

Tendley Quarry, Brigham, Cumbria Fields 3730 and 5758

Post-Excavation Assessment Report

For Tendley Quarries Ltd

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ECUS LTD

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**TENDLEY QUARRY, BRIGHAM, CUMBRIA
FIELDS 3730 AND 5758**

POST-EXCAVATION ASSESSMENT REPORT

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TENDLEY QUARRY, BRIGHAM, CUMBRIA
FIELDS 3730 AND 5758

POST-EXCAVATION ASSESSMENT REPORT

Summary

Archaeological trial trench evaluation and strip, map and record excavation were undertaken within fields 3730 and 5758 at Tendley Quarry, Brigham, Cumbria. Trial trenching was undertaken in four areas (Trenches 1–4), which targeted anomalies and responses identified during an earlier geophysical survey of the area. The evaluation was carried out in accordance with a Written Scheme of Investigation that had been approved by Cumbria County Council Historic Environment Service (CCCHES) in advance of the start of works. The Written Scheme of Investigation was updated and approved in advance of strip, map and record excavations.

The trial trench evaluation was largely negative within Trenches 1–3, but exposed significant possible Bronze Age remains in Trench 4 (Field 5758). This resulted in a programme of strip, map and record excavation to fully exposed, hand excavate and record the archaeological remains identified in this area. The excavations exposed a ring of postholes with central hearth, a flanking penannular ditch, and associated pits and postholes. Together the features represented the remains of a circular timber building. The structure has the potential to date to the Bronze Age, considering the presence of sherds of Collared Urn pottery, and a stone wrist-guard within the fill of some of the features.

The evidence derived from Trench 4 has considerable archaeological potential. Analysis of the contextual and stratigraphic evidence, in conjunction with further study of the prehistoric pottery, the stone wrist-guard, and a programme of radiocarbon dating has the potential to provide important detail on the character and chronology of the site, and the Bronze Age in Cumbria. It is recommended that the results of this analysis should be summarised for publication within an appropriate national or regional journal.

The archaeological potential of the remains present in Trench 4 would be greatly increased should analysis and publication be undertaken in conjunction with analysis of further significant finds and features identified during earlier stages of extraction at Tendley Quarry. Therefore, it is recommended that analysis should also include the results of archaeological works undertaken by NAA at the quarry from 2017 onward. Analysis should include fulfilment of several recommendations made following assessment of the results of excavations undertaken by NAA during 2020.

1.0 INTRODUCTION

- 1.1 This document presents an assessment of the results of an archaeological trial trench evaluation, and subsequent strip, map and record excavation at Tendley Quarry, Brigham, Cumbria (hereafter the 'site'; centred at NGR NY 0846 2938; Fig. 1). Trial trenching was undertaken in Fields 3730 and 5758, and resulting strip, map and record excavation in Field 5758. The work was carried out by Ecus Ltd (formerly Northern Archaeological Associates; NAA) for Tendley Quarries Ltd over a three-week period from the 1st November to the 22nd of November 2021. These works are the final phase of archaeological evaluation/mitigation required as part of the current programme of extraction.
- 1.2 Trial trenching was undertaken in four areas (Trenches 1–4), which targeted anomalies and responses identified during an earlier geophysical survey of the area (Fig. 2; NAA 2021a; 2021b). The evaluation was carried out in accordance with a Written Scheme of Investigation (WSI) that had been approved by Cumbria County Council Historic Environment Service (CCCHES) in advance of the start of works (NAA 2021c).
- 1.3 The trial trench evaluation exposed significant remains which had the potential to be Bronze Age in date in Trench 4 (Field 5758). Following consultation with CCCHES and Tendley Quarries Ltd, it was determined that further archaeological mitigation of these features was required. A revised WSI was submitted to CCCHES by Ecus on behalf of Tendley Quarries Ltd, which detailed the methodologies of both the trial trench evaluation, and a programme of strip, map and record excavation to fully exposed, hand excavate and record the archaeological remains identified in Trench 4 (*ibid.*).
- 1.4 The results of the strip, map and record excavations at Trench 4 have the potential to be of regional archaeological significance. Therefore, recommendations for analysis, publication and archiving are presented in conjunction with a provisional timetable for the work to fulfil planning requirements associated with the development.

2.0 LOCATION, TOPOGRAPHY AND GEOLOGY

Location

- 2.1 The site is located approximately 1km to the south of Brigham village and 0.75km to the north-east of Eaglesfield. It comprises pasture fields (totalling c.11.1ha), bounded to the south and west by the existing quarry, to the north by further agricultural land, and to the east by Hotchberry Road (running between Brigham and Eaglesfield).

Topography

- 2.2 At the time of the works, the site was agricultural land that was in use until recently as pasture.
- 2.3 The highest point of the site was to the north-west, and was recorded as 102m above Ordnance Datum (aOD); the ground sloped gently down to 97m aOD at the south-east corner of the site.
- 2.4 Trench 4, located toward the northern boundary of Field 5758, occupied a gently sloping plateau facing the south and east towards a valley extending north-east of Hotchberry road.

Geology

- 2.5 The solid geology of the Site has been mapped as consisting of Hensingham Grit sandstone (BGS 2021). There are no recorded superficial deposits in the western part of the area. In the eastern part of the area the bedrock is mapped as being overlain by Devensian Diamicton Till (*ibid.*). The soils across the area are of the Malham 1 Association, consisting primarily of well-drained soils in silty aeolian drift, intermixed in places with bare limestone pavement or crags (Soil Survey of England and Wales 1983; Jarvis *et al.* 1984, 234–5).

3.0 SUMMARY ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Within the wider landscape around the quarry, a number of prehistoric sites have been recorded, which predominantly represent findspots and cropmarks, although until recently no finds or sites had been recorded in the immediate vicinity of the quarry. A rectangular mound of uncertain origin was reported in 1989 in the area of the proposed works (HER No.6852). The record does not include a precise location or dimensions of the mound, but a site inspection on 5 February 2021 identified an upstanding earthwork near the western edge of Field 3730 and the proposed

extension area (Fig. 2). No indication as to the origin of the mound was visible upon the ground surface, although it was conceivable that it was artificial; similar mounds in the Pennines dales to the east are considered to represent Neolithic funerary monuments (Luke 2021). The earthwork was targeted by the current trial trenching (Trench 1).

- 3.1 The route of a Roman road running between Ravenglass and Papcastle is reputed to pass close to Tendley Hill (Margary 1973, 389–95). Historic accounts suggest parts of this road were uncovered during past quarrying activity, though no other finds or sites dating to this period have been revealed.
- 3.2 A cist burial of probable early medieval date was found at Eaglesfield, which is located c.1.5 miles to the south-east of the current site (Wilson 1978). Closer to the site, a number of burials are reported to have been found during quarrying on Tendley Hill, and one discovered in 1814 was accompanied by a 10th-century sword, a ‘pike’ (possibly a spear) and a brooch (*ibid.*, 48; Edwards 1992, 48). The 1867 Ordnance Survey (OS) map notes ‘Human remains have been found here’ on Tendley Hill (not illustrated) at the eastern side of Hotchberry Brow. There is believed to be some correlation between early medieval burials and historic boundaries (Reynolds 2002), and the presence of the boundary between Dean and Brigham parishes, skirting Tendley Hill, may suggest that it was the location of an early medieval cemetery.
- 3.3 Little is known about medieval activity in the direct hinterland of the site. Geophysical survey undertaken in numerous fields surrounding the quarry has recorded extensive ridge and furrow. This suggests that the area was used as agricultural land in the wider hinterland of Cockermouth since at least the medieval period. Historic maps from the mid-19th century (not illustrated) show much of the area surrounding Tendley Quarry as strip fields.
- 3.4 During the post-medieval period, Tendley Hill was subjected to extensive limestone quarrying. Several quarries and lime kilns are recorded on 19th-century mapping and are shown to have expanded between the 1867 and 1900 OS maps.

Previous archaeological investigations

- 3.5 A number of archaeological works have been carried out at Tendley Quarry associated with this, and earlier stages of extraction. These are listed below.

- Headland Archaeology: a rapid archaeological desk-based assessment (Conolly and Carter 2001) and trial trenching (Dutton 2003).
- Archaeological Services WYAS: geophysical surveys (Webb 2003; Gidman and Webb 2007; Watson 2008).
- Oxford Archaeology North: trial trenching (Lee and Vannan 2008).
- North Pennines Archaeology: trial trenching (Jackson 2009; Haigh 2011).
- GSB Prospection: geophysical survey (GSB 2014).
- Northern Archaeological Associates: trial trenching (NAA 2014).
- Northern Archaeological Associates: geophysical survey (NAA 2017).
- Northern Archaeological Associates: trial trenching (NAA 2018a).
- Northern Archaeological Associates: excavation (NAA 2018b).
- Northern Archaeological Associates: geophysical survey (NAA 2019).
- Northern Archaeological Associates: excavation (NAA 2020).
- Northern Archaeological Associates: geophysical survey (NAA 2021a and 2021b).

3.6 No significant archaeological remains were revealed during the works reported on between 2001 and 2014. The geophysical survey undertaken in 2017 identified several linear anomalies indicative of archaeological features in an area at the north-western side of the quarry (and to the south-west of the current area of investigation). Trial trenching and subsequent small-scale excavation carried out by NAA recorded gullies and pits containing charcoal, burnt stones and fired clay (NAA 2018b). Artefacts were limited to a whetstone and a probable hammerstone, neither of which were datable. Although these features were undated, the pits were of a character suggestive of prehistoric activity.

3.7 In 2019, further prehistoric remains were identified by geophysical survey and subsequent archaeological evaluation, directly to the south-east of the current site (Field 6532; Fig. 2). The remains excavated in January 2020 comprised a penannular gully c.25m in diameter with an entrance to the south-east. This enclosed a large central posthole, four pits containing burnt stones, and an inhumation with an associated Early Bronze Age food vessel (NAA 2019; 2020). Although initially reported as a potential barrow, it is also possible that this was a henge-type ceremonial site, which commonly attracted secondary burials during the Early Bronze Age.

- 3.8 Two geophysical surveys were undertaken in January and March 2021, which represent initial evaluation of Fields 3730 and 5758, and formed the basis of the current trial trench evaluation (NAA 2021a; 2021b).
- 3.9 The survey in the western part of the site (Field 3730) recorded former ridge and furrow cultivation across the eastern part of the field. It also recorded several of the field boundaries shown on the 1867 OS map, which have since been removed. A weak and diffuse trend recorded in the south-western part of the area appeared to be the continuation of a field boundary and stream directly to the east of the survey area and so is likely to denote an infilled channel or ditch.
- 3.10 A sub-circular anomaly was identified in the south-eastern part of the area (targeted by Trench 2; Fig. 2). At the time of survey, it was unclear if this represented an infilled archaeological feature or was caused by geological or pedological changes in the substrata. Linear anomalies immediately to the south of this feature, aligned from north-west to south-east, were also of uncertain origin (targeted by Trench 3).
- 3.11 A circular anomaly in the centre of Field 5758 and towards the northern quarry boundary was interpreted as of an archaeological origin, and was targeted by Trench 4 (Fig. 2).
- 3.12 The geophysical survey within Fields 4942 and 5758 identified several phases of ridge and furrow, and former field boundaries. All other anomalies, including those recorded in Field 4942 (Fig. 2), were considered modern or natural in origin.

4.0 AIMS AND OBJECTIVES

- 4.1 The main aim of the evaluation was to determine the presence of unrecorded sub-surface archaeological remains within the proposed extension area and to validate the results of earlier geophysical survey. If archaeology was present, the evaluation aimed to confirm the location, extent, nature, date and importance of the remains to inform an assessment of the impact and to ensure that a suitable mitigation strategy was agreed.
- 4.2 The identification of significant archaeological remains resulted in the requirement for targeted strip, map and record excavation in order to further understand the features identified in Trench 4. The aim of the strip, map and record was to expose the full extent of archaeological features and deposits associated with the remains present

in Trench 4; and sample, excavate and record the remains in order to achieve 'preservation by record'.

4.3 The objectives of the trial trench evaluation (NAA 2021c) were to:

- establish the presence, nature, extent, preservation and significance of any archaeological remains within the site;
- provide a detailed record of any such archaeological remains;
- recover and assess any associated structural, artefactual and environmental evidence;
- determine which areas within the footprint of the proposed scheme require archaeological mitigation in the form of preservation in situ, open area investigation in advance of construction, or monitoring of soil stripping during construction works;
- prepare an illustrated report on the results of the excavation to be deposited with the Historic Environment Record (HER) held by CCCHES and the National Monuments Record (NMR); and
- evaluate the potential for further unrecorded significant archaeological remains to be present within the site.

4.4 The objectives of the strip, map and record (NAA 2021c) were to:

- establish the full extent of the features and deposits identified within Trench 4;
- establish the presence, nature, preservation and significance of any other archaeological remains within the immediate vicinity;
- provide a detailed record of any such archaeological remains;
- recover and assess any associated structural, artefactual and environmental evidence;
- undertake a programme of investigation that meets with national and regional standards as detailed in Section 5 below; and
- prepare an illustrated report on the results of the archaeological investigations to be deposited with the Historic Environment Record (HER) held by CCCHES and the National Monuments Record (NMR).

5.0 STANDARDS AND GUIDELINES

5.1 The work presented in this report was carried out in accordance with a WSI (NAA 2021c) which was agreed in advance with CCCHES, and was based upon NAA's

previous experience of undertaking similar work, and with reference to the following published standards and guidelines of practice:

- Conserving and Enhancing the Historic Environment (NPPF 2014);
- Standard and guidance for the collection, documentation, conservation and research of archaeological materials (ClfA 2020a);
- ClfA Code of Conduct (ClfA 2021);
- Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide (Historic England 2015a);
- Historic Environment Good Practice Advice in Planning Note 2: Managing Significance in Decision-Taking in the Historic Environment (Historic England 2015b);
- A Strategy for the Care and Investigation of Finds (English Heritage 1995);
- Conservation Principles, Policies and Guidance: For the sustainable management of the historic environment (English Heritage 2008a);
- Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (Historic England 2015c); and
- First Aid for Finds (Watkinson and Neal 2001).

6.0 METHODOLOGY

Location of evaluation trenches

6.1 Four trenches were positioned to target responses identified by geophysical survey in Fields 3730 and 5758, and the upstanding earthwork in Field 3730 (Fig. 2). No trenches were proposed for Field 4942 at the eastern edge of the area. Trenches were located as follows.

- Trench 1 was located at the western edge of Field 3730 in order to investigate an upstanding earthwork.
- Trench 2 was located in the south-east part of Field 3730 to investigate a sub-circular anomaly and 'blank' areas to either side.
- Trench 3 was positioned to investigate two linear responses in the south-eastern part of Field 3730.
- Trench 4 was located to investigate a circular response in Field 5758 and sample areas of ridge and furrow to either side.

Location of strip map and record

- 6.2 Trial trenching demonstrated the presence of archaeological features within Trench 4. Following discussion with CCCHEs and the Client, it was agreed that targeted strip, map and record excavation be undertaken around Trench 4 to fully expose the extent of the feature group identified during evaluation (Fig. 2). The strip, map and record area measured 25m by 20m.

