LAND SOUTH OF LUMLEY ROAD, KENDAL, CUMBRIA

Archaeological Strip and Record

Client: Jones Homes (Lancashire) Ltd

Planning Application No.: SL/2016/0519

NGR: 350886 490979 (centre)

November 2018

Greenlane Archaeology Ltd,
Lower Brook Street,
Ulverston, Cumbria, LA12 7EE

Tel: 01229 588 500
Email: info@greenlanearchaeology.co.uk
Web: www.greenlanearchaeology.co.uk

Contents

Illustrations and Tables

List of Figures

List of Plates

List of Tables

Non-Technical Summary

Prior to the submission of a planning application for the construction of a residential development on land south of Lumley Road, Kendal, Cumbria, Greenlane Archaeology was commissioned to carry out a desk-based assessment and geophysical survey of the site, which was completed in 2014. The desk-based assessment revealed a series of rectangular cropmark enclosures recorded in an aerial photograph taken in 1955, part of one of which was inside the proposed development site, the remainder having since been built on by late 20th century housing estate. The geophysical survey showed the same feature very clearly and further demonstrated that it was of archaeological interest. Following the submission of a planning application for the site a condition was placed on the decision notice requiring the area around the enclosure be subject to archaeological strip and record, which was carried out in August 2018.

The site is situated on the southern edge of modern Kendal in an area of open land immediately south of Lumley Road and is bounded by the main road into Kendal on the east (the A6). It is, however, slightly less than 0.5km to the west the Roman fort of Watercrook, which was established in the 1st century, but the area containing the site had no evidence for activity beyond the cropmark recorded in 1955.

A single area was examined, 40m wide by 70m long, centred on the remaining part of the crop marks and orientated approximately east/west. Within this the cropmark enclosure was found to comprise a large ditch with a broadly U-shaped or rounded V-shaped section, and two possibly associated features – an area of cobbling and a large pit filled with loose stone were also found, in all cases buried below a thin topsoil and subsoil. The ditch had three fills indicative of a phase of initial silting followed by rapid infilling, which contained large amounts of pottery and animal bone, followed by a further phase of gradual silting. The pottery comprised various types dating from the 2nd century AD to the 4th century, with the latest within the later infilling deposit. The cobbled surface and stone filled pit also contained small amounts of early Roman pottery. Prior to the creation of these features a large channel was scoured into the hillside, which was also visible as a cropmark and in the geophysical survey. This was otherwise undated and is likely to be a naturally occurring glacial feature, but it is possibly a hollow way. A deposit of possible occupation debris was also revealed within the L-shape formed by the enclosure ditch but this contained finds ranging from the Roman period onwards and so had evidently been subject to later disturbance.

The enclosure ditch represents a substantial feature that probably remained partially visible beyond the late Roman period, although its function is uncertain. The finds and environmental remains indicate that it was domestic in nature but clearly well connected to the Roman military in the nearby fort. The nature of this relationship is, in general, complex, but the site has the potential to provide further information about this and improve the understanding of the use and final abandonment of the fort, so it is recommended that further monitoring during groundworks is carried out and the results of the fieldwork published in a suitable location.

Acknowledgements

Greenlane Archaeology would like to thank Jones Homes (Lancashire) Ltd for commissioning the project, in particular Paul Fox. Additional thanks are due to the staff of Almond Civils for their assistance on site. Special thanks are also due to Mark Brennand, Lead Officer Historic Environment and Commons, and Jeremy Parsons, Historic Environment Officer (Development Control), both at Cumbria Country Council (CCC), for their useful input regarding the project.

The fieldwork was carried out by Dan Elsworth, Tom Mace, Ric Buckle, and Jo Dawson. The report was written by Dan Elsworth and the illustrations were produced by Tom Mace. The finds were processed by Ric Buckle and specialist assessment was carried out by Ruth Leary (Roman pottery), Gwladys Montiel (Samian pottery), Phil Mills (Roman ceramic building material (CBM)), and Naomi Sewpaul (animal bone), with all other finds assessed by Jo Dawson and Tom Mace at Greenlane Archaeology. The environmental samples were processed and assessed by Dan Elsworth, with the exception of the flots, which were assessed by Laura Bailey at Headland Archaeology. The project was managed by Dan Elsworth, and the report was edited by Jo Dawson.

1. Introduction

1.1 Circumstances of the Project

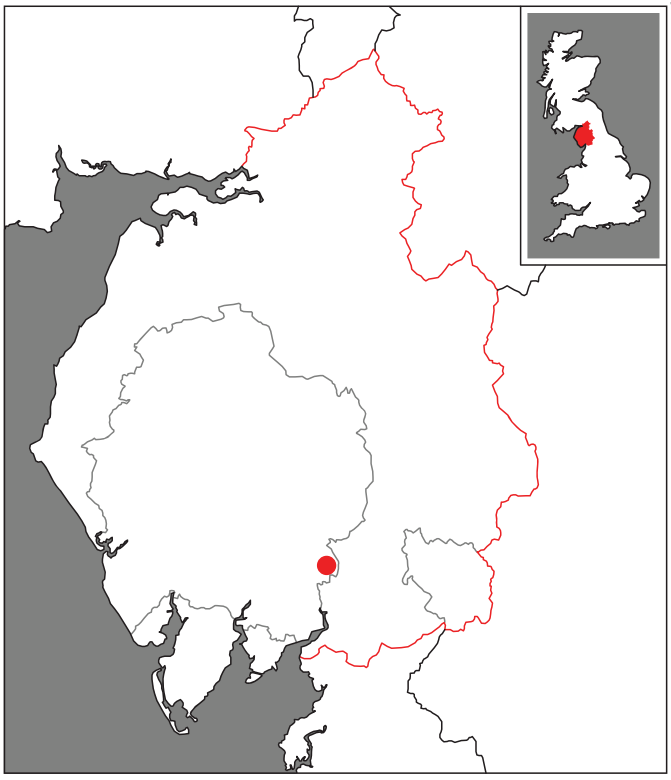
1.1.1 Prior to the submission of a planning application for the construction of a residential development on land south of Lumley Road, Kendal, Cumbria (centred on NGR 350886 490979) Greenlane Archaeology was commissioned to carry out an archaeological desk-based assessment, followed by a geophysical survey of the site (Greenlane Archaeology 2014; OA North 2014), in order to identify whether or not any features of archaeological interest were present. This identified a rectangular enclosure against the northern boundary, visible as one of a number of crop marks in an aerial photograph of 1955 and recorded by the geophysical survey.

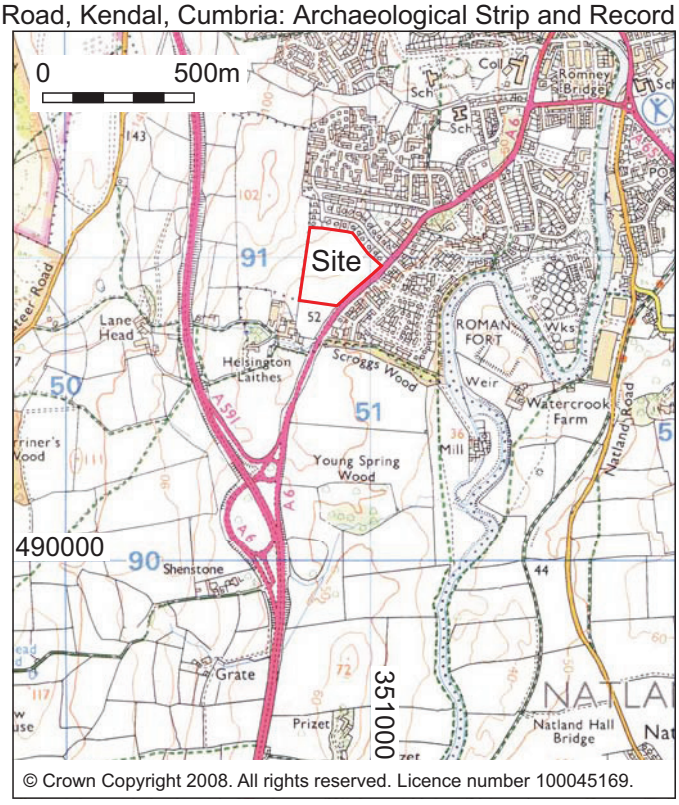
1.1.2 Following the subsequent submission of a planning application for outline planning permission for the development (ref. SL/2014/0846), a condition (No. 15) was placed on the decision notice by South Lakeland District Council, following advice from the Historic Environment Officer (HEO) at Cumbria County Council (CCC), requiring an archaeological evaluation. This was subsequently modified to comprise a strip and record of an area 70m long by 40m wide against the northern site boundary, following the submission of a full planning application for the site (SL/2016/0519). The work was carried out in August 2018.

1.2 Location, Geology, and Topography

1.2.1 The site occupies an irregularly-shaped area of approximately 4.6 hectares to the south-west of Kendal on sloping ground ranging from *c*70m above sea level at the north-west corner and *c*55m in the south-east (Ordnance Survey 2008; Figure 1). The river Kent is located less than 300m to the south-east of the site and drains the higher ground to the north-west of Kendal into Morecambe Bay. The solid geology comprises Bannisdale slates, although the site is situated on the edge of a large area of Carboniferous limestone (Moseley 1978, plate 1), with overlying drift deposits of glacial gravel (Countryside Commission 1998, 66).

1.2.2 The site is immediately to the south of Lumley Road, which forms the southern end of an area of 20th century development on the edge of Kendal proper, with Helsington Laithes to the south, open fields to the west rising up towards the A591, and the A6 forming the eastern boundary to the site. The surrounding landscape, outside of the urban area, is largely utilised for pasture for cattle and defined by small rectangular fields divided by hedges and dry stone walls (Countryside Commission 1998, 67).





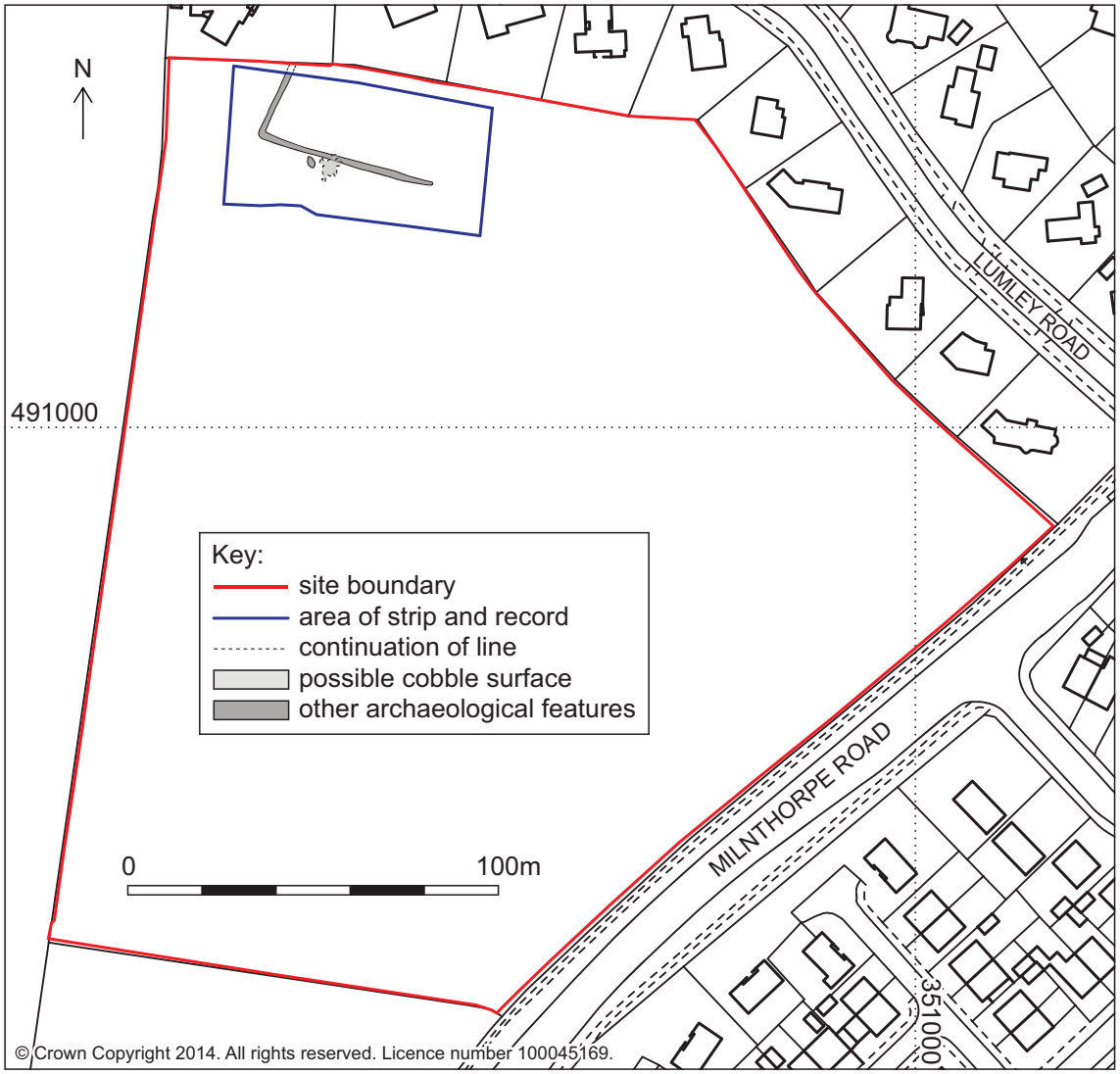


Figure 1: Site location

Client: Jones Homes (Lancashire) Ltd

2. Methodology

2.1 Archaeological Strip and Record

2.1.1 The strip and record was carried out according to the standards and guidance of the Chartered Institute for Archaeologists (CIfA 2014a) and examined a single area 40m by 70m centred on the enclosure revealed in an aerial photograph and the geophysical survey (Greenlane Archaeology 2014; OA North 2014; Plate 1). The total area investigated was therefore approximately 2,800m^2 (Figure 1). Excavation was discontinued once the natural geology was reached, which was typically at a depth of *c*0.3m-0.4m below the current ground surface at a height of between 65.5m and 68.5m above sea level.

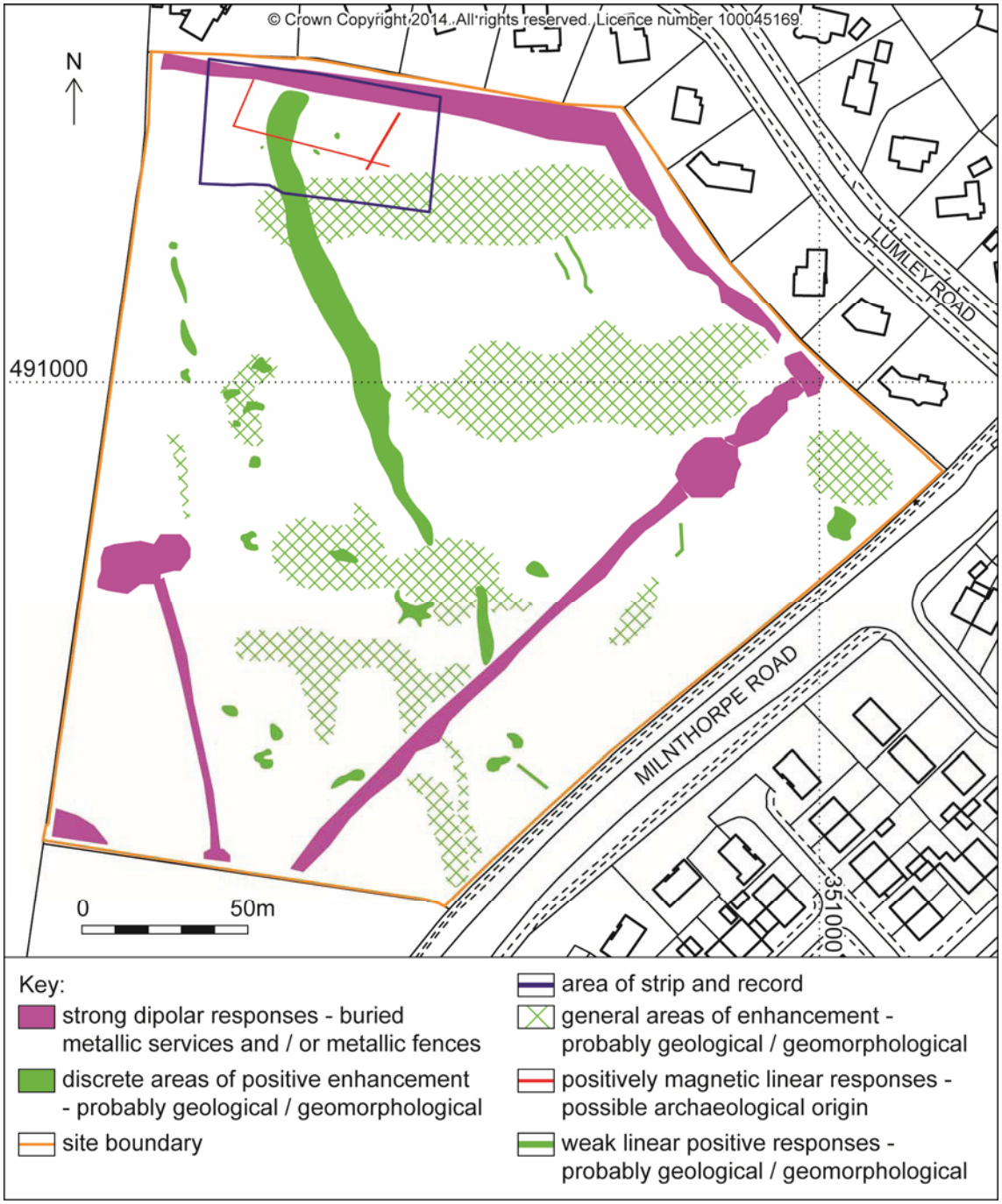


Plate 1: Interpretation plot of the magnetometer survey (after OA North 2014, figure 4), showing the location of the area of strip and record

2.1.2 The topsoil and subsoil deposits were removed using a mechanical excavator with a toothless bucket. Deposits below this were subsequently cleaned and further investigated by hand. The location of the excavation area was recorded relative to nearby property boundaries and buildings that were evident on the site plans and Ordnance Survey mapping utilising a total station. All finds were collected from all deposits, as far as was practical, and the trench and spoil were scanned periodically with a metal detector. The following recording techniques were used during the project:

- ***Written record***: descriptive records of all deposits and features (see *Appendix 2*) were made using Greenlane Archaeology *pro forma* record sheets, specifically trench record sheets and individual context record sheets where necessary;
- ***Photographs***: photographs in both 35mm colour print and colour digital format (as both jpegs and RAW format files) were taken of all archaeological features uncovered during the project, as well as general views of the site, the surrounding landscape, and working shots. A selection of the colour digital photographs is included in this report and the remainder are included in the archive. A written record of all of the photographs was also made using Greenlane Archaeology *pro forma* record sheets (Greenlane Archaeology 2007);
- ***Instrument survey***: the areas investigated were surveyed using a Leica reflectorless total station coupled to a portable computer running AutoCAD 2018 LT and TheoLT, which captures the survey data in AutoCAD in real-time at a scale of 1:1. This enabled the location of each area to be positioned and allowed levels above Ordnance Datum to be provided through reference to a nearby spot height. In addition, the larger features were primarily planned using the total station, rather than through the drawing techniques listed below;
- ***Drawings***: plans and sections of features were drawn at a scale of 1:10 or 1:20 as appropriate, and additional sketches were made on trench record sheets.

2.2 Finds

2.2.1 ***Collection***: all of the finds were recovered by hand and stored in self-seal bags with white write-on panels on site before being removed for processing and assessment.

2.2.2 ***Processing***: artefacts were washed (or dried and dry brushed in the case of glass and metal), dried in a drying oven or naturally air-dried, and packaged appropriately in self-seal bags with white write-on panels.

2.2.3 ***Assessment and recording***: the finds were assessed through visual examination, identified where possible by comparison with published examples, and a summary list of was compiled (see *Appendix 3)*. Specialist reports were produced for the finds of Roman date (*Appendices 4-7*), the animal bone (*Appendix 8*), and glass and metalwork (*Appendix 10*).

2.2.4 ***Roman pottery***: an archive catalogue (see Table 2 in *Appendix 4*) was compiled for the pottery following the Standard for Pottery Studies in Archaeology (Barclay *et al* 2016). The catalogue uses the National Fabric Reference Collection codes (NFRC, Tomber and Dore 1998). Pottery was recorded detailing wares and forms, decorative treatment, condition, cross-joins/same vessel and was quantified by sherd count, weight and rim percentage values, and giving estimated vessel equivalents. The samian was reported on by Gwladys Monteil (see *Appendix 5*).

2.2.5 ***Samian pottery***: the fabric of each sherd was examined, after taking a small fresh break, under a x 20 binocular microscope. Each archive entry consists of a context number, fabric, form and decoration identification, condition, sherd count, rim EVEs (Estimated Vessel Equivalents) if present, rim diameter, weight, comments and a date range.

2.2.6 ***Roman ceramic building material***: the material was examined by context and sorted into sherd families based on fabric and form. Metrics recorded were the number of fragments (sherd count) and weight in grams (g) (see Table 4 in *Appendix 6*). Where form was not identifiable this was recorded as ‘brick/tile’.

2.2.7 ***Metalwork conservation assessment***: fifteen metallic recorded finds were X-rayed using standard Y.A.T. procedures and equipment. One plate was used, labelled X9176. The X-ray number was written on each small find bag and each image on the radiograph was labelled with its small find number. The plate has been packaged in archival paper envelope.

2.2.8 All finds were examined under a binocular microscope at x20 magnification. The material identifications were checked and observations made about the condition and stability of the finds, and recorded below. An assessment of each find is presented in the tables in the assessment tables (Table 6 and Table 7 in *Appendix 7*).

2.2.9 ***Copper alloy conservation***: the copper alloy object was investigated by removing encrusted soil and corrosion products with a scalpel and wooden tools under magnification. This revealed an extremely fragile object with an uneven surface covered in a layer of blue and light to mid-green corrosion. Pits of powdery light green paratacamite and atacamite corrosion products were present in particular around the areas of surface loss at the edges.

2.2.10 The object was put through Benzotriazole to treat active Bronze Disease. This was done by removing the powdery light green paratacamite and atacamite corrosion products from the pits and around the edges and then immersing the object in 3% Benzotriazole (BTA) w/v in Industrial Methylated Spirits (IMS) for approximately 5 hours. After this it was rinsed with IMS and allowed to dry after which it was coated with 2-3 coats of 25% Incralac (acrylic lacquer) v/v in toluene applied with a brush. This object should be handled with gloves as some limited studies have shown BTA to be a potential carcinogen.

2.2.11 ***Roman and later metalwork and glass***: a small assemblage of metalwork and glass from excavations at Lumley Road, Kendal was submitted for assessment (*Appendix 10*). X-rays and conservation assessments from YAT were made available to aid identification. All objects were examined visually, and where possible were identified and a date-range assigned. Comment is made below on their suitability for further analysis and whether such analysis would contribute to the dating and/or interpretation of the excavated site, which lies in relatively close proximity to the Roman fort at Watercrook.

2.2.12 ***Animal bone***: non-repeatable diagnostic bone zones were recorded for the entire assemblage. All records are held in an Excel spreadsheet. Bone zones were identified to species wherever possible. Reference collection and identification manuals (Schmid, 1972) were consulted to facilitate identification. Distinction between sheep and goat was attempted using Boessneck (1969) and Payne (1985) though none were identified as goat, so are recorded here as belonging to sheep/goat. For age-at-death data, epiphyseal fusion (after Silver, 1969) and the eruption and wear of deciduous and permanent teeth were considered. Dental eruption and wear for cattle, sheep/goat and pig were calculated using Grant (1982). Bone condition; that is recent breaks, erosion, weathering, burning, gnawing and butchery were recorded to assess the taphonomic nature of the assemblage.

