

# Low Plains Quarry, Lazonby, Cumbria



## Post-Excavation Assessment



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## SUMMARY

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In May 2004, during the course of sand and gravel extraction at Low Plains Quarry, Lazonby, Cumbria (NY 4997 4166), three small circular burnt patches were noticed by quarry workers. Oxford Archaeology North was contacted by the quarry owners, Tarmac Northern Ltd, and requested to investigate these features, which proved to be three cremation burials. This work was undertaken in accordance with a verbal brief from Cumbria County Council Historic Environment Service. Manual cleaning in the immediate vicinity of these features revealed a further probable cremation.

Cremation **1** comprised an inurned burial, whilst Cremation **2** contained both broken pottery and cremated remains. Cremation **3** was aceramic, but did contain the largest amount of bone, whilst Cremation **4** contained only very small amounts of bone and charcoal. Assessment of the pottery associated with the cremations indicated a Bronze Age date. Cremation sites from this period are not commonly recorded in Cumbria, and that from Low Plains Quarry, albeit small, has the potential to contribute to a wide range of research aims. These will include an examination of the nature and absolute date of the cremation cemetery; osteological and bioarchaeological analysis of the skeletal remains in order to further an understanding of Bronze Age life and mortality and to try to understand the geographical origins of those buried at Low Plains Quarry; a study of funeral ritual and practice; typological, fabric, and lipid residue analyses of the pottery from the cemetery in order to further an absolutely dated understanding of production methods, resources and stylistic patterns in pottery manufacture, along with the uses to which these vessels were put; a reconstruction of the local environment along with the evidence for, and nature of, human ecological interaction.

This assessment examined the results of the excavation, and assessed the potential for further analysis of each category of data with regard to the project's research aims. The process has been designed to correspond to the objectives laid out in the guidance document *Management of Archaeological Projects* 2nd edition (MAP 2; English Heritage 1991). An updated project design is presented, and an appropriate programme of analysis outlined. It is recommended that, after analysis, the results are published in an appropriate archaeological journal.

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## ACKNOWLEDGEMENTS

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Oxford Archaeology North (OA North), wish to thank Jonathan Garbutt of Tarmac Northern Ltd for commissioning the work, and also Jeremy Parsons, Cumbria County Council Historic Environment Service, for providing guidance during the work.

The fieldwork was undertaken by Paul Clark, Nicola Gaskell, Martin Sowerby and Dave McNicol. The illustrations were created by Kathryn Blythe, the pottery was assessed by Chris Howard-Davis and the cremated bone was assessed by Angela Boyle. The bulk samples were processed and sorted by Frances Claxton. This assessment report was compiled by Paul Clark and Stephen Rowland with additional information provided by Chris Howard-Davis. The project was managed by Jamie Quartermaine who edited the report along with Rachel Newman.

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## 1. INTRODUCTION

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### 1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 In May 2004, during the course of gravel and sand extraction at Low Plains Quarry, Cumbria, three small circular burnt patches of potentially archaeological origin were revealed. These features were located within a roughly 10m x 12m area adjoining the northern limit of topsoil stripping conducted in 2003 (OA North 2003), and very close to the circular cropmark of Site 16 (*Section 1.4*), excavated in the same year. The features were exposed by quarry workers in the course of soil stripping for the extension of the quarry, revealing at least one ceramic vessel and a large amount of calcined bone (Plates 2 and 3), which were subsequently identified as cremation burials. In response to this discovery, Tarmac Ltd alerted Oxford Archaeology North (OA North), who immediately initiated a rescue excavation to record these and potentially other remains, in accordance with a verbal brief by Jeremy Parsons of Cumbria County Council Historic Environment Service (CCCHES). The area to the south-west of the cremation remains had been subject to bulk soil stripping prior to the discovery; however, an area to the north and east had a spoil mound deposited on it but was otherwise undisturbed. It was agreed with Tarmac Ltd. and CCCHES that this should be stripped under archaeological supervision to investigate further archaeological remains. Given the reactive, 'rescue' nature of the project, the need for a formal project design for the work was waived by the client and by CCCHES, and therefore the excavation work was undertaken in accordance with standard OA North best practice for this type of work.

### 1.2 LOCATION AND TOPOGRAPHICAL SETTING

1.2.1 Low Plains Quarry (centred NY 4997 4166) lies at the base of the south-facing slopes of Blaze Fell, some 10km north of Penrith (Fig 1). The site is on low-lying ground between two rivers, c 2.5km east of the River Patteril and c 3km west of the River Eden. Historically, the area was in Cumberland but, since 1974, has lain within the county of Cumbria. The place name 'Low Plains' is applied to two separate farmsteads in the area, one at NY 4960 4170 and the other at NY 5030 4150.

1.2.2 The site lies in an area of Penrith and Brockram (New Red) Sandstone (Doubleday 1901, 8-9; Higham 1986, 6), but locally the drift geology is sand and gravel. The drift geology is overlain by well-drained loamy soils, and '*enjoys something of a rain-shadow status*' (Higham 1986, 8), which makes it attractive to arable cultivation. The site is within the Eden Valley, an area characterised by a mixture of undulating mixed farmland, and sandstone hills with woodland and lowland heath vegetation (Countryside Commission 1998, 38). Currently, the land is principally used for arable (barley) with pasture on the steeper slopes to the north-west of Low Plains Farm. Woodland has been planted along the edge of Blackrack Beck, which runs to the west of the current area of investigation.

### 1.3 HISTORICAL BACKGROUND

- 1.3.1 **Prehistory:** the fertile Eden Valley catchment area, and nearby Lazonby Fell, attracted very early settlement, not least because the valley provides the most accessible north/south communication route through the north-west of Britain. Higham (1986) identified the Eden Valley as one of the 'core areas' in which groupings of Neolithic settlement first appeared in the north of England. Lazonby Fell, which lies about 2km south-east of the site, is an area of unploughed heathland which has allowed good survival of Neolithic and Bronze Age monuments including cairns, and there have been antiquarian discoveries of artefacts such as vessels, flint arrowheads and grooved or sculptured stones in particularly dense concentrations (Lambert 1996, 16). Jefferson was describing such prehistoric remains when he said that '*Some urns were found on the fell, about sixty years since, which contained bones and ashes...there were then several cairns on the commons*' (Jefferson 1840, 462).
- 1.3.2 Remnant Iron Age field systems, trackways and other settlement remains suggest that, in later prehistory, small-scale cultivation and livestock management took place in increasingly centralised communities. One settlement, at Lazonby Fell Plantation, is known from this period and lies about 1km south-east of the present site at around NY 5003 4042. Excavation yielded evidence for contemporary trackways and field boundaries (LUAU 1994, 53) and the site is described as '*a small, circular or kidney-shaped enclosure with stone walls, and a large hut with stone walls, located on a rise and reminiscent of a small hillfort*'.
- 1.3.3 **Roman Period:** Roman occupation, from cAD 70, seems to have had less visible impact on Cumbria than on other parts of Britain. The Roman road between Brougham and Carlisle, now the line of the A6 road, was built in the first century (Margary 1957) and may have had an impact on and around the study area, immediately to its east. Temporary marching camps, mostly likely to date to AD72/73 when the Roman Governor Quintus Petilius Cerealis waged a campaign against the dissident Brigantian leader Venutius, were constructed close to the road, for example at Petteril Green, c1km west of the study area and Plumpton Head (also known as Old Penrith, and to the Romans as *Voreda* – Austen 1991) c3.5km to the south (Lambert 1996, 15; [http://www.roman-britain.org/places/plumpton\\_head.htm](http://www.roman-britain.org/places/plumpton_head.htm)). Austen (1991) has argued that the permanent fort at Old Penrith may have been established slightly later, c AD 90, after the successful campaign against the *Caledones*, culminating in the victory at Mons Graupius (AD 83). There is a likelihood that settlement sites of the period also exist in its vicinity (Lambert 1996, 15).
- 1.3.4 **Early Medieval Period:** there is no documented early medieval activity within the vicinity of the study area. However, there are numerous settlements in the Eden Valley, whose names have Anglian origins (Rollinson 1996, 35). The place-name 'Elkrington', seen in field names in the vicinity of the site, includes elements often seen in place names deriving from Old English, but this is not a reliable indication of settlement. The important group of six early tenth century Viking furnished burials from Cumwhitton lies within the Eden Valley c6km to the north of Lazonby (OA North 2004) and a single Viking burial furnished with spurs, bridle fittings, spears, a shield, an axe, a ritually bent



sword, and bone combs is also known from beneath a cairn at Hesket-in-the-Forest, just to the west of Lazonby (Edwards 1992; Higham 1986). Extensive Scandinavian influence can also be seen in many of the place names of the surrounding area, with characteristic Scandinavian suffixes such as *-by* (Lazonby), meaning village or settlement; *-thwaite* (Galthwaite), meaning a clearing, meadow or paddock; and *-thorpe* (Melkinthorpe), meaning a secondary settlement or hamlet (Mills 1998).

