
NORTH PENNINES ARCHAEOLOGY LTD

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**ASSESSMENT REPORT ON
AN ARCHAEOLOGICAL
EXCAVATION AT
NEW COWPER QUARRY
NORTHERN EXTENSION
(PHASE 1)
ASPATRIA,
CUMBRIA**

**FOR
STEPHENSON HALLIDAY**

**ON BEHALF OF
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(HOLDINGS) LTD**

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EXECUTIVE SUMMARY

Between February and April 2005, North Pennines Archaeology Ltd. carried out an archaeological excavation (NCF-A) at New Cowper Quarry Northern Extension (Phase 1), Aspatria, Cumbria (NGR: NY 115 460) on behalf of Thomas Armstrong (Holdings) Ltd. This work preceded two further stages of excavation in neighbouring fields, which have already been reported (NCF-B, Davies 2006 and NCF-C, Gaskell 2006). The excavation revealed significant archaeological remains of later prehistoric date, including a series of Early Neolithic pits, an Early Bronze Age funerary cairn, a curvilinear boundary ditch, linear and curvilinear gullies, and a number of isolated pits and postholes of probable prehistoric date.

Early Neolithic activity was characterised by a series of pits across the site containing structured deposits of Neolithic pottery, possibly containing cremated human remains. These were associated finds of charcoal, charred grain and charred hazelnut shells. A sample of charcoal from one of the pits has provided an Early Neolithic date of 3650-3510 cal BC. A small lithic assemblage was recovered including three hammerstones, although no direct evidence for stone tool production on the site was identified.

A Bronze Age funerary monument was revealed on the east side of the excavation. This comprised a rectangular pit for an inhumation (although no physical evidence for this survived) with a four-post and stake structure built around it. A crude stone cairn covered the grave, incorporating two of the posts and a number of the stakes. At least one pit was subsequently cut into the top of the cairn. Three Beaker vessels were deposited in or near the monument (one of which contained residues of beeswax), suggesting that ceremonial practices were taking place at the monument over a significant period of time. A thumbnail scraper was also recovered from near the monument. Two possible calibrated radiocarbon dates of 2400-2380 BC and 2360-2140 BC were produced for the monument, both of which fall within the Early Bronze Age.

A number of linear features have been identified including a substantial boundary ditch on the east side of the site. Although no dating evidence has yet been obtained for these features, these are likely to date to the 1st millennium BC and represent part of a broader settled, agricultural landscape. Further work is required in order to further characterise the nature of these land divisions, which resemble the enclosures, field-systems or land divisions of a recognisably Iron Age or Romano-British pattern.

A number of post-medieval and modern features were present, including a series of post-medieval plough furrows which bisected the site, a composite field boundary, bonfires and a modern sheep burial. Some of the plough furrows could potentially be medieval in date.

The excavation has produced an important and rare collection of prehistoric pottery worthy of further analysis. The three Early Neolithic vessels are at present the only known examples of this period and type in the region. This pottery is therefore of importance both regionally and nationally. Beakers are known elsewhere in the region, but compared to other regions of England there is little Beaker pottery known. One vessel appears to be virtually complete, and it is recommended that this pot is reconstructed.

A statement regarding the potential for further analysis of this information is presented at the end of this assessment along with an updated project design that would enable this site (NCF-A) to be published at monograph level in association with other phases of work at New Cowper Quarry (NCF-B, Davies 2006 and NCF-C, Gaskell 2006).

ACKNOWLEDGEMENTS

North Pennines Archaeology Ltd would like to thank Stephenson Halliday for commissioning the project. Thanks are also extended to Frank Harkness and the staff of New Cowper Quarry (Thomas Armstrong Aggregates Ltd.) for their assistance throughout the fieldwork. Thanks are also due to Jeremy Parsons, Assistant Archaeologist, Cumbria County Council Historic Environment Service for his assistance during the project, Nick Edwards of Stephenson Halliday, Dr Bob Bewley, Dr Rob Young, and Professor Mike Parker-Pearson.

Fieldwork was undertaken by Stephen Atkinson, Jo Beaty, Tricia Crompton, Ken Denham, Leon Field, Emily Gough, Frank Giocco, Alan James, Chris Jones, Anna van der Mark, Kevin Mounsey, Faye McNamara, and Greg Shepherd. The fieldwork project was managed by Chris Jones, NPA Project Officer, and overseen by Frank Giocco, NPA Technical Director. This assessment report was written and illustrated by Martin Railton, NPA Project Officer. The specialist reports were contributed by Dr. Carol Allen (pottery analysis), Patricia Crompton (environmental analysis) and Ken Denham (lithic analysis). Matthew Town, NPA Project Officer, edited the report.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

- 1.1.1 In February 2005 North Pennines Archaeology Ltd. was commissioned by Stephenson Halliday, acting on behalf of Thomas Armstrong (Holdings) Ltd, to undertake an archaeological excavation in advance of mineral extraction at the New Cowper Quarry, Aspatria, Cumbria (Figure 1). The site of the excavation was to the northwest of New Cowper Quarry (NGR: NY 11854 45989), and comprised an area of 0.8ha. Several fields surrounding the site have been used for sand extraction since at least the 1980s.
- 1.1.2 The scheme affected an area of known archaeological interest, as identified in a desk-based assessment (LUAU 1999), and geophysical survey (WYAS 2003). This excavation (NCF-A) followed a field evaluation at the site, which revealed a series of ditches, pits and postholes containing paleoenvironmental evidence, and one pit containing prehistoric pottery (Clapperton 2004). An archaeological excavation was also undertaken in a field to the south of the site, which revealed a series of prehistoric linear features, pits, a small square enclosure, and a possible droveway (Jones 2003).
- 1.1.3 This assessment report (written between 29th January and Friday 16th February 2007) sets out the results of the excavation in the form of a document, outlining the initial findings, and assessing the potential for future research arising from this. The work presented in this report comprises Phase 1 of the excavations undertaken by North Pennines Archaeology Ltd. at the site. Two further stages of excavation work have been undertaken; a 1ha area was excavated by North Pennines Archaeology Ltd. (Phase 2) in a field to the west (NCF-B), revealing a series of Neolithic, Bronze Age and later features (Davies 2006). Headland Archaeology undertook further excavations in the field to the south of the site in 2003 (NCF-C). North Pennines Archaeology Ltd. has recently completed an assessment of this excavation (Gaskell 2006). It is intended that all three phases of work at New Cowper (NCF-A: this report; NCF-B: Davies 2006, and NCF-C: Gaskell 2006) will ultimately be amalgamated into a final report, as together these excavations have the potential to provide an important insight into the nature and development of later prehistoric settlement and land-use in West Cumbria (Figure 2).

2. PROJECT DESIGN AND METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 A project design was submitted by North Pennines Archaeology Ltd. in response to a request by Stephenson Halliday for an archaeological excavation at the site, in accordance with a brief prepared by Cumbria County Council Historic Environment Services CCHES. Following acceptance of the project design, North Pennines Archaeology Ltd. was commissioned by the client to undertake the work.

2.2 EXCAVATION METHODOLOGY

2.2.1 The archaeological excavation comprised one open area measuring 0.8ha in size. The excavation was undertaken in order to achieve the following:

- to preserve by record the archaeological evidence contained within the site and to attempt a reconstruction of the history and use of the site;
- to contribute to an understanding of prehistoric settlement, subsistence and agricultural practices, and environmental conditions on the west coast of Cumbria;
- to inform wider regional, national and period based research frameworks.

2.2.2 The work was undertaken under the management of Chris Jones, NPA Project Officer. All staff were fully briefed on the project background, made aware of the work required under the specification, and understood the projects aims and methodologies.

2.2.3 Topsoil was removed using a 360° mechanical excavator fitted with a toothless ditching bucket and removed from the site. All machine work was carried out under direct archaeological supervision. Large areas of the site were cleaned by hand and base plans were produced at an appropriate scale. The limits of the site and initial pre-excavation planning were surveyed using a Total Station and the captured data was transferred into a computer software programme for manipulation.

2.2.4 All identified archaeological features within the stripped area were excavated by hand to the depth of their cuts.

2.2.5 A detailed record of the stratigraphic sequence was made, in accordance with the Institute of Field Archaeologist (IFA) and English Heritage guidelines.

2.2.6 Archaeological deposits and features were sampled systematically in accordance with North Pennines Archaeology Ltd. standard environmental sampling practice. The processing was overseen by Tricia Crompton, NPA Environmental Specialist.

2.2.7 All written records utilised the North Pennines Archaeology Ltd. pro-forma record sheets.

- 2.2.8 Plans and sections were drawn on water resistant permatrace. Plans were drawn at a scale of 1:20 or 1:50, and sections at 1:10 or 1:20. The captured data was digitised using AutoCAD software.
- 2.2.9 A site diary was maintained detailing the nature of the work undertaken each day.
- 2.2.10 All finds belong to the landowner, but have were initially taken to the premises of North Pennines Archaeology at Nenthead for assessment.

2.3 ASSESSMENT METHODOLOGY

- 2.3.1 This document is the *post-excavation assessment* of the excavation at New Cowper Quarry (NCF-A), and includes an initial finds and environmental assessment and a review of site data.
- 2.3.2 Key features of this report include:
- a site location plan related to the national grid;
 - dates on which the project was undertaken;
 - a concise non-technical summary of the data;
 - a description of the methodology employed, work undertaken and an outline of results obtained;
 - plans and sections at an appropriate scale showing the locations and positions of deposits and finds;
 - a list of, and spot dates for, any finds recovered and a description of the deposits identified and a description of any environmental or other specialist work.
 - an updated project design including recommendations for further work .
- 2.3.3 A number of specialists have provided assessment reports for excavated material from the New Cowper Quarry northern extensions:
- Prehistoric pottery was assessed by Dr Carol Allen.
 - Lithics were assessed by Ken Denham.
 - Environmental assessment (post-processing residue analysis) took place under the direction of Patricia Crompton (NPA Environmental Specialist).

2.4 ARCHIVE

- 2.4.1 A full professional archive has been compiled in accordance with the project design, and in accordance with current UKIC (1990) and English Heritage guidelines (1991). The paper and digital archive will eventually be deposited in the Tullie House Museum, Carlisle.
- 2.4.2 One copy of this report will be deposited with the County Historic Environment Record. North Pennines Archaeology Ltd. is also registered with the **Online AssesS** to the **Index of archaeological InvestigationS (OASIS)**.

3. BACKGROUND

3.1 LOCATION, TOPOGRAPHY AND GEOLOGY

- 3.1.1 The site is situated (NGR 11854 45989), *c.*3km south east of Silloth, *c.*700m northwest of New Cowper Quarry, within the modern civil parish of Holme St Cuthbert. This area falls within the North Cumbrian Plain; a relatively low-lying area (below *c.* 200m AOD) located to the north and west of the Lake District Massif.
- 3.1.2 The assessment area is immediately south of a landscape zone known as the Abbeytown Ridge. The Abbeytown Ridge is a relatively narrow tract of land stretching from Salta Moss at the western extent of the northwest Cumbrian coastal plain, to Wedholme Flow, some 20km to the north-east. The Abbeytown Ridge reaches heights of *c.*40m AOD and forms a significant topographic feature, defining the southern boundary of the Solway Plain (Hodgkinson *et al* 2000).
- 3.1.3 The proposed extraction area is an undulating area of low ridges, approximately 35m AOD, and is used as pasture. This is typical of the Abbeytown Ridge area, where the land-use is dominated by pasture, but includes significant elements of arable. The land-use system has not changed significantly since 1997, when much of the assessment area was surveyed as part of the English Heritage-funded North West Wetlands Survey (Hodgkinson *et al* 2000, 85).
- 3.1.4 The solid geology of the area comprises Triassic Sherwood Sandstone, with Triassic Mudstone to the north (Dunham 1969). These are overlain by drift deposits of Devensian tills of the Clifton and Brickfield Associations (coarse-grained sands). The predominating Clifton soil type is seasonally waterlogged (Hodgkinson *et al* 2000).

3.2 HISTORICAL BACKGROUND

- 3.2.1 **Introduction:** This historical background is compiled mostly from secondary sources, and is intended only as a brief summary of historical developments around the study area. A number of documents held by the Cumbria Record Office Carlisle (CROC) are referenced in the text. The Cumbria Historic Environment Record numbers (HER) are also given in brackets.
- 3.2.2 **Palaeolithic:** The earliest defined prehistoric period is the Palaeolithic, and it represents a time span covering almost the last half million years. No archaeological material dating to the time of the Pleistocene glaciations has ever been recovered from Cumbria, probably because the scouring of the latest glaciation, the Devensian, removed so much of the evidence from previous periods. Towards the end of the Devensian, some time after 13,000 BP, Late Upper Palaeolithic societies returned to Britain. Evidence of occupation in the northwest at this date is extremely scarce, but includes finds of Late Upper Palaeolithic blades at Lindale Low cave, near Grange-over-Sands, and at Bart's Cave, Aldingham, on the Furness Peninsula (Chamberlain & Williams, 2001). No Palaeolithic material has been located within a 1km radius of New Cowper Quarry.

- 3.2.3 **Mesolithic:** By around 8,000 BP, the last of the major ice sheets had retreated. Rising sea levels submerged the land-bridge between Britain and continental Europe, an event that traditionally marks the beginning of the Mesolithic, or middle stone age period. Mesolithic hunter gatherer populations were active on the Cumbrian coast, for example at Eskmeals (Cherry and Cherry 1987), and St Bees (Cherry and Cherry 1983).
- 3.2.4 Palaeoecological research has used the changing patterns of pollen contained within soil cores as evidence that there may have been some human management of the landscape around the New Cowper Quarry area during the Mesolithic period. However, it is most likely that activity was concentrated on the coast further to the west (Bewley 1994, 54; Hodgkinson *et al* 2000, 106-110).
- 3.2.5 During the North West Wetlands Survey, systematic fieldwalking located a fragment of worked flint debitage of Mesolithic/Early Neolithic date just over 3km north of the northern extent of the New Cowper Quarry area (CU7, Hodgkinson *et al* 2000, 110).
- 3.2.6 The relative lack of Mesolithic material from the North Cumbrian Plain is perhaps best explained by the poor visibility of archaeological remains, rather than an absence of activity (Hodgkinson *et al* 2000,110). The presence of Mesolithic activity has been better evidenced on the Scottish side of the Solway through the coastal erosion of raised beach deposits; depositional conditions are absent on the Cumbrian coast. The presence of Mesolithic/Early Neolithic worked flint debitage in the environs of the New Cowper Quarry area does, however, suggest some exploitation of the land at this early date.
- 3.2.7 **Neolithic:** The succeeding Neolithic period has been traditionally associated with the adoption of a settled agricultural lifestyle. New types of sites appear, including large ceremonial and funerary monuments. However, environmental and archaeological evidence suggests there was a large degree of continuity between the Mesolithic and Early Neolithic periods in Cumbria, and evidence for permanent settlements of this period is lacking in the county (Bradley 2002).
- 3.2.8 There was certainly a human presence in the North Cumbrian Plain from the early Neolithic period. Unfortunately, there is only a small amount of excavated evidence, and even fewer stratigraphically secure assemblages directly related to Neolithic occupation (Hodgson and Brennand 2004, 7). Indeed, most of the cropmark sites identified in the area have traditionally been assigned an Iron Age or Romano-British date (Bewley 1994). However this imbalance has been partially redressed by Bewley's work at Plasketlands, 2km north-west of Overby (Bewley 1993, HER 607), where the excavation of a cropmark site uncovered part of a post built palisade, probably associated with a ditched enclosure. This has been radiocarbon dated to 3970-2535 cal BC and 4032-3720 cal BC. No datable artefacts were recovered from this excavation, and it is likely that there are other similar sites awaiting detection, at present assumed to be of later date (Hodgkinson *et al* 2000, 111).
- 3.2.9 By the Later Neolithic, the distribution of artefacts such as polished stone axes, indicates widespread activity throughout Cumbria. Polished stone axes from the Langdale mines in the Cumbrian mountains were traded extensively throughout the British Isles, and it is likely that by the 3rd millennium BC, Neolithic inhabitants of Cumbria were part of an extensive trans-European trading network. Over one

hundred stone axeheads have been located on and around the North Cumbrian Plain, suggesting that wetlands/coastal areas, and sometimes the plain itself, was occupied at this time (Hodgkinson *et al* 2000).

- 3.2.10 The later Neolithic and earlier Bronze ages are also characterised by increasing social sophistication best reflected by the construction of large monuments, like the stone circles of Long Meg and Her Daughters near Penrith, or Birkrigg, near Ulverston. These monuments have no obvious practical explanation, and are probably best seen as public works central to complex religious or spiritual practices.
- 3.2.11 A number of Neolithic finds have been located in the environs of New Cowper Quarry. During the North West Wetlands Survey, systematic fieldwalking in the available arable land identified a number of Neolithic flints around the Overby Quarry area (e.g. CU11, Hodgkinson *et al* 2000, 177). A kilometre south of the Overby Quarry proposed extraction area a small group of nine Neolithic flints, including two blades and a piece of burnt bone were located (CU4, Hodgkinson *et al* 2000, 177).
- 3.2.12 A single piece of Neolithic/Bronze Age worked flint was recovered from the permitted quarry area at High House (CU5, Hodgkinson *et al* 2000, 177). The importance of this single find is enhanced by the presence of a number of undated cropmarks, which could be Neolithic in date (Higham and Jones 1975). It is highly likely that parts of the proposed extraction area at Overby Quarry were farmed, and perhaps even settled upon, during the Neolithic period.
- 3.2.13 Closer to New Cowper Quarry itself, there are two findspots of stone axe heads within a 1km radius of the proposed extraction area (HER 637 and 18964) Including, an important findspot of a Neolithic axe, at Chapel Moss (HER 637, NY 11580 45320). In addition, there are four North West Wetland fieldwalking finds within 1km of New Cowper Quarry (CU 8 *collection of Prehistoric flints*, CU9 *single unretouched PH flake*, CU11 *three worked flints Neo/B Age*, CU32 *B. Age worked flint pebble*, Hodgkinson *et al* 2000, Fig.3) all indicative of settlement in and around the New Cowper area.
- 3.2.14 **Bronze Age:** In the Bronze Age, human society continued to change and develop. Early metalwork finds are rare in Northern England, and metal production and ownership may have been the sole province of a privileged few. Environmental studies have identified cereal pollen dating from *c.*2000 BC, clearly demonstrating the presence of agriculture in the North Cumbrian Plain by the Bronze Age (Hodgkinson *et al*, 2000).
- 3.2.15 By the beginning of the second millennium BC, social change is reflected most clearly by the adoption of new burial practices. Cist burial, the practice of burying the dead in stone chambers dug into the ground and covered by slabs, seems to have become common at around this time throughout upland Northern England. Though cist burials are often found in isolation, it is suspected that they represent the surviving remnants of long vanished, or hitherto undetected, Bronze Age agricultural landscapes.
- 3.2.16 Another burial practice attributable to the Bronze Age is cremation burial, which is sometimes associated with barrow mounds. The ploughed out remains of twenty or so

barrows have been identified in Cumbria by aerial photography, and these may date to the Bronze Age (Bewley 1994). It is often unclear whether the contrasting practices of cist burial and cremation burial represent differences in chronology, or differences in social practice. At Ewanrigg, c.8km south west of New Cowper Quarry assessment area, fieldwalking discovered prehistoric pottery, and a series of subsequent excavations identified a total of 29 cremation burials and a single cist burial. Radiocarbon dates (2470 cal BC - 1520 cal BC) suggest that burials were being interred over a period of about 940 years during the Bronze Age. The relationship between the excavated cemetery at Ewanrigg, and an adjacent, unexcavated, settlement site (identified from aerial photographs) is unclear (Bewley 1986).

- 3.2.17 Settlement sites dating to the Bronze Age are seldom identified, although aerial photography of the coastal plain, particularly on the Abbeytown Ridge around the Overby quarry assessment area, has identified a number of possible Bronze Age sites that are yet to be tested by excavation (Bewley 1986, 37, Davies, 2006).
- 3.2.18 There are four North West Wetland fieldwalking finds within 1km of New Cowper Quarry (CU 8 collection of Prehistoric flints, CU9 single unretouched PH flake, CU11 three worked flints Neo/B Age, CU32 B. Age worked flint pebble, Hodgkinson *et al* 2000, Fig.3) all indicative of settlement in and around the New Cowper area. There are a number of undated cropmarks within the area, which could possibly be of Bronze Age in date (Higham and Jones 1975).
- 3.2.19 **Iron Age:** During the Iron Age the impression nationwide is of a major expansion in population as evidenced by an abundance of settlement sites. There is also clear evidence for a growing social complexity and hierarchy, as demonstrated by high status burials and contrasting settlement sites.
- 3.2.20 In Cumbria, however, settlement sites and burials attributable to the early and middle Iron Age are hard to identify. Once again, a number of unexcavated settlement sites identified by aerial photography may date to this period (Bewley 1994, including the enclosure at Wolsty Hall that continues in use into the Romano-British Period (Blake 1959). Two possible Iron Age hillforts are known at the southern end of the northern coastal plain at Carrock Fell and Swarthy Hill (Hodgkinson *et al* 2000). Possible Iron Age crouched burials have been excavated at Crosby Garrett (Hodgson and Brennan 2004).
- 3.2.21 Although dated settlement evidence is lacking, environmental studies for lowland Cumbria have shown a dramatic drop in tree pollen during the later Iron Age, suggesting that large tracts of forest were cleared for agricultural activity (Hodgkinson *et al.* 2000, 114-6).
- 3.2.22 No Iron Age material has positively been identified within a 1km radius of New Cowper Quarry. A 'British' earthwork settlement was recorded by Collingwood towards Hangingshaw Moss (HER 584), which could date to this period. The undated cropmarks within the proposed extraction area could also possibly be of an Iron Age date (Higham and Jones 1975).
- 3.2.23 **Romano-British:** The Roman advance on the Northwest during the 70s and 80s AD may have been launched from bases in the Northwest Midlands such as Wroxeter and Little Chester, proceeding north via the valleys of the Eden and Lune. By 72 AD the

earliest timber fort was constructed at Carlisle (Philpott ed. 2004), and the campaigns of Agricola, governor of Britain AD 78-84, consolidated the Roman hold on the North. During the Roman period there was certainly a heavy military presence in Cumbria. Hadrian's Wall, perhaps begun in 122 AD, was built to define the northern limit of the Roman Empire and a network of military roads, forts and settlements soon sprung up around the focus of Hadrian's Wall (Breeze and Dobson 1976). Until recent decades, the Roman military sites of Cumbria received the most attention from archaeologists, and as a result the nature of rural settlement during the Roman period is poorly understood (Philpott ed. 2004).

