B) must have accreted subsequently, and this could be due to subsequent windblown or slope-washed sand shortly after the turf stripping; the pollen in this new accumulation of about 7cm depth would then reflect a mix of older pollen with significant new pollen rain over the subsequent three plus millennia.

There is another probable hiatus in Site 3 at the pollen assemblage zone f/g interface after a peak in ferns. This is only 20m from Site 2 but the upper part of the latter's pollen signature is not present. Given its place in the sequence, it is logical to see this as being due to the stripping of turf to make the adjacent barrow (Fig 2). Combined with the Site 0 evidence the effects of barrow building on the local landscape become obvious.

Barrow Zone 5: Barlavington

The excavated ring-ditch at Heath End Duncton (9618/13) yielded pollen from the ditch itself and an internal ring-slot (see Chapter 19 & App 19.2). The palynologist reporting on the pollen and spores, Pat Wiltshire, urged caution in over-interpreting the data because of the sampling technique; 'the data can only be considered in broad terms; but they do provide useful information on local landscape changes that probably resulted from activity associated with construction of the ring-ditch.' (Wiltshire 2002, 20). Two main contexts were sampled, fills of the ring-ditch [5] and of the ring-slot [10]; the data for selected species are listed in Table 1. In addition, there was a sample of the 'substrate' at the base of the ditch cut [6], but since the ditch was cut well down into this 'pure orange sand' (Johnson 2002, 7), it is unclear what the pollen and spores from this horizon will represent. It can be seen in Table 1 that a few species are at levels very different from in the other contexts, notably birch, oak, heather and grasses; this 'substrate' data will not be considered further.

The three ditch fills are the most straightforward in terms of stratigraphic sequence, but even here there is bound to be a proportion of pollen and spores reworked from earlier deposits. The percentages given by Wiltshire for the individual contexts are shown in Table 1. In some cases, there are clear temporal progressions, namely for heather, grasses, lime and birch, and others fluctuate only a little – hazel and ferns. However, oak peaks in the middle and there is a massive spike of alder in the lower silts. These must be due to very local and/or short-lived pollen-rain features, or to the human introduction of polleniferous branches to the site during use. A more general and perhaps more reliable picture can be obtained by combining all the ring-ditch contexts for direct comparison with similar combined figures for the ring-slot.

	Substrate	Ring-slot [10]	Ring-ditch [5]			
Context: Species	**(6)**	**Combined (11, 12, 12a & 12b)**	**Combined (7-9)**	**Lower (9)**	**Middle (8)**	**Upper (7)**
Alder	3.6	**1.9**	**14.1**	30.6	2.2	7.3
Birch	32.1	**7.5**	**10.3**	6.9	8.9	13.5
Hazel (Corylus-type)	17.9	**30.6**	**15.5**	13.9	17.8	15.6
Oak	8.9	**26.1**	**16.0**	12.5	24.4	14.6
Lime	8.9	**9.7**	**5.6**	8.3	6.7	3.1
Elm	1.8	**0**	**2.3**	1.4	0.0	4.2
Total trees & shrubs %	**73.2**	**75.8**	**63.8**	**73.6**	**60**	**58.3**
Heather	3.6	**7.8**	**18.8**	15.3	17.8	21.9
Grasses	16.1	**12.9**	**11.7**	6.9	13.3	14.6
Ferns	3.6	**1.6**	**2.8**	2.8	4.4	2.1
Total pollen & spore count	**112**	**744**	**426**	**144**	**90**	**192**

Table 1 Selected pollen data (all percentages of total pollen and spores) from Heath End, Duncton.

In the original report, four contexts within feature [10] were itemised separately (Wiltshire 2002, 24 table 2). As for the ditch-fill sequence, some taxa showed fairly consistent levels, whilst others fluctuated. Since the stratigraphic sequence is anyway less clear-cut (the feature may have been backfilled in one operation), the only figures given here are for all four contexts combined. The two sets of combined results present some interesting differences which would be consistent with a broad chronological sequence from ring-slot assemblage to ring-ditch assemblage. Firstly, there is a reduction in total trees and shrubs from nearly 76% to nearly 64%. Oak, hazel and lime decline, as might be expected as a result of local woodland clearance. Birch increases, but actually this is due solely to a high percentage in the upper ring-ditch fills, and so might represent a phase of secondary woodland regeneration on impoverished soil some while after construction and use of the monument. Elm apparently increases, but this is based on very small grain counts – several grains in the upper fill of the ring-ditch, none in the middle fill and just two in the lower fill. The final tree species listed is alder with its tremendous spike in the lowest fill, as already noted; this seems too marked a change to be due simply to an influx of alder pollen from nearby wetlands as the immediate woodland canopy was opened up and the idea of human introduction was raised above. It may be compared with the alder wood and charcoal from Petersfield Heath Barrow 19 (Chapter 14).

