POST-EXCAVATION ASSESSMENT

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Summary

In 2002 and 2003 Oxford Archaeology (OA) carried out an investigation of the archaeological monuments on Whiteleaf Hill, as part of Buckinghamshire County Council’s Heritage Lottery funded project to restore the Nature Reserve on the Chilterns Scarp, Buckinghamshire. The programme of excavation investigated the Neolithic oval barrow, originally excavated in the 1930s by Sir Lindsay Scott, as well as two circular features thought to be round barrows, a large cross-ridge dyke of unknown date, a series of World War 1 practice trenches and Whiteleaf Cross, a large chalk-cut cross which lies on the west flank of Whiteleaf Hill. The Neolithic oval barrow is the most prominent feature on the site but was in poor condition and its true extent was unknown. As a nationally significant site it merited re-excavation and reinterpretation in the light of current research. The excavations determined: the extent of investigations carried out in the 1930s, the nature, extent and exact location of the in-situ barrow remains, the presence of internal pre-barrow features comprising a possible mortuary structure, and the location of the surrounding ditch.

These excavations have allowed us to answer a number of questions unanswered by Scott’s unfinished work and to accurately reinstate the barrow in its correct location.

Trenches were also excavated across the two possible round barrows, one of which turned out to be a natural knoll on which a dense flint scatter was recovered, and the other appeared to contain the foundations of a medieval post-built windmill. Evaluation of the cross-ridge dyke revealed a large V-shaped ditch, with the remnants of a bank on its northern edge, which ran east-west across the north-south escarpment. Two small trenches were excavated at the base of the Cross to search for buried soils suitable for optical dating, but none were found. All stabilisation works resulting in ground disturbance on or around the Cross were monitored for potential archaeological features. Throughout the project excavation and other fieldwork on site provided a focus for encouraging community interest and participation in archaeology.
1 PROJECT BACKGROUND

1.1 Location and scope of work

The project investigated a number of archaeological features located on the top of Whiteleaf Hill on the Chilterns scarp, overlooking Princes Risborough and the Vale of Aylesbury (SP 82 04; Fig. 1). These features symbolise the importance of the site over millennia, from over 5,000 years ago when the Neolithic barrow was constructed, until the early part of the 20th century. However, the monuments on Whiteleaf Hill were poorly understood by archaeologists, despite excavations in the 1930s, and many of the features were obscured by undergrowth.

The major element of the archaeological proposals was the re-excavation of the 1930s backfill of the Neolithic oval barrow in order to re-evaluate aspects of these early investigations which remained unexplained. As well as excavating Scott’s backfill, a number of additional trenches were excavated through the barrow ditch in order to reveal the exact nature and extent of this part of the monument which was not fully explained by the previous excavations. The barrow was reinstated to its pre-1930s shape, based on computer modelling of Scott’s contour plan, which has significantly enhanced the appearance, and understanding of the monument. A single trench was excavated through each of the two possible round barrows, the cross-ridge dyke and the World War One practice trenches, and two small trenches were excavated at the base of Whiteleaf Cross to search for buried soils suitable for optical dating. In addition to this excavation, a programme of test-pitting and fieldwalking was carried out over the northern part of the study area (Fig. 2). Table 1.1.1 outlines when each phase of work was carried out.

Table 1.1.1 A breakdown of each phase of work carried out on Whiteleaf Hill

<table>
<thead>
<tr>
<th>Site code</th>
<th>Phase of work</th>
<th>Date carried out</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRWLH02</td>
<td>Trenches 1-4</td>
<td>September 2002</td>
</tr>
<tr>
<td></td>
<td>Geophysical survey</td>
<td>September 2002</td>
</tr>
<tr>
<td>PRWLH03</td>
<td>Test pits and Black Hedge trenches</td>
<td>February 2003</td>
</tr>
<tr>
<td>PRWLH03</td>
<td>Neolithic barrow excavation and trenches at base of Cross</td>
<td>June - July 2003</td>
</tr>
<tr>
<td>PRWLH03</td>
<td>Monitoring of engineering works on Cross</td>
<td>August 2003</td>
</tr>
</tbody>
</table>

1.2 Geology, topography and land use

Whiteleaf Hill is a prominent chalk ridge (c. 800 ft OD) within the Chilterns Area of Outstanding Natural Beauty (AONB), and is crossed by the Ridgeway National Trail. The hill is a designated Local Nature Reserve used for recreational purposes covering c. 11 ha, and is owned and managed by Buckinghamshire County Council. Today Whiteleaf Hill is wooded with open
areas around the Cross and the monuments along the top of the ridge. Air photographs taken in the 1930s show that tree cover has dramatically increased since that time, and although woodland was a common feature of the Chilterns scarp in the post-medieval period, the general aspect of the hill was much more open than at present (Farley 2000, figs 1-8). Tree clearance, on the west facing slope of the hill to the north of the cross, has been carried as part of Buckinghamshire County Council’s Restoration Project over the last three years.

1.3 Reasons for and circumstances of the Project

The archaeological monuments on Whiteleaf Hill are an integral part of the landscape character of the Nature Reserve in this Area of Outstanding Natural Beauty. They symbolise the importance of the site over millennia, from over 5,000 years ago when the Neolithic barrow was constructed, until the early part of the 20th century. Nevertheless, these physical traces were not fully appreciated by visitors, and indeed, the monuments and their context were poorly understood by archaeologists despite excavations in the 1930s.

The five Scheduled Ancient Monuments present on the site (Fig. 2) comprise a Neolithic oval barrow (Scheduled Monument Number, SM 19053) two round barrows (SM 19047 and SM 19048), a cross-ridge dyke (SM 27148) which cuts the hill from east to west, and a chalk-cut cross on a triangular base (SM 27147).

As part of a project to more effectively conserve, manage, display, and interpret the Whiteleaf Hill Local Nature Reserve, Buckinghamshire County Council submitted a bid to the Heritage Lottery Fund. This provided an outstanding opportunity to enhance the landscape setting of the archaeological monuments, improve an understanding of them, encourage public appreciation and enjoyment of the site and promote the value of archaeological study.

The archaeological aspects of the site were integrated into the bid in five ways:

- Management - including the prevention of environmental erosion to the monuments by visitor pressure and prevention of damage to the site by woodland regeneration and its clearance.

- Appearance - improving the appearance of the monuments in order to enhance the visitor experience.

- Interpretation - providing information about the visible monuments would improve understanding of the site and make it more accessible. The project will enable popular intellectual access to high-quality archaeological information, particularly as a result of the re-excavation of the Neolithic barrow.

- Publication and promotion of archaeology - as part of publicising the site, and the improvements that were being made to it, the opportunity was taken to
promote heritage and the work of archaeologists, both to the public and to schools. The fieldwork encouraged the participation of the local community and young people in heritage conservation, investigation and interpretation.

- Avoiding or mitigating damage to archaeological remains during landscaping and remedial works.

The project was designed to contribute to meeting the cultural-heritage objectives of the Chilterns AONB Management Plan. It had the support of the Princes Risborough Countryside Group and Town Council, and was undertaken in partnership with them, and also Buckinghamshire Countrywide Archaeological Advisory Committee (a forum for the local authorities and other key partners in the management of Buckinghamshire's archaeological heritage).

1.4 Summary of archaeological background

There is no record of archaeological investigation on the hill before the 1930s, when Sir Lindsay Scott began his excavations of the Neolithic barrow. However, there was a possibility that a trench had been inserted into the barrow before Scott began his work, accounting for its rather curious ‘kidney-shape’ which did not accord with the apparent shape of its surrounding ditch, which has an entrance in a different orientation (Richard Bradley, pers. comm.). Although not conclusive, loose deposits found by Scott within the mound, and the scattered nature of the burial beneath, could be explained by an early trench into the mound.

Sir Lindsay Scott's excavations ran from 1934 until the outbreak of war in 1939 (Childe and Smith 1954, 212). Scott died before he was able to prepare a report on his excavations, but Professor Gordon Childe and Isobel Smith examined his records and published an account in the *Proceedings of the Prehistoric Society* for 1954. The site plan indicates that approximately 40% of the mound was excavated (*ibid.* fig. 1), although its appearance on the ground suggested that digging had been more extensive. A rapid scan of site sections and photographs at the National Monuments Record, Swindon (Record Number 63/615753) showed that these existed for positions up to 8 feet south of the site limit as shown in the published plan (x = 38'). A faint line on the site plan indicates an extension in this direction. In this case, around half the barrow by area, but all its upper part would have been removed (Fig. 3). A section had also been dug through the ditch on its western, downhill side. This indicated a very shallow cut and, if fully excavated and typical of the entire ditch length, suggested that all the soil for the mound could not have come from the ditch.

For the period, recording was carried out with meticulous care with sections drawn through the barrow every two feet, on both the x and y axes, and finds recorded three-dimensionally within each one foot square. However, it can be assumed from this method of working that deposits were not removed in stratigraphic sequence, thus making the two-dimensional interpretation of remains difficult. Features encountered during the excavations were evidently recorded piecemeal, and a detailed plan had to be reconstructed from the site
notebooks and sections (ibid. 214). Not all features mentioned in the notes could be located on the drawings (for example tree trunks claimed by Scott to “contain the inner mound”), and some difficulties were obviously encountered in interpreting some of the sections (ibid. 216). Four sections were selected for publication, but many others exist (approximately 36), some drawn up on A1 sheets and others within the gridded site notebooks. An additional problem that Childe had to overcome was to distinguish between anthropogenic and natural features. It is apparent that Scott had concluded that several of the pits and ‘trenches’ he had excavated were of natural origin, but it was unclear to Childe precisely which these were.

Childe concluded from the evidence that the outer, kidney-shaped mound of the barrow sealed an inner mound within which lay a wooden mortuary structure, of which four postholes survived. The only visible evidence of the horizontal timbers mentioned by Scott were, possibly, black stains marked on some sections (eg Childe and Smith 1954, plate xxiv, X60 and Y72). A depression within the mound is attributed to the collapse of this chamber (but see above). The skeleton, apparently of a single adult male, was discovered with his left foot, some skull fragments and one tooth lying within the ‘mortuary chamber’, with the rest of his body scattered immediately to the east of the chamber (Childe and Smith 1954, 216).

Other features examined included two identified on the site plan as pits (ibid. fig. 2, Pit 2 and Pit 4), one of which appears to have been encircled by small postholes, but no finds were recovered from these two features. In addition, a few possible ‘hearth’ were located. It is not impossible that some of these features are natural solution hollows or tree-throw holes with burnt-out stumps. Some features encountered were omitted from published plans because they were believed to be natural, and others are not explained (for example a large, oval feature on figure 2).

A large number of pottery sherds (two with grain impressions) and flints and a smaller number of animal bones were found within the ‘inner mound’. A little bone and antler work was also recovered, including a pin and some possible antler picks. Mollusc samples were taken. Isobel Smith examined the pottery and concluded that its closest parallels lay with the Ebbsfleet sub-style of Peterborough Ware, although there were some similarities with earlier Neolithic Abingdon and Mildenhall wares. None of the finds were grave goods as such and their derivation and purpose within the mound are of considerable interest, as they are unusually prolific. It seems that a sample of the animal bone excavated was kept (which included deer, beaver and bird in addition to domesticated species). One sample from the inner mound yielding just 13 molluscs suggested a woodland environment, although the sample is small and the species are fairly catholic (Dominique de Moulins, pers. comm.).