Machine excavation

- 6.3 The initial site works comprised the stripping of overburden (topsoil and subsoil) within each trench. The removal of overburden was carried out under archaeological supervision by a back-acting mechanical excavator fitted with a toothless or ditching bucket.
- 6.4 Overburden was removed down to a level at which significant archaeological deposits were identified, or down to natural deposits/bedrock, whichever was encountered first. Mechanical excavation ceased in any areas where archaeological remains deemed to be significant by the monitoring archaeologist were identified. Thereafter, all archaeological work was undertaken by hand.

Hand-excavation

- 6.5 Where structures, finds, soil features or layers of archaeological interest were exposed, these were cleaned, assessed, excavated by hand, sampled and recorded as appropriate.
- 6.6 Hand excavation of archaeological features was carried out to characterise the archaeology and ensure recovery of artefactual and environmental evidence. In particular, hand excavation concentrated on intersections of features to help determine their relative chronology, and a representative sample of all features was excavated. Sample excavation included;
- up to 100% excavation of features of ritual or ceremonial nature (including burials);
 - up to 50% sample of each individual domestic, industrial, or settlement-related feature;
 - at least 50% of discrete features such as post-holes and pits, smaller features such as stakeholes were 100% excavated;

- a sample of at least 10%, up to 50%, of the overall length of linear features, a minimum of 1m section within the trench; and
- any intersections of features, to help determine phasing.

Recording

- 6.7 Significant archaeological remains were located to the National Grid using a Topcon GRS1 GPS and the information was transferred to AutoCAD software for incorporation within this report. All levels have been tied to the Ordnance Datum.
- 6.8 A drawn record of all archaeological features was made at an appropriate scale. Sections/profiles were drawn at a scale of 1:10, and their location accurately recorded on a digital trench plan. Orthorectified photographic techniques were also employed to record archaeological features. All site plans and feature sections include data on levels relative to the Ordnance Datum.
- 6.9 Written descriptions of archaeological features/deposits were recorded on pro-forma context sheets, which employ standard archaeological recording conventions. Trenches that contained no archaeological features or deposits were record using pro forma trench evaluation trench recording sheets.
- 6.10 A photographic record of the site was created using digital photography at a minimum resolution of 10 megapixels and utilising graduated metric scales.

Finds recording

- 6.11 All finds processing, conservation work and storage was carried out in compliance with guidelines issued by the Chartered Institute for Archaeologists (CIFA 2014) and those set by the Institute of Conservation (2022). Pottery and animal bone were collected as bulk samples where encountered. Significant artefacts were three-dimensionally recorded prior to removal. Finds were appropriately recorded and processed using the Ecus system and submitted for post-excavation assessment.
- 6.12 All finds recovered are appropriately packaged and stored under optimum conditions. Finds recovery and storage strategies were in accordance with published guidelines (English Heritage 1995; Watkinson and Neal 2001). Provision was made for site visits from the conservator, although this was not required.

Metal detecting

- 6.13 Metal detecting, including the scanning of topsoil and spoil heaps, was performed by an archaeologist. Metal finds were properly located and identified. All metal detecting was carried out in accordance with the DCMS (2008) The Treasure Act Code of Practice (2nd revision).
- 6.14 No artefacts recovered were considered to be treasure.

Environmental sampling

- 6.15 Bulk soil samples were taken from appropriate deposits and submitted to an environmental specialist for an assessment of their paleoenvironmental potential. Recovery and sampling of environmental remains was carried out for the purpose of retrieving plant and animal macrofossils in accordance with published guidelines (Campbell *et al.* 2011; Historic England 2015), and established practice (CIfA 2014).

Date-sampling

- 6.16 Secure contexts were sampled (either on site or as sub-samples of processed bulk samples) where the potential for using scientific dating techniques had been established. Appropriate samples have been identified and retained for submission for AMS radiocarbon dating as part of a recommended programme of analysis. Samples suitable for archaeomagnetic dating were not present.
- 6.17 The sampling strategies employed were reviewed in consultation with the environmental and botanical specialists.

Monitoring

- 6.18 During the course of the archaeological works, access was made available at all reasonable times to representatives of CCCHES so they could inspect the archaeological works being undertaken.
- 6.19 CCCHES was given a minimum of two days' notice of the start of works. They were kept informed of progress and were notified of the discovery of significant archaeological remains.

7.0 RESULTS

Trial trench evaluation

- 7.1 The trial trench evaluation consisted of four trenches. Three of the trenches were located in Field 3730 (Trenches 1–3); the fourth was located in Field 5758 (Trench 4; Fig. 2). The trenches were individually 2m by 50m in size.
- 7.2 Trenches 1 and 2 contained no archaeological remains. Mechanical soil stripping exposed a sand and gravel natural (2) that was overlain directly by up to 0.5m of modern topsoil (1). Trench 1 had been sited to investigate a slight upstanding mound. The mound was found to represent topsoil over a slight rise in the natural deposits and was an entirely natural feature.
- 7.3 Removal of 0.3m of modern topsoil (1) from Trench 3 exposed a palaeochannel (12; not illustrated; Fig. 4) at the eastern end of the trench, which may have produced the bipolar response present on Figure 2. Palaeochannel 12 was over 8m wide by approximately 1m in depth and was filled primarily by a dark, organic fill (6) which had accumulated at the base of the feature. Fill 6 was sampled to retrieve environmental remains, which demonstrated the presence of charcoal. However, the material could not be identified to species and is therefore not suitable for AMS radiocarbon dating (Appendix E). The primary, organic fill (6) was overlain by a series of silt and gravel deposits.
- 7.4 Trench 4 was sited to investigate a positive sub-circular response recorded by geophysical survey (Figs. 2 and 4). Soil stripping of 0.3m of modern topsoil (1) and subsoil (64/122) exposed the natural sand and gravel (2), which had been cut by a number of archaeological features. These included two sections of ditch (13), which represent part of the north-west and south-east circuit of the sub-circular geophysical survey response, the remains of a hearth (9), and associated pits.
- 7.5 Following discovery of these features, CCCHES requested that the area of Trench 4 be expanded to an area 20m by 25m as a strip, map and record excavation. As a result of this, the excavation methodology was modified, then approved by CCCHES (NAA 2021c).

Strip, map and record excavation (Trench 4)

- 7.6 Additional soil stripping around Trench 4 exposed a penannular ditch (13) with an east-facing entrance, which contained the sub-surface remains of a circular structure (Structure 123; Fig. 3), central hearth (9), and associated features.
- 7.7 Stratigraphically, some of the earliest features included pit 16 and posthole 48. Pit 16 was over 1m wide and 0.3m deep. It had been backfilled by a compacted stony deposit within a matrix of dark brownish-grey silty clay (17) that contained no finds or environmental remains. Pit 16 was cut by ditch 13.
- 7.8 Posthole 48 had a diameter of 1.2m and was up to 0.5m deep. Posthole 48 was filled by a loose, dark greyish-brown, stony deposit (49) that included a number of large, flat stones which may have represented post-packing. The posthole contained no artefactual or identifiable environmental material. Posthole 48 was cut by posthole 46, which was a component of Structure 123.
- 7.9 The penannular ditch (13) enclosed an area c.11 by 13m (Plate 1). Ditch 13 was up to 1.7m wide, with a width of c.1m at the terminals. It had a 'V'-shaped profile with rounded base and an average depth of 0.5m. Eleven sections of ditch 13 were excavated, which totalled over 50% of the feature. These excavations exposed a broadly consistent fill sequence in several of the sections. This sequence comprised a primary gravel fill (36, 52, 53, 118 and 117), that was overlain by a secondary loose, stony fill with a fine silt matrix (37, 51, 54, 117 and 119). The upper fill comprised a compacted silty-clay backfill (15, 50, 55 and 35). However, some of the excavated sections were found to be filled by a single deposit (114, 110, 109, 111, 112 and 113), perhaps suggesting intentional backfilling in some areas. Two fragments of daub/fired clay were recovered from upper fill 15 and an assemblage of daub was recovered from single fill 114, which included two conjoining fragments that displayed a slight imprint of wattle on the inner face (Appendix F).
- 7.10 No structural features were present as an integral part of ditch 13, therefore the feature most likely served to drain the internal, enclosed space and perhaps collected run-off from the eaves of the roof of Structure 123.
- 7.11 The post-circle forming Structure 123 had a diameter of 5m, and comprised 9 postholes (40, 46, 56, 61, 65, 68, 95, 99 and 101; Plate 2). Most of the postholes were evenly spaced at 2m apart, other than a pair situated at the eastern side (40 and 101), which most likely represented additional support around an entrance into

- the centre of the structure and mitigated the requirement for a posthole opposing posthole 65. The postholes were individually up to 0.5m in diameter, were up to 0.5m deep and were filled by a mid- to dark brown silty clay. Many of these features contained post-packing and pad stones, although not all.
- 7.12 Of the structural postholes, only feature 68 contained artefactual material. It was filled by a loose dark-greyish brown deposit (70), which was almost devoid of stones and contained frequent charcoal inclusions and flecks of possible burnt daub (Plate 3). A large rim sherd of a Bronze Age Collared Urn (Plate 4; Appendix B) and a possible hone stone (Appendix C) were recovered from the base of fill 70.
- 7.13 Two additional postholes (93 and 97) were present upon the circuit of Structure 123. Both features were up to 0.5m in diameter and were up to 0.3m deep. Considering the location of the features, they are unlikely to have represented part of the original construction, and perhaps represented later maintenance and the addition of further structural support.
- 7.14 The ring of postholes exposed at Tendley Quarry would have provided structural support for the roof of a roundhouse but is unlikely to have defined the outer wall of Structure 123. No direct evidence for the location of the external wall had survived, although it may be presumed that the eaves of the roof drained directly into ditch 13. The external wall was most likely of a lightweight wattle and daub construction, as suggested by the presence of impressed daub in fill 114 of ditch 13.
- 7.15 Hearth 9 was located centrally within Structure 123. It measured 1.25m by 1m wide and was 0.25m deep with edges that had been reddened by firing (Plate 5). Hearth 9 contained two fills. The lower fill (11) was a dark brown clayey sand that contained a few unidentifiable cereal grains and charcoal (Appendix F). The upper fill (10) was a blackish-brown clayey sand (10) that contained considerable quantities of cultural material including grains of charred barley and wheat (Appendix F), a substantial quantity of fired clay (Appendix E) and five sherds of Bronze Age Collared Urn pottery (Appendix B). A small quantity of magnetic material was present in the fill, which was most likely intrusive, being introduced by bioturbation (Appendix E).
- 7.16 The hearth (9) was flanked by a group of stakeholes (Group 126), which individually had diameters up to 0.08m. The features may have resulted from the presence of cooking apparatus, such as a frame or tripod.

- 7.17 A group of pits/postholes were present within the entrance break of ditch 13 (Group 127; 19, 22, 25, 27, 29, 31 and 33). Most of the features appeared to be pits; however, it is conceivable that elements of the group had a structural function, perhaps as a projecting porch to Structure 123. At the south side of the terminals of ditch 13, pits 22 and 25 were 0.7m-0.95m in diameter and 0.4m deep with compacted, stony backfills (23, 24 and 26). To the north, pits 27, 31, 33 had comparable dimensions and some intercutting was present (pit 33 cuts pit 31) indicating phasing to the features. All the pits were filled by a similar dark brownish-grey silty clay deposit (32 and 34), which contained no artefactual material.
- 7.18 The best-preserved posthole within Group 127 was feature 29, which was located centrally within pit 27. It may have represented a post-pipe within the pit, rather than a later cut. Posthole/postpipe 29 had a diameter of 0.35m and was up to 0.4m deep. It was filled by a dark orange-brown stony-clay deposit (30).
- 7.19 The area which most likely formed the entrance to Structure 123 was occupied by a group of features (Group 125) that included small penannular gully (19/86), and three postholes (87, and 105 and 107). The penannular gully (19/86) was c.3m in diameter and appeared to have two phases of construction. The first phase (19) was represented by a gully that was up to 0.8m wide by 0.3m deep and became considerably wider at its northern end. Gully 19 had been almost completely removed by later gully 86. Gully 19 had an irregular profile (19), which was filled by a silty-clay and gravel backfill deposit (20). Gully 19 had been re-cut centrally along its circuit by a narrow, steep-sided gully (86), which was 0.28m wide by 0.2m deep. Gully 86 was filled by a loose, dark-reddish brown silty clay (21) that contained fragments of burnt animal bone (Appendix D), burnt stone, charcoal and fragments of hazelnut shell and indeterminate cereal grains (Appendix F).
- 7.20 Posthole 87 was located slightly off centre within the circuit of gullies 19/86. It had a diameter of 0.43m and was 0.15m deep. Posthole 105 was located c.1.5m to the north. It had a diameter of 0.3m and was 0.2m deep and had been cut by posthole 107 which was of similar dimensions. None of these features contained artefactual material.
- 7.21 A further eight pits were identified outside the perimeter of ditch 13 (59, 91, 89, 73, 103 and Group 124). Pit 59 was located to the rear of Structure 123, approximately 1m from the south-western edge of ditch 13. The pit was circular and measured 0.7m

in diameter and 0.35m deep with a steep-sided profile and flat base. It was filled by a mid-yellowish-brown deposit of clayey silt and gravel (60) from which a stone wrist-guard was recovered (Plate 6; RF2). The wrist-guard was a polished grey-green stone and is thought to date to the Late Neolithic–Early Bronze Age (Appendix C). The object appeared to have been deliberately deposited on the base of pit 59 before it was backfilled.

- 7.22 Pit 91 was situated at the north-western corner of the trench. It was sub-circular and was c.1m in diameter with a steep-sided profile and rounded base to a depth of 0.5m. Pit 91 was filled by a dark greyish-brown clay-silt deposit (92), with occasional large stones and gravel, but no artefactual or environmental material. The northern edge of pit 91 appeared to have truncated an earlier, smaller posthole (89), although considering the similarity between the fills, the two features may have been contemporary.
- 7.23 Pit 73 was located 2m to the south of ditch 13. It had a diameter of 0.9m and was 0.52m deep. Pit 73 had been filled by mid-orange brown silty clay and gravel (75) before being backfilled by a deposit of medium to large stones in a matrix of dark greyish-brown silty clay (74). The fills of pit 73 were largely archaeologically sterile, with only trace amounts of charcoal identified from fill 74 (Appendix F).
- 7.24 A shallow pit (103) was located towards the eastern edge of the excavation. It was 0.95m in diameter and 0.11m deep. Pit 103 was filled by a stony deposit within a matrix of mid greyish-brown silty clay (104). No artefactual material was present.
- 7.25 A group of three small, shallow pits (76, 78 and 80; Group 124) was recorded at the south-eastern limit of the trench. Individually, the pits measured up to 0.5m diameter and had a maximum depth of 0.14m. None of the features contained artefactual material.
- 7.26 Stratigraphically, the latest features present within Trench 4 were a series of gullies (42, 71 and 120). The gullies were aligned north-east to south-west and were each in the order of 0.3m wide by 0.1m deep. They were filled by identical deposits of mid greyish-brown silty clay (43, 72 and 121), which was very similar to the overlying subsoil (64/122). These gullies most likely represented ploughing of the site. However, it should be noted that the alignment of the gullies does not correspond to the scheme of ridge and furrow ploughing recorded by geophysical survey (NAA 2021a; 2021b), which was identified as being aligned north-west to south-east. No

finds were recovered from these features, and they perhaps represent the remains of a medieval ploughing regime that was subsequently realigned during the post-medieval period to that recorded by geophysical survey.

