



August 1996

KIRKBY THORE
LANDFILL SITE

Cumbria

Archaeological Evaluation

Commissioned by:

British Gypsum Ltd

Kirkby Thore, Landfill Site
Cumbria

Archaeological Evaluation Report

Checked by Project Manager. Date
Passed for submission to client. Date

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The field work was undertaken by Stuart Elder and Dave Hodgkinson, Figure 1 was prepared by Dick Danks, and Figure 2 by Dave Hodgkinson. The report was written by Dave Hodgkinson. Jamie Quartermaine managed the project and edited the report.

EXECUTIVE SUMMARY

The Lancaster University Archaeological Unit (LUAU) was commissioned by British Gypsum Limited to undertake an archaeological evaluation at Kirkby Thore (NY 6214 2710) on the site of a proposed landfill facility.

This was a green field site, with no previous archaeological information available, but was in the vicinity of significant archaeological remains of Roman and Medieval date centred on the village of Kirkby Thore. An evaluation programme was therefore recommended by the County Archaeologist to establish if the area of the proposed development had any archaeological potential. LUAU prepared a project design for this evaluation (*Appendix 2*), in accordance with a verbal brief from the County Archaeologist.

The evaluation involved the excavation of 16 machine cut trenches in an alternate 30m grid pattern to sample the study area in a methodical manner. The study area is presently permanent pasture, but evidence for ploughing was revealed in trenches on the south side of the study area, although this lacked any dating evidence. Two small sub-circular features were also identified, within Trench 6; however, after excavation, no dating evidence was recovered and the nature of these features must also remain uncertain.

Overall the archaeological resource, identified during the evaluation, was insufficient to justify recommending any further archaeological work.

1. INTRODUCTION

- 1.1** In May 1996, at the request of British Gypsum, the Lancaster University Archaeological Unit (LUAU) were commissioned to undertake an archaeological evaluation at the proposed location for a land fill site at Kirkby Thore, Cumbria. The work was carried out to specifications detailed in a project design (*Appendix 2*), compiled by LUAU in accordance with a verbal brief provided by the County Archaeologist.
- 1.2** The greenfield evaluation involved the excavation of an alternate grid of 30m long trenches. The fieldwork took place on 28th and 29th May 1996.

2. METHODOLOGY

2.1 Project Design

- 2.1.1 A project design (*Appendix 2*) was compiled by LUAU in accordance with a verbal brief from the County Archaeologist for an evaluation of land that will be affected by a land fill development at Kirkby Thore.
- 2.1.2 The project design provided for a greenfield trenching exploration of the study area, to examine the archaeological potential of the area. The work has been carried out in accordance with the project design.

2.2 Field Evaluation

2.2.1 *Greenfield Evaluation*

- 2.2.1.1 A programme of trial excavation was formulated in consultation with the County Archaeologist. The County Archaeologist requested that the trenches should be excavated in a 30m grid pattern across the survey area, but which would exclude steep terrain. This was intended to examine c3.5% of the moderate sloped terrain to be affected by the proposed development. As far as possible, within the constraints of the topography, it was attempted to provide a uniform examination of the study area. Trenches were aligned north-west/south-east or south-west/north-east (downhill or across slope) depending on the local topography.

2.2.2 *Excavation Methodology*

- 2.2.2.1 A total of 16 trenches was excavated measuring 30 by 1.80m; on average the trenches were 0.25m - 0.35m deep. Turf, topsoil and subsoil were separated during the excavation and replaced in reverse order to ensure that the reinstatement was to as high a standard as possible. Cattle were removed from the fields during the excavation of trenches for safety reasons; however, the farmer considered that it was not necessary to remove the sheep during the excavations. The continued use of the field as grazing for cattle after the excavations may affect the quality of the regrowth over the disturbed ground.
- 2.2.2.2 The excavation was undertaken by a mechanical excavator (a JCB 3CX Sitemaster) fitted with a 1.8m toothless ditching bucket, and this was followed by hand cleaning for the purposes of examining archaeological detail. Excavation was undertaken to a depth of natural subsoils in all trenches. The trenches were mechanically backfilled.
- 2.2.2.3 All excavation was carried out stratigraphically, whether by machine or by hand, and recorded in the appropriate manner. The recording methods employed by LUAU accord with those recommended by English Heritage's Central Archaeology Service (CAS). Recording was in the form of *pro forma* Trench Sheets for each trench, which recorded the orientation, length, and depth of machining, and described the nature of the topsoil, subsoil (where applicable), and geological deposits. Where potential features were observed

they were manually sampled with a full textual, drawn, and photographic record being maintained. Any finds recovered were bagged and recorded by either the trench number or, where appropriate, by the context number from where they were recovered.