- 3.2.24 Although native settlement is poorly understood, environmental studies suggest that woodland clearances begun in the Iron Age continued apace, implying large scale cultivation of land (Philpott ed. 2004). As with preceding periods, a large percentage of the potential Romano-British rural sites around Maryport have only been identified by aerial photography. Rectangular field systems have also been identified (Bewley 1994). Where rural sites have been excavated, the traditional Iron Age building form, the roundhouse, continues in use into the Roman period, for example at Silloth Farm (Higham and Jones 1985). By the late third century, roundhouses were being superseded by rectangular timber buildings, like the example at Crosshill (Higham and Jones 1983).
- 3.2.25 The few recorded Roman burials from rural Cumbria suggest that Late Iron Age native practice, such as the use of crouched inhumation, continued into the Roman period. In contrast burials from Carlisle and the fort at Brough display great variety, such as respectively coffin burial and cremation (Philpott ed 2004). Approximately 3km northwest of New Cowper Quarry on the west Cumbria coast, lies the Roman cemetery of Beckfoot, which exhibits a variety of cremation and inhumation practices (HER 591). North of the cemetery lie the fort and associated vicus of Beckfoot (HER 625, 626); these have both been identified by aerial photography. The larger fort of Maryport is situated approximately 7km southwest of the study area (Philpott ed. 2004).
- 3.2.26 Intensive occupation of the fort at Carlisle continued until the fourth century, with extensive evidence for a vicus and associated civilian settlement to the south. The best evidence for the continued use of forts into the fifth century comes from Birdoswald (Wilmott 1997).
- 3.2.27 No Romano-British material has been discovered within a 1km radius of the proposed extraction area at Overby quarry. However, undated cropmarks in the surrounding area could possibly be of a Romano-British date (Higham and Jones 1975).
- 3.2.28 **Early Medieval:** Evidence for Early Medieval activity in North Cumbria is extremely limited. The end of the Roman economy has essentially deprived the archaeologist of diagnostic artefactual evidence on all but a small minority of sites (Higham 1986). As a result, archaeologists have been forced to look at other classes of evidence beyond the traditional domain of excavation and field survey data; these include place-name evidence, stone sculpture and early stone buildings.
- 3.2.29 Work in recent decades has shown that the Romans did not leave behind them a cultural vacuum. Archaeology has begun to fill the gap between the 'Dark Ages' and

- the colourful histories such as The Venerable Bede's, '*Historia Ecclesiastica*' written in the early eighth century.
- 3.2.30 The discovery of early medieval settlement sites in the region is rare, but a number of putative Romano-British rural sites, excavated more than forty years ago, may also have had later phases. Recent excavations at Stainmore in Cumbria have produced evidence for rectangular post-built buildings and sunken-feature buildings, perhaps dating to the seventh or eighth centuries AD (Newman ed. 2004).
- 3.2.31 Environmental studies focussing on pollen remains have indicated a continuing arable economy in Cumbria during the Early Medieval period (Hodgkinson *et al* 2000).
- 3.2.32 New Cowper Quarry lies within the modern civil parish of Holme St Cuthbert, which was a township within the historic parish of Holme Cultram. The Holme element in the parish name of Holme Cultram is Old Scandinavian, '*holmr*' meaning 'island in the marshland'. The Cultram element may refer to an older community of 'Culterham' (OE), which has been linked with an estate of the same name belonging to the See of Lindisfarne in AD 854 (Mills, 2003, 175).
- 3.2.33 The name Cowper may derive from the Old Scandinavian '*kaupa*', meaning purchased (land), or possibly from the Old English 'cupe', meaning the place by the coops or baskets (for catching fish). This latter explanation could be plausible given the location of the settlement close to the Dub stream and the surrounding marshes.
- 3.2.34 No early medieval finds have been discovered within a 1km radius of the proposed extraction area at New Cowper Quarry.
- 3.2.35 **Later Medieval:** In the eleventh century the political situation in Cumbria was volatile, with the emergent kingdom of Strathclyde to the north and the growing power of England to the south, competing for political control (Kirkby 1962). Much of the modern county of Cumbria remained outside Norman control (thus not being included in Domesday Book of 1086) until 1092, when William II marched north to Carlisle and drove out Dolfín.
- 3.2.36 During the twelfth century many settlements started to emerge and population throughout the area increased. Certainly the parish of Holme Cultram was largely fossilised by this time.
- 3.2.37 The Abbeytown Ridge, immediately north of New Cowper Quarry, is endowed with possibly the most comprehensive assemblage of documentary material relating to the late medieval and post-medieval exploitation and enclosure of the lowland mosses for the whole of Cumbria (Hodgkinson *et al* 2000, 137). This is largely due to the foundation of the Abbey of Holme Cultram, c.4km north of the assessment area, by Prince Henry, son of King David of Scotland in c.1150. A grant of land was made by Henry II when the area came under English control (LUAU 1999, 9).
- 3.2.38 Before Holme Cultram Abbey was founded, much of the Abbeytown Ridge seems to have been neglected by the 'post-conquest surge in the colonisation of the marginal lands taking place in the rest of Cumbria' (Winchester 1987, 38). The Abbey was probably responsible for the initiation of the permanent settlement and exploitation of the fringes of the wetlands of the Solway Plain in the twelfth century (Hodgkinson *et*

al, 200, 137). The initial land granted to the Abbey would included the New Cowper Quarry area, as the bounds described in the charter state that the southern boundary was Home Dub, falling into Black Dub (Hodgkinson et al forthcoming), which are the streams to the south of New Cowper. At the time of the Abbey's foundation, most of Holme Cultram was described as a waste forest ground (LUAU 1999) Documentation suggests that by 1175, five grange farms had been established in the area. Dykes (earthwork banks in this case) were also created to demarcate the monastic possessions (ibid.). So, by the end of the twelfth century, the New Cowper area fell under the jurisdiction of Holme Cultram Abbey. The farming of sheep, as is the case in the present day, was an important industry in this area along with the salt production and peat cutting.

- 3.2.39 When the monasteries were suppressed during the dissolution, the lands of Holme Abbey were leased out to tenant farmers. At the time of Elizabeth I there were no freeholders in the lordship (LUAU 1999, 9). The manor of Holme Cultram was retained by the crown until after the Restoration of Charles II, when in 1732 it was purchased by the Stephenson family (Nicolson and Burn 1777 183-4).
- 3.2.40 No recovery of finds with a medieval date have been made within a 1km radius of the proposed extraction area at New Cowper Quarry. It can be assumed that much of the land around the assessment area was used for pasture. Although, approximately 1km to the south of New Cowper Quarry, the place name Chapel Moss alludes to the site of a chapel of probable medieval date (HER 10162).
- 3.2.41 **Post-medieval:** In 1732, Holme Cultram manor was purchased from William Burton Esquire of South Luffington, Suffolk, by Edward Stephenson Esquire, of London. It was passed onto John Stephenson, and was in the hands of his heir in 1777 (Nicholson and Burn 1777, 183-4).
- 3.2.42 The origins of the settlement of New Cowper, or Cowper as it was called in the 19th century, are not known, but it was in existence in the 16th century (CROC PR/122/34). Tithe accounts from 1759 do not include mention of New Cowper for the payment of 'Tithes Bigg', or barley tithes (CROC PR/122/34), and it may be that most of the land was used for pasture (LUAU 1999).
- 3.2.43 From the end of the eighteenth century onwards, the land around New Cowper Quarrystead becomes far more visible, largely through the cartographic evidence. An enclosure map of 1814 suggests that much of assessment area was enclosed agricultural land by this date (CROC SRDBW/1).
- 3.2.44 By the nineteenth century tithe apportionment (CROC DRC8/93), a full breakdown of land ownership is possible. This shows the predominance of agricultural holdings in the New Cowper area.
- 3.2.45 There are four post-medieval HER sites recorded within a 1km radius of New Cowper Quarry. This includes a congregational chapel (HER 10324), a sundial (HER 10401), the Farm Barns of New Cowper itself (HER 40284) and a WWII decoy site at West Newton (HER 19986).
- 3.2.46 It can be assumed that much of the land around the assessment area was used for pasture or agricultural production. There is further evidence for earlier quarrying to

the immediate south east of the assessment area, where a sandpit was recorded in the 19th century at Mealrigg (HER 10400).

3.3 HISTORIC ENVIRONMENT RECORD (HER)

- 3.3.1 **HER:** there are 25 HER records within a 4km² study area centred on the New Cowper Quarry excavation areas. These include 4 entries of prehistoric date, and 13 entries of unknown date identified by aerial photography.
- 3.3.2 There are 14 known HER sites within a 1km radius of the New Cowper Quarry excavation areas, although none occur within the area itself. These include four cropmark sites (HER 3193, 3194, 3196 and 3237), one prehistoric earthwork site (HER 584), two known finds of prehistoric stone axeheads (HER 637 and 18963) and six other HER sites (HER 10162, 10324, 10400, 10401 and 19986). There are also four North West Wetland Survey finds (CU 8, 9, 11 and 32, see background for discussion).

3.4 AERIAL PHOTOGRAPHY

- 3.4.1 The area around New Cowper Quarry is particularly rich in aerial photographic evidence. This takes the form of cropmarks that evidence a number of different archaeological features. There are 13 cropmark sites within the assessment area (see Davies 2006).
- 3.4.2 These cropmark sites on the Abbeytown Ridge were first identified in the dry summer of 1975, and this led to an article by Higham and Jones (1975) that suggested these cropmarks represented a buried late-prehistoric landscape. The cropmarks have been further discussed by Bewley (1994) and by the Cumbria North West Wetland Survey (Hodgkinson et al 2000, 87, Fig 37). This work has shown that the North Cumbrian Plain is a major area of prehistoric activity and one of the few areas of Cumbria susceptible to aerial photography.
- 3.4.3 Around Overby quarry, 1km north east of New Cowper Quarry, features originally interpreted in 1975 as an annex to a large co-axial field system, have been re-interpreted as a possible sub-circular enclosure with associated small boundaries and possible ring-ditches. The morphology of this enclosure is similar to prehistoric enclosures identified by Bewley (1994), and attributed to the later prehistoric period. However, excavations in 1998 by the Carlisle Archaeological Unit at Scotby Road, Durranhill, Carlisle (McCarthy, unpublished) have suggested that this type of sub-circular enclosure could actually date to the Bronze Age or Neolithic Period.
- 3.4.4 Immediately, around the New Cowper Quarry site there are a number of cropmarks recorded on the County Historic Environment Record. These include four to the north of the assessment area, two of which (at NY 11790 45890 and NY 11900 46300) appear to relate to former field systems and possible settlement features. The other two sites (at NY 11010 46290 and NY 11900 46500) appear to be rectangular enclosures. These sites are situated on the drier, higher land above the mosses around the Dub watercourse to the south of New Cowper Quarry.

3.5 PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

3.5.1 In addition to aerial photographic reconnaissance (Higham and Jones 1975) and fieldwalking by the North West Wetlands Survey (Hodgkinson *et al* 2000), a number of archaeological investigations have taken place at New Cowper Quarry since 1999, in advance of mineral extraction. These works have included:

- **Land at New Cowper Quarry, Aspatria, Cumbria.** *Archaeological Assessment Report, Lancaster University Archaeological Unit, 1999:* A desk based assessment identified Neolithic, Iron Age/Romano-British earthworks, cropmark sites and two post-medieval sites in the vicinity of the proposed extraction area. NWSW flint finds were also noted. The assessment area was part of the Holme Cultram Abbey estate by 1150 AD. It was noted that there was considerable potential for prehistoric activity in the area.
- **New Cowper Quarry, Aspatria, Cumbria.** *Results of an Archaeological Evaluation, by Headland Archaeology, 2000:* Five trial trenches carried out in the southern area of proposed extension. Three trenches contained cultivation furrows and three possible pits were noted, but found to be non-archaeological, no finds were recovered during the evaluation so no further work was recommended.
- **New Cowper Quarry, Aspatria, Cumbria.** *Results of an Archaeological Investigation, by Elizabeth Jones for Headland Archaeology, 2003:* Open area excavation and sample trenching in the northern area of the mineral extraction area, identified a concentration of plough truncated cut features of possible late prehistoric date. These features included a possible trackway, ditches, a square open-sided enclosure, a pit and post alignment, and other isolated pits and post-holes. Dateable finds were restricted to a possible worked flint and two sherds of possible late prehistoric pottery. The North Pennines Archaeology Ltd. assessment report (Gaskell 2006) covers this work and the follow-up excavation of the rest of the area.
- **New Cowper Quarry near Aspatria, Cumbria.** *Geophysical survey by West Yorkshire Archaeological Services for Headland Archaeology, 2003:* A geophysical (fluxgate gradiometer) survey covering 6 hectares of a proposed northern extension to the mineral extraction area identified a large NE-SW aligned ditch, a curvilinear anomaly, and other less prominent features. The report suggested that the low magnetic susceptibility of the soils in the study area made detection of surviving archaeological features difficult.
- **New Cowper Quarry, Cumbria - Northern Extension.** *Results of an Archaeological Evaluation, by Kelly Clapperton, 2004:* An evaluation of the northern extension to the mineral extraction area identified several ditches, small pits (including one with late prehistoric pottery) and a post-hole. Later prehistoric pottery was recovered from a small pit in the southern part of field 1 (NCF-A), and evidence of prehistoric cereal cultivation was also recovered across the site. The small number of pits and post-holes were probably representative of later prehistoric occupation. It was suggested that this area

represented the northern limit of the prehistoric settlement identified in excavations to the south.

- **The Geoarchaeology of Deposits at New Cowper Quarry**, by *David Jordan of Terra Nova Ltd*. 2005a: Soil samples from features at the New Cowper Quarry excavations (NCF-B Davies 2006) were examined for magnetic susceptibility and it was concluded that the difficulties experienced by previous magnetic gradiometry mapping could be attributed to the low magnetic susceptibility of the soils at New Cowper.

- 3.5.2 At Overby and High House quarries, 1km north east of the New Cowper quarries, a desk-based assessment, geophysical survey and walk over survey has recently been undertaken in advance of mineral extraction (Davies 2006). This desk-based assessment, which included a detailed reappraisal of available aerial photographs, identified a number of cropmark features, which were located in the assessment area. These features, of probable prehistoric date, were originally identified by aerial photography in the 1970's, and were plotted and reinterpreted for the purposes of that assessment.
- 3.5.3 The results of the desk-based assessment indicated that the potential for Roman remains was low, although some prehistoric activity may have continued into the Romano-British Period.
- 3.5.4 In contrast, the potential for sub-surface archaeological remains dating to the prehistoric period was extremely high. Existing evidence within the proposed extraction area included a single piece of Neolithic/Bronze Age worked flint recovered from the High House permitted extraction area during the North West Wetland Survey, and numerous undated cropmark features throughout the proposed extraction area. These cropmarks seemed to represent the multi-phase remains of fields, settlement foci and possible ritual sites, which may date to the Prehistoric and Romano-British periods.
- 3.5.5 Soil coring was also undertaken at New Cowper Quarry to help assess the reliability of geophysical survey techniques for the evaluation of the archaeological potential of the proposed extraction areas (Jordan 2005b). A pilot geophysical survey of Overby Quarry (Bartlett, in Davies 2006) experimented with a range of mapping techniques, but had limited success.

4. ASSESSMENT RESULTS: THE FEATURES

4.1 INTRODUCTION

- 4.1.1 The Phase 1 excavation was undertaken over an eight-week period between 21st February and 12th April 2005. An area of 0.8ha was stripped of topsoil (100) using a mechanical digger in a single operation, under close archaeological supervision. The natural substrate was observed at a depth of 0.5m below ground level, and consisted of glacial sands and gravels (101). The area was subsequently cleaned and excavated by hand to the depth of these natural deposits. All features were recorded according to the conventions written in the North Pennines Archaeology Ltd. excavation manual (Giecco 2003).
- 4.1.2 Machine stripping of the topsoil and subsequent hand cleaning, revealed a number of sub-surface archaeological features cutting into the natural sand and gravel subsoil. The excavated features can be ascribed into two broad phases of land-use: *prehistoric* (including probable prehistoric features) and *post-medieval/modern*.
- 4.1.3 **Prehistoric features:** The majority of the features observed are likely to be prehistoric in date. For the purposes of discussion the excavation has been divided up into five areas (Figure 3). The features from Phase 1 (NCF-A) are outlined below (Areas 1-5), with further discussion in Section 7. Context numbers are shown in brackets, with square brackets used for cut features, and round brackets used for fills. A complete list of contexts is included in Appendix 1. Where it has been possible to group features together, the group numbers are also shown.
- 4.1.4 **Post-medieval features:** The site was bisected by a series of shallow plough furrows, spaced approximately 10m apart, and other more closely-spaced linear features on the west side of the site (Group 7). All were aligned northwest to southeast, and truncated many of the earlier features. These were broadly dated to the post-medieval period, as they were parallel with the post-medieval Parliamentary Enclosure field boundaries, and contained post-medieval iron objects in their fills. No medieval features were positively identified at the site, although it is possible that some of the plough furrows were medieval.

4.2 AREA 1

- 4.2.1 Area 1 was located at the southwest corner of the excavation and measured 28m by 40m. It contained a series of five prehistoric linear and curvilinear features and nine discrete sub-circular features interpreted as pits or postholes (Figure 4). The area was heavily truncated, and several of these features were cut by medieval or post-medieval plough furrows [397], [399] and [476].
- 4.2.2 **Linear and curvilinear features:** The northern-most feature [264] consisted of a narrow curvilinear gully. The gully ran northwest for approximately 8m, before gradually curving southwest, and running northeast-southwest for a distance of approximately 20m. The feature was 0.28m wide, and between 0.15m and 0.70m deep, with steep sloping sides and a concave base forming a U-shaped profile. Its fill (265) consisted of a grey-brown homogenous silty-sand which produced no finds.

- 4.2.3 Five slots were excavated through this feature. One of these contained evidence to suggest that this ditch may have been recut, as an earlier ditch [420], measuring 0.45m wide and 0.22m deep with a V-shaped profile, was revealed in section. This earlier ditch cut was filled by a 0.14m-depth of mid-brown silty-sand containing charcoal flecks (421), above which was a 0.07m-deep layer of re-deposited sand (422). The southern end of the ditch [420] was also excavated, revealing a shallow sub-oval pit [387] beneath the ditch terminal. This was 0.5m in diameter, and was filled by homogenous silty-sand (388) similar to that filling the ditch. Six stake holes [381] were located close to the ditch terminal on the south and west sides (Figure 5), and are probably associated. These were approximately 0.05m in diameter, and between 0.05m and 0.1m deep, filled by dark brown silty-sand (382). The ditch was cut by two shallow plough furrows [397] and [399], each of which traversed the site in a northwest – southeast direction, and measured 0.25m to 0.30m wide and 0.05m deep.
- 4.2.4 To the southeast of this gully was a denuded linear feature [262/298], orientated northeast–southwest, which was approximately 32m long, 0.17m wide, and between 0.10 and 0.70m deep. It was filled by a homogenous mid-brown silty-sand (263), which did not produce any finds. The course of this feature was uncertain owing to the high level of truncation, and as a result no physical relationship between this and the curvilinear ditch [264], or nearby pits could be determined.
- 4.2.5 Immediately to the southeast of this feature was a shallow linear ditch [260], which was aligned southwest-northeast. This feature was 43m long, 1.10m wide and 0.45m deep, with steep sloping sides ($>45^\circ$) and a concave base. It was filled by a homogenous mid-brown silty-sand deposit (261). Three slots were excavated through this feature, one of which [439] produced a single small piece of unworked flint (see Section 5) from its fill (440). As the ditch runs towards the southwest corner of the site, it changes character and becomes considerably narrower (0.36m wide) and shallower (0.07m deep), probably due to extensive plough truncation. This feature was also cut by a plough furrow [476], which traversed the site in a northwest to southeast direction, measuring 0.50m wide and 0.05m deep.
- 4.2.6 Parallel with, and 1.1m to the southeast of the ditch [260] was a similar shallow linear feature [258], which was 17m long, 0.75m wide and 0.15m deep, with moderately sloping sides (approximately 45°) and a slightly concave base. It was filled by a deposit of homogenous mid-brown silty-sand (259) with small charcoal flecks throughout the fill. This context produced 1 piece of modern coking coal, which suggested a modern disturbance to this feature. This feature was also cut by the plough furrow [476].
- 4.2.7 The partial remains of another linear feature [443/448] were situated 0.9m to the southeast. This feature was 13m long, 0.50m wide and less than 0.1m deep, filled by homogenous mid-brown silty-sand (444). The highly truncated nature of this feature made interpretation difficult, but it was parallel with the similar shallow linear feature [298], situated 2.25m to the northwest.
- 4.2.8 Based on the alignment and dimensions of these linear features, it is possible to discern three phases of activity at the southwest corner of the site. The two parallel ditches [264] and [258], spaced only 1.1m apart, with similar profiles and fills may be

viewed as elements of a single truncated boundary feature (Group 1). Similarly the two highly truncated parallel features [443/448] and [262/298], spaced 2.25m apart, may also be viewed together as a distinct phase of land use (Group 2), on a slightly different alignment to the Group 1 features. The curvilinear ditch [264] appears to have replaced an earlier boundary feature, possibly a fence. The presence of stake holes surrounding the ditch terminal is significant, although their purpose is uncertain (Group 3).