- 7.27 All features were sealed by a 0.2m thick subsoil horizon of mid-greyish brown silty clay (64/122), above which was a 0.1m thick accumulation of topsoil and turf (1). Topsoil 1 contained a silver threepence of Elizabeth I (RF1, Appendix C).

8.0 STATEMENT OF POTENTIAL

Assessment of the contextual and stratigraphic record

- 8.1 As part of the post-excavation assessment, a full assessment of the stratigraphic record has been undertaken. A context catalogue has been produced (Appendix A) and provisional matrices have been drawn to illustrate stratigraphic relationships between individual contexts (Fig. 4).
- 8.2 Plans and sections have been checked against context record sheets and catalogues to ensure they are fully cross-referenced. Catalogues of context, illustration records and digital photographs have been input onto digital spreadsheets. Site drawings have been scanned and digitised in AutoCAD software. Databases of the artefactual and environmental evidence have been produced.
- 8.3 An initial quantification of each category of the site archive has been made. These are listed in Table 1.

Table 1: Quantification of record categories

Record category	No.
Context descriptions	124
Plans	1 (digital)
Sections	46
Digital photographs	250

- 8.4 The contextual and stratigraphic record are in good order and provide a solid base for analysis and production of an archaeological site narrative for inclusion in an Archive Report and summarised for publication. The narrative will synthesise the results of artefactual and environmental analysis, and the scientific dating programme as detailed below.

Condition of features and deposits

- 8.5 The features and deposits had been truncated by later agricultural practices (ploughing) and bioturbation was evident within the fills of the features as demonstrated by the presence of low quantities of magnetic material in some of the features. However, the archaeological features and deposits generally survived in good condition.

Assessment of the artefactual and environmental evidence

- 8.6 During the course of the fieldwork, the artefactual material and environmental samples were transported to Ecus Ltd offices at Barnard Castle, Co. Durham. Environmental samples recovered during the monitoring were catalogued and processed prior to specialist assessment. The recovered finds assemblage was cleaned, identified, marked (where appropriate), catalogued and properly packed for long-term storage in accordance with national guidelines (as detailed above). A quantification of the artefactual and environmental remains is listed in Table 2 below.

Table 2: Quantification of environmental samples and recovered finds

Finds category	Quantity
Prehistoric pottery	8
Small finds	3
Burnt bone	26
Industrial waste and fired clay	1725.95g
Environmental samples	81 tubs

- 8.7 The artefactual and environmental evidence recovered during the excavations has been assessed for their archaeological potential and are summarised below. A fuller account of these assessments is provided as Appendices B, C, D, E and F.

The Prehistoric Pottery (Appendix B)

Archaeological Potential

- 8.8 The pottery sherds recovered from contexts 10 and 70 represent fragments from two Early Bronze Age Collared Urns. When considered together with the Bronze Age Food Vessel, recovered from an inhumation previously excavated at Tendley Quarry (NAA 2020), the assemblage is of high regional importance.

Recommendations

- 8.9 It is recommended that the sherds should be professionally drawn and photographed and subject to petrological analysis by a geologist to pinpoint a region of manufacture for the vessels and potential commonality. Suitable organic material from the

associated contexts should also be submitted for radiocarbon dating. The results should then be compared with other regional examples in order to identify trends in manufacture and bolster regional chronologies.

- 8.10 The prehistoric pottery will be retained and deposited with the receiving museum as part of the project archive.

The Small Finds (Appendix C)

Archaeological Potential

- 8.11 The assemblage of small finds from the current excavations originated entirely from Trench 4 and comprised a silver threepence dating from the reign of Elizabeth I (RF1), found in the topsoil, a green-stone wrist-guard (RF2) from the base of a pit and a potential hone stone (RF3) found at the base of a large posthole and in association with a large fragment of Bronze Age Collared Urn.
- 8.12 The stone-wrist guard (RF2) is of primary interest, as such artefacts are not common in the archaeological record and are usually associated with Late Neolithic–Early Bronze Age inhumation burials. However, the example present in Trench 4 was deposited on the base of a pit, apparently disassociated from mortuary activity.

Recommendations

- 8.13 The Elizabethan coin (RF1) and potential hone stone (RF3) should be photographed for inclusion with the site archive, although provide few further research opportunities.
- 8.14 The wrist-guard (RF2) should be illustrated. All finds should be retained and deposited with the receiving museum when archived.
- 8.15 The stone wrist-guard (RF2) belongs to an enigmatic group of prestige objects and therefore has a high potential to contribute to future research into the artefact type and their usage during the Late Neolithic–Early Bronze Age.
- 8.16 Non-destructive petrographic analysis could be undertaken to assess the origin of the stone and facilitate an understanding of how RF2 could relate to established regional and national groups of lithic artefacts. This could in turn inform the depositional process behind the location of RF2 and provide a more nuanced understanding of Late Neolithic–Early Bronze Age activity at Tendley Quarry, with particular reference

to the henge-type ceremonial site and Early Bronze Age inhumation discovered during the previous phase of work (NAA 2020).

- 8.17 The coin (RF1) and hone stone (RF3) provide no further archaeological potential and may be discarded following analysis and during deposition of the archive. The wrist-guard (RF3) should be retained and deposited with the receiving museum as part of the project archive.

Burnt Bone (Appendix D)

Archaeological Potential

- 8.18 A small assemblage of burnt animal bone was recovered from the hearth area and the penannular feature at the entrance to the circular structure. The fragments were small and heavily calcined, indicating prolonged exposure to very high temperatures, with many fragments being unidentifiable. Twenty-six fragments were able to be identified to the lowest taxonomic level and represented elements relating to pig, sheep/goat and cow, their deposition commensurate with the disposal of domestic food waste.

Recommendations

- 8.19 Due to the small size and heavy fragmentation of the assemblage, there is little further information to be gained and no further work is recommended. The material may be discarded upon conclusion of analysis and during project archiving.

The Industrial Waste and Fired Clay (Appendix E)

Archaeological Potential

- 8.20 The assemblage of industrial waste comprised fired clay and magnetic micro residues, primarily recovered from the hearth area and penannular gully at the entrance to the roundhouse, with further small concentrations retrieved from fills of internal postholes and pits and from ditch 13.
- 8.21 No notable concentrations were recorded. The magnetic micro residues, although perhaps a by-products of ferrous metalworking are almost definitely intrusive in these contexts. The quantity of diagnostic material within the assemblage is too small to provide an accurate picture of the activities represented.

Recommendations

- 8.22 The assemblage does not present any potential for further analysis and it is recommended that it is discarded upon project completion and prior to deposition of the archive.

The Palaeoenvironmental Assemblage (Appendix F)

Archaeological Potential

- 8.23 Twenty-seven environmental samples were taken during excavations, the majority were recovered from features related to the circular structure and external pit clusters present in Trench 4. Another sample was taken from a dark fill (6) within a palaeochannel (12) which contained charcoal that could not be identified to species.
- 8.24 Preservation of the environmental remains was generally poor, with high levels of sediment concretion and vitrification of charcoal and grains that was suggestive of charring at high temperatures. Most contexts had also experienced some level of bioturbation, with samples containing modern roots, uncharred seeds, earthworm eggs and insects remains. Several samples also contained Mycorrhizal fungal sclerotia, which was also attributed to the bioturbation process.
- 8.25 A small assemblage of charred plant remains was recovered from the sampled material, although very few of the specimens were identifiable. Amongst these were 7 grains of barley (*Hordeum vulgare*) and a single grain of free-threshing wheat (*triticum aestivum*) from hearth deposit 10 and fragments of charred hazelnut shell from contexts 20, 70 and 94.
- 8.26 The majority of the contexts sampled contained charcoal in varying degrees, with notable concentrations recorded from context 111 - corresponding to a dump of material within ditch 13 flanking Structure 123 - and context 57 - the fill of an internal posthole. Identifiable charcoal was recorded from contexts 36, 81, 94 and 111, the predominant species being hazel (*Corylus*).

Recommendations

- 8.27 Contexts 10, 20, 44, 60, 70, 94, 110 and 111 have provided appropriate charred plant remains for radiocarbon dating. Undertaking a programme of AMS radiocarbon dating to some, or all of these contexts would provide a chronology for Structure 123, the

deposition of the stone wrist-guard (RF2) from context 60, and the date of Bronze Age pottery fragments from 10 and 70.

- 8.28 Radiocarbon dating is recommended for the free-threshing wheat recovered from hearth context 10 to identify potential later intrusion into the context. Free-threshing wheat has rarely been identified in early prehistoric contexts in northern England (Myers and Stallibrass 2022; Hall and Huntley 2007, 27) and has the potential to provide a valuable addition to the regional dataset.
- 8.29 Dependant on the results of radiocarbon dating, the charred plant material from the contexts noted above is recommended for further analysis to inform on local subsistence strategies and economy, particularly relevant to contexts 20, 70, and 94 that contained charred hazelnut shells. The results should then be compared to assemblages from the previous phases of excavation at Tendley Quarry and to contemporary regional assemblages to identify trends in seasonal exploitation and consumption throughout the late Neolithic–Early Bronze Age.
- 8.30 No further work is recommended on the material recovered from Trench 3.

Potential of the evidence as a whole

- 8.31 The evidence derived from Trench 4 has considerable archaeological potential. Analysis of the contextual and stratigraphic evidence, in conjunction with further study of the prehistoric pottery, the stone wrist guard, and a programme of radiocarbon dating has the potential to provide important detail on the character and chronology of the site, and the Bronze Age in Cumbria. It is recommended that the results of this analysis should be summarised for publication within an appropriate national or regional journal.
- 8.32 The archaeological potential of the remains present in Trench 4 would be greatly increased if analysis and publication were undertaken in conjunction with analysis of the significant finds and features identified during earlier stages of extraction at Tendley Quarry. Therefore it is recommended that analysis should consider, and make reference to, the results of archaeological works undertaken by NAA at the quarry published from 2017 onward (NAA 2018a; 2018b; 2020), which are appropriate to realising the archaeological significance of the prehistoric occupation at the site. Analysis should include fulfilment of a number of the recommendations made following excavations undertaken by NAA during 2020 (NAA 2020, Section 11.9).

9.0 UPDATED PROJECT DESIGN

Introduction

9.1 The general aims and objects of the current phase of archaeological work at Tendley Quarry, Fields 3730 and 5758, will be achieved by the completion of a programme of analysis, publication and project archiving. Revised research aims and objectives are provided to support and give relevance to the proposed archaeological work programme. A general methodology is provided, and an anticipated timetable for completion of these works.

Revised research aims and objects

9.2 Previous excavations conducted by NAA at the site (NAA 2018a; 2018b; 2020) included an Early Bronze Age inhumation and potential henge-type monument. Coupled with the results of the current phase of work, this has created a significant corpus of material to add to our understanding of the use of the Cumbrian landscape in the Late Neolithic–Early Bronze Age. The results of these phases of archaeological investigation merit further analysis and subsequent publication in conjunction with the results of the current work.

9.3 The existing body of archaeological information and current research priorities for the region are presented in the North West Regional Research Framework (Hodgson and Brennand 2006). The three phases of excavation carried out by NAA/ECUS at Tendley Quarry have the potential to inform a number of key research areas.

9.4 Hodgson and Brennand outline that the early prehistory of Cumbria and the north-west of England is poorly understood, stating:

“There is a general lack of data for domestic architecture, settlement hierarchies, and most importantly, chronology. The available radiocarbon chronology for all prehistoric periods is poor, and there are problems with dates from some samples analysed in the past.”

Also that:

“The economic basis and land-use of many prehistoric periods is not well understood, with many unresolved questions including those of seasonality and the introduction of cereals and domestic animals.”

9.5 The excavation of a complete domestic structure at Tendley Quarry, with associated environmental evidence, is therefore significant and the importance of obtaining

radiocarbon dates for the archaeological remains cannot be understated. Indeed, initiative 2.8 (*ibid.*) encourages the radiocarbon dating of all excavated prehistoric sites in the north-west region as a matter of routine.

9.6 Determining how settlement remains relate to the wider landscape, particularly to areas of religious and ceremonial activity is also highlighted as a key area for further research (*ibid.*) and the archaeological remains excavated at Tendley Quarry provide the opportunity to study this relationship in a localised area. A comprehensive series of radiocarbon dates associated with Structure 123 and from the inhumation and potential henge-type monument excavated in the previous phase of work (NAA 2020) could determine whether the two areas were in use contemporaneously.

9.7 The finds assemblage too, although small, is also of regional importance.

9.8 The stone wrist-guard (RF2) is consistent with a known corpus of artefacts from the region, manufactured from the same source of Langdale tuff. In addition to recommended petrographic analysis, Hodgson and Brennand (2006) state that:

“There is also a need to prioritise the dating of other archaeological contexts in which axes and related forms, or even pieces of worked tuff, have been recovered”

9.9 The wrist-guard was excavated from a secure context containing viable environmental remains for radiocarbon dating (Appendix F), that would inform a date for its deposition. This information could potentially tie-in to distribution patterns of other known regional examples (Appendix C).

9.10 In terms of the Early Bronze Age pottery, there is currently “no typology or fabric sequence for the region” and “little scientific work on prehistoric ceramics has been undertaken and source, use and potential routes of movement are not known” (Hodgson and Brennand 2006). All recovered material from excavation is therefore vital for the creation of a regional database in order that these gaps in the regional archaeological record can be addressed.

9.11 The importance of stratified early prehistoric pottery assemblages and the need for independent dating and scientific analysis is also stated in initiatives 2.61 and 2.62 (Hodgson and Brennand 2006):

'...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. Analysis for lipids needs to be more widely applied for evidence of vessel use and consumption.'

- 9.12 One area consistently identified in regional research agendas and other guideline documents is a chronic under-reporting of fieldwork from developer-funded projects. The need to make available the results of smaller interventions, and to publish larger developer-funded work, is stated both at regional and national level (English Heritage 2010, 17; Hodgson and Brennand 2006, 33; Petts and Gerard 2006, 132).
- 9.13 In light of these statements, it is clear that further analysis and scientific dating of the wrist-guard, pottery and environmental remains recovered from Tendley Quarry is required, as this will greatly add to the current understanding of local and regional patterns of early prehistoric activity. The need to publish the results to the wider archaeological community and the public is equally apparent.
- 9.14 The features recorded during the current phase of works are part of a wider landscape of related activity as revealed during previous phases of investigation at the quarry. Therefore, a holistic approach should be taken to analysis and publication to ensure the archaeological potential of all work undertaken at Tendley Quarry be fully realised. In this way the results will provide a greater contribution to the regional research priorities and resources can be more focused.