2.3 Environmental Samples

2.3.1 ***Strategy***: a total of 17 samples were taken from 17 different contexts from three different features. From each of these a single bucket of up to 10 litres was processed. A summary of all of the samples taken is presented in *Appendix 11*.

2.3.2 ***Processing***: the samples were wet sieved by hand; the light fragments were floated off and collected in 250µm and 500µm sieves with the coarse component collected on a 1mm mesh. The flot and retent were then dried in a drying oven. The flot was sent for specialist assessment (see *Appendix 11*). The retent was also examined by eye and all ecofacts and artefacts extracted.

2.3.3 ***Assessment and recording***: the flot from the 250 µm sieve, once dry, was scanned using a binocular microscope. All samples were scanned using a stereomicroscope at magnifications of x10 and up to x100. Identifications, where provided, were confirmed using modern reference material and seed atlases including Cappers *et al.* (2006) and Zohary *et al*. (2012); nomenclature for wild taxa follows

Stace (1997).The content of the retent was recorded on *pro forma* record sheets. The results are discussed in *Section 4.4* and a full catalogue is produced in *Appendix 11*.

2.4 Archive

2.4.1 A comprehensive archive of the project has been produced in accordance with the project design, and current CIfA and English Heritage guidelines (Brown 2007; English Heritage 1991). The paper and digital archive and a copy of this report will be deposited in the Cumbria Archive Centre in Kendal after the completion of the project. On completion of the project a copy of this report will be provided for the client and a copy will be retained by Greenlane Archaeology. In addition, a digital copy will be provided to the Historic Environment Record at Cumbria County Council, and a record of the project will be made on the OASIS scheme.

3. Desk-Based Assessment

3.1 Map and Image Regression

3.1.1 ***Introduction***: although there are early, typically county-wide, maps that include the area these are generally at a relatively small scale and so the first useful maps of the area do not appear until the early 19th century. As a result, only maps from that date onward are discussed below. The site boundary is marked in red and the area of strip and record is marked in blue on extracts from the available photograph and maps of the site reproduced here.

3.1.2 ***Plan of Township of Helsington (CAC(K) WQ/R/C/6 1836)***: this map was compiled as part of the collection of the corn rent and is the earliest detailed map of the area. The site occupies the remaining part of what was a single large field to the north of 'Helsington Laiths' (Plate 2). The field is numbered 268. The accompanying schedule lists the owner of 268 as Colonel Howard and the occupier as Thomas Wilson and the field is called 'Annisteads'. The name probably derives from the personal name Agnes and the Old English 'stede' or 'styde' meaning place or site (Smith 1967b, 289) and so effectively means 'Agnes' homestead' or 'Agnes' place' (this particular field is not listed in the *Place-Names of Westmorland*, but the most similar comparator is Annisgarth, near Bowness-on-Windermere; see Smith 1967a, 186). Of additional note is the fact that the northern edge of this field forms the parish boundary between Helsington and Nether Graveship, although this area has subsequently been lost to modern development. The proposed development area is entirely undeveloped at this time but the layout of the field system is otherwise similar to the present arrangement.

Plate 2: Extract from the Plan of the Township of Helsington (CAC(K) WQ/R/C/6 1836)

3.1.3 ***Ordnance Survey nd and 1863***: despite the differences in scale these two maps show essentially the same details; the undated 1:2,500 scale map is probably of the same date as the first edition 1:10,560 map. The alignment of the road to the east and division of the field system is unchanged from 1836 (see Plate 3 and Plate 4; cf. Plate 2). The significant dwellings of Helsington Laithes and Collinfield are shown to the south and north of the site respectively but the area is otherwise undeveloped, although a section has been marked out in the east corner of the original field, with an illegible note within, which may relate to the area of building shown on subsequent maps. The parish boundary is still clearly marked.

Plate 3 (left): Extract from the Ordnance Survey map of 1863

Plate 4 (right): Extract from an undated Ordnance Survey map (nd)

3.1.4 ***Ordnance Survey 1898***: by this date there has been considerable change in the area, with the east corner of the original field now built on with a large structure labelled 'Howard Orphan Home' and the corner of the field has also been cut off by a new field boundary (Plate 5). The area along the road has been separated into sections for the use with the 1910 rating valuation, although these do not appear to correspond to any existing field boundaries. The plots, number 112 and 113, are listed in the 1910 valuation as just 'land' (CAC(K) WT/DV/2/40 1910). The surviving part of the original field, comprising the current proposed development site, had evidently seen no development by this time.

3.1.5 ***Ordnance Survey 1914***: by this date the site has changed very little, although a single new dwelling, named 'Ash Bank', has been constructed to the south of the Howard Orphan Home (Plate 6). The remainder of the field is still undeveloped.

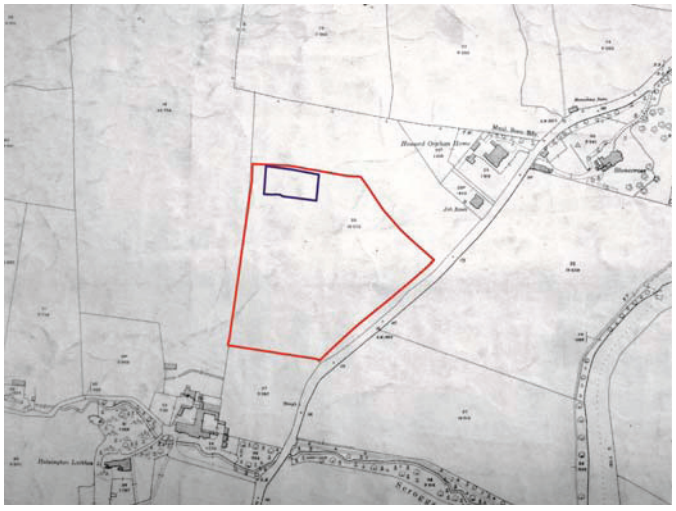


Plate 5 (left): Extract from the Ordnance Survey map of 1898

Plate 6 (right): Extract from the Ordnance Survey map of 1914

3.1.6 A copy of an aerial photograph of the site held in the Cambridge University Collection of Aerial Photographs was obtained. This was taken by JK St Joseph in 1955 and shows an arrangement of linear crop marks and other more amorphous features in what was at that time the north-west corner of the field (Plate 7; closer to NGR 350845 491150 rather than that given by Clack and Gosling (1975) and subsequently used in the HER). It is apparent, however, that the housing now adjoining the northern side of the current proposed development area was at that time under construction, with the north side of Lumley Road only just finished. The opposing side of Lumley Road and its subsequent continuation to

the west clearly cuts across at least some of this crop mark, and so part of it is now outside of the current proposed development area and presumably destroyed. However, at least part of these crop marks are likely to have survived, in addition, a large amount of apparent ridge and furrow is also apparent in the adjoining field to the west. Dating the crop mark features is extremely difficult, given their irregular form, but a late prehistoric to Romano-British date is probable; however, the presence of a seemingly relevant place-name for the field (see *Section 3.1.2* above), potentially suggests occupation in the medieval or even early medieval period.

Plate 7: Aerial photograph showing site taken by JK St Joseph in 1955 (CUCAP RL039)

3.2 Site History

3.2.1 ***Prehistoric Period (c11,000 BC – 1st century AD)***: while there is some limited evidence for activity in the county in the period immediately following the last Ice Age, this is typically found in the southernmost part, on the north side of Morecambe Bay. Excavations of a small number of cave sites there have found artefacts of Late Upper Palaeolithic type and the remains of animal species common at the time but now extinct in this country (Young 2002). Similar remains may have been discovered at Hellsfell Cave, on the north side of Kendal, which was excavated in the late 19th century, although evidence for human activity is limited and the remains are difficult to interpret on account of having been dispersed after discovery (Wilkinson *et al* 2006). The county was clearly inhabited during the following period, the Mesolithic (*c*8,000 – 4,000 BC), as large numbers of artefacts of this date have been discovered during field walking and eroding from sand dunes along the coast, but these are typically concentrated in the west coast area and on the uplands around the Eden Valley (Cherry and Cherry 2002). A small number of microliths belonging to this period were found during excavations at the Roman fort, c500m to the south-east of the site (Turner 1979, 234-235); its position alongside the River Kent is one where such artefacts are often found (Middleton *et al* 1995, 202; Hodgkinson *et al* 2000, 151-152). In addition, one of the cave sites on Morecambe Bay has recently had human remains recovered from it dated to the beginning of this period, placing them as early as any known from the rest of the country (Smith *et al* 2013).

3.2.2 In the following period, the Neolithic (*c*4,000 – 2,500 BC), large scale monuments such as burial mounds and stone circles begin to appear in the region and one of the most recognisable tool types of this period, the polished stone axe, is found in large numbers across the county, having been manufactured at Langdale to the north-west of Kendal (Hodgson and Brennand 2006, 45). During the Bronze Age (*c*2,500 – 600 BC), monuments, particularly those thought to be ceremonial in nature, become more common still, and it is likely that settlement sites thought to belong to the Iron Age have their origins in this period. These are not well represented in the area around Kendal, although an enclosure on The Helme near Oxenholme perhaps has its origins in this period (Collingwood 1908), as might another one that formerly existed on what is now Kendal Fell golf course (Ferguson and Cowper 1893, 525; Elsworth 2014 page). Stray finds of Bronze Age date have been found in the Kendal area and discovery of a Bronze Age burial is recorded in the *Kendal Mercury* on February 29th 1868, but its exact location is not accurately recorded. Sites that can be specifically dated to the Iron Age (*c*600 BC – 1st century AD) are very rare. The remains on The Helme may represent a hillfort, a typical site of this period, but they have never been dated. There is also likely to have been a considerable overlap between the end of the Iron Age and the beginning of the Romano-British period and it is evident that in this part of the country, initially at least, the Roman invasion had a minimal impact on the native population in rural areas (Philpott 2006, 73-74).

3.2.3 ***Romano-British to Early Medieval Period (1st century AD – 11th century AD)***: while the general area around Kendal has relatively little evidence for activity of this date, the environs of the site, being so close to the Roman fort at Watercrook, are well represented by remains from the Roman period. The fort used to be thought to have been known to the Romans as *Concangium*, but more recently it has been stated that it is difficult to be certain what its original name was (Shotter 1979, 319). The fort has been known to antiquarians since the 17th century, with a detailed account by Horsley in 1732 stating that the earthworks of the fort were clearly visible, and that remains thought to relate to the civilian settlement were frequently turned up on its west side (Potter 1979, 143). This latter observation is significant, since it is the only account that mentions activity to the west of the fort. The only other detailed description of the site, prior to the 20th century, apart from occasional discoveries of stray finds, was Nicholson's (1861) account of a possible pottery or tile kiln found on the west side of the river close to Mill Lane (now Scroggs Lane). Nicholson also records an urn, presumably related to a cremation burial in a field on the west side of the river, an area in which other urns had been recorded before and which was known as 'Pots Land' (Gibbons 1988, 78).

3.2.4 Considerations of the fort at Watercrook were published by both William and Robin Collingwood in the early 20th century (Collingwood 1908; Collingwood 1930), including a plan based on parch marks visible in the warm summer of 1887 by the former, but it was only after 1930 that more detailed

investigation and excavation was carried out. These began with excavations by North carried out in the 1930s, which determined the outline of its walls (North 1932). Further excavations in the 1940s examined further elements of the defences, and found evidence that the fort was established in the first century AD by Agricola during the Flavian period (North and Hildyard 1945). Further excavation in the 1970s of the fort and areas around it along the river in advance of flood alleviation work dated its establishment, on the basis of more comprehensive evidence, to the very end of the first century AD, perhaps AD 90-100 and therefore post-Agricola (Potter 1979, 176-177). A later stone fort was subsequently constructed in the mid-second century, followed by a period of reduced usage in the early third century (*op cit*, 178-179). There is evidence that it was reoccupied in the fourth century, although the extent of this is uncertain (*op cit*, 180). Subsequent investigation in the 1980s, in advance of the installation of a water pipe, identified further evidence for the civilian settlement to the south-east of the fort and evidence for further burials in the general area of those found previously (Gibbons 1988). A consideration of Watercrook's position in the local road network was presented in 1979 (Potter 1979, 139), although the details were not clear; an earthwork connecting directly to the fort was identified heading north-west towards Ambleside (*op cit*, 140), which presumably connects to that later identified by Thornton (1989). Many stray finds of Roman date are recorded in the area that probably relate to the fort and associated settlement, ranging from coins and small metal items to pottery, although many of these are poorly located (summarised in Greenlane Archaeology 2014).

3.2.5 The early medieval period is not well represented in the area in terms of physical archaeological remains, which is a common situation throughout the county. A piece of Anglian cross-shaft found at the church in Kendal (Collingwood 1904) and its place-name indicates that the town existed in some form prior to the Norman Conquest (Smith 1967a, 115). The site is located in Helsington parish. Helsington is a settlement of similar antiquity to Kendal, which is also recorded in the Domesday survey (*op cit*, 108). The place-name is earlier, although its meaning is uncertain. It may mean 'farmstead of those dwelling on the *hals*', perhaps referring to the ridge of land on which it is located, or a term relating to hazel copse is also possible (*ibid*), but there is little information or archaeological evidence relating to Helsington before the 11th century.

3.2.6 ***Medieval Period (11th century AD – 16th century AD)***: the settlement of Helsington is recorded in the Domesday Book (*ibid*). The township comprised a large area, the majority of the settlement and its chapel *c*1km to the south-west. It was initially largely owned by the Strickland family and later the de Thwengs (Perriam and Robinson 1998, 346), and in close proximity to the site was its manor house, Helsington Laithes, which was partially fortified and has at least 15th century elements surviving (*ibid*). A mill at Helsington, owned by Marmaduke de Thweng, is also recorded from the late 13th century (Somervell 1930, 68). A park is also recorded at Helsington in 1323, at which time much of the manor is said to have been '*burnt by the Scots*' (Curwen 1923, 142), presumably following the great raid of 1322.

3.2.7 An ancient stone cross, known as 'Stone Cross', thought to be at least medieval and still extant in the 16th century, stood on Milnthorpe Road *c*300m to the east and several stray finds of medieval date are recorded in the area.

3.2.8 ***Post-medieval Period (16th century AD – present)***: the site had reached its present state of development by the beginning of the 19th century, with all the fields enclosed, and it is likely that relatively little changed in the area following the end of the medieval period. The presence of the turnpike road with its toll house (as evident on the early maps) gives some indication of the sort of changes that were taking place. Helsington Laithes continued to be used throughout this period.

3.3 Previous Archaeological Work

3.3.1 Little previous archaeological work has been undertaken in this part of Kendal. However, a desk-based assessment carried out on land to the south of Scroggs Wood, a short distance to the south-east of the site, revealed some potential for remains relating to the Roman fort at Watercrook or the medieval village of Helsington to be present (Greenlane Archaeology 2010).

4. Fieldwork Results

4.1 Introduction

4.1.1 The strip and record examined a single area approximately 70m long by 40m wide against the northern field boundary (Figure 2). The turf had already been removed from almost the entire field prior to the strip and record taking place so the underlying topsoil was removed by machine.

4.2 Strip and Record

4.2.1 Across the site the topsoil comprised a loose pale grey silty clay with 50-90% angular limestone gravel and cobbles typically 0.2m-0.3m thick (***100***); it is possible it represented material dumped on the site from elsewhere given the proportion of stone it contained and also the quantities of post-medieval finds. In places this clearly overlay a thin subsoil comprising a firm mid-brown silty clay with 30% rounded gravels no more than 0.1m thick. On the north-east side of the site this in turn overlay – although the two deposits were difficult to tell apart and are essentially the same – a mid-brown firm silty clay with 20% sub-angular cobbles and 10% sub-angular gravels (both limestone and volcanics) between 0.3m and 0.4m thick, which perhaps represents a cultivation horizon and contained both Roman and post-medieval finds. The underlying natural deposit across the site comprised a firm pale yellowish-orange gritty sandy clay with 90% angular limestone cobbles, evidently fractured bedrock (***135***) beneath which were layers of more orangey 'pea gravel'. However, running through the west side of the excavated area, approximately north/south, was a softer strip of mid orange-brown silty clay with 10% rounded cobbles and 1% rounded boulders, all volcanics, 0.5m-0.6m thick (***133***), which was within a *c*10m wide cut with shallow sloping sides and a flat base [***134***]. This probably represents a natural palaeochannel formed by glacial activity, which was only investigated by the cutting of a trench by machine. Cutting into or on top of these natural deposits was a continuous L-shaped ditch (grouped as feature ***1000***), running approximately north/south along the west side and east/west along the south side, through which six slots were excavated (Slots 1 to 6; see *Sections 4.2.2* to *4.2.7* below; Figure 4 to Figure 8), an area of cobbling (***112***), and a deposit of stones (***111***) (Figure 2 and Figure 3). Within the area bounded by ditch ***1000*** and to the east of the palaeochannel [***134***] was a spread of firm mid-brown silty clay with 20% sub-angular cobbles and 10% sub-angular gravels, both volcanic types and limestone that was 0.3m-0.4m thick (***122***). This too was investigated by the excavation of exploratory trenches by machine and then removed by machine onto the underlying natural (***135***).

Plate 8: Machine-dug section through deposit *133* showing the profile of *134*, viewed from the south-west

Plate 9: Machine-dug section through deposit *133* showing the profile of *134*, viewed from the south

Plate 10: Removing deposit *122* by machine, viewed from the west

4.2.2 ***Slot 1***: this section through ditch ***1000*** revealed an upper deposit of firm mid orangey-brown silty clay with 10% sub-angular gravel 0.5m wide and 0.2m thick (***107***). Below this was a compacted dark orangey-brown sandy clay with 90% angular limestone cobbles, some more rounded volcanics, with some voids, 1.1m wide and 0.5m thick (***108***). Below this was a softer greyish orangey brown silty clay with 75% angular cobbles 0.4m wide and 0.2m thick (***109***). The cut of the ditch at this location was a maximum of 1.4m wide and 0.8m deep, running north/south, with a V-shaped profile with sides at 45° and a slightly rounded base [***110***] (see Figure 4 and Figure 6).

Plate 11: South-facing section in Slot 1, viewed from the south

Plate 12: Cut of ditch *110* as visible in Slot 1, viewed from the west

4.2.3 ***Slot 2***: this section was taken across the inside edge of the enclosure ditch (***1000***) where it turned a 90° corner from a north/south orientation to east/west (Figure 4). The uppermost deposit comprised a firm pale orangey brown silty clay with 20% rounded cobbles, mostly volcanics, 0.2m thick, which extended across the whole width of the ditch. This overlay a firm mid-orangey brown silty clay containing 75% sub-angular cobbles, both limestone and volcanics, 0.25m thick (***124***), which continued around both sides of the corner of the ditch. Below this, on the inside face of the enclosure, was a firm mid to dark orangey brown sandy silt containing 2% rounded cobbles, mostly volcanics, 0.3m thick (***125***). At the base of the ditch was a firm dark greyish brown silty clay or slightly sandy silt, which was 0.25m thick and contained 50% angular cobbles, both limestone and volcanics, concentrated towards the top and with some voids between (***126***). The ditch in this slot was at least 1m wide and 0.8m deep and the sides were at 45° to a flat base [***127***] (Figure 6).

Plate 13: South-facing section in Slot 2, viewed from the south

Plate 14: General view of Slot 2, from the south-west

4.2.4 ***Slot 3***: this section, taken through a large part of deposit ***134***, was excavated in order to determine whether the ditch observed in Slots 1 and 2 (***1000***) continued through this area. It was partially excavated by machine until the line of the ditch became visible at which point it was hand excavated. The upper fill comprised a moderately firm light orangey brown sandy silt with 20% sub-angular cobbles 1.2m wide and 0.15m-0.2m thick (***129***). Below this, on the north side, was a firm mid greyish brown sandy silt with 10% sub-angular cobbles up to 0.2m thick (***131***). On the south side was a similar deposit but with 90% angular cobbles and up to 0.3m thick and extending below ***131*** (***130***). At the base of the ditch was a dark greyish brown sandy silt with 30% sub-angular cobbles 0.7m wide and 0.2m thick (***132***). The ditch itself in this area was orientated east/west and 1.2m wide by 0.8m deep with sides sloping at 45° and a slightly rounded base [***128***] at which point eroded limestone bedrock was exposed (Figure 5 and Figure 6).

Plate 15: East-facing section in Slot 3, viewed from the east

4.2.5 ***Slot 4***: this section through ditch ***1000*** revealed an upper deposit of fairly firm mid greyish-brown sandy silt with 5% sub-angular gravels no more than 0.4m thick and 0.4m wide (***102***). Below this was a firm mid-greyish brown sandy silt with some large angular and sub-angular cobbles and between 20-33% angular boulders, up to 1.2m wide and 0.43m thick (***103***). Below this, at the base of the ditch, was a deposit of softer dark greyish brown sandy silt with 10-15% angular cobbles less than 0.3m thick and approximately 0.5m wide (***104***). On the north side of the ditch cut, below ***103*** but above ***104***, was a further deposit of firmly compacted brownish-orange sandy silt with very few inclusions less than 0.1m thick (***105***), which may represent a slumping of material into the ditch from the side. The cut of the ditch itself in this area was a maximum of 1.8m wide and running east/west with a V-shaped profile with sides at nearly 45° coming to a narrow flat base [***106***] (Figure 7).

Plate 16: East-facing section in Slot 4 with the ditch beyond, viewed from the east

Plate 17: Cut of ditch *106* as visible in Slot 4, viewed from the north

4.2.6 ***Slot 5***: the upper deposit of this section across ditch ***1000*** comprised a firm pale orangey brown silty clay with 2% sub-angular cobbles and 5% rounded gravels, mostly volcanics, 0.4m thick and 0.7m wide (***118***). Below this was a loose mid-orangey brown sandy clay with 90% sub-angular cobbles and some gravel, mostly limestone, which was 0.8m wide and 0.5m thick (***119***). Below this, at the base of the ditch, was a loose dark greyish orangey brown silty clay with 40% sub-angular gravel, 0.2m thick and 0.3m wide (***120***). The cut of the ditch itself in this area [**121**] was linear, orientated east/west, and up to 2m wide at the top but only 0.5m wide at the base and typically 0.8m deep (Figure 7). The sides sloped at 45° and it came to a slightly rounded base.

Plate 18: East-facing section in Slot 5, viewed from the east

Plate 19: Cut of ditch *121* as visible in Slot 5, viewed from the north

4.2.7 ***Slot 6***: this was the final section cut through ditch ***1000*** at the point at which it was anticipated to have a terminus, based on the aerial photograph and the results of the geophysics as its line was not visible on the surface. The uppermost deposit comprised a firm mid-orangey brown silty clay with 30% rounded and angular cobbles, both limestone volcanics, 0.5m wide and 0.3m thick (***114***). Below this was a firm mid-brownish orange silty clay with 75% rounded and sub-angular cobbles, mostly volcanics, and it was 0.4m wide and 0.5m thick (***115***). The lowest fill of the ditch comprised a firm mid to dark orangey brown gritty or sandy clay with 20% sub-angular gravel 0.5m wide and 0.2m thick (***116***). At this point the cut of the ditch itself [***117***] was linear and orientated east/west, 0.7m wide at the top and 0.5m wide at the base with near vertical rock-cut sides changing to 45° slope towards the base, which was flat (Figure 8).