- 1.3.5 **Medieval Period:** there is no specific evidence for occupation or activity within the study area during the medieval period; however, there is a reference in an antiquarian report to '*a place called Castle Rigg the ruins of a building appear, moated round*' (Hutchinson 1794, i, 289). This corresponds to the nearby Castlerigg Castle, but there are no longer any extant medieval remains at the site (Perriam and Robinson 1998, 210).
- 1.3.6 The site is believed to have lain within the extensive estates of the Dacre family (Dilley 1972, 264) and the parish of Lazonby, an area of rural and agricultural character throughout the Middle Ages. By the late eighteenth century, the parish was home to '*about 115 families, four whereof are presbyterians*' according to Nicholson and Burn (1777, 416).
- 1.3.7 **Post-Medieval Period:** at the beginning of the nineteenth century, changes in land tenure and farming practice may have been partly responsible for a brief and rapid spate of population growth in the area. An Act of Parliament enclosed the local commons in 1803; the population of Lazonby township at that time was around 320. In 1811 it was 384, but by 1821 had risen steeply to 533 (Whellan 1860, 575); thereafter it grew more slowly. There is no record of how many of these people lived in the study area, but it is possible that the two Low Plains farms were established on newly enclosed ground in the early nineteenth century, before the OS 1st edition map (1845).
- 1.3.8 The economy of the area reflected that of the parish at large, whose inhabitants were '*engaged in agricultural pursuits, and in quarrying, large quantities of red sandstone, etc, being sent from this parish*' (Whellan 1860, 575).
- 1.3.9 A comparison between modern mapping and the Ordnance Survey first edition map (1845) shows that the area itself has remained almost entirely unchanged since the mid nineteenth century. With the exception of small stone quarries, the area has remained rural and agricultural in character throughout the twentieth century, until its recent appropriation for quarrying on a larger scale. The current quarrying concession covers an area of roughly 7000m<sup>2</sup> of which 3385m<sup>2</sup> was stripped of topsoil under archaeological supervision in 2003 (OA North 2003).

#### 1.4 PREVIOUS ARCHAEOLOGICAL WORK

- 1.4.1 An extended programme of investigation has been undertaken at the Low Plains site (Fig 2), the first stage of which was an archaeological desk-based assessment (LUAU 2000), prior to the current quarry extension, which contained both desk-based and inspection elements. A geophysical survey was undertaken by GSB Prospection (2002), and an archaeological investigation was undertaken by OA North in 2003 (OA North 2003). The latter element

entailed a controlled topsoil strip, the cleaning of the exposed ground surface, and the recording of exposed features.

- 1.4.2 The desk-based assessment revealed a number of sites within the area of the quarry extension; these included Site **02** (SMR 5989), to the immediate east of the present study area, which comprised undated cropmarks likely to relate to disused field-systems. There was also a further series of cropmarks, Site **03** (SMR 5990), but these were substantially to the north of the present study area. Site **08** (SMR 3805), identified by aerial photography and lying in fields 0.3km south-west of the study area, was the undated cropmark of a possible enclosure. Perhaps the most pertinent site was a sub-circular cropmark likely to be a round house 10-12m in diameter (Site **16**), which was immediately south of the present site. A dyke (earthwork and cropmark) was identified 0.3km to the south-east of the 2000 study area (Site **01**, SMR 5988). Other sites included a small sand quarry (Site **15**); a linear cropmark of possible geological origin (Site **17**); a revetted stream (Site **18**); a modern pheasantry (Site **19**); a pond (Site **20**); and a probable bridge (Site **21**), likely to be contemporary with the late eighteenth century enclosure walls (LUAU 2000).
- 1.4.3 As a result of the desk-based assessment, Site **16** was identified as having the most archaeological potential within the development area and, in 2002, was subjected to a geophysical study by GSB Propection. The results of this study were ambiguous, and could neither confirm nor refute the presence of an archaeological feature (GSB 2002). Site **16** was again targeted, this time by the OA North investigation of 2003, during which a total area of 3385m<sup>2</sup> was stripped by machine to the natural subsoil, reaching a depth of 0.3-0.6m. Careful manual excavation could not locate any physical evidence for the circular feature itself, nor of any associated archaeological features, and led to the conclusion that it had been solely within the topsoil and had been removed within the initial strip. As such it would have been of relatively recent date and consequently of little significance. The only find, from the topsoil, comprised a single flint artefact, possibly an end-scraper (OA North 2003). The area of investigation covered by the present report adjoins the area evaluated in 2003, with the imprecisely located position of the Site **16** cropmark likely to have been less than 30m to the south or west.

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## 2. ORIGINAL RESEARCH AIMS

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### 2.1 ACADEMIC AIMS

2.1.1 Although the burials for the most part had been disturbed, prior to the present excavation, the site offered a rare opportunity for the scientific recovery and recording of what might potentially prove to be a fairly rare incidence of grouped prehistoric human remains in Cumbria. In addition, the excavation provided an opportunity to add to the body of knowledge about the site gained by OA North during the evaluation of Site **16**, undertaken in 2003, and the desk-based assessment conducted in 2000 under its former guise of the Lancaster University Archaeological Unit (LUAU).

2.1.2 Given the unavoidably destructive nature of the current quarrying, and the immediate response required, the main academic aims outlined before the commencement of the 2004 excavation were:

- to characterise and record the survival of the archaeological remains on the site;
- to determine the limit of the site and the presence of any other archaeological remains, particularly those that might relate to the putative roundhouse indicated by cropmark Site **16**;
- to date the extant features and any other archaeological features or horizons encountered;
- to recover, where possible, artefactual and human remains that would be destroyed where left *in situ*.

### 2.2 OBJECTIVES

2.2.1 In order to meet the aims stated above, the following objectives were devised:

- to extend topsoil stripping to the north of the archaeological site;
- to clean any parts of the stripped area, where appropriate, to determine the presence of archaeological features;
- to excavate as many archaeological features within the extraction area as was possible given the fact that part of the area had been stripped of topsoil prior to the excavation and the archaeological works were being undertaken alongside topsoil stripping being undertaken elsewhere in the vicinity.

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## 3. METHODOLOGY

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### 3.1 SPECIFICATION

3.1.1 Although the rapid response required for the rescue excavation precluded the formulation of a project design for the work, the fieldwork programme adhered to OA North standard best practice, and the excavation work was appropriate to meeting the aims and objectives stated in *Section 2*. The work was undertaken in accordance with a verbal brief by Jeremy Parsons of Cumbria County Council Historic Environment Service (CCCHES). All the work was consistent with the relevant standards and procedures of the Institute of Field Archaeologists, and generally accepted best practice. A Home Office burial licence was obtained prior to the removal of any human remains, and all conditions defined within the licence were followed.

### 3.2 EXCAVATION

3.2.1 On arrival at the site, an area measuring *c*120m<sup>2</sup> had been stripped and three cremations already uncovered (Fig 3; Plates 2 and 3). The area around these features was cleaned by hand revealing a probable fourth cremation (Cremation 4). The features were located with respect to the surrounding landscape features and recorded using a total station and data-logger, and the digital data were transferred into a CAD system. Subsequent to pre-excavation planning, all features and deposits identified were excavated, and the fills of each feature were retained in their entirety in re-sealable water-tight plastic sample tubs. Features and deposits were recorded stratigraphically using OA North's standard context recording system, based on that used by the English Heritage Centre for Archaeology, using context record, photographic record, and object record *pro-forma* sheets along with supporting registers and indices. A photographic record in colour transparency (slides), colour print, and monochrome formats was compiled.

3.2.2 All features were planned by hand at a scale of 1:20 and profiles of individual features were drawn separately at a scale of 1:10. An additional, roughly 200m<sup>2</sup>, area to the north of the identified features was machine-stripped with a toothless ditching bucket, under archaeological supervision, down to the upper surface of the natural subsoil, before being hand cleaned, in order to determine whether the northern limit of burials had been established.

3.2.3 ***Finds:*** following advice from Jenny Jones of the University of Durham, where necessary delicate remains were consolidated *in situ* using plaster of paris support, before being lifted. Artefactual material was processed in accordance with OA North standard practice, which follows current IFA guidelines. All artefacts were fully catalogued and prepared for deposition with the final archive.

3.2.4 Material collected by bulk sample was gently washed by hand within a bucket of water and passed through a graded sieve in order to separate any light fraction of floating matter such as charred organic material, and to remove fine clay particles. The dried heavy residue of this process was further sieved into two fractions: greater than, and less than, 2mm. Bone and any other material

was sorted from the residue exceeding 2mm across. Again, material from each fraction was catalogued and prepared for archive deposition.

### **3.3 ARCHIVE**

- 3.3.1 A full professional archive has been compiled in accordance with OA North standard best practice, and in accordance with current IFA and English Heritage guidelines (1991). The paper archive will be deposited with the County Record Office and the material archive (artefacts and ecofacts) will be deposited with Penrith Museum (Middlegate, Penrith (01768 867466)), following agreement with Tarmac Ltd.

### **3.4 THE POST-EXCAVATION ASSESSMENT**

- 3.41 The aim of this assessment report is to evaluate all classes of data generated by the OA North excavation. This enables the production of an updated project design detailing a programme of relevant analysis and publication. The assessment process has been designed to correspond to the objectives laid out in the guidance document *Management of Archaeological Projects*, 2nd edition (MAP 2; English Heritage 1991).

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## 4. SUMMARY OF THE FIELDWORK RESULTS

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### 4.1 INTRODUCTION

4.1.1 The main focus of the excavation comprised four closely spatially-related cremation burials. On arrival at the site (Plate 1), an area measuring c120 m<sup>2</sup> had already been stripped by machine, within which three cremations had been uncovered; cleaning of the area around these features revealed a probable further cremation (Cremation 4) (Fig 4). No further features were identified in the additional area (200m<sup>2</sup>) which was stripped under archaeological supervision to the north of the cremations. Cremation 1 was the most northerly feature, whilst Cremations 2, 3 and 4, formed a slightly curved east/west alignment approximately 6m to the south of Cremation 1.