Methodologies

Stratigraphic analysis

- 9.15 Further work should be carried out on refining the dating of key contexts in order to provide a more comprehensive understanding of the chronology of the site. Once undertaken, the generated evidence should be fed into the archaeological record as part of a programme of stratigraphic analysis. This would most productively be undertaken in conjunction with detailed analysis of the stratigraphic and spatial interrelationships of the remains present in the current areas of excavation, in conjunction with those areas previously investigated and assessed (NAA 2018a; 2018b; 2020).

Illustration

- 9.16 The existing site plans and matrices will be updated with any refinement of the site chronology/phasing. Full data from earlier archaeological work will be incorporated into a single illustration. Report/publication figures will be hachured and produced at an appropriate scale to the requirements of the analysis/publication report, which will include detailed site plans and sections as appropriate to present the final results of the work.

Artefactual and environmental analysis

- 9.17 The artefacts and environmental remains from all stages of work have been assessed and recommendations for any further work (from the current stage of work) are given within the individual reports (Appendices B–F). Further work is required as follows:

Prehistoric pottery

- The sherds will be professionally drawn and photographed.
- The prehistoric pottery will be subject to non-destructive petrological analysis by a geologist to pinpoint a region of manufacture for the vessels and potential commonality.
- A full report drawing on local and national comparanda, and drawing in other analyses from the surrounding context, will be prepared during analysis for publication.
- The prehistoric pottery will be retained and deposited with the receiving museum as part of the project archive.

The small finds

- The Elizabethan coin (RF1) and potential hone stone (RF3) will be photographed for inclusion with the site archive.
- The stone wrist-guard (RF2) will be photographed and illustrated for inclusion in the Archive/Publication Report.
- The coin (RF1) and hone stone (RF3) provide no further archaeological potential and will be discarded following analysis and during deposition of the archive.
- The wrist-guard (RF3) will be retained and deposited with the receiving museum as part of the project archive.

Burnt animal bone

- No further work is required on the burnt animal bone and the material will be discarded upon conclusion of analysis and during project archiving.
- The presence of the material will be noted within the Archive/Publication Reports.

The industrial waste and fired clay

- The industrial waste and fired clay have no further archaeological potential and not further work is recommended.
- The material will be discarded upon conclusion of analysis and during project archiving.
- The presence of the material will be noted within the Archive/Publication Reports.

Palaeoenvironmental remains

- The palaeoenvironmental assemblage should be analysed in conjunction with the palaeoenvironmental remains recovered during earlier stages of archaeological work undertaken at the quarry.
- The palaeoenvironmental material is not suitable to form part of the permanent archive and will be discarded following analysis and on completion of the project.

AMS radiocarbon dating

9.18 A total of 6 samples will be submitted to SUERC for radiocarbon dating. The samples will represent material recovered from:

- 1 sample from organic residue adhering to the prehistoric pottery recovered from context 70 (fill of posthole 68, Structure 123) to bolster regional pottery and site-based chronologies;
- 1 sample from organic residues adhering to sherds of prehistoric pottery recovered from context 10 (fill of hearth 9) to bolster regional pottery and site-based chronologies;
- 1 sample from charred plant material recovered from context 60 (fill of pit 59) to date the deposition of the stone wrist-guard (RF2);
- 1 sample of the free-threshing wheat recovered from context 10 to date the material;
- 1 sample from context 20 (fill of penannular gully 19 in entrance to Structure 123) to date the feature and determine if it is associated with Structure 123;

- 1 sample from context 110/111 (fill of ditch 13) to provide a date for the infilling of the penannular ditch.

Archive Report

9.19 An Archive Report will be produced detailing the full results of archaeological analysis. Report production and the synthesis of all elements of archaeological analysis will be directed towards establishing a comprehensive interpretation of the site. The evidence, and its limitations will be discussed in its local, regional and national context in conjunction with clearly stated evidence-led conclusions.

9.20 The current results, and those of previous archaeological investigations at Tendley Quarry will be collated into a single Archive Report.

9.21 It is anticipated that the Archive Report will include the following sections;

- a non-technical summary;
- site locations;
- description of the background and circumstances of the work;
- archaeological and historic background relevant to the results;
- methodology;
- aims and objectives including research themes and questions;
- archaeological narrative detailing the results of all analyses;
- discussion of the findings in their local, regional and national context with knowledge of, and reference made to project specific aims and objects, and regional research questions and priorities;
- revised and phased site plans as required, sections and matrices to support the narrative;
- the character, location and programme of publication;
- the location of the physical and digital archive following project completion;
- bibliography; and
- appendices containing specialist analysis reports.

9.22 The Archive Report will detail the character, location and programme of publication.

Publication

9.23 The Archive Report will be summarised for publication. It is currently anticipated that dissemination of the results of archaeological work by publication will be within *The*

Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society.

Storage, curation and deposition of the project archive

- 9.24 The written, drawn and photographic records and artefactual and environmental evidence are currently held at Ecus Ltd Barnard Castle offices. Subject to finalisation of discard policies and landowner permission, it is intended that the combined site archive of the current work and all future archaeological mitigation for the Scheme will be transferred to Tullie House Museum and Art Gallery, Carlisle. The digital component of the project archive will be uploaded to ADS if appropriate.
- 9.25 Archiving work and preparation for deposition will be carried out for the current works in accordance with local policy and national guidelines (Brown 2011; ClfA 2020b). The archiving of digital data arising from the work will be undertaken in a manner consistent with professional standards and guidance (Archaeology Data Service/Digital Antiquity 2011). Preparation of the digital archive will follow policy, guidance and procedures issued by the Archaeology Data Service (ADS 2020), Historic England (<https://historicengland.org.uk/research/methods/archaeology/archaeological-archives/adapt-toolkit/>) and DigVentures (<https://digventures.com/projects/digital-archives/>).
- 9.26 An online OASIS form has been initiated (OASIS ID: northern1-511345). Upon conclusion of the project, all parts of the OASIS online form will be completed for submission to the Cumbria County Council HER. This will include an uploaded PDF version of all Post-Excavation Assessment Reports and the Archive Report (paper copies will also be included with the project archive). The OASIS form will be validated by CCC Historic Environment Service once they have received the Archive Report, which will become a public document upon submission.
- 9.27 A copy of all reports and the full site archive will be deposited with the receiving museum on completion of the work. Deposition will be in accordance with guidelines on archive standards and procedures. In addition to the deposition of the archive, copies of all relevant reports will be deposited with the Cumbria County Council HER.

10.0 TIMETABLE AND PROGRAMME

- 10.1 The timetabling of analysis, reporting and archiving will be determined by commissioning of the work by the Client. The timetable presented here presumes

approval of the work by the end of January 2023. An Archive Report will be drafted within 8 months of the commissioning of the work (September 2023). A draft publication article will be produced within 4 months of the approval of the Analysis Report by the Client and CCCHES (February 2024, allowing for Archive Report approval process). Project archiving will be complete within 18 months pending the requirements of the receiving museum (July 2024).

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**APPENDIX A:
 CONTEXT CATALOGUE**

Context Number	Group Number	Context Description	Trench
1		Topsoil	All
2		Natural geology	All
3		Senary fill of palaeochannel 12	3
4		Quaternary fill of palaeochannel 12	3
5		Tertiary fill of palaeochannel 12	3
6		Secondary fill of palaeochannel 12	3
7		Primary fill of palaeochannel 12	3
8		Quinary fill of palaeochannel 12	3
9		Cut of hearth	4
10		Fill of hearth 9	4
11		Fill of hearth 9	4
12		Cut of palaeochannel	3
13		Cut of penannular ditch	4
14		Primary fill of ditch 13	4
15		Secondary fill of ditch 13	4
16		Cut of pit	4
17		Fill of pit 16	4
18		Subsoil layer cut by pit 16	4
19	125	Cut of penannular gully	4
20	125	Fill of gully 86	4
21	125	Primary fill of gully 19	4
22		Cut of pit	4
23		Primary fill of pit 22	4
24		Secondary fill of pit 22	4
25		Cut of pit	4
26		Fill of pit 25	4
27		Cut of pit	4
28		Fill of pit 27	4
29		Cut of posthole	4
30		Fill of posthole 29	4
31		Cut of pit	4
32		Fill of pit 31	4
33		Cut of pit	4
34		Fill of pit 33	4
35		Fill of ditch 13	4
36		Fill of ditch 13	4
37		Fill of ditch 13	4
38		Cut of E-W gully	4
39		Fill of gully 38	4
40	123	Cut of posthole	4
41	123	Fill of posthole 40	4
42		Cut of linear feature	4
43		Fill of linear feature 42	4
44	123	Cut of posthole	4

Context Number	Group Number	Context Description	Trench
45	123	Fill of posthole 44	4
46	123	Cut of posthole	4
47	123	Fill of posthole 46	4
48		Cut of posthole	4
49		Fill of posthole 48	4
50		Fill of ditch 13	4
51		Fill of ditch 13	4
52		Fill of ditch 13	4
53		Primary fill of ditch 13	4
54		Secondary fill of ditch 13	4
55		Tertiary fill of ditch 13	4
56	123	Cut of posthole	4
57	123	Primary fill of posthole 56	4
58	123	Secondary fill of posthole 56 void?	4
59		Cut of pit	4
60		Fill of pit 59	4
61	123	Cut of posthole	4
62	123	Primary fill of posthole 61	4
63	123	Secondary fill of posthole 61	4
64		Subsoil layer overlying 60	4
65	123	Cut of posthole	4
66	123	Primary fill of posthole 65	4
67	123	Secondary fill of posthole 65	4
68	123	Cut of posthole	4
69	123	Primary fill of posthole 68	4
70	123	Secondary fill of posthole 68	4
71		Cut of gully	4
72		Fill of gully 71	4
73		Cut of pit	4
74		Secondary fill of pit 73	4
75		Primary fill of pit 73	4
76	124	Cut of posthole	4
77	124	Fill of posthole 76	4
78	124	Cut of posthole	4
79	124	Fill of posthole 78	4
80	124	Cut of posthole	4
81	124	Fill of posthole 80	4
82		Void	4
83		Void	4
84		Void	4
85		Void	4
86	125	Cut of gully	4
87	125	Cut of posthole	4
88	125	Fill of posthole 87	4
89		Cut of posthole	4
90		Fill of posthole 89	4
91		Cut of pit	4
92		Fill of pit 91	4

Context Number	Group Number	Context Description	Trench
93	123	Cut of posthole	4
94	123	Fill of posthole 93	4
95	123	Cut of posthole	4
96	123	Fill of posthole 95	4
97	123	Cut of posthole	4
98	123	Fill of posthole 97	4
99	123	Cut of posthole	4
100	123	Fill of posthole 99	4
101	123	Cut of posthole	4
102	123	Fill of posthole 101	4
103		Cut of pit	4
104		Fill of pit 103	4
105	125	Cut of posthole	4
106	125	Fill of posthole 105	4
107	125	Cut of posthole	4
108	125	Fill of posthole 107	4
109		Fill of ditch 13	4
110		Fill of ditch 13	4
111		Fill of ditch 13	4
112		Fill of ditch 13	4
113		Fill of ditch 13	4
114		Fill of ditch 13	4
115		Cut of posthole	4
116		Fill of posthole 115	4
117		Primary fill of ditch 13	4
118		Primary fill of ditch 13	4
119		Secondary fill of ditch 13	4
120		Cut of gully	4
121		Fill of gully 120	4
122		Subsoil layer	4
123		Group number for structural postholes	4
124		Group number for structure in the south-east of area	4
125		Group number for porch structure	4
126		Group number for stakeholes surrounding hearth 9	4
127		Group number for "porch" pits at entrance	4

APPENDIX B:
ASSESSMENT OF THE PREHISTORIC POTTERY

Alex Gibson

INTRODUCTION

In February 2022, the writer was asked by Northern Archaeological Associates to prepare an assessment report on the pottery from Tendley Quarry, Cockermouth, Cumbria. The pottery was received on 2nd March 2022.

The pottery was unpacked onto a finds tray and examined in good light. A x10 hand lens was used to examine the material to aid in examining the fabric. No microscopic or petrological analyses have been undertaken and so the fabric description here is liable to modification should such work be undertaken in the future.

DISCUSSION

The Sherd Groups (SG) are described in the catalogue below.

The pottery represents fragments of two Early Bronze Age vessels. SG 2 (context 70) is certainly from a tripartite Collared Urn. SG 1 (context 10 and 10 AB) is more difficult to attribute in the absence of formal traits. It may be from the body of either a Food Vessel or Collared Urn as incised open lattice decoration can be found on both vessels although it is more common on the latter. Both SGs are, therefore, probably both Collared Urns and are broadly contemporary.

Food Vessels and Collared Urns comprise the main sepulchral vessel types of the Early Bronze Age and the types date to c.2000-1600 BC in round terms (Food Vessels perhaps starting slightly earlier at c. 2200 BC). Food Vessels are more common in northern Britain than in the South and there is a greater distribution to the East of the Pennines than the West: in the North of England 26 examples of Food Vessels from Cumbria contrast with over 140 in neighbouring Northumberland. Collared Urns, though distributed widely over the whole of Britain, are also more common in the South and East although Longworth (1984) records over 50 examples from Cumbria (contrasting with only 36 in neighbouring Northumberland). The simple repetitive herringbone collar decoration and the tripartite form of SG 2 might suggest an early form of Collared Urn (Burgess 1986).

The fragment of daub may hint at nearby (though not necessarily contemporary) structural remains.

ASSESSMENT AND RECOMMENDATIONS

The assemblage is of high regional importance, especially when combined with the Food Vessel previously recovered from the quarry (Gibson 2020) and, if properly dated, and supported by specialist reports on contexts and associations could easily be of national importance. As a result, the following recommendations can be made.

- The sherds should be professionally drawn and photographed.

- Non-destructive petrological examination by a geologist might locate the region of manufacture of all vessels in the assemblage and perhaps identify common or disparate clay sources.
- Radiocarbon dates should be obtained from associated organics to bolster regional chronologies.
- A full report drawing on local and national comparanda, and drawing in other analyses from the surrounding context, should be prepared for publication.

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CATALOGUE

Sherd Group No	Context	Fabric	No of sherds	Weight (g)	Description
1	10 (inc 10 AB)	St	5	49	Sherds in a coarse but hard and well-fired fabric with abundant angular stone inclusions reaching up to 7mm across. There are also some sandy inclusions, perhaps naturally occurring. The fabric is brown throughout with a slight greyness to the outside of some sherds. The fabric averages 12mm thick. The exterior surfaces of all but 1 sherd are well finished and decorated with finely incised open lattice. None of the sherds exhibit formal features.
2	70	St	1	80	Single large sherd in a coarse but hard and well-fired fabric with abundant angular stone inclusions up to 10mm across and included rounded soft sandstone fragments. Inclusions break both surfaces, but especially the inner. The fabric is black throughout and averages 14mm thick. The outer surface is well-finished and decorated with broad, well-spaced and lightly incised lines in a herringbone arrangement. The sherd represents a fragment of collar from a Collared Urn. The lower part of the collar has traces of a join void indicating that it was applied. The body below the collar has a slight curve suggesting that it was originally concave and that the vessel was therefore tripartite.
	114	Sa	2	25	Two conjoining sherds of fired clay or daub. Traces of wattle can be seen on the inside.