In tandem with woodland reduction, there is the inevitable expansion of open-country species, mainly seen in heather. Its percentage more than doubles between the combined figures for ring-slot and ring-ditch, and this picture can be refined by including the more detailed breakdown for the ditch which suggests a steady increase from nearly 8% (combined ring-slot) to nearly 22% (upper ditch fill). The figures for grasses are less straightforward. While, again, there is a neat upward trend in the ditch-fill sequence, the starting point (6.9%) is much less than seen in the putatively earlier slot fills (12.9%). What we may be seeing here are complex shifts in the dominant open-country species as these free-draining soils became impoverished, as grazing pressure changed or in relation to other land use such as crop growing. This is not dissimilar to the picture at West Heath Common.

Overall, while there are some unusual individual percentages that are not easily explained, the sequence starting with the ring-slot fills and followed by the succession of ring-ditch fills (App 19.2) makes good sense of the palynological data for vegetation change. The Heath End site was evidently being developed just as heathland was on the increase in response to further woodland clearance.

A second relevant site in this zone is Burton Mill Pond, where column 3 reached at its base a late second millennium BC peat deposit at 100-107cm (Evans 1991, 116-47, pollen assemblage A). A relatively high proportion of alder indicates the site's proximity to wetland. The drier wood/shrub component is apparently dominated by hazel, with significant lime (allowing for poor pollen production), oak and birch (*ibid*., 133). Elm is also present. Evans notes that the high level of hazel pollen and the presence of some others is indicative of breaks in the woodland canopy. Heather appears to be limited in extent, but its percentage value (8%) may be an underestimate if the carr had screened some of the pollen out from the sampling site. For example, in pollen assemblage B (undated and probably following a hiatus), alder is reduced to an average of less than half the levels seen in A, while heather increased substantially, thus perhaps due in part to a consequent reduction in screening.

Rother/Arun confluence zone (east of the study area)

A pollen sequence at Rackham is associated with a soil profile of about 12 inches (30cm) depth and, despite being fairly shallow, shows much variation in vegetation composition (Dimbleby 1975b). Pollen associated with unburied soil profiles are obviously exposed to pollen rain continuously up until the present day; such sites need to be interpreted with due caution. A prolific assemblage of flintwork dating to the Beaker phase (Period 1 or 2) was present between depths of 6 and 7.5 inches (15-18cm), where it was associated with charcoal concentrations interpreted as hearths[13] and a number of certain or possible stake holes. It is not thought there was any accretion of soil at a later date, in which case the level of the artefacts and charcoal would be that resulting from worm-sorting over a period of time. Geoffrey Dimbleby argued that the pollen contemporary with this Beaker horizon was probably present at a *lower* level, near the base of the sequence, but it is unclear why this should be. While in a non-acidic (woodland/brown soil) environment artefacts would consistently work downwards with earthworm action, pollen may do so less systematically and it is hard to see why a majority of it would arrive at a lower horizon.

An alternative reading of the sequence assumes that a majority of the contemporary pollen is still associated with the artefact horizon. The lowest horizon sampled (10-12 inches; *c.* 250-300mm) could then represent pre-Beaker vegetation – a climax woodland dominated by oak-hazel-lime with nearby alder carr. There were also clearings vegetated with grasses, ferns and some weeds of disturbed ground, plus a little heather. Woodland then re-established itself in the clearings (8-10 inches; *c.* 200-250mm), but renewed clearance took place around the time of the Beaker-period site. Lime was particularly hard hit (8 inches), but alder also decreased, followed later by oak (7 inches; *c.* 175mm) and hazel (5 inches; *c.* 125mm). From this time on the soil would have become progressively acidic and any downward migration of pollen would increasingly be due to leaching rather than faunal turbation. Meanwhile, there was a resurgence in grasses and a steep climb in the frequency of heather. By 3-4 inches (*c.* 75-100mm) heathland was dominant, likely representing a period long after the occupation. Changes above that are consistent with environmental changes of the last couple of centuries. This reading of the sequence suggests that an initial 'landnam' clearance was followed by woodland regeneration, then renewed clearance of the local woodland started with the Beaker activity. From then on open land expanded, heathland dominating over grassland until modern land uses favoured the latter. Sparse evidence for cereal cultivation runs alongside this long phase of opening up.