- 2.2.2.4 The positions of the trenches were recorded using a Global Positioning System (GPS). The GPS consists of two receivers, one stationary in a known location and a second mobile one used in the field, both of which recorded data transmitted from earth-orbiting satellites. Comparison of the data from the two receivers enables the location of the mobile one to be determined to an accuracy of better than c1m.

2.3 Health and Safety

- 2.3.1 Both Lancaster University and LUAU maintain Safety Policies, the latter based on the SCAUM (Standing Conference of Unit Managers) Health and Safety Manual (1991). In keeping with current Health and Safety at Work Regulations, prior to commencing on-site work, a risk assessment for each activity was completed. Due regard was given to all Health and Safety considerations during all aspects of the project, with service information having been gained from the client regarding services. However, it is LUAU standard practice to scan the positions of all trenches for underground cables using a U-scan meter and of such services only a modern water main was noted.

3. TOPOGRAPHIC AND HISTORICAL BACKGROUND

3.1 Topography

- 3.1.1 The site was situated in an area of rolling pasture land at the foot of the Cross Fell and to the immediate south of the main east/west railway line between Penrith and Appleby. The site occupies a stream valley with c 30° degrees sloping valley sides; there was a narrow area of flat ground along the valley bottom and a level area on the southern side of the valley. Extending through the site is a former track way, which was hedged and well revetted on its northern side. All field boundaries are marked by fenced, mature hedges.

3.2 Geology and soils

- 3.2.1 Kirkby Thore lies on the north bank of Trout Beck, a tributary of the River Eden. The river is a product of geological faulting which has revealed Penrith Sandstone of Permo- Triassic date. The sandstones are exposed in the higher parts of the village and are flanked by Upper and Lower Carboniferous limestones which had formerly overlain them. The overlying glacial deposits in the valley of the Eden and Trout Beck comprise sandy till earthy clay (Dakyns *et al* 1897, 96). The only published record of the depth of the till in the area around Appleby is (10.06m) at Burwain, near Bewley Castle (Dakyns *et al* 1897, 95).
- 3.2.2 The soils of the area belong to the Clifton Association (711n), a group of seasonally waterlogged soils developed in reddish fine loamy till and related glaci-fluvial deposits. Because of the slowly permeable nature of the till, the soils are of stagnogley type (Jarvis *et al* 1984, 135-7).

3.3 Historical Background

3.3.1 Roman

- 3.3.1.1 Although there is no previously recorded archaeological activity within the study area, there is evidence to indicate archaeological remains in the locality. Within Kirkby Thore village, the Roman Fort has been extensively excavated, demonstrating that the main occupation of the site was from the second century AD, with a hiatus in the third century and a transient occupation in the fourth century. The foundation of the fort is possibly attributable to the Hadrianic expansion in northern Britain. Studies carried out on ancient sources and inscriptions suggest that the fort housed a cavalry unit which may have been used to patrol the Kirkby Thore to Whitely Castle route, known as the Maiden Way.
- 3.3.1.2 Roman finds and fragments of Roman earthworks have been identified over an area of up to 36 hectares in extent, and it has been suggested by Birley (1949; 1958, 54) that the fort was accompanied by a civilian settlement, or *vicus*, which was bounded on one side by the Roman road (which is now the A66), by Piper Lane to the west, extending to Kirkby Thore Bridge to the south, and

with the fort in its eastern corner. There have been numerous excavations at Kirkby Thore, the most recent of which were carried out by LUAU in 1983 and 1985/6 (Gibbons *et al* 1989). These excavations were located in the northern part of the village and were intended to test the results of an earlier excavation carried out in 1964 by Charlesworth (Charlesworth 1964, 1965). Some 323 Roman pottery sherds, together with other finds, were analysed. The coarseware indicated a preponderance of second century types, beginning *cAD* 125, with a small amount of fourth century material; third century wares were completely absent (Hird 1989). Coins of first century date have also been found at Kirkby Thore.

