TENDLEY QUARRY EXTENSION, BRIGHAM, COCKERMOUTH, CUMBRIA

Archaeological Evaluation

Oxford Archaeology North

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Tarmac Ltd

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SUMMARY

Tarmac Ltd submitted proposals for an 0.8ha extension to the north-western fringe of Tendley Hill quarry, Brigham, near Cockermouth, Cumbria (NGR 0840 2885). The proposed extension is within an area considered to have high archaeological potential and, following the results of a geophysical survey undertaken in August 2007, Cumbria County Council Historic Environment Service (CCCHES) requested that a selection of anomalies identified by the survey should be archaeologically investigated through trial trench evaluation. The evaluation was undertaken on September 27th and 28th 2007 and consisted of four trial trenches. The investigated anomalies proved to be either natural features, or possibly the remains of former field boundaries.

ACKNOWLEDGEMENTS

Oxford Archaeology North (OA North) would like to thank Jonathan Garbutt of Tarmac Ltd for commissioning the project. Thanks are also due to Gordon Macleod, the Quarry Manager at Tendley for his assistance with the field work. OA North are also grateful to Jeremy Parsons of CCCHES for his advice during the works.

The evaluation was undertaken by Richard Lee, assisted by Annie Hamilton-Gibney and Dan Taylor. The report was written by Richard Lee and Alastair Vannan, with the drawings produced by Marie Rowland. The project was managed by Stephen Rowland, who also edited the report.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 Tarmac Ltd propose to undertake a 0.8ha extension of the north-western fringe of Tendley Hill Quarry, Brigham, near Cockermouth, Cumbria (NGR NY 0840 2885; Fig 1). The proposed extension lies within an area considered to have high archaeological potential and, following the results of a geophysical (magnetometer) survey undertaken in August 2007 (WYAS 2007), Cumbria County Council Historic Environment Service (CCCHES) requested that a selection of geophysical anomalies should be archaeologically investigated through trial trench evaluations. Oxford Archaeology North (OA North) submitted a project design (*Appendix 1*) and, following approval by CCCHES, Tarmac commissioned OA North to undertake a programme of archaeological evaluation, in September and October 2007. This report sets out the results of the evaluation in the form of a short document, outlining the findings, followed by an assessment of the impact of the proposed works upon the archaeological resource.

2. METHODOLOGY

2.1 INTRODUCTION

2.1.1 The CCCHES approved OA North project design (*Appendix 1*), was adhered to in full, and the work was consistent with the relevant standards and procedures of the Institute of Field Archaeologists, and generally accepted best practice.

2.1.2 Four trenches were excavated, in total, all of which were 20m in length and 2m wide. The trenches were positioned in order to target anomalies that had been detected by geophysical survey (WYAS 2007; Fig 2). Trench 1 was aligned east to west and was positioned to target the northern end of a linear anomaly (Anomaly A). Trench 2 was aligned west-south-west to east-north-east and was positioned to target a short discrete curvilinear anomaly (Anomaly B). Trench 3 was aligned west-south-west to east-north-east and was positioned to target a discrete irregular anomaly that may have represented a southward continuation of Anomaly A. Trench 4 was aligned north-north-east to south-south-west and was positioned to target a pair of parallel linear anomalies (Anomalies C and D).

2.1.3 Within each trench, the upper horizons of modern overburden, topsoil, and subsoil were stratigraphically removed to the surface of the first significant deposit of archaeological interest, or to the level of the natural geology, by a mechanical excavator fitted with a wide toothless ditching bucket and working under archaeological supervision. This deposit was cleaned by hand using hoes, shovel scraping and trowels, depending on the subsoil conditions, and inspected for archaeological features. All features of archaeological interest were investigated by hand and recorded unless otherwise agreed by CCCHES. Trenches were three-dimensionally located by use of GPS equipment, which is accurate to +/- 0.25m.

2.1.4 Recording of the results comprised descriptions and preliminary classifications of each revealed feature or deposit on *pro-forma* sheets, a plan of the location of each trench, and plans and section drawings drawn at appropriate scales. An indexed photographic record was maintained using black and white print and colour slide formats, with digital photography for presentation purposes.

3. BACKGROUND

3.1 LOCATION, TOPOGRAPHY AND GEOLOGY

3.1.1 ***Location:*** the area of the proposed quarry extension is equidistant between the villages of Brigham and Eaglesfield, lying approximately 2km south-east of Cockermouth, Cumbria. The quarry extension is situated at the extreme south-west side of the extant Tarmac quarry (Fig 1). The quarry works have so far extended up to the very perimeter of the field in which the current archaeological works took place.

3.1.2 ***Topography:*** Tendley Hill occupies the highest elevation in the immediate vicinity and the area of the proposed quarry extension comprises a field that slopes, from a maximum height of 100m AOD, in a southerly direction. The land is gently undulating and, immediately beyond the southernmost field boundary, there is a vertical drop of 16m to the level of the limestone currently being quarried. The field is currently under pasture, with cattle grazing there until recently.

3.1.3 ***Geology:*** the solid geology of the area is typified by outcrops of Coal Measures, shales and sandstones of the Hensingham Group and the Chief Limestone Group, all of which date to the Carboniferous period (Countryside Commission 1998, 27). The local drift geology comprises deposits of glacial boulder clay, sand, and gravel (*ibid*).