A secondary burial, the cremation of a child, was made in the mound within an urn of Bronze Age date. Several Roman finds were recovered from the topsoil and top fill of the ditch, and a rubbish pit had been dug on the west side of the mound pointing to the continued use of the hill after the prehistoric period.
No subsequent excavations have taken place on Whiteleaf Hill, but several surveys of the site have been undertaken. In 1991 a survey of the visible remains was conducted by Julia Wise for the Buckinghamshire County Museum Archaeological Service, which included a tape-and-line topographic survey (Wise 1991). The survey points were not tied in to the National Grid, and the overgrown condition of the site made work difficult. Not all features now known to exist on the site were recorded.

More recently, the Oxford Archaeological Unit undertook a rapid Condition and Management survey of the site as part of its Historic Landscape Survey of the Ridgeway National Trail for the Countryside Commission (OAU 1998). In addition, a desk-top study and walkover survey was undertaken by Mike Farley (2000), which examined historical records, gathered together early mapping, investigated the location of some of the excavation archives and commented on aspects of the condition and management of the monuments. He also drew attention to less obvious earthworks observed by Julia Carey on more wooded parts of the site (Farley 2000, figs 9 and 10).
2 ORIGINAL AIMS OF THE EXCAVATION PROJECT DESIGN

Within the context of the Heritage Lottery Bid to conserve and interpret Whiteleaf Hill and its monuments and to provide a safe, well-preserved and attractive landscape for both today's visitors and for future generations, the aims of the archaeological work were to:

2.1 Minimise and mitigate landscape enhancement and other remedial works.
   - Fully survey all earthworks on the site and thoroughly search areas of undergrowth for less conspicuous remains
   - Establish the presence or absence of buried remains within areas of impact
   - Provide advice on the impact of landscaping and other remedial works

2.2 Effectively manage the archaeological resource of the site
   - Record the current state of the monuments
   - Attempt to locate buried remains by non-intrusive survey
   - Attempt to establish the extent of in situ deposits within the monuments
   - Provide advice on issues of the setting of the monuments and their long-term conservation

2.3 Enhance the visitor experience of the monuments
   - Improve the appearance of the monuments with minimum damage to archaeological deposits
   - Improve access to archaeological remains where this does not compromise their preservation
   - Provide information to interpret the monuments on site
   - Assist the local community to research the origins and folklore attached to the Cross

2.4 Promote public interest in the site and understanding and enjoyment of the past
   - Enable people to interact with the archaeological work and experience the excitement of discovery
   - Inform the public about project activities
   - Encourage media coverage of archaeological fieldwork
   - Enable the public to view archaeological excavations
   - Create opportunities for some members of the public to work on archaeological sites and provide training
   - Undertake illustrated talks about archaeological work

2.5 Realise the educational potential of site.
   - Use the impact of the attractive Whiteleaf Hill site and its use over millennia to engender children's interest in the past in a lively and vivid way
   - Provide information for teachers, particularly the potential to feed in to the National Curriculum
• Provide opportunities for school children to see archaeologists at work and gain some hands-on experience of digging and surveying
• Provide follow-up sessions
• Develop teaching packs or sheets for long-term educational use

2.6 Improve understanding of the archaeological remains on the site.
• Establish the extent of recent, post-medieval interference in the archaeological monuments and the extent of in situ deposits
• Establish the original form of the Neolithic barrow, verify or refute the existence of a mortuary structure, investigate the location and derivation/purpose of the finds recovered, evaluate the extent of natural and man-made features beneath the barrow mound, assess the original extent of the ditch, the possibilities of causeways and the extent to which it provided the spoil for the barrow.
• Date the monuments and elucidate the development of the site through time
• Undertake historical research on the antiquity of the Cross
• Feed information directly into education and public interpretation projects

2.7 Reconstruct the past environment of the site.
• Use opportunities afforded by the remedial works and excavations to sample for environmental remains
• Re-evaluate environmental evidence provided by earlier work

2.8 Disseminate the results of archaeological work:
• Contribute to the project Web site
• Publish accounts in popular archaeological press
• Provide a popular account of the site and the archaeological work that revealed its history
• Academic publication of the results
• Deposit the archive in an accessible form and location

2.9 Undertake archaeological work in a safe manner and to a high professional standard
3 FIELDWORK METHODOLOGY

3.1 Scope of fieldwork

In 2002 OA undertook a topographic survey over the entire ridge of Whiteleaf Hill, approximately 11 ha., which recorded the current physical form of all visible archaeological features (Fig. 2). A detailed contour survey was also carried out over the Neolithic barrow prior to excavation which enabled the scale and nature of the disturbance caused by Scott’s excavations to be accurately measured using 3D computer modelling techniques (Figs 4 and 5).

Work in 2002 also included the excavation of trenches across the two supposed round barrows, the cross-ridge dyke and one of the World War One practice trenches. Two additional trenches were cut at the base of the slope to examine the Black hedge, a Saxon parish boundary. In 2002 a programme of test pitting was begun, at the northern end of the hilltop, which will be completed towards the end of 2004. Excavation and reinstatement of the Neolithic barrow was carried out during 2003. Two trenches were also cut at the base of Whiteleaf Cross to look for evidence of buried soils. All engineering works on the stabilisation of the cross were also fully monitored, as were all works in the car park.

3.2 Geophysical survey

Magnetometer survey was carried out across the open hilltop, so far as this was practicable due to the densely wooded nature of the site, covering the three scheduled ‘barrows’, two small open areas adjacent to the access track as well as a grassed area adjacent to the car park in the south of the site (Fig. 6). In addition, a magnetic susceptibility survey was carried out over the entire length of the study area and resistivity survey was carried out over the two round ‘barrows’ and in two areas at the edge of the Neolithic oval barrow (See Appendix 1 for full geophysical survey report).

Magnetometer readings were recorded at 25 cm intervals along lines 1 m apart, magnetic susceptibility readings were taken at 16.6 m intervals and ground resistance measurements were taken using a Geoscan RM15 resistivity meter with the twin electrode probe configuration and a mobile probe spacing on 0.5 m.

3.3 Fieldwalking

Fieldwalking was undertaken over three areas following tree clearance on the steep west facing slope of Whiteleaf Hill to the north of the cross (Fig. 2). The areas measured 2100 m², 5100 m², and 2700 m² and were walked at 10 m
intervals. Small quantities of material were recovered from the southernmost area, which were collected and bagged in units of 10 m². No finds were recovered from either of the larger areas to the north, which may be due to the extensive ground cover of leaf litter and scrub, as well as the steep angle of slope resulting in the downward movement of any surface finds.

3.4 Test Pit Sieving

Fifteen test pits, 1 m by 1 m, have so far been excavated in the northern part of the hill between Trench 1 and the Neolithic barrow (Fig. 2). The soil from each test pit, separated by layer, was sieved through a 10 mm mesh. Only one archaeological feature was found, a cut in Test Pit 14, which was later, during excavation of the Neolithic barrow, found to be a narrow gully. Further test-pitting will be carried out over the southern part of the hilltop during 2004.

3.5 Evaluation Trenching

Four small trenches were excavated in 2002 across the two round features scheduled as Bronze Age barrows, the cross-ridge dyke and the World War One practice trenches (Fig. 2). Four additional trenches were excavated to investigate the Black Hedge and the base of Whiteleaf Cross.

*Trench 1* was placed across round barrow 1 (SM 19047), located on a false crest on the lower northern edge of the site. The trench was aligned NNE-SSW and measured 7 m by 1.5 m.

*Trench 2* was positioned approximately 130 m to the south-east of Trench 1, to investigate a possible round barrow (SM 19048). The trench was aligned ENE-WSW and measured approximately 6 m by 1.5 m.

*Trench 3* was placed across the cross-ridge dyke (SM 27148) that cuts the hill from east to west towards the south of the site. The trench was aligned north-south and measured 10 m by 2 m.

*Trench 4* was positioned in order to investigate the World War 1 practice trenches in the south of Whiteleaf Hill. The trench was aligned NE-SW and measured 3.2 m by 1 m.

*Black Hedge Trench 1* was positioned to investigate the Saxon parish boundary known as the Black Hedge. The trench was orientated north-south and measured 4.3 m by 1.5 m.

*Black Hedge Trench 2* was also located in order to investigate the Black Hedge and was orientated north-south and measured a maximum of 4.1 m x 1 m.

*Whiteleaf Cross Trenches 1 and 2* were located at the very base of the cross to search for buried soils relating to the first cutting of the monument. Trench 1 butted the fence line directly below the right hand scar on the centre of the cross.
and the Trench 2 was located fifteen metres to the south at the base of the fan of the cross. Both trenches were aligned east-west, and measured 0.5 m by 3 m.

The removal of turf and excavation of all trenches was carried out by hand. All archaeological features were planned at 1:50 and, where excavated, their sections were drawn at 1:20. All features were photographed using colour slide and black-and-white print film. All features/layers showing potential for environmental analysis were sampled. Recording followed procedures laid down by the OA Fieldwork Manual.

3.6 Excavation

3.6.1 The Neolithic barrow excavation

Prior to excavation the barrow was stri mmed, a detailed contour survey was carried out and a grid at 5 m intervals, tied into the OS grid, was placed over the area.

The barrow was excavated in four quadrants starting with the north-west. All turf was removed by hand revealing the topsoil over the slopes of the barrow and the backfill from within Scott’s excavation. The northern edge of his excavation was clearly visible running east-west as soon as the turf in the north-west quadrant was removed. All backfill within this area was removed by hand down to the natural chalk. Numerous features cut into the chalk including postholes, tree-throw holes, solution hollows and periglacial features were also re-excavated. All archaeological and natural features were planned at 1:50 and sections were drawn at 1:20. All features were photographed using colour and black and white slide film. General site shots were also taken with a digital camera.

The topsoil over the remaining barrow bank was carefully removed by hand to reveal the compacted barrow surface. This topsoil produced the largest number of finds, although they were of mixed date. All backfill above the 1930s excavation area was removed entirely by hand. However, it was evident from the survey (Fig. 5), as well as the excavation, that the highest part of the barrow in the north-east was Scott’s spoil heap, and this could not be efficiently removed by hand. Consent was gained from Bucks County Council and English Heritage to use a 22 ton 360° tracked excavator fitted with a toothless bucket to remove this spoil. This was only begun after two slots had been dug by hand through this series of finely stratified deposits which appeared to indicate five separate phases of excavation i.e. each season from 1934 to 1939. Both east-west and north-south sections through this spoil heap were cleaned, recorded and photographed before it was all finally removed by machine. The spoil immediately above the barrow was removed by hand.

Approximately 90 % of the topsoil was sieved through a 10 mm mesh. It was set out in the project design that all spoil from the excavation would be sieved for finds that Scott may have missed. However, it soon became clear that sieving the backfill from Scott’s excavation was proving to be futile in terms
of finds recovery, and that resources would be better spent on other parts of
the project. It can therefore be estimated that only 2-3% of this deposit was
sieved. The soil from each season of excavation, identified in Scott’s spoil
heap in the north-east of the site, was however sieved, but very little material
was recovered. Finds were recovered by hand during excavation and bagged
and labelled by context. Finds recovered from sieving were bagged separately.

Advice was taken on sampling strategies from Dominique de Moulins and
Matt Canti who visited the site. Snail columns and bulk samples were taken
from three areas of the barrow mound and one snail column was also taken
from the western ditch section.

3.6.2 Reinstatement of the Neolithic barrow (Fig. 7)

Scott’s pre-excavation contour survey provided the evidence for the height
and dimensions to be achieved when reconstructing the barrow. Creating a 3D
computer model of this survey enabled visualisation of the final shape of the
monument (Fig. 4).

