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Summary

This document is a report on the post-excavation assessment and Updated Project Design for an analysis and report writing phase for finds and environmental material recovered during excavations at Netherhills, Frampton on Severn, Gloucestershire in January 2007 (English Heritage Project Number 5171). It is proposed that this work should be incorporated with the results of the analysis of the excavations at Frampton on Severn undertaken as The Archaeological Landscape of Frampton on Severn *(English Heritage Project Number 4625) and that the results should be published as a single paper in a suitable peer reviewed journal.*

1 Introduction

1.1 This report sets out the results of the assessment phase of post-excavation work on finds and environmental samples from excavations undertaken in advance of aggregate extraction at Netherhills Quarry, Frampton on Severn, Gloucestershire, funded by English Heritage (English Heritage ALSF Project Number 5171ASS*)*. The specialist assessment reports recommend further analysis of the finds from the recent excavations at Netherhills. This includes further work on the lithics and environmental remains, a programme of radiocarbon dating and the illustration of suitable finds for inclusion in a final publication report

1.2 Two further phases of work: analysis of the finds and environmental remains and the production of a publication report are also suggested. The incorporation of this analysis with that for a site to the north, excavated by Richard Atkinson in 1948 and analysed as *The Archaeological Landscape of Frampton on Severn* (English Heritage Project Number 4625) is also recommended. The site archive will be prepared to suitable standards for deposition with a local museum.

1.3 This Project Design sets out a discrete project with defined outputs that could be completed by the end of February 2008. The results will help to inform national and local curators, archaeologists, the aggregate industry and the public at large of the potential importance of the archaeological deposits located on the gravel deposits at Netherhills, Frampton on Severn and enable future management strategies to be better informed about the significance of these deposits. It has been prepared by David Mullin of the Archaeology Service, Gloucestershire County Council and is arranged in accordance with English Heritage guidelines (English Heritage 1991, Appendices 2 and 4).

1.4 This document includes reasons for and circumstances of the project (2 below); a summary of available information regarding the nature of the archaeological resource in the environs of Frampton on Severn and a summary of the GCCAS excavations at Netherhills (3 and 4 below); aims and objectives for the post-excavation programme (5 and 6); methods statement (7); and resources and programming with a costed task list (8). A series of specialist assessments of the material recovered from the GCCAS excavations at Netherhills forms Appendix D to G. A verbal report has been received on the stone recovered for the excavation, to the effect that is of low significance and no further work is recommended.

2 Reasons for and circumstances of the project

2.1 Aggregates have been extracted from the area around Frampton on Severn, Gloucestershire, since at least the 17th century (Elrington & Herbert 1972: 139). The area is rich in archaeological sites, with material dating from the prehistoric, Roman and medieval periods having been recovered during the process of aggregate extraction between Frampton on Severn and Eastington. A series of crop mark sites are also visible on aerial photographs in this area. Earlier excavation took place at several sites during the process of gravel extraction, but all occurred prior to PPG16 and none of the material recovered from this work has been adequately published. The wider context and significance of this material is also poorly understood.

2.2 The Gloucestershire County Council Archaeology Service's Project *The Aggregate Landscape of Gloucestershire: Predicting the Archaeological Resource* (ALSF Project Number 3346) identified unpublished archive material from R.J.C. Atkinson's excavations of five Bronze Age ring ditches at Netherhills, Frampton on Severn, held at the School of History and Archaeology, Cardiff University. This archive was assessed and a publication standard report written as part of the *Archaeological Landscape of Frampton on Severn* project, funded by the Aggregates Levy Sustainability Fund through English Heritage (see http://www.gloucestershire.gov.uk/index.cfm?articleid=13687 for details).

2.3 The Severn Vale was identified in *The Aggregate Landscape of Gloucestershire* as an area which is in need of further examination, including the synthesis of previous work and understanding the physical processes which might affect the visibility of the archaeological resource. The Severn was also an area which was identified as having a lower than average density of prehistoric sites and a higher than average density of sites of unknown date (see http://www.gloucestershire.gov.uk/index.cfm?articleid=9770 for a summary of the results of this project).

2.4 The area around Frampton on Severn contains one of the larger reserves of sand and gravel in Gloucestershire outside the Upper Thames Valley. At present only one gravel pit in this area has permission to extract: that at Netherhills, operated by the Moreton C Cullimore group of companies. An area to the south of Perryway was topsoil stripped in March 2006 and, in the absence of appropriate archaeological conditions attached to the permission to extract, English Heritage funded rescue excavations in advance of gravel extraction (English Heritage Project Number 5171) through PPG16 assistance funding. These excavations uncovered a number of archaeological features dating from the Neolithic to the post-medieval periods, the finds from which were assessed by specialists and the results presented here. A timetable for further work and the preparation of a publication report and site archive are also included.

3 The archaeology of Frampton on Severn

3.1 Previous archaeological work in the area of Frampton on Severn has focussed on salvage recording in advance of gravel extraction at two major sites, located to the east of the village (Figure 1). Extraction at Perryway appears to have commenced in the early 20th century, and was extended in the 1920s and subsequently into the area of Park Corner/Townfield Farm in the 1960s. The quarried area is now partly used for waste disposal and partly a recreational lake. The site at Netherhills appears to have come into production after World War II and currently has an active permission to extract aggregates, although the site is currently used as a depot and storage yard with only small scale aggregate extraction for immediate use. A smaller site, Eastington Gravel Pit, is adjacent to Netherhills to the east of the A38, and important archaeological material was recovered here in the 1930s. A number of smaller, but significant, finds of archaeological material have also been made in the area. This material was assessed as part of the *Archaeological Landscape of Frampton on Severn* project and the results are summarised below.

3.2 Perryway

St Clair Baddeley (1928) describes finds made by Henry Clifford whilst extracting gravel east of Frampton Court, in the area now known as Perryway. In 1907 a circle c.20 yards in diameter was uncovered by quarry work and was found to be associated with a series of burials. Some of the burials were associated with iron objects, but no pottery, beads or coins were present. In 1926-8 the former gravel quarry was extended due to post-war demand and a further ring ditch, c.40 yards in diameter, was located. This was destroyed without excavation and finds collected by the foreman of works included bones, but no pottery or coins. The material recovered from these sites is housed in several collections, with Gloucester Museum holding the material recovered by Brian Frith and a selection of material recovered by St Clair Baddeley. The majority of the human remains recovered from Perryway were originally held by the Royal College of Surgeons but were transferred to the Natural History Museum, where they are now located. Stroud Museum also houses material from “Frampton Gravel Pit” which corresponds to the Perryway site. All of this material was assessed by specialists and the human bone was identified as being suitable for radiocarbon dating, the results from which are currently awaited.

3.3 Park Corner/Townfield Farm

St Clair Baddeley noted in 1928 that the site at Perryway might continue to the south west into Town Field. This area was examined by Gloucester and District Archaeological Research Group in the late 1960s, prior to gravel extraction (Garrod 1968). A total of five pits were recorded from the site. One of these was modern, the others were pear-shaped and c.3.5ft deep, containing material of third to fourth century AD date, including sherds of Glevum and Samian ware. This site has not been adequately published and the archive is believed to be held by Pat Garrod, although its location has not yet been confirmed.

3.4 Netherhills

R.J.C. Atkinson excavated a series of ring ditches at Netherhills, c. 2km to the east of Frampton village in 1948. This work had not been published beyond a brief note in the *Proceedings of the Cotteswold Naturalists Club* and a summary by O’Neil & Grinsell (1960). Analysis of the finds from the site revealed that a total of five ring ditches were excavated by Atkinson, one of which had a central pit which contained a token cremation and Beaker pottery. Subsequent activity at the site consisted of a series of Roman pits of uncertain function.

3.5 Eastington Gravel Pit

Immediately to the east of Netherhills, on the east side of the A38, archaeological material was recovered during gravel extraction at Eastington Gravel Pit in the 1930s (Gardiner 1932). Here, the remains of what was interpreted as an Iron Age/Romano-British settlement, which included multiple shallow ditch systems, a storage pit containing Iron Age pottery and a pit with 8 skeletons were uncovered. A total of 30-40 skeletons was said to have been found in the field, with 24 more discovered in a field closer to the road. In 1932, an Upper Palaeolithic flint implement was found at the gravel pit, as well as a Neolithic arrowhead and a bronze fibula of c.AD50. Up to a further 60 burials and a semicircular ditched enclosure were also recorded at this time. Although the site was extensively reported upon (Gardiner 1932), analysis of the finds was poor and does not stand up to modern scrutiny. The finds recovered from this site consist mainly of pottery, held by Stroud Museum, and analysis suggests occupation of the site in the Iron Age and Roman periods, with a possible Anglo-Saxon phase of activity.

3.6 Other sites

3.6.1 A number of smaller archaeological interventions have recorded material from the environs of Frampton on Severn. Mesolithic and Neolithic worked flints were found as part of a watching brief on an MoD pipeline, part of which ran south west from Fromebridge, parallel with the A38 (GSMR 12440). Romano-British pottery was also recovered in this area (GSMR 12480).

3.6.2 Aerial photographs of the area around Frampton on Severn were analysed by the National Mapping Programme as part of the *Archaeological Landscape of Frampton on Severn* project. This analysis identified a further five ring ditches within the immediate vicinity of Netherhills, making the area the densest concentration of ring ditches in the Severn Vale in Gloucestershire. Possible prehistoric and/or Romano-British occupation was noted at Park Corner Farm and Perryway, although the cropmarks here are partially destroyed by gravel extraction and obscured by geological cropmarks and ridge and furrow.

4 Gloucestershire County Council Archaeology Service excavations at Netherhills

4.1 Excavations were carried out by Gloucestershire County Council Archaeology Service in January 2007 in the area immediately to the south of the area excavated by Atkinson in 1948 (Figure 1). These excavations were funded with support from English Heritage PPG16 Assistance and were carried out under "salvage" conditions, due to the site already having been stripped for gravel extraction (English Heritage Project Number 5171).

4.2 The site operator, Moreton C. Cullimore (Gravels) Ltd. first applied for determination of new planning conditions for the site, which is located to the west of the A38 at Netherhills, Frampton on Severn (NGR ST 766066) in January 1997 and, in the process of these conditions being determined, a member of staff of Gloucestershire County Council Archaeology Service visited the area on 16th March 2006 when they noticed machinery in the easternmost field to the south of Perry Way, which had been stripped of topsoil. No gravel had been extracted at this point, but the area had been heavily tracked over and no archaeological features were visible from the field gate.

4.3 The site has planning permission for extraction dating to 22 June 1953, although extraction is known to have been on-going at least as early as 1948, as Richard Atkinson was brought in to excavate at that date. As such, there is no archaeological condition on the extraction and there was no opportunity to evaluate the presence of archaeology within the site, with the result that significant remains may have been destroyed without record. In August 2006 a letter was written to Mr. Cullimore requesting that the team undertaking the *Archaeological Landscape of Frampton* survey be allowed to visit the stripped field to examine the evidence for surviving archaeology. The team visited and met with Mr Cullimore in October 2006 and found that the eastern half of the field had already been worked to a depth of several metres. The north east part of the field had been left at topsoil strip level and a bund created along Perry Way, potentially over the southern extent of Atkinson's Netherhills Site 1. Several darker areas were visible but the need for further cleaning to positively identify these as archaeological features was recognised. Mr. Cullimore recognised the potential archaeological significance of the area and agreed to allow access and provide a 360º excavator but no funds.