3.2 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

3.2.1 The expanding quarry has been the subject of archaeological investigations on a number of occasions. A desk-based assessment undertaken by Headland Archaeology in 2001 indicated that the quarry lay within an area of archaeological potential. Despite this potential, fieldwork at Tendley Hill, including geophysical survey and trial trench evaluation undertaken in 2003 (Webb 2003), revealed no significant archaeological remains. However, the most recent geophysical survey, undertaken in August 2007 (WYAS 2007), encountered a series of roughly north to south and east to west aligned linear anomalies, together with a number of more discrete anomalies likely to relate to natural features within the limestone geology. The following section is a brief overview of the historical and archaeological character of the site and its surroundings.

3.2.2 ***Prehistoric period:*** Neolithic activity in the area is exemplified by numerous stone axes recovered from the Solway Plain (Bewley 1994, 54) and by the Elva Plain stone circle, which is located approximately 8.5km to the east of the proposed development area (Visit Cumbria 2008). Evidence for Bronze Age activity in the wider locale comprises a collared urn find at Papcastle (Bewley 1994, 61), *c* 3km to the north-east of the proposed development area. A mound of unknown date lies on Tendley Hill (CHER 6852) and the possibility that this is a bronze Age barrow must be considered. Tute Hill, in Cockermouth,

approximately 3.5 km to the north-east of the proposed development site, was identified as a prehistoric tumulus on the first Edition Ordnance Survey Map of 1866 (Bradbury, 1995 10); however, this site has since been reconsidered as a twelfth-century motte (CHER 849). There is possible Iron Age activity at Fitz Wood, approximately 2.5km to the north-east of the study area, where a 'well-preserved rampart and ditch, 750 feet (229m) round, with a straight ditch cutting across' has been identified (Bradbury 1995, 11).

3.2.3 ***Roman period:*** no Roman evidence has been recovered within the immediate vicinity of Tendley Hill, but the fort of *Derventio* at Papcastle lies approximately 3km to the north-east of the proposed development area (Birley 1963, 122). This relatively large fort was excavated in the mid-1980s (Shotter 1993, 34), and was an important element of communication, linking other forts in the region (Holder 2004, 62). Thought to be close to Tendley Hill quarry is the putative route of a Roman Road between the forts at Ravenglass and Papcastle (Margary 1973, 389-95).

3.2.4 ***Medieval period:*** little is known about post-Roman Cumbria, partly because of a lack of recognisable and datable material culture following the end of Roman administration in *c* 410 AD (O'Sullivan 1985). The native British kingdom of Rheged is known to have expanded into the Solway plain by the fifth century (Higham 1986); however, by the mid-seventh century, Cumbria had been incorporated into the kingdom of Northumbria (Kirkby 1962) and Anglian influence in the region is demonstrated by local place names (Rollinson 1996). Although there is very little settlement evidence from this period, it has been suggested that curvilinear churchyards (of which around 30 survive in some form and continue in use into the present, including four within 10km of the development site), may well be of early medieval origin (O'Sullivan 1985). Also likely to be of early medieval origin in the area are a number of cist burials, sometimes forming cemeteries, as at Moreseby, *c* 8km to the south-west of the proposed development area, or singly, such as the empty example from Beckfoot, *c* 16km to the north-west (O'Sullivan 1985). A further cist is situated at Eaglesfield, *c* 1km to the south-east of Tendley Hill, and may be associated with a small cemetery of around six burials in a similar location, since quarried-away (Wilson 1978; Cowen 1949, 74). These burials were excavated in the mid-nineteenth century by a local enthusiast, and do not appear to bear evidence of Scandinavian influence (Cowen 1967, 34). Although there are no documented pre-Norse graves from Brigham, a late eighth- to early ninth-century cross fragment was recovered from St Bridget's church (Wilson 1978, 48). The boundary between the Parishes of Dean and Brigham skirts Tendley Hill and, considering the possible correlation between early medieval burials and historic boundaries, the proximity of documented burial activity may not be coincidental.

3.2.5 From the later ninth century, a Scandinavian influence predominated in the area, firstly via the Danes of Yorkshire, then, from AD 902, the Norse Irish, who had been evicted from Dublin (Higham 1985), had the most considerable effect on the area, not least toponymically (Higham 1986). It is possible that one such settler, or perhaps an earlier raider, was buried on Tendley (or variously and confusingly, since they are not synonymous, described as

Endlay, Endlaw or Tendlay) Hill, Eaglesfield (Higham 1985; Edwards 1992, 48). Discovered in 1814, the finds comprise an inhumation accompanied by a tenth-century sword, 'halberd' (probably a spear), and brooch (Wilson 1978, 48; Edwards 1992, 48). Examples of Scandinavian sculpture within the Derwent valley, to the west, further attest to the presence of such settlers (*ibid*), as do the hog-backed tombstones from St Bridget's church, Brigham, which was built *c* 1070. A Norse pin was also discovered at the church in 1864-5 (Edwards 1992, 48).

3.2.6 In the tenth and early eleventh century parts of Cumbria fell under Scottish influence (Kirkby 1962) but, by the end of the eleventh century, Norman control had been asserted with William Rufus' recapture of Carlisle in 1092 (Rowley 1983). Little is known of medieval activity within Brigham and Eaglesfield and, whilst Brigham remained the centre of a vast parish (Wilson 1978, 48), Cockermouth is likely to have been the most important settlement in the area. Tute Hill, a name derived from the Middle English 'tote', a look-out hill (Bradbury 1995, 10), is likely to have been the site of the motte for the first castle in Cockermouth, located as it was on a strategically important plateau close to the confluence of the Rivers Cocker and Derwent. The installation was thought to have been constructed in the early to mid-twelfth century, but to have been quickly superseded by a second fortification, this time built with both motte and bailey, by William de Fortibus II in the mid-twelfth century on the site of the present Cockermouth Castle (CHER 849; SM 23798).