### 4.2 CREMATION 1

4.2.1 This was the only cremation associated with an *in-situ* urn, 12, which had been badly damaged (see Section 4.6). Upon arrival, it was noticed that the entire upper section of the vessel had been broken off level with the surface of the machined subsoil. A few sherds of this fragmented urn had been placed next to the still-buried remainder. The vessel had been emptied of its contents, 11, which included a large volume of calcined bone and dark, ashy, charcoal-rich soil, which had been scattered in a wide arc around the despoiled interment (Plate 2). The surviving lower section of the urn, which was c0.35m in diameter, was located in a steep-sided, sub-ovoid cut, 14, which had been backfilled with a deposit of black silty-sand containing burnt stones and occasional flecks of calcined bone, 13. Excavation revealed that the surviving extent of cut 14 measured c0.55m x 0.49m at the top, and survived to a maximum depth of 0.25m (Plate 4). The urn had been placed directly onto the flat base of the pit formed by cut 14, with an approximately 0.1m void around the widest part of the urn and the edge of cut 14.

### 4.3 CREMATION 2

4.3.1 Cremation 2 was the westernmost of the alignment that was formed by Cremations 2, 3 and 4 (Fig 4). The cremation comprised a sub-circular cut, 10, measuring 0.63m x 0.6m in plan, and survived to a maximum depth of 0.15m. Upon arrival, it was noted that the fill of this feature, 9, a very dark-grey, moderately compacted sandy-silt, with inclusions of stones, calcined bone and fragmented pottery, had been partly displaced (Plate 3). This fill, 9, contained less bone than the contents of Cremations 1 and 3 (see Section 5.4). Although fragments of pottery were observed in the Cremation 2, there was no evidence for an intact vessel.

### 4.4 CREMATION 3

4.4.1 Cremation 3 was located approximately 1.4m east of Cremation 2 (Fig 4). It comprised a large quantity of burnt bone and charcoal (5), contained within a

steep-sided, flat-bottomed, circular cut, **6**, measuring 0.4m in diameter which survived to a maximum depth of 0.15m. Disturbance of this feature, prior to the archaeological investigation, had been limited to fairly shallow scraping, most likely by a machine bucket (Plate 3). No pottery was recovered from Cremation **3**.

#### **4.5 CREMATION 4**

- 4.5.1 Cremation **4** was located approximately 1.4m east of Cremation **3** (Fig 4). The fill, **7**, of this feature was composed of very dark-greyish-brown silt and contained only occasional flecks of burnt bone and charcoal, suggesting a different formation process for this fill. The steep-sided, flat-bottomed cut, **8**, was circular in plan, measuring 0.6m in diameter and 0.2m deep. There was no evidence of pottery from Cremation **4**.

#### **4.6 INTERPRETATION AND DATING**

- 4.6.1 Based upon the typology of the pottery from Cremations **1** and **2** (Section 5.4), the cremations would appear to date to the Bronze Age, but closer dating, particularly of the unurned features, is not possible without radiocarbon assay. Whether these features represent the sole survivors of a more extensive cremation cemetery is uncertain, given that the area to the west of the cremations was bulk stripped prior to the present investigation. Cropmarks attest to the fact that the area has been ploughed in the past, as perhaps do abrasions noted on the upper-body sherds of cremation urn **12** (Section 5.4.4). However, no such remains, not even redeposited bone or pottery, were observed during the extensive 2003 evaluation (OA North 2003), and it is unlikely that the depositional conditions pertaining to the discovered features were so unique as to ensure their sole survival; this would suggest that the group was relatively localised. The archaeologically supervised topsoil strip undertaken to the north of the cremations, subsequent to their discovery, would indicate that the northern limit of the features had been established. The area to the immediate west of the site had been stripped in 2003, as well as just prior to the present investigation, and there is a possibility that further cremations have been lost as a result of this process.
- 4.6.2 The alignment, careful relative placement, and similar distancing of Cremations **2**, **3** and **4** would suggest that these features were relatively contemporary with each other. Given their close proximity to Cremation **1**, and their situation within a clearly defined archaeological 'hotspot', within an otherwise apparently somewhat sterile landscape, it seems likely that all of the depositions were made at a similar time, perhaps over as much as a hundred years or so, within a small cemetery. The slightly curved alignment of Cremations **2**, **3** and **4** is almost reminiscent of a ring of satellite interments – later burials placed around a central, original burial, as was the case with several child burials and cremations within collared urns around a central beaker burial at West Overton, Wiltshire and also at Itford Hill, Sussex, where urned and unurned cremations were placed around the outskirts of an urned cremation beneath a barrow (Megaw and Simpson 1981). The evidence of just three features at Low Plains Quarry is, however, too limited to confirm this

hypothesis. If this was the case, though, Cremation **1** is unlikely to be the focus of such activity, considering that it lies to the north and, therefore, outside of, rather than inside, a projected circular alignment. If a central, primary, interment had been made, it would have lain to the south, within the area stripped under archaeological supervision in 2003 (OA North 2003). Given the careful nature of the archaeological investigation in the area around the cremations, it is highly unlikely that any surviving evidence for archaeological features would have gone unnoticed had it been present. When considering the alignment of the cremations, the flat cemetery at Ewanrigg, Maryport, is of interest as, at that site, the cremations had been arranged in a rough circle around a natural knoll (Bewley *et al* 1992).

- 4.6.2 Although the cremations were potentially broadly contemporary, the contents of each similarly proportioned burial show a degree of variability, not just in the presence of pottery, but also in the amount of calcined bone and charred matter present. Of great interest is the fact that Cremation **1** appears to have been backfilled with burnt material containing flecks of calcined bone, a deposit which almost certainly derived from the pyre itself. The limited amount of calcined bone in both Cremations **2** and **4** may suggest that the remains were not so assiduously collected from the pyre as in the case of the others, or that calcination was less complete and that decomposition of the bone was therefore greater within a well-drained and acidic sandy environment of the burials. A third alternative might be that these features, rather than primarily containing cremated human remains, had been backfilled with pyre and funerary debris, including the remains of pottery vessels. An analogous situation can be seen at Allithwaite, to the north of Morecambe Bay, where, among a number of cremations with high concentrations of bone, several deposits contained small amounts of poorly preserved calcined bone while others yielded little other than charred organic matter (Wild 2003).

A relationship between the cremations and the putative concentric cropmark Site **16** is unlikely, particularly as the spatial relationships between the two groups of features cannot be precisely defined. There was no discernible archaeological evidence for Site **16**, possibly because it was so shallow that it had not actually cut the subsoil. Moreover, the date of the circular cropmark is unknown, and it may even be of relatively recent origin. It is important to note that the absence of associated archaeological features, such as field boundaries, might tend to suggest that the cropmark is more likely to be of natural origin rather than anthropogenic (J Quartermaine pers com).



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## 5. ASSESSMENT OF THE RESULTS

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### 5.1 ASSESSMENT AIMS AND OBJECTIVES

5.1.1 The aim of this assessment was to evaluate all classes of data from the excavations undertaken at Low Plains Quarry, Lazonby, in 2004, in order to formulate a project design for a programme of further analysis appropriate to the potential demonstrated by the site archive. A statement of the significance of the results from each element of the archive is given below. These statements are based on the assessment work undertaken, related to the original academic themes defined in *Section 2*.

5.1.2 The objectives of this assessment correspond to, and are prescribed by, *Appendix 4 of Management of Archaeological Projects*, 2nd edition (English Heritage 1991). They are to:

- assess the quantity, provenance and condition of all classes of material: stratigraphical, artefactual and environmental;
- comment on the range and variety of that material;
- assess the potential of the material to address questions raised in the course of this project design;
- formulate any further questions arising from the assessment of this material.

5.1.3 This assessment will present:

- a factual summary, characterising the quantity and perceived quality of the data contained within the site archive;
- a statement of the academic potential of the data;
- recommendations on the storage and curation of the data.

### 5.2 MATERIAL ASSESSED

5.2.1 The entire paper and material archive was examined for the purposes of this assessment. Quantifications are incorporated within the individual assessments.

### 5.3 STRATIGRAPHIC DATA

5.3.1 **Quantification:** the site archive from the excavation conducted in 2004 comprises the following:

context / object / plan / section indices	4
context records	14
multiple context plans	3
sections	4
photographic indices	6
monochrome prints	74
colour slides	73

5.3.3 **Assessment of Potential:** the four cremations excavated have all been dated to the same broad phase, as all cut the natural geology and were sealed by more recent subsoil overburden. No further refinement of the phasing will be possible on the grounds of stratigraphic data, as there were no stratigraphic relationships between them. The close proximity of the features within an area otherwise containing a sparse amount of archaeology would, however, suggest that they form an important contemporary group of funerary features. Although there is little potential for further stratigraphic analysis, an understanding of this data is important in forming a context for the other areas of analysis and provides a basis for comparison with other sites.

#### 5.4 THE POTTERY

5.4.1 **Quantification:** approximately 50 fragments of soft-fired ceramic were examined for this assessment. The substantial numbers of extremely small crumbs of pottery were not quantified for this assessment, and it is sufficient to say that they, and the larger fragments, derive from either of the two vessels commented on below.

5.4.2 **Evaluation:** Vessel 1 was recognised from a small number of fragments amongst the largely undiagnostic material from the fill **9** of Cremation **2**. Its identification is based largely on a single large sherd, indicating the full depth of the decorated collar, and a second sherd suggesting a lower carination. The collar was decorated with cord-impressed pendant triangles, the cord being Z-twisted. The top of the rim was similarly decorated with short twisted cord lines, and the upper part of the interior surface of the vessel was decorated by a band of irregular stabbing (likely to be made with a tool formed from a bird-bone, a common practice in Bronze age pottery decoration - Megaw and Simpson 1981). The zone immediately above the suggested carination was also decorated by lines of twisted cord impressions, in this case running horizontally around the maximum girth of the vessel. Although only a few sherds of this vessel were identified, the fabric was relatively hard-fired. There was no sign of internal sooting and the internal surfaces appeared oxidised. The vessel appears to be a collared urn of Bronze Age date.