4.4 An evaluation of the site at Netherhills was undertaken between the 6th and 10th of November 2006, when significant archaeological deposits were identified and partially sampled. Subsequent excavation of these features, funded by English Heritage, was carried out over the 3rd to 22nd January 2007. Both the evaluation and excavation were undertaken by a team from Gloucestershire County Council Archaeology Service, under the supervision of David Mullin.

4.5 The archaeological work at Netherhills, Frampton on Severn uncovered a series of prehistoric and later features (Figure 2), and, although few stratigraphic relationships were established between most of the features on site, some chronological resolution was apparent from both the finds assessment and from the relationships of the features on site. Several phases of activity were identified and these are discussed, in chronological order, below.

4.6 Prehistoric

4.6.1 The earliest feature on the site was a well preserved, bowl-shaped pit [1001] containing two fills (1014) and (1015). This pit measured 1.10m wide and 0.58m deep and the base was in very fresh condition, suggesting it was rapidly backfilled. Finds recovered from this feature included later Neolithic worked flint, imported stone, animal bone and pottery/burnt clay from both fills. Charred remains of crab apple, sloe and hazelnut shells, as well as charcoal, were also recovered from this feature. Animal bone from the pit was both cremated and non-cremated and included remains of pig, a large horse or bovine and the right mandible of a beaver. Although these fills appeared to be discrete contexts, the presence of refitting flint flakes from the upper and lower fills suggests that they were, in fact, the same deposit. The upper fill of this pit (1014) contained pottery which may be undecorated later Neolithic pottery, although the small quantities recovered make identification difficult.

4.6.2 A shallow pit [1003] contained a single fill (1016) which included worked flint, cremated animal bone, charcoal and sherds of at least two Beakers. The pit measured 1.10m wide by 1.40m long on a roughly east/west orientation and was located c.3m to the north of the Neolithic pit [1001], but had no stratigraphic relationships to any other feature on site. No charred plant remains or short-lived charcoal was present in the fill of the pit. Pottery of a similar fabric to that from this pit was recovered from the fill of ditch terminal [1023] and from a residual context [1020], where it occurred with Roman pottery and modern glass.

4.6.3 Although the pottery recovered from the terminal of the well preserved linear ditch [1023] was of similar fabric to the Beaker from [1003], it was not decorated and is not diagnostic but is of probable prehistoric date. The morphology of the ditch was difficult to assess, as less than two meters of the feature was present on site, the remainder continuing under the northern section. The terminal of this ditch was excavated and found to be 1.60m wide and 0.80m deep, running on a roughly south west/north east orientation. No corresponding southern part of the ditch could be located on site and the feature appears not to have been a ring ditch. The fill (1025) of the ditch also contained flint and Roman pottery, but was well sorted and showed extensive worm action, making it difficult to assess the true date of this feature. It was, however located adjacent to pit [1008], which contained prehistoric and Roman pottery, and was cut by a medieval/post-medieval linear feature [1006].

4.6.4 The upper fill (1022) of pit [1008] contained only Roman pottery (see 4.7.1, below), but this was separated from the primary fill (1027) of this feature by a thin lens of gravel. The primary fill contained a sherd of fine, oxidised ware with thick walls of indeterminate prehistoric date, suggesting that the ditch [1023] and pit [1008] are of similar date. This relationship is not secure, however, and it is recommended that radiocarbon dates are sought on any suitable material recovered from both of these features. A hulled barley grain was also identified from the upper fill (context 1022) and a cereal culm node was identified from the primary fill (1027), although these could be residual.

4.6.5 A feature located in the eastern part of the site, consisting of two curving ditches [1004] and [1103], can be assigned a prehistoric date based on its morphology. Ditch [1004] measured 1.80m wide and 8.20m long, curving to the north. This ditch was only 0.22m deep and contained a fill (1109) of compact gravel with no finds. Ditch [1103] was located to the south of [1004] and measured 1.80m wide and 7.50m long, curving to the south. The fill of this ditch (1104) was also a compact gravel, containing no finds, but was cut by later postholes. These two features formed an enclosure c.9m in diameter with opposing entrances. Although both ditches were very shallow and contained no finds or potential environmental remains, the feature is very similar to small “hengiform” enclosures of later prehistoric date.

4.7 Roman

4.7.1 The upper fill (1022) of pit [1008], located close to the terminal of the prehistoric ditch [1023], contained the largest assemblage of Roman pottery from the site, although some residual worked flint and prehistoric pottery was also recovered from this deposit. The Roman material was not closely datable, although the presence of Severn Valley ware, Dorset black burnished ware and micaceous greyware suggests a date after the mid 2nd century (see Appendix D, below). This was recovered from a recut into the top of pit [1008], which was separated from the primary fill of the feature by a thin lens of gravel.

4.7.2 A series of over 100 postholes occurred across the site, with notable concentrations in the southern and south eastern part of the excavated area, but no definite structures could be discerned. The postholes varied in diameter from 0.25m to 0.70m and in depth from 0.05m to c.0.75m and contained well sorted fills from which no finds were recovered. Due to time constraints, groups of postholes were assigned single context numbers, unless their fills contained finds, and their depths recorded on the plan of each group. A single sherd of Roman pottery was retrieved from a deposit sealing the group of postholes assigned the number [1012], suggesting that these, at least, are of Roman or immediately pre-Roman date. Some of

the postholes cut the fill of the hengiform enclosure [1004]/[1103] and others were sealed by the fills of medieval linears, also suggesting a post-prehistoric but pre-medieval date.

4.8 Medieval

4.8.1 A series of parallel linear features [1006], [1005], [1010], [1013], [1038], [1044] ran north-south across the site, sealing possibly Roman postholes and cutting the prehistoric ditch [1023]. These were very shallow (less than 0.20m deep), of fairly uniform width (c.1.10m) and ran in the same direction as relict ridge and furrow mapped by the NMP in this area. Although no finds were recovered from their fills, it is suggested that these features represent the last vestiges of medieval ridge and furrow cultivation in this area.

4.9 Post-medieval

4.9.1 A large area of gravel extraction [1009] occurred in the northern part of the site, truncating all other features in this area. The fill of this feature was an unconsolidated deposit of gravel and topsoil, suggesting relatively recent, rapid backfilling. This feature probably represents modern gravel extraction, and, although no such feature is present on historic Ordnance Survey mapping, gravel extraction is known in the Frampton on Severn area since the 17th century.

4.9.2 A further pit [1019] was also present in the northern section of the site. This was poorly defined, but cut a Phase 6 linear feature [1006] and contained prehistoric and Roman pottery, flint, a fragment of animal bone and modern glass.

4.10 Undated

4.10.1 Due to a lack of finds and stratigraphic relationships, it was not possible to phase a number of features. These included pit [1034], measuring 0.75m by 0.75 and 0.53m deep. This contained a loose gravel fill (1035) and no finds. A larger pit [1047], measuring c.2.00m in diameter was located to the north of [1034] but again the fill of this feature (1048) contained no finds.

4.14 Discussion and statement of significance

The Neolithic and Beaker pits excavated at Netherhills are of at least regional importance, as they were well preserved and are the only such features from the Severn Vale in Gloucestershire to have been extensively sampled for environmental remains. Such sites are rare from the Severn Valley as a whole and the material from Netherhills has the potential to add significantly to the understanding of the Neolithic and Early Bronze Age in this part of the Severn Valley. Elsewhere in the Severn Vale, an Early Neolithic pit is known from Gloucester (Hurst 1972) and a pit containing sherds of Peterborough Ware, an ovoid macehead, struck flint, fired clay and animal bone was recorded at Lower Knapp Farm, Cam in the 1960s (Smith 1968). At the Sabrina Cinema Site, Tewkesbury (Hannan 1993), another Late Neolithic pit containing Peterborough Ware was recovered during excavations, although none of these sites were sampled for radiocarbon dating or environmental remains.

Perhaps the best understood sequence of Neolithic pits in Gloucestershire are those from work associated with improvements to the A419/A417 at Duntisbourne Grove on the Cotswolds (Mudd *et al* 1999), where three pits contained Neolithic material. Pit 94 contained Peterborough Ware, fragments of a May Hill sandstone rubber and a chisel arrowhead and pits 94 and 142 contained burnt clay and hazelnut fragments. Material from two of these pits were radiocarbon dated to 4761 ± 57BP (NZA 8671, R24151/15: calibrated to 3650 to 3490 cal BC) and 4717 ± 60BP (NZA 8672, R24151/16: calibrated to 3640 to 3360 cal BC). Environmental material recovered from the primary fills of pits 94 and 142 included both wheat and barley, hazelnut shells and a hawthorn stone. Charcoal from one of these pits also included hawthorn species.

Pit [1001] at Netherhills may be contemporary with the pits at Duntisbourne Grove, but contained a higher number of lithics and better preserved and more abundant environmental evidence, which have the potential for radiocarbon dating. The Netherhills pit also forms part of a prehistoric sequence, which was not the case at other sites in Gloucestershire, which have tended to be isolated features. The pit also contained the only incidence of Neolithic beaver so far recorded in the county.

Excavations along the line of the A419/A417 also recovered evidence for the deposition of Beaker at Trinity Farm, Bagendon, where three pits contained fragments of Beaker pottery, worked flint, burnt stone and hazelnut fragments (Mudd *et al* 1999). Pit 8 was radiocarbon dated to 3876±57BP (NZA 8673, R24151/17, calibrated to 2476 to 2142 cal BC) and pit 10 to 3836 ±58BP (NZA 8674, R24151/18, calibrated to 2462 to 2047 cal BC). The Beakers from these pits included both comb impressed and fingernail impressed sherds and sherds from the same pots were found in different pits. Many of the vessels were represented by single sherds and in no case was it possible to construct a complete vessel profile, suggesting that the Beakers were deposited in a fragmentary state. Environmental remains from these pits included large numbers of hazelnut shells, with wheat and barley grains being recovered from Pit 10, which also included oak, hazel and hawthorn charcoal. In addition, mollusc samples from the pits included both open-country and shade loving species, suggesting a relatively open landscape with some scrub in the vicinity.

The Beaker sequence in south west England remains poorly understood, especially in the Severn Vale, where there are very few sites which have produced Beaker pottery. At Saintbridge, Gloucester, three postholes containing flint and Beaker were recorded (Garrod & Heighway 1984) and at Barnwood, Gloucester a Beaker burial accompanied by complete Beaker and flint knife was recovered during gravel extraction in 1927 (Clifford 1930). Beaker has recently been recovered from higher up the Severn at Tewkesbury, where two Beaker sherds were recovered from a truncated pit at Bredon Road, Mitton (Barrett 2004) and pottery "with Beaker affinities" was recovered from excavations at Holme Hill (Hannan 1975). To the north of the county, Beaker has been found close to the Severn at Kempley, Worcestershire (Hawkes 1935) and at Holt, Worcestershire fragments of at least six Beakers were recovered from Pit F13, Site B (Hunt *et al* 1996).