3.2.7 ***Post-medieval and industrial periods:*** during the post-medieval period limestone quarrying was carried out extensively within the wider area, as attested by several quarried hollows close to the development area. Although Tendley Hill quarry was not present at the time of the survey for the Ordnance Survey map of 1867, limestone was being processed locally at this time and the location of the later quarry was labelled 'Tendley Hill Limekilns'. Numerous limekilns were shown on this map in the vicinity of the proposed development area, with nine being depicted within a 0.5km radius of the site. In addition to the large quarries at Tendley Hill (CHER 11616), Ellerbeck Limestone Quarry (CHER 11618) was situated within 1km to the north-east of the proposed development site. The large-scale processing of cereals was also evident in the local area from at least the nineteenth century, with Ellerbeck water-powered corn mill (CHER 11619) being depicted on the First Edition Ordnance Survey map. This map suggests that these industrial activities took place within a landscape that consisted largely of agricultural field systems.

4. EVALUATION RESULTS

4.1 RESULTS

4.1.1 The stratigraphic sequence revealed within each of the four trenches comprised a layer of topsoil, with a maximum thickness of 0.26m, overlying a layer of subsoil that was a maximum of 0.23m thick. Each trench was excavated until features of archaeological interest, or deposits considered to be of natural geological origin were revealed. The natural geology generally comprised orange-brown silty clay. Trench locations are shown on Figure 2 and a summary of recorded contexts is provided in *Appendix 2*.

4.1.2 ***Trench 1:*** the trench was positioned at the north of the evaluation area and was aligned east to west. The maximum depth of the trench was 0.55m. A modern field drain (***103***) with a ceramic pipe was revealed running from north to south across the centre of the trench (Plate 2), corresponding with the position of Anomaly A. This had been backfilled with silty clay (***104***) that appeared to include burnt limestone, and it is this material that was likely to have enabled the feature to be detected by the geophysical survey. The southward continuation of this field drain was revealed in Trench 3 (*Section 4.1.4*). An irregular hollow 0.3 m x0.2 m (***105***), to the west of the field drain (***103***), could have been a post-hole, with possible packing-stones for support, however this was not associated with any datable material. No other features of archaeological interest were encountered in Trench 1.

4.1.3 ***Trench 2:*** the trench was positioned at the west of the area and was aligned north-east to south-west. The maximum depth of this trench was 0.63m. A field drain was discovered running from north-west to south-east, at the western end of the trench, which corresponded with the position of Anomaly B. A small quantity of ferrous stones were found in the vicinity of the field drain. A second field drain, which had not been detected by the geophysical survey, was encountered running north-east to south-west through the trench. No other features of archaeological interest were found in this trench.

4.1.4 ***Trench 3:*** the trench was positioned at the southern end of the area, closest to the previously quarried area of Tendley Hill, and was aligned west-south-west to east-north-east. The maximum depth of this trench was 0.45m. A thin layer of sand (***116***), with a maximum thickness of 30mm, containing decaying twigs and small flecks of charcoal, was revealed within the centre of the trench at the base of subsoil (***114***). This corresponded to the position of the geophysical anomaly at the southern end of Anomaly A; however, a clear anthropogenic origin for the feature could not be demonstrated. Even if the burnt material within the deposit was a product of human activity, the deposition of layer ***116***, in its observed postion, may have been the result of natural processes. The southern continuation of a field drain (***103***) located in Trench 1, was revealed at the western end of the trench. No other features of archaeological interest were found.

4.1.5 ***Trench 4***: the trench was positioned at the eastern side of the area and was aligned north to south, excavated to a maximum depth was 0.7m. There was a variation change in the nature of the underlying geology in the trench, from a dark brown deposit of silt at the centre of the trench, to lighter, sandier, deposits at each end (Plate 4). No features of archaeological interest were found in Trench 1.

5. CONCLUSION

5.1 GEOPHYSICAL ANOMALIES

5.1.1 ***Anomaly A:*** this anomaly was detected by the geophysical survey as a linear area of magnetic enhancement, with, at the southern end an irregular expansion or perhaps separate feature. A field drain with a ceramic pipe, which corresponded to this linear feature, was revealed in Trench 1 (Plate 2). The southern extension of this drain was also encountered in Trench 3, to the west of the irregular feature that the geophysical survey had identified. Numerous other field drains were located during the evaluation trenching, which had not been highlighted by the geophysical survey, and the occurrence of burnt limestone within the backfill of this drain might explain why it was detected by the magnetometer survey, whilst other similar features had not.

5.1.2 In Trench 3, the irregular feature at the southern extent of Anomaly A was seen to lie to the east of the field drain that ran north to south through trenches 1 and 3. This anomaly was identified as a thin layer of sand (***116***) containing decaying twigs and small flecks of charcoal (Plate 3), however it was not possible to discern the origin of this material, particularly as it was not associated with any form of cut, therefore mostly derived from an earlier erosion episode.

5.1.3 ***Anomaly B:*** this anomaly corresponded to a field drain with a ceramic pipe that was encountered within Trench 2. Unlike the field drain that corresponded to Anomaly A, no burnt limestone was found within the backfill of this feature, although a high quantity of iron-rich stones were found in the vicinity of the anomaly. This ferrous material is likely to have been responsible for the signal that was detected by the magnetometer survey.