3.3.2 *Medieval*

- 3.3.2.1 Pre-twelfth-century, occupation at Kirkby Thore is fairly certain, on documentary and place-name evidence. Medieval buildings in the village include the twelfth century church of St. Michael, Whelp's Castle, and Kirkby Thore Hall, of which the core is fourteenth century (RCHM 1936, 146-8). During the Medieval period the village appears to have developed as two separate areas, Town End/Bridge End in the South and Cross End/Town Head in the north. Between these centres was Whelp's Castle, which was mentioned in an early thirteenth century charter, and would appear to comprise the ruins of the Roman fort, although it is not known to what extent it also incorporated medieval rebuilding (Cumbria SMR PRN 6848).

4. EVALUATION RESULTS

4.1 A total of 16 trenches were excavated to evaluate the archaeological potential of the proposed land fill site at Kirkby Thore, Cumbria. The locations of the trenches are shown in Figures 2 and 3. The generalised summary of the evaluation results are assessed in section 4.1 and the detailed descriptions for each excavated trench are given in *Appendix 1*.

4.2 General Trench Description

4.2.1 All trenches were 30m long unless constrained by topography; Trenches 5, 12 and 15 were shortened to 20m due to the steepness of the slope. Trench 9 was shortened to 16m to avoid a water main, which was also found within Trenches 4 and 10; the water main had been laid recently and was not recorded on any service plans.

4.2.2 The natural deposits which were encountered were principally moderately stony yellowish brown silty clays; no solid geological deposits were revealed as part of this evaluation. The stones were of mixed sizes and were glacially derived. The natural clays revealed in Trenches 12, 13, and 14 in the northern side of the survey area were overlain by orange brown colluvial silts.

4.2.3 No dateable archaeological features were identified within any of the trenches excavated as part of the evaluation. However, a pair of sub-circular, features were revealed within Trench 6, which cut into natural sub-soil deposits. The southernmost feature was slightly elliptical measuring 0.40m by 0.25m, and 0.15m deep. The northernmost feature was 0.38m in diameter and 0.11m deep. They were found to be straight sided and flat based and did not produce any dateable artefactual evidence.

4.2.4 The southern side of the survey area revealed extensive evidence for ploughing, with shallow, regularly spaced, linear features within Trenches 1, 2, 3, 4, 5, 6, and 7. The plough marks were all aligned down hill (north-west/south-east) and the spacing between them, *c* 0.30m, was constant throughout the trenches. No evidence for ploughing activity was identified within the northern half of the study area.

4.2.5 No artefacts were recovered from any of the trenches during the evaluation.

5. DISCUSSION

- 5.1** The archaeological evaluation at Kirkby Thore, Cumbria did not reveal evidence of any archaeological activity within the proposed development area. No artefacts were recovered from the evaluation and the identified features were devoid of any secure dating evidence. The trenching revealed extensive plough marks across the north facing slope and ceramic field drains in the same area, which probably reflect twentieth century arable activity. Two small sub-circular features (c0.4m diameter) were identified within Trench 6; however when excavated no diagnostic artefacts were recovered from the fill deposits. The nature of the two sub-circular features suggests a possible post-hole function, possibly for a temporary fence, and are possibly modern.
- 5.2** The sloping nature of the field is likely to have precluded any settlement of the area, particularly as there appears to have been some form of slippage of the slope as evidenced by the colluvial silt deposits identified above natural clays in Trenches 12, 13 and 14 on the southern facing slope.