The 1930s backfill was used to build up the mound which initially involved
filling the area excavated by OA as well as covering the exposed in-situ
barrow deposits. The next stage was to insert carefully measured rods into the
deposits so that their tops represented the height to which that part of the
barrow should be built. A mechanical excavator was then used to replace the
backfill to just cover these rods. Using the 3D model as a guide the driver of
the mechanical excavator was directed as to how to shape the soil to create the
pre-1930s shape of the barrow. At this stage a large number of points over the
barrow were measured to make sure that they corresponded with the
measurements required.

Once satisfied with its size and shape, a layer of chalk was placed over the
entire mound. This was then covered by Geojute, a 100% natural jute fibre, to
ensure the long term stability of the mound. An additional layer of chalk was
placed over the top which was finally shaped by hand, and the monument was
surrounded by a fence (Fig. 7). The barrow was re-surveyed after
reinstatement and finally, areas of the barrow surface were covered with turf
plugs, and the areas in between grass seeded. The layers of chalk have raised
the barrow slightly above its pre-1930s height which will allow for the
deposits to settle over time, and to provide a sacrificial layer so that the
barrow can eventually be set within open grassland and not enclosed by a
fence in order to protect it from erosion.
4 SUMMARY OF EXCAVATION RESULTS

4.1 The Neolithic oval barrow (SM 19053)

The removal of turf in the north-west quadrant of the barrow revealed the northern and western limits of Scott’s excavations and the remaining north side of the barrow (4104) (Fig. 8). The extent of Scott’s excavation was revealed as the other quadrants were excavated. The backfill was removed by hand down to the natural chalk. The rectangular cut of Scott’s excavation (4116) was significantly larger than expected measuring 13.5 m NW - SE and 11.5 m from SW - NE leaving only the lower slopes of the barrow on the north, east and south sides remaining (Fig. 8).

The barrow mound was primarily made up of compact flint nodules (4104) and overlay a subsoil of clay with flints (4151). Many features were cut into the natural chalk and having been excavated by Scott were filled with the same mixed backfill (4103). Most of these were natural tree-throw holes, solution hollows or features derived from other geological processes. The four ‘postholes’ identified by Scott as delineating the mortuary structure in the centre of the barrow were also located. Two of these, 4163 (0.82 m x 0.4 m x 0.36 m) and 4164 (0.67 m x 0.36 m x 0.28 m), were well defined oval features with vertical sides and flat bases and were clearly man-made features (Fig. 8). The two additional ‘postholes’ to the west (4165 and 4166), however, were very irregular in shape and seem unlikely to relate to any pre-barrow structure. It therefore seems likely that the four-post mortuary structure identified by Scott was in fact a two-post structure, a form seen within a number of other Neolithic mortuary monuments (Scott 1992, 104-119).

The north-east quadrant contained the largest quantity of spoil from Scott’s excavations which appeared to have been piled straight onto the barrow surface, to a maximum height of 1.32 m. It was even possible to identify individual seasons of excavation within this spoil due to the fine stratigraphy. Layers of brown humic material, interpreted as the topsoil from each season, were interspersed with predominantly chalky layers of backfill from the barrow. This spoil not only covered the whole eastern part of the barrow but also obscured the location of the ditch in this area.

The upper surface of the remaining barrow bank was covered by a deposit of topsoil; there was no evidence of a buried soil between the barrow mound and this deposit. The topsoil contained relatively large quantities of finds of prehistoric to modern date including pottery, flint, bone, glass, and metal. Much of the pottery was late Iron Age/early Roman in date, indicating a significant degree of re-use of the barrow in this period.
Five slots were fully excavated through the barrow ditch, two of which had been previously excavated by Scott. Topsoil was stripped in one additional slot to the north of the barrow which only revealed the location of the outer edge of the ditch. The profile of the western ditch (4117) (Section 1, Figs 8 and 9) was open U-shaped and relatively narrow considering the size of the barrow. Only one deposit in the ditch appeared to have been placed deliberately: a deposit of silty clay (4121) beneath which Scott found a red deer antler.

Scott’s trench across the southern slope of the barrow and ditch, also re-excavated by OA, produced a number of 1930s finds including a trowel. This ditch was much broader and shallower than the ditch on the west side of the barrow. A posthole (4126) (0.34 m in diameter and 0.24 m deep) was found immediately to the north of this ditch (Fig. 8) which, although heavily truncated by Scott’s trench, may represent the possible line of vertical stakes that Scott refers to in an interim report (1936, 213).

OA excavated three additional sections through the ditch, one to the north-west and two to the east of the barrow (Fig. 8). The ditch in the north-west (4183) had a similar profile to that in the west (4117) and its upper fills were overlain by material which may have washed down off the barrow mound (4175). Approximately 2.6 m to the north-west of this barrow ditch was a narrow gully (4184) with vertical sides and a flattish base.

The ditch to the east of the barrow (4173) had a broad mouth, and a profile similar to 4117 and 4183. The terminal of the ditch (4190) was also located to the north-east of the barrow (Fig. 8). This was wider and significantly shallower (2.7 m wide, 0.38 m deep) than the other ditch sections, and was cut through a deposit of clay with flints, which may have been filling a solution feature. It was filled by a similar deposit of clay with flints which contained a few sherds of Bronze Age pottery.

The excavations through the eastern part of the ditch and the stripping of topsoil over the ditch in this area, illustrates that there does indeed seem to be a much wider area between the ditch and the barrow in the east than there is to the north, west or south. This coincides with the “kidney-shaped” appearance of the east side of the barrow and creates a wide open forecourt area that was identified by Scott. It is considered likely that this represents the original shape of the monument but further analysis is required to verify this conclusion.

4.2 Trench 1 across ‘barrow’ SM 19047

Trench 1, located across round ‘barrow’ 1 (SM 19047), revealed no evidence of its existence. In the south of the trench the natural chalk bedrock (106, 122) was overlain by natural clay with flints (104 and 112), an orange brown silty clay layer with large flint inclusions. Three features interpreted as tree-throw holes were identified cutting the subsoil within this trench, two of which produced flints.
The top few centimetres of the layer of clay with flints (104), in the southern end of the trench, produced an extensive *in-situ* flint scatter. Over 1600 flints were recovered within an area measuring 2 m by 1.6 m. The flint was planned in two dimensions for the first four 1 cm thick spits. The very high density of flints meant this was a very laborious process and also limited the potential for spatial analysis, so the remaining flints were lifted in object reference layers 0.8 m² and 5 cm thick. The assemblage was mainly composed of trimming flakes with almost no retouched tools and very few chips present. This suggests that the scatter represents waste produced during initial working of the flint in the Neolithic or Bronze Age before further knapping elsewhere.

### 4.3 Trench 2 across ‘barrow’ SM 19048

Trench 2 was located to investigate the second possible round barrow (SM 19048) but no evidence of a burial mound was found.

Instead, a large linear trench (204) was found cut into the subsoil (measuring 4.5 m by 1.6 m and 1.3 m in depth) along with part of a similar feature at right angles to it. This feature had vertical sides and a flat base and was possibly the foundation for a substantial structure. Flat ledges were found on either side of the main cut running east to west, which may have provided support for this structure. The cut was filled by a loose chalk rubble and silty brown loam (203) to a thickness of 0.6 m, which produced a few sherds of Roman pottery as well as bone and flint. The secondary fill (201) was a firm light grey silty clay with chalk inclusions (0.7 m thick) that contained pot and bone. The feature was sealed by the topsoil (200).

Initial investigations suggest that this feature represents the trench for one arm of the cross-trees of a post-built medieval windmill. Although no evidence of a round barrow was found it remains possible that a windmill was constructed on top of an earlier monument. Examples of barrows being reused as mill mounds are known elsewhere (Watts 2002, 104), however, further fieldwork will be required at the site to resolve this issue conclusively.

### 4.4 Trench 3 across the cross-ridge dyke SM 27148

Trench 3 was placed across the cross-ridge dyke (SM 27148) that runs approximately east to west across the ridge.

The ditch cut (302) was approximately 3.5 m wide and 1.5 m deep with steep slightly convex sides, and a concave base (Fig. 10). Filling the ditch were various deposits of chalky silt (303, 304) and natural clay (312, 313). A bank of re-deposited chalk (316) from the ditch cut stood to a height of 0.5 m on the south side of the ditch. This was truncated by three small tree-throw holes.
The ditch fills were overlain by a deposit of buried soil (314), truncated at the north end by a tree-throw hole (317), and subsequently by a dark brown silty clay loam (320) representing erosion of the bank.

On the west side of the trench a large rectangular feature which may have been a saw pit (305) cut the ditch fills. This feature was cut by two tree-throw holes (311 and 333), the latter of which was filled by layers of peat (335) and clay loam (334) and subsequently by burnt soil and large quantities of ash (336 and 337). Further evidence of burning was found, particularly above the ditch fills, represented by burnt soil (323), ash layers (324, 339, 340, 341, 342, 343) and charcoal (325, 358). The large quantity of ash and charcoal is the result of a large man-made fire during forestry clear-up operations after the storm in 1989.

No dating evidence was recovered from the ditch but its character and profile suggest that it is likely to represent a late Bronze Age boundary ditch (Bryant 1994, 54).

4.5 Trench 4 across WW1 practice trench

Trench 4 revealed a WWI practice trench (401) 1.5 m wide and 0.6 m deep. It was irregularly shaped, with steep sides and a flat base, and filled by a primary fill (406) of loose yellow-brown chalky loam 0.2 m deep. This was overlain by a friable dark brown silty loam with flint and chalk inclusions (404), that was approximately 0.35 m thick. The uppermost fill contained 20th century finds.

Two earthen banks to the east and west (403 and 402) overlay the buried topsoil (405). These banks would have provided a protective screen for personnel while in the trench. The earthen banks and ditch fills were sealed by a layer of topsoil (400).

Although this practice trench was not deep it was carefully formed. It is apparent that these features resemble miniature trenches shown in manuals of the period, and were presumably excavated to demonstrate techniques of warfare, rather than as a training exercise for troops.

4.6 Trenches 1 and 2 across the Black Hedge

Trench 1 across the Black Hedge, contained a single ditch (1001), 1.0 m wide and 0.1 m deep, filled by two silty clay deposits. Root action had obscured the relationship between the ditch and the ploughsoil (1003 and 1004). It is possible that this ditch represents the trench dug for an old length of rabbit fencing. No other features were found in this trench.

Trench 2 contained a much more substantial ditch (2001), 1.55 m wide and 0.48 m deep, with steep sides and a rounded base, which was cut into colluvium over the natural chalk. This ditch was filled by two deposits which contained no finds. A circular posthole (2006), 0.27 m in diameter and 0.56 m deep, was
found cutting the northern edge of the ditch, which may relate to a twentieth century parish boundary fence.

No dating evidence was recovered from either ditch.

4.7 Trenches 1 and 2 at base of Whiteleaf Cross

Both trenches contained a very thin layer of topsoil overlying numerous layers of compacted and semi-compacted chalk wash from the Cross above. It was not possible to distinguish the numerous individual layers of deposition but three major episodes of deposition were identified in each trench, separated by two bands of humic material. These humic deposits varied in thickness from 0.01 m to 0.10 m. No evidence for ancient buried soils was observed in either trench and the only find comprised a small piece of clear, pale green glass, recovered from humic layer 204, near the bottom of the Trench 2. This piece of glass has been provisionally dated to the late 19th century.

4.8 Results of test pits

Of the 15 test pits excavated over the north of Whiteleaf Hill only TP14, situated to the north-west of the Neolithic barrow, revealed an archaeological feature. This feature was fully excavated during the excavations of the Neolithic barrow and was found to be a steep-sided linear gully.