5.1.4 ***Anomalies C and D:*** no indication of sub-surface features corresponding to these parallel linear anomalies were encountered during the evaluation. One possible explanation for the detected anomalies was a variation in the underlying geology in this area, with a linear deposit of dark silt lying between lighter, sandy, deposits to the north and south (Plate 4).

5.1.5 At the eastern end of Trench 2, the geophysical survey had detected a series of magnetic enhancements that were interpreted as being features of geological origin. No sign of these features was encountered during the evaluation, and the underlying geology did not appear to have been disturbed.

5.1.6 ***Discussion:*** exposure of the limestone bedrock by quarrying revealed that the solid geology in this area lay approximately 16m below ground level, underlying deposits of drift geology (Plate 1). It is, therefore, unlikely that natural fissures and variations in the limestone bedrock would be responsible for the anomalous signals detected during the geophysical survey. The current farmer of the land suggested that many of the geophysical anomalies corresponded with the locations of former field boundaries that he had removed in recent years. However, no evidence for such field boundaries was encountered during the evaluation and anomalies A and B were seen to

correspond with the location of field drains. Moreover, none of the anomalies identified by the geophysical survey were visible within the topography of the evaluation area.

5.1.7 No evidence was found in any of the trenches to suggest the presence of any previously unidentified graves or traces of the Roman road mentioned by Margary (1973, 389-95). The possible posthole (***105***), found within Trench 1, did not correspond to the line of Anomaly A. Given the absence of similar features, dating evidence and its small size, the interpretation of ***105*** can be considered contentious.

6. IMPACT

6.1 IMPACT

6.1.1 The targeted evaluation of the geophysical survey results did not produce any evidence for activity of archaeological interest, all of the geophysical anomalies that were investigated can be said to be the result of modern agricultural practices, or natural processes. Although, the trial trenching was able to identify a number of features not recognised by the geophysical survey, none was of archaeological significance, and there was certainly no evidence of burial activity.

6.1.2 Geophysical survey is not, however, a definitive strategy for identifying burial grounds. Unless such burials comprise an organised cemetery, where an evenly spaced formal layout is discernible, individual graves could easily become obscured within a mass of similarly-sized anomalies of natural origin. It is just possible that features of archaeological interest could survive outside of the areas investigated by the evaluation trenches, particularly in those areas close to the location of the putative early medieval cemetery. There is certainly value in expanding programmes of archaeological investigation into other parts of the quarry expansion area.

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8.ILLUSTRATIONS

8.1 FIGURES

Figure 1: Location Map

Figure 2: Trench plan and geophysical survey results

8.2 PLATES

Plate 1: Location of the evaluation site, upper left, with Tendley Quarry to the right.

Plate 2: Trench 1 with geophysical survey Anomaly A revealed as a modern field drain

Plate 3: Trench 3 looking north-east, with sandy layer (***116***) visible beyond the field drain.

Plate 4: Trench 4 looking north, with a darker deposit at the centre and lighter deposits at each end.