6. IMPACT STATEMENT AND RECOMMENDATIONS

6.1 Impact

- 6.1.1 LUAU conducts evaluations in accordance with the Institute of Archaeologists' Code of Conduct and best practices, and also in the light of *The Management of Archaeological Projects* (English Heritage 2nd edition 1991). Our concern must be to protect and preserve archaeological sites wherever possible, and only where this is not feasible are destructive techniques of record advocated. Our aim is to recommend the appropriate action which will achieve recording objectively, without the waste of resources.
- 6.1.2 The proposal to develop the study area into a land fill site will involve lowering the ground surface by as much as 13m and would thus have a profound impact, destroying any archaeological remains within the extent of the study area. However, despite systematic greenfield trenching, the evaluation has not identified significant archaeological features within the extent of the study area and therefore, on the present evidence, it is believed that the development proposal will not have an undue impact upon the archaeological resource of the locality.

6.2 Recommendations

- 6.2.1 As the evaluation of the proposed landfill site at Kirkby Thore has not revealed any dateable archaeological features which would be compromised by the proposed landfill scheme, it is recommended that no further archaeological recording will be necessary.

7. BIBLIOGRAPHY

- Association of County Archaeological Officers (ACAO), 1993 *Model Briefs and Specifications for Archaeological Assessments and Field Evaluations*
- Birley, E, 1949 Proceedings, *Trans Cumberland Westmorland Antiq Archaeol Soc*, **NS 49**, 181-2
- Birley, E, 1958 The hinterland of Hadrian's Wall, *Trans Architect Archaeol Soc Durham Northumberland*, **11**, 44-63
- Charlesworth, D 1964 Recent work at Kirkby Thore, 1964, *Trans Cumberland Westmorland Antiq Archaeol Soc*, **NS 64**, 63-75
- Dakyns, J R, Tiddeman, R H and Goodchild, J G, 1897 *Geology of the country between Appleby, Ullswater and Haweswater...*, Geol Surv Memoir **30** Old Ser/**102** SW New Ser
- English Heritage 1991 *Management of Archaeological Projects* 2nd edition, London
- Gibbons, P *et al* 1989 Excavations and observations at Kirkby Thore, *Trans Cumberland Westmorland Antiq Archaeol Soc*, **NS 89**, 93-130 and Fiches 1, and 2
- Hird, L 1989 The Roman coarseware, in Gibbons *et al*, 120-22
- Jarvis RA *et al* 1984 *Soils and their uses in Northern England*, Soil Survey of England and Wales, Bull **10**
- Lancaster University Archaeological Unit (LUAU) 1994 *Greenacres Filling Station, Kirkby Thore, Archaeological Evaluation*, Unpubl Rep
- Royal Commission on the Historical Monuments of England (RCHME) 1936 *An inventory of the Historical Monuments in Westmorland*.
- Standing Conference of Archaeological Unit Managers (SCAUM) *Health and Safety Manual*

APPENDIX 1

DETAILED TRENCH DESCRIPTIONS

Trench No. T1
Alignment North-East/South-West
Length 30m

Natural deposits of yellowish, orange silty clay were identified at a depth of 0.25m below surface. The natural clay was disturbed by a series of east/west plough scars, 0.30m apart and c0.04m in depth and a single ceramic field drain, 0.08m in diameter, set within a steep sided cut, also east/west aligned and 0.45m in depth. The natural deposits were overlain by a yellowish brown, friable loam

Trench No. T2
Alignment North-West/South-East
Length 30m

A stiff natural clay was identified at a depth of 0.26m. It was heavily disturbed by a series of thin linear features aligned north-east / south-west. On inspection these proved to be cuts for ceramic land drains which were approximately 0.27m in depth and measured 0.23m in width. They occurred at regular intervals, approximately 3m apart. The natural clay was also disturbed by faint traces of ploughing. The topsoil was a yellowish brown clay silt with a slight sand content and was 0.25m in depth.

Trench No. T3
Alignment North-East/South-West
Length 30m

Natural yellowish brown clay was recorded at a depth 0.26m. It had been disturbed by a series of parallel plough marks, aligned north-east/south-west and a single field drain sharing the same alignment. The topsoil was the same yellowish brown clay silt, revealed in the previous trenches.