Plate 20: East-facing section in Slot 6, viewed from the east

Plate 21: Slot 6, showing ditch terminus, viewed from the east

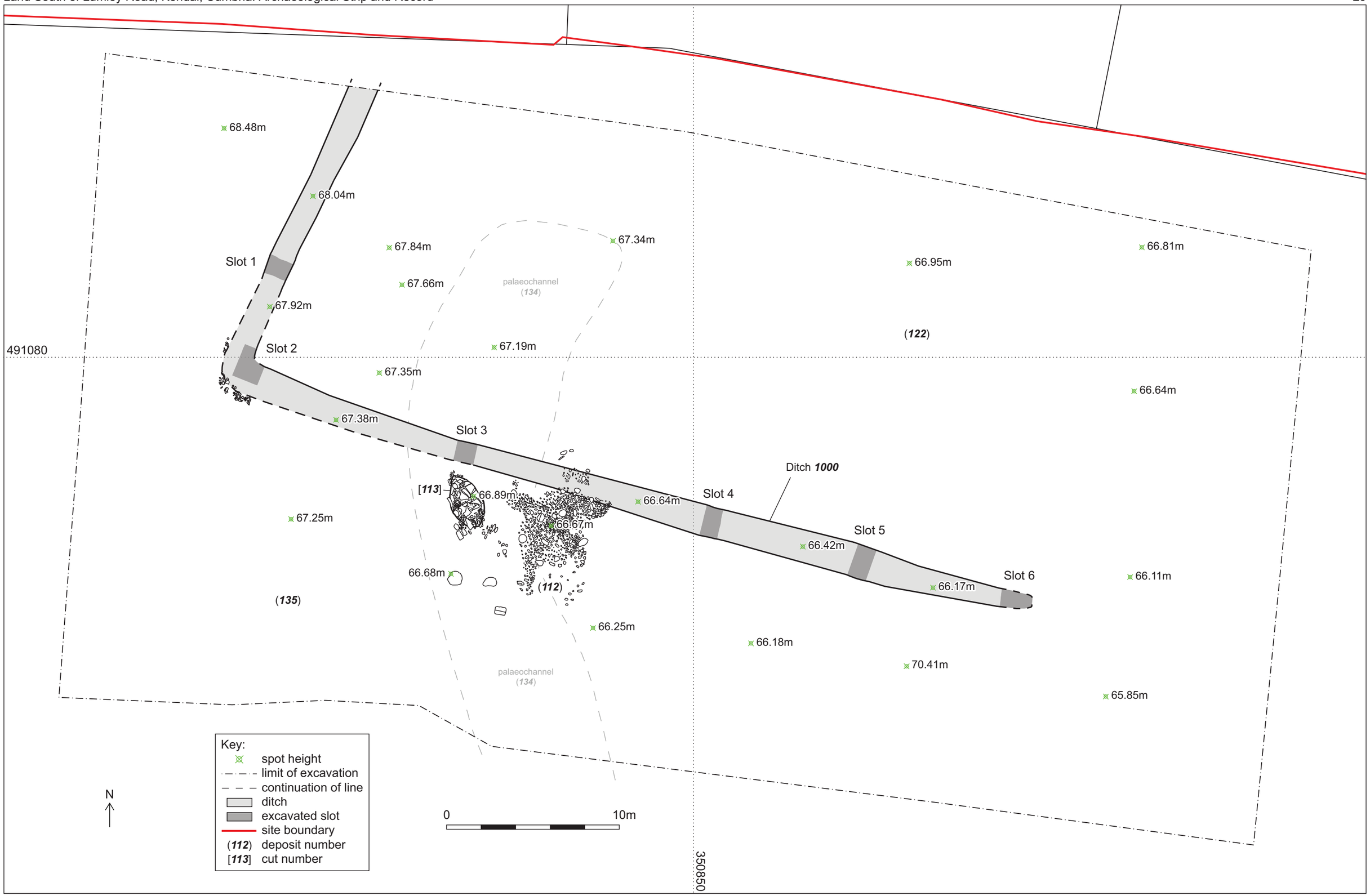
4.2.8 ***Other features***: to the south of ditch ***1000*** and within the area formed by the palaeochannel ***134*** was an area of stones (***111***) (Figure 3). These were deposited within a loose reddish-orange silty clay but comprised 90% sub-angular boulders and cobbles, all of which were of volcanic types and many comprising notably flat slabs. The deposit covered an area 3m long by 2m wide and 0.5m thick and was within a cut with relatively steep sides, at approximately 45°, and a flat base [***113***] (Figure 5). To the east of this was an irregular cobbled surface (***112***), in a loose light greyish brown sandy silt matrix with 75% rounded cobbles less than 0.3m thick (Figure 3 and Figure 5).

Plate 22: Elevated view of cobbles *112* and feature *113*, from the south-west

Plate 23: Feature *113*, viewed from the east

Plate 24: Feature *113* half-sectioned, viewed from the east

Plate 25: Cobbles *112* viewed from the north

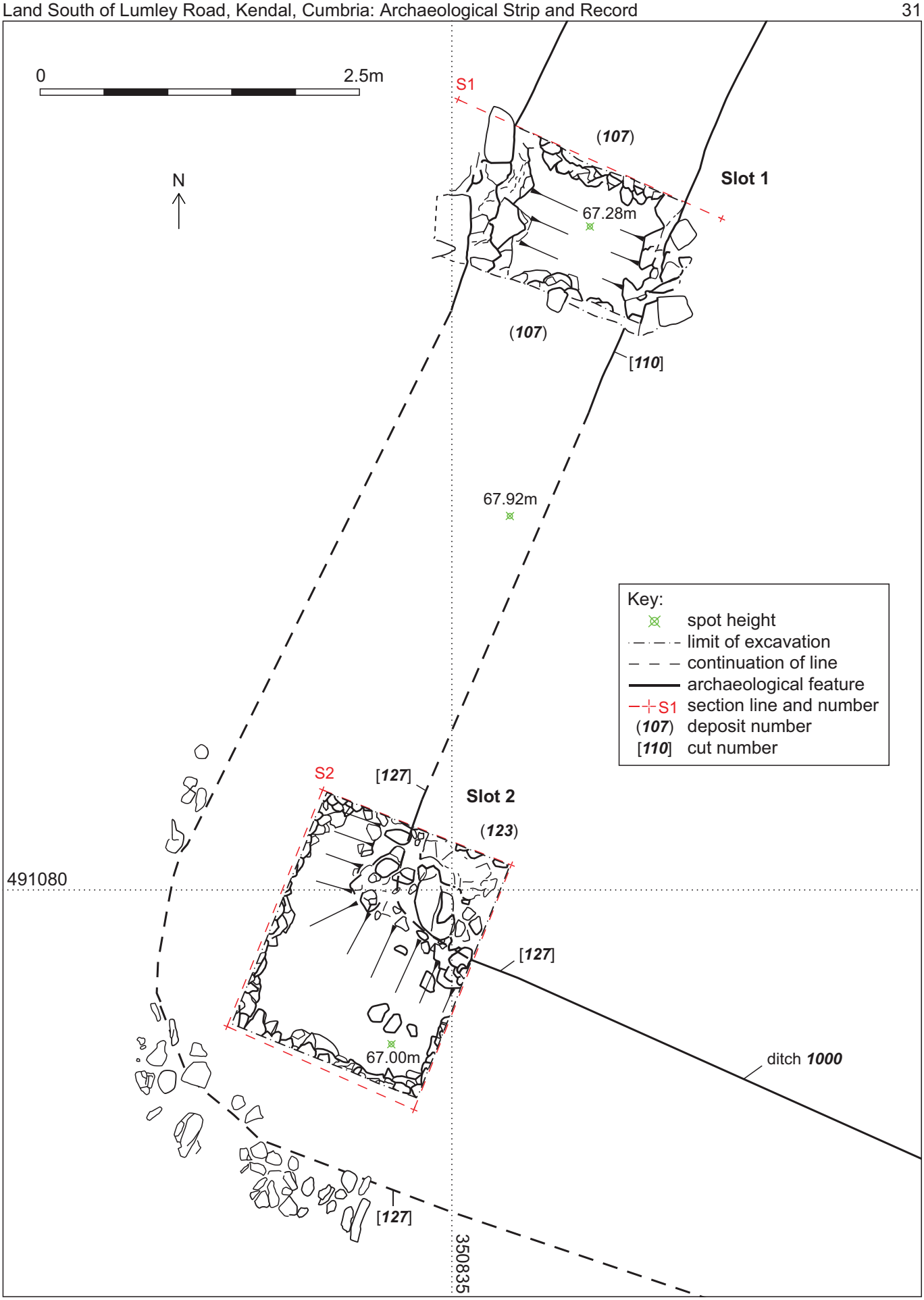


Client: Jones Homes (Lancashire) Ltd

Figure 2: Site plan, showing the location of the excavated slots in ditch *1000*

Figure 3: Pre-excavation plan of possible cobble surface *112* and feature *113*

Client: Jones Homes (Lancashire) Ltd



Client: Jones Homes (Lancashire) Ltd

Figure 4: Plan of Slot 1 and Slot 2

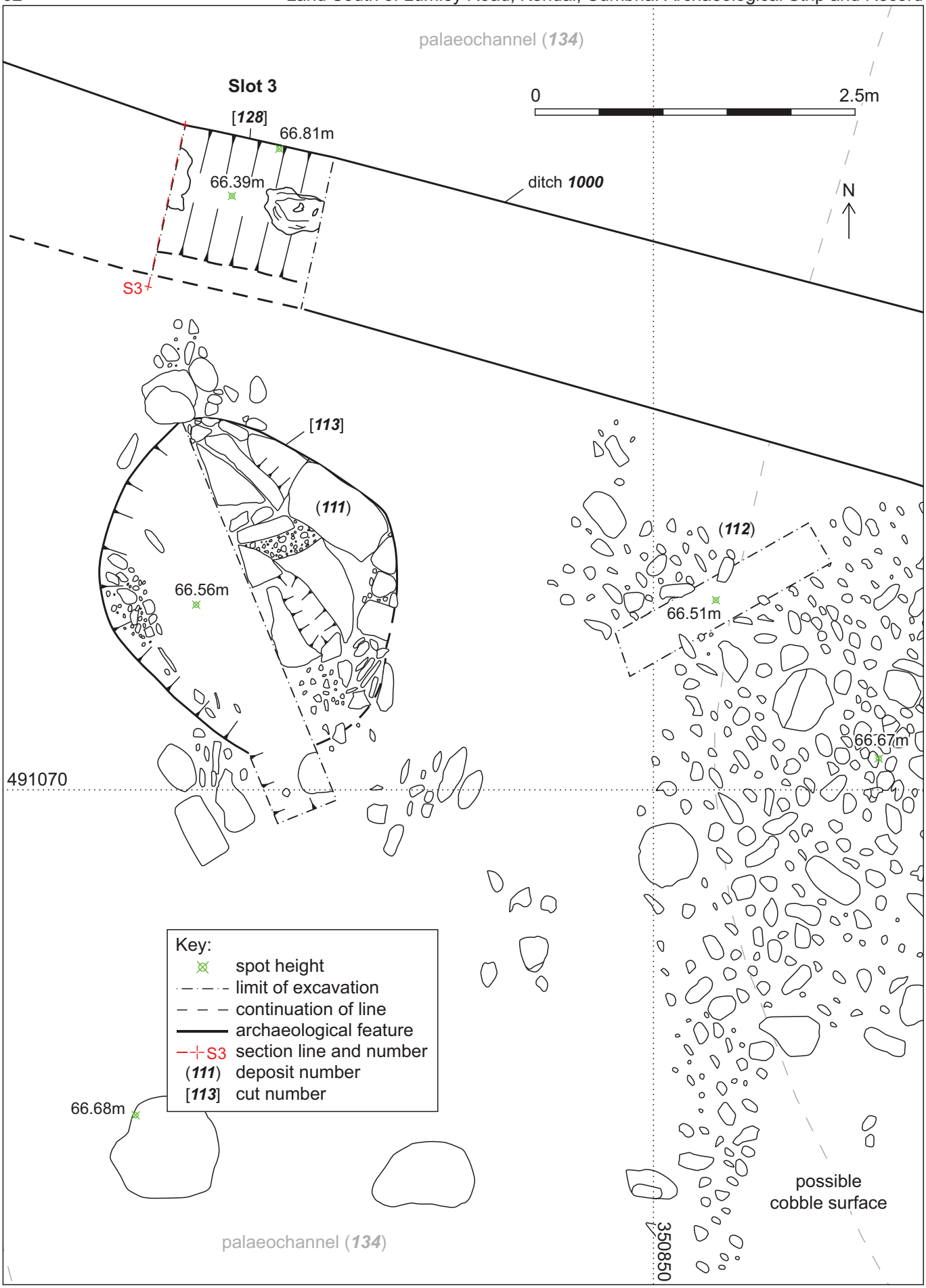
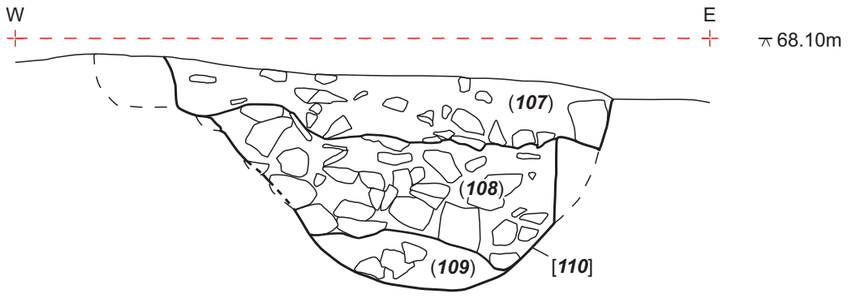


Figure 5: Plan of Slot 3 and feature *113* after half-sectioning

Client: Jones Homes (Lancashire) Ltd

S1

SOUTH-FACING SECTION - DITCH ***1000***: Slot 1



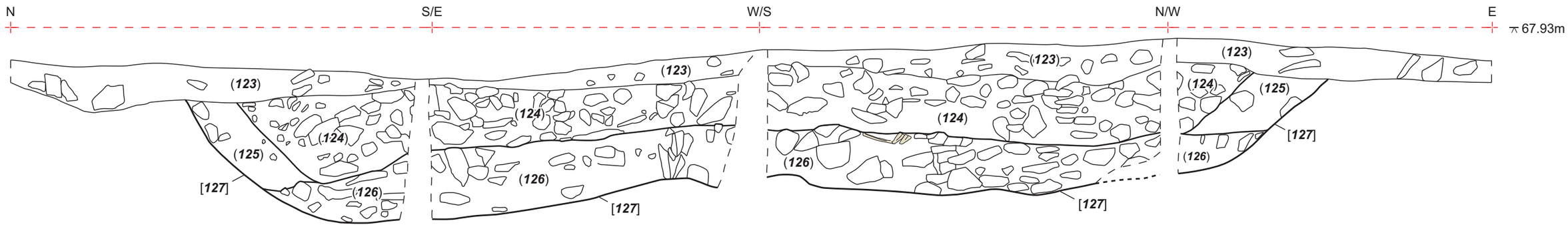
S2

WEST-FACING SECTION - DITCH ***1000***: Slot 2

NORTH-FACING SECTION - DITCH ***1000***: Slot 2

EAST-FACING SECTION - DITCH ***1000***: Slot 2

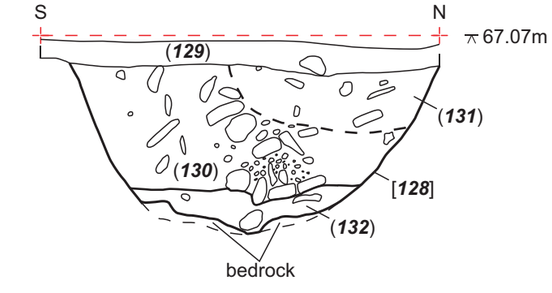
SOUTH-FACING SECTION - DITCH ***1000***: Slot 2



0 1m

S3

EAST-FACING SECTION - DITCH ***1000***: Slot 3



Key:
- level
- continuation of line
- archaeological feature
- S1 section line and number
- (***107***) deposit number
- [***110***] cut number
- animal bone and teeth

Figure 6: Sections 1 to 3

Client: Jones Homes (Lancashire) Ltd

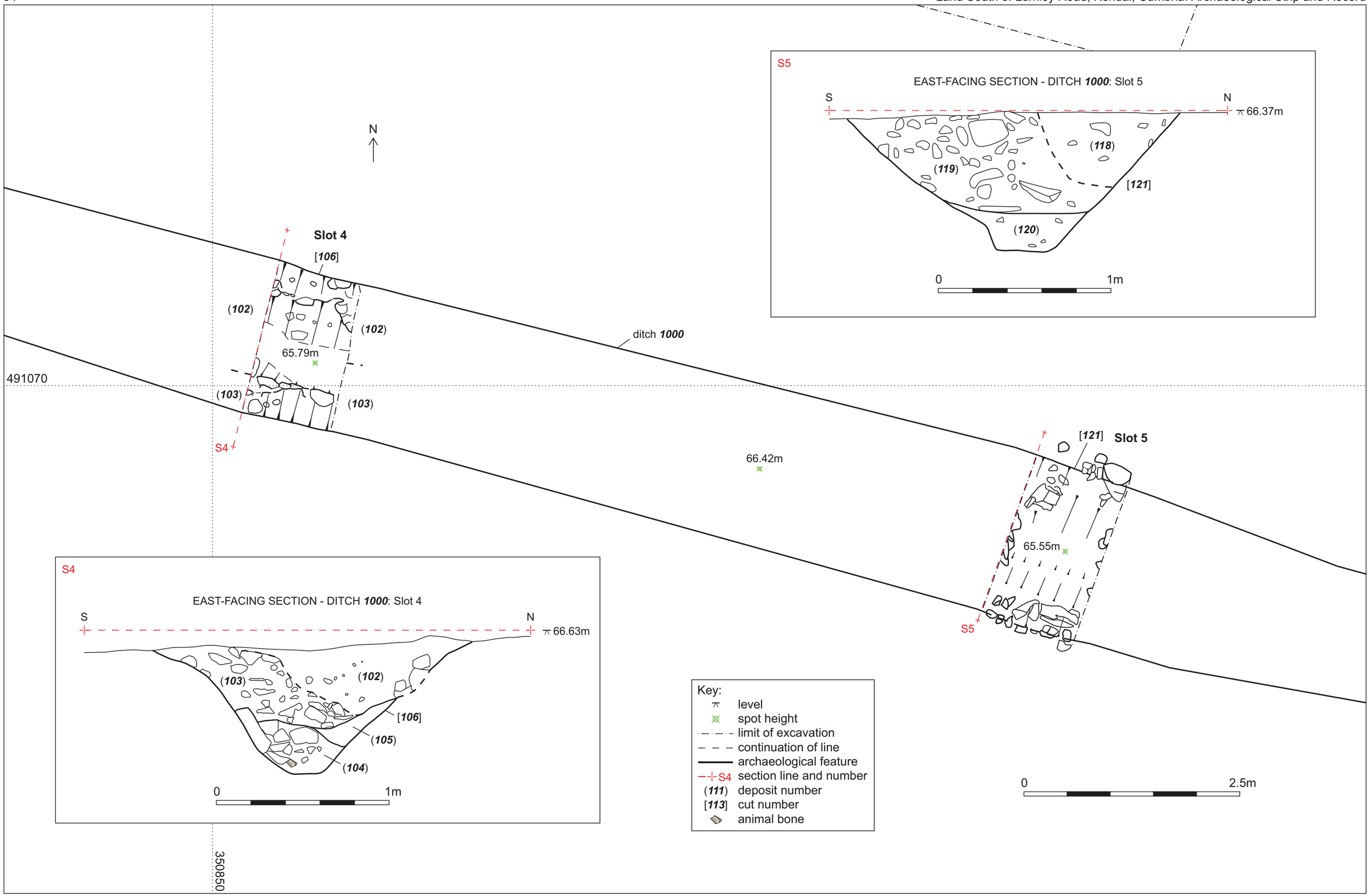
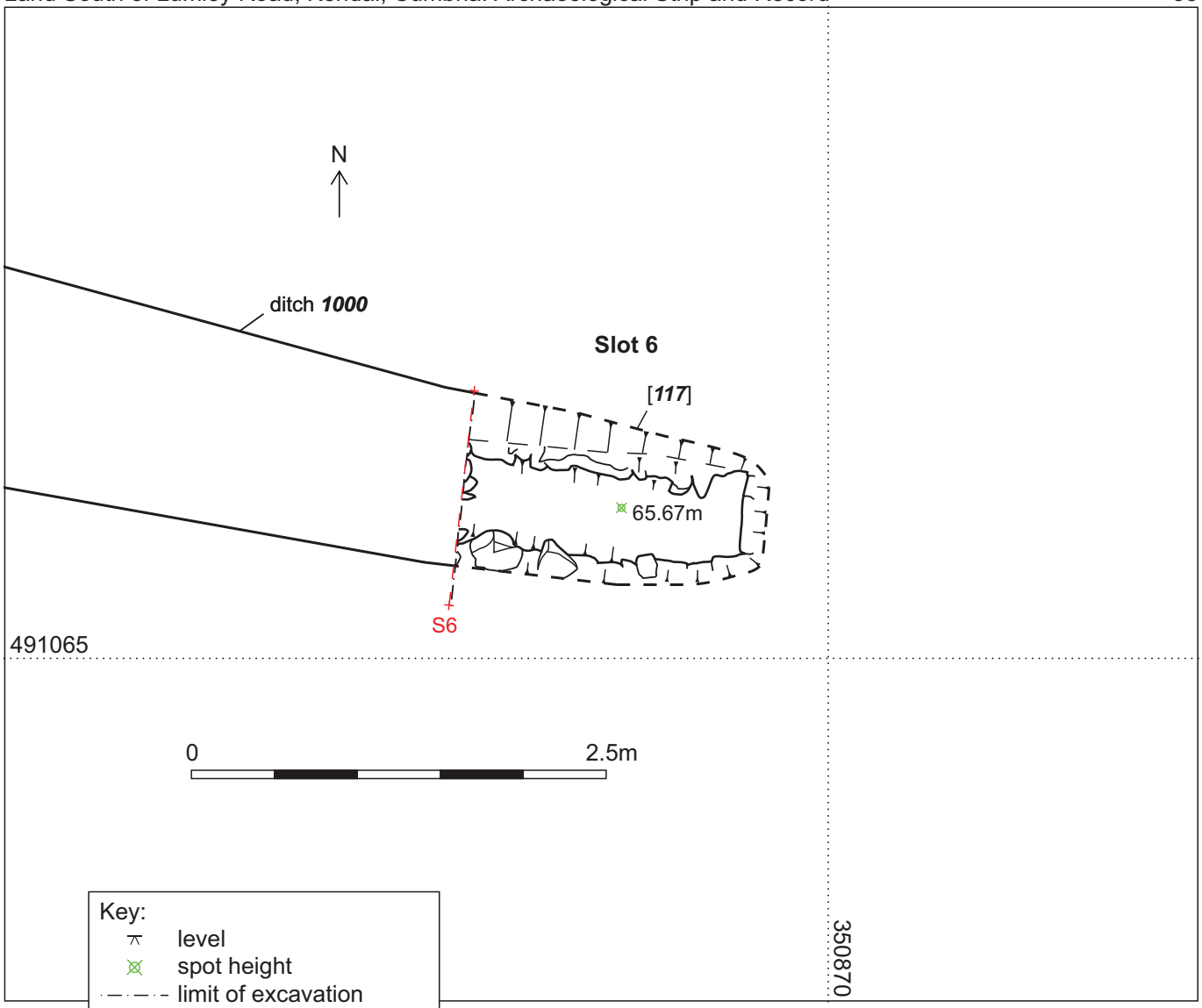
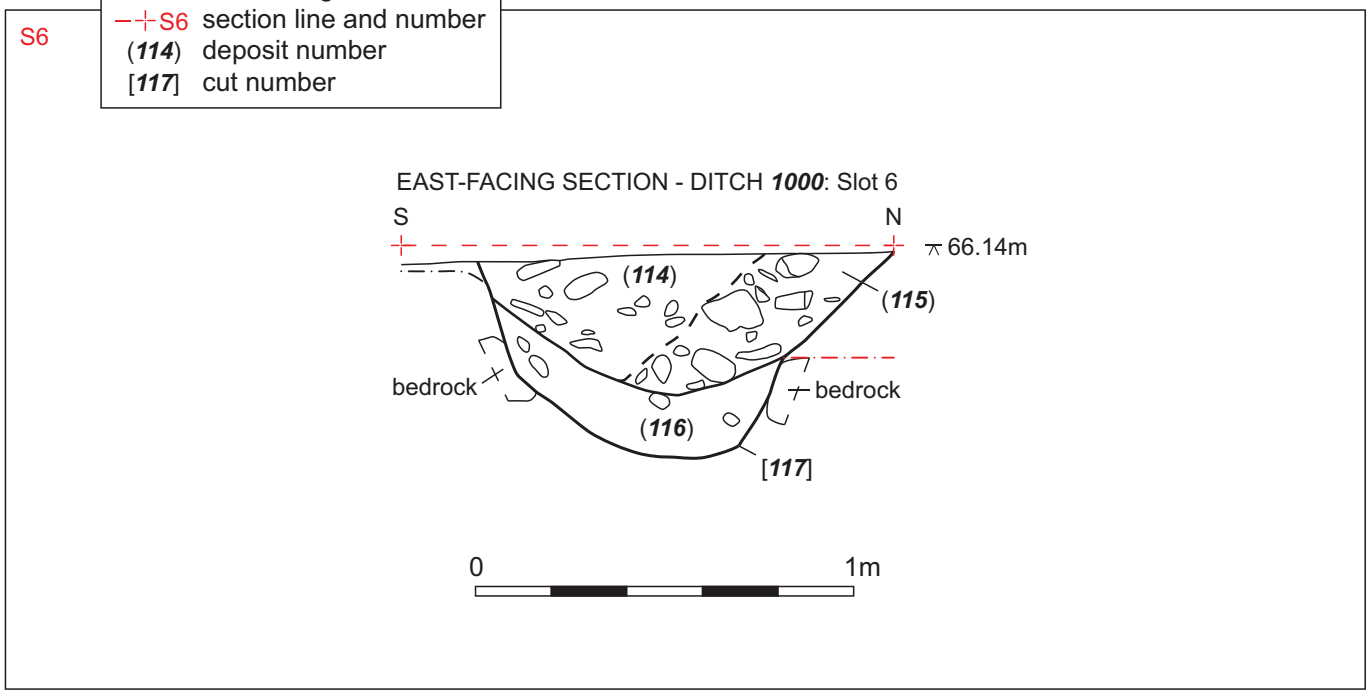


Figure 7: Plan of Slot 4 and Slot 5 and sections 4 and 5





Client: Jones Homes (Lancashire) Ltd

Figure 8: Plan of Slot 6 and section 6

4.3 Finds

4.3.1 ***Introduction***: in total 667 finds were recovered by hand during the strip and record, the majority comprising fragments of pottery ranging from Roman to post-medieval date. The remaining finds varied in type and date. Each type is discussed in the following sections, which are organised in chronological order where possible. A summary of all of the finds is present in *Appendix 3*.