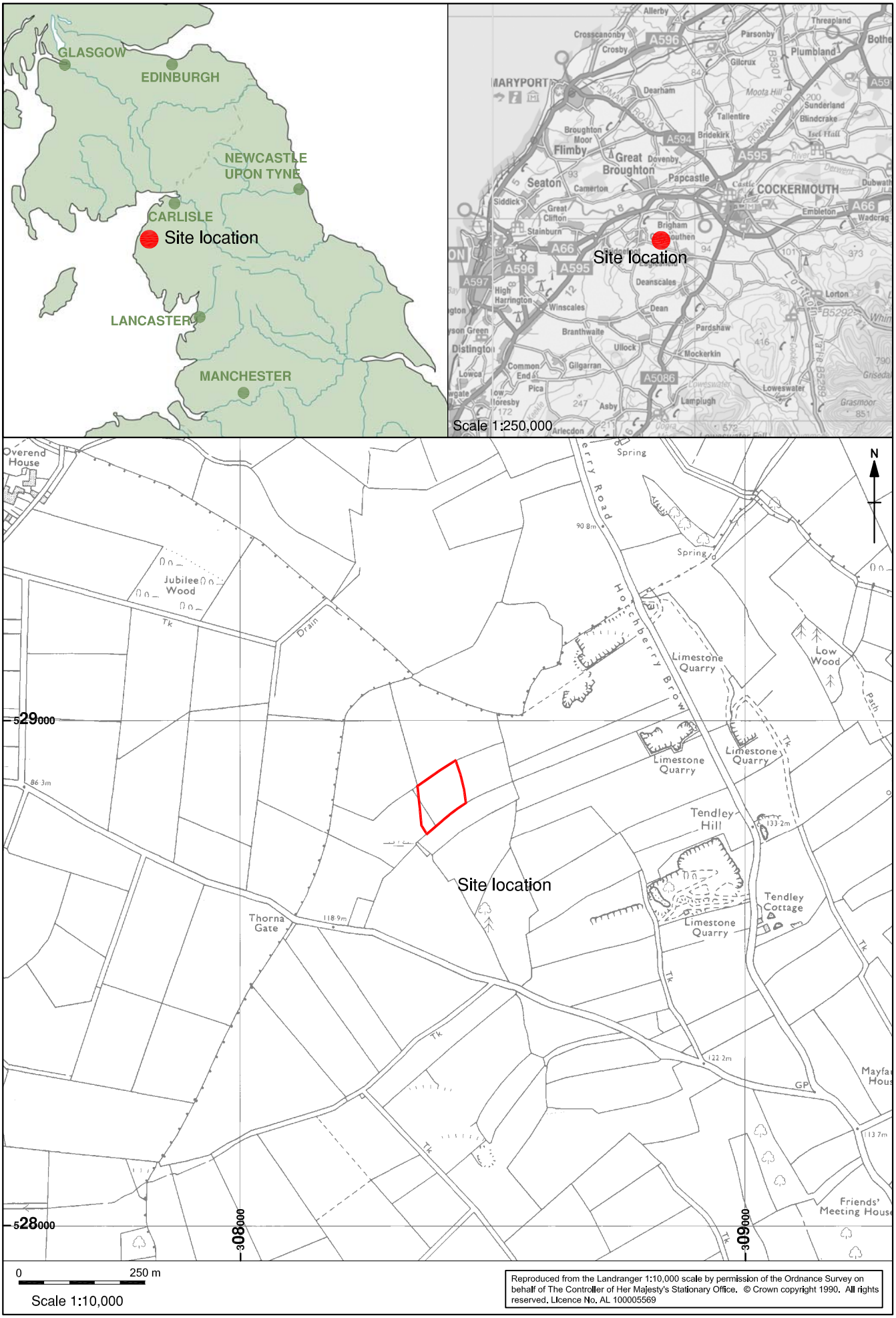

Figure 1: Site Location

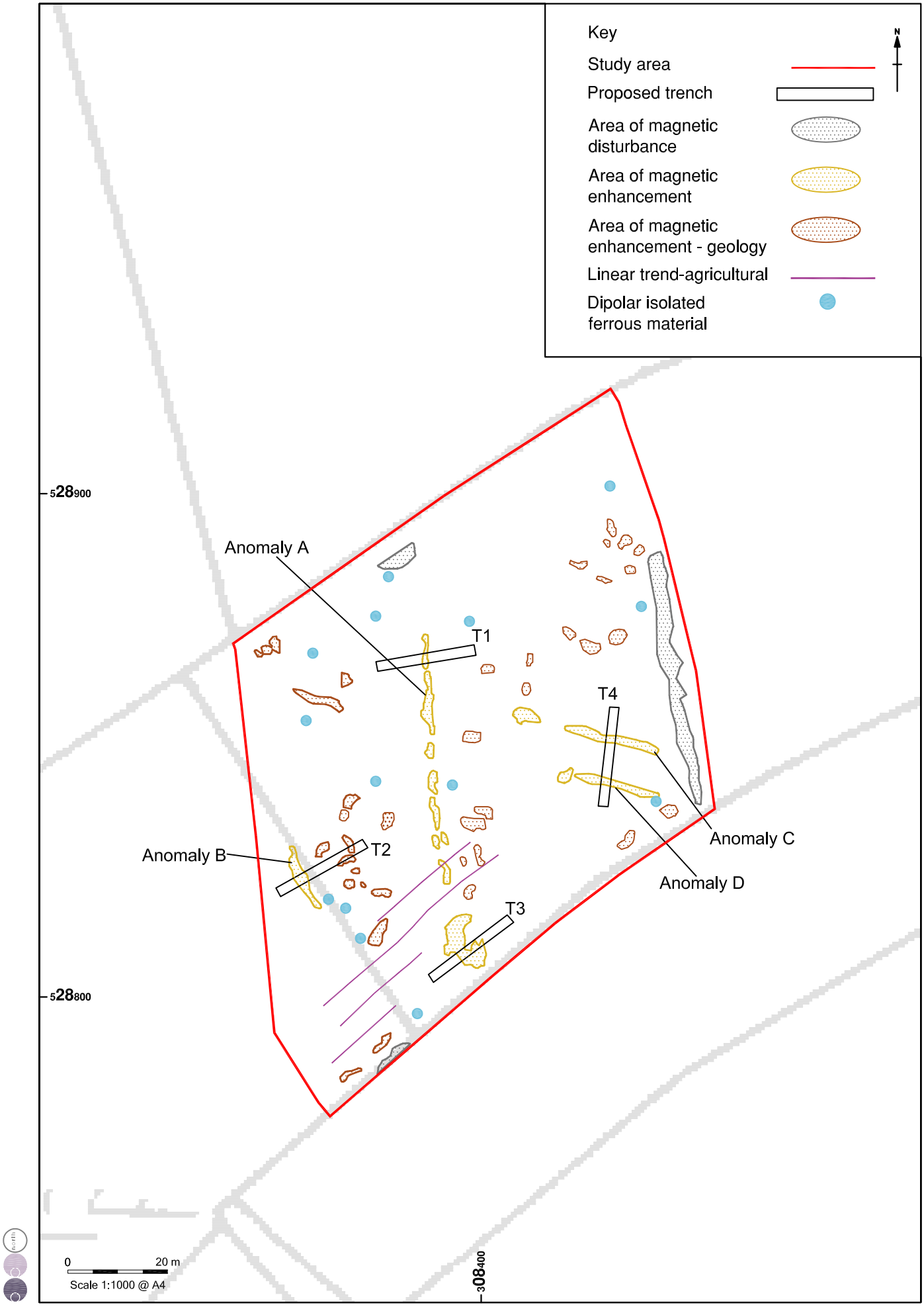

Figure 2: Trench plan and geophysical survey results

Plate 1: Location of the evaluation site, upper left, with Tendley Quarry to the right.

Plate 2: Trench 1 with geophysical survey Anomaly A revealed as a modern field drain.

Plate 3: Trench 3 looking north-east, with sandy layer (***116***) beyond the field drain.

Plate 4: Trench 4 looking north, with a darker deposit at the centre and lighter deposits at each end.

