



Artle Beck Flood Alleviation Scheme, Brookhouse, Lancashire

Archaeological Watching Brief



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Prepared by: Christina Robinson
Position: Supervisor
Date: August 2011

Checked by: Emily Mercer
Position: Senior Project Manager
Date: August 2011

Signed.....

Approved by: Gill Hey
Position: Regional Director: OA North
Date: August 2011

Signed.....

Oxford Archaeology North
Mill 3, Moor Lane Mills
Moor Lane
Lancaster
LA1 1GF
t: (0044) 01524 541000
f: (0044) 01524 848606

© Oxford Archaeology Ltd (2011)
Janus House
Osney Mead
Oxford
OX2 0EA
t: (0044) 01865 263800
f: (0044) 01865 793496

w: www.oxfordarch.co.uk
e: info@oxfordarch.co.uk

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CONTENTS

SUMMARY	3
ACKNOWLEDGEMENTS	4
1. INTRODUCTION	5
1.1 Circumstances of Project.....	5
1.2 Location, Topography and Geology	5
1.3 Historical and Archaeological Background.....	5
2. METHODOLOGY	11
2.1 Introduction	11
2.2 Watching Brief.....	11
2.3 Palaeoenvironmental Assessment.....	11
2.4 Archive	12
3. RESULTS	13
3.1 Introduction	13
3.2 Watching Brief Results	13
3.3 Palaeoenvironmental Assessment Results.....	13
3.4 Finds.....	15
4. CONCLUSION	16
4.1 Discussion.....	16
5. BIBLIOGRAPHY	17
5.1 Cartographic Sources	17
5.2 Primary Sources.....	17
5.3 Secondary Sources	17
5.4 Websites	19
6. ILLUSTRATIONS	20
6.1 List of Figures.....	20
6.2 List of Plates	20

APPENDIX 1: LCAS SPECIFICATION.....	21
APPENDIX 2: SUMMARY OF DEPOSITS	23

SUMMARY

Lancaster City Council (LCC) submitted proposals for land drainage improvement works in and around Caton and Brookhouse, Lancaster, Lancashire. This comprised a topsoil strip and cut of new drainage pipes, installation of manholes and the excavation of an open ditch, from Artle Beck Bridge in Caton (NGR SD 53426 64442), through undulating pasture fields to the south of Caton, ending to south of St Paul's Drive in Brookhouse (NGR SD 54106 64346). The route of the drainage improvement works are within an area of archaeological potential, with the possible line of the Roman road from Lancaster (Scotforth) to Over Burrow was purported to run through the area of the scheme (Margary 705: Margary 1957, 114; Lancashire Historic Environment Record PRN 26149). Consequently, the Lancashire County Archaeology Service (LCAS) requested that the associated groundworks be carried out under archaeological supervision. Oxford Archaeology North (OA North) was commissioned to undertake the watching brief, which took place between 15th March and 6th May 2011.

No archaeological evidence was observed during the topsoil strip of the route, but further excavation did reveal three features of archaeological significance, none of which dated to the Roman period as had been anticipated. The features of significance comprised a palaeochannel (**1004** and **1005**), a possible buried soil horizon (**1006**) and a large ditch (**1009**). These features contained only two finds. The buried soil, **1006**, contained a bone knife handle that could not be precisely dated, but was believed to be of no great antiquity. The large ditch, **1009**, contained a Mesolithic retouched flint blade, thought to be residual.

Samples were taken from the palaeochannel fills (**1004** and **1005**) for an assessment of their palaeoenvironmental potential. This showed that the surrounding area at the time at which the upper fill, **1004**, was deposited was open meadow/pasture land, with some evidence of possible local cultivation and woodland. The lower fill, **1005**, recorded possible erosional events within the channel, resulting in the incorporation of miospore assemblages of Carboniferous age from the surrounding underlying Millstone Grit geology. The assessment results suggest that analysis of the sediments from the upper fill would be possible, but would probably not add significantly to the current palaeoenvironmental understanding of the area. Therefore, no further work is recommended on the palaeochannel samples.

The small number of archaeological features and finds observed during the course of the monitoring of the groundworks would suggest that the landscape has changed very little over time. However, the presence of such a large ditch implies a feature of archaeological significance. Consequently, it is recommended that this feature be further investigated should any future work have an impact upon it.

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OA North would like to thank John Sugden of Lancaster City Council for commissioning the project and his assistance. Thanks also to Andy Harrison of Askam, who supervised the programme of groundworks, and the groundwork team, and to Doug Moir of Lancashire County Archaeology Service for his advice.

The watching brief was undertaken by Christina Robinson, Paul Dunn and Jeremy Bradley. The pollen analysis was undertaken by Mairead Rutherford, with sub samples prepared by Sandra Bonsall. OA North would like to thank the Geography Department of the University of Lancaster for the use of their laboratories. The finds were assessed by Christine Howard-Davis. The report and illustrations were compiled by Christina Robinson. The project was managed by Emily Mercer, who also edited the report.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF PROJECT

1.1.1 Lancaster City Council (LCC) submitted proposals for a programme of land drainage improvement works within and around Caton and Brookhouse, Lancaster, Lancashire (Fig 1). The works comprised a topsoil strip of the entire route of drainage works, and the excavation of a new drainage pipe, six manholes and open ditch (Fig 2). The development site is within an area of archaeological potential, with the possible line of the Roman road from Lancaster (Scotforth) to Over Burrow, (Margary 705: Margary 1957, 114; Lancashire Historic Environment Record (HER) PRN 26149). The HER also records the find of a Roman tessellated pavement (PRN 2509), c 150m to the north of the proposed line of the improvement works in Vicarage Avenue (Fig 2). Consequently, there was the potential for archaeological features associated with Roman activity in the area of the drainage works. Accordingly, it was agreed between LCC and Lancashire County Archaeology Service (LCAS) that the improvements would take place in association with a programme of archaeological monitoring, to which a formal brief was issued by LCAS (*Appendix 1*). As a result, a watching brief was undertaken during the main works at the site, which commenced in March 2011.

1.2 LOCATION, TOPOGRAPHY AND GEOLOGY

1.2.1 Brookhouse is a small village located to the east of the village of Caton, south of the River Lune, and is surrounded mainly by pasture fields (Fig 1). To the west Brookhouse is skirted by the Artle Beck, and Bull Beck runs through the centre of the village, both discharging into the Lune. The drainage scheme ran between Artle Beck Bridge in Caton (NGR SD 53426 64442), through undulating pasture fields to the south of Caton, and terminated to south of St Paul's Drive to the south of Brookhouse (SD 54106 64346) (Figs 1 & 2).