- 4.2.9 **Pits and postholes:** The curvilinear ditch [364] cut two earlier features on its north side, a small sub-circular feature, possibly a posthole [401], and a larger sub-oval hollow [403]. The smaller feature [401] measured 0.62m by 0.40m and was 0.22m deep, with moderately sloping sides tapering to a slightly concave base. It was filled by homogenous brown sand with charcoal flecks (402). No finds were recovered from this deposit. The second feature [403] was a very shallow sub-oval pit or hollow, which measured 2m in diameter, being 0.05m deep, and was filled by mid-brown sand containing a number of charcoal flecks (404), similar to the fill of the first feature (402).
- 4.2.10 The curvilinear ditch [364] was itself cut by an irregularly shaped pit [311], which had previously been exposed by the 2004 archaeological evaluation (Clapperton 2004). This was interpreted as a fire pit, measuring 2.0m long, 0.75m wide and 0.40m deep, with moderately sloping sides (< 45°) tapering to a flat base (Figure 5, Plate 1). The feature was filled by brown sand (478), which was overlain by charcoal-rich sand (479). This was sealed by a layer of dark brown sand (480), which was in turn sealed by a second charcoal rich layer (481). Context (481) was sealed by a thin grey clay layer, itself sealed by a charcoal-rich sand deposit (312), which produced fragments of burnt bone and fire-cracked stones. The bone fragments each measured < 10mm diameter and were therefore difficult to identify.



Plate 1. Section through fire pit [311] in Area 1, looking north

- 4.2.11 Two smaller pits were located to the south of this feature. The first pit [362] was sub-circular in plan, measuring 0.4m in diameter, and 0.17m deep. The second pit [296] was sub-oval and measured 0.9m by 0.7m. Another sub-circular pit [437] was located 13.5m to the southwest of these and measured 0.7m in diameter. All were filled by homogenous brown sand; (363), (297) and (438) respectively, and were devoid of finds.

- 4.2.12 The final three pits were located on the north side of Area 1. The largest [292] measured 1.1m in diameter and was 0.30m deep. It comprised a steep-sided, flat-bottomed pit, and was filled by homogenous mid-brown sand (293), which contained some large pieces of charcoal and fragments of bone. This feature was cut on its west side by one of the post-medieval plough furrows [397]. Situated 2.7m to the east of this was a smaller sub-oval pit [294] measuring 0.5m by 0.4m, being 0.3m deep, with a rounded base. It was filled by black-grey silty-sand (295), again containing charcoal and fragments of bone. Situated 5.7m to the west of the large pit [292], was another sub-oval pit [290] measuring 9.2m by 6.3m, and 0.4m deep with a rounded base. This pit was filled by dark brown-grey silty-sand (291), and had a large stone placed at the base. No other finds were recovered from this pit.
- 4.2.13 Apart from the possible fire pit [364], the pits identified in the southern part of Area 1 provided very little information on which to base an interpretation. They were all heavily truncated, contained similar fills of silty-sand, and were devoid of finds. The presence of charcoal flecks in the fills of two of the pits [401] and [403] is indicative of anthropogenic activity but is unremarkable. The two of the three pits on the north side of Area 1 [292] and [294] contained fragments of burnt bone, and these may be related to a cluster of pits with similar fills, located 12m to the north in Area 2 (see below).

4.3 AREA 2

- 4.3.1 Area 2 was located to the north of Area 1, on the west side of the site, and was crossed by the same two plough furrows, [397] and [476], seen in Area 1. A number of tree boles (caused by the falling or rotting of a tree stump) were identified in this area, which are not discussed further. Although archaeological features were absent from large parts of Area 2, the excavation revealed a number of prehistoric pits and stake holes (Figure 6).
- 4.3.2 **Pits, postholes and stake holes:** A cluster of nine pits (Group 4) was revealed on the south side of Area 2 (Plate 2, Figure 7). Eight of the pits [284], [286], [288], [370], [372], [374], [376] and [378] were sub-circular in plan and measured between 0.3m and 0.7m in diameter, being on average 0.5m deep. The eighth was a larger sub-oval pit [385] 1.6m long and 1m wide, on the west side of the pit cluster.
- 4.3.3 The fills of the smaller pits contained similar burnt deposits, and four contained substantial amounts of prehistoric pottery (Figure 7). Pit [284] contained a single fill of black-brown silty-sand (285) containing charcoal, fragments of prehistoric pottery and small burnt stones. Pit [286] was filled by dark grey-brown silty-sand (287), which contained large amounts of charcoal flecks with some small fragments of prehistoric pottery, and large amounts of burnt hazelnut shell. This pottery was dated to the Early Neolithic period. The fill of pit [288] was similar dark grey-brown silty-sand (289), containing charcoal, fragments of prehistoric pottery and burnt hazelnut shells. Large pieces of Early Neolithic pottery were revealed in the bottom of this pit (Plate 3). Pit [370] was filled by similar grey-brown silty-sand (371), which also contained charcoal, fragments of prehistoric pottery and burnt hazelnut shells. The fills of pits [372], [374] and [376] were similar grey-brown silty-sand (373), (375)

and (377), containing small flecks of charcoal. The last pit [378] contained similar grey-brown silty-sand (379), but contained no finds.



Plate 2. Cluster of pits (Group 4) in Area 2, looking north

- 4.3.4 The sub-oval pit [385] was 1.6m long, 1m wide, and 0.5m deep, with irregular sides and base. It was filled by a primary deposit of dark brown-black silty-sand (386), which contained significant amounts of burnt bone, hazelnut shell, fragments of prehistoric pottery and a possible pitchstone blade (see Section 5). Large pieces of prehistoric pottery (from different vessels) were revealed in the bottom of this pit. Within this deposit (386) were lenses of red-brown silty sand (432) containing further fragments of prehistoric pottery.
- 4.3.5 Another small pit [391] was situated 4.3m to the southwest of the pit cluster. This was located within a shallow depression, which measured 0.95m by 0.6m. The pit measured 0.6m by 0.5m and was 0.25m deep with steep sides and a rounded base. It was filled by dark brown silty-sand (392), the top of which was tightly packed with stones. No other finds were recovered from this feature, but it was surrounded by a series of 10 stake holes [405]. These were filled by dark brown silty-sand (406) but contained no finds.



Plate 3. Plan of half-sectioned pit [288] showing deposit of Early Neolithic pottery
(scale interval = 10cm)

- 4.3.6 Two further pits [409] and [465] were situated 8m to the north of the pit cluster (Group 4). The most southerly feature was a sub-circular pit [409], which measured 1m by 1.2m and 0.3m deep, with a flat base. This contained two fills. The first was a 0.17m depth of dark brown sandy-silt (410) containing flecks of charcoal and some larger charcoal pieces (<20mm). Above this was a 0.13m-deep burnt deposit of black sandy-silt (408) containing charcoal and fragments of burnt bone, similar to those discussed above. The second pit [465] measured 0.3m by 0.5m and 0.16m deep with moderately sloping sides and a rounded base. The pit was filled by grey-brown sand (466) containing some flecks of charcoal and bunt stone.
- 4.3.7 A small pit [472] measuring 0.37m in diameter and 0.09m deep, was identified at the northwest corner of Area 2, adjacent to two postholes, [468] and [470], measuring 0.2m-diameter, 0.08m-deep. All three features were filled by homogenous mid-brown sand, (473), (469), and (471), containing charcoal flecks. No finds were recovered from these features. All three had suffered root disturbance .
- 4.3.8 South of these, was an isolated, shallow sub-circular pit [451] measuring approximately 1.2m in diameter, which was filled by grey-brown silty-sand (452). This was cut by four triangular and square stake holes: [457], [459], [461] and [463], which appeared to be modern. No finds or material suitable for dating were recovered from these features. However a modern nail was recovered when cleaning the pit, which along with the geometric shape of the stakeholes suggested this was a modern feature.
- 4.3.9 The pit cluster (Group 4) was significant, as the pits contained similar burnt deposits, and five of the features contained quantities of prehistoric pottery, which was

deliberately laid in the bottom of two of the pits. Some of the pottery was dated to the Early Neolithic period, whilst the remainder could only be broadly dated to the prehistoric period. This evidence suggested that structured deposition was taking place in Area 2, possibly associated with cremation burial, the evidence for which has not survived, apart from some small fragments of burnt bone. The pits to the northeast may be associated with this group as one [409] also contained burnt bone. The pit [391] with stake holes [405] to the southwest may also be associated, although the absence of finds makes this uncertain.

4.4 AREA 3

4.4.1 Area 3 was located at the southeast side of the excavation and measured approximately 49m by 54m. A number of post-medieval or modern linear features (Group 7) traversed Area 3 on the southeast side of the site; [104], [106], [108], [112], [116], and [118], all aligned northwest to southeast, and spaced between 4m and 5m apart. The fills of these features contained fragments of post-medieval and modern iron objects, relating to the agricultural use of the field. The features were shallow, being 0.05m to 0.10m deep, and were interpreted as the truncated bases of post-medieval or later plough furrows. An alignment of 13 stake holes [132] was identified in association with the western-most feature [104], which in profile resembled a shallow ditch. These ran along its western edge, at the south end of the site, and were interpreted as a former fence line. It is possible that this ditch was formerly part of a field boundary. Two medieval or post-medieval plough furrows [254] and [256] also crossed Area 3 on the southwest side. A substantial linear ditch, a cairn, pits and postholes of probable prehistoric date were also revealed in Area 3 (Figure 8).

4.4.2 **Linear ditch:** A substantial ditch [102] was revealed (Group 6), orientated north to south, which ran across the entire eastern extent of the excavation over a distance of 82m, being 1.75m wide, with an average depth of between 0.50m and 0.75m. The ditch had gradually sloping sides ($<45^\circ$), tapering to a slightly concave base, and was filled by a single uniform fill (103), of dark brown silty-sand. Five slots were excavated through the ditch in Area 3 (Plates 4 & 5). Although, no material was recovered from within the fill with which to date this feature, a prehistoric date is not unlikely. It is clear that the ditch continued beyond the excavated area to the north and south, and was a major boundary feature, probably forming part of an early field system.



Plate 4. Linear ditch [102] in Area 3 during excavation, looking northwest



Plate 5. Section through the linear ditch [102] in Area 3, looking north

- 4.4.3 **Cairn:** A sub-oval stone-built cairn [122] was located on the north side of Area 3, situated 3.4m to the east of the ditch [102]. This comprised a spread of stone measuring 3.6m long, 1.6m wide and approximately 0.75m deep. The cairn had been bisected by the post-medieval ditch [178=104]. It was excavated and recorded in 10cm spits (Figure 9).
- 4.4.4 The cairn was made up of rounded cobbles and larger boulders, which sat within several layers of homogenous dark brown sand (142), (173), (177), and (181). These sat within a sub-oval shallow cut [122], measuring 2.4m by 4m, aligned northeast to southwest (Plate 7). Cut into the top of the cairn was a small shallow pit [182] measuring 0.38m in diameter. This contained homogenous brown sand (197), which contained a fragmented Beaker vessel (Pot 5, see Section 5). Above this deposit was a disturbed layer of brown sand (183) containing further fragments of pottery. The post-medieval ditch had cut the east side of this pit.
- 4.4.5 In the vicinity of the cairn, the ditch [178] contained a lower fill of brown sandy-silt (123), interpreted as disturbed cairn material, and upper fill of brown sandy-silt (179). The lower fill contained sherds of prehistoric pottery (Pot 2), and a near-complete Beaker Vessel (Pot 3, Plate 6), which was lifted prior to the excavation of the cairn. A flint thumbnail scraper was also recovered from this fill (see Section 5). Close to the cairn on the north side was a second small sub-circular pit [174], which measured approximately 0.4 in diameter, but had been heavily truncated by the ditch, making the relationship between the pit and the cairn uncertain. This pit was filled by a brown sandy-silt (175), above which was a spread of charcoal (176). A sample of this charcoal was prepared for radiocarbon dating (see Section 5).
- 4.4.6 Following the removal of the cairn material, a sub-rectangular cut (383) measuring 1.2m by 1.9m was identified (Plate 8), aligned northeast-southwest, and filled by dark brown sand (331) containing occasional pieces of charcoal. Following the removal of this deposit, a dark brown irregular stain was visible on the east side of the pit (342). This was interpreted as the possible location of an inhumation although no other evidence for this survived.
- 4.4.7 Four postholes were situated around the rectangular cut to the northeast [244], northwest [167], southeast [242] and southwest [300]. Each measured c.0.5m in diameter and was filled by homogenous red-brown sand; (245), (168), (243) and (301) respectively. The fill of posthole [242] contained several packing stones (Plate 9). Two of the postholes were situated beneath the cairn material, indicating the posts were in place prior to the construction of the cairn. A number of stake holes [486] were also visible on the west side of the rectangular cut, and outside the cairn to the north, west and southeast. These were filled by red-brown sand (487). The innermost stake holes were sealed beneath the cairn material (197).
- 4.4.8 On the basis of the excavated evidence it can be suggested that the stratigraphic sequence (see Matrix 1, Appendix 1) for the burial monument (Group 5) comprised the excavation of the rectangular pit [383] for an inhumation (although no physical evidence for this survives). Four posts [167], [242], [244] and [300] were placed around the grave, one on each side, either to demarcate the area, or as part of a funerary structure. The presence of stake holes [486] also suggests the area of the grave was fenced, or had a structure built around it. A stone cairn [122] was placed

over the grave, incorporating two of the posts and a number of the stakes. At a later date, at least one pit [182] was cut into the top of the cairn. Three Beaker vessels were deposited in or near the monument. These were disturbed when a post-medieval ditch [178] cut through the cairn.



Plate 6. Beaker vessel recovered from the context (123) in the vicinity of the cairn



Plate 7. Stone cairn [122] in Area 3 during excavation, looking northeast



Plate 8. Rectangular grave cut [383] revealed beneath the cairn material, looking southeast



Plate 9. Section through posthole [242] showing packing stones

- 4.4.9 **Pits:** A large sub-oval pit [151] was located 13m to the southwest of the cairn, which was cut by the linear ditch [102] on the west side. This measured 1.50m in diameter, being 0.42m deep and had moderately sloping sides, tapering to a slightly concave base. This pit was filled by dark brown sand with grey mottling (152), which produced fragments of charcoal and burnt bone. An irregular-shaped pit [229] was adjacent to this feature, and consisted of a steep sided, V-shaped cut, which measured 2.30m long 0.85m wide and 0.58m deep. This feature was filled by homogenous grey silty-sand (230), and did not produce any anthropogenic material, making interpretation difficult.
- 4.4.10 Two postholes [169] and [171] were situated *c.*4m to the west of the large pit [151]. Both measured 0.3m by 0.25m, being 0.1m deep, and contained dark grey-brown sand (170) and (172). Neither produced any finds, but did contain charcoal suggesting possible burning. A small pit [313] measuring 0.9m by 0.75m and 0.18m deep was situated 4m to the north of these. It contained dark brown silty-sand (314) with some flakes of charcoal.
- 4.4.11 A small sub-circular pit [130] was revealed in the south-east corner of Area 3 (not shown). The feature measured 0.48m by 0.50m, being 0.20m deep, and was cut by a post-medieval plough furrow [118]. The pit was filled by homogenous dark reddish-brown sand (131), which produced part of a prehistoric pot. The pot has been dated to the Early Neolithic on typological grounds (see Section 5). This context also produced a significant number of charred hazelnut shells, a sample of which was prepared for radiocarbon dating (see Section 7).
- 4.4.12 Pit [130] contained a similar deposit to those in the Area 2 pit cluster (Group 4). The relatively small size of the pit, and the nature of the contents, suggests a structured deposit, rather than rubbish disposal, which again may be associated with cremation burial.

4.5 AREA 4

- 4.5.1 Area 4 was located towards the centre of the excavation, to the north of Area 3 and measured approximately 46m by 57m (Figure 10). The post-medieval ditch [104] and furrow [118] crossed the east side of this area. Plough furrows [254] and [256] crossed this area to the west. The northern part of the linear ditch [102], also seen in Area 3, was situated on the east side of Area 4. Archaeological features were absent from the main part of this area. However, four pits were identified on the eastern side of Area 4, and a number of pits and postholes were located on the west side.
- 4.5.1 **Pits:** An irregularly shaped pit [165] was revealed on the east side of this area, close to the edge of the excavation. It was 4m long, 2.1m wide, and 0.7m deep and was filled by homogenous red-brown sand (166). No finds were recovered from this feature.
- 4.5.2 Approximately 3m west of this feature was a sub-circular pit [163], which measured *c.*1.2m in diameter, being 0.52m deep. This was filled by red-brown sand (164), which was devoid of anthropogenic material. This pit cut the west side of the linear ditch [102], and was truncated by the post-medieval plough furrow [118].

- 4.5.3 Pit [190] was located at the northeast corner of Area 4, and was sub-oval in plan, measuring 1.8m by 0.7m and 0.6m deep. The pit was filled by red-brown sand (191), which produced a single flint flake (debitage). The pit also contained a medium-sized granite boulder at its centre. South of this pit was an irregularly shaped pit [188], which measured 2.2m long, 0.4m wide and 0.4m deep. This was also filled by red-brown sand (189), but was devoid of finds.
- 4.5.4 **Postholes:** A sub-circular feature [334] was located on the west side of Area 4. It was 1.1m in diameter, 0.6m deep, and contained mid brown sandy-gravel (335), which was devoid of finds. A 0.6m-diameter post-pipe (337) was clearly visible in section, and consisted of a black, charcoal-rich layer (336), sealed beneath red-brown sand (338). Situated 3.6m to the southeast of this was another posthole [329], which was 0.4m in diameter and 0.3m deep and filled by red-brown silty-sand (330). No finds were recovered from these features.
- 4.5.6 A row of three further postholes [234], [236] and [238] was revealed 8m to the south, aligned east-west. These were sub-oval in plan, spaced 1m apart, and measured between 0.27m and 0.43m in diameter, being 0.2m deep. All contained dark-grey silty sand (235), (237) and (239), and were devoid of finds.
- 4.5.7 The paucity of finds from the pits in Area 4, makes interpretation and dating of these features problematic, although a prehistoric date for the pits is not unlikely. The single flint flake discovered in pit [190] could be residual. The isolated nature of the postholes makes interpretation difficult in relation to the rest of the site.

4.6 AREA 5

- 4.6.1 Area 5 was located on the north side of the excavated area, and was largely sterile of archaeological features. It measured 48m by 65m and was traversed by two medieval or post-medieval plough furrows [254] and [256]. The post-medieval linear ditch [104], which was seen in Area 3 and Area 4, was intermittently visible in Area 5. One pit [227] and a number of stake holes were identified in this area. A modern sheep burial [216] and bonfire [179] were also recorded.
- 4.6.2 **Pit:** A sub-oval pit [227] measuring 1.9m by 1.5m was revealed in the line of the denuded post-medieval linear feature [104/178]. The pit was 0.35m deep with moderately sloping sides and a flat base, filled by red-brown sand (228) with occasional charcoal flecks.
- 4.6.3 **Stake holes:** To the north of the sub-oval pit [227], 22 stake holes [220] were identified, being on average 0.1m in diameter, and 0.15m deep (Figure 11). The stake holes formed two irregular rows, approximately 4.5m long and 1.5m wide, located either side of the post-medieval ditch [104], which was only intermittently visible in this area (Plate 10). Two stake holes were also located 0.3m to the south and southeast of the sub-oval pit [227]. The stake holes were between 0.3m and 0.5m apart, and were filled by red-brown sand (221), which did not produce any anthropogenic material.
- 4.6.4 The distribution of the stake holes suggests that they formed part of a single boundary feature, or possibly two parallel structures e.g. fences. It is likely that these were

associated with the linear ditch [104], probably forming part of a field boundary. A crude alignment of an additional 21 stake holes [209] was revealed at the north end of this feature. Another alignment of stake holes [132] was identified at the south end of this feature in Area 3. Although undated, it is not unlikely that all these features are post-medieval in date and are associated with a former field boundary.