4.3.2 ***Prehistoric lithic***: a single lithic artefact of prehistoric date was recovered from the topsoil (***100***). This comprised a small thumbnail scraper in a pale grey chert with some cortex remaining, which was heavily retouched along the distal (scraping edge) and broken along the proximal end, probably deliberately as part of the manufacturing process. It is difficult to date given its date and the lack of associated artefact types but is likely to be Bronze Age.

4.3.3 ***Roman pottery***: a total of 95 sherds of pottery (1.13kg) came from eleven contexts (see *Appendix 4*). Only five fabrics were present: samian ware (SA), East Yorkshire calcite-gritted ware (HUN CG), an oxidised ware group (OW), a white ware mortarium sherd from Mancetter-Hartshill near Coventry and Dorset BB1 (DOR BB1). The samian and oxidised wares were extremely battered and abraded. The samian fabrics are further discussed below. The oxidised sherds were all in a soft quartz-tempered ware and neither the fabrics nor the forms were diagnostic in any respect. They fit into the sort of oxidised wares found in the region in the third century coming from the Cheshire and Lancashire plains industries or Severn Valley ware. Unfortunately their indeterminate character precluded firm identification. The calcite gritted ware sherds were all from one vessel, much of which was present, and much of the calcite had dissolved due to acidic soil conditions weakening the structure of the pottery and resulting in the fabric fragmenting and parts of the rim or sherd edges spalling off. This vessel is likely to fragment further if not protected from movement. The BB1 was abraded but the fabric was sound and intact.

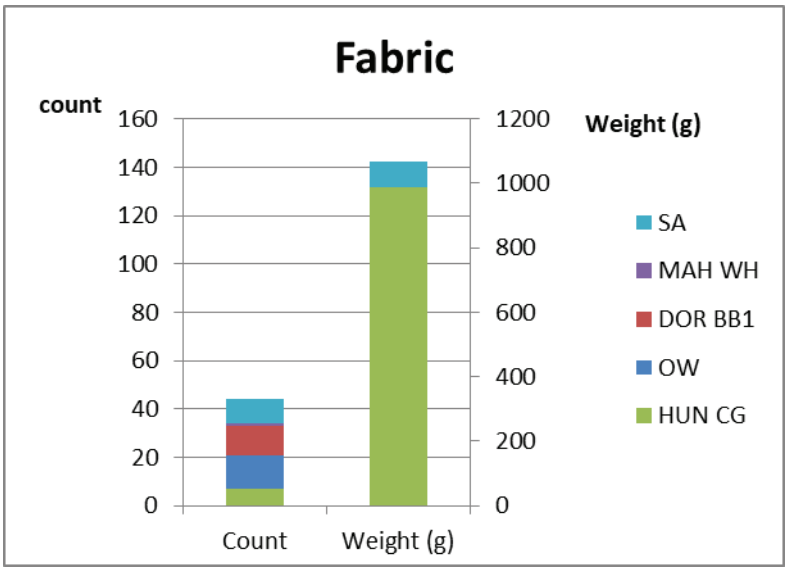


Plate 26: Quantities of Roman pottery fabrics by count and weight

4.3.4 Both the calcite-gritted jar and the BB1 jar can be readily dated by reference to published discussions based on the stratified sequences on the Northern Frontiers. The calcite-gritted jar with curving rim is a type dated to AD300-370 by Bidwell and Croom (2010, table 4.1) from their study of types on Hadrian's Wall during the fourth century. This date range is also confirmed by studies by Bell and Evans (2002, type J9 S-bend jars and type 6.3 hooked rim jars without lid-seating) who date these forms in calcite-gritted ware to the earlier fourth century and to *c*AD340-370 respectively. These jars are from an industry based in east end of the Vale of Pickering (Evans 2000, 40).

4.3.5 The BB1 jar sherds may come from a single vessel scattered in contexts ***108*** and ***109*** and the sherds in both contexts are abraded. Enough survives to suggest they came from one of the BB1 jars

made in the late third to fourth century with somewhat splayed rims (Gillam 1976 no. 10 and Holbrook and Bidwell 1991 type 20).

4.3.6 Unfortunately the oxidised sherds were all indeterminate and undiagnostic as mentioned above. They cannot of themselves be dated but they do fit in with the type of oxidised wares found in the late third century and into the early fourth century in the region such as at Ravenglass and Brougham (Bidwell and Croom 2015, 73 and Evans 2004, 341-2).

4.3.7 The single rim sherd in white ware came from a multi-reeded mortarium dating from the later third to mid-fourth century and coming from a large pottery located in the parishes of Mancetter and Hartshill near Coventry. These potteries supplied the majority of the mortaria found on the Northern Frontier in the third century, flooding all settlement types with their products, a heavy thick walled bowl thought to be used for mashing vegetables and fruit but perhaps used for other purposes also.

4.3.8 The range of fabrics and forms suggest activity spanning the third to mid-fourth century. The contexts with only samian and/or oxidised scraps may date to the earlier part of this period while contexts ***108*** and ***109*** belong in the late third or early fourth century and context ***130*** dates to *c*AD300-370. There is no pottery datable to the late fourth century.

4.3.9 The presence of pottery which is commonly found on military sites of third and fourth century date at Lumley Road, Kendal is significant and indicates the existence of a settlement accessing the military supply networks in some way and using pottery conveyed, through those networks, from distant potteries in Dorset, near Coventry and from the Vale of Pickering as well as from Gaul. The Roman fort at Watercrook has examples of all these types of vessels (Potter 1979 fig. 110 nos 306, 308 and 311 for BB1 and HUN CG jars and fig. 112 no. 365 for a multi-reeded MAH WH mortarium). Overall the coarse pottery from both the military areas and the east vicus show a decline in activity in the mid-third to mid-fourth century with a subsequent rise in the later fourth century (Pottery 1979 figs. 63 and 81). Most of our pottery belongs in this period of decline.

4.3.10 The range of vessels includes table wares such as the fine samian ware from Gaul, vessels used for food preparation such as mortaria and cooking and storage vessels such as the BB1 and calcite-gritted jars. The presence of such vessels, including those introduced to Britain during the Roman occupation, implies the adoption of foreign vessels and perhaps methods of food preparation and consumption although the presence of a vessel type does not, of course, guarantee it is being used as its creator intended. It could be adapted for a usage formerly fulfilled by an insular vessel type.

4.3.11 The presence of tableware in the form of bowls and dishes and of samian ware is commonly taken as an indicator of Roman type dining with dishes and bowls rather than communal dining such as a large central vessel from which all diners took their food. However this is true principally in the first to mid-third century and fewer fine ware dishes and bowls are being supplied in the fourth century in the North. The calcite-gritted ware jars dominate the assemblages in ever increasing numbers through the fourth century and the group from Lumley road fits into this context. It is not possible from this small group to comment further on the nature of activity or settlement. The fine wares and mortaria suggest domestic activity while the far-flung trade implied suggests a close relationship with the military presence at Watercrook.

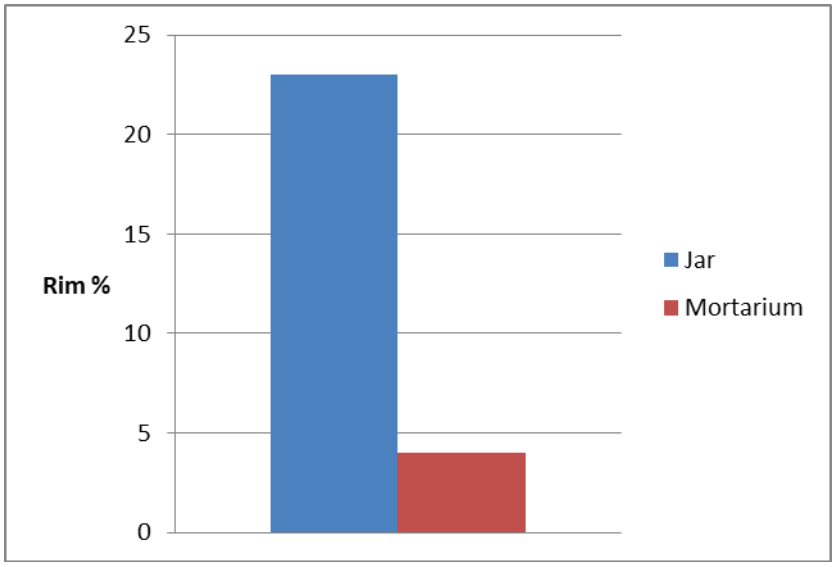


Plate 27: Roman vessel types quantified by rim percentage present

4.3.12 ***Samian ware:*** a small assemblage of ten sherds of samian ware was submitted for this assessment (see *Appendix 5*). Most of the fragments are in poor condition with much of the original surfaces and slip poorly preserved. No rim or base was recovered and more than half of the fragments cannot be attributed to a specific form. The average weight is very low at c.3g.

4.3.13 One fragment in context ***111*** is excoriated but displays a fabric more characteristic of Les Martres-de-Veyre in Central Gaul and suggests access to samian in the early part of the 2nd c. AD.

4.3.14 With eight fragments the bulk of this small group comes from Lezoux in Central Gaul, the only identifiable forms were recovered in the topsoil and include a flake possibly from a bowl form Dr.31R and a mortarium form Dr.45. Both are later Antonine in date with the mortarium normally dated AD170-210. The other Central Gaulish fragments are flakes or small body sherds which cannot be dated more precisely than AD120-200.

4.3.15 A body sherd from a mortarium with a fabric typical of Trier in East Gaul completes this small collection and is likely the latest samian vessel in the group (AD170-260).

4.3.16 The samian assemblage recovered from this site is too small and too abraded to permit much in terms of comments. Most of it was recovered mixed with later Roman material (see Leary's report) and is residual. Some brief comments are nonetheless possible. The presence of a Trajanic/early Hadrianic fragment from Les Martres-de-Veyre does not necessarily present a problem, stamps and decorated vessels from Les Martres-de-Veyre are present in the assemblage from Watercrook (Wild 1979, 63-65 and S2-4, S15, S20) and it is likely that this piece came on site via the same supply network.

4.3.17 The rest of the group is more typical of the 2nd half of the 2nd c. AD and the early 3rd c. AD with the two mortaria perhaps the most diagnostic features since the form is often well-represented at sites with strong 3rd samian deposition (Piercebridge – Ward 2008; Brougham – Ward 2011). The presence of a mortarium from Trier is itself interesting since that industry is apparently not represented in the assemblage from Watercrook (Wild 1979 though only the decorated and stamps are published).

4.3.18 ***Roman ceramic building material***: in total 22 fragments of ceramic building material weighing 500g, including an unidentifiable fragment of burnt clay, were recovered from four contexts (***100***, ***102***, ***115***, and ***122***) (see *Appendix 6*). The assemblage comprises imbrex, flue tile and brick with sooting noted on one brick. Whilst a rural scatter not associated with a building cannot entirely be discounted, the presence of flue tile, imbrex and brick and the absence of tegula in such groups is very unusual, especially in the North West. It is more likely that the material derived from a nearby hypocaust structure. It is not possible to date the material precisely, although combed flue tile tends to date from the second century or later (there was one combed flue tile fragment from the possible spread of occupation debris (***122***) and two from the topsoil (***100***)).

4.3.19 Fabric T41 is an oxidised tile fabric. It is red (10R 5/6) hard fabric with a fine fracture and sandy to clean feel. It has inclusions of common poorly sorted sub rounded translucent quartz at 0.2-0.5 mm, moderate rounded black ironstone inclusions to 1 mm and occasional white subangular quartz at 0.3mm, occasional lime at 0.3mm and sparse silver mica.

4.3.20 Fabric T42 is an oxidised fabric. It is a hard, light red (2.5YR 6/8) with an irregular fracture and very sandy feel. It has inclusions of common to abundant rounded quartz at 0.3-0.5 mm, with moderate black ironstone and lime.

4.3.21 ***Roman and later iron objects***: in all, 13 ferrous items were recovered, from five contexts. The material is in fair condition, with oxidised deposits on all surfaces, although in most cases these do not completely obscure the form of individual objects. None of the objects could be regarded as diagnostically Roman in appearance. It is, however, possible that some of the hand-forged nails are of Roman origin, but as simple, utilitarian items, they are extremely long-lived forms, which change little through time.

4.3.22 There are ten nails, coming from contexts ***100***, ***101***, ***115***, ***119***, and ***122***. With the exception of one of those from ***122***, they are all hand-forged with the shaft having a square or rectangular cross-section. A large example from ***100*** has a sub-pyramidal head, which might place it in Manning's (1985) class 1a, and thus suggesting a potential Roman date, although evidence seems to suggest that the context is somewhat disturbed. A second example, from context ***101*** can be assigned to Manning's type 4, an uncommon Roman type with an L-shaped head, which was probably intended to be driven completely into a large timber. Again, it cannot be stated with complete confidence that this is of Roman date, but it remains a possibility. The remainder of the nails are largely undiagnostic, but one of those from context ***122*** clearly has a round-sectioned shaft, and could well be a cut wire nail of late eighteenth or nineteenth-century date.

4.3.23 Context ***122*** also produced a narrow triangular object which appears to have a lozenge-shaped cross-section, perhaps suggesting a double-sided blade with a low median ridge. The most obvious identification would be part of a narrow spearhead, but this must remain speculative.

4.3.24 Context ***100*** also produced what might be part of a simple hinge, and a rectangular buckle frame, possibly tinned, but most likely to derive from horse harness. Like a lot of ironwork, its simple and long-lived form precludes confident dating, but a post-medieval or more recent date seems most likely.

4.3.25 The ironwork has little potential for further analysis, and can add little more to the dating or understanding of the development of the site. X-ray has done little to elucidate the appearance of the potential double-sided blade, but cleaning and conservation (as also suggested by YAT) might allow the currently speculative identification to be confirmed, if it is thought that this might add to the understanding of activity on the site. It should, however, be borne in mind that the context from which it derives appears to be somewhat mixed.

4.3.26 ***Roman (?) copper alloy object***: a flat strip of copper alloy was recovered from ***130*** (the stony backfill of ditch ***1000***, slot 3). It is undiagnostic and cannot be dated with any precision, and has no further potential for study. Other items from the same context suggest a Roman date for this find.

4.3.27 ***Roman and later glass***: three fragments of vessel glass were examined, all were in good condition, although the vessel glass from topsoil ***100*** was rather abraded, probably reflecting its recovery from topsoil, which is likely to have been somewhat disturbed, and implies re-deposition.

4.3.28 The two fragments of vessel glass from ***100*** are probably from the same vessel, although they do not join. They derive from the neck and shoulder of a mould-blown storage bottle of Roman date, probably of Isings (1957) form 50. This common form dates typically from the mid-late first to late second century AD (Price and Cottam 1998) although its robust nature means that individual vessels probably survived in use into the third century. The glass is a very dark natural blue-green, and in general terms this might place the vessel in the earlier part of its date-range.

4.3.29 The third fragment, from context ***122***, is a pale natural blue. Whilst clearly from a mould-blown vessel it is too small for any attempt at more detailed identification. The colour and quality of the glass

might suggest that it is of relatively recent manufacture, possibly in the late nineteenth or early twentieth century.

4.3.30 The vessel glass does not have any appreciable potential for further analysis, and can add little more to the dating or understanding of the development of the site.

4.3.31 ***Medieval pottery***: six fragments of medieval pottery were recovered from the topsoil (***100***). These were generally quite small and abraded. Four of the fragments were from thin-walled vessels and the other two were from the flat bases of coarser vessels with obtuse-angled sides. The material probably represents a few different fabrics, including gritty ware and closely-related lightly gritted sandy fabrics. Gritty wares dominate 12th and early 13th century assemblages in the region (McCarthy and Brooks 1992, 22; Whitehead *et al* 2013) and persist into the 14th century (Bradley and Miller 2009, 664) and lightly gritted sandy wares began to occur in small quantities in the late 12th to early 13th centuries (Brooks 2000, 140) and dominate late 13th and 14th century assemblages in the region (Bradley and Miller 2009, 663-664).

4.3.32 ***Post-medieval pottery***: in total, 130 fragments of post-medieval pottery were recovered during the strip and record. Of these, 118 were recovered from the topsoil (***100***), nine were from the subsoil (***101***), and three were from possible spread of occupation debris ***122***. Of the material from the topsoil, the tablewares can be the most closely dated, and of these the earliest fragments can be dated to the late 17th to early 18th century, including slip-coated twares, white salt-glazed stoneware including a fragment with scratch blue decoration, and tin-glazed earthenware. Creamware, dated to the mid to late 18th century, is present, as is pearlware, including fragments with the blue transfer-printed patterns Long Bridge aka Two man/scroll pattern (*c*1800-1820) and Willow (early 19th century). White earthenware and bone china, both dated to the 19th century, are the latest tablewares present. The utilitarian wares, comprising just over half the fragments from the topsoil, are less subject to changing fashions and therefore cannot be as closely dated. These include brown-glazed red earthenwares, some with white slip stripes, trailing, or internal coating; mottledware or early Rockingham-type ware, stoneware, and factory-produced red- and buff-bodied earthenwares. The pottery in the subsoil comprises pottery dated to the late 17th to early 18th century (mottledware and white salt-glazed stoneware), brown-glazed red earthenwares like those present in the topsoil, and Willow transfer-printed white earthenware. The fragments from context ***122*** comprise similar brown-glazed red earthenwares.

4.3.33 ***Post-medieval glass***: in total, 17 fragments of post-medieval glass were recovered, including the fragment from context ***122*** discussed in the Roman and later glass section, above. The remaining 16 fragments were all from the topsoil (***100***), and of these 12 were from green bottles. These varied considerably in date, with the earliest being an onion or similar shape dated to the late 17th to 18th century, and the latest being one with part of a punt mark showing the manufacturer was a Limited Company, and including a pattern number, dated to the late 19th to early 20th century. In addition, there were two fragments from very light turquoise bottles, and two from colourless tumblers.

4.3.34 ***Clay tobacco-pipe***: 22 fragments of clay tobacco pipe were recovered from two contexts. All apart from one stem fragment came from the topsoil (***100***), the other fragment came from ***122***. The assemblage comprises 21 plain stem fragments and one stem/bowl junction with a flat oval-shaped heel. Too little of the profile of the bowl remains to be certain of its style and date. The assemblage is small, so it is difficult to make chronological judgments with any degree of confidence in terms of stem-bore analysis, yet overall the group is fairly coherent in its contents. The composition of the assemblage has a fairly narrow spread of bore diameters with a clear peak at 5/64” and a few 6/64” and 4/64”. Comparison of the histogram of bore diameters with other sites suggests the assemblage includes some mid-18th century material and a significant 19th century group (after Davey 2013).

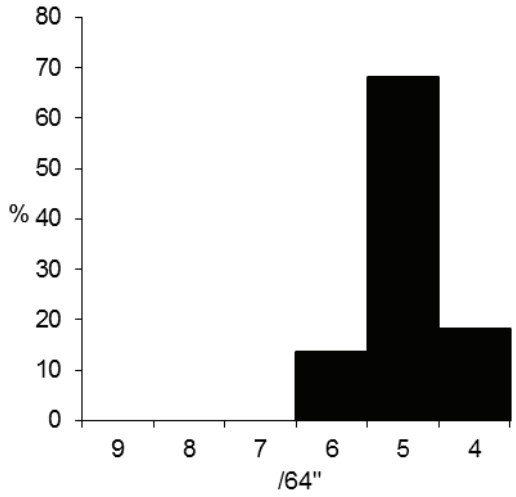


Figure 9: Histogram of bore diameters

4.3.35 ***Post-medieval ceramic building material***: a single fragment of post-medieval ceramic building material was recovered from the topsoil (***100***), from a possible brick, dated to the 19th to early 20th century.

4.3.36 ***Industrial residue***: a single cinder fragment was recovered from possible occupation spread debris ***122***, and it could not be closely dated. This context contained both finds dated to the Roman and post-medieval periods.

4.3.37 ***Land snail***: fragments of land snail shells were recovered from the middle and lower fills of slot 4 of ditch cut ***106*** (contexts ***103*** and ***104***, respectively). These could not be closely dated.

4.3.38 ***Animal bone***: a total of 350 fragments of animal bone were recovered from hand-excavated features (a total of 12 deposits). Microfauna and herpetofauna were also recovered from bulk environmental soil samples (Table 9). Only 70 bone fragments were recorded as diagnostic non-repeatable bone zones (20% of the total assemblage) (Table 10). Cattle (*Bos Taurus*) (60%), horse (*Equus caballus*) (23%) and sheep/goat (*Ovis aries/Capra hircus*) (11%) dominate the assemblage, with pig (*Sus scrofa*) (1.4%) and dog (*Canis* spp.) (4.2%) present in smaller quantities. No bird or fish bones were noted.

4.3.29 *Condition and treatment:* the small animal bone assemblage is poorly preserved except for teeth. Most fragments are affected by recent breakages. All fragments exhibited a high degree of surface erosion/porosity, root etching, weathering and cracking. The cortical surface on most fragments was not visible, which may in part be responsible for the lack of visible butchery marks and carnivore gnawing. No incidences of butchered fragments were recorded, whilst gnawing (carnivore) was rare with just two instances; both on cattle post-cranial remains (an astragalus and a metacarpal). There were no elements suitable for sexing or metrical/non-metrical analysis. Overall, for all deposits/species, teeth and cranial fragments dominate the assemblage, with post-cranial elements few. Many of the small mandibular fragments appear to be associated with many of the teeth; that is, they were once whole jaws within the deposit.