1.2.2 The solid geology of Brookhouse consists of Carboniferous Millstone Grit, Mudstone, Siltstone and Sandstone. Brookhouse is directly underlain by river terrace deposits consisting of a combination of sand, gravel, clay and silt (British Geological Survey nd).

1.3 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

1.3.1 **Introduction:** the following section presents a summary of the historical and archaeological background of the general area. This is presented by historical period, and has been compiled in order to place the study area into a wider archaeological context.

Period	Date Range
Upper Palaeolithic	30,000 – 10,000 BC
Mesolithic	10,000 – 4,000 BC

Neolithic	4,000 – 2,500 BC
Bronze Age	2,500 – 700 BC
Iron Age	700 BC – AD 43
Romano-British	AD 43 – AD 410
Early Medieval	AD 410 – AD 1066
Late Medieval	AD 1066 – AD 1540
Post-medieval	AD 1540 – c1750
Industrial Period	cAD1750 – 1901
Modern	Post-1901

Table 1: Summary of British archaeological periods and date ranges

- 1.3.2 **Palaeolithic, Mesolithic, and Neolithic Periods:** the prehistory of Lancashire is largely non-monumental in character, and is predominantly represented by finds of lithics and metalwork, made either by chance or during systematic surveys (Middleton *et al* 1995, 17). Scatters of lithic material recovered from ploughsoil constitute the commonest evidence for settlement in the period. Palaeolithic finds from Lancashire are limited, but the Mesolithic is better represented, with large numbers of upland sites, and an increasing body of lowland sites, particularly adjacent to wet mire, alluvial, and coastal deposits (Cowell 1996, 30). Several such flint scatter sites have been found in the Lune Valley near Caton, which indicate Mesolithic activity in this area. Work on the southern bank of the Lune at Halton, c 3km to the west of the site, produced a group of some 300 fragments of flint blades, cores, and flake waste material (Williams 1998, 3-8). A microlithic flint site was discovered in Halton Park, c 1.4km to the north-west of the current site, during field walking by members of the Lancaster Archaeological Society (Penney 1978, 43). Over 300 hundred items of lithic material were discovered, which comprised local black chert and non-local pebble flint. Excavations at the Crook O'Lune in advance of a new pipeline, c 950m to the west of the current site, recovered 480 Mesolithic and Neolithic flint and chert artefacts (OA North 2006, 18-19). The majority of these represented waste material, but tools included burins, microliths and leaf-shaped arrowheads were found. Flint and chert were fairly equally used, but chert appeared to have been selected for the more intricate tools (*ibid*; Hodgson and Brennan 2006, 26).
- 1.3.3 There appears to have been a degree of continuity between the late Mesolithic and Early Neolithic periods in terms of lithic technology. The introduction of pottery, adoption of agriculture and appearance of a new type of tool - the polished stone axe - are typically taken to be signifiers of the arrival of Neolithic traditions, although the physical changes are often difficult to identify (OA North 2006, 7). Neolithic settlement sites are rarely identified in the North of England, but the distribution of lithics suggests that settlement was concentrated in the lowlands, mainly around the coasts and in the river valleys; in particular, the early farming communities seem to have sought out areas of gravel within a landscape predominantly covered with boulder clay (Middleton 1996, 40).

- 1.3.4 **Bronze Age Period:** a great increase in the variety and geographical spread of finds in the Bronze Age probably indicates a more extensive use of the landscape (*op cit*, 54). Finds of metalwork are concentrated in the lowlands, particularly in the wetlands, although this may reflect depositional practices, rather than the location of settlements (*op cit*, 45). Conversely, finds of axe hammers and other perforated stone implements, which are relatively common in north Lancashire, tend to be found in 'dry land' locations, evenly spread across the landscape. One axe hammer was recovered from Sandhole Wood, near Claughton Hall, some 3.7km north-east of the current site (HER PRN 119), and appears to have been associated with a cremation which formed the primary burial within a tumulus. In addition, there is a considerable body of evidence for Bronze Age burial monuments in the wider area, dating to the period 2500-1600BC. Many of these lie in upland areas, such as The Bleasedale Circle (SM 23749; NGR SD 5771 4599), an enclosed urnfield, which lies some 18.5km to the south of the study area at *c* 200m OD.
- 1.3.5 **Late Bronze Age and Iron Age Periods:** artefactual evidence declines sharply after *c* 1400BC, and the development of blanket peats in the uplands and raised mires in the lowlands suggests that this may have been indicative of a genuine abandonment of some parts of the landscape (Middleton 1996, 55). Evidence for the Iron Age in lowland Lancashire is notoriously scarce, indeed very little is known about the nature of material culture and settlement in northern England generally (Cunliffe 1991, 101; Hodgson and Brennan 2006, 51). In part, this is regarded as being a product of poor site visibility, with Iron Age pottery being relatively fragile, the boulder clay soils that cover much of the region not favouring aerial photography, and the predominance of pastoral farming meaning that finds have less chance of being turned up by ploughing (Middleton *et al* 1995, 19). The contrast of limited artefactual evidence with substantial evidence for prolonged clearance in pollen diagrams suggests that the number of known archaeological sites of the period grossly under-represents actual settlement activity, and that many sites remain to be detected (Haselgrove 1996, 64).
- 1.3.6 There are two Scheduled Monuments for this period in the area. Askew Heights (SM 23760), located *c* 2km to the south-west of the current site (NGR SD 5272 6239), is a defended enclosure and hollow way (list.english-heritage.org.uk/mapsearch.aspx). The enclosure measures *c* 77m north/south by *c* 70m east/west, and has a shallow external ditch *c* 11m wide. Entrances are located to the north and south, and to the south-west is a hollow way, up to 14m in width, interpreted as a trackway. The site is located on a small promontory, overlooking a tributary of the river Lune (*ibid*). The second Scheduled Monument is also a defended enclosure and hollow way, but with a secondary enclosure (SM 23761), and is situated *c* 4km to the north-east of the current site just north of Claughton Hall (NGR SD 5727 6633). The main enclosure is D-shaped, and measures up to 58m by 57m and has a shallow ditch *c* 9m wide. The hollow way, *c* 10-15m wide, runs from the entrance on the north-west side. To the west, the secondary enclosure measures 70m by 45m. The site is on a slight terrace on the lower slopes of Claughton Moor, overlooking the river Lune (*ibid*).