Trench No. T4
Alignment North-West/South-East
Length 30m

Naturally occurring deposits were identified at a depth 0.30m which was cut through by a large linear feature on a west-north-west/east-south-east alignment. The cut was straight sided, although the full extent of the feature was never established. The feature was filled by a deposit of rounded boulders, up to 0.35m in width. The feature was the cut for a 6 inch water main recently laid by the farmer. Topsoil was the yellowish brown clay silt, 0.28m in depth and contained 5% rounded stones due to its down hill location.

Trench No. T5
Alignment North-East/South-West
Length 30m

Natural deposits of yellowish orange silty clay containing small rounded stones were identified at a depth of 0.35m. The natural deposits had been cut through by a number of north-east / south west aligned plough marks. The topsoil deposit of yellowish brown clay silt was 0.33m in depth.

Trench No. T6
Alignment North-West/South-East
Length 30m

A stiff, orange natural clay was recorded at a depth of 0.25m and contained 10% sub-angular stones with an average diameter of 0.10m. The natural was cut by a pair of small circular features, the southernmost was approximately 4.9m from the edge of the trench and was slightly elliptical measuring 0.40m by 0.25m, and 0.15m deep. The second, northern feature, was 12.3m from the southern edge of the trench and was 0.38m in diameter and 0.11m deep. There was also evidence of ploughing within the trench, with plough marks aligned north-east / south-west. The topsoil was the yellowish brown clay silt deposit and was 0.25m deep.

Trench No. T7
Alignment North-East/South-West
Length 30m

A stiff orange clay was identified at a depth of 0.28m. It was cut by a series of north/south aligned plough marks and was overlain by the yellowish brown clay silt topsoil.

Trench No. T8
Alignment North-East/South-West
Length 30m

A naturally occurring yellowish orange silty clay was established at a depth of 0.30m in the north end of the trench; at the southern end the trench deepened significantly to approximately 0.61m. At the downhill, northern end of the trench, directly above natural was a deposit of yellowish brown stiff brown clay silt which was approximately 0.25m in depth. The topsoil deposits were the yellowish brown clay silts identified in the previous trenches. although at the southern end of the trench topsoil was 0.35m deep, as oppose to the average 0.21m at the northern end of the trench.

Trench No. T9
Alignment North-East/South-West
Length 16m

The excavation of the full length of Trench 9 was prevented due to the presence of the water main revealed in trench T4. Naturally occurring deposits of yellowish orange silty clay were revealed at a depth of 0.25m, although these were established at a depth of 0.55m at the downhill northern end of the trench. At the northern end of the trench natural subsoils of pinkish sandy clay and manganese deposits were overlain by a 0.30m deep deposit of stiff, yellowish, brown silty clay. A Topsoil of yellowish brown clay silt varied in depth throughout the trench but was on average 0.37m deep.

Trench No. T10
Alignment North-West/South-East
Length 9m

The full excavation of Trench 10 was prevented because of the discovery of the water main identified in trench T4. All underlying deposits had been disturbed during the laying of the drain and the trench was abandoned after 9m.

Trench No. T11
Alignment North-West/South-East
Length 30m

Orange silty clay natural deposits were identified at a depth 0.26m and contained 15% rounded stones. The natural subsoils were directly overlain by a brown clay silt, 0.26m in depth.

Trench No. T12
Alignment North-East/South-West
Length 20m

A naturally occurring stiff orange clay, containing 10% rounded stones and gravels was identified at a depth of 0.35m. These were overlain by a deposit of orange clay silt, which contained 5% rounded and sub-rounded stones. The topsoil deposit was a brown clay silt, with occasional rounded stones measuring 0.18m in depth.

Trench No. T13
Alignment North-West/South-East
Length 30m

A stiff orange clay natural deposit was identified at a depth of 0.32m; it was overlain by an orange clay silt deposit, containing occasional rounded stones, which was 0.11m deep. The topsoil deposit was a brown clay silt, 0.21m deep.

Trench No. T14
Alignment North-West/South-East
Length 30m

A naturally occurring yellowish orange, stiff silty clay containing rounded cobbles ranging from 0.08 to 0.20m in diameter, was identified at a depth of 0.36m. It was overlain by a pinkish, brown clay silt deposit 0.10m in depth. The topsoil was a yellow brown clay silt 0.25m deep.