Plate 10. Stake holes [220] of a field boundary on the north side of the site, looking southeast

- 4.6.5 **Modern Features:** A shallow spread of charcoal (180) was revealed at the northeast corner of the site measuring 2m by 2.3m and 0.15m deep. This was interpreted as the location of a possible bonfire [179] of post-medieval or modern date. A modern sheep burial [216] was revealed 3m to the south of this feature. This comprised a sub-circular pit measuring 0.7m by 0.4m and 0.3m deep, filled by grey sand (217), containing a sheep skeleton.
- 4.6.6 The majority of the features in Area 5 could be dated to the post-medieval or modern periods. No prehistoric features were positively identified, indicating that the north part of the site was outside the focus of prehistoric activity.

5. ASSESSMENT RESULTS: THE ARTEFACTS

5.1 INTRODUCTION

By Joanne Beaty

- 5.1.1 This section covers the artefacts that were retrieved during the excavation. The artefacts have been listed by material type, and quantified. The finds are currently held at the NPA offices at Nenthead, Alston, Cumbria, and will be deposited with Tullie House Museum in due course. The quantification of the datable material archive is set out below, and shown in Table 1.
- 5.1.2 The finds assemblage consisted predominantly of coarse prehistoric pottery comprising 252 fragments in total (see Section 5.3 below), and 8 pieces of worked flint (see Section 5.2 below). The remainder of the finds included fire cracked stone (15 pieces), hazelnut shells (26 fragments), almond shell (1 fragment), 3 hammer stones, burnt shale, charcoal, and burnt bone fragments.
- 5.1.3 One unstratified fragment of Roman Samian ware was recovered, which exhibited signs of modification and may have been used as a pendant or gaming token. This item measured 30mm x 15mm and was heavily abraded. The fragment may be part of a pendant as there is evidence of part of a cylindrical hole.
- 5.1.4 The remainder of the finds were entirely consistent with post-medieval activity, and included 82 iron implements of agricultural origin, 25 sherds of post medieval pottery, 1 glass bead, and 3 bullets or rifle casings, the majority of which were recovered from unstratified contexts.

Table 1. Finds recovered during the excavation at New Cowper Quarry (NCF-A)

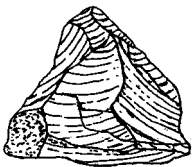
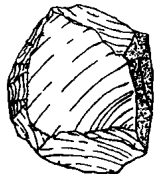

Context	Prehistoric Pot	Coke	Burnt Stone	Post Med Pot	Clay Pipe Stem	Flint	Hazelnut Shell	Almond Shell	Wooden Object	Stone	Samian	Glass/Crystal	Iron (Fe)	Burnt Shale	Coal	Cu Alloy	Charcoal	Burnt Bone	Rifle Casings	Baked Clay	Sandstone
100	4	5	4	19	1	4			1	1	1	1	2	4	11	1	2			1	
109														3							
117				2																	
123	17					1															
125					1																
128																	2				
129		3																			
131	25						5	1													
149		2																			
180			3																		
183	1																				
189						1															
203		3																			
206	3																				
259		5																			
285			3											1			2				
287	22						20														
289	105		3														1				1
318												1									
345																					1
368						1												1			
371	20																				
386	54						1														
440						1															
466			2																		
U/S	1			4	1								80	1		7		1	3		
TOTAL	252	18	15	25	3	8	26	1	1	1	1	1	82	9	11	8	7	2	3	1	2

5.2 THE FLINT

By Kenneth Denham

- 5.2.1 The flint assemblage consisted of eight pieces of worked lithic material, three of which were tools. The remainder were waste material from flint working (debitage). The flint assemblage is detailed in Table 2, where the flint tools are also illustrated.

Table 2. Flint recovered during the excavation at New Cowper Quarry (NCF-A)

CONTEXT	SF NO.	DESCRIPTION	ILLUSTRATION
100	3	End scraper. Triangular. 21mm long x 21mm wide. Retouched at proximal end Grey flint	
100	4	Debitage flake. 29mm long x 10mm wide. Obliquely truncated at proximal end. Displays some evidence of blade removal on dorsal face. Heavily patinated and thermally damaged on dorsal face. Local beach flint.	
100	5	Debitage flake. 20mm long x 12mm wide. Evidence of blade removal on dorsal face. Obliquely truncated at proximal end Grey flint.	
100	8	Debitage. 10mm long x 5mm wide. White flint	
123	2	Thumbnail scraper. 20mm long x 20mm wide. Retouch along entire length of left hand margin. Cortex remaining on right hand margin. Greenish brown flint	
189	6	Debitage flake. 28mm long x 12mm wide. Obliquely truncated at proximal end. Displays evidence of blade removal on dorsal face. Local beach flint.	
386	7	Blade. 22mm long x 8mm wide. Truncated at proximal end Pronounced conchoidal profile on ventral face. Evidence of previous blade production on dorsal face. Material uncertain but probably pitchstone.	
440	6	Debitage flake. 28mm long x 13mm wide. Heavily patinated and thermally damaged on dorsal face. Local beach flint.	

- 5.2.2 As a result of the small size of the assemblage, it is not possible to interpret any activities, which might have taken place on the site. There was no evidence of stone tool production on the site, and it must be concluded that the lithics were imported from elsewhere. Materials included locally produced beach flint, and flint from outside the region. The possible pitchstone blade would indicate a provenance from Southwest Scotland, with the material sourced to the Isle of Arran. This may represent the most southerly example of such material found to date.
- 5.2.3 In some of the debitage flakes, the blade removal seems to be from narrow blade technology, which is usually associated with the Mesolithic, although current research indicates that the use of such technology also extended well into the Neolithic period.
- 5.2.4 The thumbnail scraper from context 123 is associated with Late Neolithic/Early Bronze Age stone tool production and, as with the Beaker pottery, is diagnostic of this period.

5.3 THE PREHISTORIC POTTERY AND FIRED CLAY

By Carol Allen

- 5.3.1 **Introduction:** This section provides an assessment and summary of the prehistoric pottery found on this site. The pottery types are identified (when these are known), and the likely dates for the vessels are given together with a summary of the fabric types, wherever possible. The potential of the assemblage is assessed, and recommendations for further work are given. A catalogue of the pottery is provided in Table 3. Some of the material was identified as fired clay, and this is also detailed.
- 5.3.2 **Methodology:** The pottery has been recorded and described according to the guidelines of the Prehistoric Ceramics Research Group (PCRG 1997). In addition, this report conforms to the standards and guidance of the Institute of Field Archaeologists (IFA 2001). All the sherds have been counted, weighed and recorded.
- 5.3.3 A sherd from each pot has been examined by use of a x2 binocular microscope in order to allow the fabric types to be summarised. The part of the pot remaining, rim, body or base is also recorded, together with the number of vessels estimated to be present and those requiring illustration for a report.
- 5.3.4 **Quantifications:** In total 254 sherds (and 239 fragments, <10mm), weighing a total of 3273g were recovered from the site. This represents at least 13 separate vessels, although it is possible that some of the assigned body sherds may have originated from different pots. The exact number of vessels will be defined when the fabric types have been securely identified.
- 5.3.5 The number of sherds, weight, fabrics and abrasion levels for each context are recorded in Table 3. The larger part of Pot 3, the fine Beaker vessel from the cairn, remains in a collapsed condition within a box. These sherds have not been disturbed in order that it may be possible to reconstruct the vessel. The total number of sherds and weight has therefore been estimated based on the available material.

- 5.3.6 **Fabric Types:** The tempering materials of the pottery have been summarised for this assessment, but would require a more detailed study for a full report. The types of inclusions have been recorded on Table 3, but no attempt has been made to quantify the inclusions or to qualify the size or angularity of the tempering. If the fabrics were studied further and recorded in more detail it might be possible to link tempering type and quantity to vessel type and form.
- 5.3.7 The most common form of tempering material in eight of the pots (62%) is a granitic type with inclusions of quartz, feldspar and biotite mica. The exact type and source of this material should be determined by thin section analysis. Four vessels (33%) have angular rock tempering with some quartz, and again the type should be determined by thin section. Some burnt sherds are very light and seem to have been tempered with limestone some of which has been leached from the pottery. Thin section analysis should be able to determine the type and origin of the material.
- 5.3.8 Study of the tempering materials can provide a useful regional database for determining chronology of future finds of prehistoric pottery (Allen and Hopkins 2000, fig. 8), and can assist with understanding technology of ceramic manufacture. In addition, investigation of the source of the tempering materials may improve understanding of trade and movement of pottery in prehistory.
- 5.3.9 The site lies on Triassic sandstones above Upper Coal Measures seen in bores near Aspatria (Taylor *et al* 1971, 64), but carboniferous limestones and volcanic rocks lie within 10 to 20 kilometres of the site (*ibid*, plate 13). Prehistoric pottery often contains interesting tempering materials, which are not local to the site as seen in Neolithic pottery at Brougham (Peacock 1972). Further information on the pottery inclusions is required for any conclusions to be drawn on nature and source of the fabric types.
- 5.3.10 **Pottery Forms and Dates:** The pottery assemblage includes early Neolithic pottery, Peterborough ware and Beaker pottery. Sherds representing six pots (46%) are clearly prehistoric in date but their exact type cannot be determined as there are no diagnostic features of form or decoration to assist with identification. When fabric types have been clarified it may be possible to assign these sherds to a pottery type.
- 5.3.11 Three vessels have clearly been identified as early Neolithic date and three are of Beaker type. One sherd, which was unstratified, is of Peterborough ware.
- 5.3.12 **Early Neolithic:** A minimum of three early Neolithic pots has been found on this site (Pots 4, 7 and 8). Two are represented by sherds from round bottomed pots and each has lugs. One vessel has two lugs. The third vessel is a small cup also with a lug. No other decoration is apparent.
- 5.3.13 Such vessels are known from sites such as Windmill Hill in Wiltshire, where a large collection of similar vessels with opposing lugs was found. A small amount of early Neolithic pottery is known from a few sites in Cumbria. Some of this pottery came from 19th century excavations (Darbishire 1874) at Ehenside Tarn, and some sites are currently unpublished, for example in Carlisle, and this material should be investigated for a full report. However, current knowledge of early Neolithic pottery found in Cumbria, for example at Barrow (Allen 2002), indicates that no comparable vessels have been found, as the known vessels are plain bowls or Grimston ware.

- 5.3.14 This type of vessel can be dated to around 3500 BC (Gibson 2002, fig.36). Due to its age and extreme fragility early Neolithic pottery is rare nationally, and very rare regionally.
- 5.3.15 **Peterborough Ware:** A single sherd, moderately abraded, was found unstratified on this site (Pot 1). This is from the neck of a middle Neolithic Peterborough ware type of vessel with abraded decoration on the body.
- 5.3.16 Some similar vessels are known in Cumbria, for example from Carlisle (unpublished), Brougham and Ehenside Tarn (Fell 1972). However, little material that has been found has been systematically recorded, and comparisons for the sherd should be sought. Dating of material associated with middle Neolithic impressed wares of this type confirms that these were in use between about 3400 and 2500 BC (Gibson and Kinnes 1997).
- 5.3.17 **Beaker Pottery:** Three pots of Beaker type are seen in the assemblage, and the main vessel found in association with the cairn pit (Pot 3) is a long necked Beaker with vertical and horizontal fingernail decoration. The other two vessels (Pots 2 and 5) are more fragmentary, one is decorated with whipped cord and the other has diagonal fingernail decoration.
- 5.3.18 Beakers are known elsewhere in the region (Cherry and Cherry 1987), but compared to other regions of England there is little Beaker pottery known (Clarke 1970, 477 & 500). Comparative material should be sought for these vessels. Pot 3 appears to be virtually complete, and as the sherds are quite large and in good condition, this pot could be reconstructed.
- 5.3.19 Beaker pottery is known throughout Britain (Clarke 1970), and is usually dated to a period between 2600 and 1800 BC (Kinnes *et al* 1991). These vessels probably fall into the later part of this period.
- 5.3.20 **Fired Clay:** Twenty two pieces of fired clay, weighing 119g, were found on the site. These are mainly small irregular and broken pieces although some are slightly shaped. Further study would be required to determine the use and possible date of the fired clay.
- 5.3.21 **Discussion of context:** The three Beaker pots were uncovered in Area 3, and all were found in association with the cairn [122]. Fine Beakers are often found in association with burials and this seems likely in this case. The Peterborough ware sherd was unstratified.
- 5.3.22 One early Neolithic vessel (Pot 4) was found in Area 3 in a pit [130] in association with hazelnut and almond shells. Such vessels were often placed as special deposits with animal bone and other material, and this may be the case on this site. Pot 4 is very friable but is only slightly abraded, and it is possible that a complete profile may be obtained. The other two early Neolithic pots were found in pits [286] and [288] in Area 2. Parts of the small cup (Pot 7) were found in both these pits, and hazelnut shells were also found in pit [286]. In pit [288] together with the early Neolithic pottery were found fire-cracked stones and charcoal.

- 5.3.23 A sherd of the larger Neolithic pot (Pot 8) with a lug was found attached, by mud, to a triangular-shaped hammerstone. This has signs of working on all its extremities and has been smoothed for ease of use.
- 5.3.24 The remaining six vessels of prehistoric date were found in Area 2 within pits [284], [370] and in [386], where the fired clay material was also found. Some of this pottery is very abraded suggesting that the contents of pit [385] may be rubbish, and that the pottery is therefore residual and perhaps of different periods.
- 5.3.25 **Condition and Storage:** The abrasion levels of the sherds from each of the vessels have been recorded in Table 3. The average sherd weight at 12.9g is not particularly small for prehistoric pottery, but there are also several hundred fragments indicating the fragmentary nature of the sherds in many of the contexts.
- 5.3.26 Of the 13 vessels only parts of the almost complete Beaker are unabraded and much of the material is slightly or moderately abraded. The early Neolithic pottery sherds are very friable, and some begin to fall apart as they are handled. Some of the prehistoric sherds are very abraded and possibly burnt. This assemblage requires very careful handling, and only some of it is suitable for marking.
- 5.3.27 Much of this material is quite unusual and rare particularly in this region. It is recommended that all the material should be retained for further study and research. All the sherds should be well packed in suitable material to prevent further abrasion.
- 5.3.28 **Recommendations:** This is an unusual and distinctive assemblage of 13 prehistoric vessels, and some of the material is in reasonable condition. The fired clay should be investigated in order to understand its origin and function.
- 5.3.29 The three early Neolithic vessels with lugs are unusual for all locations and at present no other pots of this period and type are known in the region. This pottery is therefore of importance both regionally and nationally. These vessels should be studied, illustrated and if possible published. Ideally, unpublished material at Tullie House Museum in Carlisle should be examined to be clear whether any of the pottery is comparable.
- 5.3.30 Compared to other regions, little Beaker pottery is known in this area. The Beaker vessels should be studied, recorded and drawn and comparative material in the region should be found and discussed.
- 5.3.31 As the region does not have a large collection of prehistoric pottery known so far, these vessels will add significantly to the knowledge of early prehistoric pottery in this area. Comparative material should be sought in the locality and in the region, in order to place this assemblage into its local and regional perspective. Comparisons with other vessels of these periods both in this region and elsewhere will help to build up knowledge of typical style, forms and decorations for the region. Prehistoric pottery, although conforming to national types, tended to have regional variations.
- 5.3.32 The tempering materials of the vessels should be analysed by thin section analysis. It is recommended that 10 thin sections should be taken. Once the nature and source of the tempering has been defined this will assist the sorting of the pottery and will help to define typical fabric types for the region. This greatly assists in identifying sherds when found on sites. If the origins of the tempering can be established this helps to

define trading patterns in prehistory. It is clear that not all prehistoric pottery in this region was locally made (Peacock 1972).

- 5.3.33 Dating for comparative material should be sought in order to better understand the assemblage from this site. It is recommended that due to the rare nature of this pottery in the area, and the few dates available, radiocarbon dates should be obtained, if suitable material is available. The following features are of particular interest in terms of prehistoric ceramics: contexts 131, 142 and 289.
- 5.3.34 Due to the friable nature of much of the material, it is not suitable for marking. However, the pottery sherds in the following contexts should be lightly brushed and marked with context numbers: u/s, 100, 123 (note 2 pots are present), 183, and 206. None of the pottery should be washed.
- 5.3.35 The fine Beaker (Pot 3) is in a suitable condition for reconstruction. The sherds are of reasonable size and thickness and not abraded. A large part of the vessel remains packed into a box as excavated and has not been disturbed. An estimate has been obtained for the reconstruction of this vessel and this is highly recommended in view of the local and regional rarity and unabraded condition of the pot. The fabric and decoration of the pot should be examined *before* the reconstruction takes place, as this will be impossible after reconstruction. The nature of the extent of the reconstruction should be decided.
- 5.3.36 A number of the vessels should be illustrated from this assemblage, and the individual pots which should be drawn are indicated on Table 3. The minimum number required in order to represent the types of rims and profiles from this site has been selected for illustration. In total eight vessels require illustration. Most are partial and will require very careful handling. The specialist should prepare draft illustrations to assist the illustrator.

Table 3. Pottery and fired clay from New Cowper Quarry (NCF-A)

Context	Description	Pot	Sherd	Frag.	Sherds	Fabric	Abrasion	Drawing	Type	Part	Comments
<> sample	(1) primary fill (2)sec fill	No	No	No	weight	type	level	required	of pot	pot	
Pottery											
unstrat	u/s	1	1	0	11	GT	M	DR	PB	B	neck & vague dec
100	topsoil	2	4	0	14	R+Q	S	DR	BKR	R, B	flat rim, fnail dec
123/1	fill ditch 178 (1)	2	3	0	11	R+Q	S		BKR	R,B	same pot as 100
123/2<14>	as above	3	24	0	131	R+Q	U	DR	BKR	R,B,B a	long necked late beaker fnail dec vert & horiz
131+131<3 >	fill of pit 130 (1)	4	45	40	962	GT	S	DR	EN	R,B, 2 lugs	shouldered rd bttm everted rim
142	fill cairn 122 (2)	3	20	10	1050	R+Q	U		BKR	R,B,B a	142
183	fill pit 182	5	1	0	24	GT	S	DR	BKR	B	whipped cord vert rows
197<47>	fill cairn 122 (2)	5	14	12	34	GT	S		BKR	R,B,B a	same pot as 183 as above
206	fill pit 205 (1)	3	3	0	27	R+Q	S		BKR	R+B	fnail same as pot 3 (beneath 142)
285<107>	fill pit 284 (1)	6	1	0	12	GT	S		P	B	undec
287	fill pit 286 (1)	7	12	10	19	R+Q	M	DR	EN	B, lug	small cup lug fnail thumbprint
289/1	fill pit 288 (1)	7	6	10	30	R+Q	S		EN	R,B	small cup 80mm rim diam undec
289/2	as above	8	68	123	596	GT	M	DR	EN	R,B, lug	applied lug, v friable
371	fill pit 370 (1)	9	12	20	53	GT	M		P	B	undec
386/1	fill pit 385 (1)	10	4	0	7	R+Q	M		P	B	very thin wall
386/2	as above	11	9	0	64	LI	V	DR	P - EN?	R,B	burnt
386/3	as above	12	3	0	64	GT	S		P	B	ang tempering on surface
386/4	as above	13	24	14	164	GT	S/M		P	B	brown/buff
Totals			254	239	3273						
Fired Clay											
386/5	fill pit 385 (1)	0	22	0	119	R	M	0	P	irregul ar	pieces of fired clay
Total			22	0	119						

Key:

Date: EN=early Neolithic, PB=Peterborough ware, BKR=Beaker, P=prehistoric
Pot part: B=body, Ba=base, R=rim
Abrasion Level: U=unabraded, S=slightly abraded (5-25% of surface affected),
M=moderately abraded (25-50%), A=abraded (50-75%), V=very abraded (>75%)

Drawing Required: DR= required

Fabric Type: R=rock (unidentified), GT=granitic type with quartz, feldspar and mica,
Q=quartz, L=limestone (possibly leached out), Q=quartz

5.4 POTTERY RESIDUE ANALYSIS

By Dr Ben Stern

5.4.1 **Introduction:** Analysis of two sherds of pottery from New Cowper Quarry was carried out. The first pot from context 131 was a Neolithic pot with inclusions of quartz and mica. The second from context 142, was a Bronze Age Beaker with inclusions of quartz. The following section presents a summary of the analysis of two sherds for organic residues by Gas Chromatography-Mass Spectrometry.