- 1.3.7 **Roman Period:** Caton lies on the route of a Roman road (Margary 705: Margary 1957, 114; HER PRN 26149) which proceeded from Lancaster along the south bank of the river Lune to Over Burrow, and probably joined with the Ribchester to Over Burrow road, perhaps at its crossing of the river Wenning (Margary 1957, 114; Shotter 1997, 22). The route is attested by the discovery of a milestone in Artle Beck in 1803. The inscription (*RIB 2272*) reads ‘*For the Emperor Caesar Trajan Hadrian Augustus, Chief Priest, with Tribunician power, three times Consul, Father of his Country, from... 4 miles*’ (*ibid*). The findspot is shown on the Ordnance Survey map of 1847, c 300m to the south-west of the current site, and appears to have been close to its original location as the stone was in good condition. Also, the measurement of four Roman miles to Lancaster does equate to the straight line distance between the findspot and the eastern gate of the fort at Lancaster (lancashire.gov.uk/environment/historichighways/roman3.asp). Traces of a road in Caton, near Gresgarth Hall (c 1km to the south-west of the current site) were found in 1992, which suggests that there was a branch along the valley floor towards Caton from the Roman brick, tile, and pottery kiln sites in Quernmore, situated some 4.3km to the south-west (*ibid*; Shotter and White 1990, 51).
- 1.3.8 The HER records the find of a Roman tessellated pavement (PRN 2509), c 150m to the north of the current site in Vicarage Avenue. The 2006 excavations at the Crook O’Lune, c 950m to the west of the current site, recovered one small sherd of abraded pottery, similar to the material produced at the Quernmore kiln site, and likely to be second century in date (OA North 2006, 15).
- 1.3.9 **Early Medieval Period:** evidence for early medieval activity is limited throughout northern Lancashire; few artefacts of the period have been recovered, and there is almost no archaeological evidence for settlement. However, logic suggests that the rural settlements of the Roman period either continued or declined gradually and, by the end of the period, considerable densities of Scandinavian place names imply that a large number of settlements were in existence, either newly founded, or renamed (Newman 1996, 103). Caton is perhaps derived from *cae* (hedge) and *ton* (town), meaning a hedged town (Bulmer 1913, 242).
- 1.3.10 Settlement can also be inferred from the presence in the vicinity of a Scandinavian burial and hoard. The burial was found at Sandholme Wood near Claughton Hall, some 3.7km north-east of the current site, and took the form of a secondary interment within a Bronze Age tumulus (HER PRN 119). Several weapons were found, as well as a pair of ‘tortoise’ brooches of tenth century date, and a third brooch, a converted Carolingian baldric mount (Kenyon 1991, 124).
- 1.3.11 **Medieval Period:** Caton is recorded in the Domesday Survey of 1086 as one of the twelve manors granted to Torfin, a Norman baron, and was subsequently held of the honour of Lancaster (Farrer and Brownbill 1914, 79). By the thirteenth century, Caton manor was held by the Gernet family of Heysham. However, the mesne lordship was neglected, and by 1297 Caton was a single estate held by a younger branch of the Gernet family, who

adopted the surname Caton to distinguish themselves from the senior line who lived at Halton (Potts 1984, 26). The origins of Caton church may also be traced back to the thirteenth century; in 1266, the patronage of Caton chapel was given to St Mary's at Lancaster (Caton Village Exhibition Committee 1979).

- 1.3.12 The male line of the Caton family died out before 1317, when Thomas de Caton was succeeded by his daughters, Alica and Agnes. The manor was then split into two moieties; one, with a seat at Caton Hall, descending through the de Lancaster family to the Harringtons of Farleton and Hornby, and then, in the sixteenth century, to Lord Mouteagle of Hornby (Farrer and Brownbill 1914, 80-1). The second moiety, whose seat came to be at Gresgarth, descended through the Curwen family through the marriage of Agnes de Caton to John de Curwen. Later this moiety was acquired by the Girlingtons of Thurland (*ibid*).
- 1.3.13 During the thirteenth century, a corn mill and a fulling mill were operating on the banks of Artle Beck (*op cit*, 82), and a charter in the Clifton muniments (LRO DDC1 69), undated but of *c* 1250, provides some indication of pottery making in Caton. The charter states that Brother Robert of Manneby of the Hospital of Jerusalem in England grants *inter alia*, to Adam of *Appledoretheyt* land in Caton '*which Roger the Potter held*'. Excavations in 2002 at Escowbank Farm, *c* 700m to the west of the current site, revealed evidence for pottery production in the vicinity, in the form of wasters and kiln fabric, although no kiln structures were discovered (OA North 2003, 3). Place-name evidence provides further indication of pottery manufacture during the later medieval period; a hill on the edge of Caton Moor has been recorded as 'Potter Hill' since *c* 1580 (Chipindall 1939, 70). Other late medieval industry thought to have been operating in Caton includes the production of potash for lyes (an abrasive cleaning substance) and, later, soaps for the woollen trade (Davies-Shiel 1974, 52).
- 1.3.14 **Post-medieval Period:** in 1673, Caton was predominantly an agricultural community with a population of *c* 450 (Caton Village Exhibition Committee 1979). The growth of the settlement was linked to the development of water-powered industries, with as many as eight mills operating at one time. Some of these water-powered mills drew their power from Artle Beck. After providing power for Crossgill Mill and the Gresgarth corn mill, for instance, a millrace taking water from the beck powered in turn Forge Mill, Rumble Row, Willow Mill and Low Mill (Price and Trippier 1974, 45). These mills manufactured a variety of textiles, including silk, flax and cotton, and bobbins. There was also an iron forge in Caton, which appears to have been operating during the later eighteenth century, and was perhaps associated with the blast furnace at Halton (Chaloner 1964, 357-8).
- 1.3.15 The clay resource of the region has been utilised for brickmaking since the Roman period, and production continues today at Claughton, some 4km to the north-east of Caton. The origins of this brickworks may be traced back to 1874, when Thomas Baynes, yeoman farmer of Hole House Farm, Caton Green, opened up land on Potters Hill Wood to extract clay and shale (Hudson

2000, 58). The company expanded its operations, and eventually amalgamated with the Claughton Brick Company in 1897 (*ibid*).

- 1.3.16 By the nineteenth century, most settlements of any size in the Lune Valley depended not just on agriculture, but on employment opportunities generated by mining, quarrying and manufacturing (Winstanley 2000, 1). By 1841, the population of Caton was 1310 (Slater 1851, 119), which increased to a peak of 1434 by 1851 (Caton Village Exhibition Committee 1979). By this time, Caton had the cottage industries familiar to settlements of its size during this period, including tailors, shoe makers, blacksmiths, a maltster, a wheelwright and a miller (Slater 1851, 119).
- 1.3.17 The First Edition OS maps of 1847 and 1891 show the site of this drainage scheme as agricultural fields, with the nearest farms being Bridge End on the west side of the tributary of the Artle Beck, to the west of the site, and Lane Cottage on the north side of the Caton to Brookhouse Road. The site continued to be under fields during the first half of the twentieth century, and is shown as such on the OS maps of 1932 and 1957. The OS map for 1932 also shows the north/south route of the 'Thirlmere Aqueduct (Manchester Corporation Water Works)' which runs through the western end of the current site. The second half of the twentieth century saw the expansion of Caton and Brookhouse, and aerial photos from the 1960s (mario.lancashire.gov.uk/agsmario/default.aspx) show the residential development to the immediate north of the site to be mostly constructed at this time. This was complete by the time of the OS map of 1972.