4.9 Results of non-intrusive survey and watching briefs

All stabilisation works carried out on the Cross were monitored for evidence of archaeological features and buried soils, but none were found (See Appendix 2 for detailed report).

The most significant findings of the magnetometer survey are perhaps the cluster of magnetic anomalies on the hilltop above the cross and to the north of the Neolithic barrow (Fig. 6). This area also shows enhanced susceptibility readings and could therefore indicate settlement or other remains. However, these magnetic disturbances are most likely to be non-archaeological and perhaps derive from the lighting of bonfires on the hilltop. Further test pits in this area may help to resolve whether these features are anthropogenic or natural. The Neolithic barrow, the windmill site and the natural knoll in the north all produced very limited findings. Those from around the Neolithic barrow probably related to the 1930s excavation and backfilling rather than to the barrow itself. The resistivity survey, carried out over the north and eastern parts of the Neolithic barrow, shows some negative anomalies possibly indicating the location of the ditch.
Disturbances in areas 2 and 3 (Fig. 6) are most likely to represent recent debris such as bricks and slag related to the access track. No potential archaeological features were found near the car park in area 4 (Fig. 6). (See Appendix 1 for full geophysical survey report)

5 QUANTIFICATION OF THE ARCHIVE

5.1 Stratigraphic archive

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<th>Record Type</th>
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<td>Site plans (A4)</td>
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<td>Sections (A1)</td>
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<tr>
<td>Colour slide films</td>
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5.2 Artefactual and ecofactual material

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<th>Material</th>
<th>Quantity (No. of pieces)</th>
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<td>CBM</td>
<td>60</td>
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<td>Clay Pipe</td>
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<td>Composite</td>
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<td>Iron objects</td>
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<td>Flint</td>
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<td>Glass</td>
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<td>Stone</td>
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<td>Animal bone</td>
<td>76</td>
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<tr>
<td>Shell</td>
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</tr>
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<td>Charred remains</td>
<td>Wood charcoal</td>
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6  ANALYTICAL POTENTIAL

6.1  Work to date as part of current assessment

A context database has been created, and general matrices produced for the Neolithic barrow and Trenches 1-4, although the lack of inter-cutting features resulted in these being very shallow. Three dimensional computer models of the barrow mound have been produced using Scott’s pre-excavation contour survey and digital drawings of his sections through the barrow have been created. OA’s plan of the barrow excavation along with one of the ditch sections have been illustrated.

6.2  Analytical potential of the stratigraphic record

Due to the extensive excavations of the Neolithic barrow in the 1930s and the deposition of spoil over the barrow mound, only relatively small areas of the in-situ barrow deposits maintained a high stratigraphic integrity. The whole central area of the barrow containing the mortuary structure, skeleton and ‘inner mound’ was removed by Scott and all of the features cut into the chalk below the barrow had been excavated previously leaving no evidence of original fills, buried soils or ground surfaces. However, the remaining lower slopes of the barrow were intact and there is good potential to investigate the makeup of the barrow mound through detailed analysis of both Scott’s and OA’s excavation records. There is also good potential to examine the nature and exact location of the ditch and to calculate whether it could have provided enough material to form the barrow mound.

The data does have considerable potential to address some of the project aims expressed in Section 3.6. Specifically, it will be possible to establish the original form of the Neolithic barrow and verify the existence of a mortuary structure, evaluate the extent of natural and man-made features below the barrow mound, and assess the original extent of the ditch. It should also be possible to establish an approximate date for the monument and gain an understanding of the development of the site through time.
6.3 Potential for artefact and ecofact distribution analysis

The vast majority of finds from OA’s excavation came from unstratified contexts, therefore precluding any potential for distribution analysis. A very small amount of animal bone was recovered from the excavation. All of this was from Scott’s backfill apart from one antler which was found in the northern edge of the barrow mound, seemingly deliberately placed. The pottery and flint was recovered primarily from Scott’s backfill and the topsoil over the barrow which contained material from prehistoric to modern in date. The potential for analysis of this material is therefore considered to be low. A small quantity of material was recovered from well stratified ditch contexts which may have potential for dating.

However, the finds from Scott’s excavation were all marked with grid co-ordinates at the time of excavation. OA have been working with volunteers from the Risborough Countryside Group to record onto a database every single artefact. With this information it is possible to create three-dimensional distribution plots for find locations within the barrow, based on Scott’s original sections. This will provide an excellent opportunity to analyse the spatial distribution of the finds in relation to the barrow deposits.

Trench 1 produced a large flint assemblage composed of waste flakes from knapping activity. No retouched tools were found. The flint scatter was excavated in four spits, each removing 0.01 m of soil. Due to the quantity of flints further deposits were removed in object reference contexts of 0.8 m by 0.8 m by 0.05 m deep spits. The quantity of flints hindered recording and planning, and the potential for further spatial analysis of the scatter is considered to be low.
7 THE ARTEFACTUAL RESULTS AND POTENTIAL

7.1 The pottery from the 2002 -2003 excavation
by Paul Booth

7.1.1 Introduction

Some 1692 sherds (8962 g) of pottery were recovered during the excavation. The pottery from each context group was scanned rapidly and quantified by sherd count and weight in terms of broad period. The Roman material was quantified in terms of the major ware groups identified in OA’s standard system for recording Roman pottery and notes were made of principal inclusion types in elation to some other material where this was likely to be informative. The material was generally in poor condition; the average sherd weight was low (5.3 g) and many sherds were very abraded. Attribution of sherds even to broad period was therefore problematic in many cases and the figures tabulated below should be regarded as a guide rather than as completely definitive. A relatively small number of sherds, principally amorphous fragments in sand-tempered fabrics, were categorised as ‘uncertain’ with regard to period. Quantification of the material by period and context is given in Table 8.1.1.

Table 7.1.1: Quantification of pottery by period and context (sherd count/weight (g))

<table>
<thead>
<tr>
<th>Context</th>
<th>Prehistoric</th>
<th>Late Iron Age</th>
<th>Roman</th>
<th>Medieval</th>
<th>Post-medieval</th>
<th>Uncertain</th>
<th>TOTAL</th>
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<td>18/129</td>
<td>72/421</td>
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<td></td>
<td></td>
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<td>65/357</td>
<td>12/112</td>
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<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>1692/8962</td>
</tr>
</tbody>
</table>

Average weight: 5.8 4.6 5.4 7.5 9.8 2.5 5.3
7.1.2 Description

Prehistoric
All pottery considered to be earlier in date than the late Iron Age was grouped together. The majority of the identified fragments were tempered with flint and sand, but occasional sherds were tempered only with fine sand. Diagnostic pieces were almost entirely lacking. Simple rims, probably from barrel shaped jars, were present in flint and fine sand tempered fabrics (one each). The only significant group of prehistoric material consisted of four sherds heavily tempered with burnt flint, from the fill of the ditch terminal (4191). These were all from the same vessel, a thin walled Bucket Urn of middle Bronze Age date, with a cordon with finger impressed decoration. It will be important to compare the fabric of this vessel with the that of the urn, found by Scott covering cremated remains in the east side of the barrow. All the other prehistoric sherds from OA’s excavations are residual in mixed contexts, and none appear to be Neolithic in date.

Late Iron Age
This material was distinguished from the remainder of the Roman component of the assemblage because it appeared to be particularly numerous - it comprises 53.7% of the total sherds (47.1% by weight). The sherds are almost entirely in grog-tempered fabrics in a ‘Belgic’ tradition characteristic of the region. Vessel rims were similarly almost entirely from jars, as would be expected, with occasional examples of possible dish forms. This pottery will have continued in use into the early Roman period and there is no reason to suggest a chronological break between the two.

Roman
A wider range of fabrics and forms was encountered in the Roman period, but particularly diagnostic pieces were still scarce. Four tiny fragments of samian ware and a single possible amphora fragment were the only imported types. A small number of Oxford colour-coated ware sherds were present, and single sherds of Oxford and Verulamium white ware mortaria were noted. The great majority of the material consisted of sandy reduced coarse wares, presumably from relatively local sources. These were associated with a (very) few black-burnished ware sherds, small quantities of oxidised coarse wares and a slightly larger component of shell-tempered fabrics. It is possible that some of these last should be assigned to the late Iron Age or possibly even earlier, but all the identified rim forms, of jars, were of distinctly Roman types. Overall the range of fabrics and forms does not permit the identification of any particular chronological emphasis in the Roman assemblage.

Post-Roman
A small number of medieval sherds, the identification of some of which was rather tentative, were in sand tempered fabrics. No diagnostic rims were identified. It is possible that one or two sherds in glazed red sandy fabrics recorded as post-medieval were in fact of late medieval date. The post-
medieval pottery comprised a relatively wide range of fabrics and forms, with the majority of the material probably of 19th century date.

7.1.3 Groups and chronology

The majority of the pottery occurred in mixed assemblages and most was probably redeposited. A single context with in situ Bronze Age sherds has been noted above. Two very small groups, 4174 (topsoil from the NW quadrant) and 4182 (eroded bank material), contained only pottery of probable late Iron Age date, but in view of the quantities of material the significance of this is uncertain. The overall quantity of late Iron Age pottery is notable, however, regardless of its context, and suggests relatively intensive activity in the area at this time. Generally, however, the mixed nature of the groups makes them of very limited value for developing detailed understanding of activity in the area in successive periods.

7.1.4 Further work

With the exception of the Bronze Age sherds from the ditch terminal (4191) it is not recommended that any further analysis is required on the material. The summary level of detail recorded for the assessment should suffice to inform general questions related to deposit character and site formation processes on and around the monument. Apart from the Bronze Age material none of the pottery is of significant intrinsic interest in ceramic terms. However, the spread of Iron Age and Roman pottery over the site is of particular interest. A more detailed report on this material will provide a greater understanding of the nature and extent of activity on the site during this period. Further test pits in the vicinity of the barrow would help to define the extent of the distribution of the Iron Age and Roman pottery in relation to the monument.

7.2 Pottery from the 1930s excavation

By Alistair Barclay

7.2.1 Introduction

The pottery assemblage recovered from Scott's excavations was re-assessed against the published report (Smith, 1954). The aim of this re-assessment was to see whether Smith’s work could be enhanced in any way. The pottery reported on by Smith largely belongs to the final early Neolithic sequence of the 4th millennium cal BC. Smith also reports on a secondary urn of Deverel-Rimbury type, which today would be placed in the middle Bronze Age (1600-1150 cal BC).
With the exception of a small number of fragments (Smith, 1954; pl XXV:1-3) that are on display in the museum, all of the pottery assemblage was re-examined against the publication report. The pottery had been separated by Smith into vessels and those sherds not assigned vessel numbers were bagged by fabric group.

7.2.3 Storage and curation

Although the pottery was individually bagged by vessel it was also bulk bagged and this has resulted in fresh breakage of the assemblage. Given the national importance of this assemblage it was considered necessary to re-pack this material with particular attention being paid to the featured vessel groups which needed to be stored flat and protected by some form of protective packaging. This work has been undertaken by members of the Risborough Countryside Group who, at the same time, recorded onto a database the co-ordinates indicating the location of each sherd within the barrow.

7.2.4 Potential and recommendations for further work

Publication report

The report by Isobel Smith is, as expected, both thorough and of a high standard. The illustrations are accurate and depict the range of vessels (form, rim type and decoration), and all of the significant vessels are illustrated.