About 3km north-east of the Rackham site, a deep pollen profile was obtained from deposits alongside a tiny stream at Hurston Warren (Groves *et al.* 2012). It spans Chalcolithic (*c.* 2400 cal BC) to early medieval times before there is a hiatus. It is calibrated by five radiocarbon dates at intervals. The earliest pollen assemblage, HW-1, covers the Chalcolithic and earliest Bronze Age, at which time the area is still densely wooded with limited openings supporting heather and ferns. Alder dominates the pollen spectrum, presumably being immediately around the site, but in the background on drier soils is an oak-lime-hazel-birch mix. Pine and elm are also present. There is very little evidence for grassland. The main changes in pollen zone HW-2, covering the mature Early Bronze Age and the Middle Bronze Age, are a reduction in lime and to a lesser extent in oak. This suggests some interference with the dry woodland backdrop and in the second half of the period alder reduces to around half its previous average while birch increases significantly, perhaps woodland regeneration in damp and dry habitats alike that had been previously cleared. Alder recovered a little before a further attack on it around the beginning of the Late Bronze Age (*c.* 1150 BC). The woodland backdrop otherwise changes little, a slight increase in species like oak and hazel could be apparent rather than real effects caused by the thinning of the alder. Sedges and wet-loving ferns now flourished better in the damp areas and perhaps also grasses. The total grassland component immediately steps up, again perhaps partly due to the thinned alder screen. By contrast, heather only increases from its former minimal levels after an interval (*c.* 20cm above Poaceae) and this suggests that it was a genuine emergence of heathland due to clearance in nutrient-poor parts of the catchment. Areas of birch woodland seem to be the main casualties, so it appears to be mainly the clearance of previously cleared, regenerated land. While a greater diversity of weed species is present from here on, cereal pollen only appears sparsely in relatively recent levels.

Barrow Zone 7: Black Down

In the sandstone upland, pollen results are available from Black Down site 9129/2 (Branch 2015). This has been argued in Chapter 16 most likely to be a Bronze Age enclosure barrow, rather than a much later feature, and certainly the pollen shows that it pre-dates the pine plantations of *c.* AD 1800 onwards.[14] This discussion therefore assumes it is a prehistoric monument.

The morphology of the monument gives rise to a limited stratigraphic sequence of samples: buried soil

13 A bulked charcoal sample gave an imprecise radiocarbon date of 3950 ± 140 BP, but another date obtained was inexplicably late and presumably intrusive, 2300 ± 100 BP (Holden & Bradley 1975, 98).

14 Plantations are thought to have become important nationally from the mid-18th century onwards due to timber shortages as a consequence of the Seven-Years War (1756-63) (Evans 1991, 349; Jones 1961).

Species	Buried soil <5 & 6>	Middle ditch fill <3>	Intermediate ditch fill <2>	Upper ditch fill <1>	Combined <1 & 2>
heather (*Calluna*)	140 (65%)	54 (44%)	0	16	16 (8%)
heather (*Erica* spp.)	0	0	0	5	5 (2.5%)
grasses	11 (5%)	23 (19%)	0	11	11 (5.5%)
hazel	21 (10%)	5 (4%)	0	3	3 (1.5%)
oak	3 (1.5%)	4 (3%)	10	8	18 (9%)
beech	7 (3%)	2 (1.5%)	0	5	5 (2.5%)
birch	8 (3.5%)	0	35	16	51 (25.5%)
alder	6 (3%)	2 (1.5%)	3	3	6 (3%)
elm	0	0	0	2	2 (1%)
lime	0	0	0	2	2 (1%)
pine	0	0	52	23	75 (37.5%)
ivy	0	0	0	3	3 (1.5%)
Aster type	0	0	0	2	2
Centaurea cyanus	0	2	0	0	0
Cirsium type	2	0	0	0	0
Lactuceae	5	0	0	0	0
Plantago Lanceolata	0	4	0	0	0
Ranunculus type	0	2	0	0	0
Rumex acetosa	0	4	0	0	0
ferns	0	1	0	2	2
Polypodium	10	14	0	0	0
Ficales	0	6	0	0	0
Sphagnum	1	0	0	0	0
Totals	**214**	**123**	**100**	**101**	**201**

Table 2 Summary of pollen results for the enclosure barrow on Black Down, 9129/2

(2 samples), middle ditch fill, intermediate ditch fill, upper ditch fill; unfortunately no pollen survived in the low ditch fill (#4). The pollen results obtained by Nick Branch are shown in Table 2. Although they are not identical in composition, both the intermediate and upper fills are radically different from the others, especially in a massive reduction in heather and correspondingly substantial increases in birch and pine. In the interests of improving statistical representation therefore these two samples have been combined in the last column in Table 2.