Trench No. T15
Alignment North-East/South-West
Length 30m

A yellowish orange, natural clay was identified at a depth of 0.30m. It contained rounded stones, up to 0.15m in diameter and was stained with manganese mineralization. It was overlain by a dark yellowish brown clay silt topsoil, 0.25m in depth.

Trench No. T16
Alignment North-West/South-East
Length 20m

A natural deposit of yellowish orange silty clay was recorded at a depth of 0.30m. It contained occasional rounded and sub-rounded cobbles up to 0.20m in diameter. It was overlain by a yellowish brown clay silt topsoil, 0.25m in depth.

APPENDIX 2 PROJECT DESIGN

April 1996

Lancaster
University
Archaeological
Unit

KIRKBY THORE LANDFILL SITE CUMBRIA ARCHAEOLOGICAL EVALUATION

Proposals

The following project design is offered in response to a request from Mr B Donnelly, of British Gypsum Limited, for an archaeological evaluation in advance of a proposed landfill site at Kirkby Thore, Cumbria.

1. INTRODUCTION

The Kirkby Thore works are located within the Eden valley (NY 643 272) which is an area with well documented prehistoric activity. The site is close to the Roman fort of *Bravoniacum* at Kirkby Thore and there was a civilian *vicus* settlement outside the fort. The Roman road serving the fort is for the most part on the line of the A66, which has been used as a primary communication route at least since that time. There is considerable potential for medieval settlement and associated activity extending out from the line of the road. The medieval settlement at Kirkby Thore developed to the east of the *vicus* and by virtue of the 'Kirkby' place name may indicate a relatively early foundation for the church.

The site displays little evidence of surface features, but by virtue of its location and association with the Roman fort there is the potential for sub-surface survival and consequently the County Archaeologist has requested an archaeological evaluation in advance of the proposed landfill development. This is aimed at evaluating sub-surface remains and also assessing the quantity, period and quality of such deposits in the context of the surrounding landscape.

The Lancaster University Archaeological Unit has considerable experience of the evaluation and excavation of sites of all periods, having undertaken a great number of small and large scale projects during the past 15 years. Evaluations have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables. LUAU has the professional expertise and resource to undertake the project detailed below to a high level of quality and efficiency. LUAU and all its members of staff operate subject to the Institute of Field Archaeologists (IFA) Code of Conduct.

2. OBJECTIVES

The following programme has been designed, in consultation with the County Archaeologist, to provide an accurate archaeological evaluation of the designated area, within its broader context. The required stages to achieve these ends are as follows:

2.1 Field Evaluation

A limited programme of trial excavations, as recommended by the County Archaeologist, will be undertaken to establish the nature, extent, chronology, and preservation of any archaeological deposits encountered. Suitable samples recovered will be assessed for their palaeoenvironmental potential.

2.2 Evaluation Report

A written evaluation report will assess the significance of the data generated by this programme within a local and regional context. It will advise on the mitigation measures necessary to protect and/or record (to appropriate levels) identified archaeological features and deposits, including any appropriate further evaluation, excavation, and recording strategies.

3. METHOD STATEMENT

The following work programme is submitted in line with the stages and objectives of the archaeological work summarised above.

3.1 Field Evaluation

3.1.1 Access

Liaison for basic site access will be undertaken with the client. The precise location of any services within the study area will also be established.

3.1.2 Greenfield evaluation

This programme of trenching will establish the presence or absence of any previously unsuspected archaeological deposits and, if established, will then briefly test their date, nature, and quality of preservation. Excavation will normally be limited to the upper surface of significant archaeological deposits, unless further work is regarded by ourselves and the county archaeologist as essential in order to complete the full evaluation. This element of the trial trenching is invaluable in order to assess those accessible plots within the proposed study area where there is a potential for archaeological deposits to survive which are not visible on the surface. This also reduces the possibility of the discovery of any important archaeological features within those designated plots during groundworks, so as to minimise the possibility of any disruption at that late stage.