Contextual

Further information on the use of the site could be gained by plotting the distribution of the assemblage by vessel number, sherd size and/or fabric, using the database produced by the Risborough Countryside Group.

Chronology

Some vessels have charred residue adhering to their surfaces and this presents the possibility of obtaining high quality radiocarbon determinations for the actual vessels and for their associated contexts of deposition. This type of pottery is thought to appear after 3500 cal BC, at a time when causewayed enclosures are going out of use and when Peterborough ware is being adopted. A date or dates on vessels from Whiteleaf would significantly add to our understanding of the development of early Neolithic ceramics in the southeast of England. Suitable sherds with residue for radiocarbon dating will be selected as a first stage in the post-excavation process.

Output

It is recommended that a short report is produced summarising any new results and updating the terminology and chronology found in the original report.

7.3 The flint from the 2002-2003 excavations

By Philippa Bradley
7.3.1 Introduction

A total of 1911 pieces of worked flint and 59 pieces of burnt unworked flint were recovered from the excavations (Table 7.3.1). The flint is summarised by context in Table 1 and described in more detail below. The assemblage came from a variety of contexts: a flint scatter, other layers, fills of features, including ditches and tree-throw holes, and was largely composed of debitage, with only five retouched forms being recovered. Dating is therefore somewhat limited to these forms and the technology of the material.

7.3.2 Methodology

The flint was scanned with notes being made on condition and typological details where possible. A certain quantity of natural unworked flint was identified amongst the collection; this natural material was noted and discarded. This has allowed the assemblage to be quantified and characterised.

7.3.3 Raw materials and condition

The flint is heavily corticated and the original colour of the flint was only discernible in recent breaks and a few uncorticated flints. The original colour of the flint is dark brown to black. Cortex, where present, is brown or buff in colour and it is generally worn. Some post-depositional damage was also recorded. A small quantity of burnt unworked flint was recovered, which was generally heavily calcined grey or tinged with red. Few of the worked pieces are burnt.

7.3.4 Description and discussion

The assemblage is summarised in Table 7.3.1. It can be seen that debitage in the form of flakes, roughly worked cores and tested nodules dominate the assemblage. Only six fairly regularly worked cores were recovered, the remainder consisting of irregularly worked fragments and tested nodules. A few blades, blade-like flakes and bladelets were recovered. Occasionally blade scars were noted on the dorsal surfaces of flakes and a couple of cores also have some blade scars (eg Sf 1228, context 105) although no cores could be seen to have been exclusively used to remove blades. Little platform edge preparation was noted and both hard and soft hammers were used to remove flakes. Six core rejuvenation flakes, all removing the front of the cores, were recovered perhaps indicating that some care was being taken during the reduction stages. Trimming flakes of various types dominate the assemblage. The dominance of trimming flakes and the roughly worked nodules suggest that the flint assemblage is the product of initial preparation of material and shaping of cores for removal and further working elsewhere. The small quantity of blades and blade-like flakes may suggest an earlier Neolithic date.
The majority of the debitage is, however, much less carefully worked and may possibly be later in date. An alternative explanation for the nature of the flint is the fact that it is simply the preliminary working prior to more careful working of cores elsewhere.

All stages of the reduction sequence were recovered but chips and smaller pieces are underrepresented, especially considering that the deposits from Trench 1, containing the flint scatter, were sieved. Some possible differences in the types of flakes recovered was noted between the layers making up the flint scatter, for example context 114 (one spit within context 105) produced many more non-cortical flakes than other spits. It is possible that differential dumping of flint was occurring.

Unfortunately the few retouched forms recovered do not really assist with dating as they include three very worn serrated flakes, two minimally worked scrapers and a probable unfinished knife or arrowhead. Serrated flakes occur in both Neolithic and early Bronze Age assemblages and scrapers are difficult to date individually (cf Riley 1990). The unfinished knife or arrowhead has been invasively retouched and may be early Bronze Age in date. The limited number of retouched forms clearly relates to the function of the assemblage, and although only a scan was undertaken little usewear was noted. This suggests that the majority of the material recovered is waste produced whilst roughly working the flint before further working elsewhere. The few retouched and used pieces perhaps being used during other activities at the site.

The flint is closely comparable to the assemblage from the initial excavation of the site (Childe 1954, 217-9). This excavation produced a large number of trimming flakes and a few limited retouched forms, although two leaf-shaped arrowheads do confirm a Neolithic date for at least some of the assemblage (Child 1954, 218-9, fig. 4).

7.3.5 Potential and recommendations for further work

Although the assemblage is of reasonable size, its composition and lack of closely dateable artefacts limits the potential for further work. Almost all of the flint from the Neolithic barrow excavation was found in mixed, modern or redepósited layers and only a few were recovered from well stratified deposits so there is little potential for further analysis of this material. It would, however, be worthwhile comparing the 87 flints discarded by Scott (contexts 4103, 4113, 4135, 4138, 4142 and 4143) with those he collected from the barrow (Section 7.4).

A little further work may also elucidate more information from the in situ scatter in Trench 1. A technological and metrical analysis of approximately 250 flints, out of the 1400 found, would help to refine the date of this assemblage and provide a clearer understanding of the nature of the flint working at this site. The flint assemblage should be placed in its local context.
An analysis of the spatial distribution of the flints is not recommended as it would add little to our understanding of the site. A limited number of retouched forms and cores should be drawn to illustrate the report, drawing briefs will be prepared and the drawings checked. A summary publication report should be prepared from the assessment report.

7.3.6 Storage and curation

The flint is adequately bagged and boxed for long-term storage.

Table 7.3.1: Whiteleaf Hill, summary quantification of flint by context

<table>
<thead>
<tr>
<th>Location</th>
<th>Context</th>
<th>Flakes</th>
<th>Blades, blade-like flakes etc</th>
<th>Chips</th>
<th>Irreg. Waste</th>
<th>Cores, core fragments</th>
<th>Retouched forms</th>
<th>Burnt unworked flint</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trench 1</td>
<td>100</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>Trench 1</td>
<td>104</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>Trench 1</td>
<td>105</td>
<td>367 (inc 2 CRF)</td>
<td>6</td>
<td>11 (6 core fragments, 1 tested nodule, 1 multi-platform core, 1 core with 2 platforms)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>384</td>
</tr>
<tr>
<td>Trench 1</td>
<td>108</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Trench 1</td>
<td>109</td>
<td>10</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Trench 1</td>
<td>113</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Trench 1</td>
<td>114</td>
<td>478 (inc 1 CRF)</td>
<td>1</td>
<td>27</td>
<td>12 (9 core fragments, 3 tested nodules)</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
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<tr>
<td>Trench 1</td>
<td>115</td>
<td>242 (inc 2 CRF)</td>
<td>2</td>
<td>8</td>
<td>8</td>
<td>15 (9 tested nodules, 3 core fragments, 1 multi-platform core, 1 core on a flake, 1 single platform core)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Trench 1</td>
<td>116</td>
<td>89 (inc 1 CRF)</td>
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<td></td>
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<tr>
<td>Trench 1</td>
<td>117</td>
<td>6</td>
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<td></td>
<td></td>
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<td></td>
<td>7</td>
</tr>
<tr>
<td>Trench 1</td>
<td>118</td>
<td>24</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Trench 1</td>
<td>119</td>
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<td>30</td>
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<tr>
<td>Trench 2</td>
<td>200</td>
<td>4</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Trench 2</td>
<td>201</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Trench 2</td>
<td>203</td>
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</tr>
<tr>
<td>Trench 3</td>
<td>303</td>
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<td></td>
<td>21</td>
</tr>
<tr>
<td>TP 1</td>
<td>3010</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>TP 2</td>
<td>3020</td>
<td>9</td>
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<td></td>
<td></td>
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<td></td>
<td>1</td>
</tr>
<tr>
<td>TP 3</td>
<td>3030</td>
<td>5</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
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</tr>
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<td>5</td>
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<td></td>
<td>1</td>
</tr>
<tr>
<td>TP 7</td>
<td>3070</td>
<td>4</td>
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<td></td>
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<td></td>
<td>1</td>
</tr>
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<td>TP 7</td>
<td>3071</td>
<td>4</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>TP 10</td>
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<td>15</td>
<td>1</td>
<td></td>
<td>1 (core fragment)</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>TP 11</td>
<td>3110</td>
<td>6</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>1 (misc. retouch, knife or unfinished arrowhead)</td>
<td>7</td>
</tr>
<tr>
<td>TP 12</td>
<td>3120</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<td>1</td>
</tr>
<tr>
<td>TP 13</td>
<td>3130</td>
<td>4</td>
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<td></td>
<td></td>
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<td></td>
<td>1</td>
</tr>
<tr>
<td>TP 14</td>
<td>3140</td>
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<td>1</td>
</tr>
<tr>
<td>TP 14</td>
<td>3143</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>4</td>
</tr>
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<td>4</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Barrow 4</td>
<td>4101</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Barrow 4</td>
<td>4102</td>
<td>155</td>
<td>1</td>
<td></td>
<td>2 (tested nodules)</td>
<td></td>
<td></td>
<td>1 (end scraper)</td>
<td>4</td>
</tr>
<tr>
<td>Barrow 4</td>
<td>4103</td>
<td>67</td>
<td>1</td>
<td></td>
<td>1 (single platform flake core)</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Barrow 4</td>
<td>4113</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Barrow 4</td>
<td>4114</td>
<td>31</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

30
7.4 **Flint from the 1930s excavation**

By Kate Cramp

7.4.1 **Introduction**

The flint assemblage recovered by Scott from the Neolithic barrow was very briefly assessed during the sorting and packaging of the material for long term storage.

7.4.2 **Description**

The assemblage of c. 600 flints is in an exceptionally fresh condition, but includes very few tools compared to the huge quantity of unretouched debitage. Of the tools that were recovered, serrated flakes/blades dominate almost to the exclusion of other types such as scrapers. Several possess edgégloss, which indicates use on silica-rich plant materials. It is likely that these reflect some sort of specialised activity at the site. A larger, broader range of retouched tools (more scrapers, for example) would be expected from more generalised domestic activity. Very little evidence of burning was observed.

The assemblage contains very few cores (only 1 formal core identified), which is also highly unusual in such a large assemblage, and suggests that knapping activity was not performed at the site. Very few chips (normally indicative of *in situ* knapping) were recovered. A microlith and microburin were also recovered, indicating a small amount of Mesolithic activity (the microlith is an Early Mesolithic type; the microburin could be early or late).

7.4.3 **Potential and recommendations for further work**

The published report on the flint from the 1930s excavations is very brief, and does not recognise the full range of material present. Modern methods of analysis will significantly enhance this record and shed light on this nationally important site.
The flint assemblage from the barrow is important in terms of size (c. 600 pieces), its exceptionally fresh condition, its provenance and its ceramic associations. A full digital catalogue of the flint is required to allow a more detailed categorisation and quantification of the material before further discussion and analysis of the flintwork can be undertaken.

The assessment detected numerous utilised edges which, in conjunction with the fresh condition of the flints, means that low power use-wear analysis is likely to produce valuable results. As the assemblage contains low numbers of retouched tools, it would be rewarding to examine the use of unretouched edges. Use-wear analysis would enable the exploration of the possibility that the large number of serrated flakes/ blades in the assemblage reflects some sort of specialised activity. Technological analysis would help to refine the dating of the flintwork, which at the moment is broadly Neolithic. The distribution and ceramic association of the flints would allow any spatial and chronological patterns to be investigated.

It would also be useful to compare this assemblage with the flints discarded by Scott which were found within the backfill during OA’s excavation (87 pieces in total). This may help to clarify the nature of Scott’s selection strategy with regard to the worked flints.