5.4.2 **Methodology:** Scrapings of adhering residues were taken from the interior surface of each sample, sub-samples of the ceramic were also removed to a depth of 2mm from both the exterior and interior surfaces of each sherd with a *Dremmel* electric drill fitted with a tungsten abrasive bit. These samples were extracted with three aliquots of ~3 ml DCM:MeOH (dichloromethane:methanol 2:1, v/v), with ultrasonication for 5 minutes, followed by centrifugation (5 min 2000 rpm). The solvent extract was then transferred to a clean glass vial. The solvent was then removed under a stream of nitrogen. Excess BSTFA (N, O- bis(trimethylsilyl)trifluoroacetamide) with 1% TMCS (trimethylchlorosilane) (*Pierce*) was added to derivatise the sample which was warmed overnight. Excess derivatising agent was removed under a stream of nitrogen. The samples were diluted in DCM for analysis by GC-MS. A known quantity of C₃₄ n-alkane was added to the ceramic samples as an internal standard. A modern ceramic pot, previously solvent cleaned, was also prepared and analysed alongside the samples to reveal any contamination introduced during sample preparation and analysis.

5.4.3 **Instrumental (GC-MS):** Analysis was carried out by combined gas chromatography-mass spectrometry (GC-MS) using a Hewlett Packard 5890 series II GC connected to a 5972 series mass selective detector. The splitless injector and interface were maintained at 300°C and 340°C respectively. Helium was the carrier gas at constant inlet pressure. The temperature of the oven was programmed from 50°C (2 min.) to 340°C (10 min.) at 10°C/min. The GC was fitted with a 15m X 0.25mm, 0.1µm OV1 phase fused silica column (MEGA). The column was directly inserted into the ion source where electron impact (EI) spectra were obtained at 70 eV with full scan from m/z 50 to 700.

5.4.4 **Results:** The results are presented as total ion chromatograms of the BSTFA derivatized solvent extract. These show each separated component of the solvent extract as discrete peaks, the area under each peak being representative of the abundance. Where identified, components have been labelled:

P = Phthalate plasticiser

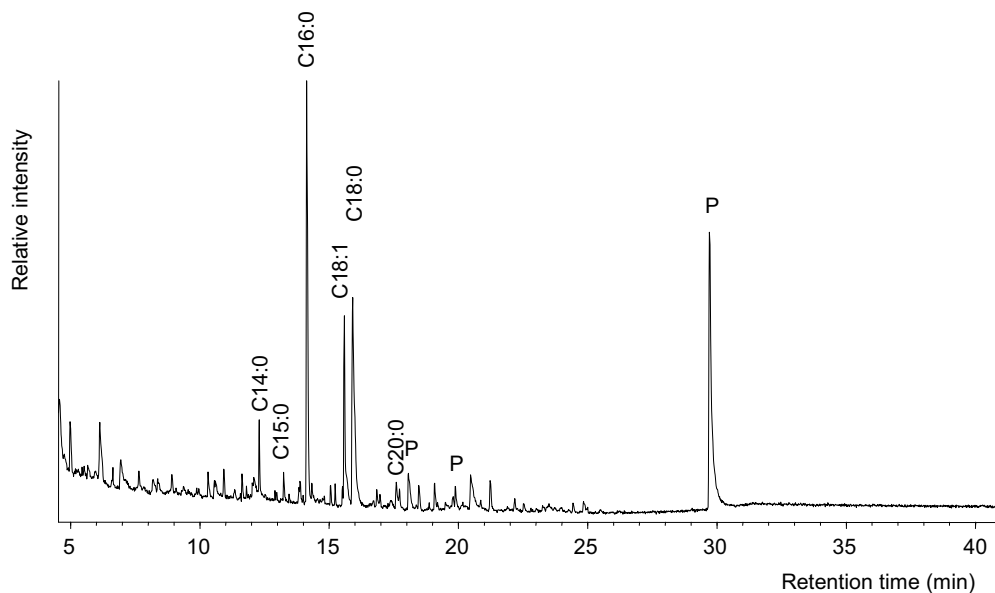
x = analytical artefact

IS = C₃₄ n-alkane internal standard

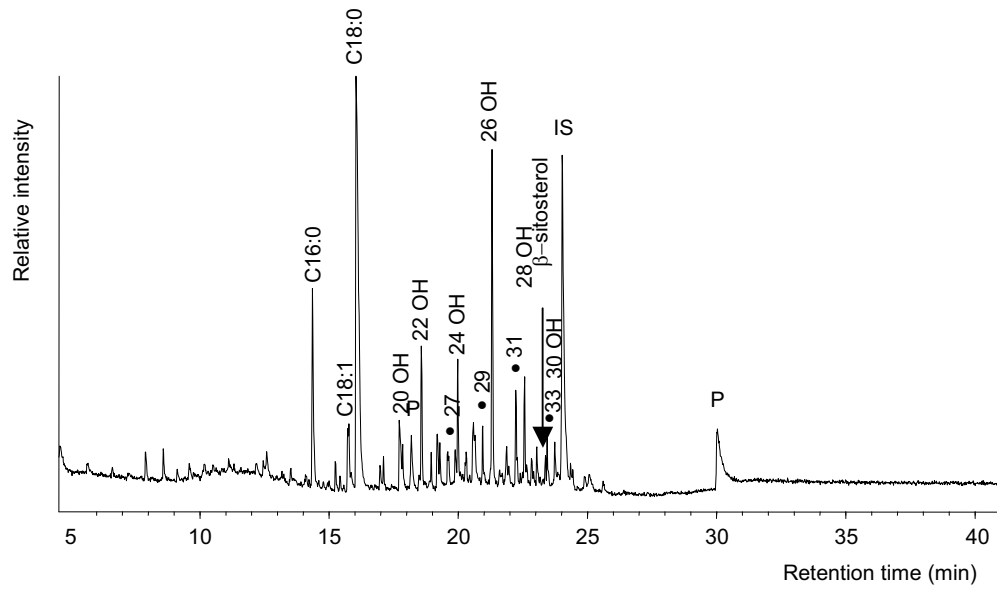
- = *n*-alkane
- C = Fatty acid, with selected carbon numbers and degree of unsaturation
- OH = Alcohol, with selected carbon numbers

5.4.5 131 = Probable Neolithic pot with inclusions of quartz and mica

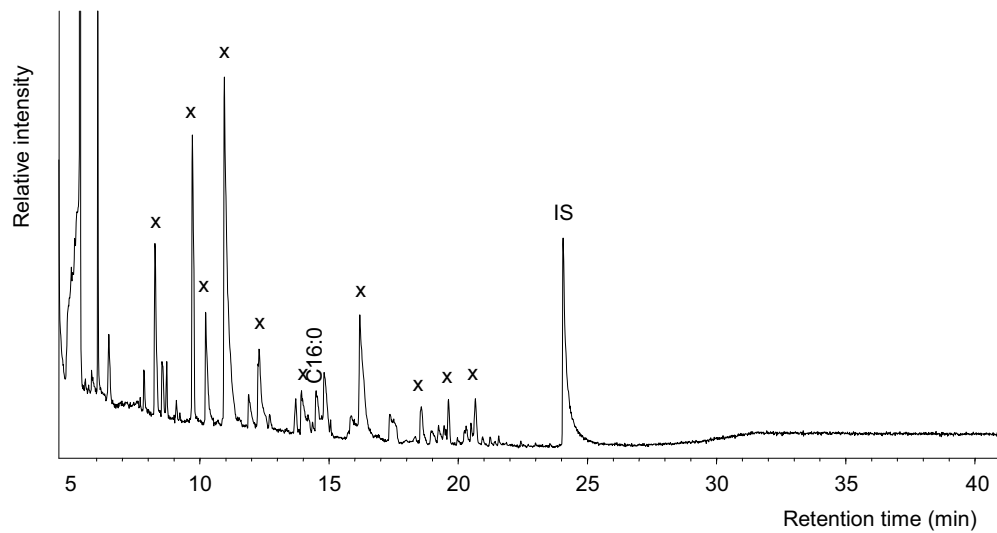
NPA05 NCF-A, 131, 2. Scraping from interior surface.



NPA05 NCF-A, 131, 2. Absorbed residue from interior 0-2mm.

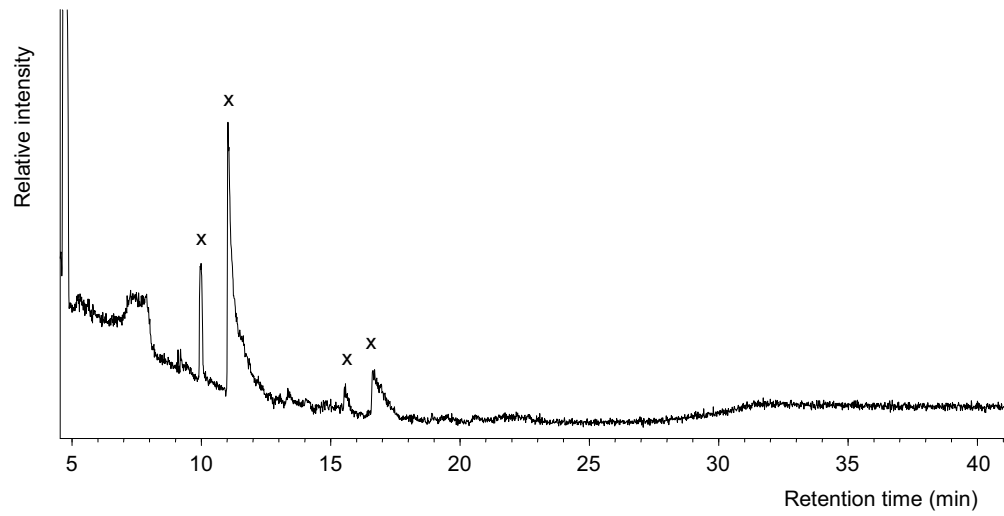


NPA05 NCF-A, 131, 2. Absorbed residue from exterior 0-2mm.

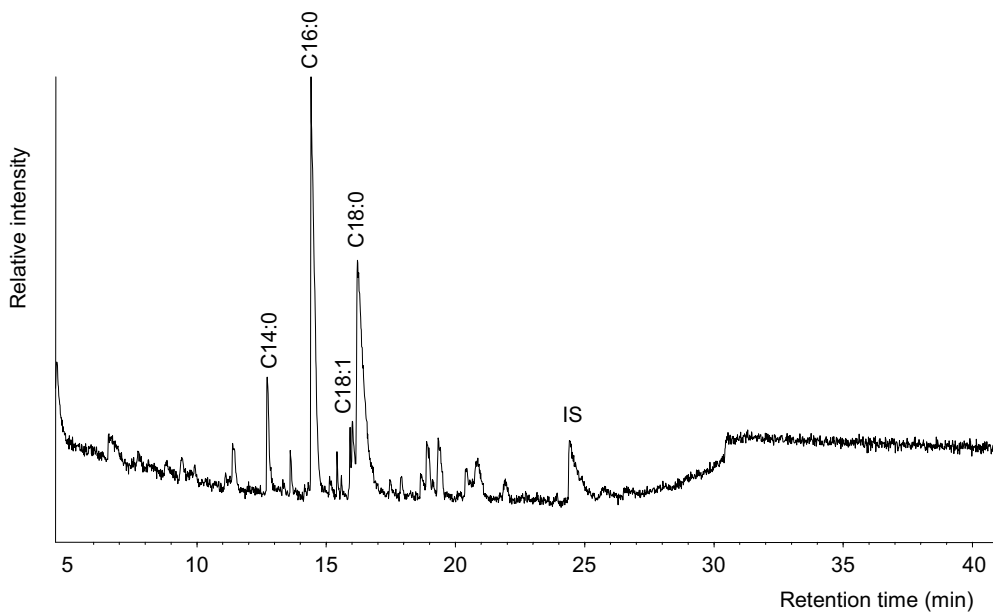


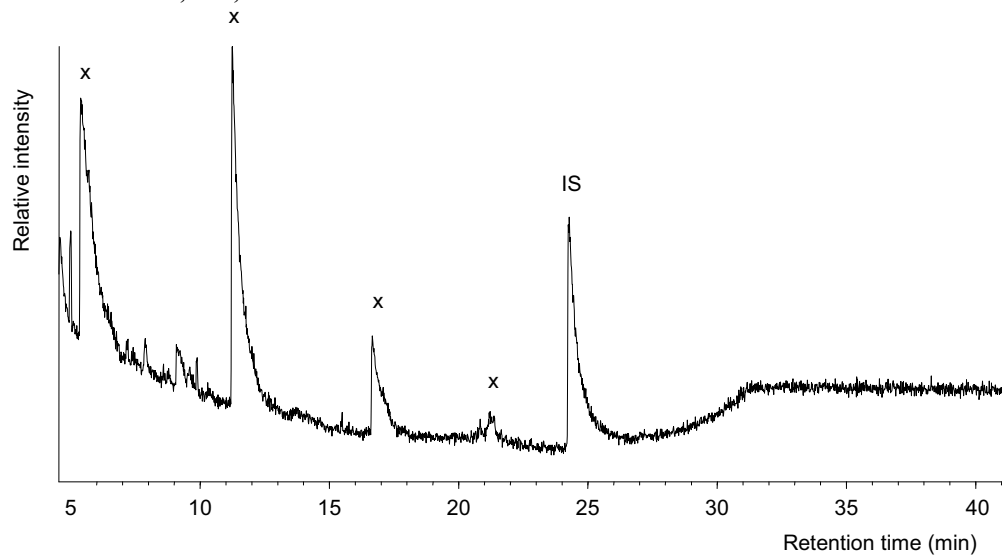
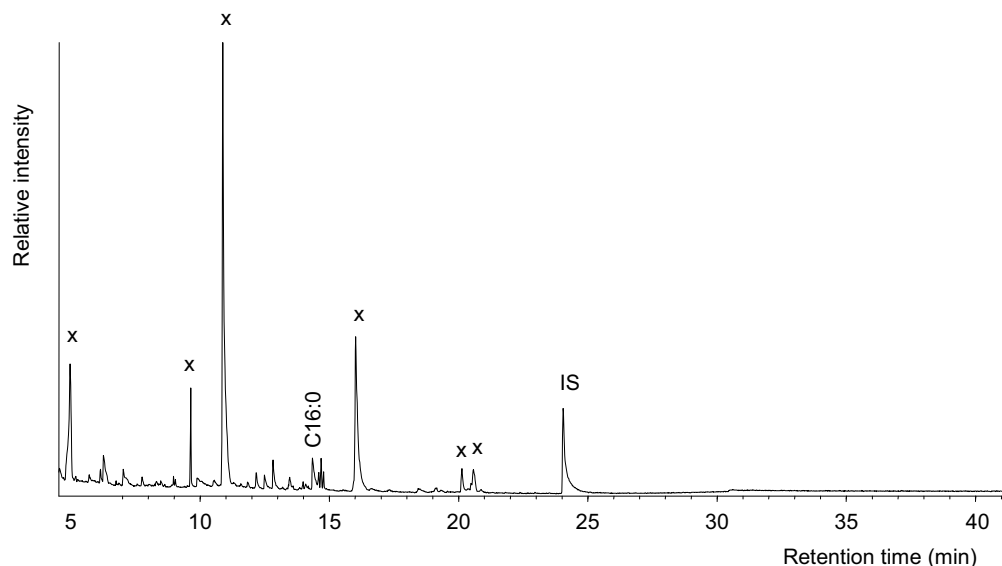
5.4.6 142 = Probable Bronze Age Beaker pot with inclusions of quartz

NPA05 NCF-A, 142, 1. Scraping from interior surface.



NPA05 NCF-A, 142, 1. Absorbed residue from interior 0-2mm.



NPA05 NCF-A, 142, 1. Absorbed residue from exterior 0-2mm.**5.4.7 Modern pot**

5.4.7 Discussion: There are trace levels of contamination (labelled P and x) in many of the samples, this is not unexpected due to the ubiquitous nature of some of these compounds and the high instrumental sensitivity. There is a trace of C_{16:0} fatty acid in the modern pot, again this is a ubiquitous compound and difficult to completely exclude, the levels measured in this sample are very low.

5.4.8 Sample NPA05 NCF-A (context 142) has traces of fatty acids absorbed into the 0-2mm of the interior surface of the ceramic. The levels are low, and I don't think any further conclusion can be drawn from this data. No original lipids were extracted from the other samples of this sherd.

5.4.9 Sample NPA05 NCF-A (context 131) yields a number of compounds from the surface scraping and the underlying ceramic. The external ceramic absorbed sample

yields no original lipids and trace C_{16:0} fatty acid – however this has also been extracted from the modern pot and therefore can be attributed to contamination.

- 5.4.10 The interior surface scraping yields a range of fatty acids from C₁₄ to C₂₀, these are in even carbon numbers indicating a biological origin, the unsaturated oleic acid C_{18:1} is also present. A range of fatty acids (C₁₆ to C₂₆ – those of low abundance are not labelled on the figure) were extracted, this wide range of fatty acids is indicative of a plant origin. In addition, the sterol β -sitosterol was also recovered, this also indicates a plant origin. The presence of the long chain alcohols (even carbon numbers C₂₀ to C₃₀) and the *n*-alkanes (odd carbon numbers C₂₇ to C₃₃) indicates that hydrolysis of wax esters has occurred, one possibility is that of beeswax. These lipids are of similar range and distribution to those of previously reported degraded beeswax, with the exception that in this sample there are no wax esters – presumable these have been completely hydrolysed.
- 5.4.11 The differences between the exterior and exterior surfaces indicate that the interior lipids are original and not a result of post-depositional, excavation or storage contamination, as this would be expected the effect both surfaces. Therefore I can conclude that the interior of this sherd was highly likely to have contained beeswax.

6. ASSESSMENT RESULTS: THE ENVIRONMENTAL DATA

6.1 INTRODUCTION

By Patricia Crompton

- 6.1.1 Soil conditions in the area around New Cowper Quarry comprise moist topsoil, overlaying natural layers of sand and gravel. Given these conditions the preservation of environmental remains will probably be restricted to those that are charred. Bone does not preserve well in sandy conditions, as these tend to be acidic, and bone ultimately dissolves in this environment, unless it is cremated or burnt. Preservation of the organic remains from New Cowper Quarry was therefore expected to be limited.
- 6.1.2 Analysis of all the recovered material will be skewed due to factors such as none recovery of pertinent material, degradation of originally deposited material, degradation of material during processing, and differences between the relative preservation of the various phases of occupation.

6.2 INSECT AND PARASITE REMAINS

- 6.2.1 No fragments of invertebrate exoskeletons or larva/pupa cases were noted in the organic flot. The only pupal or larval remains recovered were modern, the organisms still in a live state within the soil matrix. These were removed during the analysis of the flot samples.

6.3 PLANT REMAINS

- 6.3.1 **Methodology:** In total 150 contexts were considered worth sampling due to their organically rich content, or because they were stratified within archaeological features (Table 3). This number includes samples of charcoal removed from certain contexts as spot samples for carbon dating or wood identification (see Section 7). Of the 150 samples taken, all the whole earth samples (apart from those found to be modern in origin) were selected for processing in order to assess their environmental potential. This can provide further information as to the depositional processes involved in their formation. The methodology employed required that the whole earth samples be broken down and split into their various different components. This was achieved by a combination of water washing and flotation.
- 6.3.2 The process of flotation, by passing the sample through a flotation tank, serves to separate the matrix of the whole earth sample into the organic fraction and the heavier mineral content of mainly sands, silts, clays and stones. The two resultant sub-samples are the flot and the retent or residue. The flot consists of the material that floats on water as the light or floating fraction. This produces mainly organic and charred remains. The heavy, retent fraction, consists of the denser material that usually sinks, including the waterlogged material. The method relies purely on the variation in density of the recovered material to separate it from the soil matrix,

- allowing for the recovery of ecofacts and artefacts from the whole earth sample. The recovered remains can then be assessed for content.
- 6.3.3 The more of the sample that can be processed the better the interpretation. All the material was processed as there was little evidence of material where parasites, human or animal, could be recovered and so sub-sampling was not required. Both the retent and the flot residues were examined (Table 4 and Table 5). The results of the seed identification will be carried out for a final report, but appear in this interim report as present or absent in their varying degrees.
- 6.3.4 The retent, like the residue from wet sieving, will contain any larger items of bone or artefacts recovered from the soil matrix. The flot or floating fraction will generally contain organic material such as plant matter, fine bones, cloth, leather and insect remains recovered from the soil matrix. A rapid scan at this stage will allow further recommendations to be made as to the potential for further study by entomologists or palaeobotanists with a view to retrieving vital economic information from the samples. Favourable preservation conditions can lead to the retrieval of organic remains that may produce a valuable suite of information in respect of the depositional environment of the material, which may include anthropogenic activity, seasonality and climate and elements of the economy. The remains will also be influenced by factors of preservation and cleanliness of the original area and contamination by modern intruders.
- 6.3.5 **Results:** The diversity of the contexts fell into several categories. The first consisted of those from which charred grain and weed seeds of arable land were recovered, usually associated with a quantity of charred wood (contexts 105, 297, 384, 442).
- 6.3.6 Charred grain was also found in association with burnt bone (contexts 143, 312, 373, 410). Charred hazelnuts and charred grain occurred in some contexts (285, 287, 371, 373, 386, 414). Context 287 also contained a high amount of charred wood. There were only two contexts that contained charred grain, burnt bone and charred hazelnuts (371 and 386). A piece of worked flint was also recovered from context 386.
- 6.3.7 Several other contexts contained only charred hazelnuts (168, 185, 301, 368, 430). Others contained burnt bone and charred hazelnut shells (111 and 289). Unusually context 111 contained no charred wood, even though both the bone and hazelnut shells were burnt. Some contexts had only burnt bone associated with them (123, 141, 152, 180, 234, 393).
- 6.3.8 The sequence of contexts bearing charred grain, indicates that these deposits were associated with the processing of grain at some stage. Charring would occur as part of the grain drying process or during cooking, both requiring that the grain had been present in the embers of a fire or close to them. Both result from the slow combustion of the material, coinciding with a minimum exposure to oxygen, thus allowing charring to occur. This means they are converted to a mix of stable carbon and other charring products, an excellent state for preservation.