APPENDIX 1: PROJECT DESIGN

TENDLEY QUARRY EXTENSION, BRIGHAM, COCKERMOUTH,

CUMBRIA

ARCHAEOLOGICAL EVALUATION PROJECT DESIGN

Oxford Archaeology North

September 2007

Tarmac

Grid Reference: NY 0840 2885
OA North Job No: L9924

1. INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Tarmac (hereafter the 'client') has requested that Oxford Archaeology North (OA North) submit proposals for an archaeological evaluation ahead of a 0.8ha extension of the north-western fringe of Tendley Hill Quarry, Brigham, near Cockermouth, Cumbria (NGR NY 0840 2885). The proposed extension lies within an area considered to have high archaeological potential and, following the results of a geophysical survey undertaken in August 2007, Cumbria County Council Historic Environment Service (CCCHES) requested that a selection of geophysical anomalies should be archaeologically investigated through trial trench evaluation. The following project design adheres to the normal standards of CCCHES written briefs, and to those of the IFA. The proposed quarry extension comprises gently undulating agricultural land to the immediate west of the present quarry face, at which the natural carboniferous limestone bedrock is presently being extracted. The site slopes down from *c* 100m OD from the south-west.

1.2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

1.2.1 The expanding quarry has been the subject of archaeological investigations on a number of occasions. A desk-based assessment undertaken in 2001 (Headland Archaeology) indicated that the quarry lay within an area of archaeological potential. A number of cropmarks of potentially prehistoric date lie close to the quarry, as does the putative route of a Roman road between the forts at Ravenglass and Papcastle. The most significant remains are those of early medieval date, and could pertain to a small Viking or early medieval cemetery. Discovered in 1814, the finds comprise an inhumation accompanied by a tenth-century sword, halberd and brooch (English Heritage 2007). There is an ealry medieval short cist cemetery at Eaglesfield, *c* 1km to the south-west of Tendley Hill, whilst Brigham, 1km to the north, also has early medieval origins: St Bridget's church was built *c* 1070, and a number of hog-backed tombstones and a cross fragments are present within the churchyard and within the vicarage. The boundary between the Parishes of Dean and Brigham skirts Tendley Hill and, considering the possible correlation between early medieval burials and historic boundaries, its location may be more than fortuitous. Despite this potential, fieldwork, including geophysical survey and trial trench evaluation undertaken in 2003, revealed no significant archaeological remains. However, the most recent geophysical survey, undertaken in August 2007, encountered a series of roughly north/south and east/west aligned linear anomalies, together with a number of more discrete anomalies likely to relate to natural features within the limestone geology.

1.3 OXFORD ARCHAEOLOGY NORTH

1.3.1 The company, both as Oxford Archaeology North and under the former guise of Lancaster University Archaeological Unit (LUAU), has considerable experience of sites of all periods, having undertaken a great number of small and large scale projects throughout Northern England during the past 25 years. Evaluations, assessments, watching briefs and excavations have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables.

1.3.2 OA North has the professional expertise and resources to undertake the project detailed below to a high level of quality and efficiency. OA North is an Institute of Field Archaeologists (IFA) registered organisation, registration number 17, and all its members of staff operate subject to the IFA Code of Conduct.

2 OBJECTIVES

2.1 The following programme has been designed to assess the subsoil deposits within the development area in order to determine the presence, extent, nature, quality and significance of any archaeological deposits that may be threatened by the proposed development. To this end, the following programme of archaeological work has been designed. The results of each stage will influence that which ensues and will provide information as to whether further mitigation works are required prior to, or during, ground works associated with the development. The required stages to achieve these ends are as follows:

2.2 ***Archaeological evaluation:*** to implement a programme of focussed trial trenching examining 2% of the 0.8ha proposed development area, which equates to 160m^2.

2.3 ***Report and archive:*** a written report will assess the significance of the data generated by this programme within a local and regional context. It will present the results of the evaluation and would make an assessment of the archaeological potential of the area, and any recommendations for further work.

3 METHOD STATEMENT

3.1 EVALUATION

3.1.1 The programme of trial trenching will establish the presence or absence of archaeological deposits and, if established, will then test their date, nature, depth and quality of preservation. In this way, it will adequately sample the threatened available area.

3.1.2 ***Trench configuration:*** the evaluation is required to focus on the anomalies identified during the geophysical survey, and it is proposed that 4 trenches, each measuring 20m by 2m, be excavated. Trenches will be located and aligned in order to maximise the identification of archaeological features; a plan of the proposed trench locations will be submitted for the approval of CCCHES prior to work commencing.

3.1.3 ***Methodology:*** within each trench, the upper horizons of overburden, topsoil, subsoil and any recent made-ground will be rapidly removed by a mechanical excavator fitted with a wide toothless ditching bucket and working under archaeological supervision to the surface of the first significant archaeological deposit or to the level of the natural subsoil. This deposit will be cleaned by hand, using either hoes, shovel scraping, and/or trowels, depending on the subsoil conditions, and inspected for archaeological features. All features of archaeological interest must be investigated and recorded unless otherwise agreed by CCCHES. The trenches will not be excavated deeper than 1.2m to accommodate health and safety constraints; any requirements to excavate below this depth will involve re-costing.

3.1.4 All trenches will be excavated in a stratigraphical manner, whether by machine or by hand. Trenches will be located by use of GPS equipment, which is accurate to +/- 0.25m, or Total Station. Altitude information will be established with respect to Ordnance Survey Datum.