The Beaker pit [1003] at Netherhills fits within a regional pattern for the deposition of fragmentary Beakers within pits. The highest number of Beaker finds from Gloucestershire occur within pits and the dominance of Beaker finds from pits and other features, rather than burials, in Devon has recently been pointed out by Henrietta Quinnell (2003) and this also seems to be the case in Cornwall (Jones 2005). In common with other Beaker pits known from Gloucestershire, the example from Netherhills appears to have formed part of a small cluster of pits, which includes that from within the ring ditch of Atkinson's Netherhills Site 1, which has previously been interpreted as being a primary burial. This no longer appears to have been the case and it is more likely that, although the Beaker pit formed a focus for the ring ditch, it was a pre-existing feature, rather than a funerary feature associated with a bell barrow.

The hengiform enclosure [1004]/[1103] from Netherhills is of at least regional importance as it forms part of an emerging monumental type which belong to the later Bronze Age (Richard Bradley, pers com). Similar sites are known elsewhere in the UK but are presently poorly understood. Indeed, the phrase "hengiform" appears only once in the South West Archaeological Research Framework (Webster 2007). Hengiforms were defined by Harding and Lee (1987) as being similar in morphology to henges, but are distinguished by their small size, being between 5 and 20m in diameter. Class I hengiforms are defined as having a single entrance and can be confused with small, penannular ring ditches, but do not contain a central burial. Class II hengiforms have two, opposing entrances and are generally less common than Class I hengiforms. The example at Netherhills conforms to the Class II hengiform type in having two entrances, a small diameter and no finds. A similar enclosure was excavated by Cotswold Archaeology at Ripple, Worcestershire, c35km to the north of Frampton on Severn and is in the process of being written up for publication (Martin Watts pers com). Further afield, enclosures of similar dimensions, and associated with earlier features, have been excavated in north west Wales at Llandegai Site E (Lynch & Musson 2004), Whitemoor Haye, Staffordshire (Hewson 2006) and at Alnham, Northumberland (Jobey & Tait 1966). The hengiform at Netherhills is a further example of this class of monument, which deserve wider recognition.

Not only does the material from the recent excavations at Netherhills provide important data about the later prehistoric landscape in this area, it also allows a more complete understanding of the previous archaeological work carried out in this area, especially that of Richard Atkinson which was undertaken less than 100m from the Netherhills site. Although it was initially thought that Atkinson's Site 1 may extend into the northern part of the site at Netherhills, machine excavation and cleaning failed to reveal any sign of this ring ditch, and it is assumed that the southern extent of this feature lies under the road which bounds the site to the north. Furthermore, the presence of earlier pits close to Site 1 adds chronological depth to the sequence at Netherhills, and also suggests that the Beaker pit associated with the ring ditch may, in fact, be earlier feature.

The nature of the feature fills in the recent excavation also throws light on the confusion over the dates of the other ring ditches excavated by Atkinson, as fills are very well sorted, with extensive worm action. This means that later pottery can easily be carried in earlier deposits, explaining the presence of Roman pottery in what appear to be prehistoric ring ditches. This also makes recuts difficult to spot. One feature at Netherhills (fill (1022) of pit [1008]) demonstrated the recutting of an earlier feature in the Roman period, however, a phenomena noted elsewhere in Britain and interpreted as a renewed interest in ancient monuments in the early first millennium AD (Williams 1998).

4.15 Recommendations for further work on the excavated assemblage

4.15.1 Further work is recommended for several aspects of the lithic assemblage (Appendix E). Reduction techniques and aspects of the reduction sequence can be clarified by a metrical and technological attribute analysis. Considerable potential for refits has also been demonstrated and a refitting exercise would allow a better understanding of reduction strategies and may identify further refits among the intentionally broken artefacts. A low-powered use-wear analysis would also be informative regarding levels of use in the assemblage and may identify utilised flakes in refitting sequences, so informing the narrative of events occurring prior to pit deposition. Approximately 15 flints should be illustrated to demonstrate the technology employed.

4.15.2 Although most of the pottery assemblage (Appendix D) is too fragmentary to warrant further work, the decorated Beaker sherds warrant illustration and full description for the publication report.

4.15.3 The assessment of the environmental remains from the site (Appendix G) indicated some potential, the most significant being those from the Neolithic pit [1001]. Full analysis of the charred plant remains from context (1015) and the identification of the charcoal from this context will allow the determination of the habitats which were exploited in the Early Neolithic in this area.

4.15.4 Although no further work was recommended on the animal bone assemblage, research needs to be carried out into the occurrence of beaver in Later Neolithic contexts in Britain and an AMS date for this individual occurrence should be sought (Bryony Coles, pers com).

4.15.5 Radiocarbon dating of the hazelnut shells from the Neolithic pit [1001] is recommended. Other elements of the environmental assemblage may also be suitable for radiocarbon dating and further consideration of these elements is recommended.

4.16 Academic research aims

The work proposed here addresses the following Research Aims identified in the South West Archaeological Research Framework (Webster 2007).

- **Research Aim 2:** Encourage works of synthesis within and across periods, settlements, monuments and areas.
- **Research Aim 3:** Address apparent “gaps” in our knowledge and assess whether they are meaningful or simply biases in current knowledge.
- **Research Aim 11:** Improve knowledge and study of under-utilised museum collections.
- **Research Aim 13:** Identify and bring to publication key unpublished excavations.
- **Research Aim 16:** Increase the use and improve the targeting scientific dating.
- **Research Aim 28:** Improve our understanding of Neolithic settlements and landscapes.

5 Aims

In addition to the Aims and Objectives outlined in the evaluation report and Updated Project Designs (Catchpole 2006, Mullin 2007), the following additional aims and objectives apply to the post-excavation analysis outlined here.

Aim 5.1 To undertake further analysis of the lithic and environmental assemblages recovered from excavations at Netherhills, Frampton on Severn in 2007 to MAP 2 standards.

Aim 5.2 To radiocarbon date the beaver mandible from Neolithic pit [1001], the hazelnut shells from this feature and to identify other material suitable for radiocarbon dating from the site.

Aim 5.3 To produce a suitably illustrated report which incorporates the material analysed for *The Archaeological Landscape of Frampton on Severn* and that from the excavations at Netherhills in 2007 for publication in a suitable format.

Aim 5.4 To prepare the site archives from the Atkinson excavations and those carried out by Gloucestershire County Council Archaeology Service for deposition with a suitable local museum and as a digital archive for the ADS.

6 Objectives

Tasks referred to are detailed at section 8.3 below.

Objective 6.1 - Relates to aim 5.1 and 5.3, task 2

To undertake analysis of material for the site at Netherhills, excavated by Gloucestershire County Council Archaeology Service in 2007

The finds archive for this site is presently held by the specialists used for the assessment phase. Further detailed work is only recommended for the environmental and lithic assemblages, although the fabric and decoration of the Beaker pottery requires proper description.

Objective 6.2 - Relates to aim 5.1 and 5.2, task 2

Identification of material suitable for radiocarbon dating within the archive material identified above.

No absolute dating evidence is currently available for the archaeological material and deposits recovered in advance of aggregate extraction at Frampton on Severn, although this is thought to date from the Neolithic through to the medieval periods. Material suitable for radiocarbon dating has been outlined in Appendix G and consultation with Alex Bayliss, English Heritage scientific advisor, will be undertaken to establish the best way of dating this material.

Objective 6.3 - Relates to aim 5.2, task 3

The production of a publication text which is suitably illustrated and incorporates the results of the Archaeological Landscape of Frampton on Severn project.

A suitably referenced text will be prepared to publication standard, for inclusion in the Transactions of the Bristol and Gloucestershire Archaeological Society. A short note will also be prepared for inclusion in PAST, the newsletter of the Prehistoric Society.

Objective 6.4- Relates to aim 5.4, task 4

Packaging and documenting the archive for deposition with Stroud and Gloucester Museums.

The archive from projects 5171 and 3346 will be packed and documented to a suitable standard for deposition with Gloucester Museum (the Atkinson excavations) and Stroud Museum (the GCCAS excavation). A digital archive will be deposited with the ADS.

7 Methods statement

7.1 Analysis reports will be compiled by Gloucestershire County Council Archaeology Service and combined with stratigraphic and archaeological data into a full publication report. The analysis will follow the following methods:

7.2 Lithics

A Method statement for the lithic assemblage is given in Appendix E, but is reproduced here.

- Metrical and technological attribute analysis will be undertaken on flakes and a limited number of artefact types. Technological attributes recorded include; butt type (Inizan *et al.* 1992), extent of dorsal cortex, termination type, flake type (after Harding 1990), hammer mode (Onhuma and Bergman 1982), and the presence of platform edge abrasion and dorsal blade scars. Metrical analysis will undertaken using standard methods for recording length, breadth and thickness (Saville 1980) and the data will be considered against current research (e.g. Pitts and Jacobi 1979 and Ford 1987).

- Groups of flintwork for refitting will be set out over an adequate area and the material sorted into groups of raw materials. Raw material groups, knapping refits and conjoining flake fragments will be recorded. Three-dimensional locations of refits will be plotted, where data is available, and appropriate illustrations generated. Burnt or utilised flints in knapping sequences will be recorded.

- Low-power use-wear analysis techniques were developed by Dr. Andrew Brown as a method of rapidly examining large assemblages for evidence of use, broad patterns of use, and hardness of contact materials. Flints are examined using a binocular microscope at 10x magnification for the identification of use-damage patterns, and 20x magnification for the categorisation of the hardness of contact materials. The methodology draws on experimental work on the use of flint published by Tringham *et al.* (1974), Cotterell and Kamminga (1979), Mallouf (1982) and Akoshima (1987). The position of use damage was recorded in relation to standard flake orientation (left, right, distal, proximal, left proximal, left distal, right proximal and right distal). The position of edge damage at each location is recorded as either on one side, both sides or on or behind a point. This determines the use action as scraping, cutting/whittling or boring respectively. The hardness of contact materials is determined by recording the nature of the edge damage and micro-flaking. Edge rounding is indicative of use against soft materials and is typically associated with scraping actions on thicker edges. Crescent fractures are created by flexion suggest contact with soft materials, such as meat and fleshy plants; large crescent fractures are also typical of post-deposition edge-damage. Scalar micro-flaking with less than 10% step fractures is typical of contact with materials of medium hardness, whilst edge damage with higher than 10% step fractures is suggestive of contact with hard materials.

7.3 Environmental remains

The following analyses are suggested for the charred plant remains and charcoal:

- Full analysis of the charred plant remains from context (1015)
- Identification of the charcoal from context (1015).
- Research and reporting into regional and period context of archaeobotanical
- Writing of full report
- Liaison, editing of report for publication

This work will be undertaken by AEA who will undertake to liaise, commission and edit all environmental reports.

7.4 Illustration

Small finds from the Atkinson archive and Gloucester and Stroud Museums have already been drawn as part of Phase I of the *Archaeological Landscape of Frampton on Severn* project. In addition elements of the lithic and ceramic assemblages recovered from Netherhills need to be illustrated for the publication report. This will be undertaken by Cotswold Archaeology to IFA/Association of Archaeological Illustrators standards.