The pollen assemblage that had accumulated in the soil prior to earthwork construction <5 & 6> is dominated by heather (65%) supplemented by a small amount of grasses (5%). The most significant non-herbaceous presence was hazel (10%), with only very low percentages of trees – oak, beech, birch and alder. After its initial (non-polleniferous) sand fill, ditch fill (3) was a 'more humic layer of sand' and probably ended in a stable surface at the interface with layer (2). This secondary fill is likely to have been an accumulation which was slowing up over time, allowing the incorporation of humic matter through soil development and leaf-litter accumulation. It may of course include some pollen reworked from eroding edges. However, this would not explain the main changes in evidence, being a decline in heather and hazel and a significant rise in grasses. Although grain counts are low for trees, there is a collective decline in oak, beech, birch and alder from 11% to 6.5%. This suggests a period beginning around monument construction during which some local woodland and hazel scrub was cleared, this perhaps contributing to the higher grassland to heathland balance. Four small herbaceous plants (*Centaurea cyanus, Plantago lanceolata, Ranunclus* type, *Rumex acetosa*, are only represented in this ditch fill, together comprising 10% of total pollen, and ferns are also important (Filicales, *Polypodium, Pteridium*). The ditch would still have been a significant depression and presumably at times was damp, and this very local habitat may also at least partially explain the spike in grasses at this stage. However, the inclusion amongst these plants of cornflower and ribwort plantain (*Centaurea cyanus, Plantago lanceolata*) would suggest disturbed ground nearby, potentially due to cultivation.

The samples taken for analysis (spot samples by context) do not allow assessment of the transition to the later vegetation community dominated by pine, birch and oak in the upper ditch fills <1 & 2>. Nevertheless, this appears as a stark change and may imply a significant hiatus somewhere around the layer (2/3) boundary. Layer (2) is interpreted by Anelay (2015) as a buried topsoil and could have been very long-standing, perhaps

extant until the re-forestation of this part of Black Down. If so, it incorporated some of the new tree-pollen rain on its surface. The overlying deposit (1) was humus and was quite a thick deposit on the upslope side where the ditch was still only about 60% full. This is presumably a product of considerably enhanced leaf-litter over the past two centuries in the wake of re-forestation.

That the Black Down area should have been so relatively open before the Bronze Age should not be too surprising; there is evidence from many casual finds of Mesolithic and Neolithic artefacts to suggest sustained occupation of this landscape (Figs 12.7, 12.8, 20.4 & 20.5).

Mention should be made of a pollen column from Black Moss, about 0.5km north-north-west of this barrow (Evans 1991, 236-51). The pollen assemblage was relatively stable through the 10cm profile sampled and is not dissimilar to that for the construction phase of barrow 9129/2, albeit with less heather and more hazel, oak and birch. Unfortunately, however, this profile could not be directly dated and such a vegetation cover could potentially have been long-lived in this upland environment with low-scale 'management'.

Barrow Zone 12: Beacon Hill

Immediately south of Zone 12 lies the site of the Neolithic oval barrow of North Marden (Drewett 1986). The alkali environment on chalk meant that mollusc shells were preserved and pollen not. Since none of the barrow mound had survived, the environmental samples were taken from different levels in the ditch fill and were found to represent three major assemblages. The lowest productive sample came from context [40], a level which also yielded Beaker sherds associated with a charcoal deposit, thus probably of Chalcolithic age or earliest Early Bronze Age (*c*. pre-2000 BC). Thomas and Carter interpreted the assemblage as belonging to a short-turfed grassland habitat, although there were also possible indications of phases of arable activity in the vicinity of the site (Thomas & Carter 1986, 43). At some unspecified time later this open country saw scrub or woodland regeneration, although this need not have been more than a very local phenomenon, and this was followed by further clearance associated with arable agriculture, probably in Romano-British times.[15] This area has had such extensive recent cultivation that it is no longer possible to see whether the blocks of ancient fields seen to the north (text Fig 20.10) were present around this barrow.