2. METHODOLOGY

2.1 INTRODUCTION

- 2.1.1 The specification from LCAS (*Appendix 1*) was adhered to in full, and the work was consistent with the relevant standards and procedures of the Institute for Archaeologists (2008a, 2010) and English Heritage guidelines (1991), and generally accepted best practice.

2.2 WATCHING BRIEF

- 2.2.1 Close liaison was maintained with the groundworks contractor at all times, and all works were monitored by an experienced archaeologist. Most works were undertaken by a mechanical excavator, fitted with a wide toothless ditching bucket for soil stripping, and a toothed bucket for excavation of the drainage runs. The programme of field observation comprised the systematic examination, characterisation and recording of any subsoil horizons exposed during the course of the excavation. Removed spoil was systematically searched for human remains, artefacts and other dating evidence. Recording was by means of OA North's standard system, with *pro-forma* record sheets and supporting registers and indices. A fully indexed photographic record in digital, monochrome and colour slide formats was maintained.
- 2.2.2 Due to the method by which the drainage runs were excavated (i.e. with a toothed bucket) it was difficult to identify archaeological remains until the excavation of material had taken place. Furthermore, when the open ditch was excavated several different machine buckets were employed simultaneously, with the final bucket being a toothless ditching bucket on hydraulics with a 45° angle. This open ditch also created issues with recording, as samples and straightening of sections were not permitted, and also the depth of the ditch did not allow access for recording at any time

2.3 PALAEOENVIRONMENTAL ASSESSMENT

- 2.3.1 Four sub-samples were taken from a monolith sample collected from a palaeochannel (**1004** and **1005**, *Appendix 2*) for pollen assessment. The sample was cleaned and described prior to sub-sampling. One sub-sample was taken from the upper layer **1004**, a light grey-orange sandy-silt, and three sub-samples were taken from the underlying layer **1005**, a bluish-grey sandy-silt.
- 2.3.2 Volumetric samples were taken from the four sub-samples, which were prepared using a standard chemical procedure (method B of Berglund and Ralska-Jasiewiczowa (1986)), using HCl, NaOH, sieving, HF, and Erdtman's acetolysis, to remove carbonates, humic acids, particles >170 microns, silicates, and cellulose, respectively. The samples were then stained with safranin, dehydrated in tertiary butyl alcohol, and the residues mounted in 2000cs silicone oil. Slides were examined at a magnification of 400x by ten equally-spaced traverses across at least two slides, to reduce the possible effects of differential dispersal on the slides (Brooks and Thomas 1967), or at

least 100 total land pollen grains. Pollen identification was made following the keys of Moore *et al* (1991), Faegri and Iversen (1989), and a small modern reference collection. Plant nomenclature follows Stace (1997). Microscopic charcoal follows Peglar (1993). The preservation of the pollen was noted and an assessment was made of the potential for further analysis.

2.4 ARCHIVE

- 2.4.1 A full professional archive has been compiled in accordance with the specification provided by LCAS (*Appendix 1*), and with IfA (2008b and c) and English Heritage guidelines (1991). The paper and digital archive of the original field records and supporting information, together with a copy of this report, will be deposited with the County Record Office in Preston. A digital copy of the report will be deposited with the Lancashire HER in Preston.

3. RESULTS

3.1 INTRODUCTION

- 3.1.1 The following section presents a synthesised summary of the results of the watching brief investigation. For the sake of brevity and clarity, more detailed context descriptions are tabulated in *Appendix 2*.

3.2 WATCHING BRIEF RESULTS

- 3.2.1 The watching brief revealed no evidence of the Roman road that was believed to run through the area of the improvement works, or any related features. There was a small number of other features that were identified, however, in the two large fields to the east-end of the drainage run, and largely within the open ditch (Fig 2).
- 3.2.2 The first feature to be identified was a palaeochannel (**1004** and **1005**; Fig 2 and Plate 3) that was aligned approximately north/south and *c* 10m wide. The palaeochannel could not be excavated to its full depth due to the access restrictions (0.6m deep and 0.9m wide), so only two layers were observed within it (**1004** and **1005**), of which the lower layer (**1005**) contained preserved wood.
- 3.2.3 To the north-east of the palaeochannel, a possible buried soil (**1006**; Fig 2 and Plate 4) was observed within the northern side of the open ditch for a distance of 10m. The buried soil survived to a depth of 0.2m and had hillwash material (**1007**) above it to a depth of 0.3m. Within it was a plain bone handle (see *Section 3.4*, below).
- 3.2.4 The final feature to be observed was a large ditch (**1009**; Figs 2 and 3; Plate 5) which was observed close to the property boundary of nos. 14 and 16 St. Paul's Drive. Ditch **1009** crossed the open ditch excavated for the improvement works, and was aligned approximately north/south. It measured 4.6m wide and was excavated to a depth of 1.22m. The ditch was overlain by subsoil **1001**, which was to a depth of 0.65m in this area, and was of a similar composition to the fill, **1008**, of ditch **1009**. The fill of the ditch (**1008**) contained charcoal, but it could not be accessed to obtain any samples, although one flint was recovered.

3.3 PALAEOENVIRONMENTAL ASSESSMENT RESULTS

- 3.3.1 The pollen assessment results are presented in Table 2, below. Only one sub-sample, the topmost sample from the upper palaeochannel layer, **1004**, yielded an assemblage of *in-situ* pollen grains, which was generally well preserved, although approximately 15% of grains are either crumpled, concealed or broken. This may reflect grain taphonomy, where pollen has been subjected to river transport prior to deposition, or it may also be due to the minerogenic nature of the lithology within which the pollen grains are preserved. The other

three sub-samples all contained reworked Carboniferous (359-299 million years ago) miospores, presumably incorporated into the palaeochannel fill by river erosion of the Millstone Grit bedrock from the sides of the channel.