7.5 Production of the publication report

A draft publication report for the material excavated by Richard Atkinson has previously been submitted to English Heritage. The suggested title for the publication report is *A Round Barrow Cemetery in the Severn Vale: Richards Atkinson's excavations of five ring ditches at Netherhills, Frampton on Severn, 1948 and their archaeological context*. This will take the form:

INTRODUCTION

R.J.C. ATKINSON'S EXCAVATIONS AT NETHERHILLS

Excavation methodology and results

THE LOCAL CONTEXT

to include the results of the initial Archaeological Landscape of Frampton on Severn project and the results of the analysis of museum collections. Discussion of the sequences and finds from:

Perryway

Eastington Gravel Pit

Other Sites

NMP ANALYSIS OF AERIAL PHOTOGRAPHS

[the identification of Atkinson's sites and further ring ditches in the area]

RADIOCARBON DATING

[results of the analysis of museum collections and their absolute dates]

GLOUCESTERSHIRE COUNTY COUNCIL ARCHAEOLOGY SERVICE EXCAVATIONS AT NETHERHILLS, 2007

[results of the 2007 excavations including a discussion of the features and finds]

DISCUSSION

[the 2007 excavations in their regional and national context. Discussion of how the GCCAS and Atkinson excavations relate and how these relate to the material now in local museums and analysed for the initial stage of the project]

CONCLUSION

SPECIALIST REPORTS

[for all of the material analysed]

BIBLIOGRAPHY

7.6 Data storage and the preparation of the project archive

7.6.1 All digital information generated by the project will be stored within the existing framework of the Gloucestershire SMR database and GIS. Guidance will be sought from English Heritage regarding archiving digital data with the ADS. The existing OASIS form for the *Archaeological Landscape of Frampton on Severn* project will be updated on the completion of the proposed project.

7.6.2 Raw data, in the form of copies of original text or mapped data, catalogues, lists, and maps generated from the project database will require curation as a project archive. This material will be quantified, ordered, indexed and stored in accordance with English Heritage guidelines (English Heritage 1991, Appendix 6).

7.6.3 The final location for the archiving of the material from the excavations at Netherhills will be Stroud Museum, from whom an accession number has been requested. The material excavated by Atkinson already has a Gloucester City Museum and Art Gallery accession number and will be deposited there. The museums will be advised that archive storage grants can be applied for.

8 Resources and programming

The staffing of this project as outlined below assumes that the project is commissioned to be carried out in the financial year 2007/8.

8.1 Personnel and project team structure

8.1.1 Toby Catchpole: Senior Project Officer (SPO).

Toby Catchpole will manage the project under the direction of Jan Wills, the County Archaeologist.

8.1.2 David Mullin: Project Officer (PO).

David Mullin will be responsible for the day-to-day running of the project and carry out the majority of tasks, under the supervision of Toby Catchpole.

8.1.3 Finds Specialists (SPEC)

A series of finds specialists will be required to analyse the material:

Material	**Specialist**
Lithics	Hugo Lamdin Whymark
Ceramics	Jane Timby
Environmental archaeology and plant macrofossils	Dr Michael Allen, Dr Alan Clapham (AEA Allen Environmental Archaeology. Dr Rob Scaife (Southampton University)
Illustrator	Cotswold Archaeology
Radiocarbon dating	Alex Bayliss (English Heritage)

8.2 Funding and other resources

The tasks outlined below are to be funded by English Heritage through the Aggregates Levy Sustainability Fund.

Gloucestershire County Council will provide the following at no cost to the project:

- Jan Wills (County Archaeologist) will maintain an overview of the project, including reviewing and editing project outputs.

- Tim Grubb (County SMR Officer) will advise on the use of GIS and the SMR database.

- Technical support for GIS and the SMR database and the digital base maps of geology sheets and OS County Series plans will be provided by Sunguard-Vivista as part of their contract with GCC.

8.3 Project tasks

The following table summarises tasks to be undertaken during the project.

Task No.	Objective	Task	Staff member	Days	Total Days
1	5.1	**Preliminary tasks**			
		Dispatch of material to illustrator and specialists	DM	1	
		TOTAL			PO 1
2	5.1, 5.2	**Analysis of archive material**			
		Analysis of pottery and completion of publication report	JT	1	
		Analysis of lithic material and completion of publication report	HLW	17	
		Analysis of environmental remains and completion of publication report. Full analysis of charred plant remains and charcoal from (1015) and writing full report	AEA	6	
		Management, liaison, editing report for publication	AEA	2	
		Environmental overview research and reporting	AEA	3.5	
		Analysis material suitable for radiocarbon dating and submission of samples (not charged to project)	EH		
			ILL	9	
		Illustration of finds			SPEC 38.5
		TOTAL			
3	5.3	**Production of Publication Report**			
		Integration of stratigraphic and archaeological data with further analysis and preparation of report (including internal editing)	DM	10	
			TC	1.5	PO 10
		TOTAL			SPO 1.5
4		**Preparation of the archive for deposition with Stroud and Gloucester Museums and digital archiving with ADS**	DM	2	PO 2
5	All	**Monitoring meetings**			
		Internal: 1 hour per week	DM	1	
			TC	1	
		English Heritage (Estimated 1 meeting)	DM	0.5	PO 1.5
		TOTAL	TC	0.5	SPO 1.5

For detailed costing see Appendix A

8.4 Equipment

The project will be externally funded as will the staff involved, with the exception of the support detailed at 8.2 above. It is not anticipated that any additional equipment will be required to carry out the project outlined here.

8.5 Timetable and basis of cost

Staff costs are based on the figures detailed in Appendix A. Figures are for the financial year 2007/8. An increment of 2.5% (compound) would be added for each subsequent financial year in line with current English Heritage guidelines on inflation calculations on *Historic Environment Enabling Programme* Grants (EH 2002).

The identified key tasks for the project are tabulated at 8.3. A Gantt Chart of proposed progress is presented as Appendix B. Within the detailed work programme there is a time allowance of 1 calendar week per 5 calendar weeks per person for annual leave/sickness and sundry absences.

The project will total 8 weeks, assuming specialist availability. The Gantt chart has been drawn up on the assumption that the project commences on 7th January, 2008. As the project is ALSF funded it is essential; that it is commissioned in time for completion within the current financial year.

8.6 Project monitoring

Jan Wills, County Archaeologist, will monitor progress of the project on a weekly basis. Monitoring meetings will be held with English Heritage as required to review the progress of the projects against the timescale presented in the Gantt chart (Appendix B).

9 Health and safety

Health and Safety, within Shire Hall, the project base, and any other places where project work is undertaken, is covered by Gloucestershire County Council, Environment Department Health and Safety policies. The recently revised health and safety manual for the Archaeology Service will be supplied with this UPD. Further documentation can be provided on request.

10 Copyright

Copyright of all written, graphic, photographic, and digital records remains that of the originator unless otherwise agreed with English Heritage. All material copied from other sources will be fully acknowledged and relevant copyright conditions observed.

11 Data Protection Act 1998

Information regarding the contact details of organisations and individuals is collected for the administration of archaeological projects by Gloucestershire County Council Archaeology Service. It may be passed to others who are involved in the project. It will also be passed to Stroud Museum as part of the archive resulting from the archaeological project. Any queries or concerns regarding this should be notified to the Archaeology Service on Gloucester 01452 425681.

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Appendix A

Appendix B Gantt chart

Dates shown as week beginning (Monday). Based on arbitrary commencement date of 7th January 2007. Lighter shading indicates tasks on-going throughout the project.

Task	Who	JAN				FEB				MAR		
		7	14	21	28	4	11	18	25	3	10	17
1	DM	1										
2	JT		1									
2	HLW		17									
2	AEA		11.5									
2	ILL		9									
3	DM									10		
3	TC										1.5	
4	DM											2
5	DM											1.5
5	TC											1.5

Appendix C: Context List

Context	Description	Date
1000	Topsoil	
1001	Cut for ?Neolithic pit. Filled by (1014) and (1015)	
1002	Cut for postholes east of [1001]	
1003	Cut for Beaker pit, filled by (1016).	EBA (Beaker)
1004	Cut for northern arc of ?hengiform, filled by (1108). Northern arc is [1103]	
1005	Cut for linear feature S of [1009], filled by (1037).	
1006	Cut for linear running N/S across W end of site. Filled by (1021)	
1007	Clay deposit to S of [1011]	
1008	Cut for oval pit to W of [1019], filled by (1022), (1026) and (1027)	
1009	Area of ?post medieval gravel extraction	
1010	Linear cut running N/S across E boundary of site. Filled by (1024)	
1011	Linear cut running E/W between [1005] and [1006] and sealing [1047]	
1012	Area of stake/postholes in SW corner of site	Roman
1013	Cut for linear feature running N/S to the E of [1005]	
1014	Upper fill of pit [1001]	Late Neolithic
1015	Primary fill of pit [1001]	
1016	Fill of pit [1003]	EBA (Beaker)
1017	Void	
1018	Void	
1019	?post medieval pit cutting linear feature [1006], filled by (1020)	Roman
1020	Fill of [1019]	Roman
1021	Fill of linear feature [1006]	
1022	Upper fill of pit [1008]	
1023	Cut for ditch terminal in N section of site, cut by [1006], filled by (1025).	Roman
1024	Fill of linear feature [1010]	
1025	Fill of ditch terminal [1023]	Roman
1026	Gravel tip within fill of [1008], below (1022)	
1027	Primary fill of pit [1008], below gravel tip layer (1026)	Prehistoric
1028	Cut for pit, cut by pit [1008], filled by (1029)	
1029	Fill of pit [1028]	
1030	Cut for double postholes, filled by (1031)	
1031	Fill of double postholes [1030] and stakehole [1032]	

1032	Cut for stakehole to W of [1030], filled by (1031)	
1033	Fill of [1032] SAME AS (1031)	
1034	Cut for large pit to N of [1012], filled by (1035)	
1035	Fill of pit [1034]	
1036	Stakehole filled by (1007)	
1037	Fill of linear feature [1005]	
1038	Cut for linear feature running N/S, filled by (1039)	
1039	Fill of linear feature [1038]	
1040	Cut for truncated pit, filled by (1041)	
1041	Fill of pit (1040)	
1042	Stakehole cutting [1005]	
1043	Stakehole SW of [1007]	
1044	Cut for linear feature running N/S to E of [1006], filled by (1045)	
1045	Fill of linear feature [1044]	
1046	Clay deposit overlying [1034], similar to (1007)	
1047	Cut for pit to W of [1007], filled by (1048)	
1048	Fill of pit [1047]	
1049	Cut for shallow pit, filled by (1050)	
1050	Fill of pit [1049]	
1051	Cut for pit to W of [1049], filled by (1052)	
1052	Fill of pit [1051]	
1053	Group of postholes to S of [1049]	
1054	Cut for irregular pit, containing stakeholes [1056] and [1058], filled by (1055)	
1055	Fill of pit [1054]	
1056	Stakehole within pit [1054]	
1057	Fill of [1056]	
1058	Stakehole within pit [1054]	
1059	Fill of [1058]	
1060	Stakehole to E of [1054]	
1061	Fill of [1060]	
1062	Stakehole to E of [1054]	
1063	Fill of [1062]	
1064	Stakehole to E of [1054]	
1065	Fill of [1064]	

1066	Stakehole to E of [1054]	
1067	Fill of [1066]	
1068	Stakehole to E of [1054]	
1069	Fill of [1068]	
1070	Stakehole to E of [1054]	
1071	Fill of [1070]	
1072	Stakehole to E of [1054]	
1073	Fill of [1072]	
1074	Stakehole to E of [1054]	
1075	Fill of [1074]	
1076	Stakehole to E of [1054]	
1077	Fill of [1076]	
1078	Stakehole to E of [1054]	
1079	Fill of [1078]	
1080	Stakehole to E of [1054]	
1081	Fill of [1080]	
1082	Stakehole to E of [1054]	
1083	Fill of 1082	
1084	Stakehole to E of [1054]	
1085	Fill of [1084]	
1086	Stakehole to E of [1054]	
1087	Fill of [1086]	
1088	Stakehole to E of [1054]	
1089	Fill of [1088]	
1090	Stakehole to E of [1054]	
1091	Fill of [1090]	
1092	Stakehole to E of [1054]	
1093	Fill of [1092]	
1094	Stakehole to E of [1054]	
1095	Fill of [1094]	
1096	Area of stakeholes S part of site, filled by (1097)	
1097	Fills of [1096]	
1098	Cut for shallow pit, filled by (1101)	
1099	Cut for stakehole within pit [1098]	

1100	Shallow scoop, filled by (1101)	
1101	Fill of [1098], [1099] and [1100]	
1102	VOID	
1103	Cut for southern arc of ?hengiform, filled by (1104) and (1105). N arc is [1004].	
1104	Upper fill of [1103]	
1105	Lower fill of [1103]	
1106	Stakehole, cutting [1104] and [1105], filled by (1107)	
1107	Fill of [1106]	
1108	Fill of northern arc of ?hengiform [1004]	
1109	Area of postholes to W of [1004]	
1110	Cut for stakehole in SE corner of site, filled by (1111)	
1111	Fill of stakehole [1110]	

Appendix D: Pottery Assessment

by Jane Timby

Introduction

The excavation at Frampton-on- Severn produced a small assemblage of 47 sherds of pottery weighing 200 g accompanied by a few pieces of fired clay and burnt stone.