- 6.3.9 **Discussion:** Several of the samples have produced adequate flots containing organic material of sufficient quantity, quality and diversity for further assessment, especially as some of them are associated with burnt bone and pottery recovered from archaeological features such as pits and hearths. Some have limited potential, and a few have no further potential.
- 6.3.10 The material recovered from this study will aid the reconstruction of the conditions and habitats of the site. It will, in association with the dateable finds, lead to the determination of the various phases and periods of the site. From the pottery finds recovered it is known that the site was utilised in the Neolithic and Bronze Age periods. This is a particularly rare and important discovery in Cumbria and will help to determine the patterns of settlement and land use in the county.

6.4 MOLLUSC REMAINS

- 6.4.1 There were no mollusc remains recovered from the site, probably due to the acidic conditions.

6.5 BONE REMAINS

- 6.5.1 Only one of the deposits produced quantities of bone (217) and this was a modern sheep burial. The condition of the bone was poor and degrading, indicating that the conditions for preservation were not good on the site, even though the deposition had occurred fairly recently. This was probably a combination of the lack of waterlogging throughout most of the contexts and also an acidic pH level leading to the degradation of the bone.
- 6.5.2 Several contexts contained cremated or burnt bone. Most of this bone was associated with the fills of pits, some also containing pottery and charcoal.

6.6 RECOMMENDATIONS

- 6.6.1 It is recommended that a full and complete analysis of the environmental data should be undertaken. This will enable a reconstruction of the past environments of the different phases of occupation to be carried out. The samples analysed should be selected by type, with additional reference to period, so that as wide a range of assemblage types is represented in the material for further analysis.
- 6.6.2 It would be useful to analyse the charcoal and burnt wood material to species, in order determine types of woodland, and woodland activity present.
- 6.6.3 Several contexts contained cremated or burnt bone that requires specialist analysis to determine whether it is human or animal.
- 6.6.4 The material from this site could potentially provide a model for the interpretation of other prehistoric sites in Cumbria by fully analysing the botanical remains, taking into consideration the poor preservation conditions due to the local geology.

Table 4. Environmental samples, contents from flot analysis New Cowper Quarry (NCF-A)

KEY FOR CONTENTS: 0=Absent, 1=Present, 2=Frequent, 3=Abundant

Sample number	CONTEXT NUMBER	Charred grain	Charred hazelnut shells	<i>Stellaria media</i>	<i>Chenopodium</i>	<i>Scirpus</i>	Raspberry	<i>Plantago lanceolata</i>	<i>Galium</i>	<i>Pale persicaria</i>	<i>Brassica</i>	<i>Spergula arvensis</i>	<i>Rumex</i>	Pea	Dandelion	<i>Malus sylvestris</i>	Woody plant parts	Burnt wood	Charcoal	Charred heather	Larvae/insects	Burnt bone	Roots	Spores
1	107	0	0	0	2	1	0	0	0	0	0	2	1	0	0	0	0	1	0	0	0	0	3	2
2	105	1	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0	1	1
3	111	0	1	0	2	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	1
6	115	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	3	1
8	121	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	3	1
14	123	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0	2	1
16	142	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	3	0	0	0	0	2	1
17	141	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	1	1	1
18	143	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	1
19	154	0	0	1	0	0	0	0	0	0	1	1	1	0	0	0	0	2	0	0	0	0	3	1
20	162	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	2	2
21	150	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	3	1
22	152	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	3	0	0	0	0	1	1
23	166	0	0	0	1	0	1	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	3	2
24	149	0	0	0	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	3	2
25	147	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
26	164	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	3	1
27	168	0	0	1	1	0	0	0	0	0	0	1	1	0	1	0	0	2	0	0	0	0	2	1
28	166	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	3	1
29	170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	1
30	166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	176	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	3	0	0	0	0	1	0
32	172	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	3	1
33	173	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	3	1
34	152	0	0	0	0	0	0	0	1	0	1	0	1	1	0	0	0	3	0	1	0	0	1	1
35	180	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	2	1
37	181	0	0	1	1	0	0	0	0	0	1	0	1	0	1	0	0	2	0	0	0	0	2	2
38	185	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	3	1
40	189	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	3	0	0	0	0	2	2
43	191	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	3	3
47	197	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	2	0	0	0	0	1	1
50	201	0	0	1	1	0	0	1	0	0	1	1	1	0	0	0	0	1	0	0	0	0	3	2
52	212	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	1
56	219	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	3	1
59	230	0	0	0	0	0	0	0	0	0	2	0	1	1	0	0	0	1	0	0	0	0	2	2
60	231	0	0	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	1

Sample number	CONTEXT NUMBER	Charred grain	Charred hazelnut shells	<i>Stellaria media</i>	<i>Chenopodium</i>	<i>Scirpus</i>	Raspberry	<i>Plantago lanceolata</i>	<i>Galium</i>	<i>Pale persicaria</i>	<i>Brassica</i>	<i>Spergula arvensis</i>	<i>Rumex</i>	Pea	Dandelion	<i>Malus sylvestris</i>	Woody plant parts	Burnt wood	Charcoal	Charred heather	Larvae/insects	Burnt bone	Roots	Spores
61	228	0	0	1	1	0	0	0	0	0	2	1	0	0	0	0	0	1	1	0	0	0	2	1
62	233	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	3	2
63	301	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	1	2
67	234	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	1
68	330	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	3	1
69	335	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	3	0	0	0	0	2	1
70	338	0	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0	3	0	0	0	0	1	1
71	336	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	1	3	0	0	0	0	1	1
72	339	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3	0	0	0	0	1	2	
73	237	0	0	1	1	0	0	0	0	0	0	1	1	0	1	0	0	1	0	0	0	0	3	1
75	243	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	3	1
79	331	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	0	3	0	0	0	0	1	2
80	345	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	1
81	239	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0	0	2	1
83	314	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	1
84	347	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	3	3
85	241	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	1
87	349	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	3	1
89	351	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	1
91	295	0	0	1	1	0	1	0	0	1	0	0	1	0	0	0	2	3	0	0	0	0	2	0
96	361	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	3	0	0	0	0	1	0
97	287	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	2	1
99	368	0	0	0	1	0	1	0	0	0	0	1	1	0	0	0	0	3	0	0	0	0	2	1
100	297	1	0	1	1	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0	3	0
101	363	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	3	1
103	312	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	2	0
104	371	2	0	1	1	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	2	2	0
106	373	1	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	3	0	0	0	0	1	2
107	285	1	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	3	0	0	0	0	2	1
108	312	1	0	1	1	0	1	0	0	1	0	0	1	0	0	0	3	0	0	0	0	0	3	0
109	312	2	0	1	2	0	0	0	0	0	1	1	0	0	0	0	1	2	0	0	0	2	2	1
110	375	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0
112	386	2	0	1	1	0	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	2	1
113	377	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	1
116	474	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	3	2
117	384	1	0	1	1	0	0	1	0	1	0	1	1	0	0	0	0	1	0	0	0	0	3	1
118	388	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	3	0
119	289	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	3	0	0	0	0	2	1
121	392	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	3	1
123	408	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	3	1
124	402	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	1
125	410	1	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0	3	1
126	412	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	3	1

Sample number	CONTEXT NUMBER	Charred grain	Charred hazelnut shells	<i>Stellaria media</i>	<i>Chenopodium</i>	<i>Scirpus</i>	Raspberry	<i>Plantago lanceolata</i>	<i>Galium</i>	Pale persicaria	<i>Brassica</i>	<i>Spergula arvensis</i>	<i>Rumex</i>	Pea	Dandelion	<i>Malus sylvestris</i>	Woody plant parts	Burnt wood	Charcoal	Charred heather	Larvae/insects	Burnt bone	Roots	Spores
127	414	1	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	3	0	0	0	0	2	1
128	423	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	2	0	0	0	0	3	1
129	426	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	3	1
131	428	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	1
132	430	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	3	1
133	434	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	3	1
137	442	1	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	2	0	0	0	0	2	1
139	446	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0
142	452	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0
147	466	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	3	1
148	467	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	2	1
150	245	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	1

Table 5. Environmental samples, contents from retent analysis New Cowper Quarry (NCF-A)

CONTEXT NUMBER	SAMPLE NUMBER	Stone	Gravel	Quartz fragments	Pottery	Metalwork	Magnetic	Seeds/ Fruit	Nut shells	Charred wood	Charred plant material	Plant/animal fibres	Bone	Burnt bone	Pupae/ Larva	Flint
107	1	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
105	2	2	2	0	0	0	0	0	0	1	0	0	0	0	0	0
111	3	1	3	0	0	0	0	0	2	0	0	0	0	1	0	1
115	6	1	3	0	0	0	0	0	0	2	0	0	0	0	0	0
121	8	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
111	9	1	3	0	0	0	1	0	2	1	0	0	0	1	0	0
111	11	1	3	0	0	0	1	0	2	1	0	0	0	1	0	0
111	12	2	3	0	0	0	1	0	0	2	0	0	0	0	0	0
123	14	2	3	0	2	0	1	0	0	1	0	0	0	1	0	0
142	16	2	3	0	0	0	1	0	0	1	0	0	0	0	0	0
141	17	1	2	0	0	0	0	0	0	1	0	0	0	0	0	0
143	18	1	3	0	0	0	0	0	0	1	0	0	0	1	0	0
154	19	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
162	20	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
150	21	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
152	22	0	3	0	0	0	0	0	0	2	0	0	0	0	0	0
166	23	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0
149	24	2	2	0	0	0	0	0	0	1	0	0	0	0	0	0
147	25	1	3	0	0	0	1	0	0	2	0	0	0	0	0	0
164	26	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
168	27	1	3	0	0	0	1	0	1	1	0	0	0	0	0	0
166	28	3	2	0	0	0	1	0	0	0	0	0	0	0	0	0
170	29	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
176	31	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0
172	32	0	2	0	0	0	0	0	0	3	0	0	0	0	0	0
173	33	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0
152	34	1	3	0	0	0	0	0	0	1	0	0	0	1	0	0
180	35	2	3	0	0	0	0	0	0	1	0	0	0	0	0	0
181	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
185	38	1	2	0	0	0	0	0	1	1	0	0	0	0	0	0
189	40	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
191	43	1	3	0	0	1	0	0	0	1	0	0	0	0	0	0
197	47	1	3	0	0	1	0	0	0	1	0	0	0	0	0	0
201	50	1	3	0	0	1	0	0	0	0	0	0	0	0	0	0
212	52	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
213	53	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
219	56	2	2	0	0	0	0	0	0	1	0	0	0	0	0	0
230	59	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0
231	60	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0
228	61	2	3	0	0	0	0	0	0	1	0	0	0	0	0	0
233	62	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0
301	63	1	3	0	0	0	0	0	1	2	0	0	0	0	0	0
234	67	1	3	0	1	0	0	0	0	0	0	0	0	1	0	0
330	68	2	2	0	0	0	0	0	0	1	0	0	0	0	0	0
335	69	2	3	0	0	0	0	0	0	2	0	0	0	0	0	0
338	70	2	3	0	0	0	0	0	0	2	0	0	0	0	0	0

CONTEXT NUMBER	SAMPLE NUMBER	Stone	Gravel	Quartz fragments	Pottery	Metalwork	Magnetic	Seeds/ Fruit	Nut shells	Charred wood	Charred plant material	Plant/animal fibres	Bone	Burnt bone	Pupae/ Larva	Flint
336	71	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
339	72	2	3	0	0	0	0	0	0	2	0	0	0	0	0	0
237	73	1	3	0	0	0	0	0	0	2	0	0	0	0	0	0
243	75	2	3	0	1	1	0	0	0	1	0	0	0	0	0	0
331	79	2	2	0	0	0	0	0	0	2	0	0	0	0	0	0
345	80	2	3	0	0	0	0	0	0	2	0	0	0	0	0	0
239	81	2	3	0	0	0	0	0	0	2	0	0	0	0	0	0
345	82	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
314	83	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0
347	84	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
241	85	1	3	0	0	0	0	0	0	2	0	0	0	0	0	0
349	87	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
393	88	1	3	0	0	0	0	0	0	1	0	0	0	1	0	0
351	89	0	2	0	0	0	0	0	0	3	0	0	0	0	0	0
295	91	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
361	96	1	3	0	0	1	1	0	0	1	0	0	0	0	0	0
287	97	0	2	0	0	0	0	0	1	3	0	0	0	0	0	0
368	99	1	3	0	0	0	0	1	1	2	0	0	0	0	0	0
297	100	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0
363	101	3	2	0	0	0	0	0	0	1	0	0	0	0	0	0
312	103	2	3	0	0	0	1	0	0	1	0	0	0	1	0	0
371	104	1	3	0	0	0	1	0	2	2	0	0	0	0	0	0
373	106	1	3	0	0	0	1	0	1	1	0	0	0	1	0	0
285	107	1	3	0	0	0	0	0	2	2	0	0	0	0	0	0
312	108	2	3	0	0	2	1	0	0	0	0	0	0	1	0	0
312	109	2	3	0	0	0	1	0	0	1	0	0	0	1	0	0
375	110	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0
386	112	1	3	0	0	0	0	0	2	2	0	0	0	1	0	1
377	113	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
474	116	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0
384	117	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0
388	118	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
289	119	0	3	0	2	0	0	0	1	1	0	0	0	1	0	0
392	121	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
408	123	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
402	124	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
410	125	1	3	0	0	0	0	0	0	1	0	0	0	1	0	0
412	126	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0
414	127	1	3	0	0	0	0	0	2	2	0	0	0	0	0	0
423	128	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
426	129	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
410	130	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0
428	131	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0
430	132	1	3	0	0	0	0	0	1	1	0	0	0	0	0	0
434	133	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0
442	137	2	3	0	0	0	0	0	0	1	0	0	0	0	0	0
446	139	1	3	0	0	0	1	0	0	1	0	0	0	0	0	0
452	142	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
245	150	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0

7. RADIOCARBON DATING

7.1 INTRODUCTION

- 7.1.1 A total of 4 samples of charred wood from contexts 131, 176, 312 and 371 were submitted for C¹⁴ dating. These represented a selection of key features from across the site.
- 7.1.2 The charcoal from context 131 was from the fill of a small pit (context 130) in Area 3. This pit contained a prehistoric pot, dated on typological grounds to the Early Neolithic. Context 176 was a layer of charcoal filling a pit (context 174), which had been cut into the stone cairn (context 122) in Area 3. This pit may have contained a Beaker pot, which had been disturbed by a later post-medieval feature. Context 312 was the primary fill of the probable fire pit (context 311) in Area 1. Context 371 was the fill of a pit (context 370), which was one of a cluster of pits containing prehistoric pottery in Area 2.

7.2 RESULTS

- 7.1.2 The analysis of the samples showed that only 2 were suitable for carbon14 dating by the AMS method. These were from contexts 131 and 176. Both provided sufficient quantities of carbon for accurate measurements, and all the analyses went normally. The method of analysis is listed in Table 6, with the results and calibration data appearing where applicable. This information appears as Appendix 3.

Table 6. Radiocarbon dating results for contexts 131 and 176 (NCF-A)

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional
Beta 207050 Sample : 131	4820 +/- 40 BP	-27.0/00	4790 +/- 40 BP
ANALYSIS: AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 3650 to 3510 (Cal BP 5600 to 5460)			
Beta 207051 Sample : 176	3830 +/- 40 BP	-26.4 0/00	3810 +/- 40 BP
ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 2400 to 2380 (Cal BP 4350 to 4330) AND Cal BC 2360 to 2140 (Cal BP 4300 to 4090)			

7.3 DISCUSSION

- 7.3.1 The charcoal sample from context 131 produced a calibrated radiocarbon date of 3650-3510 BC, which falls within the Early Neolithic period. This corresponds well with the date of the pottery recovered from the same context, and confirms that the pit does date from the Early Neolithic.
- 7.3.2 Context 176 produced two calibrated radiocarbon dates of 2400-2380 BC and 2360-2140 BC, both of which are within the Early Bronze Age. This suggests that the pit was associated with the Early Bronze Age Beaker vessel found nearby, and provides additional dating evidence for the cairn.
- 7.3.3 No dates were produced for the fire pit [122] in Area 1 or pit cluster (Group 4) in Area 2, due to the unsuitability of the material.

8. CONCLUSIONS AND STATEMENT OF POTENTIAL

8.1 INTRODUCTION

8.1.1 This section presents the original aims of the NCF02 excavation, and then presents some conclusions that highlight both the excavated data that relates to these research questions, and also the potential for this excavated data to address these research questions.

8.2 PROJECT AIMS

8.2.1 The original project design set out three main aims for the excavation of the northern area at New Cowper Quarry. These were:

- to preserve by record the archaeological evidence contained within the site and to attempt a reconstruction of the history and use of the site;
- to contribute to an understanding of prehistoric settlement, subsistence and agricultural practices, and environmental conditions on the west coast of Cumbria;
- to inform wider regional, national and period based research frameworks.

8.2.2 The second two aims listed above are consistent with research questions set out in the Prehistoric Period Research Agenda in the North West Region Archaeological Research Framework (Hodgson and Brennand 2004). This document highlights a number of research problems in the North West region that the excavations at New Cowper may help to address:

- **Discovering Prehistoric Settlements:** *‘Ultimately some form of intrusive fieldwork is required to characterise and date these [Neolithic/Bronze Age] enclosure sites throughout the region. Dating of even a few sites has the potential to transform our understanding of Early Neolithic activity in the region, and provide details of regional site characteristics’* (Hodgson and Brennand, 2004, Introduction, 11).
- **Dating these sites:** *‘The Late Bronze Age ceramic and metalworking traditions seemingly disappear in the early first millennium BC and the dating of settlement sites becomes fraught with difficulties...While some rural sites have more identifiable artefacts during the Romano-British period this is not always the case, and layers and even sites from this period can be seemingly artefact free, and ultimately misleading...The only solution to the problems of chronology and artefact recovery is to increase the size of sampling strategies and to undertake scientific dating, most especially AMS radiocarbon dating’* (ibid. Introduction, 17-18). *‘Routine radiocarbon dating should be accepted as the norm on all prehistoric sites. This need to target a wide variety of features and deposits, both with and without artefacts’* (ibid. Prehistoric Agenda, 4).

- **Understanding prehistoric economies:** *‘Details of agricultural and fundamental aspects of economy remain poorly understood. One might postulate varying degrees of mixed farming according to the topographical character of different areas of the region, but this ratio is not known’* (ibid. Introduction, 18). *‘The potential for the recovery of environmental material from excavations must be recognised...and suitable sampling strategies must be employed’* (ibid. Prehistoric Agenda, 9).
- **Understanding prehistoric ritual, religion and ceremony:** *‘Although parts of the region have a number of impressive and even nationally important Neolithic and Bronze Age ritual monuments, there is little known of the wider context of these sites and their relationship with contemporary settlement* (ibid. Prehistoric Agenda, 9). *‘Little is known of the larger enclosures in the North West, and indeed, it may be erroneous to place some of them within the Ritual and Religion section...’*(ibid. Prehistoric Agenda, 11)

8.2.4 The following section presents initial conclusions that can be drawn from the assessment of the stratigraphic, artefactual and environmental data from the excavation (NCF-A), and provides an assessment of the research potential of these different datasets.

8.3 INTERPRETATION AND DISCUSSION

Phase 1: *Mesolithic*

8.3.1 There was no direct evidence for Mesolithic activity across the site. A sub-oval pit of possible Mesolithic origin was observed to the north of Area 3 (Figure 12), containing a small granite boulder, apparently deliberately placed at the centre of the feature. The fill produced one flint blade, which exhibited signs of narrow-blade technology of Mesolithic or Neolithic date. However, this flint could be residual, and cannot be relied on to date this feature.

8.3.2 This absence of Mesolithic evidence on the site, however, does not indicate an absence of Mesolithic activity on the Solway Plain in this period.

Phase 2: *Neolithic*

8.3.3 The Neolithic period was characterised by a series of pits across the site, some of which contained Early Neolithic pottery (Figure 12). A sample of charcoal from one of the pits (context 131) has provided an Early Neolithic date of 3650-3510 cal BC. Some of these possibly contained cremated human remains, which have not survived. A small lithic assemblage was recovered including three hammerstones, although no direct evidence for stone tool production on the site was identified.

8.3.4 The Neolithic of the Solway Plain is generally characterised by the distribution of polished stone axes and axe-hammers, which are usually found on high or relatively high ground above a peat/moss area or a river (Bewley, 1994). Bewley suggests that the Neolithic of the Solway Plain is characterised by small groups who favoured settlement on sandy ridges around the coasts, tarns and marshes, with an economy based on natural resources, with some cereal cultivation (Ibid.).