5.4.3 A substantial amount of Vessel 2 was recovered intact from fill **12** of Cremation **1**. It had been badly damaged in the course of its discovery (prior to the archaeological investigation), and the upper part of the vessel, principally the apparently deep decorated collar, had been damaged and dispersed. A number of fragments of this zone of the vessel were subsequently recognised amongst pottery from the same and other contexts, showing that it had been decorated with a cord-impressed irregular lattice. The cord used was Z-twisted and each twist showed marked vertical striations.

5.4.4 It should be noted that there were no fragments of the top of the rim amongst the recovered fragments, and the 'top' of several of the joining fragments noted was more heavily abraded than the 'bottom', suggesting that the vessel had already been disturbed prior to its recent discovery.

5.4.5 The fabric seemed to be in good condition and solid; the fragments have not been washed. There appeared to be heavy internal sooting which seemed to carry over some of the significant breaks, and the internal surface of the vessel

was universally dark grey to black, perhaps suggesting that it had been burnt or had received cremated remains whilst they remained very hot. The vessel stood upright in a sub-circular cut. The vessel is likely to be a collared urn of Bronze Age date.

- 5.4.6 **Assessment:** both vessels retain sufficient diagnostic elements to warrant further study. This will allow a refinement of the broad dating of the site by reference to a typology of the various stylistic traits and by references to the similarity or otherwise of the fabric of these vessels to the known corpus (Longworth 1984; Burgess 1986). In addition, this will allow some comparison between this and the growing number of other Bronze Age sites in the locality, such as Ewanrigg (Bewley et al, 1992), Allithwaite (Wild 2003), and Hardendale Nab (Williams and Howard-Davis forthcoming), allowing the Low Plains site to be considered within its local context rather than in isolation.
- 5.4.7 The sherds of the two vessels should be examined and commented upon by a specialist and a report suitable for publication prepared. Analysis of the carbonised deposits on the interior of Vessel 2 should be considered.

## 5.5 THE CREMATED BONE

- 5.5.1 **Quantification:** a total of 3046g of cremated bone, probably human, was produced from eight contexts, representing four cremation burials, although one of the burials, Cremation 4, yielded only a very limited amount of bone.

Cremation Number	Total Weight of Cremated Bone
<i>1</i>	1177g
<i>2</i>	235g
<i>3</i>	1625g
<i>4</i>	4g
<i>Unstratified</i>	5g

Table 1: Weight of cremated bone by context

- 5.5.2 **Assessment of potential:** large quantities of well-preserved and well-calcined bone were recovered from both Cremations 1 and 3, while the amount from Cremation 2 can be considered moderate. Fragmentation of bone from each of these features was moderate, with most fragments between 10mm and 40mm and a sizeable proportion of fragments exceeding 40mm. Several virtually unworn teeth were also recovered from two burials. Overall, the volume of material from each of Cremations 1, 2 and 3 and the good state of preservation, along with the large size of many of the bone fragments, would indicate that these three cremations have excellent potential for further analysis in terms of age, gender, palaeopathology, body part representation, minimum number of individuals, presence of non-human bone, pyre technology, and treatment between the processes of cremation and deposition. It may be possible to conduct stable isotope analysis on several of the teeth where the enamel survives from cremations 1,2 and 3. Because of the very

limited amount of bone from Cremation **4**, it has less potential for the further analyses listed above. However, the very different nature of this feature is of interest, and the bone collected from this feature has the potential to be informative about formation processes, fragmentation and differential preservation, and therefore to aid the interpretation of the site.

## **5.6 PALAEOENVIRONMENTAL EVIDENCE**

- 5.6.1 **Quantification:** although no uncharred organic material was preserved from the cremation burials, a large volume of charcoal was recovered through flotation of the bulk-sampled contexts. Much of this charcoal was unabraded and most exceeded 10mm across.
- 5.6.2 **Assessment of potential:** the charcoal assemblage has excellent potential to be informative regarding the type of fuel woods that were used for the pyre. From the identification of the wood used, it may be possible to draw inferences about the nature of exploitation of local woodlands. Further analysis of the fine fraction of the charcoal may reveal the presence of charred grains and weed seeds that would be useful clues regarding the local environment, agricultural exploitation, and also the possibility of funerary offerings of foodstuffs and flowers placed on the pyre.

## **5.7 RADIOCARBON DATING**

- 5.7.1 Although no specific radiocarbon samples were taken in the field, the large volume of charcoal from each of the bulk-sampled cremation deposits would mean that there is plenty of scope for the selection of stratified charred material to be submitted for dating. It is recommended that at least one sample be taken from each of Cremations **1**, **2** and **3**.

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## 6. CURATION AND CONSERVATION

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### 6.1 RECIPIENT MUSEUM

- 6.1.1 Penrith Museum has been nominated as the ultimate place of deposition for the finds, and the paper and electronic archive. Copies of the paper and electronic archive will be deposited with the Cumbria Record Office.

**Penrith Museum**, Middlegate, Penrith

Tel 01768 867466

**Cumbria Record Office**, Archive Service, Cumbria County Council, The Castle, Carlisle, Cumbria, CA3 8UR

Tel 01228 23456

### 6.2 CONSERVATION

- 6.2.1 It is probable that Vessel 2 will collapse on removal of the temporary support applied during excavation. As a result of this, and bearing in mind that other detached fragments have been noted, some conservation and reconstruction will be required subsequent to examination by a suitable pottery specialist. The remaining material requires no further conservation.

### 6.3 STORAGE

- 6.3.1 The complete project archive, which will include records, plans, both black and white and colour photographs, artefacts, ecofacts and sieved residues, will be prepared following the guidelines set out in *Environmental standards for the permanent storage of excavated material from archaeological sites* (UKIC 1984, Conservation Guidelines 3) and *Guidelines for the preparation of excavation archive for long-term storage* (Walker 1990).
- 6.3.2 All finds will be packaged according to the Museum's specifications, in either acid-free cardboard boxes, or in airtight plastic boxes for unstable material.

### 6.4 PACKAGING

- 6.4.1 The assemblage is currently well-packed and will require no further packaging. Box lists derived from the site database are prepared and will be updated when the identification of objects is complete.

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## 7. STATEMENT OF POTENTIAL FOR POST-EXCAVATION ANALYSIS

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### 7.1 BRONZE AGE CREMATIONS IN THE EDEN VALLEY AND THE WIDER REGION

Early Bronze Age burials are now relatively well known from Cumbria, having been recorded in a wide range of contexts, from complex and multiphase upland cairns (Turnbull and Walsh 1997; Williams and Howard-Davis forthcoming) to the equally long-lived flat cemeteries of the Solway Plain (Bewley *et al* 1992; Bewley 1994) and sites such as Garlands Hospital, Carlisle and Aglionby, (Hodgson 1986) to those deposited in natural cracks in the limestone pavement of South Cumbria (Wild 2003).

- 7.1.1 Several Bronze Age cremation cemeteries are known from the Eden Valley, although most were discovered during the nineteenth century and were not scientifically excavated. During building work at Garlands Asylum in 1861, 15 vessels, including pygmy urns and twisted cord decorated collared urns (described as ‘overhanging rim’), were recovered from a deposit of ‘pit-sand’ (Hodgson 1956). Nothing is known of the contents of these vessels. At Waterloo Sandpit, Aglionby, five collared urns with twisted cord decoration, some inverted, were recovered, along with a poorly preserved inhumation and an unspecified number of heaps of bones. Several of the urns had been placed in hollows about 2m in diameter and filled with black ash and charcoal. As at Low Plains Quarry, there was no evidence for a tumulus (*ibid*). Close by, at Lazonby Fell, a Bronze Age urnfield and a number of chance finds of arrowheads were made in the nineteenth century, but little was recorded other than an antiquarian interest in some of the urns (Jefferson 1840; Lambert 1996).
- 7.1.2 Further cremation cemeteries are known in Cumbria, of which that at Allithwaite, on the northern edge of Morecambe Bay (Wild 2003), is the most recently excavated. Ten burials containing a total of between twelve and fifteen individuals ranging in age from infant to older adult were recorded during the evaluation and excavation phases of investigation at the site. Many of the interments were made in inverted collared urns incised with twisted cord decoration, but of particular interest when compared with Low Plains Quarry cremations were two burials (**119** and **121**) which contained a few poorly preserved and eroded fragments of bone, indicative of a different environment of burial, and three further features without urns (burials **106**, **108** and possibly **117**), which appeared to be formal deposits of pyre debris, and predominantly comprised fuel ash mixed with lower concentrations of burnt bone (McKinley 2003). Radiocarbon dating of three samples from two of the urned cremations (**115** and **119**) provided dates between 2107 cal BC and 1637 cal BC (Wild 2003), placing the cemetery within the earlier Bronze Age. At Ewanrigg, Maryport (Bewley *et al* 1992), 26 out of a total of 28 interments at the flat cemetery were cremations, many in inverted collared urns and with formal deposits of pyre debris also present. Charcoal samples from this site produced radiocarbon dates of 2460-1520 cal BC.