The assemblage was recovered from a total 11 contexts and comprised a mixture of Roman and early prehistoric date, the latter mainly dating to the Beaker period.

For the purposes of the assessment the assemblage was scanned to assess its likely chronology and quantified by sherd count and weight. The resulting data is summarised in Table 1.

The sherds are extremely fragmentary with an average sherd weight of just 4.2 g for the group. Many of the individual fragments had abraded edges or were quite friable. Featured sherds were limited which has an impact of the level of accuracy of the dating, particularly for the Roman sherds.

In the following assessment the material is discussed chronologically.

Earlier prehistoric

At least 23, possibly 27, sherds of earlier prehistoric date were recovered from five contexts (1003, 1014, 1016, 1020, 1025 and possibly 1027).

The most diagnostic are the 13 sherds from context 1003 which represent at least two vessels, both Beaker. One vessel is decorated with lines of fingernail impressions impressed both vertically and diagonally. The second vessel has horizontal lines of comb-impressed decoration separating zones with crosses. One vessel has a grog and sand-tempered fabric; the latter is finer with mainly grog.

Similar grog-tempered sherds were recovered from 1016, 1025 and 1020. Context 1014 contained six fragments of very friable, vesicular fabric with an oxidised exterior and reduced interior. This was originally limestone and fossil tempered and the firing is characteristic of Beaker ware intimating it may be contemporary with the Beaker. A fine, oxidised ware with thick walls of indeterminate date came from 1027.

Contexts 1020 and 1025 also produced Roman sherds suggesting that any prehistoric material from these contexts is redeposited.

Most of the contexts with prehistoric pottery also produced small fragments of fired clay of indeterminate form and function, and small pieces of burnt stone. This was the only material present in context 1015 and as such it cannot be dated. Collectively the fired clay amounted to some 41 pieces weighing 92 g.

Roman

Eighteen sherds of Roman date were recovered from five contexts (1012, 1020, 1021, 1022 and 1025).

The largest group came from 1022 with 13 sherds. Accompanying these were two small vesicular pot crumbs, which may be later Iron Age or belong with the earlier prehistoric material.

The assemblage is not closely datable although the presence of Severn Valley ware, Dorset black burnished ware and micaceous greyware implies a date after the mid 2nd-century.

Summary

The assemblage recovered from this phase of work complements that already documented from the Frampton area, which has highlighted both Beaker and Roman activity.

Most of the assemblage is too fragmentary to warrant any further work but if publication is envisaged the decorated Beaker sherds would warrant illustration or photography and full description.

Table 1. Summary of pottery from Frampton

Context	Description	Pot No	Wt	Date
1003	2 vessels= decorated Beaker, grog-tempered	13	53	Beaker
1012	grey sandy	1	4	Roman
1014	fired clay x8; calcareous bodysherds	6	4	ePreh
1015	burnt stone; ?fired clay x22	0	0	no date
1016	grog-tempered ?Beaker	1	2	ePreh
1020	?Severn Valley ware	1	53	Roman
1020	grog-tempered	1	3	ePreh
1021	micaceous greyware	1	3	late C2-C4
1022	BB1, SVW, pot crumbs, fired clay x3	15	38	C2+
1025	Preh grog etc, fired clay x8	2	8	ePreh
1025	BB1	2	6	C2+
1027	thick walled oxidised ?hm	4	26	?preh/undated
Total		**47**	**200**	

Appendix E: The worked flint

By Hugo Lamdin-Whymark

Introduction

Excavations at Frampton on Severn yielded a total of 690 flints from five archaeological features (Table 1). The vast majority of the assemblage, amounting to 675 flints, was recovered the two fills (1014 and 1015) of pit 1001. This pit has been dated to the later Neolithic on the basis of diagnostic artefacts, including two chisel arrowheads, and technological attributes of the flint debitage. In addition, a further ten flints were recovered from Beaker pit 1003, three flints from ditch 1023 and single flints from linear 1006 and pit 1019.

Methodology

The artefacts were catalogued according to broad artefact/debitage type, general condition noted and dating attempted where possible. Retouched pieces were classified according to standard morphological descriptions (e.g. Bamford 1985, 72-7; Healy 1988, 48-9; Bradley 1999, 211-277). Additional information on condition (rolled, abraded, fresh and degree of cortication), and the state of the artefact (burnt, broken, or visibly utilised) was also recorded. Unworked burnt flint was quantified by weight and number. The assemblage was catalogued directly onto a Microsoft Access database and data manipulated in Microsoft Excel.

Provenance

The flints from pits 1001 and 1003 form coherent assemblages and derive from contemporary archaeological deposits. The condition of the flints from ditch 1023, linear 1006 and pit 1019 suggests these artefacts are re-deposited in later archaeological features.

Raw material and condition

The raw material exploited at Frampton on Severn derives from relatively local gravel deposits, although further work is required to identify the closed possible sources. The raw material exploited appears to have taken the form of relatively small, probably fist-sized, cobbles. The cobbles vary considerably in appearance and quality. The cortex varies between buff-coloured surfaces, 3-5 mm thick, to abraded white and grey surfaces; the flint is usually light brown in colour. The flint is mostly of good flaking quality, but occasional thermal fractures were present; these, on occasion, hindering flaking.

The flint assemblage from pits 1001 and 1003 was in fresh condition, although occasional pieces exhibited slight edge-damage, perhaps indicating they were exposed for a period before deposition. The flint from ditch 1023, linear 1006 and pit 1019 was in poor condition, with four of the five flints exhibiting some post-depositional edge-damage; one of the flints was also rolled. The degree of cortication was exceptionally variable, even within contexts. The majority of the assemblage was free surface cortication, but approximately one third of the assemblage exhibited either a light speckled bluish-white surface or a moderate to heavy white cortication. It was noted that flints with similar cortex where corticated to a similar degree. This may suggest that the flakes from some of the nodules present in the assemblage were more susceptible to cortication than the flakes from other nodules.

Table 1: The flint assemblage from Frampton on Severn (NHQ'06) by feature and context.

	Pit 1003	Pit 1001		*Sub-total Pit 1001*	Pit 1019	Linear 1006	Ditch 1023	
CATEGORY TYPE	1016	1014	1015		1020	1021	1025	Grand Total
Flake	3	136	256	*392*	1	1	2	399
Blade		2	8	*10*				10
Bladelet		2	8	*10*				10
Blade-like		6	8	*14*				14
Irregular waste	1	3	1	*4*				5
Chip	3	31	175	*206*				209
Rejuvenation flake tablet		1		*1*				1
Single platform flake core		1		*1*				1
Multiplatform flake core		2		*2*				2
Keeled non-discoidal flake core		1	1	*2*				2
Levallois/ other discoidal flake core			1	*1*				1
Chisel arrowhead			2	*2*				2
End scraper		4	7	*11*				11
Side scraper	2							2
End and side scraper		2		*2*				2
Other scraper	1							1
Awl		1		*1*				1
Piercer			2	*2*				2
Serrated flake		1	1	*2*				2
Notch		1	2	*3*				3
Other knife			1	*1*				1
Retouched flake		3	3	*6*				6
Miscellaneous retouch							1	1
Hammerstone		1	1	*2*				2
Grand Total	10	198	477	*675*	1	1	3	690

No. of burnt flints (%)*	2	8 (4.8)	48 (15.9)	*56 (11.9)*				58 (12.1)
No. of broken flints (%)*	3	36 (21.6)	112 (37.1)	*148 (31.6)*		1	1	153 (31.8)
No. of retouched flints (%)*	3	12 (7.2)	18 (6)	*30 (6.4)*			1	34 (7.1)

* Percentage excludes chips

Storage and curation

The majority of the struck flints are bagged by context. This will ultimately result in damage to the edges of artefacts, particularly during transportation and unpacking. It is recommended that the retouched artefacts are individually bagged for long-term storage and curation to avoid further damage.

The assemblage

The flint assemblage will be considered by feature below.

Pit 1001

The flint assemblage from pit 1001 was recovered from two fills. The lower fill, 1015, contained approximately two thirds of the flintwork, with the remaining third in the upper fill, 1014. The assemblage does not differ greatly between the two contexts, although it is notable that the lower fill produced a larger number of chips and has higher proportions of burning and breakage that the upper fill. Moreover, a knapping refit was located between a core in the lower fill (1015) and a flake in the upper fill (1014). This suggests the flint derives from the same event and for the purpose of assessment the assemblage may be considered as a whole.

The total of 675 flints is dominated by unretouched flakes (392) and chips under 10 mm² (206). Blades, bladelets and blade-like flakes amount to only 34 pieces, representing 8% of the flake assemblage; a proportion comparable to late Neolithic assemblages across southern Britain (Ford 1987). The flakes, although not particularly narrow, are relatively thin and were detached using both hard and soft hammer percussion; platform-edge abrasion is present on a small number of flakes. Two small and well used flint hammerstones, weighing 39 g and 40 g, may have been used for knapping the flakes in the assemblage. The assemblage contains only one possible platform-rejuvenation flake, suggesting little attention was paid to the maintenance of cores during reduction. The six cores in the assemblage are all orientated towards flake production. The presence of two keeled and one discoidal core is notable as this reduction strategy is characteristic of the later Neolithic. The large number of flakes, cores and chips, reflect the presence of knapping debitage. A brief scan of the assemblage demonstrated the presence of knapping refits. A flake was refitted to a keeled core and a separate sequence of three trimming flakes conjoined.