- 3.3.2 The pollen assemblage recovered from this layer (**1004**) indicates a largely open landscape, possibly locally meadow/pasture land. The pollen assemblage is dominated by Poaceae (Grasses) and a variety of herb taxa, for example, *Taraxcum*-type (Dandelions), *Aster*-type (Daisies), *Ranunculus* (Buttercups) and *Potentilla*-type (Cinquefoil). Cereal-type pollen is also present along with *Plantago lanceolata* (Ribwort Plantain), suggesting areas of cultivation and possible waste ground associated with arable farming. This interpretation is tentative, given the very low numbers of probable cereal pollen recorded and the similarity of pollen grains from cultivated cereals to some wild varieties of grass such as wild barley (e.g. *Hordeum murinum*) and sweetgrass (*Glyceria* sp.) (Andersen 1979). Regionally, stands of alder woodland are suggested from reasonably high counts of *Alnus* (Alder) pollen. Occasional grains of both *Quercus* (Oak) and *Betula* (Birch) pollen also indicate mixed deciduous woodland. Low values of microcharcoal are present within the sample.
- 3.3.3 The sub-samples from the underlying fill **1005** record possible erosional events within the channel, resulting in incorporation of miospore assemblages of Carboniferous age.

CONTEXT		1004	1005	1005	1005
Preservation		Good	-	-	-
Potential		Yes	No	No	No
Depth (m)		0.19-0.2	0.34-0.35	0.41-0.42	0.53-0.54
TREES/SHRUBS					
<i>Alnus glutinosa</i>	Alder	21			
<i>Betula</i>	Birch	1			
<i>Quercus</i>	Oak	2			
<i>Corylus avellana</i> -type	Hazel-type	7			
CROPS					
Cereal-type		8			
HERBS					
<i>Apiaceae</i>	Carrot family	1			
<i>Aster</i> -type	Daisy-type	1			
Cyperaceae	Sedge	3			
<i>Fabaceae</i>	Pea family	1			

<i>Plantago lanceolata</i>	Ribwort Plantain	2			
Poaceae	Grasses	48			
<i>Potentilla</i> -type	Cinquefoil	1			
<i>Ranunculus</i>	Buttercup	2			
<i>Rumex</i>	Sorrels	1			
<i>Taraxacum</i> -type	Dandelion	2			
Unknown herbs		8			
	Total land pollen	108	0	0	0
	Number of traverses	2	10	10	10
FERNS AND MOSSES					
Polypodium	Polypodies	1			
<i>Pteridium</i>	Bracken	1			
<i>Pteridophyta</i>	Fern spores	2			
<i>Sphagnum</i>	Bog moss spores	1			
Broken grains		4			
Concealed grains		9			
Crumpled grains		6			
Microscopic charcoal		4	11	15	45
Reworked					
Carboniferous age	Miospores		16	41	103

Table 2: Pollen assessment results

3.4 FINDS

- 3.4.1 Only two artefacts were recovered. A plain bone handle was retrieved from a possible buried horizon, **1006**, that cannot be dated with any precision. However, the soils of this area tend to be inimical to the survival of bone, which suggests that the object is not of any great antiquity. A single worked flint artefact was recovered from the fill of a large linear ditch, **1008**. It is a retouched blade in good quality brown flint, likely to be of early Mesolithic date, presumably reflecting some activity on the site at that time.

4. CONCLUSION

4.1 DISCUSSION

- 4.1.1 A watching brief was required in mitigation of the drainage improvement works due to the potential presence of a Roman road from Lancaster to Over Burrow (HER PRN 26149), which was purported to have crossed the area, together with evidence of a tessellated pavement (PRN 2509) in Vicarage Avenue to the north of the site. However, no evidence of Roman activity was observed during the groundworks.
- 4.1.2 During the length of the scheme, only three archaeological features were recorded, all within the eastern end of the site. These included a palaeochannel (**1004** and **1005**), a possible buried soil horizon (**1006**), and a large ditch (**1009**). The limited nature of the excavation area and restricted access to features and sections, together with the poor visibility due to the requirement to excavate with a toothed bucket, meant that interpretation of the buried soil horizon, **1006**, or ditch, **1009**, is difficult. It is suggested, however, that due to the size of the ditch it may be a former boundary ditch, possibly from the later prehistoric period, as there is nothing known historically that would relate to such a ditch in the area.
- 4.1.3 Furthermore, none of the features could be dated with any accuracy. The palaeochannel (**1004** and **1005**), by its very nature, was of unknown date. Although it contained preserved wood (Plate 3) it was not possible to obtain samples for radiocarbon dating purposes. A bone handle from a knife was found within the deposit for the buried soil horizon (**1006**). It could not be precisely dated, but was not believed to be of any great antiquity. A single flint, probably of Mesolithic date, was retrieved from the large ditch, **1009**, but it was most likely residual.
- 4.1.4 The palaeoenvironmental assessment showed that the surrounding area at the time in which the upper fill, **1004**, was deposited was open meadow/pasture land, with some evidence of possible local cultivation and woodland. The lower fill, **1005**, recorded possible erosional events within the channel, resulting in incorporation of miospore assemblages of Carboniferous age. The assessment results suggest that analysis of the sediments from the upper fill would be possible, but would probably not add significantly to the current palaeoenvironmental understanding of the area. Therefore, no further work is recommended on the palaeochannel samples.
- 4.1.5 The small number of archaeological features and finds observed during the course of the monitoring of the groundworks suggests that the landscape has changed very little over time. However, the presence of such a large ditch would imply a feature of archaeological significance. Consequently, it is recommended that this feature be further investigated should there be any intrusive work that would impact on it in the future.

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6. ILLUSTRATIONS

5.5 LIST OF FIGURES

Figure 1: Site location

Figure 2: Location plan of the route of the drainage improvement works and archaeological features