4.3.30 *Discussion by Species:* due to the small nature of this assemblage, species from all contexts have been grouped together for discussion, rather than by context. Cattle is represented by forty-two diagnostic zone; the greatest part of the identifiable assemblage. Most are teeth (twelve maxillary; twenty-three mandibular). Two full tooth rows/mandibles were recorded, revealing two old 'senile' individuals, although three loose lower molars exhibited no signs of wear, so younger individuals were also present at this site. Five post-cranial elements were also present (an astragalus, femur, metapodials and a 1st phalanx).

4.3.31 Horse is represented by sixteen diagnostic zones; all fifteen teeth (all maxillary) and one distal scapula. All teeth are extremely worn; near or right down to the root. Some are wavy, with sharp enamel points and an upper fourth pre-molar worn at a sloped angle. Poor dental care can lead to uneven wear, periodontal disease, weight loss and malnutrition (Evans 2014).

4.3.32 Sheep/goat is represented by eight diagnostic zones; seven teeth (five maxillary; two mandibular) and part of a socketed jaw, which probably supported several of the loose teeth. Tooth wear data is limited but based upon the third molars; all are adult specimens at least two-three years old.

4.3.33 Pig is only represented by a single lower third molar, which exhibited no wear and looks to have been unerupted.

4.3.34 An adult dog is represented by three diagnostic zones (which were the best preserved and most complete of any of the post-cranial elements recovered throughout the assemblage); two metacarpals and one calcaneum. Both left and right sides are represented and appear to be from the same individual.

4.3.35 *Conclusions*: this small faunal assemblage is dominated by teeth for most species represented here. This is largely due to poor preservation conditions. Fragmentary mandible and skull fragments suggest that whole jaws and or skulls were being deposited. There are several older animals within this assemblage; horse in particular showing signs of age and abnormal wear. Post-cranial elements for all species were few and axial elements were absent. Essentially, the small size of the assemblage and poor preservation, mean that they are of little interpretative value with regards to questions about husbandry and socio-economics.

4.4 Flots

4.4.1 Seventeen bulk sediment samples were recovered during archaeological works at Lumley Road, Kendal, Cumbria. The samples were taken from the various fills of a late Roman ditch [***1000***], the fill of a rock-filled pit (***111***) a cobbled surface (***112***). The aims of the assessment were to assess the presence, preservation and abundance of any environmental remains and to determine the potential of the material for indicating the character and significance of the deposit.

4.4.2 Results of the assessment are presented in Table 15 in *Appendix 11*. Material present in five of the samples was sufficient for AMS (Accelerated Mass Spectrometry) radiocarbon dating. The majority of samples contained abundant modern root material.

4.4.3 ***Cereal grain***: a small number (<10) of cereal grains were recovered from six deposits (Table 15). The grains exhibited mixed levels of preservation ranging from moderate to poor. Some of the cereals were abraded and broken and therefore recorded as indeterminate glume wheat. Cereals present included barley (*Hordeum* sp.), spelt wheat (*Triticum Spelta*), emmer wheat (*Triticum dicoccum*) and indeterminate glume wheat (*Triticum* sp.). A single oat (*Avena* sp.) was also present in deposit ***115***.

4.4.4. ***Wood charcoal***: wood charcoal was present in varying quantities in all sampled features (Table 15). The charcoal exhibited mixed levels of preservation. Two of the deposits, ***120*** and ***132***, contained charcoal fragments of a size potentially sufficient for AMS radiocarbon dating. Both oak and non-oak species were identified.

4.4.5 ***Animal bone:*** a small amount of unburnt bone was present in deposit ***126***. The bone was heavily abraded and fragmented and lacked any diagnostic features required for identification.

4.4.6 ***Molluscs:*** a range of molluscs was present in varying quantities in four deposits (Table 15). Shells were particularly abundant in deposit ***104***, from the base of Ditch [***1000***]. Many of the shells were in excellent condition. Some variation in species type was apparent in the samples. The species present were typical of those living on the sides of ditches or in the water filling the ditches and therefore represent the local conditions in the segments of the ditch from where they were recovered.

4.4.7 Two large possible garden snail (*Cornu aspersa*) shells were present in deposit ***108***. Given the excellent condition of the shells, the abundance of roots and the detailed fine surface patterning, it is likely that they are modern.

4.4.8 ***Scientific dating potential of the remains:*** the dating potential of the remains will be dependent on the nature of the research questions posed. Of the environmental evidence recovered the remains that offer the best potential for AMS radiocarbon dating are the better preserved cereal grains and the larger, non-oak charcoal fragments.

4.4.9 ***Discussion and Recommendations***: the small cereal grain assemblage does not offer any significant information relating to site economy other than possible crop choices. Once incorporated into negative features charred remains tend to survive well but, as in this case, their inclusion is often incidental, and the materials have no direct relationship to the features themselves.

4.4.10 A large number of molluscs were present. Analysis of the molluscs would provide information on the micro-environment in the areas of the ditch from which they were recovered, but they provide limited information on the nature of the wider environment. Therefore, further analysis would depend on the research questions posed.

4.5 Retents

4.5.1 ***Lithics***: a small about of flint was recovered from the retents of the samples, from contexts ***103***, ***104***, ***115***, ***116*** and ***126***, all fills of ditch ***1000***. While none are particularly diagnostic they are potentially evidence for flint working in the local area and, when taken into consideration with the discovery of a chert scraper of Bronze Age date from the topsoil, indicate a 'background' of prehistoric activity in the area. This is also something that was identified during the excavations at the nearby Roman fort, where artefacts of Mesolithic date were discovered (Turner 1979).

4.5.2 ***Glass***: two beads were retrieved from retents of the environmental samples, and are both very small and largely undiagnostic as to date. The small globular example from context ***132***, an early fill of ditch ***1000*** (Slot 3) would not be out of place in a Roman context, but is a long-lived type. That from ***103***, an upper fill of the same ditch (Slot 4), is in a very dark glass, appearing black, and is again very small. It cannot be readily paralleled amongst Roman material (see Guido 1978) and seems most likely to be considerably more recent in date. The retent from this context also contained a very small brown glass flake. The beads do not have any appreciable potential for further analysis, and can add little more to the dating or understanding of the development of the site.

4.5.3 ***Pottery***: fragments of pottery were recovered from the retents of contexts ***131*** and ***132***. These are probably very small fragments of the much larger sherds recovered from context ***130***, above, and therefore calcite gritted ware dated to the early- to mid-4th century.

4.5.4 ***Ceramic***: very tiny ceramic fragments were recovered from the retents of the majority of samples. They are too small and undiagnostic to be dateable.

4.5.5 ***Industrial residue***: slag, hammerscale, prill, coal, and cinders were recovered from the retents. There is very slightly more material from the upper than the middle fills of the ditch, and less still from the lower fill and the slumped deposit.

4.5.6 ***Animal bone***: fragments of animal bone, mainly unburnt, were recovered from the retents of the majority of environmental samples. The largest quantities were from contexts ***104*** and ***126***, both of which are the lower fills of the ditch [***1000***]. Significant quantities were also recovered from slumped ditch fill ***125***. In contrast, the largest quantity of burnt bone was recovered from context ***118***, the upper fill of the ditch. Micro and herpetofauna were recovered from two bulk environmental samples (contexts ***119*** and ***104*** respectively). Three teeth were identifiable to genus for the common vole (*Microtus* spp.) and a partial skull to the common shrew (*Sorex* spp.). They are most likely intrusive animals within the contexts.

4.5.7 ***Land snail***: large quantities of land snail fragments were recovered from contexts ***104*** and ***109***, both lower fills of ditch [***1000***]. Significant quantities were also recovered from context ***108*** (the middle fill above ***109***) and from context ***120***, another of the lower fills. Smaller quantities were recovered from four other contexts.

4.5.8 ***Earthworm egg capsules***: fragments of earthworm egg capsules were present in seven contexts, the largest quantity being in context ***102***, an upper fill of ditch ***1000***.

4.5.9 ***Charred organics***: possible very small charcoal fragments, possible charred seeds, charred cereal grains, charred nutshell, and other charred organic remains were recovered from the retents of the environmental samples. The nutshell and cereal grain came from contexts ***109*** and ***116***, respectively, both of which are lower fills of ditch [***1000***]. Possible charred seeds came from contexts ***109*** and ***118***, the latter of which is an upper ditch fill.

4.5.10 ***Uncharred organics***: uncharred seed husks were recovered from six different contexts, including a slumped ditch fill (***125***, which also contained roots) and a lower ditch fill (***132***). They are likely to be present due to bioturbation.

4.5.11 ***Lime mortar***: fragments of lime mortar were recovered from context ***104***, a lower fill of ditch ***1000***.

4.5.12 ***Iron and copper alloy***: undiagnostic possible fragments of iron or iron concretions were present in the retents of three of the samples. A single fragment of copper alloy was present in context ***115***, a middle fill of ditch ***1000***. None of the fragments can be closely dated, and they have limited potential for further study.

4.6 Discussion

4.6.1 It is clear that the majority of the finds of any significance, and by far the largest quantity of finds (422 finds, 63% of the total), were recovered from the fills of the large ditch (***1000***), with the majority from the middle fills. On the basis of those that could be closely dated they are all Roman or Romano-British. A substantial quantity (238, or 36% of the total) was also recovered from the topsoil (***100***), subsoil (***122***), and possible occupation spread (***122***), but these are clearly very mixed and include finds of Bronze Age, Roman, Medieval and post-medieval date. The cobbled surface (***112***) and the fill of the stone filled pit (***111***) contained very few finds but these were of only Roman date. All of this information is summarised in Table 1 below.

4.6.2 Within ditch ***1000*** there is some distinction between the dating of the finds from the lower fills and the middle fills, although there is a considerable difference in the quantities present; those from the lower fill are slightly earlier with a late 2nd to 3rd century date, while those from the middle fill are more typically third to mid-4th century. This suggests that the ditch was first excavated in the later part of the 2nd century or early 3rd and backfilled within a century. The few finds from the cobbled surface (***112***) and the fill of the stone filled pit (***111***) indicate that these are both early to mid-2nd century and so therefore pre-date ditch ***1000*** or are contemporary with when it was first created.

Date	Material	Topsoil (100)	Subsoil (101)	Upper ditch fill (102)	Middle ditch fills (103, 108, 115, 119, 130)	Lower ditch fills (104, 109, 116, 120, 126, 132)	Pit fill 111	Cobble surface 112	Occupation spread 122	Total
Bronze Age	Stone	1								1
Roman / Romano British	Pottery	18	1	1	66	5	2	1	2	96
	Glass	2			2					4
	CBM	10		3					6	19
	Ironwork	1	1						1	3
	Burnt clay	1								1
Medieval	Pottery	6								6
Post-medieval	Pottery	118	9						3	130
	Clay tobacco pipe	21							1	22
	Glass	16							1	17
	CBM	1								1
	Industrial residue								1	1
	Ironwork	1							2	3
Not closely dateable	Ironwork	2			4				1	7
	Copper alloy				1					1
	Animal bone	3			255	78			8	344
	Land snail				10	1				11
Total		*201*	*11*	*4*	*338*	*84*	*2*	*1*	*26*	***667***

Table 1: Finds by date and context type

5. Discussion

5.1 Results

5.1.1 ***Introduction***: the strip and record was able to successfully locate and investigate the rectangular structure first recorded in the aerial photograph of 1955 and later revealed in the geophysical survey. It also demonstrated that the large discrete area of positive enhancement recorded by the geophysical survey related to a large area of sand within the area of strip and record that was not of archaeological interest, but that there was also an area of cobbling slightly less than 5m wide and 8m long and a smaller stone-filled feature, neither of which were recorded in the geophysical survey.

5.1.2 ***Phasing***: the results of the strip and record revealed seven phases of activity on the site, beginning in the prehistoric period and continuing to the present day. These are outlined below.

5.1.3 ***Phase 1***: the earliest feature recorded on the site (***134***) is undated and is either a natural feature caused by water running down the slope or a particularly wide and shallow hollow way, which has cut into the underlying boulder clay and bedrock (***135***), the resulting scar then infilling with softer sandier material (***133***). A relatively small section of the full extent of this was revealed in the strip and record area but the aerial photograph and geophysical survey show that it extends for over 100m to the south.

5.1.4 ***Phase 2***: the chert thumbnail scraper found in the topsoil (***100***) and the few flakes of flint found in various samples suggest that there has been some prehistoric activity in the immediate area, although no corresponding features were found.

5.1.5 ***Phase 3***: the earliest dateable features revealed during the strip and record comprise the cobbled surface (***112***) and the large stone-filled pit (***113***), although this has been determined on the basis of a very small number of fragments of pottery in very abraded condition, and they are both likely to have originated at the same time as ditch ***1000*** was first excavated. The purpose of the former is unclear but its location, immediately adjacent to ditch ***1000***, suggests that it was connected to it and it presumably formed an ancillary function to the main enclosure or was a working platform created in the area of softer ground within feature ***134***. Feature ***113*** is also of obscure purpose and the lack of finds and or large quantities of artefactual material from the sample retent make interpretation difficult. What was noteworthy is that the fill was almost entirely volcanic stone, including some large blocks, similar to the stone content of ***133*** so it is possible that this feature is entirely natural, essentially a small drumlin that has been ploughed flat, or that it represents stone that has been disposed of by burial. The presence of small amounts of metal working waste in the sample from ***111*** might also be taken to suggest that this activity was being carried out nearby but this was found in many of the nearby slots through ditch ***1000***, particularly those to the east, in small quantities and so is not indicative of large-scale metal working on the site.

5.1.6 ***Phase 4***: the large ditch (***1000***) was clearly excavated in a single phase shortly after, or at the same time, as the creation of the cobbled surface (***112***) and pit (***113***); certainly before the end of the 2nd century AD. This was confirmed in Slot 2, where the fills were seen to be continuous along both the north/south and east/west sections. The aerial photographic evidence demonstrates that it formed one arm of a seemingly irregularly size C-shaped enclosure approximately 50m square, which was part of a group of similar structures (see Plate 7 and Plate 28). The purpose of the enclosure when first created is unclear, although the nature of the finds incorporated into the initial deposit that filled it indicates strong connections to the Roman military and that probable domestic and minor industrial activity was taking place nearby. The profile of its ditch was consistently a slightly rounded or tapered V-shape, with slightly concave sides at around 45˚ to the horizontal, and the fill deposits along its length were fairly uniform, and it is conceivable that there was originally some form of earth or stone bank alongside the ditch that was later deliberately removed and then ploughed out (see *Sections 5.1.7* and *5.1.8* below). What is particularly odd is the lack of a return at the east end. If there was any settlement within the enclosure the ditch cannot have been for defence, although it was in any case too small for this, while if it housed animals a temporary and portable barrier could presumably have been placed over the east end.

Plate 28: Aerial photograph taken by JK St Joseph in 1955 (CUCAP RL039), with the site boundary and location of ditch *1000* marked

5.1.7 ***Phase 5***: after an initial period of silting and some slumping of the ditch sides or perhaps from the remains of an associated bank, which undoubtedly began soon after the enclosure was created (the base of the enclosure ditch was fairly level along the north/south section, however, it steadily declined by roughly 1.4m along its length from the west corner to the east end, between Slots 2 to 6, which suggests that it may have been deliberately designed to drain water away), the ditch was rapidly backfilled, primarily with locally derived stone (perhaps from a bank alongside the ditch), but also with large quantities of animal bone, pottery, and fragments of iron. The dating evidence from this suggests that it took place late in the 3rd century or as late as the mid-4th and the loose nature of the deposits and the presence of large amounts of snail shells indicates that material was placed very roughly and not compacted. In the north/south arm it was almost entirely filled and left level, with a slight depression at the top, but the east/west arm was filled more deeply, typically on the south side, leaving what must have been a very visible ditch. The majority of the finds were deposited during this phase and either suggest that there was quite a substantial settlement nearby or that material was specifically brought from the nearby Roman fort; the presence of large quantities of pottery, iron nails, and pieces of ceramic material derived from the sort of buildings that would be present in a fort, such as a bath house, clearly demonstrate this. The presence of a possible 'occupation' deposit (***122***) within the interior of the

enclosure, which contained a range of Roman material, might suggest that the site was inhabited until the beginning of this phase, and that the material therefore did not travel a great distance. However, ***122*** was very mixed and contained post-medieval finds as well suggesting it has been considerably disturbed by later ploughing.

5.1.8 ***Phase 6***: the shallow ditch of the former enclosure, albeit deeper along the east/west arm, seems to have more gradually filled following the previous phase of deliberate infilling and given the lack of finds, other than a small amount of Roman ceramic building material, it is difficult to know how long this took. The fact that the field was known as 'Annisteads' by the early 19th century (see *Section 3.1.2*) above might suggest that the enclosure was still evident into the early medieval and medieval period. This phase is probably essentially contemporary with a thin subsoil deposit (***101***) that was revealed across parts of the site and the possible 'occupation' deposit (***122***), both of which undoubtedly relate to a period of agricultural improvement across the field. Again, subsoil ***101*** contained a mixture if finds suggesting that such activity continued into at least the early post-medieval period.

5.1.9 ***Phase 7***: the uppermost deposit comprised a thin and stony topsoil (***100***), which had mostly likely developed later in the post-medieval period, although it contained a wide range of finds suggesting that some improvement to the land was still taking place and disturbing material from lower deposits and features.

5.2 Discussion and Recommendations

5.2.1 While the dating and square shape of the enclosure might suggest it is directly connected to the nearby Roman fort at Watercrook it is essentially impossible to untangle the complex relationship between 'native' settlements and the Roman military, with the former almost certainly directly supplying the latter, without considering the evidence from a much wider area. Recent work in Cumbria has continued to emphasise the close relationship in some cases between 'native' sites and the Roman military (eg Breeze (ed) 2018), in particular when these are in close proximity to each other (Anstee *et al* 2018). Extensive aerial survey in the 1970s revealed that many such sites formed part of larger field systems, which in turn connected to the roads and forts established by the Roman military (Higham and Jones 1991) although they had been placed within an existing and developing landscape of at least Iron Age date (Higham 1979). At a much wider level there is considerable variation in the manner in which the procurement of supplies for the Roman army impacted on local settlement both in terms of its reaction to this new market but also its affect upon it, through the provision of locally specialised crop types and livestock (see Stallibrass and Thomas 2008).

5.2.2 At the wider level the form of 'native' farmsteads or small settlements often included rectilinear forms, sometimes with very little evidence for internal structures, with only a single hut circle not uncommon (Dark and Dark 1997, 80-81). The entrances to such settlements were also often on the east side (*ibid*) so it is conceivable that at Lumley Road the open east side is in fact representative of a more general entrance and that it originally had a hut circle or circles and that these were destroyed by later agricultural activity or in the half now lost beneath the houses to the north.

5.2.3 In terms of the finds the animal bone is relatively similar in terms of the major species present to what was encountered during excavations at the fort, including unusual species such as dog, although perhaps with a greater dominance of horse and far less pig (see Fifield 1979). The pottery was dominated by late types of late 3rd or even 4th century date and the same type of material has been found in large quantities in late backfilling deposits within the fort and it has been debated whether this represents Roman military or 'native' occupation (Potter 1979, 180). At Lumley Road the ditch was clearly been quite deliberately backfilled at this time and the site was, presumably purposefully, put out of use, which potentially has considerable implications in terms of understanding the use of the fort; was it too entirely out of use by this date, the finds representing rubbish left by those involved in its decommissioning? The presence of ritual activities associated with such events has also recently been considered (albeit some two centuries earlier; Symonds 2018) and it might be worthwhile reconsidering the nature of late 3rd to 4th century deposits at the fort in this light. The other types of finds (the metal, CBM, and glass) from the ditch and also the possible 'occupation' horizon (***122***, although very mixed) also indicate a strongly Romanised style of life and a likely connection to the military. The CBM is

unlikely to be indicative of there having been a bath house or structure with a tiled roof within or close to the structure represented by the ditch present at Lumley Road as these are more likely to have been brought from structures at the nearby fort. Such material was regularly reused to form bases for ovens and within other structures.

5.2.4 The results of the fieldwork have demonstrated that the site has considerable archaeological potential in terms of better understanding the development of rural sites of this period and their relationship to the Roman military. It also provides a useful comparison and contrast to the nearby fort and might therefore aid in the understanding of its growth and eventual abandonment. It is recommended that ideally the site should be subject to additional monitoring when ground work begins on the area containing the ditch, if for no other reason than the recovery of further finds. The quantity and quality of these, which from a 'rural' site of this type is unusual, would make further data useful, but there is also the potential for important remains relating to the fort to be present such as inscribed stone or marked pottery. In any case the results of the strip and record should be published in a suitable location, most likely the *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society*, and further dating ascertained for contexts where this is uncertain, essentially those relating to Phase 6, through radiocarbon dating.

6. Bibliography

6.1 Primary and Cartographic Sources

CAC(K) WT/DV/2/40, 1910 *Duties of Land Valuations. Record of Valuations Made by the Commissioners of Inland Revenue, in Accordance with the Provisions of Pat I of the Finance (1909/10) Act, 1910. County of Westmorland Division of Kendal Ward. A Valuation Book for the Parish or Place of Helsington and Levens*

CAC(K) WQ/R/C/6, 1836 *Plan of the Township of Helsington*

Ordnance Survey, nd *Westmorland Sheet* **38.12**, 1:2,500

Ordnance Survey, 1863 *Westmorland Sheet* **38**, 1:10,560, surveyed 1858

Ordnance Survey, 1898 *Westmorland Sheet* **38.12**, 1:2,500, revised 1897

Ordnance Survey, 1914 *Westmorland Sheet* **38.12**, 1:2,500, revised 1911

Ordnance Survey, 2008 *The English Lakes South-Eastern Area: Windermere, Kendal & Silverdale*, **OL7**, 1: 25,000, revised 2002

6.2 Secondary Sources

Anstee, J, Anstee, J, and Hooley, G, 2018 Brockholes: A Roman Period site in the Lune Gorge, Tebay, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 3rd ser, **18**, 43-66

Barclay, A, Knight, D, Booth, P, Evans, J, Brown, DH, and Wood, I, 2016 *A Standard for Pottery Studies in Archaeology*, Prehistoric Ceramics Research Group, Study Group for Romano-British Pottery and Mediaeval Pottery Research Group, no location

Bell, A, and Evans, J, 2002 Pottery from the CFA excavations, in PR Wilson (ed) *Cataractonium: Roman Catterick and its Hinterland. Excavations and Research*, 1958-1997, CBA Research Report **128**, York, 352-416

Bidwell, P, and Croom, A, 2010, 'The Supply and Use of Pottery on Hadrian's Wall in the 4th Century', in R Collins and L Allason-Jones (ed), *Finds from the Frontier: Material Culture in the 4th-5th centuries*. CBA Res Rep **162**, York, 20-36

Bidwell, P, and Croom, A, 2015 'The Roman Pottery', in K Hunter-Mann, *Romans in Ravenglass Excavation report 2013-2015*, unpubl rep, 65-85

Boessneck, J, 1969 *Osteological Differences Between Sheep (*Ovis aries *Linné) and Goat* (Capra hircus *Linné)*, in D Brothwell and ES Higgs (ed), *Science in Archaeology,* London, 331-358

Bradley, J, and Miller, I, 2009 The Medieval and Post-Medieval Pottery, in C Howard-Davis (ed) *The Carlisle Millennium Project. Excavations in Carlisle, 1998-2001. Volume 2: The Finds*, Oxford, 660-677

Breeze, A (ed), 2018 *The* Crosby Garrett Helmet, CWAAS extra ser **48**, Kendal

Brooks, CM, 2000 The Medieval Pottery, in MR McCarthy (ed), *Roman and Medieval Carlisle: The Southern Lanes. Excavations 1981-2*, Department of Archaeological Sciences University of Bradford Research Report **1**, Carlisle, 139-143

Cappers, RTJ, Bekker, RM, and Jans, JEA, 2006 *Digital seed atlas of the Netherlands*, Groningen

Chartered Institute for Field Archaeology (CIfA), 2014a *Standard and Guidance for Archaeological Excavation*, revised edn, Reading

CIfA, 2014b *Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives*, revised edn, Reading

Cherry, PJ, and Cherry, J, 2002 Coastline and Upland in Cumbrian Prehistory – A Retrospective, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 3rd ser, **2**, 1-20

Clack, PAG, and Gosling, PF, 1975 *Archaeology in the North: Gazetteer*, no location

Collingwood, RG, 1930 The Roman Fort at Watercrook, Kendal *Trans Cumberland Westmorland Antiq Archaeol Soc*, 2nd ser, **30**, 96-107

Collingwood, WG, 1904 An Anglian Cross-Fragment at Kendal, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **4**, 330-333

Collingwood, WG, 1908 Three More Ancient Castles of Kendal, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 2nd ser, **8**, 97-112

Countryside Commission, 1998 *Countryside Character, Volume 2: North West*, Cheltenham

Coysh, AW, 1970 *Blue and White Transfer Ware 1780-1840*, Newton Abbot

Curwen, JF, 1923 (ed) *Records Relating to the Barony of Kendal by William Farrer, Litt. D.*, CWAAS rec ser **4**, Kendal

Dark, K, and Dark, P, 1997 *The Landscapes of Roman Britain*, Stroud

Davey, PJ, 2013 The Clay Tobacco Pipes, in J Walker and M Graham (eds), *St. Mary's Abbey, Holme Cultram, Abbeytown Cumbria*, Bowness on Windermere, 88-92

Elsworth, DW, 2014 Hillforts Around Morecambe Bay, in T Saunders (ed), *Hillforts in the North West and Beyond*, Archaeology North West, new ser, **3**, Manchester, 51-60

English Heritage, 1991 *The Management of Archaeological Project*s, 2nd edn, London

English Heritage, 2006 *Management of Research Projects in the Historic Environment*.