A total of 30 retouched artefacts were recovered from pit 1001, representing 6.4% of the assemblage (excluding chips). This total is dominated by scrapers (13), particularly of end scraper form (11). The end scrapers exhibit considerable variation in their form and particularly the angle of retouch. This perhaps suggests they were used for different purposes. Several of the scrapers were very heavily used and one example exhibited a rounded-edge. The retouched assemblage also includes a heavily retouched awl, two piercers, three shallow notched flakes and six flakes with limited areas of slight edge retouch. In addition, a large backed knife, with limited invasive edge retouch, was recovered as four conjoining burnt fragments. Plant working is indicated by the presence of two serrated blades; one exhibits silica gloss on the reverse of the teeth. Two chisel arrowheads were also present in the lowest fill of the pit. One of the arrowheads has been shaped by retouch on the dorsal surface and exhibits a distinct barb on the right hand side; the left hand side exhibits a modern break. The second arrowhead exhibits a strong blade edge with bifacial retouch along the right hand side, the left hand side exhibits an ancient break. Chisel arrowheads broadly date to the middle Neolithic and are most commonly associated with Peterborough Ware pottery. Earlier associations are, however, also known and chisel forms have been recovered in association with earlier Neolithic Plain Bowl pottery and leaf-shaped arrowheads. In addition to the formally retouched tools, use damage was noted on a number of the flakes, suggesting a good proportion of the unretouched flake debitage may also have been utilised.

The levels of burning and breakage are relatively high, at 11.9% and 31.6% respectively, but not untypical of later Neolithic pits. The presence of intentional breakage on 13 flints is particularly noteworthy. Intentional breakage is a distinct feature of later Neolithic assemblages and is employed in the production of tools (for example chisel arrowheads), but it is also frequently observed that finished artefacts are intentionally broken (Lamdin-Whymark forthcoming). The thirteen intentionally broken flints comprise six flakes, three end scrapers, three edge-retouched flakes and a notch. The three end scrapers are of particular note as the breakage clearly occurred on finished and well used artefacts. In one example, two fragments of the scraper were con-joined, suggesting the breakage occurred shortly before deposition.

The flint assemblage from pit 1001 can be broadly dated to the later Neolithic on the grounds of the reduction strategy, flake morphology and the presence of two chisel arrowheads. The composition of the flint assemblage is characteristic of later Neolithic pit deposits. The proportions of burning, breakage and retouch are relatively high. The assemblage contains evidence of production debitage alongside well used artefacts, particularly scrapers. These attributes suggest the deposit was created by a sequence of events comparable to other pits of the period. Further research will clarify both the activities involved and the sequence of events leading up to deposition in the pit.

Pit 1003

Pit 1003 produced a small assemblage comprising three flakes, three chips, a piece of irregular waste, two side scrapers and a broken fragment possibly of a third scraper. The two side scrapers are both manufactured on broken flakes and of relatively limited proportions, measuring 30 mm by 17 mm and 22 mm by 31 mm respectively. The flint recovered from this pit is not intrinsically datable, but the composition of the assemblage is appropriate for the Beaker date provided by the pottery.

Ditch 1023, linear 1006 and pit 1019

The features contained four flakes and broken retouched flake. The retouched flake exhibited invasive retouch along the right hand side and slight abrupt retouch on the left hand side. It is not possible to determine the original form of this artefact from the surviving fragment, but it is possible that it represents part of a projectile point.

Potential

The flint assemblage recovered from Frampton on Severn, particularly the groups recovered from pits 1001 and 1003, have considerable potential for further work. The assemblage from pit 1001 represents a large and rare group for the region. The assemblage, therefore, offers an opportunity characterise later Neolithic flint working techniques in the region. This exercise will be particularly valuable if the deposit is radiocarbon dated. The flints from pits 1001 and 1003 also have the potential to provide considerable information on the nature of pit deposition in the Neolithic. A detailed analysis of aspects including technology, refitting and use-wear, may clarify the activities and sequence of events leading to the acts of deposition in the pits. These patterns may be compared to trends in pit deposition emerging across southern Britain (Garrow 2006; Garrow *et al.* 2006; Lamdin-Whymark 2007; Lamdin-Whymark *et al.* forthcoming).

Recommendations

Further work is recommended for several aspects of the assemblage. A metrical and technological attribute analysis will clarify reduction techniques and aspects of reduction sequence represented in the pit deposits. Considerable potential for refits has been demonstrated and a refitting exercise would inform on reduction strategies and may identify

further refits among the intentionally broken artefacts. A low-powered use-wear analysis will also be informative regarding levels of use in the assemblage and may identify utilised flakes in refitting sequences, so informing the narrative of events occurring prior to pit deposition. A total seven days would be required of to analyse all of the flints, except chips, in pit 1001 for use-wear. Patterns of use-wear may, however, be characterised by analysing a sample of 200 flints, this would take 3 days.

A publication text of *c* 4000 words with five to six tables should be prepared. Approximately 15 flints should be illustrated to demonstrate the technology employed.

Task list

Task	Time (days)
Metrical and technological analysis (*c* 500 flints)	3 days
Refitting analysis (pit 1001 and pit 1003)	2 days
Low powered use-wear analysis (all flints from pit 1001 except chips)	7 days
Report writing (4000 words)	4 days
Brief and check illustrations	1 day
Total	**17 days**
Illustration and paging up (illustrator)	*c* 4-5 days

Method statement

The lithic assemblage has been quantified and characterised typologically. During the initial analysis additional information on condition (rolled, abraded, fresh and degree of cortication), and state of the artefact (burnt, broken, or visibly utilised) was also recorded. Retouched pieces were classified according to standard morphological descriptions (e.g. Bamford 1985, 72-7; Healy 1988, 48-9; Bradley 1999, 211-277).

Metrical and technological attribute analysis will be undertaken on flakes and a limited number of artefact types. Technological attributes recorded include; butt type (Inizan *et al.* 1992), extent of dorsal cortex, termination type, flake type (after Harding 1990), hammer mode (Onhuma and Bergman 1982), and the presence of platform edge abrasion and dorsal blade scars. Metrical analysis will undertaken using standard methods for recording length, breadth and thickness (Saville 1980) and the data will be considered against current research (e.g. Pitts and Jacobi 1979 and Ford 1987).

Groups of flintwork for refitting will be set out over an adequate area and the material sorted into groups of raw materials. Raw material groups, knapping refits and conjoining flake fragments will be recorded. Three-dimensional locations of refits will be plotted, where data is

available, and appropriate illustrations generated. Burnt or utilised flints in knapping sequences will be recorded.

Low-power use-wear analysis techniques were developed by Dr. Andrew Brown as a method of rapidly examining large assemblages for evidence of use, broad patterns of use, and hardness of contact materials. Flints are examined using a binocular microscope at 10x magnification for the identification of use-damage patterns, and 20x magnification for the categorisation of the hardness of contact materials. The methodology draws on experimental work on the use of flint published by Tringham *et al.* (1974), Cotterell and Kamminga (1979), Mallouf (1982) and Akoshima (1987). The position of use damage was recorded in relation to standard flake orientation (left, right, distal, proximal, left proximal, left distal, right proximal and right distal). The position of edge damage at each location is recorded as either on one side, both sides or on or behind a point. This determines the use action as scraping, cutting/whittling or boring respectively. The hardness of contact materials is determined by recording the nature of the edge damage and micro-flaking. Edge rounding is indicative of use against soft materials and is typically associated with scraping actions on thicker edges. Crescent fractures are created by flexion suggest contact with soft materials, such as meat and fleshy plants; large crescent fractures are also typical of post-deposition edge-damage. Scalar micro-flaking with less than 10% step fractures is typical of contact with materials of medium hardness, whilst edge damage with higher than 10% step fractures is suggestive of contact with hard materials.

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Appendix F: The Animal Remains

By Christie Cox, Human Osteologist

INTRODUCTION

This osteological report describes the archaeological animal remains of 3 species from Netherhills Quarry, Gloucestershire. The excavation was conducted under the direction of David Mullin (Gloucestershire County Council Archaeological Services) as part of a larger project entitled of the archaeological landscapes of Frampton on Severn. This project is funded by the Aggregates Levy Sustainability Fund and English Heritage.

Following the English Heritage, IFA and BABAO recommended guidelines (Mays, 2002; Brickley and McKinley, 2004) the cremated remains were assessed in order to determine the minimum number of individuals, species type, age at death, total weight, and the efficiency of cremation. It was not possible to estimate sex, or observe any pathological data; however cut marks were observed on one rib fragment. The purpose of this assessment report is to produce factual data and to evaluate potential research agendas which would broaden archaeological and scientific knowledge (Mays, 2002).

NON-CREMATED ANIMAL BONES

Three non-cremated deposits [1014, 1015, and 1020] were assessed from Netherhills Quarry, Gloucestershire (see Table 2 for complete list of bone fragments).

PRESERVATION AND COMPLETENESS

The state of preservation of bone surfaces for each of the articulated skeletons was assessed according to the weathering stages recommended by Brickley and McKinley (2004). The majority of the skeletal remains were graded between '5' and '5+' (Figure 1) indicating that there was extensive erosion which resulted in the modification of the bone surface, probably due to acidic soil conditions and root action.

All of the animal skeletons are incomplete and only a very small proportion are represented. Included in the assemblage is a mandible fragment, several rib fragments, and an upper limb all belonging to various animal species.

Figure 1: Poor preservation of some pig bones (NHQ06/1015).

SPECIES AND MINIMUM NUMBER OF INDIVIDUALS (MNI)

It was noted that one beaver, two pigs, and a larger animal (i.e., horse/bovine) were within the assemblage. This brought the total to 3 species and 4 individuals.

Figure 2: Beaver mandible from NHQ06/1015.

AGE AT DEATH

Within this assemblage, 3 of the animals were adult (one pig, the beaver and the horse/bovine) due to the epiphyseal fusion of the long bones. The remaining pig specimen was a foetus/neonate due to its size and the lack of epiphyseal fusion.

CUT MARKS

On one of the rib fragments, cut marks were observed on one surface (Figure 2). The species of this bone fragment is not known due to the lack of characteristic features.

Figure 3: Cut marks on a rib from NHQ06/1015.

CREMATED ANIMAL BONES

Three cremation deposits [1016, 1004 and 1015] were assessed from Netherhills Quarry, Gloucestershire (see Table 3 for complete list of cremated bone fragments). Due to the small quantity of cremated remains and the tiny fragment sizes, it was not possible to determine the minimum number of species or age at death. However, all other data has been recorded and presented within this report.

COLOUR AND EFFICIENCY OF THE CREMATION PROCESS

The effectiveness of the cremation process is reflected primarily in the colour of the bones (Shipman *et al.,* 1984). Full oxidization is when the bones have been fully burnt on the pyre and will become buff-white in colour; while colours of blue, grey, brown, and black indicate varying degrees leading towards complete oxidization (Table 1). The colour of the cremated remains from Netherhills Quarry ranged from scorched (light black and bone-colour) [Figure 4 and 5] to grey and white. This indicates that some of the bones were effectively cremated with temperatures reaching between 645-940°C while other bone fragments were only slightly seared by the flames.

STAGE	TEMPERATURE	COLOUR
1	20 - <285°C	Neutral white, pale yellow, yellow
2	285 - <525°C	Reddish brown, dark grey-brown, neutral grey, reddish-yellow
3	525 - <645°C	Neutral black, medium blue, some reddish-yellow
4	645 - <940°C	Neutral white, light blue-grey, light grey
5	940 + °C	Neutral white, medium grey, reddish-yellow

Table 1: Changes in bone colour due to rises in the pyre temperature (after Shipman *et al*, 1984)

Figure 4: Scorched bone fragment from NHQ06/1015.