15 Two early Bronze Age radiocarbon dates on charcoal from high levels in the ditch would appear to be residual.

Appendix 20.2

Summary table of diagnostic Neolithic flintwork from the Rother Region

Sabine Stevenson

See separate Excel spreadsheet.
http://www.peopleoftheheath.com/publications

The project has involved the collation of all key diagnostic Neolithic and Bronze Age artefact types from the defined region. However, it did not set out to undertake first-hand study of all. Sources of information are very mixed and, inevitably, of varying quality. When there has been an opportunity to study them at first hand, this will have contributed to decisions on correct classification but for most finds a judgement has been made on the strength of the source information, in particular the likelihood that identifications are reasonably authoritative. Obviously, this is aided enormously when illustrations are available.

Some finds included in our datasets and maps may therefore later prove to be of other types or periods, but the detailed listing in Appendices 20.2, 20.6 and 20.7 will allow easy identification of both these and any omissions.

Diagnostic flint categories plotted

Neolithic axes & adzes (Fig 20.4)

Since only a small proportion of these objects has been studied at first hand, we cannot be confident of consistency in the identification of adzes relative to axes, nor in the presence/absence of ground surfaces or whether grinding is all-over or partial. These variations are not therefore represented in the plot.

Neolithic arrowheads (Fig 20.5)

Arrowheads described before as 'triangular' have usually, when seen, been found to have slight asymmetry and have therefore been treated as later Neolithic 'transverse'. It is possible that preforms for barbed-and-tanged arrowheads might be amongst the few examples not seen.

1. Leaf: leaf-shaped arrowheads, including larger laurel and lozengic forms;
2. Transverse: all chisel and oblique forms, including slightly asymmetric triangular;
3. Uncertain: probable Neolithic arrowhead, but exact form uncertain on the basis of available information.

Chalcolithic and Early Bronze Age arrowheads (Fig 20.17)

Arrowheads described as 'hollow-based', but not seen, have been assumed to be symmetrical if it has not been stated otherwise and are thus included as Chalcolithic to Early Bronze Age.

1. Barbed-and-tanged, including two 'tanged arrowheads';
2. Hollow-based

Thumbnail scrapers (Fig 20.17)

Particular difficulties arise for thumbnail scrapers, not least because there is no cut-and-dried definition on the basis of size and other characteristics. However, there is a general consensus that they do constitute a chronologically and culturally significant trend amongst the scraper spectrum.

There is one horned scraper, from east of Sheet Mill.

Appendix 20.3

Notes on the transcription of boundaries and other features shown in text Figures 20.8-20.13

Stuart Needham

The transcriptions were all drawn by the author using the High Woods Lidar data for the southern Chalk and the Environment Agency data for Goanah Farm and Pound Common. Both local-relief and hill-shade models were consulted for the HW areas, while EA areas were viewed from at least two different hill-shade lighting angles.

The features shown represent *all* linear boundaries for which there is no evidence that they are relatively modern; obvious ridge-and-furrow is also excluded but there may be other medieval elements present. In addition to barrows, other circular or sub-square features are shown; these include potential house platforms. Pond-like features and craters are excluded even though many of the former will have belonged with the pre-medieval boundary systems. The positions of lines drawn for the linear boundary features represent as far as possible the crests of bank or lynchet; ditches are only depicted if a bank is absent and they are thought to be more than the hollowing caused by a track.

The detail present in these landscapes is phenomenal and only selected features have been ground-truthed; indeed, some of the features are extremely ephemeral and are difficult to discern in woodland, rough grassland or scrub. However, the beauty of processed Lidar images is that they smooth out the tussock-level detail to show systematic deviations from the local norm. Where linear features appear, they *do* represent something real on the ground, but that does not necessarily mean they are ancient or humanly created. However, many of the most vestigial linear traces can be seen to line up with much more positive boundaries, giving them more credence.