- 8.3.5 Five pits (contexts 284, 286, 288, 370 and 385) within a cluster of nine pits, contained the fragmentary remains of prehistoric pottery. Two of these contained pottery that could be identified as being Early Neolithic (from contexts 286 and 288). The Early Neolithic pottery comprised rim and base sherds from a small cup or cups, which appeared to have formed parts of structured deposits. Although the precise depositional processes involved are not clear, the quality and rarity of the material is exceptional within a regional context, and no comparable examples are known within Cumbria. The nearest comparable vessels are those found at sites such as Windmill Hill in Wiltshire. As stated in the pottery report, further work is needed here in order to establish the reasons behind the appearance of such pottery in a Cumbrian context.
- 8.3.6 The environmental remains included charred grain, hazelnut shell and charcoal in a number of the pits. This indicates that agricultural practices were taking place in the vicinity in addition to the utilisation of wild foods, and would support Bewley's hypothesis regarding limited cereal cultivation in this period. The location of the site on high ground above Hangingshaw Moss is also potentially significant, which has been postulated as a focus for Neolithic communities (Bewley, 1994).
- 8.3.7 Further work is needed in order to characterise the nature of Neolithic settlement. What is clear is that the evidence from the present site is strongly indicative of a Neolithic human presence on the sand ridge above Hangingshaw Moss in the 4th and 3rd millennia BC.

Phase 3: Bronze Age

- 8.3.8 Bronze Age period activity on the site was represented by the construction of a funerary structure or structures (Figure 12). This consisted of a rectangular pit (context 383), probably for an inhumation, and a four-post structure, sealed beneath a stone-built cairn (context 122). This was followed by the deliberate deposition of at least three 'Beaker' vessels, which suggests that ceremonial practices were taking place at the site over a significant period of time.
- 8.3.9 The New Cowper cairn is an unusual example of a relatively common tradition which spans the Neolithic and Early Bronze Ages. This period in Britain is generally characterised by the creation of embanked stone circles, cairns, ring-cairns, cairn circles and kerb circles. The period is also characterised by the use of 'Beaker' pottery, often in the form of urns, food-vessels and cups. Burials of the period generally consisted of human remains placed in stone cists, covered by a small circular cairn, often with cremation burials being added at a later stage in the sequence.
- 8.3.10 Bronze Age activity in North Cumbria is evident by the distribution of artefacts, including flints, bronze items, beakers and collared urns (after Bewley, 1994). The distribution of flint artefacts on the Abbeytown ridge, close to the site at New Cowper, demonstrates activity across different parts of the landscape: slope, hilltop, bog-edge and valley bottom (Ibid.). The spread of artefacts, however, is indicative general *activity* rather than *occupation*.
- 8.3.11 Prior to the present site, only one Beaker had been discovered on the Solway Plain, at Ewanrigg (Bewley 1986), the majority of Cumbrian Bronze Age finds being from Carlisle, the Eden Valley and Southwest Cumbria. The site at Ewanrigg produced 29

cremation pits, one cist burial and an enigmatic stone feature (Bewley 1986). The cremation consisted of small pits filled with ash, charcoal and bone from a pyre; some also contained urns inserted within the ash and charcoal. Bewley's excavations demonstrated the site at Ewanrigg to have been an important Bronze Age funerary site, and also demonstrated the likely Bronze Age origins for the adjacent settlement.

- 8.3.12 The pottery and a thumbnail scraper produced from the cairn, strongly suggest a Bronze Age date for the feature. This was confirmed by the production of an early Bronze Age radiocarbon date from charcoal filling a pit (context 176), which was cut into the cairn material (2400-2380 cal BC or 2360-2140 cal BC). This evidence for Bronze Age activity indicates a settlement site was probably present within the environs of the cairn, and provides evidence of activity from the mid 3rd to early 2nd millennium BC.

Phase 4: Iron Age/Roman Period

- 8.3.13 There is an absence of direct evidence for Iron Age activity at the site. However, a major ditch running across the east side of the excavation (context 102), and a number of linear boundary features in the south-west corner of the site, could potentially be Iron Age or later in date. These features closely resemble the enclosures, field-systems or land divisions of a recognisably Iron Age or Romano-British pattern (Figure 13).
- 8.3.14 The pre-Roman Iron Age in the North of England is problematic, given the period is essentially aceramic and generally difficult to characterise. The archaeology of the period is generally classified by settlement morphology, i.e. through the analysis of the character of enclosed farmsteads and associated land divisions. Evidence from aerial photography, and limited excavated evidence has suggested that the Solway Plain may have been intensively occupied during the Iron Age and Romano-British periods, with known at Fingland and Plasketlands (Bewley, 1994). The identification of a probable ditched trackway and field boundaries during the 2000/2002 excavations at New Cowper (Gaskell 2006), is strongly indicative of activity dating to the 1st millennium BC (or later). It is therefore likely that the Group 1, Group 2 and Group 3 ditches, and the linear north-south aligned ditch (context 102) may date to this period.
- 8.3.15 The recovery of a single sherd of Samian pottery, which has exhibited signs of reuse, cannot be used as evidence of Roman activity as the find, although of Roman in origin, cannot be provenanced.

Phase 5: Medieval

- 8.3.16 No direct evidence of medieval activity was revealed during the excavation. However it is possible that a series of widely-spaced plough furrows across the site are medieval.

Phase 6: Post Medieval and Modern

- 8.3.17 A closely-spaced group of plough furrows and a narrow ditch (context 104) crossed the east side of the site, and were aligned with the current Parliamentary Enclosure period field boundaries, which suggested a post-medieval date for these features (Figure 14). This was confirmed by the recovery of a number of iron objects of post-

medieval date from their fills. The ditch (context 104) was associated with a number of stake holes, and probably formed part of a composite field boundary.

8.3.18 Modern features included bonfires and a sheep burial

8.4 CONCLUSION AND RECOMMENDATIONS

8.4.1 The Phase 1 excavation at New Cowper Quarry has addressed many of the academic aims set out in the original project design, and has provided important information regarding the significance of a hitherto unknown landscape.

8.4.2 The absence of clear physical or stratigraphic relationships over large parts of the site has made structural phasing difficult. However the archaeological remains have facilitated the construction of a broad chronological framework, based on the recovery of pottery and a small lithic assemblage, and through the radiocarbon dating of a small number of charcoal samples.

8.4.3 A significant level of truncation of archaeological deposits has taken place as a result of medieval and post-medieval agriculture. However, the amount of information recovered during the excavation was significant, and sufficient to facilitate a basic understanding of the kinds of activities, which were undertaken on site.

8.4.4 The excavation revealed a series of archaeological features spanning Neolithic and Bronze Age. No direct settlement evidence was revealed, although the central part of the site appears to have been a focus for funerary activities between the Early Neolithic and Early Bronze Age.

8.4.5 A number of linear features, forming part of a field system and possible enclosures have been identified. Although no dating evidence has yet been obtained for these features, these are likely to date to the 1st millennium BC and represent part of a broader settled, agricultural landscape. Further work is required in order to further characterise the nature of these land divisions.

8.4.6 The excavation has highlighted a number of issues regarding the use of the landscape in prehistory. Further investigation could shed light on the nature of agricultural and mortuary practices in the later prehistoric period in Cumbria. Further work is needed in order to fully characterise the excavated remains, including detailed analysis of the results of the environmental sampling programme, additional carbon 14 dates to increase the current state of knowledge, and also further work in the form of pottery analysis and reconstruction.

8.4.7 It is recommended that the results of this excavation (NCF-A) be combined with those from two later phases of excavation at New Cowper Quarry in adjacent fields (NCF-B) and (NCF-C), and that the combined data be published as a coherent body of work.

8.5 POTENTIAL FOR FURTHER WORK

- 8.5.1 This report serves as a MAP2 Assessment and level 3 archive report for the current site. The primary written, drawn and photographic archive records have been checked, ordered and appropriately stored.
- 8.5.2 To take the report to publication level would require significant editorial work and further research on regional and local comparisons. The material recovered from the site also requires additional work, before the report can be successfully published.
- 8.5.3 Further work based on the environmental material recovered from the site should aim to characterise the nature of activities undertaken throughout prehistory. Detailed work should aim to elucidate the nature of the land divisions identified, and clarify the depositional practices observed, which have resulted in the burial of prehistoric pottery in a series of pits across the site. This analysis would also provide valuable information as to the nature of agricultural practices and environmental conditions during the Neolithic and Bronze Age in Cumbria
- 8.5.4 The structural and stratigraphic data from the various phases should form the basis of a synthesised report, which will include any additional data gathered from further documentary, environmental and artefact studies.
- 8.5.5 The unusual and distinctive nature of the pottery assemblage, is of both regional and national importance. These vessels should be further studied (as outlined in Section 5), and illustrated by photography and line drawing.
- 8.5.6 The fine Beaker vessel (Pot 3) is in suitable condition for reconstruction, and should be undertaken due to the local and regional rarity and unabraded condition of the vessel. The fabric and decoration of the pot should be examined before the reconstruction takes place.
- 8.5.7 The fired clay should also be investigated in order to understand its origin and function.
- 8.5.8 Further C14 dates would be valuable in order to provide absolute dates for a broader range of features and deposits.
- 8.5.9 An updated project design for the work required to fully analyse the site, and bring the work to publication is included in Section 9.

8.6 ARCHIVE DEPOSITION

- 8.6.1 On completion of the analysis and publication, the site archive will be prepared for deposition in Tullie House Museum.
- 8.6.2 One copy of this report will be deposited with the Cumbria County Council Historic Environment Record, where viewing will be available on request.
- 8.6.3 The project is also registered with the **Online Access to the Index of archaeological investigationS (OASIS)**.

8.7 PUBLICATION REPORT

- 8.7.1 The final report will be submitted for publication in the Transactions of the Cumberland and Westmorland Archaeological and Antiquarian Society. The detailed environmental results will be submitted to the journal of the Association for Environmental Archaeology.
- 8.7.2 The detailed prehistoric pottery results will be disseminated through the Prehistoric Ceramics Research Group.

9. UPDATED PROJECT DESIGN

9.1 INTRODUCTION

9.1.1 This section presents the outline of an updated project design based on the results of the assessment. The work modules required for completion of the post-excavation programme are also set out in relation to a series of identified aims.

9.2 AIMS

9.2.1 The principal aims of the final post-excavation work can be summarised as follows: to produce, concurrently with the two later phases of excavation (NCF-B, Davies 2006) and (NCF-C, Gaskell 2006), an integrated interpretive synthesis of data for monograph publication.

9.2.2 Undertake analysis of identified categories of data at appropriate levels of detail.

9.2.3 To create and deposit an ordered and indexed research archive in Tullie House museum.

9.3 OBJECTIVES

9.3.1 Following on from the assessment it is possible to set out a number of objectives that will be addressed by the final post-excavation programme:

[1] To finalise, in conjunction with radiocarbon dating, the stratigraphic sequence of the site

[2] To determine spatial and temporal patterns within the site, once key stratigraphic elements have been scientifically dated.

[3] To better define the nature of land use and depositional practices on the site and how this changes over time.

[4] To use the environmental evidence to undertake detailed spatial analysis of deposits and determine evidence for changing social and economic activities.

[5] To examine possible continuity of occupation between the Bronze Age and Iron Age.

[6] To illustrate and publish the significant finds including important Neolithic and Bronze Age pottery.

[7] To define the position and significance of the site, concurrently with the later phases of excavation (NCF-B and NCF-C), within its local, regional and national context.

9.4 METHODS OF ANALYSIS

9.4.1 To achieve the post-excavation programmes specified aims and objectives the following methods will be used. Each dataset and the relevant objectives and work modules to which it relates are set out below.

9.4.2 **Stratigraphic data:** Further stratigraphic analysis will involve the quantification and description of the archaeological sequence in the light of radiocarbon dating. The context data will be reappraised and feature groups revised where necessary. Comprehensive interpretive group text has already been produced, but where applicable the environmental evidence will be integrated into this group text. Period text will be written to provide a chronological overview of the development of the site in conjunction with the later phases of excavations. Illustrations will be produced, including digitisation of key plans and section drawings.

9.4.3 **Pottery:** For a report providing a full analysis of the assemblage suitable for publication or for a client report, the following tasks will be required:

- Laying out and sorting the pottery. Search for any joins or groups, and joining sherds where possible and appropriate.
- Checking all information and plans are available.
- Sorting the pottery into fabric types and recording.
- Incorporate fabric types into the catalogue and make any necessary adjustments to catalogue.
- Select sherds for thin section, despatch, liase and incorporate results.
- Select sherds for illustrations of the 8 representative vessels.
- Compile descriptive catalogue of material to be illustrated.
- Consider all associated finds and investigate the fired clay pieces.
- Search for and consider comparable material from other sites in the region and nationally.
- Look for dating evidence for similar material.
- Consider results of fabric analysis and interpret.
- Write report with analysis and interpretation of investigations.
- Return sherds for illustration, advise and check illustrations.
- Reconstruct Beaker Vessel (Pot 3)
- Parcel up and return pottery.

Fulfil objectives: [6,7].

9.4.3 **Flint:** Small finds <2>, <3>, <7> will be professionally drawn and published. *Fulfil objectives: [6,7].*

9.4.4 **Burnt Bone:** The burnt bone, whether human or animal, from contexts 123 (cairn), 312 (fire pit) and contexts 111, 152, 293, 386, and 408 (pits), will be analysed by an appropriate specialist to hopefully give an insight into the nature of the deposition observed at this site. *Objectives: [3,4].*

9.4.5 **Radiocarbon dating:** Radiocarbon dating of ten samples: sample numbers 30 (context 166, Group 5 posthole), 64 (context 301, Group 5 posthole), 76 (context

243, Group 5 posthole), 98 (context 287, Group 4 pit), 99 (context 386, Group 1 gully), 120 (context 289, Group 4 pit), 22 (context 152 Area 3 pit), 105 (context 371 Group 4 pit), 111 (context 312 fire pit) and 114 (context 293 Area 1 pit). These are from a variety of features at the NCF-A site and will be undertaken and integrated into the stratigraphic narrative, providing the narrative with a comprehensive chronological foothold. *Objectives: [1,2,3,5,7].*

9.4.6 **Report Synthesis, Preparation and Publication:** The conclusions drawn from the final elements of analysis will be summarised and included in a coherent descriptive text. Final site, interpretative and artefactual illustrations will be produced, in conjunction with the later phases of excavation. The completed manuscript will be edited internally and submitted to an appropriate publisher as a monograph level publication. *Objectives: [1-7].*

9.4.7 **Outline Synopsis for publication:** It is envisaged that the NCF-A excavation will be published together with the later phases of excavation (NCF-B and NCF-C). As a result, this synopsis would include all three phases of work, with a format as outlined below.

- **Summary**
- **Introduction:** Background, circumstances of project, geology/topography, archaeological background.
- **Site Description:** Location and fieldwork methodology.
- **Excavated Data:** Introduction, overall site plan. Neolithic: feature descriptions integrated with artefactual, environmental and radiocarbon evidence, illustrations. Bronze Age: feature descriptions integrated with artefactual, environmental and radiocarbon evidence, illustrations. Iron Age/Romano-British: feature descriptions integrated with artefactual, environmental and radiocarbon evidence, illustrations. Post-prehistoric: feature descriptions integrated with artefactual, environmental and radiocarbon evidence, illustrations.
- **Artefactual Data:** Pottery, flint etc.
- **Environmental data:** Macrofossils, burnt bone and radiocarbon dating
- **Synthesis:** Site interpretation and discussion, comparative evidence, local and regional significance.

9.4.8 **Archiving:** The site and research archives will be prepared and deposited in Tullie House Museum.

9.5 COSTS, STAFFING AND RESOURCES

9.5.1 The costs for bringing the two later phases of excavation (NCF-B and NCF-C) to completion and publication have been provided in two earlier assessment reports (Davies 2006 and Gaskell 2006).

9.5.2 It is envisaged the full analysis of this excavation (NCF-A) will be undertaken in conjunction with the two later phases, and all three be published as a coherent piece

of work. It is proposed that a revised costing be produced for the full analysis and publication of all three phases of excavation at New Cowper Quarry, and that this will be produced as a separate document. North Pennines Archaeology can provide the costs for the analysis of this phase work alone, as required.

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APPENDIX 1: LIST OF CONTEXTS

Context	Description	Group	Above	Below	Cuts	Cut by	Filled by	Fill of	Comments
100	Sandy loam topsoil		101	-					
101	Natural subsoil		-	100					
102	Cut of Linear Ditch	6	101	103	101,1511 52,163		103,131, 141,143 144,150 160		Same as 120,126, 148
103	Primary fill of 102	6	102	100				102	
104	Cut of Linear Gully	7	101	105	101		105		Same as 178, 246, 306
105	Primary fill of 104	7	104	100				104	
106	Cut of Linear Gully	7	101	107	101		107		Same as 124
107	Primary fill of 106	7	106	100				166	
108	Cut of Linear Ditch	7	101	109	101		109, 340		Same as 200, 222, 224, 227, 246, 250, 327, 331, 343, 354
109	Primary fill of 108	7	108	100				108	
110	Slot through Linear Ditch	7	101	111	101		111, 136, 137, 145		Same as 146
111	Primary fill of 110	7	110	100				110	
112	Cut of Linear Ditch	7	101	113	101		113		Same as 252
113	Primary fill of 112	7	112	100				112	
114	VOID								
115	VOID								
116	Cut of Linear Gully	7	101	117	101		117, 134		Same as 134
117	Primary fill of 117	7	116	100				119	

Context	Description	Group	Above	Below	Cuts	Cut by	Filled by	Fill of	Comments
118	Cut of Linear Ditch	7	101	119	101, 130, 163		119		Same as 248
119	Primary fill of 118	7	118	100				118	
120	Slot through Linear Ditch	6	101	121	101		121		Same as 102
121	Primary fill of 120	6	120	100				120	
122	Cut of Sub Oval Cairn	5	101	177	101	178	142, 173, 176, 177, 181,		
123	Disturbed cairn material	5	178	179				178	
124	Cut of Terminus of Linear Ditch	7	101	125	101		125		Same as 106
125	Primary fill of 124	7	124	100				124	
126	Slot through Linear Ditch	6	101	127	101		127, 128, 129, 135, 231		Same as 102
127	Primary fill of 126	6	126	100				126	
128	Secondary fill of 126	6	126	100				126	
129	Secondary fill of 126	6	126	100				126	
130	Cut of Pit		101	130	101	118	131, 483		
131	Primary fill of 130		130	118		118		130	
132	Stakeholes	7	101	132	101		133		
133	Primary fill of 132	7	133	100				132	
134	Secondary fill of 116	7	101	100				116	
135	Secondary fill of 126	7	126	100					
136	Secondary fill of 110	7	110	100				110	
137	Secondary fill of 110	7	110	100				110	
138	Secondary fill of 102	6	102	100				102	

Context	Description	Group	Above	Below	Cuts	Cut by	Filled by	Fill of	Comments
139	VOID								
140	VOID								
141	Secondary fill of 102	6	102	100				102	
142	Secondary fill of 122	5	176	100				122	
143	Secondary Fill of 102	6	102	100				102	
144	Secondary fill of 102	6	102	100				102	
145	Secondary fill of 110	7	110	100				110	
146	Cut of Linear Ditch	7	101	147			147		Same as 110
147	Secondary fill of 146	7	146	100				146	
148	Cut of Linear Ditch	6	101	149	101		149		Same as 102
149	Primary fill of 148	6	148	100				148	
150	Secondary fill of 102	6	102	100				102	
151	Cut of Pit		101	100	101	102	152		
152	Primary fill of 151		151	100		102		151	
153	VOID								
154	VOID								
155	VOID								
156	VOID								
157	VOID								
158	VOID								
159	VOID								
160	Secondary fill of 102	6	102	100				102	
161	VOID								
162	VOID								
163	Cut of Pit		149	100	101, 102	118	164		
164	Primary fill of 163		163	100				163	

Context	Description	Group	Above	Below	Cuts	Cut by	Filled by	Fill of	Comments
165	Cut of Pit		101	166	101		166		
166	Primary fill of 166		165	100				165	
167	Post-hole	5	101	168	101		168		
168	Primary fill of 167	5	167	100				167	
169	Post-hole		101	100	101		170	169	
170	Primary fill of 169		169	100					
171	Post-hole		101	100	101		172	171	
172	Primary fill of 171		171	100					
173	Secondary fill of 122	5	181	100				122	
174	Cut of Pit	5	177	175	177, 173	178	175, 176		
175	Primary fill of 174	5	174	176				174	
176	Charcoal spread	5	175	179		178		174	
177	Secondary fill of 122	5	122	100				122	
178	Cut of Linear Ditch	7	101	123	101, 122, 173, 177		123, 179		Same as 104
179	Fill of 178	7	123	100			178		
180	VOID								
181	Fill of 122	5	122	173				122	
182	Pit	5	173	197			183, 197		
183	Fill of pit	5	197	100				182	
184	Tree bole		101	185	101		185		
185	Primary fill of 184		185	100				184	
186	Cut	7	101	187	101	187		187, 208	Same as 194, 198, 203, 214, 254
187	Primary fill of 186	7	186	100			186		
188	Cut of Pit		101	100	101		189		
189	Primary fill of 188		188	100				188	
190	Cut of Pit		101	100	101		191		