Figure 3: Oblique section of ditch **1009**

5.6 LIST OF PLATES

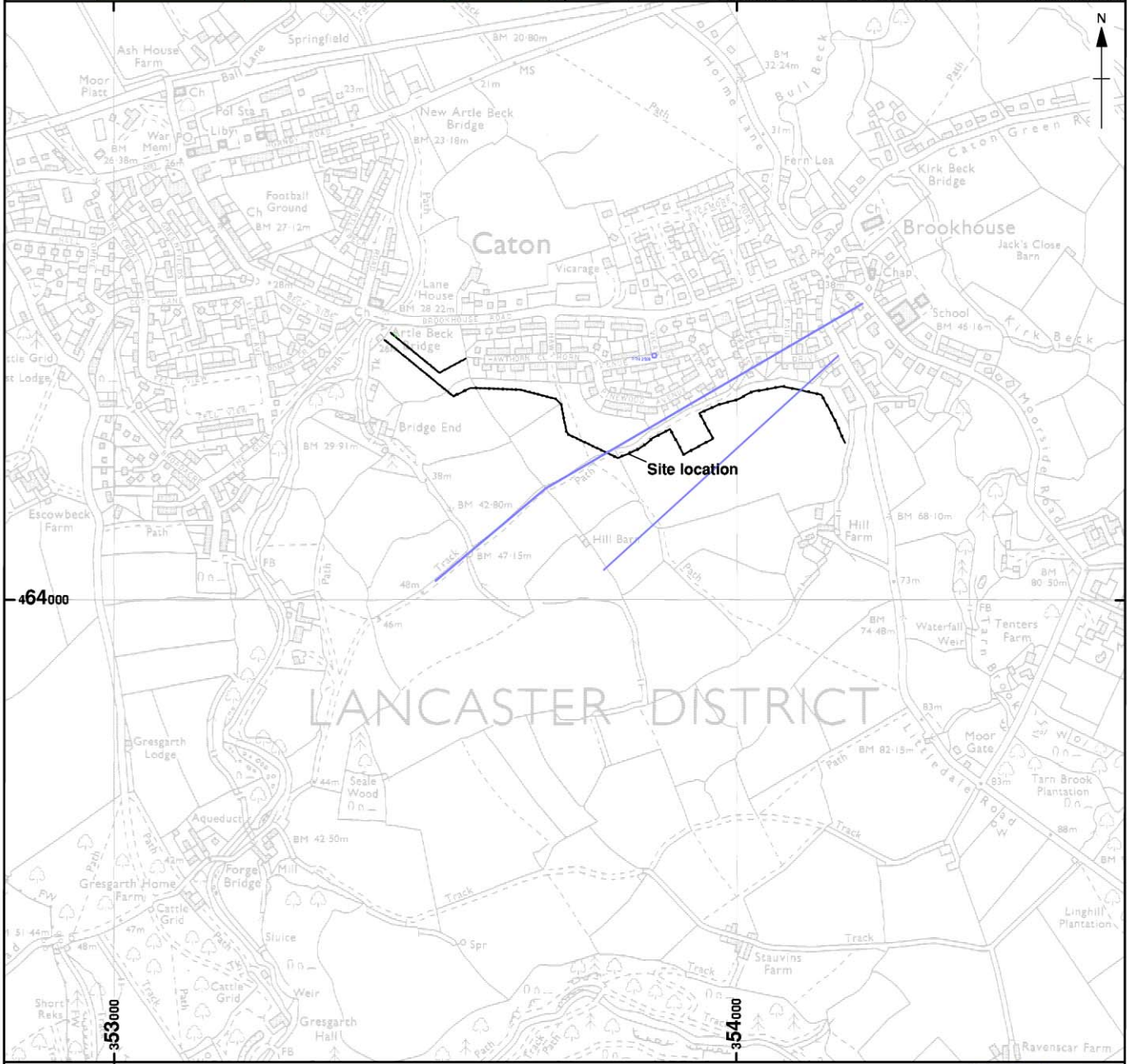
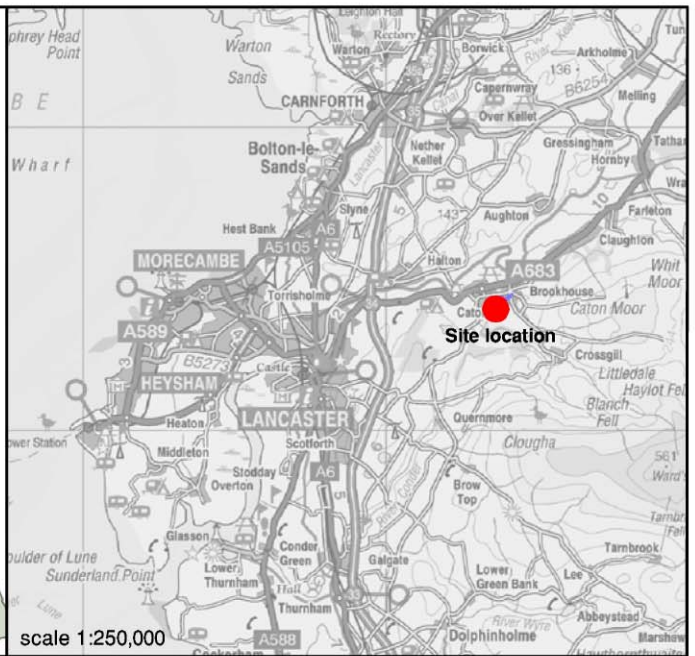
Plate 1: Natural shale (**1003**) in base of drainage run

Plate 2: River terrace deposits (**1002**) in the base of the drainage run

Plate 3: West-facing section through the palaeochannel, showing the preserved wood in lower levels **1005**

Plate 4: Oblique north-west-facing section of the buried soil horizon, **1006**

Plate 5: Oblique view of north/south-aligned ditch, **1009**



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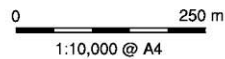