Fabric Abbreviation: Sa – rounded sand; St – crushed stone

APPENDIX C:
ASSESSMENT OF THE SMALL FINDS AND COINAGE

Julie Shoemark

INTRODUCTION

A total of seven objects were recovered during the course of archaeological investigations on land to the north of Tendley Quarry, Cumbria and submitted for assessment.

METHOD

The finds were assessed by eye on the 16th of February 2022. The assemblage was quantified by count and weight and, where possible, assigned a broad period. Each find was then assigned a functional group after the method of Crummy (1983). The assemblage was then considered in terms of its stratigraphic relationship. This report should be read in conjunction with the accompanying spreadsheet.

OUTLINE OF THE ASSEMBLAGE

A single fragment of unworked flint and four fragments of unworked stone (two of which were refitting) were recovered. They are excluded from the quantification of finds presented in Table C1. One, with traces of crystalline deposits, known as druse, has been submitted for assessment by the industrial waste specialist to rule out any association with potential industrial activities such as metalworking taking place on the site.

Table C1: quantification of finds.

RF No.	Context	Find	Description	Quantity	Measurements (mm)	Weight (g)
1	1	Ag Coin		1	Diam: 18.5	1.5 (23.1gn)
2	60	Wrist-guard		1	L: 100; W max: 12.9; W min: 7.1; Th max: 4.9; Th min: 0.3	12.19
3	70	Hone/whetstone		1		174.4
-	10	Natural	Two refitting fragments of unworked stone	2		4.8
-	110	Natural flint		1		0.2
-	14	Natural flint		1		2.2
-	111	Natural? flint		1		3.5

Coinage

A slightly worn silver threepence of Elizabeth I (RF1) minted in 1580 (second coinage, North 1991, no. 1998) was recovered from topsoil. The coin exhibits evidence of having been lightly clipped around the circumference to remove slivers of metal: a common criminal practice during the 17th and 18th centuries.

Personal adornment

A polished stone wrist-guard (RF2) of Atkinson Type A2 (Smith Type 2TF) was found in fill 60 of pit 59. Wrist-guards of this form have a strong distribution along West coast of Scotland and Northern England (Smith 2006; Woodward *et. al.* 2006, 533) and are the predominant type found in Ireland however, Woodward *et. al.* (2006) note that whilst Irish and continental examples are predominantly manufactured from red stone, British wrist-guards of Type A are generally grey or grey/blue in colour. RF2 is notable then in that it is manufactured from grey-green stone, more commonly associated with wrist-guards of Type C.

Petrographic analysis of a group of grey-green wrist-guards (Woodward *et. al.* 2006, 538) suggested that they had all been manufactured from Langdale Tuff and furthermore, that all appeared to have been sourced from a particular facies (*ibid.* 541), suggesting a coherent resourcing strategy for manufacture of this type of artefact. Visual examination of RF2 suggests that it is also likely to be manufactured from Langdale Tuff, however, this cannot be confirmed without petrographic analysis.

The term “wrist-guard” derives from the suggestion by the Reverend Canon Ingram in 1867 (Ingram 1867, 109) that these objects were worn by archers as a form of bracer, however, this interpretation has been widely queried over the last several decades (for example by Turek 2015; Smith 2006; Fokkens, Achterkamp and Kuijpers 2008; Woodward *et. al.* 2006). Use-wear analysis along with examination of position on inhumation burials, the frequency with which they were buried with other archery equipment and decorative features on some examples now suggests that although stone wrist-guards may have originally been associated with archers, they changed over time to become an object of primarily personal adornment and a symbol of status (Turek 2015; Woodward *et al.* 2006). They are now generally interpreted as having a symbolic rather than functional value, being most frequently recovered from high-status Beaker burials.

Tools

A single hone stone (RF3) manufactured from a fine-grained buff coloured stone was recovered from fill 70 of posthole 68. The type of stone was not established. It exhibits no striations one would expect to see from sharpening of either stone or metal tools, however, two sides are particularly smooth and polished, suggesting it may have been used for grinding/polishing. Hone stones are known from the Bronze Age and continue in use to the present. They can therefore be difficult to date (Whitehead 2013). This example is similar in shape to the post-medieval bar-shaped stones described by Whitehead (*Ibid.*), but may equally be of earlier date, especially given that it was recovered from a context containing sherds from a collared urn. A similar hone was recovered from an earlier phase of archaeological intervention at Tendley Quarry (fill 46 of penannular gully 20), but was not stratigraphically datable (Shoemark 2020).

DISCUSSION

The site exhibits evidence of activity during the Late Neolithic-Early Bronze Age, including a stone wrist-guard (RF2). Artefacts of this type are not common and are usually found in association with high-status Beaker burials. This, along with other Bronze Age material recovered from Tendley Quarry including evidence for a henge-type ceremonial site with and Early Bronze Age inhumation burial discovered during previous phases of work (NAA 2019; NAA 2020; NAA 2022) suggests an important locus of activity, however, the current area of

investigation is at a considerable distance from the areas investigated under previous phases and is interpreted as a circular domestic structure with a central hearth. RF2 was recovered from a pit outside the structure (pit 59). A small number of wrist-guards have been recovered from contexts interpreted as foundational deposits and this is probably the most plausible suggestion for RF2.

The hone/rubber stone from fill 70 of posthole 68 did not exhibit diagnostic features, however, it was found in the same fill as fragments of a collared urn, suggesting it was probably contemporaneous.

The only find dateable to the 16th century is a threepence of Elizabeth I, recovered from topsoil and therefore unstratified. Given the total lack of other evidence for post-medieval activity, this must be considered a casual loss and cannot assist any further in building a picture of post-medieval land use in the vicinity of the area under investigation.

RECOMMENDATIONS

It is recommended that the coin, hone stone and wrist guard (RF2) be photographed as part of the site archive. In addition, the wrist guard should also be drawn.

The status of wrist-guards as prestige goods and their exact purpose is still very much debated. As such, RF2 has high potential to contribute to future research into the artefact type specifically and to a range of other Late Neolithic- Early Bronze Age research questions. It should be retained as part of the site archive and deposited with a suitable repository. Petrographic analysis is strongly recommended in order to assess the origin of the stone and to potentially tie the wrist-guard to previous research on petrographic origins of this artefact type (e.g. Woodward *et. al.* 2006). This would facilitate an understanding of how RF2 fits within established groups of wrist-guards and other lithic artefacts in the local region and beyond. Furthermore, it would enable a more nuanced understanding of Late Neolithic-Early Bronze Age activity at Tendley Quarry. Given the evidence for a henge-type ceremonial site with and Early Bronze Age inhumation burial discovered at Tendley Quarry during previous phases of work (NAA2019; NAA2020; NAA2022) it would be desirable to establish whether there is any evidence for funerary or other ceremonial activity from the current phase of investigation.

The coin (RF1) and hone stone are of relatively common types and have no further research potential, therefore, do not need to be retained, however, both would be suitable candidates for handling or reference collections if the landowner is willing to donate them. The coin in particular would be a strong candidate for educational outreach as it is clearly identifiable and exhibits evidence of clipping, a practice widespread in the 17th and 18th centuries, but now little understood.

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APPENDIX D:
ASSESSMENT OF THE BURNT BONE

Claire Rainsford

INTRODUCTION

A small amount of burnt bone was recovered via environmental sampling from hearth deposits within a roundhouse at Tendley Quarry, Cumbria, totalling 65 grams of material across four samples. The material was assessed in full to determine its nature and any further potential.

METHODS

Due to the small amount of material and the heavily burnt nature of the bone, where material was identifiable it was identified to the lowest taxonomic level possible, and both taxon and element identifications were recorded. Where identification to taxon was not possible (e.g. for ribs, vertebrae, and shaft or cranial fragments without diagnostic features), fragments were counted as unidentified, and rib, vertebrae, cranial and shaft fragments were assigned a size category (small / medium / large) where possible. All bone was identified with reference to standard reference literature (Schmid 1972, Serjeantson & Cohen 1986, Pales & Lambert 1971, Hillson 2005, Johnson 2015, 2016).

Colouration was recorded across each sample, to indicate degree of burning; and notes were taken as to approximate fragment size. A total weight was taken for the identified fraction in each context. Weights are given correct to the nearest 0.1g, and material was weighed in a portable electronic balance (Inateck DS1001). Bone was kept bagged by context following analysis. Data were stored as Excel spreadsheets.

RESULTS

A small quantity (64.4g) of burnt bone was recovered from four samples across three contexts. The majority of this was unidentifiable, with 11.3g (26 fragments) tentatively identified to some degree (Table D1). These are all consistent with faunal bone, with no human bone positively identified at this stage.

The majority of identifiable fragments were identified as medium mammal, with two pig elements identified and one element of sheep/goat provisionally identified (Table D2). Large mammal elements, one of which is likely to be cow, were recorded only from context 10, sample AB. Most of the elements identifiable to taxon derived from the feet (phalanges, carpals and sesamoids); this is common in heavily burnt and fragmented material. However, elements were identified from throughout the skeleton, including cranial, ribs, vertebrae and shaft fragments.

The bone was predominantly calcined (burnt white), indicating a high temperature or long exposure to heat. The exception to this was context 20, sample AA, where the colouration was more variable and included black/grey, indicating a less complete burning. While the material was too small in quantity for separation via sieve stack, most fragments in all contexts were below 4mm in their longest dimension, with only a small proportion of larger fragments. The high level of fragmentation reduces the possibility of extracting any further information.

DISCUSSION AND RECOMMENDATIONS

The range of species and body parts present across a small quantity of material is consistent with an interpretation of this as incidental debris burnt within the hearth, rather than anything more deliberate. The high levels of calcination may indicate a long-lived or repeated use of the hearth without clearance. Alternatively, if bone preservation elsewhere on the site is relatively poor, it is possible that the relatively stable calcined portion of the assemblage has simply survived where less heavily-burnt material has not.

Due to the small size and heavy fragmentation of the assemblage, there is little further information to be gained and no further work is currently recommended.

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TABLES

Table D1: Quantity of burnt bone from samples by weight (grams), Tendley Quarry.

Context	Sample	Total weight	ID weight	%ID
10	AA	9.3	1.9	20.4
10	AB	41.4	6.9	16.7
20	AA	0.6		0.0
11	AA	13.1	2.5	19.1
Total		64.4	11.3	17.5

Table D2: Identified bone from Tendley Quarry samples. Quantity refers to fragment count.

	10 AA	10 AB	11 AA
pig	1		1
medium mammal	4	8	8
large mammal		4	

APPENDIX E:
ASSESSMENT OF THE INDUSTRIAL WASTE AND FIRED CLAY

Julie Shoemark

INTRODUCTION

This report presents an assessment of the industrial waste and fired clay assemblages recovered during the course of archaeological investigations carried out in advance of development work at Tendley Quarry, Brigham (centred at NGR NY 0846 2938).

This report should be read in conjunction with the accompanying catalogue. It presents an assessment of the finds by type, followed by a consideration of the archaeological significance of the assemblage and makes suggestions for any further work that may be required. This is a preliminary assessment and interpretation may be subject to change during further phases of analysis.

METHOD

The finds were assessed by eye on 03/08/2022. Finds were examined, recorded and reported upon in compliance with appropriate national guidance (ClfA 2014; ALGAO 2015; Historic England 2015a; Historic England 2015b). The industrial waste assemblage was in its entirety hand-collected during sorting of soil samples processed using the Siraf method of flotation (Williams 1973), as was most of the fired clay. The remainder of the fired clay was hand-collected during excavation. Material was examined by eye and under magnification where necessary using a microscope with x10 magnification.

OUTLINE OF THE ASSEMBLAGE

The assemblage comprises 1099.05g of industrial debris indicative of ferrous metalworking, consisting largely of undiagnostic magnetic micro-residues, with a small quantity of undiagnostic magnetic residues >30mm in size. In addition, 626.9g of fired clay was recovered. No macro-residues were recovered.

Most of the assemblage derived from fills 10 and 11 of hearth 9, comprising 470.6g of fired clay, 350.73g of undiagnostic magnetic residues, seven pieces of spheroidal hammerscale, two pieces of flake hammerscale and a possible combustion spheroid. Smaller concentrations of magnetic residues were recovered from fill 20 of gully 86 (87.5g); fill 57 of posthole 56 (68g); fills 109, 110, 111, 112 and 113, all the upper fill of ditch 13 (67g and a small lump of slag weighing 3.5g) and fill 70 of posthole 68 (65.6g). Small quantities of undiagnostic magnetic matter were recovered from the fills of gullies and postholes and are likely to have been redistributed from the area of smithing activity through cleaning of the area or other means of dispersal. Similarly, small quantities of fired clay were recovered from fill 14 of ditch 13 (85g), fill 114 of ditch 13 (41.7g), fill 98 of posthole 97 (27g) and fill 45 of posthole 44 (2.6g).

The fired clay assemblage consisted of featureless, oxidised-orange, buff and partially or wholly reduced fragments. No metallurgical residues were identified, although some fragments contained occasional ferrous inclusions which may have been present naturally in the clay and a small number of fragments had grass impressions on one surface. The lack of vitrification indicated that the assemblage had not been subjected to extremely high

temperatures. The majority was recovered from fill 10 of hearth 9 and was therefore probably fired as a result of the hearth being used. The remainder of the fired clay assemblage was recovered from secondary contexts and is of a similar colour and was likely also dispersed from a hearth or other similar feature in the vicinity.

There are no elements present which are intrinsically dateable.

DISCUSSION

The contents of the assemblage indicate that ferrous metalworking may have been being carried out, probably centred on hearth 9, on a very small scale. The material recovered may represent the disposal of waste material from the hearth over one or more episodes of smelting and/or smithing. The small quantities of diagnostic micro-residues suggest smithing, including fire welding may have been taking place (Dungworth and Wilkes 2013, 34), however, the diagnostic component of the assemblage is too small to provide an accurate picture of the nature of activities being carried out.

RECOMMENDATIONS

The assemblage does not present any potential for further analysis and it is recommended that it is discarded prior to deposition of the project archive.

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APPENDIX F:

PALAEOENVIRONMENTAL ASSESSMENT

Mai Walker (with contribution from Nicholas Lion)

INTRODUCTION

This report presents an assessment of the environmental remains recovered during an archaeological evaluation undertaken in Fields 3730 and 5758 at Tendley Quarry, Cumbria.

METHOD

Twenty-seven bulk environmental samples were taken from archaeological deposits and were processed at Ecus facilities in Barnard Castle, using standard 'Siraf' style flotation tank (Williams 1973). The collection and processing of environmental samples were undertaken in accordance with Historic England guidelines (Dobney 1992; Cambell *et al.* 2011), extracted from contexts that were considered appropriate, well-sealed and potentially dateable. Light fractions (flots) were collected using a 500µm (micron) mesh, whilst heavy fractions (residues) were sieved to 1mm. Sample fractions were dried, and light fractions sorted under a low powered stereomicroscope (x10 and x30 magnification). Heavy fractions were sieved at 4mm and 2mm, with the >4mm fraction sorted and the <4mm scanned for any artefacts or ecofacts. Each sample heavy fraction was also scanned with a magnet to retrieve magnetic matter with the aim to recover any potential hammer scale. All artefacts, bone and shell from heavy and light fractions were retained and forwarded to the relevant specialist for inclusion in their assessment and/or analysis reporting.