Appendix 20.4

Neolithic to Earliest Iron Age non-funerary structures and material culture in the Rother Region

Stuart Needham

Previous excavations have produced some evidence for later prehistoric structures, although none yet as early as the Early Bronze Age. In the south of the study area is a classic Middle Bronze Age settlement excavated in 1968 at Gravel Hill, under Butser Hill, by Barry Cunliffe during A3 improvements. There were two structures, both set on slope-cut terraces and associated with pottery and a few pieces of bronze metalwork (Cunliffe 1970). Neither survived as a complete circle and the depths of post holes for hut 1 at least suggest truncation on the east side, perhaps as a result of Romano-British ploughing. The half-circle of post holes representing hut 2 enclosed a hard-baked marly chalk patch interpreted as a hearth; this would have been well west of centre had the structure originally been circular or oval, but the plan in fact looks more parabolic. There were a few pits and scoops in the immediate vicinity. A similar site with slope-cut terrace was found immediately outside the western boundary of the region at Westbury, West Meon, but although a variety of finds were made including pottery, animal bone, worked stone and bone and flintwork, no structures were found, just several pits (Lewis & Walker 1976).

Excavations at the Beacon Hill univallate hilltop enclosure (Zone 12) in the 1970s included the stripping of an area inside the south corner, but still a tiny percentage (*c*. 1%) of the 12ha area enclosed by the earthwork (Bedwin 1977; 1979). This resulted in the discovery of four four-poster structures and one six-poster, types thought most often to have served as granaries; no round houses were present. Judging from the pottery recovered, the main use of the site was between the very end of the Bronze Age and the Earliest Iron Age (*c*. 900-600 BC). Earlier excavations by Miss Keef in 1949 had found a pair of gold lock-rings in one of the ditch terminals at the western entrance (Keef 1953; Bedwin 1983). Although their precise context was not well recorded, they give strong grounds for supposing that the enclosing rampart was constructed before the end of the Bronze Age (pre- *c*. 800 BC).

Broadly contemporary is a well-defined round house with an elaborate porch structure found in 2017 in an excavation ahead of housing development on the east side of The Causeway, Petersfield (Zone 2). The site yielded little by way of datable finds and the house is only imprecisely dated by a small assemblage of undiagnostic pot sherds, *c*. later 2nd to earlier 1st millennium BC on the basis of their fabric (Cornelius Barton, LP Archaeology – pers. comm.). Although clearly of a later period than the barrows, it is intriguing that

this house faced the unusual direction of north-east, thus towards the Heath across the Criddell Stream.

Another local site investigated by Miss Keef in the 1940s comprised two platform sites on the scarp slope of the Chalk above South Harting (Keef 1950). They cannot now be precisely located, but her description places them close to Hill Lane and probably just south of Down Place (*c*. SU 182794).[16] The excavation produced earlier Iron Age pottery, probably of *c.* 600-300 BC. The terraces cut into the slope were about 6m across and 4.8m front to back and hearths and a few post holes were identified; the plans of the holes are not that of conventional round houses and, if the full set, they suggest less formal shelters. The site looks across the Harting amphitheatre to the Iron Age hillfort of Torberry Hill (Cunliffe 1976; 1978, 258-60). These discoveries only give us a hint as to the potential for later prehistoric settlement sites in the Rother Region. Observations made during the Regional Barrow Survey suggest there are potentially many well preserved slope-cut platforms surviving in the region that are not obviously charcoal burning platforms.

Further artefactual material relating to non-funerary activity is equally scarce. Some sherds of Long-Necked Beaker pottery were recovered from Buriton Manor Gardens (SU 74062010; des Brisay 1995), datable to the earliest part of the Early Bronze Age (*c*. 2200-1900 BC). It is possible they were disturbed from a burial deposit, but just as feasible that they derived from non-funerary activity. At the oval barrow on North Marden Down, 11 Beaker sherds were mainly associated with 'a patch of ashy loam containing burnt flint and bone', possibly a hearth, high in the ditch fill (context 25;[17] Drewett 1986, 33). Two imprecise radiocarbon dates on charcoal from this context suggest a date range of 2150-1700 cal BC. A possible Beaker sherd was found at the prolific flint arrowhead site at Brinsbury, just east of the study area, a site discussed more fully in Chapter 20.