Figure 1: Site location

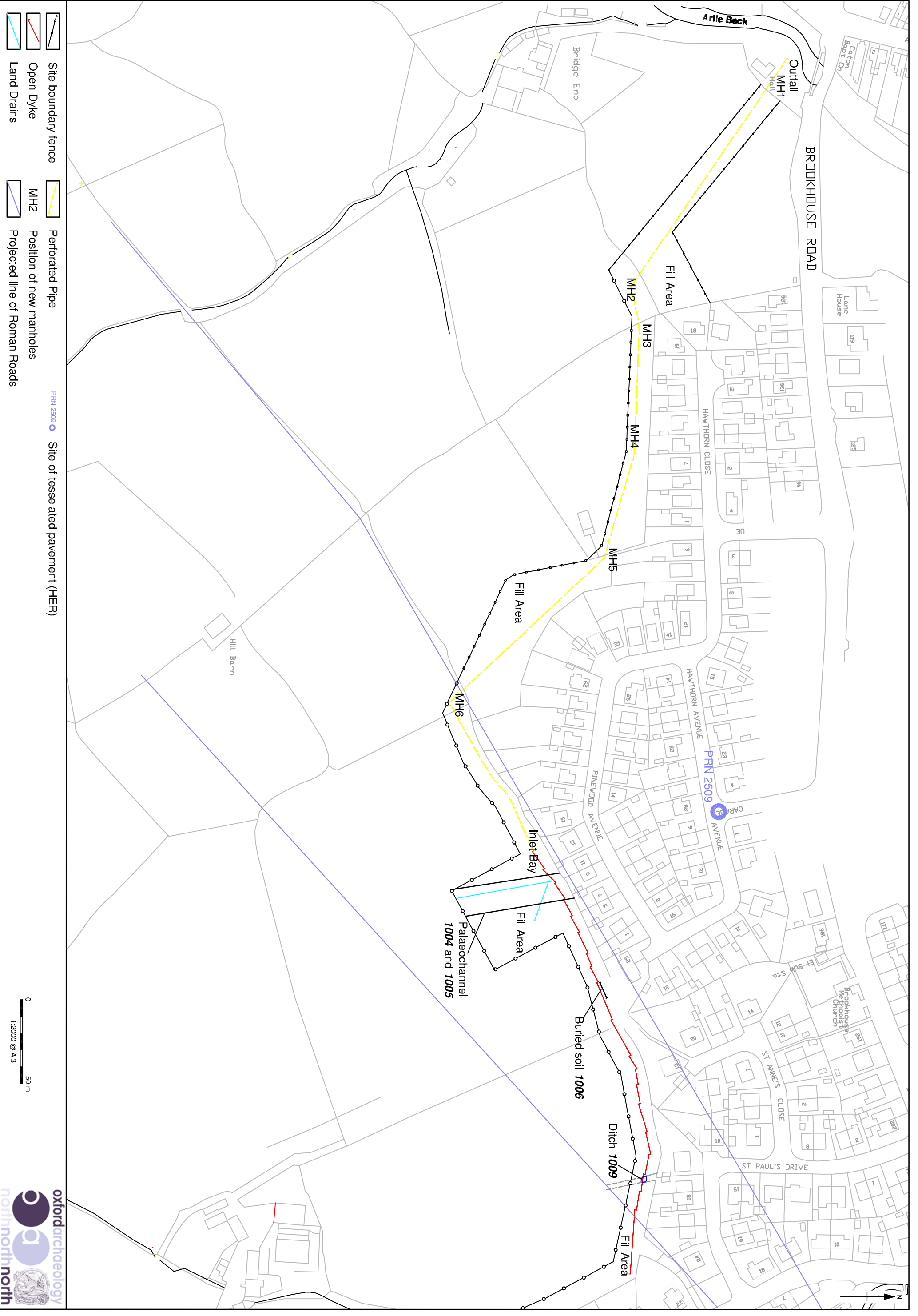
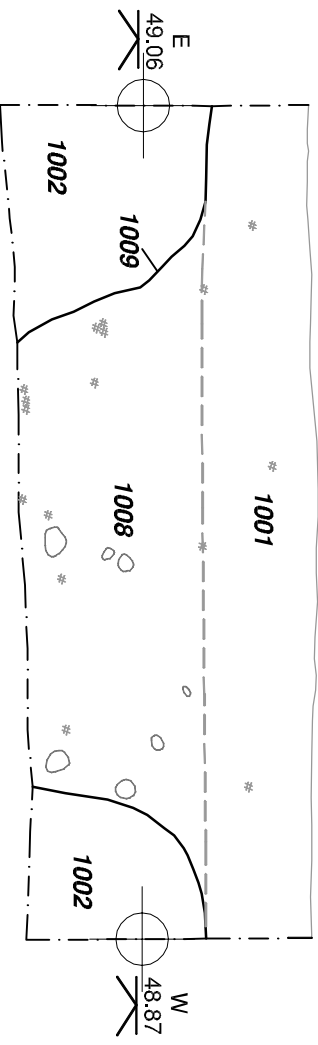
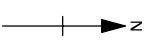








Figure 2: Location plan of the route of the drainage improvement works and archaeological features



 LOE
 Charcoal

 Stones
 Feature

 Deposit
 Levels

1001 Context number

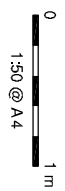


Figure 3: Oblique section of ditch 1009

APPENDIX 1: LCAS SPECIFICATION

**Specification for an Archaeological Watching Brief at
Pinewood Avenue, Brookhouse, Caton
SD 353426 464442 to SD 354106 464346**

Prepared on behalf of Lancaster City Council for Mr J Sugden

1. Introduction

1.1 It is proposed to carry out land drainage improvement works from Artle Beck Bridge to land to the rear of 20 St Paul's Drive, Brookhouse, near Caton. Lancashire County Archaeology Service has recommended that the works be the subject of an archaeological watching brief during any groundworks.

1.2 This specification has been prepared by Lancashire County Archaeology Service (LCAS).

2. Archaeological Interest

2.1 The route of the new drainage proposals is thought to cut across the possible line of the Roman road from Lancaster (Scotforth) to Overborrow, Margary 705 (Lancashire Historic Environment Record PRN 26149). The HER also records the find of a Roman tessellated pavement (PRN 2509), c. 150 m to the north of the proposed line of the scheme in Vicarage Avenue. Consequently there is a potential that archaeological features associated with Roman activity in the area might be encountered by the proposals

3. General Considerations

3.1 Prior to the commencement of *any work*, the archaeological contractor should confirm in writing adherence to this specification, or state (with reasons) any proposals to vary the specification. Should the contractor wish to vary the specification, then written confirmation of the agreement of LCAS to any variations is required prior to work commencing. The archaeologist carrying out the watching brief should be appropriately qualified and experienced. Any technical queries arising from the specification detailed below should be addressed to LCAS *without delay*.

4. Fieldwork Methodology

3.1 An archaeologist should be present on site during the excavation of any area below a depth of 0.15m. (approximately six inches) in the area of development, such as topsoil stripping. The archaeologist should view the area as it is being dug and any trench sections after excavation has been completed. Where archaeology is judged to be present, the excavated area should be rapidly cleaned and the need for further work assessed. Where appropriate, any features and finds should then be hand excavated, sampled and recorded, across the whole width of the easement.

4.2 Excavated soil should be searched as practicable for finds. The presence and nature of 19th and 20th century material should be noted (quantified and summarily described) but finds of this date need not be retained for processing. Finds judged to be 18th-century in date or earlier should be retained.

4.3 The actual areas of ground disturbance, and any features of possible archaeological concern noted within these areas, should be accurately located on a site plan and recorded by photographs, scale drawings (including height above O.D.) and written description sufficient to permit the preparation of a report on the site.

4.4 The intention of the archaeological watching brief is not to unduly delay the work of other contractors on site. This work should not, therefore prejudice the progress of the main or subsidiary contractor's work, except by prior agreement and on-site co-operation.

4.5 The archaeologist on site will naturally operate with due regard for Health and Safety regulations. In this case, where archaeological work is carried out at the same time as the work of other contractors, regard should also be taken of any reasonable additional constraints that these contractors may impose. This work may require the preparation of a Risk Assessment of the site, in accordance with the Health and Safety at Work Regulations. **LCAS and its officers cannot be held responsible for any accidents that may occur to outside contractors engaged to undertake this survey while attempting to conform to this specification.**

5. Unexpectedly Significant or Complex Discoveries

5.1 Should there be, in the professional judgement of the archaeologist on site, unexpectedly significant or complex discoveries made that warrant more detailed recording than possible within the terms of this specification, then the archaeological contractor is to urgently contact LCAS with the relevant information to enable the matter to be resolved with the developer.