Plant macrofossils were identified to the lowest taxon, where possible, using a reference collection of modern specimens and published identification guides (Ellis, 2005, Cappers *et al.*, 2006, Jacomet, 2006 and Hather, 2016). During the assessment selected grains were identified to genus or species to provide a broad understanding of the plant remains from the site and assess the potential for further work on the assemblage. A taphonomic assessment of each fragment was undertaken, recording evidence of charring, surface deposits and surface condition. Any other surface modifications of note were also recorded. Fragments of grains that could be identified as cultivated were grouped as far as possible using size and class or order categories. Fragments representing >50% of a complete grain were counted as one, while those <50% were recorded as a fragment.

The charcoal recovered from the sample residues was quantified (weights were recorded in grams). During recording, particular consideration was given to the identification of suitable remains for submission for radiocarbon dating by standard radiometric technique or accelerator mass spectrometry (AMS).

Results were recorded in an electronic proforma in Microsoft Excel. This assessment has been undertaken in line with published standards and guidelines (Campbell *et al.* 2011 and Cappers *et al.*, 2016), alongside the written scheme of investigation and with reference to the appropriate research framework for the area. This report was prepared with support from the site context list.

OUTLINE OF THE ASSEMBLAGE

The results of the examination of the submitted material are presented below in context number order.

Context 06

Sample AA (21 litres sieved to 500 microns, no flot; no unprocessed sediment remains)

Context 06 contained 5.9g of charcoal flecks ranging in size. Charcoal was extracted from heavy fraction residue, no flot material was present for assessment. Some of the fragments of charcoal were of sufficient size to be submitted for radiocarbon dating if required, although charcoal was not able to be identified to species level.

Context 10

Sample AA (18 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 10 AA contained one indeterminate cereal grain fragment, thirty-nine indeterminate cereal fragments and fifty indeterminate seed fragments. All charred plant remains had moderate to high sediment concretion and poor preservation, making identification impossible. Some charred plant remains were vitrified from exposure to high heat. No charcoal fragments were recovered from the light residue fraction; however, 1.6g of charcoal was extracted from the heavy residue fraction. This deposit included evidence for substantial bioturbation, including frequent inclusions of modern roots, uncharred seeds, insect remains, earthworm eggs and organic material. One Mycorrhizal fungal sclerotia was found within the sample, it has been assigned to bioturbation.

Sample AB (35 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 10 AB contained nine fragments of charcoal above 2mm and sixty charcoal fragments below 2mm. A total of 2.4g of charcoal was found within the heavy and light fractions. Thirteen charred cereal grains were extracted from the sample, which included seven grains of Barley (*Hordeum vulgare*), one free threshing Wheat (*Triticum aestivum*) and five indeterminate cereal grains. Charcoal fragments and cereal grains had moderate sediment concretion, some with poor survival. Eight micro slag fragments were also extracted from the light fraction and were sent to appropriate specialists for assessment. Bioturbation was present, including the presence of uncharred seeds, modern roots, earthworm eggshells, insects and organic material.

Context 11

Sample AA (9 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 11 contained no fragments of charcoal above 2mm and only one fragment below 2mm, indicating a low density of charcoal within this sample. A total of 0.12g of charcoal was found within the heavy and light fractions. One indeterminate cereal grain was recovered from the light residue fraction from this context, charred plant material had moderate sediment concretion. Bioturbation was present, which included modern roots, uncharred seeds, insects and organic material.

Context 14

Sample AA (9 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 14 contained 8.3g of charcoal flecks 1-4mm in size. Charcoal was extracted from heavy fraction residue, no flot material was available for assessment. Context 14 contained charcoal of sufficient size to be submitted for radiocarbon dating, although no identification of wood was determined.

Context 20

Sample AA (8 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 20 AA contained nine fragments of charcoal above 2mm and sixty charcoal fragments below 2mm. A total of 32.35g of charcoal was found within the heavy and light fractions. One indeterminate cereal grain was extracted from the light fraction. Two fragments of charred Hazelnut (*Corylus*) shell were recovered by hand from the heavy residue fraction material from this context. The charcoal, cereal grain and hazelnut shell had high sediment concretion and fairly poor preservation. Bioturbation was present including modern roots, uncharred seeds, insects and organic material. Two Mycorrhizal fungal sclerotia were found within the sample which have been assigned to bioturbation.

Sample AB (11 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 20 AB contained three fragments of charcoal above 2mm and sixty-seven charcoal fragments below 2mm with a combined weight of 2g. The charcoal was derived from the heavy and light fractions and included occasional vitrified fragments. One possible Barley (*c.f. Hordeum vulgare*), was notably small in size, but with obvious diagnostic features, hence the *c.f.* application to the cereal grain. One indeterminate cereal grain was also found within the sample. Charcoal and grains displayed high sediment concretion and poor preservation. Bioturbation was present including modern roots, uncharred seeds, insects and organic material. Two Mycorrhizal fungal sclerotia were found within the sample which have been assigned to bioturbation.

Context 36

Sample AA (N/A litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 36 AA contained thirty-nine fragments of charcoal above 2mm and one hundred and forty-seven charcoal fragments below 2mm. A total of 1.28g of charcoal was present within the heavy and light fractions. All charcoal fragments had moderate to high sediment concretion and poor preservation, some vitrification has occurred to charcoal. No bioturbation or modern foliage was found within light fraction.

Context 44

Sample AA (8 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 44 contained seventeen fragments of charcoal above 2mm and ninety-three charcoal fragments below 2mm. A total of 5g of charcoal was found within the heavy and light fractions. One indeterminate seed was found within the light fraction. Charcoal and grains had moderate

sediment concretion and preservation. Bioturbation was present including frequent inclusions of modern roots and modern foliage.

Context 50

Sample AA (21 litres sieved to 500 microns, no flot; no unprocessed sediment remains)

Context 50 contained 16.3g of charcoal pieces ranging in size. Charcoal was extracted from heavy fraction residue, no flot material was available for assessment. Some of the fragments of charcoal were of sufficient size to be submitted for radiocarbon dating if required, although charcoal was not able to be identified to species level.

Context 57

Sample AA (5 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 57 contained thirty-six hundred fragments of charcoal above 2mm and over five hundred charcoal fragments below 2mm, some fragments of charcoal are suitable in size for carbon dating if required, although charcoal was not able to be identified to species level. A total of 15.5g of charcoal was found within the heavy and light fractions. Bioturbation was present including modern roots, uncharred seed and organic material.

Context 60

Sample AA (9 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 60 contained twenty-nine fragments of charcoal above 2mm and over forty-seven charcoal fragments below 2mm. A total of 0.4g of charcoal was found within the heavy and light fractions. Charcoal and grains had moderate sediment concretion and preservation. Bioturbation was present including inclusions of modern roots and modern foliage. One Mycorrhizal fungal sclerotia was found within the sample which has been assigned to bioturbation.

Context 67

Sample AA (8 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 67 contained eleven fragments of charcoal above 2mm and one hundred and fourteen charcoal fragments below 2mm. A total of 4.4g of charcoal was present within the heavy and light fractions. Fragments of vitrified charcoal were found within the light fraction and had moderate sediment concretion and preservation. Bioturbation was present including modern roots, uncharred seeds, earthworm eggshells, insects and organic material.

Context 70

Sample AA (9 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 70 contained twenty-five fragments of charcoal above 2mm and one hundred and thirty charcoal fragments below 2mm. A total of 39.7g of charcoal was found within the heavy and light fractions, charcoal fragments within this sample can be provided for carbon dating if required, although charcoal was not able to be identified to species level. Eight fragments of

charred Hazelnut (*Corylus avellana*) shell were recovered by hand from the heavy residue fraction material from this context. Charcoal had moderate to high sediment concretion. Bioturbation was present including frequent inclusions of modern roots, uncharred seeds and earthworm eggshells and modern foliage.

Context 74

Sample AA (9 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 74 contained one fragment of charcoal above 2mm and sixteen charcoal fragments below 2mm. A total of 0.3g of charcoal was found within the heavy and light fractions, charcoal had moderate to high sediment concretion. Bioturbation was present including frequent inclusions of modern roots, uncharred seeds, earthworm eggs, insects and organic material.

Context 77

Sample AA (1 litre sieved to 500 microns with flot; no unprocessed sediment remains)

Context 77 contained fifty fragments of charcoal above 2mm and over one hundred and thirty-eight charcoal fragments below 2mm. A total of 0.47g of charcoal was found within the heavy and light fractions, charcoal had moderate to high sediment concretion. Bioturbation was present including inclusions of modern roots and organic material.

Context 79

Sample AA (1 litre sieved to 500 microns with flot; no unprocessed sediment remains)

Context 79 contained thirty-one fragments of charcoal above 2mm and two hundred and sixty charcoal fragments below 2mm. A total of 0.59g of charcoal was found within the heavy and light fractions charcoal, had moderate to high sediment concretion. Bioturbation was present including inclusions of modern roots, earthworm eggshells and organic material.

Context 81

Sample AA (11 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 81 contained over one hundred and twenty-nine fragments of charcoal above 2mm and over five hundred charcoal fragments below 2mm, indicating a higher density of charcoal within this sample. A total of 4g of charcoal was found within the heavy and light fractions. Four fragments of indeterminate cereal grains were present. Charcoal and grains had moderate sediment concretion and preservation. Bioturbation was present including modern roots, uncharred seeds, insect remains and modern foliage.

Context 94

Sample AA (4 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 94 contained twenty-two fragments of charcoal above 2mm and ninety-five charcoal fragments below 2mm. A total of 7.1g of charcoal was found within the heavy and light fractions. Ten fragments of charred Hazelnut (*Corylus avellana*) shell were recovered by hand from the heavy residue fraction and one fragment was recovered from light fraction material

from this context. Hazelnut shell fragments and charcoal fragments had moderate to high sediment concretion. Bioturbation was present including modern roots, earthworm eggshells and organic material.

Context 96

Sample AA (10 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 96 contained eighty-seven fragments of charcoal above 2mm and one hundred and fifty-six charcoal fragments below 2mm. A total of 4.5g of charcoal was found within the heavy and light fractions. Charcoal had moderate sediment concretion and preservation. Bioturbation was present including modern roots, earthworm eggshells and organic material. Two Mycorrhizal fungal sclerotia were found within the sample, which have been assigned to bioturbation.

Context 98

Sample AA (3 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 98 contained no fragments of charcoal above 2mm and thirteen charcoal fragments below 2mm. A total of 4.8g of charcoal was found within the heavy and light fractions. Charcoal fragments had moderate to high sediment concretion. Bioturbation was present including inclusions of modern roots and modern foliage. One Mycorrhizal fungal sclerotia was found within the sample which has been assigned to bioturbation.

Context 100

Sample AA (5 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 100 contained six fragments of charcoal above 2mm and one hundred and ninety-six charcoal fragments below 2mm. A total of 2g of charcoal was found within the heavy and light fractions. One fragment of indeterminate seed was found within the light fraction. Seed fragment and charcoal fragments had moderate to high sediment concretion. Bioturbation was present including inclusions of modern roots, uncharred seeds, insect remains, earthworm eggshells and modern foliage.

Context 109

Sample AA (8 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 109 contained one fragment of charcoal above 2mm and twenty-six charcoal fragments below 2mm were extracted from the context. A total of 0.1g of charcoal was present within the heavy and light fractions. Four indeterminate cereal fragments were extracted from the light fraction. Indeterminate cereal fragments and charcoal fragments had moderate to high sediment concretion. Bioturbation was present including modern roots, uncharred seeds, insect remains, earthworm eggs and modern foliage. Two Mycorrhizal fungal sclerotia were found within the sample, which has been assigned to bioturbation.

Context 110

Sample AA (9 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 110 contained one fragment of charcoal above 2mm and thirteen charcoal fragments below 2mm. A total of 1.7g of charcoal was found within the heavy and light fractions. One indeterminate cereal and one indeterminate seed fragment was extracted from the light fraction. Charred plant remains had moderate to high sediment concretion. Bioturbation was present including modern roots, uncharred seeds, insect remains, earthworm eggs and modern foliage. Three Mycorrhizal fungal sclerotia were found within the sample and has been assigned to bioturbation.

Context 111

Sample AA (9 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 111 contained over five hundred fragments of charcoal above 2mm and over five hundred charcoal fragments below 2mm. A total of 36g of charcoal was found within the heavy and light fractions, which is the largest concentration of charcoal recovered. One grain of *Hordeum vulgare* was extracted from the light fraction. Charred plant remains had moderate to high sediment concretion. Bioturbation was present including modern roots, uncharred seeds, insect remains and modern foliage.

Context 112

Sample AA (8 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 112 contained one vitrified charcoal fragment over 2mm and three charcoal fragments below 2mm, some fragments were vitrified. A total of 0.1g of charcoal was found within the heavy and light fractions. Charred plant remains had moderate to high sediment concretion. Bioturbation was present including of modern roots and modern foliage. One Mycorrhizal fungal sclerotia were found within the sample, which has been assigned to bioturbation.

Context 113

Sample AA (11 litres sieved to 500 microns with flot; no unprocessed sediment remains)

Context 113 contained nineteen fragments of charcoal above 2mm and seventy-three charcoal fragments below 2mm. A total of 0.9g of charcoal was found within the heavy and light fractions. Charred plant remains had moderate to high sediment concretion. Bioturbation was present including inclusions of modern roots, uncharred seeds, insect remains and modern foliage. Two Mycorrhizal fungal sclerotia were found within the sample, which have been assigned to bioturbation.

CHARCOAL ANALYSIS

Nicholas Lion

Charcoal assessment was undertaken to number of charcoal fragments over 4mm. Fragments were split using a surgical blade to create a clean cross-section of the anatomical features, before being examined using a universal compound microscope (x50 to x600). Identifications were carried out with reference to published works (Hather, 2016).

In total, 915 charcoal fragments were recovered weighing 17.85g. Two contexts contained more than 500 fragments of charcoal (total count not taken for these contexts). The most

abundant taxa was Hazel (*Corylus sp.*), which was present in contexts 36 AA and 111 AA, with 20 fragments recovered. Also present at the site was a possible fragment of *Maloideae* and a fragment of *Rosa* (both part of the *Rosaceae* family).

Contexts which were identified to species level were 36 AA, 81 AA, 94 AA and 111 AA, the charcoal extracted within these samples would be viable for carbon dating alongside any other charred plant remains which have species identification.

DISCUSSION AND STATEMENT OF POTENTIAL

A total of twenty-one carbonised cereal grains and forty-eight indeterminate cereal grain fragments were present in material recovered from twenty-seven sampled contexts. The material also included Nineteen fragments of charred Hazelnut shell were recovered by hand from the heavy fraction residue. One indeterminate wild seed or weed was recovered, as well as fifty-two indeterminate seed or weed fragments were also recovered.

Preservation of the charred plant remains was moderate to poor. Some larger fragments of charcoal were present but were solely extracted by hand from heavy fraction residue. Charred plant remains had high concentrations of sediment concretion, which is typically seen in this area. Vitrification of charcoal and grains also occurred in contexts, 10 AA, 20 AA 20 AB, 36 AA, 67 AA and 112 AA, suggesting that a high temperature process was being undertaken in the vicinity.