- 7.1.3 At Birkrigg, c3km south of Ulverston, a stone circle and three barrows were investigated in 1911 and 1913 (Gelder and Dobson 1912; Gelder *et al* 1914). Four cremations, including one in an inverted twisted cord decorated, collared urn (Barnes 1970), were recorded during the excavation of the Druids Circle, along with calcined human bone and local evidence of burning (Gelder and Dobson 1912). Beneath one of the three barrows, along with three incomplete inhumations and a central burial of a skull covered by large stones, there were about 30 features around 200mm in diameter, filled with dark, ashy soil and capped with large stones. These were interpreted as cremations that had been placed into pits lined with organic matter, the acidic decomposition of which had destroyed any evidence for human remains. A small, inverted bucket-shaped urn containing calcined bone was also recovered. Excavation of the third barrow, at Appleby Slack, revealed two urns (identified as collared urns - Barnes 1970) and evidence for at least four cremations placed within pits with extensive evidence of burning in the form of charcoal layers, varying amounts of calcined bone and fire-reddened aureoles (Gelder *et al* 1914).
- 7.1.4 Evidence suggests that the burials from Low Plains were part of a small flat cemetery, the sand subsoil perhaps precluding the structure of an overlying mound, although the heavily quarried nature of the vicinity could long ago have swept any such feature away. The small number of burials might suggest a familial group but it must be noted that from other sites (for example, Ewanrigg, Bewley *et al* 1992), an extended timescale is implied by the radiocarbon dating of individual burials and such cemeteries could have been added to over hundreds of years. Evidence is perhaps most clear for this in the stone cairns of the Cumbria uplands, where, for instance, Hardendale Nab (Williams and Howard-Davis forthcoming) probably remained in use for some 500 years, being returned to on numerous occasions.
- 7.1.5 It must be remembered that burials such as those from Low Plains Quarry were not isolated acts, and reflect a rich and complex landscape of agricultural and monumental activity, best preserved in the uplands to the west. Barratt notes (1999, 253-4) that early Bronze Age burial monuments are often sited peripherally to larger communal 'ritual' monuments, such as henges or cursus, which were, it is thought, visited cyclically, perhaps seasonally (Brück 2000, 282), reinforcing the notion that usually more disparate social groups gathered together on certain significant occasions. Presumably it was rather easier to gather for other social events of lesser scale, such as funerals, in the course of major events which had already brought a large group together, thereby providing the most important ingredient of any public statement of status or possession, a wide audience. The Eden Valley is well known for its marked concentration of prehistoric activity and it is perhaps no coincidence that the site lies between the Mayburgh henges (at Eamont bridge to the south-west) and the Long Meg stone circle to the north-east (Waterhouse 1985).

## 7.2 REGIONAL RESEARCH PRIORITIES

- 7.2.1 A regional research agenda for the prehistoric period (Hodgson and Brennan forthcoming) is presently being compiled as part of the development of an Archaeological Research Framework for the North West (NWRARF). Within this, the known evidence for the period within the region is considered,

lacunae identified, and important avenues for further research defined. Where these can be addressed by the evidence from the Low Plains Quarry cremation cemetery, these are listed below, where appropriate being quoted in full.

7.2.2 **Chronology:** a key priority outlined in the research agenda is that of dating, and *'Routine radiocarbon dating should be accepted as the norm on all prehistoric sites. This needs to target a wide variety of features and deposits, both with and without artefacts.'*

7.2.3 **The Prehistoric Environment and Economy:** due partly to preservational conditions and to the small dataset of stratified archaeological evidence, the environmental and zooarchaeological data for the region is sparse. The NRWARF states that the *'shortage of information for the entire prehistoric period means that every avenue of analysis must be investigated.'*

7.2.4 **Ritual, Religion and Ceremony:** although the following passage is mainly concerned with funerary monuments, the central theme is relevant to the Low Plains Quarry cremation cemetery:

*'The most widely endorsed research priority for all ceremonial and funerary sites is the development of regional research programmes to examine chronological frameworks, and to link those into wider environmental and landuse contexts, the relationship between individual monuments and monument complexes, and how that may relate to the current evidence for settlement.'*

7.2.5 **Burial:** the NRWARF highlights the current dearth of evidence for non-monumental Bronze Age funerary traditions, indicating that 'flat' cemeteries with little or no above ground evidence, such as that represented at Low Plains Quarry, may be widespread, although the examination and characterisation of round funerary monuments and ring cairns along with the utilisation of natural features and bedrock fissures are listed as initiatives. The fact that flat cemeteries are not covered by this initiative is perhaps a reflection of their lower visibility as surface features and the greater excavated sample required to understand such a site. A comprehension of flat cemeteries within a cultural and geographic context is just as important as in the case of the more visible monuments, and is vital in contributing to an interpretation of the relationships, be they cultural or temporal, between these varying practices. The following initiative from NRWARF is of particular relevance to the Low Plains Quarry cremation cemetery and is quoted in full:

- *'Further understanding of the Bronze Age funerary record would be considerably enhanced by the formation of a regional typology and chronology of ceramic sequences. An assessment and catalogue of existing material must therefore be viewed as a priority.'*

7.2.6 **Technology, Production, Trade and Exchange:** despite the fact that the study of ceramics can produce evidence for technology and production, as well as insights into religion, trade, diet and agricultural practices, the extant prehistoric ceramic resource remains unquantified and there is no pottery typology or fabric sequence for the region. The following initiatives are again quoted in full:

- *'Prehistoric pottery typologies are still poorly understood, and reliant on chronologies and parallels from outside the region. The priority*



*must be for more absolute dates, both from existing archives and by further scientific dating of contexts where prehistoric pottery types are securely stratified (particularly on developer-funded projects).*

- *Fabric analysis, thin section analysis and sourcing of all prehistoric ceramics is required. This could incorporate the re-analysis of existing material in museum collections. In areas where faunal assemblages are not evident, analysis for lipids needs to be more widely applied for evidence of vessel use and consumption.'*

### 7.3 PRIMARY POTENTIAL

- 7.3.1 The following statements are based upon the analytical potential of the material recovered from the Low Plains Quarry cremation cemetery to further the initiatives of the NWRARF stated above, and to contribute to an understanding of the Bronze Age in Cumbria.
- 7.3.2 **Dating:** the greatest potential for analysis lies with the large volume of stratified charcoal and calcined human remains that can be used for absolute dating at this site.
- 7.3.3 **Palaeodemography:** the cremated bone from Cremations **1**, **2** and **3** has great potential for further analysis in terms of age and sex and for palaeopathology, but also to determine the number of individuals represented within each feature, and overall on site. If osteological analysis indicates the presence of multiple individuals, as has been the case at a number of Bronze Age cremation cemeteries, notably Allithwaite (Wild 2003), then it may be possible to use non-metric traits to determine whether those within the same vessel are any more closely related than those interred separately. Although Cremation **4** has less potential in this direction, analysis of the osseous material could be useful not only palaeodemographically, but also in highlighting the physical differences between this and the other cremations.
- 7.3.4 **Funerary Ritual:** body part representation of the calcined bone will be informative regarding the nature of post-cremation collection, while examination of the fragmentation may help to provide clues about treatment between collection and deposition. The state of calcination can provide information about the temperatures reached on the pyre and identification of the charcoal will also help to make inferences about pyre technology. Identification of non-human bone among the calcined fragments as well as any charred plant remains, can be informative about the nature of funerary offerings or of feasting. A consideration of the contents of Cremation **4**, and its comparison with those of Cremations 1-3, is particularly important in formulating an interpretation of activity at the site.
- 7.3.5 **Ceramic Analysis:** in combination with the radiocarbon dating, investigation of the form and decoration of the pottery will be of extreme value in contributing to the development of a securely dated ceramic typology for the region. Thin section and petrological analysis and examination of the vessels will provide clues concerning the techniques of manufacture as well as the origin of the materials used to make the vessels.

## 7.4 SECONDARY POTENTIAL

- 7.4.1 Although the following statements of potential address themes considered by the NWRARF to be no less important than those stated above, the more limited volume of material recovered from the Low Plains Quarry cremation cemetery mean that the recovered assemblage has the potential to address these themes in only an indirect manner.
- 7.4.2 **Stable Isotope Analysis:** the state of preservation of the calcined bone, particularly the presence of teeth, at times still retaining enamel, may be sufficient for the analysis of isotopes, that might provide clues about the origin and diet of the people interred at Low Plains Quarry.
- 7.4.3 **Environmental and economic reconstruction:** examination of charred plant remains would enable a certain amount of inferences to be made regarding the nature and economic exploitation of the local environment. Analysis of non-human remains will also be useful in this area.
- 7.4.4 **Social reconstruction:** the combination of the demographic data with spatial relationships and the presence or absence of a ceramic funerary vessel, and the morphology and decoration of that vessel, could be a useful basis for the analysis of social relationships within the wider context of Bronze Age cremation burials. While typically such analyses are applied to large datasets there exists the possibility that the present small dataset can, in conjunction with others potentially contribute to an assessment of trends in the size, shape and decoration of the pottery vessels, features that may have been used to define groupings within or between societies. Other patterns within the data could relate to age or gender. Such structuralist analysis has proved moderately fruitful during the analysis of (albeit larger) Anglo-Saxon cremation cemeteries (Richards 1987).

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## 8. UPDATED RESEARCH AIMS AND OBJECTIVES

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### 8.1 UPDATED RESEARCH AIMS

8.1.1 This section follows the guidance of English Heritage regarding the formulation of updated research aims (English Heritage 1991, 2-3). This recommends that it is useful to treat *aims* as major themes or goals to which specific *objectives* contribute, and think of these aims and objectives as questions.

8.1.2 **Updated Research Aim 1:** what was the nature and absolute date of the cremation cemetery at Low Plains Quarry, Lazonby?

*Objective 1:* is it possible to date the cremations by radiocarbon assay?

*Objective 2:* is it possible to establish that the cremations were contemporary, or relatively so?

*Objective 3:* is it possible to determine that each of the features represents a cremation burial?

8.1.3 **Updated Research Aim 2:** how many people are represented within the cremation cemetery, and what contribution can be made to an understanding of Bronze Age life and mortality?

*Objective 1:* is it possible to establish the number, age and sex of the human remains within each feature?

*Objective 2:* is it possible, using age and sex data, combined with representation of body parts, to indicate that each feature represents a separate interment?

*Objective 3:* is it possible, using pathological lesions observed on the calcined bones, to make inferences regarding the life-styles of those represented by the cremated remains?