5.2 Any human remains that are discovered must initially be left in-situ, covered and protected. If removal is necessary, this must comply with the relevant legislation, any Home Office and local environmental health regulations and English Heritage's and The Church of England's *Guidance for best practice for treatment of human remains excavated from Christian burial grounds in England* (2005) where relevant.

5.3 The terms of the Treasure Act, 1996 must be followed with regard to any finds, which might fall within its purview. Any such finds must be removed to a safe place and reported to the local coroner as required by the procedures laid down in the "Code of Practice". Where removal cannot be effected on the same working day as the discovery, suitable security measures must be taken to protect the finds from theft.

6. Monitoring

6.1 The recording exercise will be monitored as necessary and practicable by LCAS in its role as 'curator' of the county's archaeology. LCAS should receive **as much notice as possible in writing** (and certainly not less than one week) of the intention to start the watching brief. **A copy of the archaeological contractor's risk assessment of the site should accompany the notification.**

7. Post-Excavation/Post-Recording Work and Report Preparation

7.1 On completion of the fieldwork, any samples shall be processed and all finds shall be cleaned, identified, assessed, dated (if possible), marked (if appropriate) and properly packed and stored in accordance with the requirements of national guidelines. A fully indexed field archive shall be compiled consisting of all primary written documents, plans, sections, and fully labelled photographs. Labelling should be in indelible ink on the *back* of the print and should include film and frame number; date recorded and photographer's name; name and address of site; national grid reference. Photographic prints should be mounted in appropriate archivally-stable sleeves. **A quantified index to the field archive should form an appendix to the report.** The original archive is to accompany the deposition of any finds, providing the landowner agrees to the deposition of finds in a publicly accessible archive (see Section 8.1 below).

7.2 A report should be produced to provide background information, a summary of the works carried out, a description and separate interpretation of any features and finds identified. Details of the report's style and format are to be determined by the archaeological contractor, but it should include a full bibliography, a quantified index to the site archive and as an appendix, a copy of this specification. The report illustrations should include, as a minimum, a location map at a reasonable scale plus any drawings and photographs.

7.3 If nothing of archaeological interest is identified during the course of the watching brief, then a summary report will be adequate, as long as sufficient details are supplied for Historic Environment Record (HER) purposes. Illustrations would not be required, although it would be anticipated that black and white prints would form part of the archival record. A summary record should include: (1) details of the commissioning body; (2) the nature of the development and resultant ground disturbance; (3) the approximate position of any ground disturbance viewed with relation to adjacent existing fixed points; (4) the date(s) of fieldwork; (5) name(s) of fieldworker(s); (6) written observations on the nature and depth of deposits observed (this may include annotated sketch sections); (7) the conditions under which they were observed (for example, details of weather conditions, ease of access and views, attitude of other organisations *etc.*); (8) a quantified index to the field archive; (9) details of the archives present location and intended deposition and (10) a copy of this specification.

7.4 The report should be produced within three weeks of completion of the fieldwork, unless otherwise agreed with LCAS. Copies of the report should be supplied to the client and the Lancashire HER. The report will become publicly accessible once deposited with the Lancashire HER. The report for the HER should be supplied in digital format, preferably as a single PDF file, but with any accompanying gazetteers, images, plans, etc. in their original formats, to allow it to be easily incorporated into the digital HER.

7.5 Archaeological contractors must complete the online OASIS form at <http://ads.ahds.ac.uk/project/oasis/>. Contractors are advised to contact Lancashire HER prior to completing the form. Once a report has become a public document by submission to or incorporation into the HER, Lancashire HER may place the information on a web-site. Please ensure that you and your client agree to this procedure in writing as part of the process of submitting the report to the case officer (Ken Davies) at Lancashire HER.

8. Deposition of Archive

8.1 Before commencing any fieldwork, the archaeological contractor must contact the relevant District museum archaeological curator in writing (copied to LCAS) to determine the museum's requirements for the deposition of an excavation archive. In this case the contact is Stephen Bull, Curator of Military History & Archaeology, Museum of Lancashire, Stanley Street, Preston, PR1 4YP; telephone 01772 534080, fax: 01772 534079.

8.2 It is the policy of the Museum of Lancashire to accept complete excavation archives, including primary site records and research archives and finds, from all excavations carried out in the County, which it serves.

8.3 It is the responsibility of the archaeological contractor to endeavour to obtain consent of the landowner, in writing, to the deposition of finds with the Museum of Lancashire.

8.4 It is the responsibility of the archaeological contractor to meet the Museum of Lancashire's requirements with regard to the preparation of fieldwork archives for deposition.

8.5 The museums officer named in 8.1 above should be notified in writing of the commencement of fieldwork at the same time as the Lancashire Sites and Monuments Record.

9. Further Details

9.1 Any queries about the contents of the specification should be addressed to Lancashire County Archaeology Service, Lancashire County Council, Environment & Public Protection Services, Guild House, Cross Street, Preston PPR1 8RD, Tel 01772 531734, fax 01772 533423.

10. Valid period of specification

10.1 This specification will remain valid for up to one year from the date of issue. After that time it may need to be revised to take into account new discoveries, changes in policy or the introduction of new working practices or techniques.

Lancashire County Archaeology Service
Douglas Moir
Planning Officer (Archaeology)
E-mail: Douglas.moir@lancashire.gov.uk

February 2011

APPENDIX 2: SUMMARY OF DEPOSITS

Context	Category	Form	Description
1000	Deposit	Layer	Topsoil
1001	Deposit	Layer	Subsoil
1002	Deposit	Layer	Natural
1003	Deposit	Layer	Bedrock
1004	Deposit	Layer	Top fill of palaeochannel, light grey mottled with orange sandy-silt
1005	Deposit	Layer	Lower fill of palaeochannel, mid greyish-blue sandy-silt
1006	Deposit	Layer	Possible buried soil, mid grey clayey-silt
1007	Deposit	Layer	Possible hillwash/re-deposited natural, mid yellowish-brown clay
1008	Deposit	Fill	Fill of ditch 1009 , mid brown silty-clay
1009	Cut	Ditch	Large linear ditch



Plate 1: Natural shale (*1003*) in base of drainage run



Plate 2: River terrace deposits (*1002*) in the base of the drainage run



Plate 3: West-facing section through the palaeochannel, showing the preserved wood in lower levels **1005**



Plate 4: Oblique north-west-facing section of the buried soil horizon, **1006**



Plate 5: Oblique view of north/south-aligned ditch, **1009**