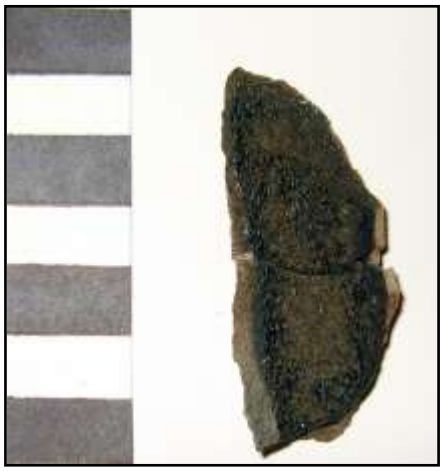

Figure 5: Semi-cremated bone fragment from NHQ06/1015.

WEIGHT AND MAXIMUM FRAGMENT SIZE

The small amount of cremated from Netherhills Quarry are 29.03 g in total and are far below expected weight ratios, especially when taking into consideration the number of different species contained within the deposits. Additionally, the cremated remains were less than 2mm in length and as such, are far below expected fragment sizes. Only one fragment (Figure 5) of semi-cremated bone was noted to be above 2mm in length.

PRESERVATION AND COMPLETENESS

Cremated bone is not subjected to the same destructive forces in acidic soil when compared to inhumed bone. This is due to the reduction of organic components and its subsequent dehydration which leaves a fully mineralized skeleton after the cremation (McKinley, 1994 and 1989). The Netherhills Quarry cremated animal remains fall within the expected preservation range and are in good condition.

Only a few cremated fragments of long bone fragments were identified from the Netherhills Quarry site. This information, added with the low weight and fragment length, indicate that this is not a typical or complete cremation deposit.

SUMMARY

The non-cremated and cremated remains from Netherhills Quarry, Gloucestershire assessed in this report contain 4 individuals from 3 animal species: two pigs, a beaver and a horse/bovine. It was not possible to determine sex or any pathological data however, it was noted that one rib fragment contained cut marks on its surface.

Fragment sizes and bone weights fell below expected averages indicating that entire skeletons were *not* buried. A few bones were only partially cremated while the majority were grey to white in colour which is indicative of a pyre temperature of 645-940ºC. Interestingly the temperatures are consistent with other Bronze Age cremation burials.

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TABLE 2: NON-CREMATED ANIMAL BONES

NHQ06-1014

Name of Bone	Age	Species	Notes
Misc bone frags	-	-	

NHQ06-1015

Name of Bone	Age	Species	Notes
Upper first molar	Adult	Pig	
?side/position molar	Adult	Pig	
Rib fragment	Adult	-	Cut marks on the shaft
Right mandible	Adult	Beaver	
Ulna	Adult	Pig	
Humerus	Adult	Pig	
Carpals	Adult	Pig	
Rib fragment	Adult	Horse/Bovine	
Misc. fragments	Adult	Pig	
Femur fragment	Neonate/ Foetal	-	

NHQ06-1020

Name of Bone	Age	Species	Notes
Rib fragment	-	-	Very poor preservation (5+)

TABLE 3: CREMATED ANIMAL BONES

NHQ06-1016

Name of Bone	Weight	Frag. Size	Colour
Misc bone frags	0.35 g	-	White = fully Oxidized, no organic matrix

NHQ06-1014

Name of Bone	Weight	Frag. Size	Colour
Misc bone frags	2.05 g	-	Grey-white = mostly oxidized with slight organic matrix

NHQ06-1015

Name of Bone	Weight	Frag. Size	Colour
Misc bone frag	0.71 g	-	Black and Bone colour = Partially scorched: no oxidization, full organic matrix
Long bone frags	13.39 g	-	Black = Mostly scorched: no oxidization, full organic matrix
Misc bone frags	12.53 g	-	White = Cremated: full oxidization, no organic matrix

Appendix G: The Environmental Remains

by ***Michael J. Allen, PhD, MIFA, FLS, FSA*** (with ***Alan J. Clapham***)

This report details the palaeo-environmental assessment of samples from Neolithic, Bronze Age and prehistoric contexts at Netherhills Quarry. Assessment of charred plant remains and charcoal, pollen and snails was conducted as well as a review of the radiocarbon potential.

Poor preservation of both pollen and Mollusca from even the most important contexts negated any potential. Rich charred plant remains assemblages from Neolithic pit 1001 are of regional importance and may provide may some opportunity for obtaining absolute dates on some of the archaeological events. Of the eight samples assessed only one from the primary fill of an Late Neolithic pit (context 1015) contained charred plant remains in large quantities, the other seven samples produced none or very little.

ASSESSMENT PROGRAMME

A series of eight bulk soils samples, and two monoliths were presented to AEA for processing and assessment. Two samples had previously been presented to Rona Davis to assess the preservation of land snails. This report includes the assessment of the charred plant remains, pollen and land snails as well as comment on the radiocarbon dating potential.

no	*location*	*phase*	*action*
10	Primary fill of [1001]	Phase 1 (Later Neolithic)	flotation assess cpr
6	Secondary fill pit [1001]	Phase 1 (Later Neolithic)	flotation assess cpr
9	Fill of pit [1003]	Phase 2 (Beaker)	flotation assess cpr
1	Fill of ditch [1023]	Phase 3 (Bronze Age)	flotation assess cpr
4	Fill of pit [1008]	Phase 3 (Bronze Age)	flotation assess cpr
5	Secondary fill pit [1008]	Phase 3 (Bronze Age)	flotation assess cpr
2	Fill of pit [1049]	no phase	flotation assess cpr
11	Fill of posthole [1110]	no phase	flotation assess cpr
7	Fill of ditch [1023]	Phase 3: pollen column	subsample and assess pollen
8	Primary fill of pit [1008]	Phase 3: pollen column	subsample and assess pollen
3	Primary fill of pit [1008]	Phase 3: mollusc sample	process and assess snails
	Primary fill of pit [1001]	Phase 1: mollusc sample	process and assess snails

cpr = charred plant remains

Table 1. List of palaeo-environmental samples assessed.

Aims of assessment were: -

- *To assess the potential for pollen data from two monolith samples to provide information on the nature of the surrounding environment.*
- *To assess the potential for molluscs (land and fresh/brackish water) from one mollusc column to provide information on the nature of the local and surrounding environment*

- *To assess the potential for plant macrofossil remains and charcoal from pits dating to the Neolithic/Early Bronze Age period to provide information on human activity on the site (possibly ritual) and on the nature of the surrounding environment.*
- *To recover cremated human bone and other archaeological material within the samples.*

This assessment comprises: -

- Charred plant remains and charcoal (Dr Alan Clapham with Dr Michael Allen)
- Pollen (Dr Rob Scaife)
- Land and freshwater molluscs (Rona Davis & Dr Michael Allen)
- Outline radiocarbon assessment (Dr Michael Allen)

PROCESSING and SAMPLE PREPARATION

Bulk Soil samples

The bulk soil samples (Table 1) were processed by M.J. Allen (AEA) and A. Mann (Historic Environment and Archaeology Service, Worcestershire County Council), by standard flotation techniques. Samples were processed by either washover flotation with flots retained on 500μm sieve and residues on 1mm mesh, or by flotation using a Siraf tank with flots retained on 300μm sieve and residues on 1mm mesh. All of sample from the Neolithic and Beaker contexts were processed (contexts 1015, 1014 and 1016), up to 30 litres of the Bronze Age samples (contexts 1025, 1022 & 1027) and 10 to 20 litres of the unphased samples. The remaining portions of the samples were wet sieved over a 2mm and 4mm meshes in order to retrieve any artefacts and ecofacts. This allows for the recovery of items such as small animal bones, molluscs and seeds.

The residues were fully sorted by eye and the abundance of each category of environmental remains estimated. A magnet was also used to test for the presence of hammerscale. The flots were scanned using a low power MEIJI stereo light microscope.

Quantities of sample provided and processed by flotation are given (Table 5).

Pollen

Two soil monoliths were provided from Bronze Age features; one each from ditch 1023 (monolith 7) and pit 1008 (monolith 8). The monoliths were cleaned and then carefully sampled at 4cm intervals. A suite of 10 samples were passed to Dr R. Scaife for palynological assessment (see Table 6).

Samples of 2ml – 4ml volume of the 10 selected subsamples were processed using standard techniques for the extraction of the sub-fossil pollen and spores (Moore & Webb 1978; Moore *et al.* 1992). These procedures were carried out in the Palaeoecology Laboratory of the Department of Geography, University of Southampton.

Molluscs

Two samples of 500g of air dried material from contexts from 1026 and 1015 (sample 3) were processed by Rona Davis following standard methods (Evans 1972) using sieve mesh sizes of 2mm, 1mm and 0.5 mm for the residues and 0.5mm for flots. Flots were scanned for Mollusca.

PALAEO-ENVIRONMENTAL ASSESSMENT

(*Michael J. Allen, Alan Clapham, Rob Scaife & Rona Davis*)

Charred plant and charcoal remains

(*Dr. Alan Clapham with Dr. Michael J. Allen*)

The aims of the assessment were to determine the state of preservation, type, and quantity of environmental remains recovered, from the samples and information provided. This information was used to assess the importance of the environmental remains. Plant remains were identified using modern reference collections maintained by the Worcestershire County Archaeological Service, and a seed identification manual (Beijerinck 1947). Nomenclature for the plant remains follows the *New Flora of the British Isles*, 2nd edition (Stace 2001).

Of the eight samples assessed for charred plant remains only one (pit 1001, context 1015) contained charred plant remains in any quantity. In the majority of cases the flots were of a small volume ranging from 1-10 millilitres, with context 1015 (pit 1001) producing a flot of over 200 ml. Apart from context 1015 where no modern contamination was detected, the dominant component of the samples was modern roots. In five of the contexts covering the Neolithic, Beaker and Bronze Age occasional burnt bone was recorded, most likely of large mammal (contexts 1015, 1014, 1016, 1025 and 1022). The results are presented in tables 2 and 3.

Feature	*Context*	*Sample*	*large mammal*	*charcoal*	*charred plant*	*Comment*
Pit 1001	1015	10	occ*	abt	abt	* burnt bone
Pit 1001	1014	6	occ*	occ	occ	* burnt bone
Pit 1003	1016	9	occ*	occ	-	* burnt bone
Ditch 1023	1025	1	occ*	-	-	* burnt bone
Pit 1008	1022	4	occ*	occ	occ	* burnt bone
Pit 1008	1027	5	-	occ	occ	-
Pit 1049	1050	2	-	occ	occ	-
Posthole 1110	1111	11	occ	-	occ	-

KEY:- occ = occasional; abt = abundant

Table 2. Summary of environmental remains from the bulk samples.

The richest context was that from the primary fill of the Late Neolithic pit 1001 (context 1015). This contained a large number of charred hazel nutshell fragments (*Corylus avellana*) along with a number of fragments of both crab apple (*Malus* sp.) and sloe (*Prunus spinosa*), no cereal remains were identified from this pit. Crab apple fragments were also found in the secondary fill of the pit (context 1014).

The only cereal remain was that of a hulled barley grain (*Hordeum vulgare*) from the secondary fill of the probable Bronze Age pit 1008 (context 1022), a cereal culm node was identified from the primary fill (context 1027) of the same pit. The only other seed found was that of a wood-rush nutlet from context 1050, the fill of unphased pit 1049.