The 'greenfield' trenching would be undertaken using a conventional 30m alternate trench configuration, which provides a 3.5% coverage of the investigated area. This would involve the excavation of trenches measuring 30m in length, by 2m in width, and the orientations of the trenches would be varied to improve the likelihood of them crossing linear features. The study area incorporates a relatively steep sided valley, and there is a reduced likelihood that there will be archaeological settlement on the steep slopes. The terrain also severely restricts the machine excavation, and it has been agreed with the County Archaeologist that the evaluation trenching be limited to the gently sloping ground in the valley bottom and at the top of the valley on the southern side (figure 1). There is approximately 2.4 hectares of this gently sloping ground, which would necessitate the excavation of about 14 trenches. The precise locations of the trenches would be determined in discussions with the client and County Archaeologist at the outset of the project.

3.1.3 Methodology

To maximise the speed and efficiency of the operation the removal of overburden will be undertaken by machine (with a standard five or six foot toothless ditching bucket), although in areas where ephemeral remains are encountered elements may *be hand dug. It is understood that the excavation plant will be provided by the British Gypsum Ltd and therefore the evaluation costs do not anticipate plant hire.

All trenches will be excavated in a stratigraphical manner, whether by machine or by hand. Trenches will be accurately located with regard to surrounding features, by use of a total station survey instrument.

Full regard will, of course, be given to all constraints (services etc) during the excavation of the trenches, as well as to all Health and Safety considerations. LUAU 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 (1991) and risk assessments are implemented for all projects. As a matter of course the Unit uses a U-Scan device prior to any excavation to test for services. It is assumed that the client will provide any available information regarding services within the study area, if available.

Land disturbed as a result of this work will be reinstated to the Client's satisfaction, although LUAU as a matter of course replaces material in a stratigraphic manner and relays the surface, if possible. It is presumed that the Client will have responsibility for site security. LUAU would take responsibility for temporary fencing arrangements to exclude livestock or any other farming activities. In addition, any deep sections of open trench would be fenced off to prevent any accidents occurring to LUAU/client staff.

3.1.4 Timetable

All excavation will be undertaken within constraints agreed with the client.

3.1.5 Recording

All information identified in the course of the site works will be recorded stratigraphically, with sufficient pictorial record (plans, sections and both black and white and colour photographs) to identify and illustrate individual features. Primary records will be available for inspection at all times.

Results of the field investigation will be recorded using a system, adapted from that used by Central Archaeology Service of English Heritage. The 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. Samples will be collected for technological, pedological, palaeoenvironmental and chronological analysis as appropriate, but it is only intended to process such material for assessment at this stage. If necessary, access to conservation advice and facilities can be made available. LUAU maintains close relationships with Ancient Monuments Laboratory staff at the Universities of Durham and York and, in addition, employs artefact and palaeoecology specialists with considerable expertise in the investigation, excavation and finds management of sites of all periods and types, who are readily available for consultation.

3.2 Evaluation Report

3.2.1 Archive

The results of the fieldwork will form the basis of a full archive to professional standards, in accordance with current English Heritage guidelines (*The Management of Archaeological Projects, 2nd edition, 1991*). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. It will include summary processing and analysis of all features, finds, or palaeoenvironmental data recovered during fieldwork. The deposition of a properly ordered and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the IFA in that organisation's code of conduct. LUAU conforms to best practice in the preparation of project archives for long-term storage. The expense of preparing such an archive is part of the project cost, but only represents a very small proportion of the total. This archive can be provided in the English Heritage Central Archaeology Service format, both as a printed document and on computer disks as ASCII files, and a synthesis (in the form of the index to the archive and the report) will be included in the Cumbria Sites and Monuments Record. A copy of the archive can also be made available for deposition with the National Archaeological Record in Southampton. LUAU practice is to deposit the original record archive of projects (paper, magnetic and plastic media) with the appropriate County Record Office (Carlisle), and a full copy of the record archive (microform or microfiche) together with the material archive (artefacts, ecofacts, and samples) with an appropriate museum. The actual details of the arrangements for the deposition/loan and long term storage of this material will be agreed with the landowner and the receiving institution. Wherever possible, LUAU recommends the deposition of such material in a local museum approved by the Museums and Galleries Commission, and would make appropriate arrangements with the designated museum at the outset of the project for the proper labelling, packaging, and accessioning of all material recovered. The archive costs include a single payment of £11/m³ to the receiving museum as a one-off contribution towards the cost of long term storage and curation.