Hazelnut shell fragments were found in deposits; 20 AA, 70 AA and 94 AA. The presence of charred hazelnut shells indicates that hazelnuts were likely eaten as a food by the local people. As hazelnuts are only seasonally available, harvested usually in late summer/autumn, it would be interesting to investigate further into the aspects of food gathering in the Cockermouth area within further analysis and next phasing of project. Hazelnuts, once dried or roasted can be stored for several months (Olsen and Raab, 2013), this is another aspect that would provide research potential for the analysis phase. It is unclear whether the hazelnuts were dried and then eaten, using the nuts shell fragments later as kindling, or whether they were roasted and eaten, with the shells then being discarded into the fire. Further analysis of the Hazelnut shell fragments is suggested in the form of potential carbon dating of material to provide a date of when Hazelnuts were being exploited, as well as more in-depth research comparisons of the anthropogenic impact of the local people within the local area and how this may answer questions on food consumption in the past.

One grain of free-threshing wheat (*Triticum aestivum*) were extracted from context 10 AB, often a sign of medieval deposition or possible contamination (see Pelling *et al.*, 2015). Free-threshing wheat is a staple cereal crop, used for creating bread, alcohol, glue and gluten, as well as being used as fodder for animal feed.

Seven cereal grains of domesticated Barley (*Hordeum vulgare*) from context 10 AB and one Barley grain from context 111 AA were extracted. One possible Barley grain (c.f. *Hordeum vulgare*) was recovered from 20 AB, the cereal grain had typical diagnostic features of *Hordeum vulgare*, yet the poor preservation of the grain and high sedimentation made full definite identification more difficult. Domesticated Barley is an edible grain used for bread making, alcohol brewing and also as fodder and for animal feed.

One indeterminate seed fragment was recovered from context 44 AA, fifty indeterminate seed fragments were extracted from context 10 AA, one indeterminate seed fragment from context

100 AA and one indeterminate seed fragment from context 110 AA. The indeterminate seed and seed fragments do not aid interpretation of the site. It is likely that these seed inclusions are unintentionally charred and the byproduct of a burning event.

Samples 06 AA, 10 AB, 20 AA, 20 AB, 50 AA, 57 AA, 60 AA, 70 AA, 94 AA, 98 AA, 109 AA, 111 AA and 113 AA contain charred plant material identified to species level, which is suitable evidence which can be put forward for possible radiocarbon dating (via AMS) if contexts are of interest to the project.

Assessment of the charcoal has indicated the presence of Hazel (*Corylus avellana*) as the dominant species found within the burnt assemblage. The presence of Hazel in the charcoal record links to the recovery of Hazelnut fragments from several contexts, showing this species was thriving in the area and being used as a source of both food and fuel.

Mycorrhizal fungal sclerotia was found within samples 10 AA, 10 AB, 20 AA, 20 AB, 60 AA, 96 AA, 98 AA, 109 AA, 110 AA, 112 AA and 113 AA, although it was found to be uncharred, it is a symbiotic fungus relating to plants (Egerton-Warburton *et al.* 2005), it has been assigned to more recent bioturbation within the archaeological features.

Most samples contained frequent evidence of substantial bioturbation, with flots consisting of mostly modern roots and organic matter, indicating some contamination in the samples.

RECOMMENDATIONS, RETENTION AND DISPOSAL

Further study is advised for contexts; 10 AA, 10 AB, 20 AA, 20 AB, 44 AA, 70 AA, 94 AA, 110 AA and 111 AA. Carbon dating is advisable on samples with larger charcoal or other charred plant remains, as this will provide a clearer phasing. A date will aim to provide clarity on the occurrence of free-threshing wheat in the context 10 AB. Further analysis is required for contexts that contain charred plant materials when sufficient data has been produced from carbon dating. Dating of contexts will help to better understand the activities around food consumption occurring on site. As a Late Neolithic-Early Bronze Age wrist-guard was found within context 60 AA (Appendix C), radiocarbon dating from these contexts is highly recommended for further understanding and possibly narrowing down the date of this deposition. The possible Bronze Age hone/rubber stone and fragments of collared urn recovered from context 70 AA would also be another candidate highly recommended for radiocarbon dating (Appendix C), the hazelnut fragments extracted from the fill would be suitable as material for AMS. Radiocarbon dating of fill 70 AA will help to answer questions about phasing of not only food gathering and consumption, but wider practices on possible ceremonial activities present on site.

The charred plant remains recovered from contexts will be retained with the archive and has the potential to provide material for radiocarbon dating. The recovered seeds and grains will be retained for further analysis in later phases of the project.

Table F1: Raw Data.

Context	Sample	Volume (l)	Grain/seed	Grain/seed frag.	Chaff	Charcoal >2mm	Charcoal	Charcoal weight (g)	Other – hand collected
6	AA	21	-	-	-	-	-	5.9	-
10	AA	18	1	89	-	-	-	1.6	-
10	AB	35	13	-	-	9	60	2.4	-
11	AA	9	1	-	-	-	1	0.12	-
14	AA	-	-	-	-	-	-	8.3	-
20	AA	8	1	-	-	70	201	32.35	x2 Hazelnut
frags"	Yes								
20	AB	11	2	-	-	3	67	2	-
36	AA	-	-	-	-	39	147	1.28	-
44	AA	8	1	-	-	17	93	5	-
50	AA	-	-	-	-	-	-	16.3	-
57	AA	5	-	-	-	36	>500	15.5	-
60	AA	9	-	-	-	29	47	0.4	-
67	AA	8	-	-	-	11	114	4.4	-
70	AA	9	-	-	-	25	130	39.7	x8 Hazelnut
frags"	Yes								
74	AA	9	-	-	-	1	16	0.3	-
77	AA	1	-	-	-	50	138	0.47	-
79	AA	1	-	-	-	31	260	0.59	-
81	AA	11	-	4	-	129	>500	4	-
94	AA	4	-	-	-	22	95	7.1	x10 Hazelnut
frags"	Yes								
96	AA	10	-	-	-	87	156	4.5	-
98	AA	3	-	-	-	-	13	4.8	-
100	AA	5	-	1	-	6	196	2	-
109	AA	8	-	4	-	1	26	0.1	-
110	AA	9	1	1	-	1	13	1.7	-
111	AA	9	1	1	-	>500	>500	36	-
112	AA	8	-	-	-	1	3	0.1	-
113	AA	11	1	-	-	19	73	0.9	-

Table F2: Raw data for identification of grains and seeds.

Context	Sample	Cereal							Nut	Non-cereal			Total	
		<i>Hordeum vulgare</i>	<i>c.f. Hordeum vulgare</i>	<i>Triticum aestivum</i>	Indet. Cereal	Indet. Cereal frag.	Chaff	Indet. Chaff	Chaff frag.	<i>Corylus</i> shell	Poaceae	Indet. seed		Indet. seed frag.
10	AA	-	-	-	1	39	-	-	-	-	-	-	50	90
10	AB	7	-	1	5	-	-	-	-	-	-	-	-	13
11	AA	-	-	-	1	-	-	-	-	-	-	-	-	1
20	AA	-	-	-	1	-	-	-	-	-	-	-	-	1
20	AB	-	1	-	1	-	-	-	-	-	-	-	-	2
44	AA	-	-	-	-	-	-	-	-	-	-	1	-	1
81	AA	-	-	-	-	4	-	-	-	-	-	-	-	4
100	AA	-	-	-	-	-	-	-	-	-	-	-	1	1
109	AA	-	-	-	-	4	-	-	-	-	-	-	-	4
110	AA	-	-	-	1	-	-	-	-	-	-	-	1	2
111	AA	1	-	-	-	1	-	-	-	-	-	-	-	2
113	AA	-	-	-	1	-	-	-	-	-	-	-	-	1
Total	-	8	1	1	11	48	0	0	0	0	0	1	52	122

Table F3: Raw data for identification of charcoal.

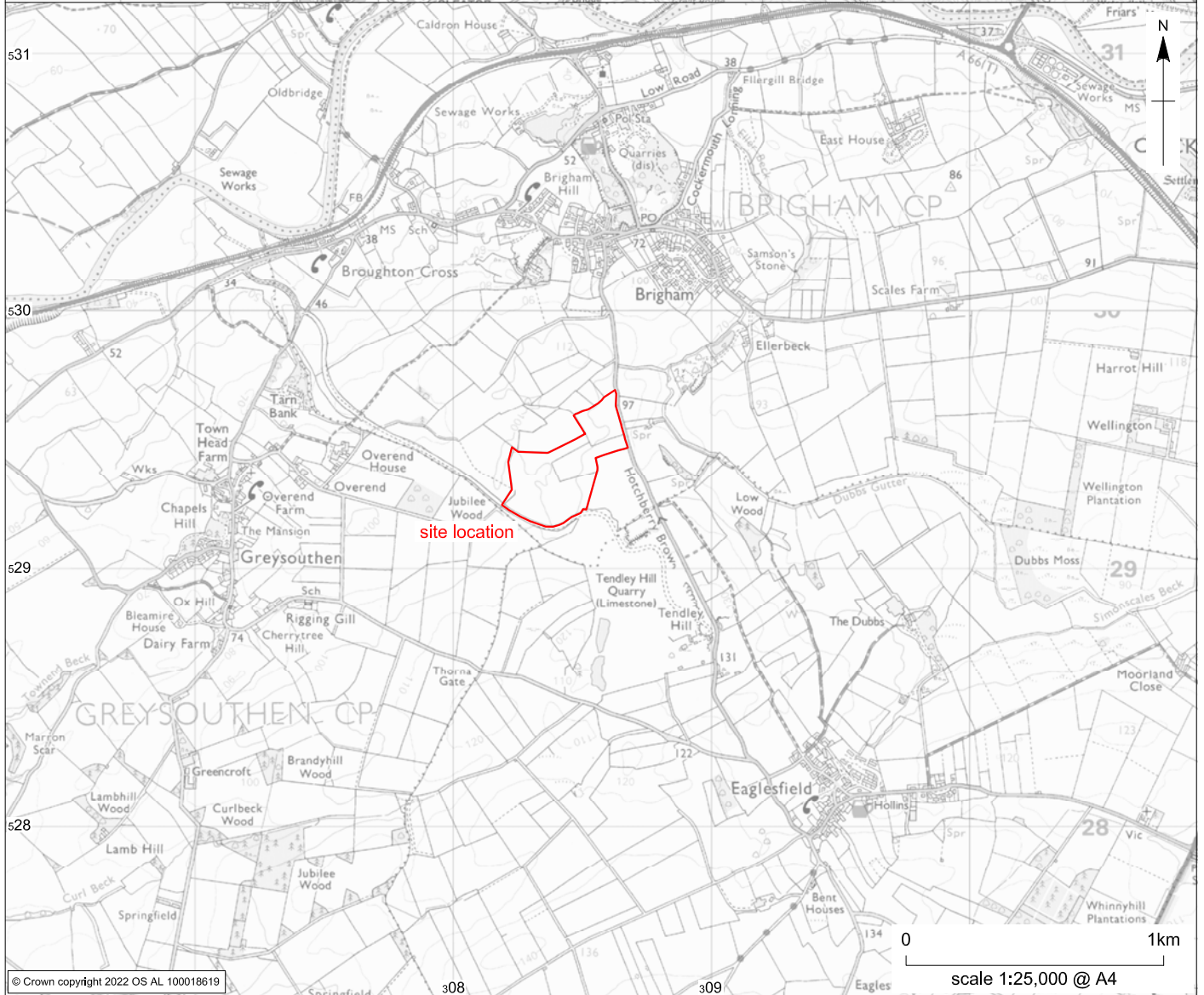
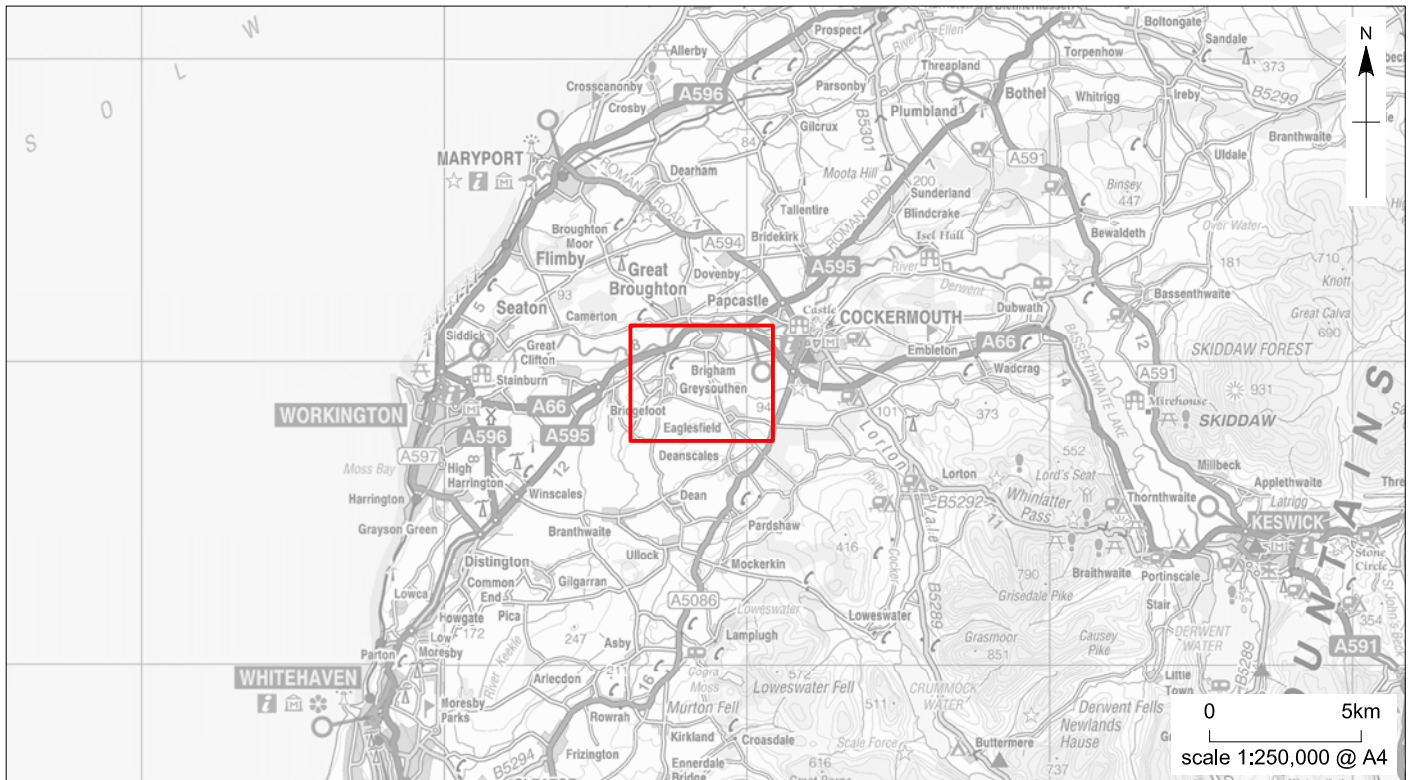
Context	Sample	Taxa	Count	Weight (g)	Notes
20	AA	Indet.	136	1	Charcoal crumbled easily
36	AA	Corylus	2	0.58	
36	AA	c.f. Corylus	4	0.68	
36	AA	Indet.	180	0.44	
60	AA	Indet.	76	0.49	
70	AA	Indet.	155	0.54	
81	AA	c.f. Maloideae	1	0.21	
81	AA	Indet.	>500	1.49	
94	AA	c.f. Rosa	1	0.2	
94	AA	Indet.	103	0.45	
96	AA	Indet.	243	0.97	
111	AA	c.f. Corylus	14	2.32	
111	AA	Indet.	>500	8.48	charcoal slightly crumbly