7.5 The stone from the 2002-2003 excavations

by Ruth Shaffrey

7.5.1 Summary and Quantification

Five pieces of stone out of approximately 35 were of interest.

7.5.2 Methodology

All the stone was examined with the aid of a x10 magnification hand lens.

7.5.3 Description

The stone included two fragments of Culham Greensand both from the backfill of Scott’s excavations (4103). One of these has two worked surfaces suggesting it is a fragment of a rotary quern. Culham Greensand was a surprise find on the site but as the context of recovery was unphased, there is very little that can be said about its presence. There were also three small spherical stones. These are of high iron content with very smoothed surfaces and do not appear to be natural. It is possible that these result from some iron
producing process and ought to be looked at by a slag specialist. These items were unstratified, however, and their presence is therefore of limited potential.

7.5.4 Statement of Potential

The assemblage does not have any further potential unless it is considered worthwhile showing the ferrous spheres to another specialist.

7.6 Copper alloy from the 2002-2003 excavations

by Leigh Allen

7.6.1 Quantification and description

<table>
<thead>
<tr>
<th>Location</th>
<th>Context</th>
<th>SF No</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrow</td>
<td>4102</td>
<td>2</td>
<td>1 Roman coin</td>
</tr>
<tr>
<td>Barrow</td>
<td>4102</td>
<td></td>
<td>Modern pennies</td>
</tr>
<tr>
<td>Barrow</td>
<td>4102</td>
<td></td>
<td>Part of a cartridge case</td>
</tr>
<tr>
<td>Barrow</td>
<td>4102</td>
<td></td>
<td>1 pin with a domical head of green glass</td>
</tr>
<tr>
<td>Barrow</td>
<td>4102</td>
<td></td>
<td>Copper alloy strip</td>
</tr>
<tr>
<td>Barrow</td>
<td>4103</td>
<td>1</td>
<td>1 Roman coin</td>
</tr>
<tr>
<td>Barrow</td>
<td>4103</td>
<td></td>
<td>Modern pennies</td>
</tr>
<tr>
<td>Barrow</td>
<td>4103</td>
<td></td>
<td>Tin plated modern mount and decorative fitting</td>
</tr>
<tr>
<td>Barrow</td>
<td>4103</td>
<td></td>
<td>Decorative copper alloy strip</td>
</tr>
<tr>
<td>Barrow</td>
<td>4113</td>
<td></td>
<td>Modern pennies</td>
</tr>
</tbody>
</table>

**Context 4102**

*SF 2* - Very worn 4th century Roman coin

*Pin* - has a domical head of green glass D:7mm and a copper alloy shaft of rectangular section L:54mm. An almost identical example was recovered from Winchester (type C) from a context dating from the early 11th-12th century (Biddle 1990, 554-557, fig 150, No.1439). Glass pins are quite frequently found in Romano-British contexts and it may be that this item could be regarded as a residual item of Romano-British manufacture. (illustrate ?)

*Copper alloy strip* - L:28mm curved along its length and flaring towards one end. Plain but possibly plated with a white metal coating possibly silver or tin.

**Context 4103**
Decorative copper alloy strip - curved along its length and expanded at the centre to form a circular plate with 2 small perforations through it. Either side the strip is decorated with raised ridges of knurling. Possible fragment from a buckle frame/shoe buckle.

SF 1 - Roman coin, GLORIA ROMANORUM, Emperor and captive 364-378

7.7 Other finds from the 2002-2003 excavations

Large quantities of modern glass and metal were recovered from the backfill of Scott’s excavations and the topsoil over the barrow, as well as two of the test pits and three of the trenches. No assessment of this material has been undertaken but it is summarised in Table 7.7.1.

Table 7.7.1 Other finds from Whiteleaf Hill not assessed

<table>
<thead>
<tr>
<th>Context</th>
<th>Glass</th>
<th>Iron</th>
<th>Clay pipe</th>
<th>Shell</th>
<th>CBM</th>
</tr>
</thead>
<tbody>
<tr>
<td>4113</td>
<td>25</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4114</td>
<td>17</td>
<td>1</td>
<td>2</td>
<td>1</td>
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</tr>
<tr>
<td>4138</td>
<td>1</td>
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<td>4193</td>
<td>5</td>
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<td>4204</td>
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<td>4101</td>
<td>3</td>
<td>9</td>
<td>1</td>
<td></td>
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</tr>
<tr>
<td>4102</td>
<td>118</td>
<td>19</td>
<td>14</td>
<td>167</td>
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<td>4103</td>
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<td>4012</td>
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<td>TP 6 -3061</td>
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<td>TR 2 - 201</td>
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<td>TR 2 - 200</td>
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<td>TR 4 - 404</td>
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<td>2</td>
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</tbody>
</table>

7.7.1 Discarded finds

A number of very modern finds have been discarded. These are summarised in Table 7.7.2. Large quantities of barbed wire were found within the topsoil and Scott’s backfill which appears to have originated from the fence surrounding the 1930s excavation of the Neolithic barrow.

Table 7.7.2 Modern finds discarded

<table>
<thead>
<tr>
<th>Context</th>
<th>Discarded material</th>
</tr>
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<tbody>
<tr>
<td>4090</td>
<td>Modern pill bottle</td>
</tr>
<tr>
<td>4102</td>
<td>5 fragments of barbed wire, 2 rubber balls, 2 pencil leads, 1 plastic tube, 1 marker pen, bottle tops, can lid, tin opener.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>4103</td>
<td>Plastic whistle, bottle tops, cycle clips, 33 fragments of barbed wire, tin can, metal casters.</td>
</tr>
<tr>
<td>4113</td>
<td>24 fragments of barbed wire</td>
</tr>
</tbody>
</table>

### 7.8 Small finds from the 1930s excavation

A small number of bone/antler finds recovered from the Neolithic barrow were reported on by Childe and Smith (1954, 219), and are listed below. No further analysis of this material will be carried out.

- 1 small bone pin (sheep metapodial)
- 3 red deer antlers (1 shed)
- 1 beavers tusk, longitudinally split, but showing no traces of working

### 7.9 The animal bone from the 2002-2003 excavations

by Emma-Jayne Evans

#### 7.9.1 Introduction

This report encompasses the animal bones from the site at Whiteleaf Hill, from which a total of 78 fragments (489 g) of bone and teeth were excavated.

#### 7.9.2 Methodology

Identification of the bone was undertaken at Oxford Archaeology with access to the reference collection and published guides. All the animal remains were counted and weighed, and where possible identified to species, element, side and zone (Serjeantson 1996). Also, fusion data, butchery marks, gnawing, burning and pathological changes were noted when present. Ribs and vertebrae were only recorded to species when they were substantially complete and could accurately be identified. Undiagnostic bones were recorded as small (small mammal size), medium (sheep size) or large (cattle size). The separation of sheep and goat bones was undertaken using the criteria of Boessneck (1969) and Prummel and Frisch (1986), in addition to the use of the reference material housed at OA. Where distinctions could not be made, the bone was recorded as sheep/goat (s/g).

The condition of the bone was graded using the criteria stipulated by Lyman (1996). Grade 0 being the best preserved bone and grade 5 indicating that the bone had suffered such structural and attritional damage as to make it unrecognisable.
The quantification of species was carried out using the total fragment count. Tooth eruption and wear stages were measured using a combination of Halstead (1985) and Grant (1982), and fusion data was analysed according to Silver (1969). Measurements of adult, that is, fully fused bones were taken according to the methods of von den Driesch (1976), with asterisked (*) measurements indicating bones that were reconstructed or had slight abrasion of the surface.

7.9.3 Quantity of Material

The bone analysed for this assessment encompasses both all the hand collected and sieved material, and has been recorded in full. Of the hand recovered material any broken fragments were re-fitted, reducing the number to 58 fragments of bone and teeth. Table 7.9.1 below shows the number of sieved and unsieved bones recovered from the site.

<table>
<thead>
<tr>
<th>Location</th>
<th>Context</th>
<th>Unsieved</th>
<th>Sieved</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trench 3</td>
<td>300</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Barrow</td>
<td>4102</td>
<td>28</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>Barrow</td>
<td>4103</td>
<td>19</td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>Barrow</td>
<td>4104</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Barrow</td>
<td>4169</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Barrow</td>
<td>4170</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Barrow</td>
<td>4193</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Barrow</td>
<td>4769</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>56</td>
<td>2</td>
<td>58</td>
</tr>
</tbody>
</table>

7.9.4 Species Representation

A total of 37 fragments were identified to species, 63.7% of the total fragment count (Table 7.9.2). From the site as a whole the main domestic species are represented, with red deer and rabbit representing the wild species, and domestic fowl and wood pigeon representing the birds. The presence of rabbit and domestic fowl in context 4102 suggests that this context has a degree of disturbance, as these species were not introduced until much later than the Neolithic period.

<table>
<thead>
<tr>
<th>Context</th>
<th>Phase</th>
<th>Sheep/goat</th>
<th>Pig</th>
<th>Cattle</th>
<th>Dog</th>
<th>Red deer</th>
<th>Deer</th>
<th>Rabbit</th>
<th>Domestic fowl</th>
<th>Wood pigeon</th>
<th>Bird</th>
<th>Unid</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>Modern</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>4102</td>
<td>Modern</td>
<td>7</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>9</td>
</tr>
<tr>
<td>4103</td>
<td>U/S</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>9</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>4104</td>
<td>EN</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>4169</td>
<td>Unknown</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>4170</td>
<td>Unknown</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>4193</td>
<td>Modern</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>
7.9.5  Condition

The animal bone has survived in relatively poor condition, with the majority of the bone according to Lyman’s grading scoring 4, as shown in Table 7.9.3. Gnawing and butchery marks were only noted on one bone from this site, and it is likely that the poor surface condition has hindered the identification of such processes.

<table>
<thead>
<tr>
<th>Context</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4102</td>
<td>10.7%</td>
<td>28.6%</td>
<td>28.6%</td>
<td>32.1%</td>
<td>-</td>
</tr>
<tr>
<td>4103</td>
<td>-</td>
<td>47.4%</td>
<td>10.5%</td>
<td>42.1%</td>
<td>-</td>
</tr>
<tr>
<td>4104</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>100.0%</td>
<td>-</td>
</tr>
<tr>
<td>4169</td>
<td>-</td>
<td>-</td>
<td>100.0%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4170</td>
<td>-</td>
<td>-</td>
<td>40.0%</td>
<td>60.0%</td>
<td>-</td>
</tr>
<tr>
<td>4193</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>100.0%</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>5.2%</td>
<td>29.3%</td>
<td>27.6%</td>
<td>37.9%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

7.9.6  Potential and Recommendations

The condition and quantity of the bone limits the amount of information that can be gained from the animal bones from this site. The red deer antler recovered from the barrow bank (4104) is the only piece of animal bone found from a Neolithic context. This antler is of interest as it appeared to be a placed deposit and it therefore warrants a small amount of further work. In addition, a radiocarbon date for the antler would provide a date for the construction of the final mound.

7.10  Animal bone from the 1930s excavation

The following identifiable fragments of animal bone were recovered from the inner mound of the barrow (Childe and Smith, 1954:219):
- red deer - 38
- pig - 23
- sheep - 10
- roe deer - 9/12
- beaver - fragments of left lower incisor
- unid. bird - 2

The red deer remains included two antlers from the bottom of the ditch on the west side of the barrow. It is likely that these were used as picks for the construction of the monument although they were both too decayed and fragmentary to demonstrate any evidence of this (Childe and Smith 1954, 219). No further analysis of this material will be carried out.