3.1.5 Any investigation of intact archaeological deposits will be exclusively manual. Selected pits and postholes will normally only be half-sectioned, linear features will be subject to no more than a 10% sample, and extensive layers will, where possible, be sampled by partial rather than complete removal. It is hoped that in terms of the vertical stratigraphy, maximum information retrieval will be achieved through the examination of sections of cut features. All excavation will be undertaken with a view to avoiding damage to any archaeological features, which appear worthy of preservation *in situ*.

3.1.6 All information identified in the course of the site works will be recorded stratigraphically, using a system, adapted from that used by Centre for Archaeology Service of English Heritage, with sufficient pictorial record (plans, sections, colour slides and monochrome contacts) to identify and illustrate individual features. Primary records will be available for inspection at all times.

3.1.7 Results of all field investigations will be recorded on *pro-forma* context sheets. The site archive will include both a photographic record and accurate large scale plans and sections at an appropriate scale (1:50, 1:20 and 1:10). All artefacts and ecofacts will be recorded using the same system, and will be handled and stored according to standard practice (following current Institute of Field Archaeologists guidelines) in order to minimise deterioration.

3.1.8 ***Reinstatement:*** it is understood that there is a basic requirement for reinstatement; the trenches will be backfilled so that the topsoil is laid on the top, and the ground will be roughly graded. Following agreement with CCCHES, any trenches that do not contain archaeological features would be backfilled as soon as possible. It would be preferable for the landowner to agree to the finished reinstated trenches prior to leaving site. Should there be a requirement by the client other than that stated this will involve recosting for an agreed variation. Similarly, if there is any requirement to cut turf prior to excavation and re-lay it following backfilling, this would need to be costed separately as an agreed variation.

3.1.9 ***Fencing/hoarding requirements:*** it is assumed that this part of the quarry is free from unauthorised ingress and from animals, and that no barrier fencing materials will be needed. Open trenches will be demarcated along their long edges by spoil heaps, and at their short ends by orange netlon fencing. Should the hire and erection of heras fencing or similar by OA North staff be required, it can be included as a contingency item and will be invoiced at cost. Costs for hire and delivery of fencing, together with the cost of staff to erect such fencing, would need to be agreed as a variation.

3.1.10 ***Environmental Sampling:*** environmental samples (bulk samples of 30 litres volume, to be sub-sampled at a later stage) will be collected from stratified undisturbed deposits and will particularly target negative features (gullies, pits and ditches). An assessment of the environmental potential of the site will be undertaken through the examination of suitable deposits by the in-house palaeoecological specialist, who will examine the potential for further analysis.

3.1.11 The assessment would include soil pollen analysis and the retrieval of charred plant macrofossils and land molluscs from former dry-land palaeosols and cut features. In addition, samples from waterlogged deposits would be assessed for plant macrofossils, insects, molluscs and pollen. The costs for the palaeoecological assessment are defined as a contingency and will only be called into effect if good deposits are identified and will be subject to the agreement of CCCHES and the client.

3.1.12 ***Faunal remains:*** if there is found to be the potential for discovery of bones of fish and small mammals, a sieving programme will be carried out. These will be assessed as appropriate by OA North's specialist in faunal remains, and subject to the results, there may be a requirement for more detailed analysis. A contingency has been included for the assessment of such faunal remains for analysis.

3.1.13 ***Human Remains****:* any human remains uncovered will be left *in situ*, covered and protected. No further investigation will continue beyond that required to establish the date and character of the burial. CCCHES and the local Coroner will be informed immediately. If removal is essential, the exhumation of any funerary remains will require the provision of a Home Office license, under section 25 of the Burial Act of 1857. An application will be made by OA North for the study area on discovery of any such remains and the removal will be carried out with due care and sensitivity under the environmental health regulations. The cost of removal or treatment will be agreed with the client and costed as a variation.

3.1.14 ***Treatment of finds:*** all finds will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the United Kingdom Institute for Conservation (UKIC) *First Aid For Finds*, 1998 (new edition) and the recipient museum's guidelines.

3.1.15 All identified finds and artefacts will be retained, although certain classes of building material can sometimes be discarded after recording if an appropriate sample is retained on advice from the recipient museum's archive curator.

3.1.16 ***Treasure:*** any gold and silver artefacts recovered during the course of the excavation will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act, 1996. Where removal cannot take place on the same working day as discovery, suitable security will be employed to protect the finds from theft.

3.1.17 ***Contingency plan:*** a contingency costing may also be employed for unseen delays caused by prolonged periods of bad weather, vandalism, discovery of unforeseen complex deposits and/or artefacts which require specialist removal, use of shoring to excavate important features close to the excavation sections etc. This has been included in the Costings document (*Section 10*) and would be charged in agreement with the client.

3.1.18 The evaluation will provide a predictive model of surviving archaeological remains detailing zones of relative importance against known development proposals. In this way, an impact assessment will also be provided.

3.2 REPORT AND ARCHIVE

3.2.1 ***Report:*** one bound and one unbound copy of the final report will be submitted to the client within two months of completion of fieldwork. Should the client require a draft report, bound and unbound copies of such reports can be provided on request, within three weeks of the completion of each stage of the programme of work. Three copies of the final report will be submitted to the CHER. The report will include:

- a site location plan related to the national grid
- a front cover to include the planning application number and the NGR
- the dates on which each phase of the programme of work was undertaken
- a concise, non-technical summary of the results
- an explanation to any agreed variations to the brief, including any justification for any analyses not undertaken
- a description of the methodology employed, work undertaken and results obtained
- an interpretation of the desk-based assessment results and their significance, using the 'Secretary of State's criteria for scheduling ancient monuments' included as Annex 4 of PPG 16 (DoE 1990)
- plans and sections at an appropriate scale showing the location and position of deposits and finds located as well as sites identified during the desk-based assessment
- monochrome and colour photographs as appropriate
- a list of and dates for any finds recovered and a description and interpretation of the deposits identified
- a description of any environmental or other specialist work undertaken and the results obtained
- a summary of the impact of the development on any archaeological remains and, where possible, a model of potential archaeological deposits within as-yet unexplored areas of the development site
- a copy of this project design, and indications of any agreed departure from that design

- the report will also include a complete bibliography of sources from which data has been derived.