Evans, J, 2000 'The End of Roman Pottery in the North', in Wilmott, T, and Wilson, P (ed), 2000 *The Late Roman Transition in the North*, BAR Brit Series **299**, Oxford, 39–46

Evans, J, 2004 'The Pottery Vessels', in HEM Cool (ed), 2004 *The Roman Cemetery at Brougham, Cumbria Excavations 1966-67*, Britannia Monograph Series **21** London, 333-363

Evans, J, 2014 *Equine Dentistry*, http://www.bendequine.com/documents/Dentistryarticle.pdf

Ferguson, RS, and Cowper, HS, 1893 An Archaeological Survey of Cumberland and Westmorland and Lancashire North-of-the-Sands, *Archaeologia*, **53**, 485-538

Fifield, PW, 1979 The Animal Bones, in TW Potter (ed), 1979 *Romans in North West England: Excavations at the Roman Forts of Ravenglass, Watercrook and Bowness on Solway*, Trans Cumberland Westmorland Antiq Archaeol soc*,* res ser, **1**, Kendal, 299-311

Gibbons, P, 1988 Archaeological Report on the Watercrook E.T.W. Pipeline, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 2nd ser, **88**, 71-86

Gillam, JP, 1976 Coarse Fumed Ware in Northern Britain and Beyond, *Glasgow Archaeol J*, **4**, 57-89

Grant, A, 1982 The Use of Tooth Wear as a Guide to the Age of Domestic Ungulates, in Wilson, B, Grigson, C, and Payne, S (ed), *Ageing and Sexing Animal Bones from Archaeological Sites,* BAR British Series **109**, 91-108

Greenlane Archaeology, 2007 *Archaeological Excavation Manual*, unpubl rep

Greenlane Archaeology, 2010 *Land to the South of Scroggs Wood, Kendal, Cumbria: Archaeological Desk-Based Assessment*, unpubl rep

Greenlane Archaeology, 2014 *Land South of Lumley Road, Kendal, Cumbria: Archaeological Desk-Based Assessment*, unpubl rep

Guido, M, 1978 *The Glass Beads of the Prehistoric and Roman Periods in Britain and Ireland,* Soc Antiq London Res Rep, **35**, London

Higham, NJ, and Jones, B, 1991 *The Carvettii*, 2nd edn, Stroud

Higham, NJ, 1979 Continuity in North West England in the First Millenium A.D., in NJ Higham (ed), *The Changing Past: Some Recent Work in the Archaeology of Northern England*, Manchester, 43-51

Hodgkinson, D, Huckerby, E, Middleton, R, and Wells, CE, 2000 *The Lowland Wetlands of Cumbria*, North West Wetlands Survey **6**, Lancaster Imprints **8**, Lancaster

Hodgson, J, and Brennand, M, 2006 The Prehistoric Period Assessment, in M Brennand (ed), *The Archaeology of North West England – An Archaeological Research Framework for North West England: Volume 1 Resource Assessment*, Archaeology North West, **8**, Manchester, 23-58

Isings, C, 1957 *Roman Glass from Dated Finds*, Groningen

McCarthy, MR, and Brooks, CM, 1992 The Establishment of a Medieval Pottery Sequence in Cumbria, England, in D Gaimster and M Redknap (ed), *Everyday and Exotic Pottery from Europe c.650-1900*, Exeter, 21-37

Manning, WH, 1985 *Catalogue of the Romano-British Iron Tools, Fittings and Weapons in the British Museum*, London

Middleton, R, Wells, CE, and Huckerby, E, 1995 *The Wetlands of North Lancashire*, North West Wetlands Survey **3**, Lancaster Imprints **4**, Lancaster

Moseley, F (ed), 1978 *The Geology of the Lake District*, Yorkshire Geological Society, occ publ **3**, Leeds

Neale, G, 2005 *Miller's Encyclopedia of British Transfer-Printed Pottery Patterns 1790-1930*, London

Nicholson, C, 1861 *The Annals of Kendal*, 2nd edn, London

North, OH, 1932 The Roman Station at Watercrook, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 2nd ser, **32**, 116-123

North OH, and Hildyard, EJW, 1945 Excavations at the Roman Fort of Watercrook 1944, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 2nd ser, **45**, 148-162

Oxford Archaeology North (OA North), 2014 *Land South of Lumley Road, Kendal, Cumbria: Geophysical Survey Report*, unpubl rep

Payne, S. 1985. Morphological Distinctions Between the Mandibular Teeth of Young Sheep, *Ovis,* and Goats, *Capra, Journal of Archaeological Science* **12**, 139-147

Perriam, D, and Robinson, J, 1998 *The Medieval Fortified Buildings of Cumbria: An Illustrated Gazetteer and Research Guide*, CWAAS extra ser, **29**, Kendal

Philpott, R, 2006 The Romano-British Period Resource Assessment, in M Brennand (ed), *The Archaeology of North West England – An Archaeological Research Framework for North West England: Volume 1 Resource Assessment*, Archaeology North West, **8**, Manchester, 59-90

Potter, TW (ed), 1979 *Romans in North West England: Excavations at the Roman Forts of Ravenglass, Watercrook and Bowness on Solway*, Trans Cumberland Westmorland Antiq Archaeol soc*,* res ser, **1**, Kendal

Price, J, and Cottam, S, 1998 *Romano-British Glass Vessels: a Handbook*, CBA Practical Handbook in Archaeology **14**, York

Prummel, W, and Frisch, H-J, 1986 A Guide for the Distinction of Species, Sex and Body Size in Bones of Sheep and Goat, *Journal of Archaeological Science* **13**, 567-577

Schmid, E, 1972 *Atlas of Animal Bones: For Prehistorians, Archaeologists and Quaternary Geologists,* Oxford

Shotter, DCA, 1979 Watercrook and Ravenglass: The Names and the Garrisons, in TW Potter (ed), *Romans in North West England: Excavations at the Roman Forts of Ravenglass, Watercrook and Bowness on Solway*, Trans Cumberland Westmorland Antiq Archaeol soc*,* res ser, **1**, Kendal, 315-320

Silver, IA, 1969 The Ageing of Domestic Animals, in Brothwell, D, and Higgs, E (ed), *Science in Archaeology* (2nd edn), London

Smith, AH, 1967a *The Place-Names of Westmorland, Part One: Introduction, Bibliography River- and Lake-Names, Kendal Barony*, English Place-Name Society, **42**, Cambridge

Smith, AH, 1967b *The Place-Names of Westmorland, Part Two: Westmorland Barony, Analyses, Index, Distribution Maps,* English Place-Name Society, **43**, Cambridge

Smith, IR, Wilkinson, DM, and O'Regan, HJ, 2013 New Late Glacial Faunae and Early Mesolithic Human Remains from Northern England, *J Quaternary Science*, **28:6**, 542-544

Somervell, J, 1930 *Water-Power Mills of South Westmorland*, Kendal

Stace, C, 1997 *New Flora of the British Isles* (second edition), Cambridge University Press, Cambridge

Stallibrass, S, and Thomas, R (ed), 2008 *Feeding the Roman Army: The Archaeology of Production and Supply in NW Europe*, Oxford

Symonds, M, 2018 Terminating Milecastle 50: Ritual Activity on the Hadrian's Wall Milecastles, *Trans Cumberland Westmorland Antiq Soc*, 3rd ser, **18**, 67-86

Thornton, A, 1989 The Roman Road Between the Forts at Ambleside and Kendal, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 2nd ser, **89**, 37-40

Tomber, R, and Dore, J, 1998, *The National Roman Fabric Reference Collection: A Handbook*, MoLAS Monograph **2**, London

Turner, RC, 1979 Flints, in TW Potter (ed), *Romans in North West England: Excavations at the Roman Forts of Ravenglass, Watercrook and Bowness on Solway*, Trans Cumberland Westmorland Antiq Archaeol soc*,* res ser, **1**, Kendal, 234-235

Ward, M. 2008 The Samian Ware, in HEM Cool and DJP Mason (ed), *Roman Piercebridge: Excavations by D.W. Harding and Peter Scott 1969-1991*, Architect Archaeol Soc of Durham and Northumberland **7**, 169-196

Ward, M. 2011 Samian Ware from Brougham, unpublished report for Oxford Archaeology North

Whitehead, S, Williams, D, and Mace, T, 2013 Excavation of Medieval Burgage Plots to the Rear of 130-136 Stricklandgate, Kendal, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 3rd series, **13**, 89-115

Wild, F, 1979 Samian Ware, in Potter, T, *Romans in North-West England: Excavations at the Roman forts of Ravenglass, Watercrook, and Bowness on Solway*, CWAAS Res Ser **1**, 269-291

Wilkinson, DM, O'Regan, HJ, and Clare, T, 2006 A Tale of Two Caves: Exploration at Haverbrack and Helsfell in Southern Cumbria, *Studies in Speleology*, **14**, 55-57

Young, R, 2002 The Palaeolithic and Mesolithic Periods in Northern England: An Overview, in C Brooks, R Daniels, and A Harding (eds), *Past, Present and Future: The Archaeology of Northern England*, Architect Archaeol Soc Durham Northumberland, res rep **5**, 19-36

Zohary, D, Hopf, M, and Weiss, E, 2012 *Domestication of Plants in the Old World*, Oxford

6.3 Aerial Photographs

St Joseph, JK, 1955 **CUCAP RL039**

Appendix 1: Project Design

LAND TO THE SOUTH OF LUMLEY ROAD, KENDAL, CUMBRIA

Archaeological Strip and Record Project Design

Client: Jones Homes (Lancashire) Ltd

NGR: 350886 490979 (centre)

April 2016

1. Introduction

1.1 Project Background

1.1.1 Prior to the submission of a planning application for the creation of a residential development on land south of Lumley Road, Kendal, Cumbria (NGR 350886 490979 (centre)), and following advice from the Cumbria County Council Historic Environment Service (CCCHES), Greenlane Archaeology was commissioned to carry out an archaeological desk-based assessment of the site. This revealed that while there is evidence for activity of a range of dates from around the site, including a Roman fort across the River Kent to the east and potential elements relating to the village of Helsington nearby the most significant feature was an undated rectangular enclosure revealed in an aerial photograph within the proposed development area against its northern boundary (Greenlane Archaeology 2014a). As a result of this a geophysical survey was carried out, which showed up this enclosure in great detail as well as other features, perhaps corresponding to the natural geology and modern features such as utility pipes (Oxford Archaeology North 2014). Following submission of an application for the construction of a residential development on the site by Jones Homes (Lancashire) Ltd (hereafter 'the client') a condition was placed on the decision requiring a programme of archaeological strip and record of the area containing the rectangular enclosure so that this could be investigated and better understood This project design was produced in response.

1.2 Greenlane Archaeology

1.2.1 Greenlane Archaeology is a private limited company based in Ulverston, Cumbria, and was established in 2005 (Company No. 05580819). Its directors, Jo Dawson and Daniel Elsworth, have a combined total of over 25 years continuous professional experience working in commercial archaeology, principally in the north of England and Scotland. Greenlane Archaeology is committed to a high standard of work, and abides by the Chartered Institute for Archaeologists' (CIfA) Code of Conduct. The strip and record will be carried out according to their standards and guidance.

1.3 Project Staffing

1.3.1 The project will be managed and supervised by ***Dan Elsworth (MA (Hons), ACIfA)*** with suitably qualified assistance. Daniel graduated from the University of Edinburgh in 1998 with an honours degree in Archaeology, and began working for the Lancaster University Archaeological Unit, which became Oxford Archaeology North (OA North) in 2001. Daniel ultimately became a project officer, and for over six and a half years worked on excavations and surveys, building investigations, desk-based assessments, and conservation and management plans. These have principally taken place in the North West, and Daniel has a particular interest in the archaeology of the area. He has recently managed a number of similar archaeological excavation projects in the region including evaluation and excavation at the former Lowwood Gunpowder Works in Haverthwaite (Greenlane Archaeology 2010; 2011a), evaluation at Salthouse Farm, Millom (Greenlane Archaeology 2011b), and an evaluation and strip and record near Carlisle (Greenlane Archaeology 2014b; 2015), as well as several more projects over the last six years ranging from large excavations, to building recordings, surveys, and desk-based assessments.

1.3.2 All artefacts will be processed by Greenlane Archaeology, and it is envisaged that they will initially be assessed by Jo Dawson, who will fully assess any of post-medieval date; medieval pottery will be assessed by Tom Mace. Finds of earlier date will be assessed by specialist sub-contractors as appropriate, but it is anticipated that this might include Ruth Leary for the assessment of Roman pottery. The Cumbria County Council Historic Environment Service (CCCHES) will be notified of any other specialists, other than those named, who Greenlane Archaeology wishes to engage, before any specialist contracts are awarded, and the approval of the (CCCHES) will be sought.

1.3.3 Environmental samples, and faunal or human remains will be processed by Greenlane Archaeology. It is envisaged that any environmental samples would be assessed by staff at Headland Archaeology, and significant quantities of animal bones by Jane Richardson at ASWYAS. Other remains,

such as industrial material, will be assessed by specialist sub-contractors as appropriate and the CCCHES will be informed and their approval will be sought for these arrangements.

2. Objectives

2.1 Archaeological Strip and Record

2.1.1 To mechanically strip a single area of 40m by 70m covering the area of the rectangular feature and extending to the northern site boundary, depending on the nature of any on site constraints. This will assess the presence or absence of features of archaeological interest within these areas, their extent, date, nature, and significance.

2.2 Report

2.2.1 To produce a report detailing the results of the archaeological strip and record, that will present the results, and assess the potential of the site and significance of the remains.

2.3 Archive

2.3.1 Produce a full archive of the results of the project.

3. Methodology

3.1 Archaeological Strip and Record

3.1.1 A single area of 40m by 70m will be stripped by machine over the cropmark feature identified during desk-based assessment and geophysical survey, taking into account any constraints such as the high level power line that runs across the centre of the site. These will be stripped by machine until a horizon in which any archaeological features corresponding to the cropmark can be recognised. These will then be revealed, fully exposed, and sampled. This will comprise 50% half section in the case of pits and non-linear features and 10-20% sectioning in the case of linear features, although particularly significant features or features where there are particular research queries such as their dating or function, that have not been resolved by a 50% sample, will be 100% excavated where it is practical to do so. It is anticipated that the strip and record will initially take 22 person days on site with four archaeologists, with further work to follow if significant or complex remains are revealed, following discussion with the CCCHES and the client.

3.1.2 The methodology, which is based on Greenlane Archaeology's excavation manual (Greenlane Archaeology 2007c), will be as follows:

- The position of the cropmark feature identified in the earlier desk-based assessment and geophysical survey will be located through reference to local topography such as field boundaries by hand and/or through the use of a total station in order to locate the area to be stripped;
- The overburden (which is likely to largely comprise topsoil) and underlying subsoil will be removed by machine under the supervision of an archaeologist until the level at which the feature of archaeological interest identified during the desk-based assessment and geophysical survey is reached;
- All features revealed at this level will be examined by hand in a stratigraphic manner, using shovels, mattocks, or trowels as appropriate for the scale. Deposits will typically only be sampled, rather than completely removed, below the first identified level of archaeological interest, unless there are specific research queries that require 100% excavation or if it is specified by the CCCHES;
- The position of any features, such as ditches, pits, or walls, will be recorded and where necessary these will be investigated in order to establish their full extent, date, and relationship to any other features. Negative features such as ditches or pits will be examined by sample excavation, typically half of a pit or similar feature and approximately 10-20% of a linear feature;

- All recording of features will include hand-drawn plans and sections, typically at a scale of 1:20 and 1:10, respectively, and photographs in both 35mm colour print and colour digital format;
- All deposits, trenches, drawings and photographs will be recorded on Greenlane Archaeology *pro forma* record sheets;
- All finds will be recovered during the strip and record for further assessment as far as is practically and safely possible. Should significant quantities of finds be encountered an appropriate sampling strategy will be devised;
- All faunal remains will also be recovered by hand during the strip and record, but where it is considered likely that there is potential for the bones of fish or small mammals to be present appropriate volumes of samples will be taken for sieving;
- Deposits that are considered likely to have, for example, preserved environmental remains, industrial residues, and/or material suitable for scientific dating will be sampled. Bulk samples of between 20 and 60 litres in volume (or 100% of smaller features), depending on the size and potential of the deposit, will be collected from stratified undisturbed deposits and will particularly target negative features (e.g. gullies, pits and ditches) and occupation deposits such as hearths and floors. An assessment of the environmental potential of the site will be undertaken through the examination of samples of suitable deposits by specialist sub-contractors (see *Section 1.3.3* above), who will examine the potential for further analysis. All samples will be processed using methods appropriate to the preservation conditions and the remains present;
- Any human remains discovered during the strip and record will be left *in situ*, and, if possible, covered. The CCCHES will be immediately informed as will the local coroner. Should it be considered necessary to remove the remains this will require a Home Office licence, under Section 25 of the Burial Act of 1857, which will be applied for should the need arise;
- Any objects defined as 'treasure' by the Treasure Act of 1996 (HMSO 1996) will be immediately reported to the local coroner and securely stored off-site, or covered and protected on site if immediate removal is not possible;
- The area subject to excavation will not be backfilled or otherwise reinstated to its original condition.

3.1.4 Should any significant archaeological deposits be encountered during the strip and record these will immediately be brought to the attention of the CCCHES so that the need for further work can be confirmed. Any additional work will be carried out following discussion with the CCCHES and subject to a new project design, and the ensuing costs will be agreed with the client.

3.2 Report

3.2.1 The results of the strip and record will be compiled into a report, which will include the following sections:

- A front cover including the appropriate national grid reference (NGR) and planning application number;
- A concise non-technical summary of results, including the date the project was undertaken and by whom;
- Acknowledgements;
- Project Background;
- Methodology, including a description of the work undertaken;
- Results of the strip and record, including descriptions of any deposits identified, their extent, form, and potential date, and an assessment of any finds or environmental remains recovered during the strip and record;

- Discussion of the results including an assessment of the significance of any archaeological remains present within the study area, and areas of further archaeological potential. Any recommendations for further work, and appropriate types of further work, will be provided separately;
- Bibliography, including both primary and secondary sources;
- Illustrations at appropriate scales including:

  - a site location plan related to the national grid;

  - copies of early maps, plans, drawings, photographs and other illustrations of elements of the site collected as part of the desk-based assessment as appropriate to aid the understanding of the results of the strip and record;

  - a plan showing the location of the strip and record area in relation to nearby structures and the local landscape;

  - plans and sections of the strip and record area showing any features of archaeological interest;

  - photographs of the strip and record, including both detailed and general shots of features of archaeological interest and the area;

  - illustrations of individual artefacts as appropriate.

3.3 Archive

3.3.1 The archive, comprising the drawn, written, and photographic record of the strip and record, formed during the project, will be stored by Greenlane Archaeology until it is completed. Upon completion it will be deposited with the Cumbria Archive Centre in Kendal (CAC(K)). The archive will be compiled according to the standards and guidelines of the CIfA (Brown 2007), and in accordance with English Heritage guidelines (English Heritage 1991). In addition details of the project will be submitted to the Online AccesS to the Index of archaeological investigationS (OASIS) scheme. This is an internet-based project intended to improve the flow of information between contractors, local authority heritage managers and the general public.

3.4.2 A copy of the report will be deposited with the archive at the Cumbria Archive Centre in Kendal, one will be supplied to the client, and within two months of the completion of fieldwork, one paper and one digital copy will be provided for CCCHES. In addition, Greenlane Archaeology will retain one copy, and a digital copy will be deposited with the OASIS scheme as required.

3.4.3 The client will be encouraged to transfer ownership of the finds to a suitable museum. Any finds recovered during the strip and record will be offered to an appropriate museum, most likely Kendal Museum, although this is at present at capacity. If no suitable repository can be found the finds may have to be discarded, and in this case as full a record as possible would be made of them beforehand.

4. Work timetable

4.1 Greenlane Archaeology will be available to commence the project from the **23rd May 2016**, or at another date convenient to the client. The project will comprise the following tasks:

- ***Task 1***: archaeological strip and record, including any additional work carried out beyond investigation of the main area of 40m by 70m, following agreement with the CCCHES and client;
- ***Task 2***: post-excavation work on archaeological strip and record, including processing of finds and production of draft report and illustrations;
- ***Task 3***: feedback, editing and production of final report and archive.

5. Other matters

5.1 Access

5.1.1 Access to the site for the strip and record will be organised through co-ordination with the client and/or their agent(s).

5.2 Health and Safety

5.2.1 Greenlane Archaeology carries out risk assessments for all of its projects and abides by its internal health and safety policy and relevant legislation. Health and safety is always the foremost consideration in any decision-making process.

5.3 Insurance

5.3.1 Greenlane Archaeology has professional indemnity insurance to the value of **£1,000,000**. Details of this can be supplied if requested.

5.4 Environmental and Ethical Policy

5.4.1 Greenlane Archaeology has a strong commitment to environmentally and ethically sound working practices. Its office is supplied with 100% renewable energy by Good Energy, and uses ethical telephone and internet services supplied by the Phone Co-op. In addition, the company uses the services of The Co-operative Bank for ethical banking, Naturesave for environmentally-conscious insurance, and utilises public transport wherever possible. Greenlane Archaeology is also committed to using local businesses for services and materials, thus benefiting the local economy, reducing unnecessary transportation, and improving the sustainability of small and rural businesses.