7.11 The charred plant remains and charcoal from the 2002-2003 excavations
by Dana Challinor

7.11.1 Introduction
Two bulk 50 litre samples were taken from the Neolithic barrow for the recovery of charred plant remains, one from the possible ‘midden’ material described by Scott, and one from the barrow mound immediately below the topsoil. The sample from the barrow mound was not thought to be worth assessing as this is clearly redeposited material. Three samples were also taken from fills of the cross-ridge dyke (Trench 3) along with one from the layer containing the flint scatter in Trench 1.

7.11.2 Methodology
The samples were processed by flotation using a modified Siraf-type machine, with the flot collected on a 250μm mesh. After air-drying the flots were scanned for material under a binocular microscope at x10 and x20 magnification.

7.11.3 Results
The flots were medium to large in size and all were dominated by tree roots. A few modern seeds were also present. Molluscs were abundant, but specific samples have been assessed separately (see Stafford, this report). Occasional fragments of wood charcoal were noted in the samples; several taxa were represented, including *Quercus* sp. (oak), *Ilex aquifolium* (holly) and cf. *Fraxinus excelsior* (ash) (Table 7.11.1). No other charred plant remains were recorded.
### Table 7.11.1 Results of the assessment of the charred plant remains

<table>
<thead>
<tr>
<th>Location</th>
<th>Sample Number</th>
<th>Context number</th>
<th>Charcoal</th>
<th>Snails</th>
<th>Modern contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trench 1</td>
<td>1</td>
<td>114</td>
<td>-</td>
<td>++</td>
<td>++++</td>
</tr>
<tr>
<td>Trench 3</td>
<td>3</td>
<td>308</td>
<td>++</td>
<td>++++</td>
<td>++++</td>
</tr>
<tr>
<td>Trench 3</td>
<td>4</td>
<td>306</td>
<td>+</td>
<td>++++</td>
<td>++++</td>
</tr>
<tr>
<td>Trench 3</td>
<td>5</td>
<td>315</td>
<td>-</td>
<td>++</td>
<td>++++</td>
</tr>
<tr>
<td>Barrow</td>
<td>11</td>
<td>4154</td>
<td>+</td>
<td>+++</td>
<td>++++</td>
</tr>
</tbody>
</table>

+ = present, ++ occasional, +++ frequent, ++++ abundant

### 7.11.4 Potential

Given the lack of charred remains in these samples, there is no potential for archaeobotanical analysis. Moreover, the high level of modern contamination compromises the suitability of the wood charcoal for radiocarbon dating or analysis. It is recommended that, unless these flots are required for molluscan analysis, they be discarded.

### 7.12 The land snails from the 2002-2003 excavations
by Elizabeth Stafford

#### 7.12.1 Introduction

The geology of Whiteleaf Hill, situated on the Chiltern escarpment, is Middle and Upper Chalk overlain by patchy drift deposits of clay-with-flints. The calcareous nature of the soils at the site are therefore conducive to the preservation of molluscs shells. A total of 41 samples were taken during the two phases of excavation for the retrieval of molluscan assemblages. The samples derive from sequences of deposits at a number of locations beneath the Neolithic barrow, from the make-up of the barrow itself, and from the fill of the barrow ditch. In addition, a sequence was retrieved from the fill of a ditch assumed to be part of the cross-ridge dyke to the south of the barrow. No dating evidence was retrieved from the ditch, however it is likely that it dates to the prehistoric period, possibly the late Bronze Age.

#### 7.12.2 Method

It was decided that the best approach to the assessment of the columns was to identify those which gave the best sequences and to assess them in detail. Twenty five samples from five columns were selected. The samples were disaggregated in water and floated onto 0.5 mm mesh. The remaining residues were also sieved to 0.5 mm and airdried. Both the flots and residues were scanned under a low power binocular microscope at magnifications of x 10 and x 20.

#### 7.12.3 Results
Land snails were preserved in the majority of the flots in varying amounts from sparse to very abundant. The abundance of taxa was recorded on a scale of + (1-4 individuals), ++ (5-25), +++ (26-50), ++++ (51-100), +++++ (>100).

An estimate was also made of the total number of individuals in each flot excluding *Cecilioides acicula*. This species was excluded because it burrows deeply and provides no useful information on conditions as a sediment or soil formed. *C. acicula* can be extremely numerous and its inclusion in the total tends to obscure the results from the other species. (The other burrowing species listed, *Pomatias elegans*, only burrows just below the surface of loose soil or leaf litter, so does give useful palaeoecological information). The identifications are divided into species groups in the tables of results (Tables 1-3). Nomenclature follows Kerney (1999).

The pre-barrow deposits were examined at three different locations where three distinct deposits were identified.

The lowermost deposits, (4151) and (4153), consisted of compact reddish brown clay with flint and chalk fragments directly overlying chalk bedrock. It was unclear at the time of excavation whether these deposits were related to deposits of clay-with flints, of periglacial origin, or, in part, the remnants of a pre-barrow soil of later Holocene date. The lower contact with the chalk was uneven with subsoil hollows extending some way into the chalk. No samples were retrieved from the base of the hollows. However, the uppermost part of the deposit, (4153) <8>, contained a sparse assemblage of shells and the presence of *Discus rotundatus*, a thermophilous species, suggests a later Holocene date at this location. On the whole the assemblages consisted of shade-loving species *D. rotundatus*, *Carychium* sp. Open country elements, *Pupilla muscorum*, *Vallonia* sp., are present in small quantities.

A discrete layer of more humic, dark brown clay-silt (4154), overlying (4153), and directly beneath the barrow make-up, was also examined (samples 6 and 7). Similarly mollusc assemblages were sparse consisting predominantly of shade-loving species.

Context 4104, a compact mid grey brown silt-clay with chalk fragments, represents bank material from the Neolithic barrow. Mollusc assemblages in these deposits were richer and more diverse. They are dominated by shade-loving species *Discus rotundatus*, *Carychium* sp., *Zonitidae*, with lesser quantities of Clausiliidae. However, there is also an open country element to the assemblage mostly *Pupilla muscorum* and *Vallonia* sp. with occasional *Vertigo pygmaea* and *Abida secale*, which may reflect clearance. The shells may derive from the turf horizon of the ancient soil which would have been the first material to have been incorporated into the bank.

Ten samples were examined from the barrow ditch deposits and all contained useful quantities of shells. All the fills are dominated by shade-loving species. Open-country molluscs however are by no means absent. *Discus rotundatus*, is characteristic of woodland conditions and is well-represented., along with various *Zonitidae*, and lesser quantities of Clausiliidae and *Ena* sp.. The "old woodland" snail *Acicula fusca* is also present. *Carychium* sp. is present in high
Carychium tridentatum, although often classed as woodland species, this small shade-loving snail, along with Acanthinula aculeata, is often found in abundance in areas of long grassland. The abundance of Pomatias elegans, especially in the secondary fills of the ditch possibly reflects surface disturbance, while the occurrence of Vallonia sp. suggests tree cover was not complete. The assemblages suggest the barrow may have been sited in a grassy clearing surrounded by woodland. There is some evidence of environmental change through the sequence with an increase in abundance and diversity up the profile with particular increases of Carychium sp., A. aculeata and P. elegans.

Cross-ridge dyke

Four samples were examined from the fill of a ditch assumed to belong to the cross ridge dyke. The assemblages were similar to those of the barrow ditch in that they were dominated by shade loving species. Discus rotundatus, along with various Zonitidae, and lesser quantities of Clausiliidae and Ena sp.. Carychium sp. is also present in high numbers. P. elegens is sparsely represented when compared to the barrow ditch. Samples taken from buried soil beneath the bank of the cross-ridge dyke, which have not been assessed here, also have potential to produce good molluscan assemblages.

7.12.4 Significance and potential

Overall the assemblages at Whiteleaf are likely to reflect some form of wooded conditions prior to the construction of the barrow and during its use. It may well have been sited in a grassy clearing within woodland or with woodland very close-by. There is little indication of vast or substantial areas of open country grassland existing in the locality in any of the sequences examined. There is, however, a small but consistent open country element within the sequences suggesting woodland cover was not complete, as well as evidence for continued surface disturbance in the area whilst the barrow ditch was infilling. The soil beneath the barrow at Whiteleaf has been investigated previously (Kennard in Childe and Smith 1954, 230), however, no quantification or details of a soil profile were provided. Two samples were examined, one yielded no molluscan remains and was interpreted as an undisturbed subsoil as opposed to a ‘true soil’. The other sample yielded thirteen species, predominantly shade-loving particularly Discus rotundatus, Pomatias elegens, Carychium sp. Zonitidae and various catholic species. Open country such as the Vallonias and Pupilla muscorum were similarly absent. Further work on the mollusc assemblages from Whiteleaf will increase the species lists and provide data on the environment of the long barrow prior to its construction and during the period of use.

Further work will also provide additional regional data on the environment and landscape setting of Neolithic monuments within the region. Several sequences have been investigated along the Chiltern escarpment from deposits within dry valley sequences. At nearby Pink Hill, deposits from subsoil hollows beneath plough wash deposits contained snail assemblages reflecting a closed woodland environment, with shade loving species predominating. It was suggested the faunas probably dated to the Atlantic period. The origin of the material was not clear but it was suggested it was likely to be result of tree-
root action (Evans 1972, 1993). With reference to the date of widespread woodland clearance in the region, dry valley sites along the Chiltern escarpment such as Chinnor, Pitstone and Pegsdon suggest initial woodland clearance to the Iron age or earlier, in the Bronze Age. Beneath the Bronze Age barrow on Bledlow Cop on the opposite side of the Risborough gap a dry grassland fauna was identified. (Evans 1972, 316).

This initial clearance is somewhat later than in other chalkland areas such as Wessex where analysis of mollusc assemblages from soils beneath Neolithic monuments and within adjacent ditches suggest extensive permanent grassland existed during the Neolithic. There are however examples of Neolithic monuments being sited within or adjacent to woodland in several regions and in this aspect Whiteleaf is not unique. Evans (1993) comments causewayed camps such as Maiden Castle, Windmill Hill, and others in Sussex, were built adjacent to woodland in land that had been cleared but not extensively cultivated or grazed, or alternatively within woodland that had been recently cleared for the purpose of construction. Evans also comments that during the earlier Neolithic siting of monuments may well be related to function within the landscape. In addition to this there is substantial evidence for abandonment with regeneration of scrub and light woodland during the later Neolithic at many sites that demonstrated an initial clearance phase.

7.12.5 Recommendations for further work

It is recommended that, since many of the assemblages were very similar, further work be carried out on a limited number of samples that best represent the assemblages from each site. The molluscs from the barrow ditch contain sufficiently large assemblages for a degree of palaeoecological interpretation. The excellent preservation at these sites is due to their location on chalk geology. Further work on these samples would confirm identifications and extend the species list. This data may be compared to numerous sites previously excavated in the region for which data is available.

This work would include a sample from each context from the barrow ditch, a sequence of four samples from the deposits beneath the barrow mound and a sample from each context from the cross-ridge dyke if further dating evidence is provided in the next phase of work. Work would involve sorting both flots and fine residues for identifiable shell fragments. Shells of *Pomatias elegans* and Limacidae are under-represented in the flots, along with apical fragments generally, that are less inclined to float than whole shells that trap air inside. This would be overcome in any full-scale analysis by sorting the fine residues as well as the flots. For this purpose the fine residues have been retained.