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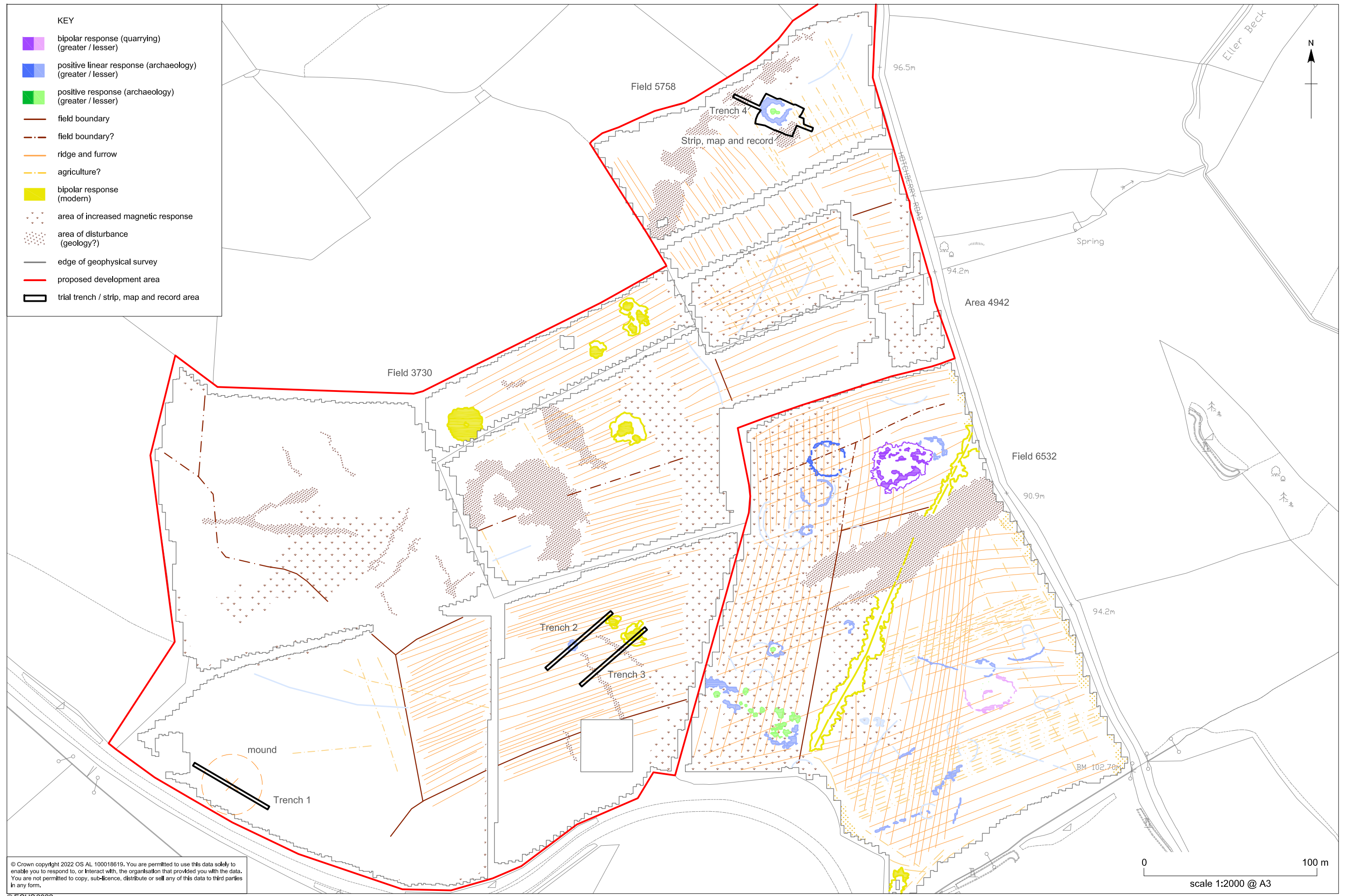
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Tendley Quarry, Field 3730 and 5758: site location

Figure 1

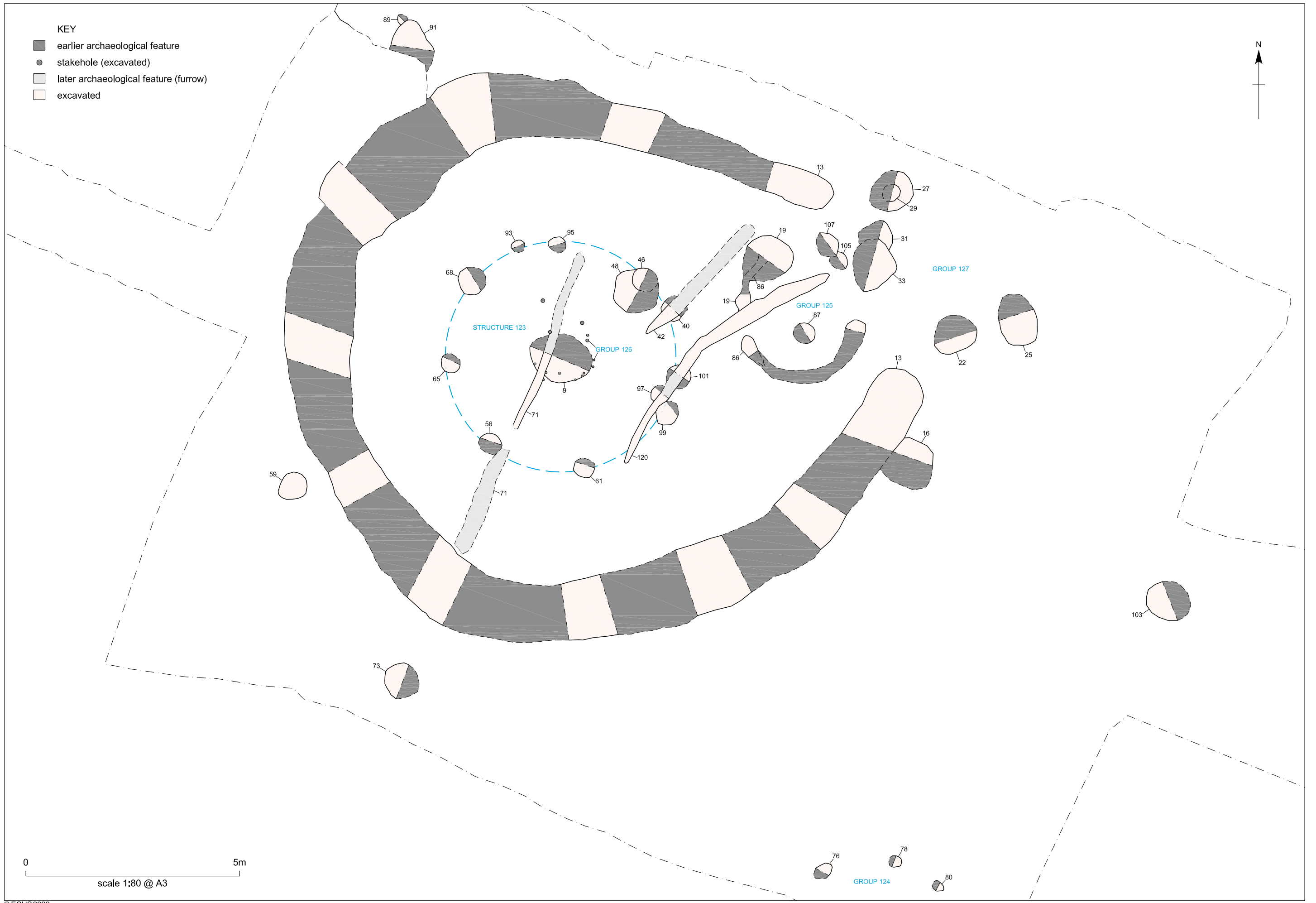


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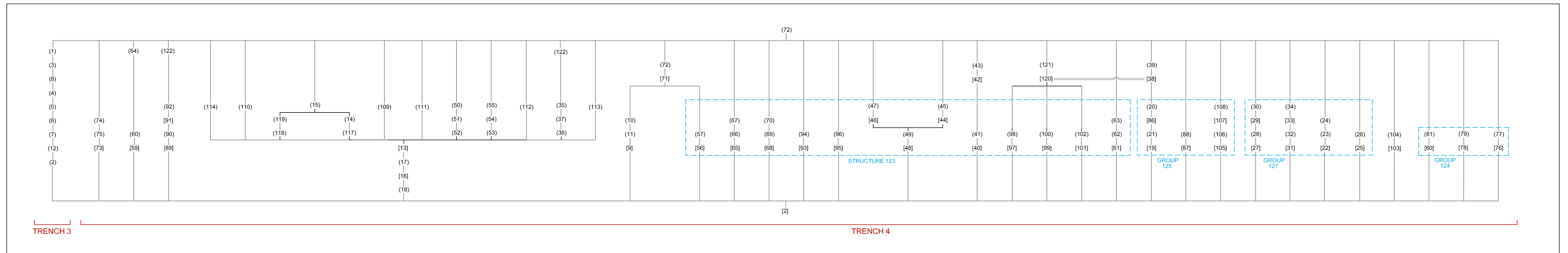
Tendley Quarry, Field 3730 and 5758: trial trench and strip, map and record area locations overlain on interpretation of gradiometer survey with previous survey results

Figure 2



Tendley Quarry, Field 3730 and 5758: Trench 4 site plan

Figure 3



Tendley Quarry, Field 3730 and 5758: site matrix



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Tendley Quarry, Field 3730 and 5758: ditch 13, looking west

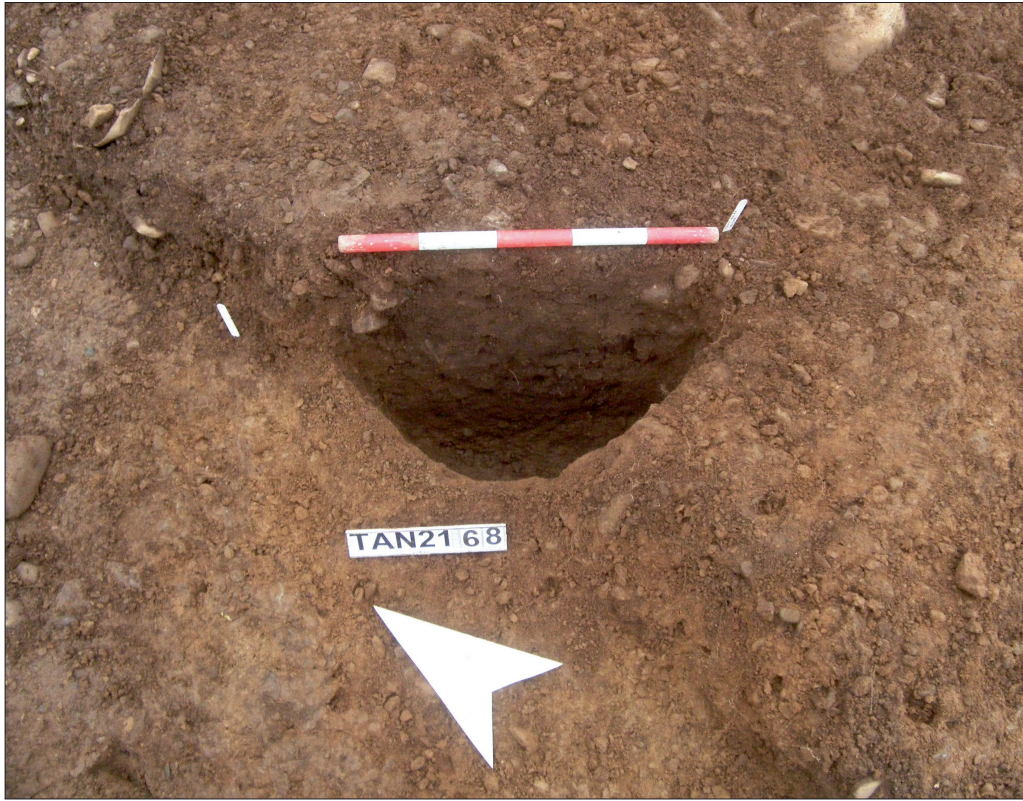
Plate 1



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Tendley Quarry, Field 3730 and 5758: Structure 123 and central hearth 9, looking south

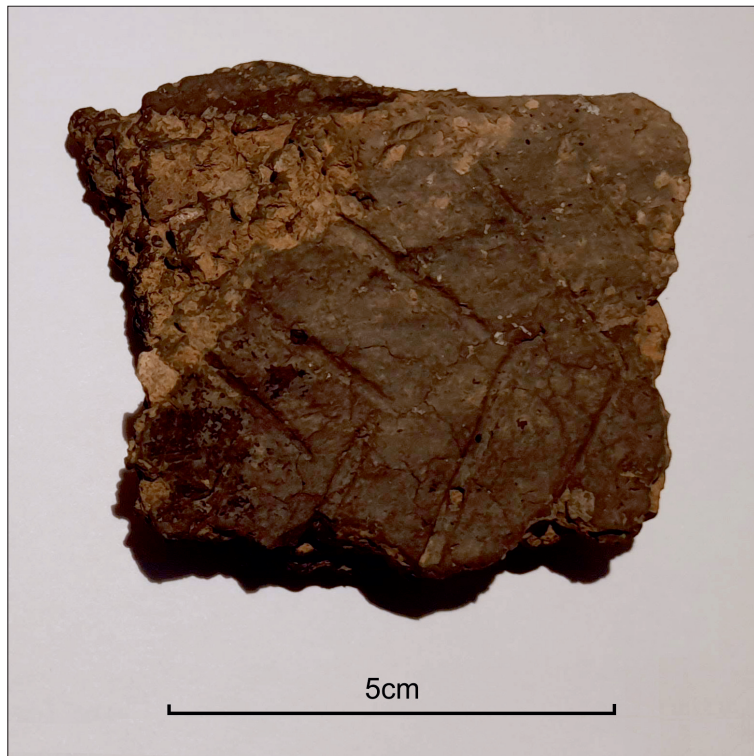
Plate 2



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Tendley Quarry, Field 3730 and 5758: structural posthole 68, looking north-east

Plate 3



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Tendley Quarry, Field 3730 and 5758: Bronze Age Collared Urn

Plate 4



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Tendley Quarry, Field 3730 and 5758: hearth 9,
looking north-east

Plate 5



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Tendley Quarry, Field 3730 and 5758: stone wrist-guard (RF2)

Plate 6



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