Context	Description	Group	Above	Below	Cuts	Cut by	Filled by	Fill of	Comments
191	Primary fill of 190		190	100				190	
192	Cut of Linear Ditch	7	101	193	101		193	196, 207	Same as 256, 356, 358
193	Primary fill of 192	7	192	100				192	
194	Cut	7	101	195	101		195		Same as 186
195	Primary fill of 194	7	194	100				194	
196	Secondary fill of 192	7	192	100				192	
197	Fill of 182	5	182	183				182	
198	Cut	7	101	199	101		199		Same as 186
199	Primary fill of 198	7	198	100				198	
200	Cut of Linear Ditch	7	101	200	101		201		Same as 108
201	Primary fill of 200	7	200	100				200	
202	VOID								
203	Cut	7	101	204	101		204		Same as 186
204	Primary fill of 203	7	203	100				203	
205	VOID								
206	VOID								
207	Secondary fill of 192	7	192	100				192	
208	Secondary fill of 186	7	186	100				186	
209	Post Hole	7	101	210	101		210		
210	Primary fill of 209	7	209	100				209	
211	Cut of Pit		101	212	101		212, 213		
212	Primary fill of 211		211	213				211	
213	Secondary fill of 211		212	100				211	
214	Fill of 186	7	186	100				186	
215	Secondary fill of 254	7	254	100				215	

Context	Description	Group	Above	Below	Cuts	Cut by	Filled by	Fill of	Comments
216	Cut of Pit		101	217	101		217		
217	Primary fill of 217		216	100				216	
218	Cut of Linear Ditch	7	101	219	101		219		Same as 256
219	Primary fill of 219	7	218	100				218	
220	Stake holes	7	101	220	101		221		
221	Primary fill of 220	7	220	100				220	
222	Cut of Linear Ditch	7	101	223	101		223, 341		Same as 108
223	Primary fill of 222	7	222	100				222	
224	Cut of Linear Ditch	7	101	225	101		225, 226		Same as 108
225	Primary fill of 224	7	224	100				222	
226	Secondary fill of 224	7	224	100				222	
227	Cut of Pit	7	101	228	101		228		Same as 108
228	Primary fill of 227	7	227	100				227	
229	Cut of Pit		101	228	101		230		
230	Primary fill of 229		229	100				229	
231	Secondary fill of 126		126	100				126	
232	VOID								
233	VOID								
234	Post-hole		101	235	101		235		
235	Primary fill of 234		234	100				234	
236	Post-hole		101	237	101		237		
237	Primary fill of 236		236	100				236	
238	Posthole		101	239	101		239		
239	Primary fill of 238		238	100				238	

Context	Description	Group	Above	Below	Cuts	Cut by	Filled by	Fill of	Comments
240	Cut of Linear Ditch	7	101	241	101		241		Same as 118
241	Primary fill of 240	7	240	100				240	
242	Posthole	5	101	243	101		243		
243	Primary fill of 242	5	242	100				242	
244	Post Hole	5	101	245	101				
245	Primary fill of 244	5	244	100				244	
246	Cut of Linear Ditch	7	101	247	101		247		Same as 104, 246
247	Fill of 246	7	246	100				246	
248	Cut of Linear Ditch	7	101	249	101		249		Same as 118
249	Fill of 248	7	248	100				248	
250	Cut of Linear Ditch	7	101	251	101		251		Same as 108
251	Fill of 251	7	250	100				250	
252	Cut of Linear Ditch	7	101	253	101		252		Same as 112
253	Fill of 252	7	252	100				251	
254	Cut of Linear Ditch	7	101	255	101		255	215, 305, 348	Same as 186
255	Fill of 254	7	254	100				254	
256	Cut of Linear Ditch	7	101	257	101		257		Same as 192
257	Fill of 256	7	256	100				256	
258	Cut of Linear Ditch 257	1	101	259	101	476	259		Same as 453
259	Fill of 258	1	258	100		476		258	
260	Cut of Linear Ditch	1	101	261	101	397, 476	261		Same as 395, 411, 439
261	Fill of 260	1	260	100		476		260	
262	Cut of Linear Ditch	2	101	263	101		263, 431		Same as 298, 389
263	Fill of 262	2	262	100				262	
264	VOID								
265	VOID								

Context	Description	Group	Above	Below	Cuts	Cut by	Filled by	Fill of	Comments
266	Cut of Linear Ditch	7	101	267	101		267		Same as 476
267	Fill of 266	7	266	100				266	
268	Cut of Linear Ditch	7	101	269	101		269		Same as 393, 397, 435
269	Fill of 268	7	268	100				268	
270	Cut of Linear Ditch	7	101	271	101		271, 349		Same as 106
271	Fill of 270	7		100				270	
272	VOID								
273	VOID								
274	VOID								
275	VOID								
276	VOID								
277	VOID								
278	VOID								
279	VOID								
280	VOID								
281	VOID								
282	VOID								
283	VOID								
284	Cut of Pit	4	101	285	101		285		
285	Primary fill of 284	4	284	100				284	
286	Cut of Pit	4	101	287	101		287		
287	Primary fill of 286	4	286	100				286	
288	Cut of Pit	4	101	289	101		289		
289	Primary fill of 288	4	288	100				288	
290	Cut of Pit		101	291	101		291		
291	Primary fill of 290		292	100				290	
292	Cut of Pit		101	293	101	397	293		
293	Primary fill of 292		292	100		397		292	
294	Cut of Pit		101	295	101		295		

Context	Description	Group	Above	Below	Cuts	Cut by	Filled by	Fill of	Comments
295	Primary fill of 294		294	100				294	
296	Cut of Pit		101	297	101		297		
297	Primary fill of 298		296	100				296	
298	Cut of Linear Ditch	2	101	299	101		299		Same as 262, 388
299	Primary fill of 298	2	298	100				298	
300	Post hole	5	101	301	101		301		
301	Primary fill of 300	5	300	304				300	
302	Primary fill of 303	7	303	100				303	
303	Cut of Linear Ditch	7	101	302	101		302		Same as 108
304	Secondary fill of 300	5	301	100				300	
305	Secondary fill of 254	7	254	100				254	
306	Cut of Linear Ditch	7	101	307	101				Same as 104
307	Secondary fill of 306	7	306	100				306	
308	Secondary fill of 306	7	306	100				306	
309	VOID								
310	VOID								
311	Cut of Fire pit		101	312	101, 364		312, 478, 479, 480, 481		
312	Primary fill of 311		311	100				311	
313	Cut of Pit		101	100			314		
314	Primary fill of 313		313	100				313	
315	Tree bole		101	100			316		
316	Primary fill of 315		315	100				315	
317	Tree bole		101	100			318		

Context	Description	Group	Above	Below	Cuts	Cut by	Filled by	Fill of	Comments
318	Primary fill of 317		317	100				317	
319	VOID								
320	VOID								
321	VOID								
322	VOID								
323	VOID								
324	VOID								
325	VOID								
326	VOID								
327	Cut of Linear gully	7	101	328	101		328		Same as 108
328	Primary fill of 327	7	327	100				327	
329	Post hole		101	330	101		330		
330	Primary fill of 329	5	329	100				329	
331	Primary fill of 122	7						122	
332	Cut of Linear Ditch	7	101	333	101		333		
333	Primary fill of 332		332	100				332	
334	Post hole		101	336	101		335, 336, 337, 338		
335	Primary fill of 334		336	337				334	Same as 339
336	Charcoal layer		334	335, 339				334	
337	Post pipe		335, 339	338				334	
338	Primary fill of 337		337	100				334	
339	Secondary fill of 337		336	337				337	Same as 335
340	Primary fill of 108		108	100				108	
341	Primary fill of 222		222	100				222	
342	Deposit	5	101	331				122	
343	Cut	7	101	334	101		344		Same as 108

Context	Description	Group	Above	Below	Cuts	Cut by	Filled by	Fill of	Comments
344	Primary fill of gully 343	7	112	100				343	
345	VOID								
346	VOID								
347	VOID								
348	Primary fill of 254	7	254	100				254	
349	Primary fill of 270	7	270	100				270	
350	VOID								
351	VOID								
352	Stakeholes	5	101	487	101				Same as 486
353	Primary fill of 354	7	254	100				354	
354	Cut of Linear Ditch	7	101	355	101		353, 355		Same as 108
355	Primary fill of 354	7	354	100				354	
356	Cut of Linear Ditch	7	101	357	101		357		Same as 192, 256
357	Primary fill of 356	7	356	100				356	
358	Cut of Linear Ditch 256	7	101	359	101		359		Sme as 192, 256
359	Primary fill of 358	7	358	100				358	
360	VOID								
361	VOID								
362	Cut of Pit		101	363	101		362		
363	Primary fill of 362		362	100				361	
364	Cut of Linear Feature	3	101	363	101, 401, 403	397, 399, 311	365		Same as 441, 424, 445, 448
365	Primary fill of 364	3	364	384		397, 399, 311		364	
366	VOID								
367	VOID								
368	VOID								
369	VOID								

Context	Description	Group	Above	Below	Cuts	Cut by	Filled by	Fill of	Comments
370	Cut of Pit	4	101	372	101		371		
371	Primary fill of 370	4	370	100				370	
372	Cut of Pit	4	101	373	101		373		
373	Primary fill of 372	4	372	100				372	
374	Cut of Pit	4	107	375	101		375		
375	Primary fill of 374	4	374	100				374	
376	Cut of Pit	4	101	377	101		377, 378		
377	Primary fill of 376	4	380	100				376	
378	VOID	4	376	377			379		
379	VOID	4	382	100				378	
380	Secondary fill of 376	4	376	377				376	
381	Cut for stakeholes	3	382	100	101		382		
382	Primary fill of 381	3	101	381				381	
383	Grave cut	5	101	331	101		331		
384	Secondary fill of 367		364	100					
385	Cut of Pit	4	101	386	101		384, 432		
386	Primary fill of 385	4	385	100				385	
387	Cut of Pit	3	101	388	101		388		
388	Primary fill of 387	3	387	384				387	
389	Cut of Linear Ditch	2	101	390	101		390		Same as 262, 298
390	Primary fill of 389	2	389	100				389	
391	Cut of Pit		101	392	101		392		
392	Primary fill of 391		391	100				391	
393	Cut of Furrow	7	101	394	101		394		Same as 268, 397, 435
394	Primary fill of 393	7	393	100				393	

Context	Description	Group	Above	Below	Cuts	Cut by	Filled by	Fill of	Comments
395	Slot through ditch 260		101	396	101		396		Same as 260
396	Primary fill of 395		395	100				395	
397	Cut of Furrow	7	101	398	101, 260, 292, 364, 365		398		Same as 268, 393, 435
398	Primary fill of 397	7	397	100				397	
399	Cut of Furrow	7	101	400	101, 364, 365		400		
400	Primary fill of 399	7	399	100				399	
401	Cut of pit		101	402	101	364	402		
402	Fill of 401							401	
403	Cut of pit		404	100	101	364	404		
404	Fill of 403							403	
405	Cut for stakeholes		101	406	101		406		
406	Primary fill of 405		405	100				405	
407	VOID								
408	Secondary fill of 409	4	407	100				409	
409	Cut of Pit	4	101	410	101	407	408, 410		
410	Primary fill of 409	4	409	407		407		409	
411	Slot through Ditch 260		101	412	101		412		Same as 260
412	Primary fill of 411		411	100				411	
413	VOID								
414	VOID								
415	VOID								
416	VOID								
417	VOID								
418	VOID								
419	VOID								
420	Cut of Linear Ditch	3	101	421	101		421, 422		

Context	Description	Group	Above	Below	Cuts	Cut by	Filled by	Fill of	Comments
421	Primary fill of 420	3	420	422				420	
422	Secondary fill of 420	3	421	423				420	
423	Primary fill of 424	3	424	100				424	Same as 365
424	Cut of Linear Ditch	3	422	423	101, 401		423		Same as 364, 441, 445, 448
425	VOID								
426	VOID								
427	VOID								
428	VOID								
429	VOID								
430	VOID								
431	Secondary fill of 262	2	262	100				262	
432	Secondary fill of 386	4	385	100				386	
433	Root hole		101	434	101		434		
434	Primary fill of 433		433	100				433	
435	Cut of Linear Ditch	7	101	436	101		436		Same as 268
436	Primary fill of 435	7	435	100				435	
437	Cut of Pit		101	438	101		438		
438	Primary fill of 437		437	100				437	
439	Slot through Ditch 260		101	440	101		440		Same as 260
440	Primary fill of 439		439	100				439	
441	Cut of Linear Ditch		101	442	101		442		Same as 364, 424, 441, 448
442	Primary fill of 441	3	441	100				441	
443	Cut of Linear Ditch	2	101	443	101		444		
444	Primary fill of 443	2	443	100				443	

Context	Description	Group	Above	Below	Cuts	Cut by	Filled by	Fill of	Comments
445	Cut of Linear Ditch	3	101	446	101		446, 447		Same as 364, 424, 441, 448
446	Primary fill of 445	3	445	447				445	
447	Deposit	3	446	100				445	
448	Cut of Linear Ditch	3	101	449	101		449, 450		Same as 364, 424, 441, 445
449	Primary fill of 448	3	448	450				448	
450	Deposit	3	449	100				448	
451	Cut of Pit		101	452	101		452		
452	Primary fill of 451		451	100				451	
453	Cut of Linear Ditch	1	101	454	101		454		Same as 258
454	Primary fill of 453	1	453	100				453	
455	Cut of Linear Ditch	1	101	456	101				
456	Primary fill of 455	1	455	100					
457	Modern Stake hole		101	458	101		458		Associated with 451
458	Primary fill of 457		457	100				457	
459	Modern Stake hole		101	460	101		460		Associated with 451
460	Primary fill of 459		459	100				459	
461	Modern Stake hole		101	462	101		462		Associated with 451
462	Primary fill of 461		461	100				461	
463	Modern Stake hole		101	464	101		464		Associated with 451
464	Primary fill of 463		463	100				463	
465	VOID								
466	VOID								
467	VOID								
468	Post hole		101	469	101		469		

Context	Description	Group	Above	Below	Cuts	Cut by	Filled by	Fill of	Comments
469	Primary fill of 468		468	100				468	
470	Post hole		101	471	101		471		
471	Primary fill of 470		470	100				470	
472	Cut of Pit		101	473	101		473		
473	Primary fill of 472		472	100				472	
474	Coarse sand	5	475				122		
475	VOID								
476	Plough furrow	7	101	477	191, 258, 260		477		Same as 266
477	Fill of 476	7	476	100				476	
478	Fill of fire pit 311		479	312				311	
479	Fill of fire pit 311		480	478				311	
480	Fill of fire pit 311		481	479				311	
481	Fill of fire pit 311		482	480				311	
482	Fill of fire pit 311		311	481				311	
483	VOID								
484	VOID								
485	VOID								
486	Stake holes	5	101	487			487		Same as 352
487	Fill of 486	5	486	100				486	

APPENDIX 3: RADIOCARBON DATING DATA

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-27:lab. mult=1)

Laboratory number: **Beta-207050**

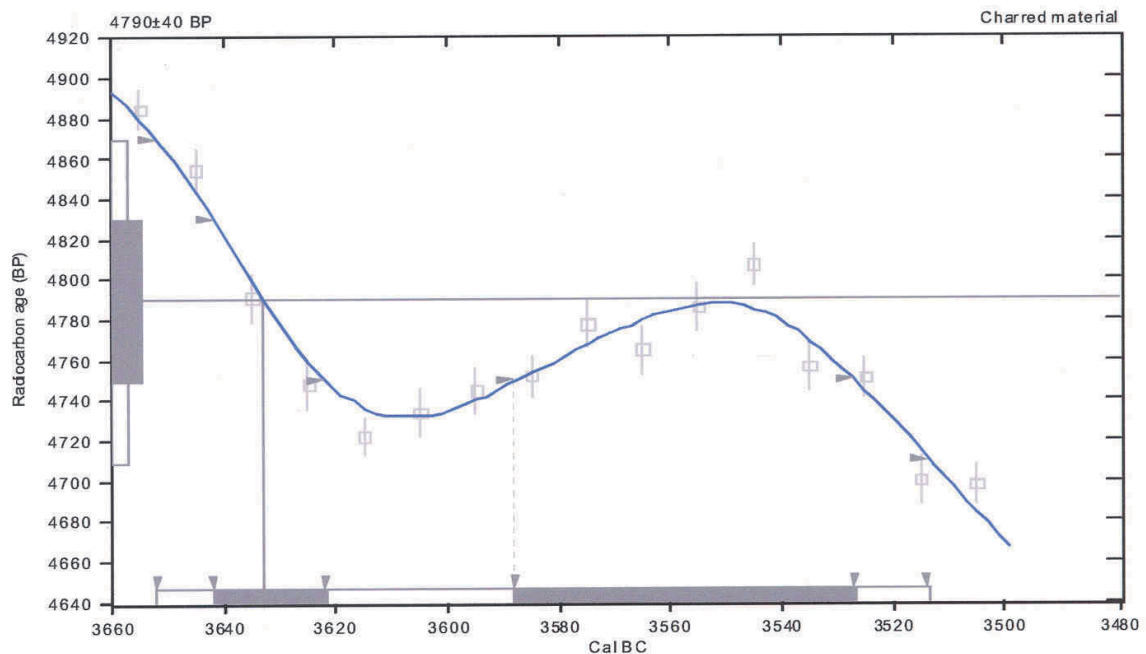
Conventional radiocarbon age: **4790±40 BP**

2 Sigma calibrated result: Cal BC 3650 to 3510 (Cal BP 5600 to 5460)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: **Cal BC 3630 (Cal BP 5580)**

1 Sigma calibrated results: Cal BC 3640 to 3620 (Cal BP 5590 to 5570) and
(68% probability) **Cal BC 3590 to 3530 (Cal BP 5540 to 5480)**



References:

Database used

INTCAL 98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, *Radiocarbon* 40(3), pxi-xii

INTCAL 98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, *Radiocarbon* 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

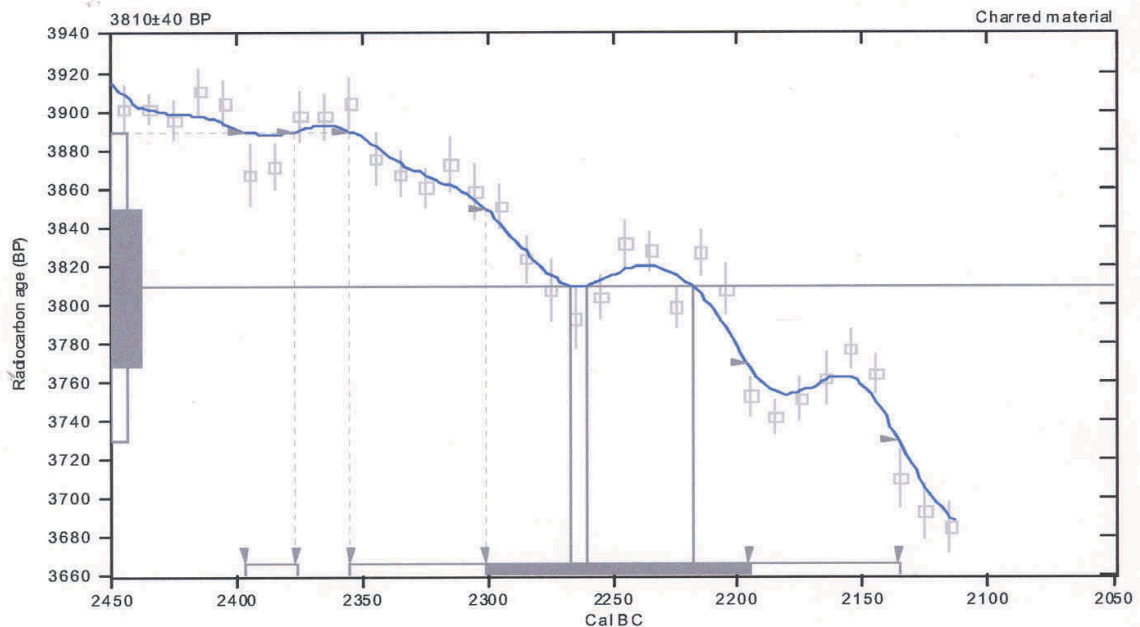
4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.4;lab. mult=1)

Laboratory number: Beta-207051**Conventional radiocarbon age: 3810±40 BP****2 Sigma calibrated results: Cal BC 2400 to 2380 (Cal BP 4350 to 4330) and
(95% probability) Cal BC 2360 to 2140 (Cal BP 4300 to 4090)**

Intercept data

Intercepts of radiocarbon age
with calibration curve:Cal BC 2270 (Cal BP 4220) and
Cal BC 2260 (Cal BP 4210) and
Cal BC 2220 (Cal BP 4170)**1 Sigma calibrated result: Cal BC 2300 to 2200 (Cal BP 4250 to 4150)
(68% probability)****References:***Database used*

INTCAL 98

*Calibration Database**Editorial Comment*Stuiver, M., van der Plicht, H., 1998, *Radiocarbon* 40(3), p xii-xiii*INTCAL98 Radiocarbon Age Calibration*Stuiver, M., et al., 1998, *Radiocarbon* 40(3), p1041-1083*Mathematics**A Simplified Approach to Calibrating C14 Dates*Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2), p317-322**Beta Analytic Radiocarbon Dating Laboratory**

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APPENDIX 4: ILLUSTRATIONS