6. Bibliography

Brown, DH, 2007 *Archaeological Archives: A Guide to Best Practice in Creation, Compilation, Transfer, and Curation*, Institute for Archaeologists (IfA), Reading

English Heritage, 1991 *The Management of Archaeological Projects*, 2nd edn, London

Greenlane Archaeology, 2007c *Archaeological Excavation Manual*, unpubl rep

Greenlane Archaeology, 2010 *Lowwood Gunpowder Works, Haverthwaite, Cumbria: Archaeological Evaluation*, unpubl rep

Greenlane Archaeology, 2011a *Lowwood Gunpowder Works, Haverthwaite, Cumbria: Archaeological Excavation and Watching Brief*, unpubl rep

Greenlane Archaeology, 2011b *Salthouse Farm, Millom, Cumbria: Archaeological Evaluation*, unpubl rep

Greenlane Archaeology, 2014a *Land South of Lumley Road, Kendal, Cumbria: Archaeological Desk-Based Assessment*, unpubl rep

Greenlane Archaeology, 2014b *Land South-West of Cumwhitton Road and to the Rear of Farbrow Road, Carleton, Carlisle, Cumbria: Archaeological Evaluation*, unpubl rep

Greenlane Archaeology, 2015 *Land South-West of Cumwhitton Road and to the Rear of Farbrow Road, Carleton, Carlisle, Cumbria: Archaeological Strip and Record*, unpubl rep

HMSO, 1996 *Treasure Act*, http://www.opsi.gov.uk/acts/acts1996/1996024.htm

Oxford Archaeology North, 2014 *Land South of Lumley Road, Kendal, Cumbria: Geophysical Survey Report*, unpubl rep

Appendix 2: Summary Context List

Context	Location	Type	Description	Interpretation
100	Site	Deposit	Topsoil / dump deposit; much stonier on east side of the area; loose, pale grey silty-clay with 50-90% sub-angular limestone gravel / cobbles, 0.2-0.3m thick	Topsoil/dumped deposit
101	Site	Deposit	Subsoil: firm, mid orangey-brown silty-clay, with 30% rounded gravel inclusions, *c*0.1m thick	Subsoil
102	Slot 4	Deposit	Upper fill of cut ***106***, to the north side of Slot 4; dry, fairly firm, mid grey-brown, sandy-silt with abundant (5%) small, sub-rounded and sub-angular stones; maximum 0.42m thick, 1.37m wide, and extends beyond the edge of Slot 4 – probably 10s of metres long; possible the same as ***103***, but less stony	Uppermost fill of cut ***106***
103	Slot 4	Deposit	Middle fill of cut ***106***; dry/firm, stone-filled, mid greyish-brown sandy-silt, with some large angular and sub-angular stones (between 0.2-0.4m on a side); towards the top of the slot it was *c*33% large angular boulders, but perhaps 20% further down; towards the base of the deposit the stones were more angular and flatter; the deposit was up to 0.43m thick, 1.2m wide north/south, and extending beyond Slot 4 to the east and west	Stony fill to the south side of ***106*** in Slot 4, possibly stony fill below ***102*** or possibly just a variation within ***102***
104	Slot 4	Deposit	Lower fill of cut ***106***, containing animal bone and shell; darker and more shell-filled than the deposits above within Slot 4; softer and more friable than the deposits above in Slot 4, possibly retaining some moisture; dark grey-brown sandy-silt with 10-15% angular stones; 0.29m thick at the base of ***106*** in Slot 4, c0.5m wide north/south an extends beyond the east and west ends of Slot 4	Lower fill of cut ***106***
105	Slot 4	Deposit	Slump on north side of cut ***106***; firmly compacted, brownish-orange sandy-silt, possibly including some small angular pebbles; difficult to determine in section if it was above or below ***104***, similarities to deposits in Slot 2 suggest it was probably above ***104***	Slump to north side of Slot 4 in west face of ***106***; probably above ***104*** in the east side of the slot
106	Slot 4	Cut	V-shaped cut in east/west section of linear ditch examined in Slot 4; part of group ***1000***; maximum 1.8m wide and +30m long; steeply sloping sides at almost 45˚ to the horizontal; V-shaped section tapering to a a narrow flat base; slightly rounded to the top edge of the cut; filled by: ***105***, ***104***, ***103***, and ***102***	Part of group ***1000***
107	Slot 1	Deposit	Upper fill of cut ***110***; firm, mid orangey-brown silty-clay, with 10% sub-angular gravel; 0.5m wide and 0.2m thick	Upper fill / silting of mostly filled ditch ***110***
108	Slot 1	Deposit	Middle / main fill of cut ***110***; dark, orangey-brown, sandy-clay, with 90% angular limestone cobbles and some more rounded volcanics; 1.1m wide and 0.5m thick; compacted but with voids	Backfill of ditch ***110***

Context	Location	Type	Description	Interpretation
109	Slot 1	Deposit	Lower fill of ***110***; soft/loose greyish orangey-brown silty-clay, with 75% angular cobbles, *c*0.4m wide and 0.2m thick	Lowest fill / initial silting of ditch ***110***
110	Slot 1	Cut	Cut of north/south section of linear ditch (Slot 1); 1.4m wide at the top and 0.8m deep; sides slope at 45˚ to the horizontal to a rounded base; filled by: ***107***, ***108*** and ***109***; part of group ***1000***	Cut of north/south arm of enclosure ditch (Slot 1); part of group ***1000***
111	–	Deposit	Volcanic stone deposit: loose, reddish orange silty-clay, with 90% sub-angular boulders and cobbles and slabs, *c*3m long by 2m wide and 0.5m thick	Fill of oval 'pit' (feature ***113***); dump of stones
112	–	Surface	Cobbles: loose light grey brown sandy-silt deposit with 75% cobbles; examined in a slot 0.35m wide by 0.90m long by 0.27m deep; the slot through the cobbled surface revealed more cobbling to a depth of 0.27m to the natural substrate	Substantial cobbled surface, using stone of various sizes and rounded as opposed to the more angular stone generally found elsewhere on site
113	–	Cut	Cut for stone deposit ***111***; oval-shaped feature, aligned north-west/south-east, *c*3m long by 2m wide and 0.5m deep; sides at 45 to flat base; filled by: ***111***	'Cut' for dump of stones (***111***)
114	Slot 6	Deposit	Upper fill of cut ***117***; firm, mid orangey-brown, silty-clay, with 30% rounded and angular cobbles, including volcanics and limestone; 0.5m wide and 0.3m thick	Upper fill of ditch ***117***
115	Slot 6	Deposit	Middle fill of cut ***117***; firm, mid brownish/orangey silty-clay, with 75% rounded and sub-angular cobbles, mostly volcanics; 0.4m wide and 0.5m thick	Middle fill of ditch ***117***
116	Slot 6	Deposit	Lower fill of cut ***117***; firm, mid to dark orangey-brown, gritty, sandy-clay, with 20% sub-angular gravel, 0.5m wide by 0.2m thick	Initial silting / lowest fill of cut ***117***
117	Slot 6	Cut	Terminus of ditch; east end of east/west linear section of L-shaped ditch (Slot 6; part of group ***1000***); 0.5m wide at the base and 0.7m wide at the top, 0.5m deep; near vertical sides to the flat base of the cut, where the edges are defined by the bedrock at the centre of the cut, then breaking to a 45˚ slope to the top edge; filled by: ***114***, ***115*** and ***116***	Ditch terminus (Slot 6); part of group ***1000***
118	Slot 5	Deposit	Upper fill of cut ***121***; firm, pale orangey-brown, silty-clay, with 2% sub-angular cobbles and 5% rounded gravel, mostly volcanic; 0.4m thick and 0.75m wide	Upper fill of cut ***121***
119	Slot 5	Deposit	Middle fill of cut ***121***; loose, mid orange-brown, sandy-clay with 90% sub-angular cobbles and gravel, mostly limestone; 0.8m wide and 0.5m thick	'Dumped' middle fill of cut ***121***
120	Slot 5	Deposit	Lower fill of cut ***121***; loose, dark greyish/orangey-brown silty-clay, with 40% sub-angular gravel; 0.2m thick and 0.3m wide	Lowest fill of cut ***121***

Context	Location	Type	Description	Interpretation
121	Slot 5	Cut	Cut of east/west section of linear ditch; part of group ***1000***; 2m wide at the top and 0.5m wide at the base; 0.8m deep; sides sloped at 45˚ to a slightly rounded base; filled by: ***118***, ***119***, and ***120***	Cut of linear ditch (Slot 5); part of group ***1000***
122	North-east side	Deposit	Firm, mid brown, silty-clay with 20% sub-angular cobbles and 10% sub-angular gravels, comprising volcanics and limestone; 0.3-0.4m thick	Possible spread of occupation debris
123	Slot 2	Deposit	Overlying deposit in cut ***127***; firm, pale orangey-brown silty-clay, with 20% rounded cobbles; 0.2m thick	Probably remaining subsoil (same as ***101***) overlying fills of cut ***127*** in Slot 2
124	Slot 2	Deposit	Upper fill of cut ***127***; firm, mid orange-brown silty-clay, with 75% sub-angular cobbles, comprising limestone and volcanics; 0.25m thick	Upper fill of cut ***127*** – Slot 2 – continuous around junction of north/south and east/west sections of an enclosure (group ***1000***)
125	Slot 2	Deposit	Middle fill of cut ***127***; possibly slumped material to the north and east sides of the ditch in Slot 2, continuous around the inside of the corner, above the bedrock; firm, mid to dark orangey-brown sandy-silt, with 2% rounded cobbles (mostly volcanic); up to 0.3m thick	Middle fill of cut ***127***; possible slumping of material against the inside edge of the enclosure ditch (group ***1000***)
126	Slot 2	Deposit	Lower fill of cut ***127***; dark grey-brown, silty-clay to sandy-silt, with 50% angular cobbles (limestone and volcanics); 0.25m thick; some voids within the deposit, which contained some bone and shell; notably darker lower fill of ditch cut ***127***; not a stony at the very bottom of the feature, perhaps the bottom 0.10-0.15m of the cut, in Slot 2, but seemingly all the same deposit	Lower fill of cut ***127***, continuous around the corner of the enclosure ditch
127	Slot 2	Cut	Cut of ditch ***127***; corner of L-shaped ditch with linear sections north/south and east/west; 1m wide by 0.8m deep with slightly concave sides at roughly 45˚ to a flat base; filled by: ***123***, ***124***, ***125***, and ***126***	Corner of enclosure ditch in Slot 2 (part of group ***1000***)
128	Slot 3	Cut	Cut of linear ditch; part of group ***1000***; cut of east/west section of ditch running through the central sandy area (within the area of strip and record); not as visible from the surface as it was elsewhere on site; 1.20m wide by 0.8m deep, with moderate inclusions and slightly concave sides; filled by ***129***, ***130***, ***131***, and ***132***	Cut of east/west arm of enclosure ditch (Slot 3); part of group ***1000***
129	Slot 3	Deposit	Fill of cut ***128***; moderately compacted, light orangey-brown sandy-silt, with 20% stone inclusions; 1.2m wide by 0.1m thick	Upper fill of cut ***128***
130	Slot 3	Deposit	Fill of cut ***128***; heavily compacted, mid grey-brown sandy-silt, with 90% stone inclusions, 1.0m wide by 0.55m	Stony fill of cut ***128***
131	Slot 3	Deposit	Fill of cut ***128*** to the north side of Slot 3; identical to deposit ***130*** apart from it had less stone, approximately <70% stone inclusions; 0.7m wide by 0.2m thick	Fill of cut ***128***; possibly the same as ***130*** with less abundant stone inclusions

Context	Location	Type	Description	Interpretation
132	Slot 3	Deposit	Fill of cut ***128***; moderately compacted, dark grey-brown sandy-silt, with 50% stone inclusions; 0.7m wide by 0.15m thick	Lower fill of cut ***128***
133	Slot 3	Deposit	Soft to firm, mid orangey-brown, silty-clay with 10% rounded cobbles and 1% rounded bounders and volcanics, up to 0.6m thick	Fill of natural palaeochannel (***134***)
134	Slot 3	Cut	Cut of palaeochannel; north/south aligned linear feature, curving to the south-east at the south end; shallow sloping sides, with a flat base; filled by ***133***	Cut of natural palaeochannel
135	Site	Deposit	Compacted mid-orange sandy clay, with layer of fractured limestone bedrock below	Natural
1000	Site	Group number	Group number for L-shaped ditch within the area of strip and record and extending beyond the north limit of excavation; investigated by hand in Slots 1 to 6; comprises cuts: ***106***, ***110***, ***117***, ***127***, ***134***, and ***121*** and associated fill deposits	Defensive enclosure ditch for a Roman camp

Appendix 3: Summary Finds List

Context	Type	Qty	Description	Date range
100	Animal bone	3	Including 1 identifiable zone from a cow bone	Not closely dateable
100	Stone	1	Pale grey chert thumbnail scraper, some cortex remaining, possibly broken at proximal end, heavily retouched at distal end	Bronze Age
100	Burnt clay	1	Burnt clay with grass impressions	?Roman
100	Ceramic building material	10	4x brick/tile; 2x combed flue tile (probably second century or later); 3x brick; 1x imbrex? (see *Appendix 6*)	Roman
100	Pottery	6	Samian ware (see *Appendix 5*)	2nd to 3rd century
100	Pottery	12	Roman pottery body and rim fragments, including mortarium fragment (see *Appendix 4*)	Mid-3rd to mid-4th century
100	Fe	4	1x buckle plate; x*2 nails; 1x probable fitting/hinge* (actually two separate pieces connected through one of two circular rivet holes) (see *Appendix 10*)	Romano-British, Post-medieval or later, and not closely dateable
100	Pottery	6	Medieval pottery fragments, comprising gritty and lightly gritted sandy fabrics: 1x small, abraded body fragment from a thin-walled vessel in a soft, light orange to buff, lightly gritted fabric (gritty ware) and no glaze apparent; 1x flat base fragment with bottom of obtuse-sided coarse vessel in a fairly soft lightly gritted fabric, with visible quartz inclusions (up to 1mm), oxidised to a brownish-orange on the surfaces (no glaze apparent) and inner margin and with a reduced mid-to-dark grey core; 1x small shoulder fragment from a thin-walled vessel in a soft, uniform, light orange, very slightly gritted sandy fabric, with reddish brown surfaces (slip?) and some glaze dribbled externally (possibly clear above slip or brown-colour); 2x very small, much abraded fragments of soft, pale orange, lightly gritted sandy fabric, probably from thin-walled vessel or vessels (no glaze apparent); 1x abraded flat base fragment with base of obtuse-angled sides (the broken edges of which have become worn smooth), from a coarse vessel in a soft sandy fabric, with sparse inclusions and pale orange margins and surfaces (no glaze apparent) and a reduced mid-to-light grey core	12th – 14th century
100	Pottery	8	Mottledware/early Rockingham-type ware: hollow-ware coarseware base, coarseware flatware dish body, refitting tea/coffee pot lid rim fragments, and base and body fragments	Late 17th – 19th century
100	Pottery	2	Fine slip-coated cream-coloured earthenware: cup rim with red slip coating, and hollow-ware body with red slip-coating with white slip-trailing externally	Late 17th – early 18th century
100	Pottery	5	High-fired thin-walled brown-glazed red earthenware, including hollow-ware base	Late 17ty – 19th century
100	Pottery	5	Glazed buff-bodied stoneware bottle body fragments, one with ironwashed glaze	Late 18th – early 20th century

Context	Type	Qty	Description	Date range
100	Pottery	26	Brown-glazed red earthenware, including pancheon rim, coarseware hollow-ware base fragments x 4, small strap handle fragment, and thin-walled plate rim	Late 17th – early 20th century
100	Pottery	8	Brown-glazed red earthenware with white slip stripes, including 3 body fragments from bottles or similar closed vessels, and hollow-ware rim, one with white slip trailing rather than stripes	Late 17th – early 20th century
100	Pottery	6	Brown-glazed red earthenware with white slip coating internally, including 2 refitting dish rims with pie crust edge, and body fragments with brown decoration on the glaze	Late 17th – early 20th century
100	Pottery	1	Glazed pale orange earthenware flatware body fragment	Late 17th – early 18th century
100	Pottery	1	Brown-glazed factory-produced red earthenware fineware body fragment with white slip coating and blue decoration externally	Late 18th – early 20th century
100	Pottery	6	Red earthenware, probably brown-glazed but some surfaces missing	Late 17th – early 20th century
100	Pottery	2	Tin-glazed earthenware body fragment and burnt rim fragment	Late 17th – early 18th century
100	Pottery	9	White salt-glazed stoneware: plate base x 2, hollow-ware base x 1, hollow-ware body fragments x 3, including 1 scratch blue; body or base fragments x 2, and handle fragment x 1	Late 17th – early 18th century
100	Pottery	1	Pearlware blue transfer-printed flatware rim Long Bridge pattern (Neale 2005, 79), also known as the Two-man/scroll pattern (Coysh 1970, 16-7), probably Leeds Pottery (*ibid*)	*c*1800 (Coysh 1970, 16-7) or 1810-20 (Neale 2005, 79)
100	Pottery	12	Creamware, including two plate rims	Mid – late 18th century
100	Pottery	7	Pearlware: Willow transfer-printed plate fragments x 2, refitting plain plate base fragments x 3, body/base fragment x 1, body fragment x 1	Late 18th – early 19th century
100	Pottery	13	White earthenware: Willow transfer-printed fragments x 4, blue leaf transfer-printed pattern x 1, blue painted pattern sausage-rimmed hollow-ware rims x 2, factory-produced slipware body fragment x 1, plain hollow-ware body fragments x 2, body/base fragment x 1, and ribbed paste pot (?) rim and base fragments, base impressed with maker's mark '[M]AL[ING]'	19th century
100	Pottery	5	Bone china: Broseley transfer-printed hollow-ware body fragments x 2, Fibre transfer-printed flatware body fragment x 1, and plain plate rim and base fragments	19th century
100	Pottery	1	Glazed factory-produced buff-coloured earthenware mug (?) handle	19th – early 20th century

Context	Type	Qty	Description	Date range
100	Clay tobacco pipe	21	1x bowl/stem junction with flat heel (oval-shaped, 5mm by 9mm), with 7mm – 8mm round stem and 4/64" borehole; 20x plain stem fragments: 1x l. 81mm, narrowing to one end, 8mm – 6mm diameter section, 4/64" diameter borehole; 1x l. 43mm, pointed oval shaped section, 6.5mm – 8mm, 4/64" borehole; 1x l. 22mm, 7mm diameter section, 4/64" borehole; 1x l. 53mm, 6mm diameter section, 5/64" borehole; 1x l. 40mm, 7mm diameter section, 5/64" borehole; 1x l. 37mm, 6.5mm-7mm diameter section, 5/64" borehole; 1x l. 41mm, slight oval section 5mm – 7mm, 5/64" borehole; 1x l. 43mm, 7mm diameter section, 5.64" borehole; 1x l. 39mm, 6.5mm – 7mm diameter section, 5/64" borehole; 1x l. 42mm, 7mm diameter section, 5/64" borehole; 1x l. 35mm, 6,5mm diameter section, 5/64" borehole; 1x l. 27mm, 7mm diameter section, 5/64" borehole; 1x l. 29mm, 6mm diameter section, 5/64" borehole; 1x l. 27mm, 6mm – 7mm slight oval-shaped section, 5/64" borehole; 1x l. 32mm, pointed oval-shaped section, 3.5mm – 5.5mm, with dark grey surfaced and margins and 5/64" borehole; 1x l. 27mm, 6.5mm diameter section, 5/64" borehole; 1x l. 20mm, 5.5mm – 6mm round section, 5/64" borehole; 1x l. 25mm, 6mm diameter section, 6/64" borehole; 1x l. 31mm, 6mm diameter section, 6/64" borehole; 1x l. 17mm, 7mm diameter section, 6/64" borehole	Mid-18th – 19th century
100	Ceramic building material	1	Red earthenware brick (?) fragment	19th – early 20th century
100	Glass	2	Refitting light turquoise bottle neck fragments (see *Appendix 10)*	Romano-British
100	Glass	1	Green bottle base fragment, onion or similar shape	Late 17th – 18th century
100	Glass	1	Green bottle base fragment, roughly cylindrical	Late 18th – early 19th century
100	Glass	4	Green bottle body fragments	Late 17th – early 19th century
100	Glass	5	Green bottle body fragments and base fragment with high kick	19th – early 20th century
100	Glass	1	Green bottle base with punt mark '[?] & C^{O} L^{D} / [?]587'	Late 19th – early 20th century
100	Glass	1	Very light blue facetted bottle body	19th – early 20th century
100	Glass	1	Very light turquoise bottle mouth	Late 19th – early 20th century
100	Glass	2	Colourless tumbler (?) base fragments	19th – 20th century
101	Pottery	1	Samian ware body fragment (see *Appendix 5*)	Early-2nd to start of 3rd century

Context	Type	Qty	Description	Date range
101	Pottery	6	Brown-glazed red earthenware body fragments, 2 with white slip stripes, one with internal white slip coating and brown decoration on it	Late 17th – early 20th century
101	Pottery	1	Mottledware coarseware hollow-ware base fragment	Late 17th – early 18th century
101	Pottery	1	Willow transfer-printed white earthenware plate (?) base fragment	19th century
101	Pottery	1	White salt-glazed stoneware dolls tea set base fragment	Late 17th – early 18th century
101	Fe	1	Nail (see *Appendix 10*)	Romano-British?
102?	Pottery	1	Very abraded body fragment (see *Appendix 4*)	Roman
102	Ceramic building material	3	Flue tile fragments (see *Appendix 6*)	Roman
103	Land snail	10	Shell fragments	Not closely dateable
103	Animal bone	69	Including 17 identifiable zones: 7 cow, 1 horse, 8 sheep/goat, and 1 pig	Not closely dateable
104	Land snail	1	Medium, rounded brown striped shell	Not closely dateable
104	Animal bone	11	Including 2 identifiable zones: 1 cow and 1 horse	Not closely dateable
108	Pottery	10	Fragments including splayed rim of a burnished jar, joins fragment from ***109*** (slot 1) (see *Appendix 4*)	Late 3rd to mid-4th century
108	Animal bone	1	No identifiable zones	Not closely dateable
109	Pottery	1	Samian ware (see *Appendix 5*)	Late 2nd to late 3rd century
109	Pottery	1	Fragment of splayed rim from burnished jar, joins fragments from ***108*** (slot 1) (see *Appendix 4*)	Late 3rd to mid-4th century
111	Pottery	1	Samian ware body fragment (see *Appendix 5*)	Start- to mid-2nd century
111	Pottery	1	Body fragment (see *Appendix 4*)	Roman
112	Pottery	1	Samian ware (see *Appendix 5*)	Early-2nd to start of 3rd century
115	Pottery	2	Body fragments (see *Appendix 4*)	Roman
115	Ceramic building material	2	1x brick/tile; 1x imbrex (see *Appendix 6*)	Roman
115	Fe	2	Nails (see *Appendix 10*)	Not closely dateable
115	Animal bone	20	Including 1 identiable zone from a cow bone	Not closely dateable
116	Animal bone	12	No identifiable zones	Not closely dateable
119	Fe	2	Nails (see *Appendix 10*)	Not closely dateable
119	Animal bone	130	Including 13 identifiable zones – all from cow bones	Not closely dateable
120	Stone?	1	Vesicular, laminated lump of unidentified material, perhaps stone or mortar	Not closely dateable
120	Animal bone	3	Including 4 identifiable zones: 1 cow and 3 dog	Not closely dateable
122	Pottery	2	Body fragment (see *Appendix 4*)	Roman
122	Pottery	3	Brown-glazed red earthenware hollow-ware: one body fragment with end of handle terminal, one with white slip stripes, and one rim fragment	Late 17th – early 20th century
122	Ceramic building material	6	1x brick; 4x brick/tile; 1x combed flue tile (probably second century or later) (see *Appendix 6*)	Roman

Context	Type	Qty	Description	Date range
122	Glass	1	Very light turquoise body fragment (see *Appendix 10)*	Post-medieval?
122	Fe	4	x1 possible blade; x3 nails (see *Appendix 10*)	Romano-British?, not closely dateable, and post-medieval or later?
122	Clay tobacco pipe	1	Plain stem fragment, 40mm long, 6.5mm diameter section, with fairly central 5/64" diameter borehole	18th to 19th century
122	Industrial residue	1	Cinder fragment	Post-medieval
122	Animal bone	8	No identifiable zones	Not closely dateable
126	Animal bone	49	Including 23 identifiable zones: 9 cow and 14 horse	Not closely dateable
130?	Pottery	1	Very abraded body fragment (see *Appendix 4*)	Roman
130	Pottery	1	Very abraded fragment (see *Appendix 4*)	Roman?
130	Pottery	52	Jar fragments, mostly early to mid-4th century (see *Appendix 4*)	mid-3rd century onwards; mostly early to mid-4th century
130	Cu alloy	1	Flat strip	Roman
130	Animal bone	35	Including 9 identifiable zones, all from cow bones	Not closely dateable
132	Pottery	3	Very abraded body fragments (see *Appendix 4*)	Roman
132	Animal bone	3	No identifiable zones	Not closely dateable

Appendix 4: Roman Pottery

Ruth Leary

Context	Slot	Fabric	Sherd count	Weight (g)	Abrasion	Part	Form description	Vessel type	Rim diameter	Rim %	Spot date	Decoration	Comment
100		SA	6	16	V	BDY		1 mortarium					
100		OW	11	17	V	BDY							
100		MAH WH	1	34	M	RIM	reeded hammerhead - seven reed	mortarium	28	4	M3-M4		
101		SA	1	0.5	V	BDY							
102?		OW	1	4	V	BDY							
108	1	DOR BB1	10	43	A	IRS+ B+B	splayed rim burnished jar	jar			L3-M4		Joins ***109*** Slot 1 fragment
109	1	SA	1	5	V	BDY		mortarium					
109	1	DOR BB1	1	1	U	IRS	splayed rim from burnished jar	Jar	18	2	L3-M4		
111		SA	1	0.5	V	BDY							
111		OW	1	1.5	V	BDY							
112		SA	1	0.5	V	BDY							
115	6	OW	2	4	V	BDY							
122		OW	1	3	V	BDY							
130	3	HUN CG	1	30	M	R+B	S profile proto-Huntcliff type jar	jar	29	7	E-M4		
130	3	HUN CG	3	78	M	BDY	closed vessel	jar			E-M4		
130	3	HUN CG	2	100	M	R+B	S profile proto-Huntcliff type jar	jar	29	13	E-M4		
130	3	HUN CG	2	162	M	R+B	S profile proto-Huntcliff type jar	jar	29	1	E-M4		rim tip nearly entirely missing
130	3	HUN CG	2	50	M	BDY	closed vessel	jar			E-M4		
130	3	HUN CG	1	78	M	BDY	closed vessel	jar			E-M4		
130	3	HUN CG	1	34	M	BDY	closed vessel	jar			E-M4		
130	3	HUN CG	1	49	M	BDY	closed vessel	jar			E-M4		
130	3	HUN CG	1	50	M	BDY	closed vessel	jar			E-M4		

Context	Slot	Fabric	Sherd count	Weight (g)	Abrasion	Part	Form description	Vessel type	Rim diameter	Rim %	Spot date	Decoration	Comment
130	3	HUN CG	1	37	M	BDY	closed vessel	jar			E-M4		
130	3	HUN CG	35	316	M	BDY	closed vessel	jar			E-M4		
130	3	DOR BB1	1	10	U	BDY	jar with burnished zones	jar			opt M3+		burnished with horizontal groove
130	3	OW	1	0.1	V	BDY							traces of red slip
130	3	HUN CG	1	4	M	BDY	closed vessel	jar			E-M4		
130?	3	OW	1	0.1	V								traces of ?black slip
132	3	OW	3	2	V	BDY							

Table 2: Roman pottery catalogue

Abbreviations: *Fabric*: HUN CG = calcite-gritted ware; OW = oxidised ware; SA = samian; MAH WH = Mancetter-Hartshill white ware (details in Tomber and Dore 1998). *Abrasion*: U = unabraded; M = moderately abraded; A = abraded; V = very abraded. *Part*: BDY = body; R+B = rim and body; IRS = incomplete rim sherds; IRS+B+B = incomplete rim with body and base sherds. *Date*: E = early; M = mid; L = late.