8.1.4 **Updated Research Aim 3:** is it possible to reconstruct funerary ritual and practice at the Low Plains Quarry cremation cemetery?

*Objective 1:* does body part representation indicate the collection of selected body parts?

*Objective 2:* does fragmentation indicate that the burnt bones were treated in a specific manner between collection and deposition?

*Objective 3:* what temperature range is indicated by the state of calcination of the bones?

*Objective 4:* does the evidence of the charcoal indicate the selection of particular types of wood for fuel?

*Objective 5:* are food remains such as charred organic material and burnt non-human bone present, and can they be interpreted as representing a funerary offering or a funerary feast?

*Objective 6:* is it possible on the basis of food residue and lipid analysis to determine whether the vessels had contained other materials before their use in the funerary ritual?

- 8.1.5 **Updated Research Aim 4:** can the results of the analysis of the stratigraphic, ceramic and anthropological remains from the Low Plains Quarry cremation cemetery be used to complement and further the existing knowledge of Bronze Age life, death and culture in Cumbria?

*Objective 1:* can the arrangement and deposition of the cremation features, along with the treatment of their contents, be compared with others from Cumbria?

*Objective 2:* is it possible through thin section and petrological analysis, along with close examination, to determine the geographical origin and manufacturing process in the production of the pottery?

*Objective 3:* how does the form, fabric and decoration of the pottery from Low Plains Quarry fit in with existing typologies and designs from the area, and further afield?

*Objective 4:* is it possible to use the results of Objectives 4.2 and 4.3 to further an understanding of Bronze Age production and trade?

- 8.1.6 **Updated Research Aim 5:** is it possible to determine the origin of the people represented by the cremated remains at Low Plains Quarry?

*Objective 1:* can any non-metric traits be osteologically identified among any of the cremated remains, and if so, can any relationships be established?

*Objective 2:* can isotope analysis be conducted on any of the extant tooth enamel, and if so, what can be deduced from this data about the geographical origin of the cremated people?

- 8.1.7 **Updated Research Aim 6:** is it possible to use the environmental remains from the cremation burials to cast light on the nature of the Bronze Age environment and agricultural exploitation?

*Objective 1:* does the wood identified indicate any form of woodland management?

*Objective 2:* do any charred food remains or associated charred organic matter indicate the exploitation of particular ecological zones for specific resources?

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## 9. METHOD STATEMENT

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### 9.1 INTRODUCTION

9.1.1 The following methodology is required to fulfil the revised research aims outlined in *Section 8*. This will require a programme of analysis, followed by the preparation of an appropriate text for publication.

### 9.2 PROGRAMME STRUCTURE

9.2.1 The post-excavation programme will be divided into the following stages:

- analysis
- synthesis
- preparation of draft text and illustrative material
- publication
- archive deposition.

### 9.3 INFORMATION AND REVIEW

9.3.1 It is proposed that regular review meetings should be held to monitor the progress of the analysis, and to keep all parties informed. In addition, OA North will liaise with the radiocarbon laboratory to ensure that the critical dates are obtained within the defined programme.

### 9.4 RADIOCARBON DATING

9.4.1 A minimum of four charcoal samples will be submitted for radiocarbon dating. These will include at least one sample from Cremation **1** and one each from Cremations **2** and **3**.

### 9.5 POTTERY

9.5.1 The pottery will be classified by form and fabric and quantified by weight and sherd count, and an illustrated form and fabric series will be prepared for publication. One sherd from each vessel will be submitted for thin-section and petrological analysis to establish the area of origin for these vessels, by means of analysis of the clay and inclusions. A further sample from each will be taken for residue and lipid analysis. The latter technique will test for the presence of food and fats materials on the internal surface of the sherd. It will entail taking a scraped sample from the sherd and then analysis using a chromatograph to identify the chemical make-up of any organic compounds present.

### 9.6 CREMATED BONE

9.6.1 Analysis of the calcined bone will aim to determine age, gender, pathology, minimum number of individuals, body part representation, state of calcination and fragmentation within each feature and over the cemetery as a whole. Any

non-human bone will need to be separated and identified, where possible, to taxon. Any animal present will be examined and species identification will be undertaken. The results of this analysis will be detailed in a report to be included in the publication. This analysis should include all the bone from all four of the cremations so that any differences between the assemblages can be demonstrated scientifically.

## **9.7 CHARCOAL AND CHARRED ORGANIC MATERIAL**

9.7.1 Sub-samples of charcoal fragments exceeding 5mm will be taken from one sample from each of the cremations and subjected to analysis in terms of identification to taxon and of the presence of any tool marks. The degree of abrasion and fragmentation will also be assessed. Sub-samples of smaller fragments will be scanned for the presence of charred organic material, which will be identified to taxon and quantified. The results of this analysis will be detailed in a report to be included in the publication.

## **9.8 STABLE ISOTOPE ANALYSIS**

9.8.1 One tooth will be taken from each of Cremations **1**, **2** and **3** and will be sent away to test for the viability of strontium and nitrogen isotope analysis. This will entail analysis of the tooth enamel by means of a mass spectrometer which will establish the relative quantities of the different strontium and nitrogen isotopes. These relative quantities are derived from the foodstuffs consumed and are themselves based upon the geological make-up of a particular region. It is therefore possible to suggest the general region where the owners of the teeth resided for most of their lives.

## **9.9 FURTHER RESEARCH**

9.9.1 In order to place the Low Plains Quarry cremation cemetery within the wider context of Bronze Age Cumbria and the North West, it will be necessary to conduct some documentary research into similarly dated sites within the region, such as, for example, the cemetery from Allithwaite (Wild 2003). Consultation with the Cumbria Historic Environment Record (HER) and the regional Record Offices, along with a literature review of sites and findings in the wider area, would be of great value in determining a model for the character of Bronze Age funerary activity in the area, into which the Low Plains Quarry cremation cemetery could be placed. Such aspects of comparison would include site size and morphology, spatial relationships, presence and types of ceramic, form, decoration, and firing technology, palaeodemography and ritual practice.

## **9.10 PRESENTATION OF RESULTS**

9.10.1 In accordance with the guidelines outlined in the English Heritage document MAP 2 (English Heritage 1991), it is proposed that the results of the project should be presented in the following stages:

- **Publication text:** following the completion of the programmed analysis proposed above, a text will be prepared suitable for publication as a journal article in the *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society*. This will be in the format described in *Section 10*, and will incorporate as necessary any information from comparable excavations. This text will be submitted for internal revision, and to all specialists after editing, for their comments. The edited text will be submitted to an external referee for formal academic review. Following incorporation of the referee's and other comments, the text will be copy edited, ready for publication.
- **Project archive:** the completion of the project will result in an integrated project archive, which will be deposited with Penrith Museum.

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## 10. PUBLICATION SYNOPSIS

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### 10.1 INTRODUCTION

10.1.1 Following the analysis and interpretation of the results, a text will be prepared suitable for publication as a journal article in the *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society*.

### 10.2 THE STRUCTURE OF THE REPORT

10.2.1 The following section represents a likely breakdown of the proposed publication. It should be noted, however, that this synopsis can only be regarded as a draft, based on the current understanding of the material.

10.2.2 The text will be supported by a number of graphics, comprising drawings and photographs to illustrate the evidence and with tables to summarise data. Specialists will work closely together in order to facilitate integration of material categories. The finished text will aim to present a high degree of integration between both finds categories and the structural/stratigraphical history of the site.

### 10.3 OUTLINE SYNOPSIS

#### Background

Circumstances of the project, location and geology	500 words
Archaeological and Historical Background	1000 words

#### Results

The cremation cemetery	500 words
The pottery	500 words
The cremated human bone	1000 words
The cremated animal bone	200 words
Charcoal	200 words
Charred organic remains	100 words

<b>Discussion</b>	2500 words
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#### Bibliography

<b>Acknowledgements</b>	100 words
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## 11. RESOURCES AND PROGRAMMING

### 11.1 NAMED PROJECT TEAM

11.1.1 The team consists of internal OA North staff, with input from Oxford-based OA staff. The project will be managed by Jamie Quartermaine.

Name		Organisation	Tasks
Jamie Quartermaine	JQ	OA North	Project management and academic editing
Rachel Newman	RMN	OA North	Internal quality control
Paul Clark	PC	OA North	Writing of publication text, research
Chris Howard-Davis	CH-D	OA North	Research
Carol Allen	CA	Freelance	Pottery analysis/report
Elizabeth Huckerby	EH	OA North	Charred plant and charcoal
Emma Carter	EC	OA North	Finds illustrator
Jenny Jones	JJ	University of Durham	Conservator
Andrew Bates	ABa	OA North	Animal bone
Angela Boyle	ABo	Oxford Archaeology	Cremated human bone
	Kiel	AMS Laboratory	Radiocarbon Dating
	UB	University of Bradford	Isotope Analysis
Alex Gibson	AG	University of Bradford	Lipid Analysis
David Williams	DW	Southampton University	Thin Section Analysis
	PS		Project Supervisor

### 11.2 HEALTH AND SAFETY

11.2.1 All OA North post-excavation work will be carried out under relevant Health and Safety Legislation, including the Health and Safety at Work Act (1974). A copy of the Oxford Archaeology Health and Safety Policy can be supplied on request. The nature of the work means that the requirements of the following legislation are particularly relevant:

*Workplace (Health, Safety and Welfare) Regulations (1992)* – offices and finds processing areas.

*Manual Handling Operations Regulations (1992)* – transport of bulk finds and samples.

*Health and Safety (Display Screen Equipment) Regulations (1992)* – use of computers for word-processing and database work.

*COSSH (1998)* - finds conservation and environmental processing/analysis.