Immediately to the north of the Buriton Beaker finds just mentioned, further prehistoric material was found in Lawn Field. This included half a Neolithic flint axe, a 'long flint tool' (?rod), some sherds of flint-gritted pottery of Bronze Age type, a spindle whorl, a saddle quern of Lodsworth stone and flint flakes (des Brisay 1995). The extensive ploughing up of West Harting Down for forestry in 1957 brought to light 'fragments of Bronze Age pottery' from an area of rectilinear field boundaries (HER CD254; *c*. SU 762184). The small size of some plots at the location could suggest they were settlement enclosures of the sort typically integrated into field systems at this time. Small quantities of pottery have been retrieved from Apple Down and Fernbeds Farm, both Compton (*c*. SU 7915; HER CD318, 320 & 407), and further west on the Chalk quantities of Bronze Age pottery, pot boilers and a saddle quern were recovered from Head Down Hanger in the south of the study area (SU 73771773; HER 26680); more sherds were found 300m to the north-east (HER 26717). A more unusual location is on the scarp of the Upper Greensand north of Didling village, where sherds of heavily gritted pottery were recovered by fieldwalking (SU 84071895; HER CD2955). In the Upper Rother Valley, some prehistoric flint-gritted pottery, probably of Post Deverel-Rimbury tradition, was amongst field-walked material from the A3 west of Liss (SU 770275; HCT, W352/W400; Wessex Archaeology 1990); associated flintwork is probably contemporary.

Only three sites have yielded animal bone assemblages of Neolithic or Bronze Age date. Closest, dating to the Middle Bronze Age and very small in size (20 pieces), is that from Chalton. Species identified were ox, sheep/goat, pig and dog; sheep/goat bones accounted for over half of the identified ones, but it is too small a sample to draw conclusions on relative numbers kept (Grant 1970). The assemblage of similar date from Westbury, West Meon, is barely any larger; here the species list is ox, sheep/goat, pig, bird and horse (Grant 1976). The last is represented by a single incisor and should not necessarily be regarded as contemporary. These tell us which domestic animals were kept, but nothing about the animal husbandry involved, for example whether there was a focus on one species and whether dairy farming was practised. The assemblage from the ditch fills of the Neolithic oval barrow on North Marden Down is larger, but unfortunately probably has a fair date span from the date of construction in the mid-4th millennium BC onwards. Cattle seem to be more important here than the other domesticates (≥60% of identified bones on two different count methods; Browne 1986).

16 They seem to be misplaced by Bedwin (1977, 227).

17 It is given instead as context (40) in the pottery report, *ibid* p.36, presumably in error.

Appendix 20.5

Summary table of later prehistoric flintwork assemblages from the Rother Region

Sabine Stevenson

See separate Excel spreadsheet:
http://www.peopleoftheheath.com/publications

Appendix 20.6

Summary table of diagnostic Chalcolithic to Early Bronze Age flintwork from the Rother Region

Sabine Stevenson

See separate Excel spreadsheet:
http://www.peopleoftheheath.com/publications
See Appendix 20.2 for qualification of material listed and plotted.

Appendix 20.7

Summary table of Bronze Age metalwork from the Rother Region

Sabine Stevenson and Stuart Needham

See separate Excel spreadsheet:
http://www.peopleoftheheath.com/publications

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BARROWS AT THE CORE OF BRONZE AGE COMMUNITIES

SUPPLEMENTARY MATERIAL

Barrows at the Core of Bronze Age Communities argues exactly that. Round barrows do not just represent the death side of Early Bronze Age communities placed in set-a-side ritual landscapes, but were instead central to existence in many ways. This study of the Rother Region, where the Weald meets the Wessex massif, reports the results of the People of the Heath project, 2014–18. It integrates a wealth of data from comprehensive field study of all relevant sites in the region with that from excavations into one of its major cemeteries – Petersfield Heath, Hampshire. Fourteen of 21 surviving barrows were sampled by excavation, one of the fullest records for such a cemetery in modern times. In addition to diverse burial rites, the site yielded a range of 'other significant deposits' and totally novel insights into the organic artefact repertoire thanks to mineral replacement.

Amongst the supplementary material in this volume are: a crucial new analysis of enclosure barrows in Wessex; further analyses regarding barrow morphologies, condition, cemetery formation and siting; observations on damage and recommendations on the future management of the archaeology of Petersfield Heath; detailed context descriptions for the block-lifted urns and log-coffin burial subjected to pioneering stratigraphic micro-excavation; summaries of palaeoenvironmental evidence from the region; the full report on quartz optical dating; a major re-assessment of the excavated ring-ditch at Heath End, Duncton; further detail on finds; and details on various methodologies and definitions employed in the volume.

Together the two volumes contain much new for those researching the period, early burial practices and the prehistoric occupation of the western Weald. They will also galvanise debates about variations in the character of barrowscapes across Britain and the place of the Wessex barrow foci.

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