Appendix 5: Samian Pottery

Gwladys Monteil

context	vessel part	fabric	form	condition	MNV	sherd count	weight	Edate	Ldate	comments
100	bodysherd	SAMCG	DR45		1	1	11	170	210	
100	bodysherd	SAMCG			2	2	4	120	200	
100	flake	SAMCG		excoriated	2	2	1	120	200	
100	flake	SAMCG	bowl?		1	1	1	150	200	flake from the rim of a Dr.31 or 31R
101	flake	SAMCG			1	1	1	120	200	
109	bodysherd	SAMTR	mortarium		1	1	4	170	260	
111	flake	SAMMV		excoriated	1	1	1	100	150	
112	bodysherd	SAMCG		excoriated	1	1	1	120	200	

Samian abbreviations: SAMCG = Lezoux, SAMMV = Les Martres-de-Veyre, SAMTR = Trier

Table 3: Samian fabrics and forms represented

Appendix 6: Roman Ceramic Building Material

Dr Phil Mills

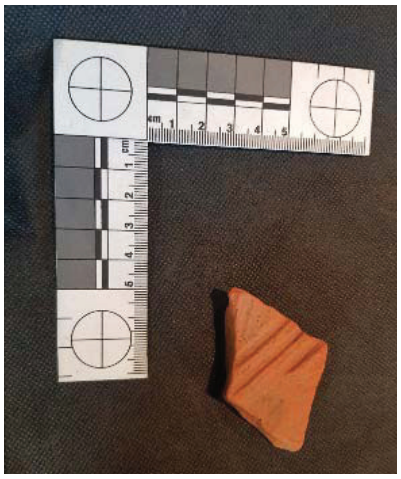
Context	Fabric	Sherd count	Weight (g)	Comments
100	Burnt clay	1	18	Burnt clay with grass impressions
100	T41	4	61	Brick/tile
100	T41	2	48	Flue tile with combed key 
100	T42	2	43	Brick, sooted on one face
100	T42	1	42	Brick
100	T41	1	23	Imbrex?
102	T42	1	47	Flue tile, sooted on surface
102	T42	2	25	Flue tile, abraded
115	T42	1	1	Brick/tile
115	T42	1	70	Imbrex
122	T42	1	62	Brick
122	T41	4	32	Brick/tile
122	T41	1	28	Flue tile, with cross combed key 

Table 4: Roman ceramic building material

Appendix 7: Roman Metalwork Conservation Assessment Report

YORK ARCHAEOLOGICAL TRUST
CONSERVATION LABORATORIES

Conservation Assessment Report

Site Name and code: Lumley Road, Kendal
Site Director/Unit: Greenlane Archaeology
Conservator: C. Wilkinson
Date: 24th August 2018

York Archaeological Trust Conservation Report Number 2018/45

Number of artefacts

Material	Quantity
Iron (Fe)	14
Cu Alloy	1
TOTAL	**15**

Table 5: Roman metalwork sent for conservation assessment

AIMS AND OBJECTIVES

This report aims to meet the requirements of MAP2 (English Heritage 2001) and MoRPHE (English Heritage 2006) to produce a stable site archive. This has involved X-radiography and an assessment of the condition, stability and packaging of the finds.

The condition of the various classes of material is summarised and indicators of unusual preservation noted. The potential of the assemblage for further analysis and research is discussed, and recommendations made for further investigative conservation and long term storage.

CONDITION ASSESSMENT SUMMARY

Iron: The fourteen iron small finds from this area were found to be corroded and in an overall fair to good condition. Active corrosion in the form of hairline surface cracks were noted on all of the finds, this should however be kept at bay through dry storage. X-radiography showed a majority of the objects to have fairly robust metal cores although patchy and mineralised in places in particular towards the edges. Mineral preserved organics (possible wood) were found to be present on one of the finds (***100***, straight nail). X-radiography of the buckle plate (also from ***100***) indicated the presence of possible plating. However as both these items were recovered from the topsoil no further investigative work has been proposed.

All the iron has been repacked and should be stored dry below 15%RH.

Copper Alloy: The single copper alloy find from this area (from ***130***) was found to be in overall fair condition. Areas of surface loss were visible towards the edge of the object amongst which spots of light green powdery corrosion indicative of active bronze disease are present. X-radiography showed the metal core to be thin but fairly even. Areas of pitting are faintly visible. Further investigation was recommended by Greenlane Archaeology to ascertain whether the artefact was decorated – please refer to separate conservation record [*Appendix 8*].

This item should be stored dry below 35% RH.

STATEMENT OF POTENTIAL

Indicators of preservation

There were no indicators of specific preservation conditions, all objects having come from well-aerated terrestrial deposits.

Evidence of technology, craft or industry or anything else of note

Tools: The Fe object from ***122*** is a possible blade and has been recommended for further investigation to aid identification if necessary

RECOMMENDATIONS

Investigative Conservation

Targeted investigation, if required, of the possible blade from Context ***122*** will cost [redacted]

Packaging and Long Term Storage

All finds have been repacked in perforated finds bags with Jiffy™ foam inserts for support. The bags are stored in suitable sealed containers with silica gel to provide the appropriate desiccated environment.

All materials used are archive stable and acid-free. The metal finds should be stored in a desiccated environment at less than 15%RH. The desiccated environment will need to be maintained.

Assessment Tables

1. Iron

X-ray	RF	Context	Assessment
9176	-	***100***	Labelled as Fe x 5. Fe buckle plate, 2 x Fe nails, Fe object (possible fitting) and Fe object (possible concretion). *Fe buckle plate* in overall good condition. Encrusted sand, silt, roots and small stone inclusions cover the surface of the object overlying a layer of brown/orange corrosion products. Hairline cracks are visible on the surface of the object indicating the presence of active corrosion. This should however be kept at bay through dry storage. X-ray shows the metal core to be fairly robust although slightly mineralised towards the edges and indicates the presence of possible plating. *2 x Fe nails* in overall good condition. Encrusted sand, silt, roots and small stone inclusions cover the surface of the objects overlying a layer of brown/orange corrosion products. Hairline cracks are visible on the surface of the objects indicating the presence of active corrosion. This should however be kept at bay through dry storage. Sections of MPO wood are present on the straight nail which are recommended for further investigation. X-ray shows the metal core of the curved nail to be fairly robust although slightly mineralised towards the edges. The metal core of the straight nail is significantly more mineralised. *Fe object (probable fitting/hinge)* in overall good condition. Encrusted sand, silt, roots and small stone inclusions cover the surface of the object overlying a layer of brown/orange corrosion products. Hairline cracks are visible on the surface of the object indicating the presence of active corrosion. This should however be kept at bay through dry storage. Sections of MPO wood are present which are recommended for further investigation. X-ray shows the metal core to be fairly robust and indicates the presence of two circular rivet holes. It shows object is two separate pieces connected through one of the circular rivet holes. *Fe object (possible concretion)* in overall good condition. Appears to be a section of concretion which has become dislodged from one of the other objects. Encrusted sand, silt, roots and small stone inclusions cover the surface of the object overlying a layer of brown/orange corrosion products. The object is barely visible on the x-ray plate indicating there to be little or no metal remaining. **Recommendations: No further action. Store dry.**
9176	-	***101***	Labelled as Fe x 1. Fe nail in overall good condition. Encrusted sand, silt, roots and small stone inclusions cover the surface of the object overlying a layer of brown/orange corrosion products. Cracks are visible on the surface of the object indicating the presence of active corrosion. This should however be kept at bay through dry storage. X-ray shows the metal core to be fairly robust although slightly mineralised and patchy towards the edges. **Recommendation: No further action. Store dry.**
9176	-	***115***	Labelled as Fe x 2. 2 x Fe nails in overall good condition. Encrusted sand, silt, roots and small stone inclusions cover the surface of the objects overlying a layer of brown/orange corrosion products. Hairline cracks are visible on the surface of the object indicating the presence of active corrosion. This should however be kept at bay through dry storage. X-ray shows the metal cores to be fairly robust although slightly mineralised and patchy towards the edges. Cracks are faintly visible towards the edges of both objects. **Recommendation: No further action. Store dry.**
9176	-	***119***	Labelled as Fe x 2. 2 x Fe nails in overall fair condition. Encrusted sand, silt, roots and small stone inclusions cover the surface of the objects overlying a layer of brown/orange corrosion products. Significant cracks are visible on the surface of the object indicating the presence of active corrosion, dry storage is essential. X-ray shows the metal cores to be fairly robust although mineralised and cracked in places.

X-ray	RF	Context	Assessment
			Recommendation: No further action. Store dry.
9176	-	***122***	Labelled as Fe x 4. Fe object and 3 x Fe nails. *Fe object* in overall good condition. Possible blade. Encrusted sand, silt, roots and small stone inclusions cover the surface of the object overlying a layer of brown/orange corrosion products. Hairline cracks are visible on the surface of the object indicating the presence of active corrosion. This should however be kept at bay through dry storage. X-ray shows the metal core to be patchy and uneven. *Fe nails x 3* in overall good condition. Encrusted sand, silt, roots and small stone inclusions cover the surface of the objects overlying a layer of brown/orange corrosion products. Hairline cracks are visible on the surface of the object indicating the presence of active corrosion. This should however be kept at bay through dry storage. X-ray shows the metal cores to be fairly robust although mineralised towards the edges. **Recommendation: Investigate object to aid identification (3 hours). Store dry.**

Table 6: Roman ironwork

2. Cu Alloy

X-ray	RF	Context	Assessment
9176	-	***130***	Labelled as Cu Alloy x 1. Cu alloy object (flat strip) in overall fair condition. Encrusted sand, silt and small stone inclusions cover the surface of the object overlying a layer of mid-green waxy corrosion products. Areas of surface loss are visible towards the edge of the object amongst which spots of light green powdery corrosion indicative of active bronze disease are present. X-ray shows the metal core to be thin but fairly even. Areas of pitting are faintly visible. **Recommendation: Stabilised as part of assessment process. No further action. Store dry.**

Table 7: Roman copper alloy

Appendix 8: Copper Alloy Object Conservation Report

YORK ARCHAEOLOGICAL TRUST
CONSERVATION LABORATORIES

Conservation Report
Site Name and code: Lumley Road, Kendal
Site Director/Unit: Greenlane Archaeology
Conservator: C. Wilkinson
Date: 30th August 2018

Number of artefacts:

Material	Quantity
Cu Alloy	1
TOTAL	**1**

Table 8: Copper alloy sent for conservation

York Archaeological Trust Conservation Report Number: 2018/46

INTRODUCTION

This report describes the analysis phase investigative conservation of a Cu Alloy find from the site of Lumley Road, Kendal as excavated by Greenlane Archaeology. Please also refer to the assessment report dated 24th August 2018. The work carried out has been the investigative cleaning and stabilisation of the object submitted. Once the artefact has been treated it will be packed appropriately for return to the client and for archive storage.

DESCRIPTION

LR18 (***130***)

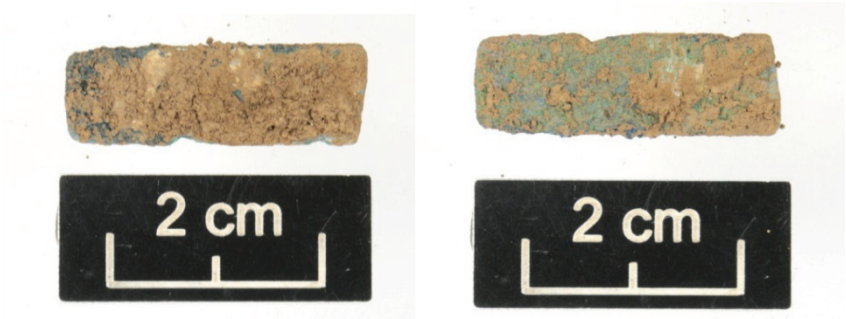
Labelled as Cu Alloy x 1. Cu alloy object (flat strip) in overall fair condition. Encrusted sand, silt and small stone inclusions cover the surface of the object overlying a layer of mid-green waxy corrosion products. Areas of surface loss are visible towards the edge of the object amongst which spots of light green powdery corrosion indicative of active bronze disease are present. The object is thin and extremely fragile. X-radiography shows the metal core to be thin but fairly even. Areas of pitting are faintly visible.

RECOMMENDATIONS

The object has been repacked in a perforated finds bag with a Jiffy™ foam insert for support. The bag is stored in a suitable sealed container with silica gel to provide the appropriate desiccated environment. All materials used are archive stable and acid-free.

The object is now stable however requires storage in a stable environment below 35% Relative Humidity and limited fluctuations in temperature. The object should be handled with care whilst wearing gloves due to the fragile nature of the exposed surfaces.

PHOTOGRAPHS



Before Conservation:

After Conservation:

©2018. York Archaeological Trust Conservation Laboratories,
47 Aldwark, York YO1 7BX
Tel: (01904) 663036 Fax: (01904) 663002 Email: ipanter@yorkat.co.uk
Registered Charity in England & Wales (No. 509060) and Scotland (No. SCO42846)

Appendix 9: Animal Bone

Context	Excavated Area	No. Fragments	Identifiable zones	Other
100	-	3	1	-
103	Slot 4	69	17	-
104	Slot 4	11	2	Herpetofauna*
108	Slot 1	1	0	-
115	Slot 6	20	1	-
116	Slot 6	12	0	-
119	Slot 5	130	13	Microfauna*
120	Slot 5	9	4	-
122	-	8	0	-
126	Slot 3	49	23	-
130	Slot 3	35	9	-
132	Slot 3	3	0	-
	Total:	**350**	**70**	-

Table 9: Fragment counts and number of identifiable zones per context (*from bulk soil samples)

Cattle	Horse	Sheep/Goat	Pig	Dog
42	16	8	1	3

Table 10: Number of identifiable diagnostic zones per species.

Context	Excavated Area	Total No. Fragments	Identifiable Zones	Cow Zones	Horse Zones	Sheep/Goat Zones	Pig Zones	Dog Zones
100	-	3	1	1	-	-	-	-
103	Slot 4	69	17	7	1	8	1	-
104	Slot 4	11	2	1	1	-	-	-
108	Slot 1	1	0	-	-	-	-	-
115	Slot 6	20	1	1	-	-	-	-
116	Slot 6	12	0	-	-	-	-	-
119	Slot 5	130	13	13	-	-	-	-
120	Slot 5	3	4	1	-	-	-	3
122	-	8	0	-	-	-	-	-
126	Slot 3	49	23	9	14	-	-	-
130	Slot 3	35	9	9	-	-	-	-
132	Slot 3	3	0					
	Total	**350**	**70**	**42**	**16**	**8**	**1**	**3**

Table 11: Species by context

Appendix 10: Metalwork and Glass

Christine Howard-Davis

Context	Material	Quantity	Description	Date
130	Copper alloy	1	Small, narrow strip of ?cast copper alloy sheet. No obvious decoration.	Not closely dateable
100	Iron	1	Rectangular buckle frame, possibly coated. The size and shape suggest it to be from harness. (There is no evidence from the object, or the x-ray, to suggest the presence of perforations to allow the insertion of a central bar, which would have allowed identification as a shoe buckle.)	Post-medieval or later?
100	Iron	1	Large, hand-forged nail with sub-pyramidal head. Accords with Manning (1985) type 1a	Romano-British?
100	Iron	1	Small, hand-forged nail with flat round head.	Not closely dateable
100	Iron	1	The object comprises a fragment of perforated sheet, through which a tapered bar has been inserted. No obvious identification is available, but a simple hinge is possible.	Not closely dateable
101	Iron	1	Large hand-forged nail with L-shaped head. Accords with Manning (1985) type 4.	Romano-British?
115	Iron	1	Hand-forged nail with large flat oval head	Not closely dateable
115	Iron	1	Shaft fragment, hand-forged nail	Not closely dateable
119	Iron	2	Two shaft fragments, hand-forged nails	Not closely dateable
122	Iron	1	One hand-forged headless nail.	Not closely dateable
122	Iron	1	One drawn wire nail with small round head	Post-medieval or later?
122	Iron	1	One hand-forged headed nail	Post-medieval or later?
122	Iron	1	Triangular fragment with lozenge-shaped cross-section suggesting it to be a double-sided bladed object with a median rib. It is probably broken at the base, but the x-ray is not clear. It can perhaps be identified as the tip of a long, narrow spearhead, but this must remain speculative.	Romano-British?
103	Glass	1	Very small 'black' glass bead with pentagonal section.	Post-medieval or later?
132	Glass	1	Small globular wound bead in transparent dark blue glass	Romano-British?
100	Glass	2	Two much-abraded fragments of very dark natural blue-green glass, from the neck and shoulder of a mould-blown prismatic storage bottle (Isings form 50). They do not join, but are probably from the same vessel.	Romano-British
122	Glass	1	Undiagnostic body fragment in pale natural bluish glass. Blown.	Modern?

Table 12: Metalwork and glass sent for specialist assessment

Appendix 11: Environmental Sample Data

Sample number	Context number	Slot number	Size (litres)	Context type
1	***103***	4	20	Upper fill of ditch [***106***]
2	***104***	4	10	Lower fill of ditch [***106***]; abundant shell
3	***108***	1	30	Middle fill of ditch [***110***]
4	***109***	1	20	Lowest fill of ditch [***110***]
5	***115***	6	30	Middle fill of ditch [***117***]
6	***116***	6	20	Lowest fill of ditch [***117***]
7	***119***	5	30	Middle fill of ditch [***121***]
8	**120**	5	20	Lowest fill of ditch [***121***]
9	**112**	-	10	Cobble surface
10	**111**	-	20	Fill of feature [***113***]; stone dump
11	**102**	5	20	Upper fill of ditch [***106***]
12	**118**	5	20	Upper fill od ditch [***121***]
13	**124**	2	20	Middle fill of ditch [***127***]
14	**126**	2	10	Lowest fill of ditch [***127***]
15	**125**	2	10	Slump in ditch [***127***]
16	**131**	3	10	Upper fill of ditch [***128***]
17	**132**	3	10	Lowest fill of ditch [***128***]

Table 13: Summary of samples taken

Sample number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Uncharred seed husks					+				+	+	+				+		+
Roots															+		
Charcoal?	+	+		+	+	++		+	+	+	+	+	+		+		++
Charred seed?				+								+					
Charred cereal grain						+											
Charred nutshell				+													
Charred organic	+																
Land snail	+	++++	+++	++++				+++					++	+			+
Bone (unburnt)	+	++++			+	++	++	++	+		++			++++	+++		++
Bone (burnt)	+	+	+		+		+		+			++		+	+		+
Earthworm egg capsule	+	+				+	+		+		++	+					
Pottery																+	+
Ceramic	+	+	+	+	+	+	+		+		+	+		+			
Glass	+																+
Slag					+						+						
Hammerscale	+	+		+						+		+					
Prill	+				+												
Coal	++		+	+	++		+	+		+	+	+	+		+	+	+
Cinders	+		+	+	+		+	+		+	+				+	+	+
Flint	+	+	+		+	+								+			+
Lime mortar		+															
Fe?				+							+						+
Cu alloy					+												

Key: + = 1-9, ++ = 10-20, +++ = 21-50, ++++ = >51

Table 14: Contents of retents

Context			103	104	108	109	115	116	119	120	112	111	102	118	124	126	125	131	132
Sample			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Context type			Ditch [1000]	Ditch [1000]	Ditch [1000]	Ditch [1000]	Ditch [1000]	Ditch [1000]	Ditch [1000]	Ditch [1000]	Road surface	Deposit	Ditch [1000]	Ditch [1000]	Ditch [1000]	Ditch [1000]	Ditch [1000]	Ditch [1000]	Ditch [1000]
Sample Vol (l)			10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Retent Vol (l)			2	3	3	4	2	2	3	4	2	2	3	2	3	3	2	2	2
Flot Vol (ml)			5	100	10	2	10	3	10	5	35	30	40	30	5	5	100	20	20
Sufficient for AMS?			N	N	N	N	Y	N	Y	Y	N	N	N	Y	N	Y	N	N	Y
Plant remains																			
cereals	grain	ch	-	-	-	-	+	+	+	+	-	-	-	+	-	+	-	-	-
Charcoal																			
Charcoal	Qty	ch	+	+	+	++	+	+	+	+	+	+	+	+	+	+	+	+	++
	Max size (mm)	ch	5	1	3	2	1	1	1	10	3	1	1	1	1	1	5	5	10
	Oak	ch	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+
	Non-oak	ch	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	+
Animal Remains																			
Unburnt bone	Mammal Qty		-	-	-	-	-	-	-	-	-	-	-	-	-	+++	-	-	-
Earthworm egg capsule		u	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fly puparia		u	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Terrestrial snail shell		u	-	++++	+	+++	-	-	-	+	-	-	-	-	-	-	-	-	-

Key: + = rare (0–5), ++ = occasional (6–15), +++ = common (15–50) and ++++ = abundant (>50); ch = charred, w/l = waterlogged, u = uncharred; NB charcoal over 10mm is sufficient for identification and AMS dating

Table 15: Environmental sample results