The largest amount of charcoal was found in context 1015 (pit 1001), some of these fragments were of identifiable size, none of which were of round wood.

charred plant - Latin name	*Family*	*Common name*	*Habitat*	*Pit 1001*		*Pit 1008*		*Pit 1049*
				1014	*1015*	*1022*	*1027*	*1050*
Hordeum vulgare grain (hulled)	Poaceae	barley	F	-	-	+	-	-
Cereal sp indet culm node	Poaceae	cereal	F	-	-	-	+	-
Corylus avellana shell fragment	Betulaceae	hazelnut	C	-	++++	-	-	-
Prunus spinosa	Rosaceae	sloe	C	-	+	-	-	-
Malus sp	Rosaceae	crab apple/apple	CF	++	++	-	-	-
Luzula sp	Juncaceae	wood-rush	E	-	-	-	-	+

Key

Habitat	*Quantity*
A= cultivated ground	+ = 1 - 10
B= disturbed ground	++ = 11- 50
C= woodlands, hedgerows, scrub etc	+++ = 51 -100
D = grasslands, meadows and heathland	++++ = 101+
E = aquatic/wet habitats	
F = cultivar	

Table 3. Summary of charred plant remains.

Discussion

The lack of cereal grains and the dominance of charred hazel nutshell fragments in the primary fill of the Late Neolithic pit 1001 (context 1015) suggests that cereal cultivation did not take place on this site or within the local area. The presence of burnt animal bone suggests that the pit may have been used as a refuse pit. The presence of sloe stone fragments and crab apple fragments along with the hazelnut shell fragments suggests the gathering of wild food. Raw crab apples tend to be unpalatable and need to be processed in some way before eating, hazelnuts also become more palatable after roasting and roasting in a domestic hearth is one way of to achieve this. The presence of charcoal in the pit may possibly suggest the dumping of domestic hearth material.

The presence of a single charred hulled barley grain in the secondary fill of the probable Bronze Age pit 1008 (context 1022) and the culm node in the primary fill (context 1027) does not really indicate local agriculture and could be residual.

Significance/Potential

The only sample of any significance is that from context 1015; the primary fill of the Late Neolithic pit 1001. The presence of charred hazel nutshell, apple and sloe indicates the exploitation of the local environment. The full analysis of the charcoal may emphasise the exploitation of the local environment by indicating which habitats were exploited for fuel. The lack of cereal remains suggests that wild foods played a prominent part of the diet for the local population.

The archive consists of one box of sorted flots and residues and eight AS17 sample recording sheets.

Pollen assessment

(*Dr. Rob Scaife*, Palaeopol, School of Geography, Southampton University)

Dr Rob Scaife reports that pollen preservation from Bronze Age pit 1008 and ditch 1023 was sparse to nil, with preferential preservation of *Taraxacum* (Dandelion group) due to its robust exine. This indicates loss and degradation of pollen in the sampled deposits with only poor sparse preservation of the more robust spores. Poor pollen preservation is typical of this type of deposits. The archive consist of slides held by Dr. Scaife. Extra subsamples not assessed (Table 6) will be discarded.

Snail assessment

(*Rona Davies & Dr. Michael J. Allen,* AEA: Allen Environmental Archaeology)

Two samples were assessed for their potential to provide environmental information through mollusc analysis. The samples were from the primary fill of probably prehistoric pit 1008 (context 1027) and primary fill of Late Neolithic pit 1001 (context 1015).

Both samples yielded very occasional, non-apical shell fragments, no more than five pieces from each context. The results point towards non-favourable conditions for molluscs and/or their subsequent preservation. The lack of a viable sample size, normally in the region of 150 individuals, would not be improved by processing more material. One poorly preserved specimen of *Ceciloides acicula* was present in sample 3 from context 1015, whilst the other recovered shell fragments were not diagnostic of any one species.

Poor shell preservation was confirmed by the lack of Mollusca from the flots and residues of the bulk samples (Table 2).

OUTLINE RADIOCARBON ASSESSMENT

In the first instance the chronological assessment needs to define the types of chronological questions to be addressed, and then the material and palaeo-environmental archive can be reviewed to see if there is suitable material with which to address these questions. There is little doubt, however, that the radiocarbon dating programme here is hindered by the limited quantities of preserved bone charred remains.

The types of question to be addressed might be

- to confirm the broad phase ascription and phase order provided by the assessment
- Does the activity related to the later Neolithic pit 1001 fall within a typical range of Grooved Ware (2800-2400 cal BC) or Peterborough (3350-2910 cal BC) pottery traditions?
- Can the later Neolithic activity (dumps in pit 1001) and the Beaker activity (pit 1003) be considered a single chronological phase?
- Is the beaver late Neolithic? Does the Beaver mandible indicate an early or unusual date for its presence / exploitation in this area?

However the available datable material is very limited (Table 4). There are no articulated bone groups, nor is any of the non cremated bone clearly a product of a single event dump or discard (Cox 2007). Even the cut (humanly modified) rib from Late Neolithic pit 1001 could, without clear contextual information, be residual from an earlier phase. Although a radiocarbon date is achievable from the cremated animal bone, clear contextual evidence that these belong to a disposal or single-event dump episode needs to be ascertained. There is no datable material from the hengiform monument.

There are plenty of charred hazelnuts in the primary fill of pit 1001 and these may represent disposal of waste debris. The origin of the few remains from other features is less clear-cut.

date	*feature*	*context*	*charred*	*bone*	*crem bone*
Late Neolithic	pit 1001	1015 primary	hazel nuts, crab apple	9 frags inc beaver and cut bone	0.71g misc 13.39g long bone 12.53g misc frags
Late Neolithic	pit 1001	1014 upper	crab apple	misc bone <1g	2.05g misc frags
Beaker	pit 1003	1016	-	-	0.35g misc frags
Bronze Age	ditch 1023	1022	-	-	-
Bronze Age	pit 1008	1027	-	-	-
Bronze Age	pit 1008	1022	-	-	-
undated	pit 1049	1050	-	-	-
undated	posthole 1110	1111	-	-	-

Table 4. Dateable material from the Netherhills Quarry excavation

Potential Submissions

The beaver mandible fragment provides an opportunity to date the presence of beaver in western England, and confirm that it belongs with the later Neolithic activity in pit 1001. The Late Neolithic activity can be reliably dated by hazelnuts. If the two belong to the same event they should pass the Chi squared test (Ward & Wilson 1978). It may then be assumed the cremated animal bone belongs to this phase.

No Charred plant remains or short-lived charcoal was present in Beaker pit 1003. The Bronze Age ditch 1023 and pit 1008 seem to provide evidence of only isolated activity and do not on their own characterise defined phases of activity. Further, they do not contain any suitable dateable material (Table 4).

Palaeo-environmental Summary

The Neolithic and Beaker pits excavated at Netherhills Quarry are of at least regional importance, as they were well preserved and are the only such features from the county to have been extensively sampled for environmental remains. There are presently few radiocarbon dates from Late Neolithic pits from the county and the Beaker sequence in south west England remains poorly understood, especially in the Severn Vale. The lack of pollen and snails is unfortunate in view of the regionally important contexts and the deficiency in palaeo-environmental data of this data in this area. The charred plant remains and charcoal were sparse in all but the primary fill of the Late Neolithic pit 1001. The presence of hazel nutshell is typical of Neolithic sites, and the crab apple is less common but not unusual. This information will provide an important (dated) palaeo-environmental assemblage.

Recommendations for further work

Recommendations for, and details of, further work are given below. Costs and any timetables are presented at the end of this section.

Charred and mineralised plant remains

(*Dr. Alan Clapham & Dr. Michael J. Allen*)

The following recommendations are made with regard to further work on the samples considered as part of this report

Full analysis of the charred plant remains from context 1015 is recommended as identifications of the charred plant remains in this assessment report are provisional only. Analysis will provide full quantification and identification of these and other remains. It will also specifically relate these remains to the region and period. These remains are of significance within this region due to the sparseness of comparable data.

Identification of the charcoal from context 1015. This will allow the determination of the habitats which were exploited in the Early Neolithic. Allen (2002) and French *et al.,* (2002; 2003; 2007/in press*)* have demonstrated that the Neolithic environment cannot be assumed to be one of consistent closed woodland in which clearance occurred – but was a mosaic of vegetation patterns and these are key to the location of some prehistoric activities and community development within specific areas – there is little evidence of Neolithic exploitation in this area/ region, even if the evidence here generally follows the national expectations. The analysis proposed here would be the first evidence for the Neolithic environment in this area and, as such, will supply new information.

Writing of full report for publication.

Three and a half days have been added for research and reporting into the regional and period context of the archaeobotanical, charcoal and pollen data as requested in English Heritage comments on a draft of the assessment report.

Pollen assessment

(*Dr. Rob Scaife*, Palaeopol, School of Geography, Southampton University)

The lack of pollen precludes any further work on the sampled contexts.

Snail assessment

The lack of shell preservation precludes any further work on the sampled contexts.

Radiocarbon

The radiocarbon potential for this site is marred by poor preservation of bone, and the lack of discrete contexts of dumped and disposed of charcoal. No major radiocarbon programme is possible from this site. However a limited and targeted programme of dates is considered useful in view of the lack of dated material in this region, and the potential to confirm phase and sequence at Netherhills Quarry.

1) The context and taphonomy of some of the potential datable material (Table 4) is closely scrutinised by AEA with the project director (D. Mullin)

2) Selection of further material may be suggested ***if*** this contextual information can provide unambiguous confirmation that dateable material has a causal relationship with the features and activities and that the material is unlikely to residual.

3) Submissions will be modelled and discussed with the English Heritage Scientific Dating Team

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This report was compiled and edited by M.J. Allen for AEA: Allen Environmental Archaeology.

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TABLE 5: List of bulk environmental samples and processing and assessment quantities

Feature	*Context*	*Sample*	*Description*	*Period*	*Phase*	*Sample volume (l)*	*Volume processed (l)*	*Residue assessed (ml)*	*Flot assessed (ml)*
Pit 1001	1015	10	primary fill	Late Neo	1	60	60	850	200
Pit 1001	1014	6	secondary fill	Late Neo	1	51	51	300	10
Pit 1003	1016	9	fill	Beaker	2	53	53	2800	10
Ditch 1023	1025	1	fill	Bronze Age	3	20	20	200	1
Pit 1008	1022	4	primary fill	Bronze Age	3	40	40	1700	1
Pit 1008	1027	5	secondary fill	Bronze Age	3	35	35	1600	2
Pit 1049	1050	2	fill	?	?	20	20	1800	2
Posthole 1110	1111	11	fill	?	?	20	20	600	10

TABLE 6: Pollen samples

Ditch 1023: monolith 7

depth	context	assessed
2cm	**1023**	✓
6cm	1023	
10cm	1023	
14cm	**1023**	✓
18cm	1023	
22cm	1023	
26cm	**1023**	✓
30cm	1023	
34cm	1023	
38cm	**1023**	✓
42cm	1023	
46cm	1023	
50cm	**1023**	✓

Pit 1008: monolith 8

depth	context	assessed
2cm	**1022**	✓
6cm	1026	
10cm	1025	
14cm	**1025**	✓
18cm	1025	
22cm	1025	
26cm	**1025**	✓
30cm	1025	
34cm	1025	
38cm	**1025**	✓
42cm	1025	
46cm	1025	
50cm	**1025**	✓

Appendix G