7.13 Radiocarbon dating

An excellent opportunity exits to gain radiocarbon determinations from a number of samples from the Neolithic barrow. Permission has been granted for a sample of the human bone to be made available for radiocarbon dating which will provide a more accurate date for the primary burial and the first use of the
site. Dating the charred residues found adhering to the pottery sherds from the ‘inner’ mound will enhance our understanding of the development of early Neolithic ceramics in the south-east of England, as well as enable this phase of the monument to be related to the burial. In addition, gaining a date for the antler pick wedged into the bank of the barrow will provide a date for the construction of the final mound. It is possible that mathematical modelling of the results, taking into account the stratigraphic relationships between the samples, will enable a tighter chronology to be constructed. However, the morphology of these samples will have to be considered in great detail before this is undertaken.

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APPENDIX 1: Report on Archaeogeophysical Surveys, 2002 - 3

By Alistair Bartlett
Bartlett - Clark Consultancy

Introduction

Geophysical surveys have been carried out at Whiteleaf Hill as part of a programme of archaeological investigations which is being undertaken by Oxford Archaeology on behalf of Buckinghamshire County Council. The aim of the project is to improve the conservation and interpretation of the archaeological monuments on Whiteleaf Hill, which is also a Nature Reserve, and lies in the Chilterns Area of Outstanding Natural Beauty.

Fieldwork for the initial survey was carried out in advance of an open day held at the site in September 2002, and plots of the findings were shown as part of the display presented by OAU at that time. A further more limited investigation was undertaken during a subsequent open day on 27 June 2003.

This revised report is based on the original report (dated 3 June 2003), with the addition of the further resistivity results from the fieldwork done on 27 June 2003.
Site Description

There are five Scheduled Ancient Monuments at Whiteleaf Hill, and other archaeological features may also be present, as noted in the project design document prepared by OA. The most conspicuous of the surviving monuments is a Neolithic oval barrow which lies towards the southern end of the open clearing on the summit of the wooded hill (SM 19053). This barrow was extensively excavated in the 1930s, and the mound is now of a very uneven shape. One purpose of the project is to re-assess the excavation findings, as well as to carry out further excavations with a view to reinstating the original profile of the mound.

The other scheduled monuments are two possible round barrows, a cross ridge dyke (SM 27148) of probable Bronze Age date, and the chalk – cut Whiteleaf Cross (SM 27147) on the west slope of the hill.

Round barrow 1 (SM 19047), which lies on lower ground at the northern end of the hilltop clearing, is of irregular shape and has no visible ditch. Round barrow 2 (SM 19048) lies on the hilltop to the north of the Neolithic barrow, and may also have been excavated. It contains a central hollow and cross shaped depressions, which perhaps indicate it once served as the base of a windmill.

Other previously recorded archaeological findings may relate to later activities at the site. Roman finds, including coins and a rubbish pit dug into the Neolithic barrow, indicate the possible presence of Roman, Saxon or later features or remains. There are also traces of WWI practice trenches between the hilltop and the car park.

The main aims of the geophysical survey were to investigate the barrow sites, and also to test for evidence of any additional previously unidentified archaeological remains. This was done by means of magnetometer and resistivity surveys in 2002, and a further resistivity survey in 2003. The Neolithic oval barrow was at that time under excavation, as mentioned below, and sections of various ditches, including the main barrow ditch, were exposed. Two sample areas, located as shown on figures 5 and 7 (area C) were surveyed by resistivity to test whether these ditches could be traced in adjacent unexcavated areas of the site.

Survey Procedure

The extent of the magnetometer coverage was determined by the densely wooded nature of the site, and is indicated on the magnetometer data plots (Fig. 6). Area 1 includes the three scheduled barrows, and covers the open hilltop. Areas 2 and 3 were surveyed in small open areas adjacent to the access track, and area 4 is a grassed area adjacent to the car park. The magnetometer survey was supplemented by a slightly more extensive magnetic susceptibility survey and by resistivity surveys of the two round barrows (Fig. 6).

Magnetometer readings were recorded at 25 cm intervals along lines 1m apart using Geoscan fluxgate magnetometers. The x-y (graphical) plots represent the initial data after correction for irregularities in line spacing caused by variations in the instrument
zero setting. Additional 2D low pass filtering has been applied to the grey scale plots to reduce background noise levels.

Magnetic susceptibility readings were taken at 16.6m intervals using a Bartington MS2 meter and field sensor loop. Susceptibility measurements can provide a broad indication of areas in which archaeological debris, and particularly burnt material associated with past human activity, has become dispersed in the soil. They can provide useful supplementary evidence when interpreting a magnetometer survey, but are also affected by non-archaeological factors, including geology, past and present land use, and modern disturbances.

Ground resistance measurements were taken using a Geoscan RM15 resistivity meter with the twin electrode probe configuration and a mobile probe spacing on 0.5m. The location of the survey blocks is shown on figure 6. A mean value calculated from neighbouring readings is subtracted from each reading in turn in the filtered plots. This removes larger scale background effects and emphasises localised features which may be of archaeological significance.

The survey grid was set out and located at the required national grid co-ordinates by means of a sub-1m accuracy GPS system.

Outlines and shading indicating potentially significant magnetic anomalies and areas of magnetic activity are shown superimposed on the x-y magnetometer plots. The same interpretation is reproduced to provide a summary of findings on the susceptibility plan (Fig. 6).

Results

Magnetometer Survey

Conditions on chalk-based soils are usually reasonably favourable for magnetometer surveying, as is confirmed here by the susceptibility readings. These are sufficiently high (mean = 11 \times 10^{-5} \text{ SI}) to suggest that subsurface archaeological features should, in general, be detectable. A magnetometer survey does, however, respond more readily to ancient settlement or industrial remains, which usually contain traces of burnt material which causes magnetically enhanced fill, rather than to earthworks. Ditches are sometimes detectable, depending on the depth and composition of the fill, particularly in the vicinity of settlement remains, but this cannot be relied upon. The magnetic anomalies detected in this survey may represent a variety of subsurface disturbances, but few of them appear to relate to the barrow ditches.

There is a distinct concentration of magnetic disturbances to the north and north east of the Neolithic barrow. Some of the magnetic anomalies are narrow spikes indicating buried iron, but others (e.g. the features outlined at A and B) have the rounded profile characteristic of silted pits. The magnetic susceptibility readings also show strong localised enhancement in this part of the site.

The anomalies as indicated near Round Barrow 2 are small and indistinct, but there are well-defined features at C to the south west of Round Barrow 1. There are
strong disturbances across much of the area of the Neolithic barrow, and this part of the survey is shown in an enlarged detail plot inset on figure 1. Some small pit-like features may be present, but are difficult to identify. Most of the magnetic anomalies in the inset plot are strong and narrow, and probably indicate iron objects in the backfilling of the previous excavations.

Disturbances (as shaded) to the south east of the Neolithic barrow in area 1 and in area 2 probably indicate magnetic debris (bricks, slag, etc) in hardcore laid along the access track. Strong disturbances near the cross ridge dyke in area 3 may also indicate the presence of recent debris, rather than relate to the original earthwork.

Various magnetic disturbances were detected in area 4 alongside the car park, but none appear to be of clear archaeological significance. Susceptibility readings here were lower than on the hill top near the Neolithic barrow.

**Resistivity Survey**

*Areas A and B*

The two round barrows were examined further by means of resistivity surveys because this technique is often more effective for investigating earthworks than magnetometer surveying. Resistivity can also detect banks, which are rarely seen in magnetometer surveys, as well as ditches.

The results from Round Barrow 1 (area A) are not very conclusive. An area of low readings which extends across much of the survey and corresponds to the visible mound can be seen in both the filtered and unfiltered plots. This suggests an increased depth of topsoil cover within the mound, but the survey provides no evidence for a surrounding ditch, or any indication that the mound conforms to a circular plan.

The results from Round Barrow 2 (area B) show a distinct cluster of high readings corresponding to the barrow mound, and low readings (blue on colour plot) which suggest an adjacent ditch. This encloses the mound to the south and west, but appears to be incomplete, and may therefore be less well preserved, to the north and east. Blank areas within the plots correspond to trenches and spoil heaps at the time of the survey.

*Area C*

The areas covered by the resistivity survey done on 27 June 2003 were constrained by the excavation trenches, which were open at that time across much of the barrow, and by adjacent spoil heaps. Two small areas of open ground were surveyed, located to the north and east of the barrow as shown on figures 5 and 7.

The smaller survey areas to the north measures some 17m x 12m, and was surveyed with readings taken on a 1m grid (as for areas A and B). The excavation had identified a number of superimposed features at the west side of the barrow, including a linear ditch extending to the north in the direction of the survey. An area of low
readings to the north of the barrow, which is visible particularly in the filtered data plot, and could indicate an earth-filled silted ditch. These low readings could represent the excavated ditch, but they extend only a short distance from the southern survey boundary, and cannot therefore be taken as confirmation that the ditch extends further to the north. Adjacent high readings are likely to indicate areas of the site in which the chalk bedrock lies near to the surface, and do not necessarily demarcate the ditch.

The second survey area extends for 38m from north to south along the eastern side of the barrow, and should intersect the then partially excavated main barrow ditch. This area was surveyed with readings taken at 0.5m intervals to extract the maximum detail from the limited area covered. The main finding is a band of low readings, which could represent the approximate alignment of the ditch. One edge of the ditch may also have been detected at the north end of the survey, where there is a drop in readings. Nearby areas of high readings may relate in part to the presence of excavation spoil, but are again also likely to reflect natural or other irregularly distributed variations in the depth or texture of the topsoil.

Conclusions

One of the more significant findings from the magnetometer survey may be the cluster of magnetic anomalies (including the features at A and B) on the hilltop above the cross and to the north of the Neolithic barrow. Some of the magnetic disturbances here could be non-archaeological, but the activity corresponds to an area of enhanced susceptibility readings, and could therefore indicate settlement or other remains, as suggested by the Roman finds previously recorded nearby. It is perhaps unlikely that ephemeral events such as medieval fairs would leave substantial remains, although hearths or pits of any date should be detectable.

The three barrows produced only limited findings. There were distinct pit-like magnetic anomalies at C adjacent to Round Barrow 1, and the resistivity results suggest an earth filling to the mound. Neither survey, however, shows any distinct circular plan which would indicate the presence of a deliberately constructed mound. This is consistent with initial trenching findings (from the Oxford Archaeology excavation in 2002), which suggest the mound could be natural.

Some ditch-like negative anomalies were seen in the resistivity results from Round Barrow 2. These could indicate a response to the barrow ditch, although the plan of the anomalies, if they represent a circular ditch, is incomplete and irregular.

The magnetic disturbances as shaded around the Neolithic barrow probably relate to the backfilling of the 1930s excavation rather than the barrow itself. The strength of the magnetic interference may therefore provide some indication of the extent of the
excavations. The additional resistivity surveying done alongside the Neolithic barrow at the time of the excavation in June 2003 appears to have detected part of the main barrow ditch on the east side of the mound, but failed to confirm the continuation of a linear ditch extending towards the north.

The survey did not provide any evidence for detectable archaeological features in area 4 near the car park.
Figure 10: Section through the Cross-Ridge Dyke
Figure 3: Excavation of Neolithic barrow (after Childe and Smith 1954, figure 1)
Figure 4: 3D model of Scott's pre-extraction contour survey showing the extent of his excavation.
Figure 5: Survey of barrow, prior to excavation by Oxford Archaeology, showing upcast and spoil from Scott's excavations.
The barrow covered with Geojute

The final covering of chalk

The completed barrow

Figure 7: The reinstated Neolithic barrow
Figure 9: The barrow ditch, Section 1