### **11.3 LIST OF TASKS**

11.3.1 The project has been broken down into a series of summary tasks, which are set out in *Appendix 3*. In addition to the tasks outlined there is some time allocated to general project monitoring and management. As these tasks are ongoing and are not allocated to any specific days, they do not appear on the task sheet or the Gantt chart (*Appendix 5*).

11.3.2 **Management Tasks:** the management and monitoring allocations include project monitoring, advice and co-ordination, and problem solving.

### **11.4 TOTAL COSTS**

11.4.1 The total costs for the analysis stage and report production are set out in the Financial Breakdown section in *Appendix 4*.

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## APPENDIX 1: CONTEXT LIST

Context Number	Feature Subdivision	Context Description
<i>1</i>	Cremation 1	Group number for Cremation 1, comprising fills <i>11</i> , <i>12</i> and <i>13</i> and cut <i>14</i>
<i>2</i>	Cremation 2	Group number for Cremation 2, comprising fill <i>9</i> and cut <i>10</i> , along with finds left by machine driver
<i>3</i>	Cremation 3	Group number for Cremation 3, comprising fill <i>5</i> and cut <i>6</i>
<i>4</i>	Cremation 4	Group number for Cremation 4, comprising fill <i>7</i> and cut <i>8</i>
<i>5</i>	Cremation 3	Fill of cremation pit cut <i>6</i> : dark grey/black well-compacted silt 0.15m thick comprising <i>c</i> 80% burnt bone and charcoal.
<i>6</i>	Cremation 3	Circular cut of cremation pit: 0.4m across and 0.15m deep, steep-sided, flat-bottomed. Filled with <i>5</i>
<i>7</i>	Cremation 4	Fill of cremation pit cut <i>8</i> : fairly compacted very dark greyish-brown silt with patches of black silt containing small rounded stones, and occasional flecks of charcoal and burnt bone
<i>8</i>	Cremation 4	Circular cut of cremation pit: 0.6m across and 0.2m deep, vertically-sided and flat-bottomed U-shaped profile. Filled with <i>7</i>
<i>9</i>	Cremation 2	Fill of cremation pit cut <i>10</i> : moderately compacted very dark grey sandy silt 0.2m thick, containing small rounded stones, pottery and 10% calcined bone
<i>10</i>	Cremation 2	Sub-circular cut of cremation pit: <i>c</i> 0.6m across and 0.2m deep, steep-sided with a sloping flat bottom. Filled with <i>9</i>
<i>11</i>	Cremation 1	Fill of urn <i>12</i> : burnt bone and charcoal, redeposited by machine
<i>12</i>	Cremation 1	Cremation urn filled with <i>11</i> and placed within <i>14</i>
<i>13</i>	Cremation 1	Backfill of cremation pit cut <i>14</i> : loose to firm black silty-sand containing burnt stones and <1% calcined bone
<i>14</i>	Cremation 1	Sub-oval cut of cremation pit measuring 0.55m north/south by 0.49m by 0.25m deep, steep sided with a sloping bottom. Filled with <i>12</i> and backfilled with <i>14</i>

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APPENDIX 2: FINDS LIST

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<b>Context</b>	<b>Material</b>	<b>Category</b>	<b>No Sherds</b>	<b>Description</b>	<b>Date</b>
<i>12</i>	Ceramic	Vessel	25	Cremation Urn	Bronze Age
<i>9</i>	Ceramic	Vessel	c 3	Decorated pottery including collar	Bronze Age

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**APPENDIX 3: TASK LIST**


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<b>Task No</b>	<b>Task</b>	<b>Days</b>	<b>Resources</b>
Task 1:	Project Set up	0.5	JQ
	Contact / Liaise with Project Team	0.25	JQ/ PC / EH
Task 2:	Upgrading of context database	1	PS
Task 3:	Production of Site Narrative	2	PC
Task 4:	Research	2	PC/CH-D
Task 5:	Stratigraphic illustrations	1	Illust
Task 6:	Preparation of C14 dates	1	EH
Task 7:	Charcoal and Charred Organic Material	2	EH
Task 8:	Animal bone Analysis	0.5	ABa
Task 8:	Pottery Analysis	1	CA
Task 9:	Finds Research	0.5	CA
Task 10:	Palaeoenvironmental Analysis	2	EH/DC
Task 11:	Lipid Analysis	2	AG
Task 12:	Thin Section Analysis	2	DW
Task 13:	Radiocarbon Analysis	2	Kiel
Task 14:	Isotope Analysis	2	UB
Task 15:	Finds illustrations	2	Illust
Task 16:	Publication Compilation	2	PC
Task 17:	Reconstruction drawings for publication	1	Illust
Task 18:	Editing	1	JQ
Task 19:	Quality assessment of Publication	1	RMN
Task 20:	Integrate Edits into Text	0.5	PC
Task 21:	Prepare Archive for Deposition	1	PS



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## ILLUSTRATIONS

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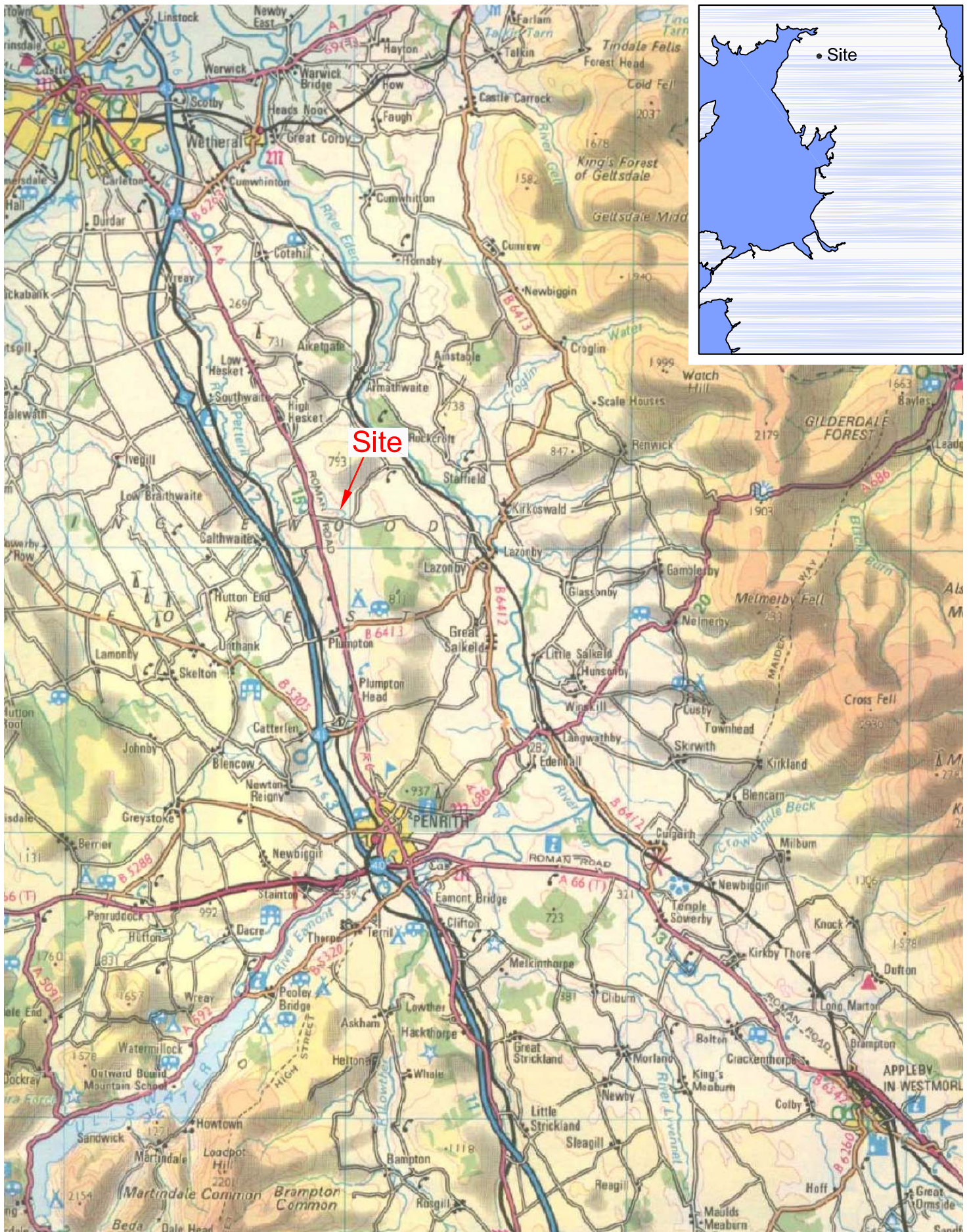
### FIGURES

- Figure 1      Location map  
Figure 2      Site location plan  
Figure 3      Location of the excavation area, showing areas of topsoil stripping  
Figure 4      Detailed site plan, showing Cremations **1-4**