3.2.2 This report will be in the same basic format as this project design; a copy of the report can be provided on CD, if required. Recommendations concerning any subsequent mitigation strategies and/or further archaeological work following the results of the field evaluation will be provided in a separate communication.

3.2.3 ***Confidentiality:*** all internal reports to the client are designed as documents for the specific use of the client, for the particular purpose as defined in the project brief and project design, and should be treated as such. They are not suitable for publication as academic documents or otherwise without amendment or revision.

3.2.4 ***Archive:*** the results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with current English Heritage guidelines (*Management of Archaeological Projects*, 2nd edition, 1991). The project archive will include summary processing and analysis of all features, finds, or palaeoenvironmental data recovered during fieldwork, which will be catalogued by context.

3.2.5 The deposition of a properly ordered and indexed project archive in an appropriate repository is essential and archive will be provided in the English Heritage Centre for Archaeology format and a synthesis will be submitted to the Cumbria HER (the index to the archive and a copy of the report). OA North practice is to deposit the original record archive of projects with the appropriate Record Office.

3.2.6 All artefacts will be processed to MAP2 standards and will be assessed by our in-house finds specialists. The deposition and disposal of any artefacts recovered in the evaluation will be agreed with the legal owner and an appropriate recipient museum. Discussion regarding the museum's requirement for the transfer and storage of finds will be conducted prior to the commencement of the project, and CCCHES will be notified of the arrangements made.

4. HEALTH AND SAFETY

4.1 OA North provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. All site procedures are in accordance with the guidance set out in the Health and Safety Manual compiled by the Standing Conference of Archaeological Unit Managers (1997). A written risk assessment will be undertaken in advance of project commencement and copies will be made available on request to all interested parties.

4.2 Full regard will, of course, be given to all constraints (services etc) during the fieldwork as well as to all Health and Safety considerations. **Information regarding services within the study area have been received and will be used during the course of the evaluation.**

5 PROJECT MONITORING

5.1 Whilst the work is undertaken for the client, CCCHES will be kept fully informed of the work and its results, and will be notified a week in advance of the commencement of the fieldwork. Any proposed changes to the project design will be agreed with CCCHES in consultation with the client. Fieldwork will be monitored by the CCCHES Assistant Archaeologist on behalf of the developer.

6 WORK TIMETABLE

6.1 EVALUATION TRENCHING

6.1.1 Approximately three days will be required to complete this element, although a few additional days may be needed if there is any requirement for OA North to erect heras fencing prior to works commencing and then dismantle it afterwards.

6.1.2 OA North can execute projects at very short notice once an official order/confirmation has been received from the client. A team could mobilise with one to two weeks notice (to allow the necessary arrangements to be made to commence the task).

6.2 REPORT

6.3.1 Copies of the report, as outlined in *Section 3.2.1*, will be issued to the client and other relevant parties within two months of the completion of fieldwork, unless otherwise agreed prior to the commencement of fieldwork.

6.3 ARCHIVE

6.3.1 The archive will be deposited within six months following submission of the report, unless otherwise instructed.

7 STAFFING

7.1 The project will be under the direct management of **Stephen Rowland** (OA North Project Manager) to whom all correspondence should be addressed. The evaluation will comprise a suitably-sized team of experienced archaeologists led by **Richard Lee**, OA North Project Officer, an experienced archaeologist capable of undertaking small-, medium- and large-scale projects in a range of urban and rural situations. The finds will be processed, studied and reported upon, either by, or under the guidance, of **Chris Howard-Davies** (OA North Finds Manager) who has extensive experience of finds from all periods, but particularly prehistoric and Roman material. All environmental sampling and assessment will be undertaken under the auspices of **Elizabeth Huckerby** (OA North Environmental Manager) who has unparalleled experience of palaeoenvironmental work in the North West and who heads an excellent team of environmental archaeologists. Any faunal remains will be studied by **Andrew Bates** (OA North Project Officer), who has a large amount of experience in undertaking the assessment and analysis of faunal assemblages of all sizes from a wide range of periods and locations.

8 INSURANCE

8.1 OA North has a professional indemnity cover to a value of £2,000,000; proof of which can be supplied as required.

9 REFERENCES

English Heritage, 1991 *Management of Archaeological Projects*, second edition, London

SCAUM (Standing Conference of Archaeological Unit Managers), 1997 *Health and Safety Manual*, Poole

UKIC, 1990 *Guidelines for the Preparation of Archives for Long-Term Storage*, London

UKIC, 1998 *First Aid for Finds*, London

APPENDIX 2: CONTEXT LIST

Context Number	Trench Number	Context Description
100	Trench 1	Topsoil
101		Subsoil
102		Natural geology
103		Cut of drain
104		Fill of ***103***
105		Cut of posthole
106		Fill of ***106***
107		Not used
108	Trench 2	Topsoil
109		Subsoil
110		Natural geology
111		Not used
112		Not used
113	Trench 3	Topsoil
114		Subsoil
115		Natural geology
116		Sand layer
117	Trench 4	Topsoil
118		Subsoil
119		Natural geology