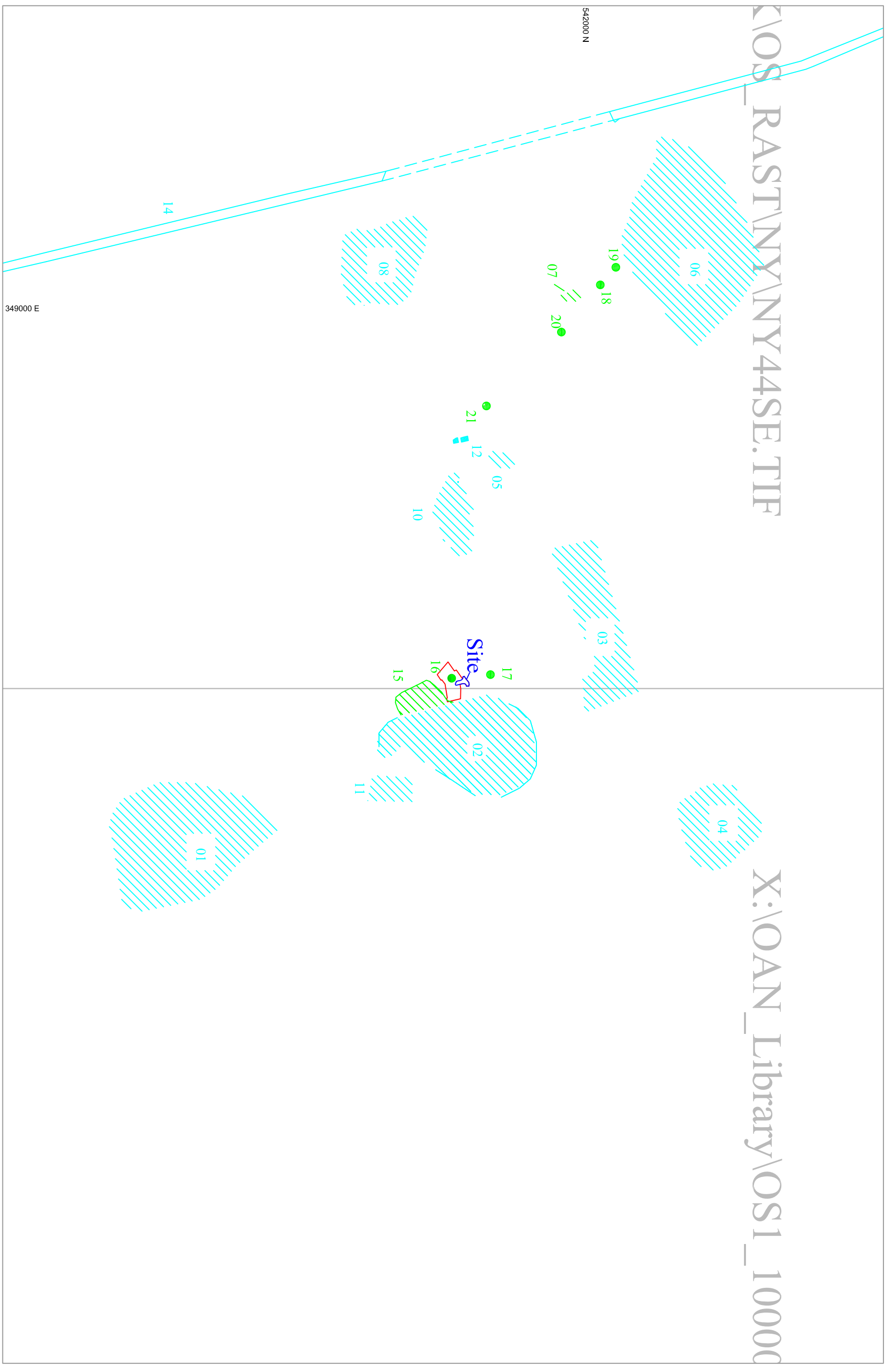
### PLATES

- Plate 1      General View of Site  
Plate 2      Cremation **1** on arrival at the site  
Plate 3      Cremations **2** and **3** on arrival at the site  
Plate 4      Cremation **1**, prior to the lifting of urn **12**









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16 Fieldwalking site  
02 Documentary site



Excavation area in 2004  
Excavation area in 2003



Scale 1:10000 at A3



Figure 2: Site location plan



based upon the Ordnance Survey 1:10000  
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Scale 1:1000 at A3

0 50m  
metres



Figure 3: Location of the study area, showing areas of topsoil stripping

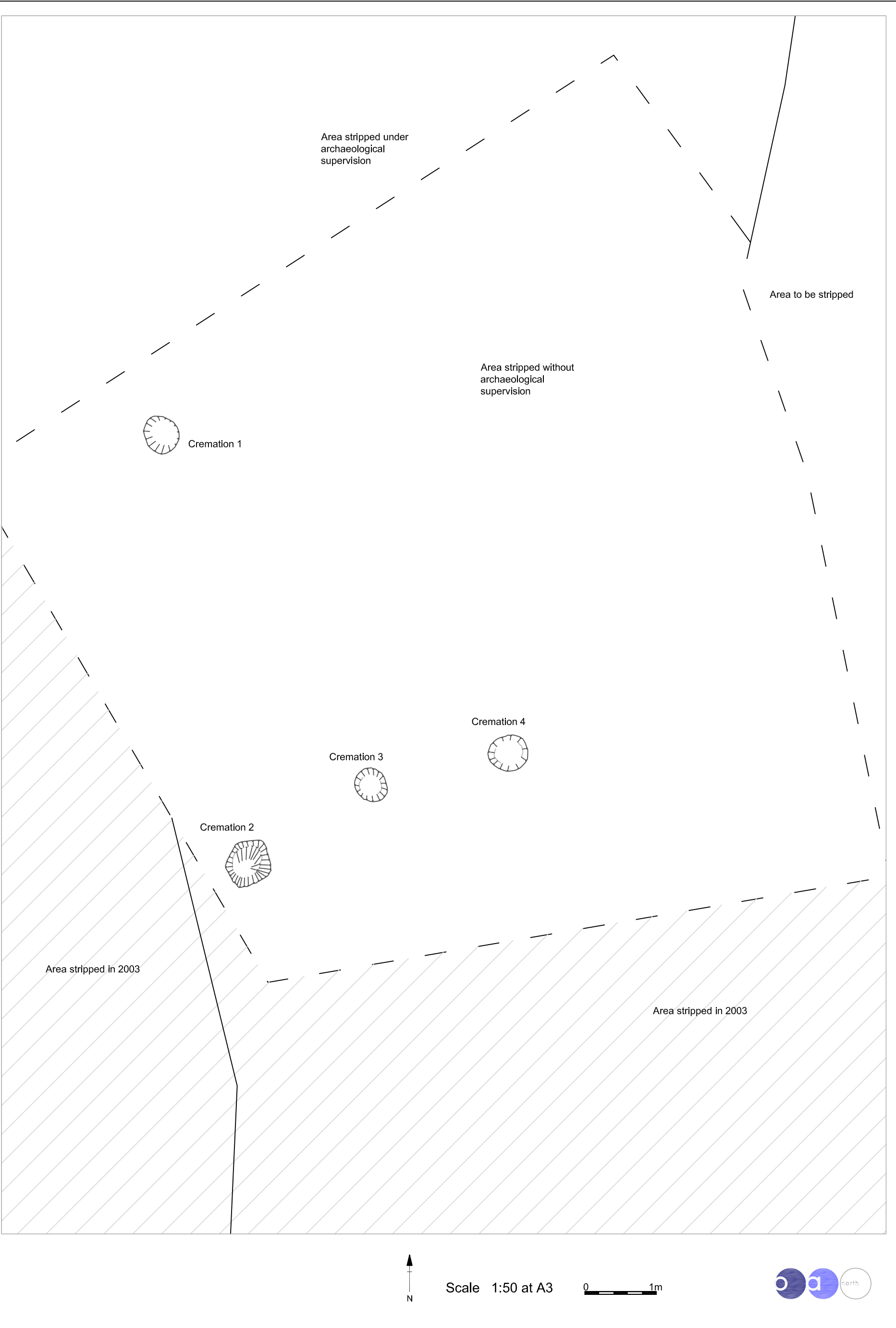


Figure 4: Detailed site plan, showing Cremations 1-4



Plate 1: General view of site



Plate 2: Cremation 1 on arrival at the site



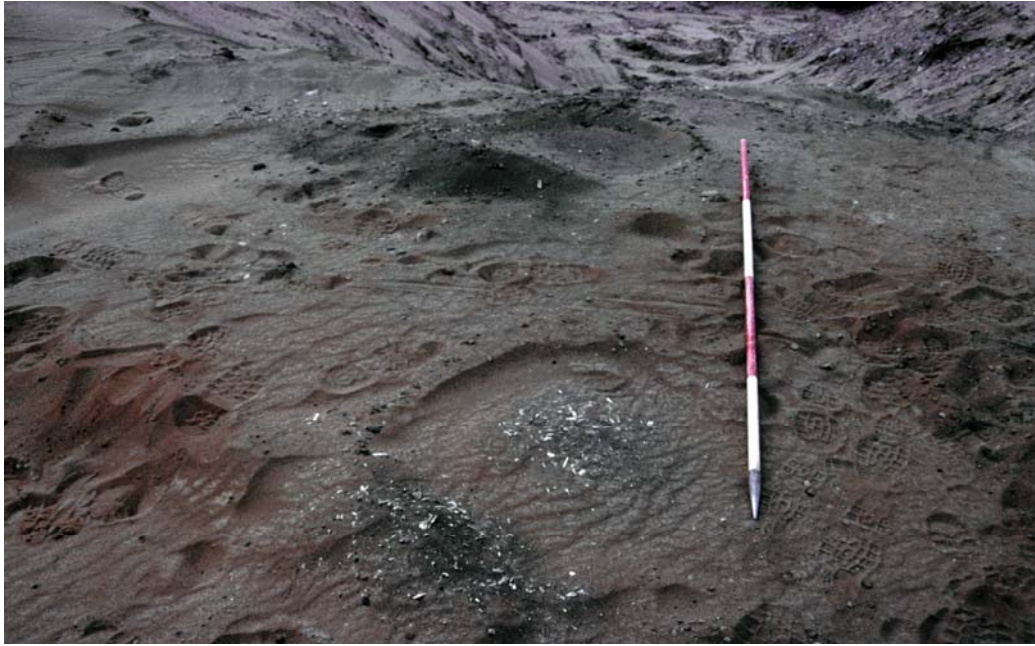


Plate 3: Cremations 2 and 3 on arrival at the site



Plate 4: Cremation 1, prior to the lifting of urn 12