3.2.2 Evaluation report

One bound and one unbound copy of a written synthetic report will be submitted to the Client, and a further copy submitted to the Cumbria County Archaeologist. The report will include a copy of this project design, and indications of any agreed departure from that design. It will present, summarise, and interpret the results of the programme detailed above and will include a full index of archaeological features identified in the course of the project, with an assessment of the overall stratigraphy, together with appropriate illustrations, including detailed plans and sections indicating the locations of archaeological features. Any finds recovered from the excavations will be assessed with reference to other local material and any particular or unusual features of the assemblage will be highlighted and the potential of the site for palaeoenvironmental analysis will be considered. The report will also include a complete bibliography of sources from which data has been derived, and a list of further sources identified during the programme of work, but not examined in detail.

This report will identify areas of defined archaeology, the location of trenches, and whether the results of the sampling were positive or negative. An assessment and statement of the actual and potential archaeological significance of the site within the broader context of regional and national archaeological priorities will be made. Illustrative material will include a location map, section drawings, and plans if appropriate; it can be tailored to the specific requests of the client (eg particular scales etc), subject to discussion. The report will be in the same basic format as this project design; a copy of the report can be provided on 3.5" disk (IBM compatible format).

3.2.3 Proposals

The report will make a clear statement of the likely archaeological implications of the quarry extension. It will highlight whether, as a first option, the preservation *in situ* of significant archaeological features should take place and possible strategies for the mitigation of the impact of the development will be considered. When preservation is neither possible, nor practical, a further stage of archaeological work may be required. In this case, recommendations for such mitigation measures will be submitted. It should also be made clear that the results of this archaeological evaluation should only be considered as representative of the below ground archaeological potential of those areas presently accessible for trial trenching.

3.2.4 Confidentiality

The evaluation report is designed as a document for the specific use of the Client, for the particular purpose as defined in the project design, and should be treated as such; it is not suitable for publication as an academic report, or otherwise, without amendment or revision. Any requirement to revise or reorder the material for submission or presentation to third parties beyond the project brief and project design, or for any other explicit purpose can be fulfilled, but will require separate discussion and funding.

3.3 Project Monitoring

3.3.1 British Gypsum Ltd

LUAU will consult with British Gypsum Limited regarding access to land within the study area. Whilst the work is undertaken for British Gypsum Limited, the Cumbria County Archaeologist will be kept fully informed of the work and its results. Any proposed changes to the project design will be agreed with him in co-ordination with the Client. LUAU will arrange a preliminary meeting, if requested, and the Cumbria County Archaeologist will be informed in writing at the commencement of the project.

3.3.2 Cumbria Sites and Monuments Record

Any proposed changes to the project brief or the project design will be agreed with the Cumbria County Archaeologist in co-ordination with the client. LUAU will arrange a preliminary meeting, if required, and the Cumbria SMR will be informed at the commencement of the project.

4. WORK TIMETABLE

The phases of work would comprise:

4.1 Evaluation

A two day period is required to undertake the trenching programme.

4.2 Prepare evaluation report

A two day period would be required to complete this element.

LUAU can execute projects at very short notice once an agreement has been signed with the client. LUAU would be able to submit the report to the client within two weeks from the commencement of the project.

5. OUTLINE RESOURCES

The following resource base will be necessary to achieve the proposals detailed above.

5.1 Evaluation

2 man-days Project Supervisor

2 man-days Project Assistant

5.2 Evaluation report

2 man-days Project Supervisor

2 man-days Draughtsman

The project will be under the direct line management of **Jamie Quartermaine, BA, Surv Dip, MIFA** (Unit Project Manager) to whom all correspondence should be addressed.

ILLUSTRATIONS

- Fig 1 Site Location Plan
- Fig 2 General Trench Location Plan
- Fig 3 Detailed Trench Location Plan

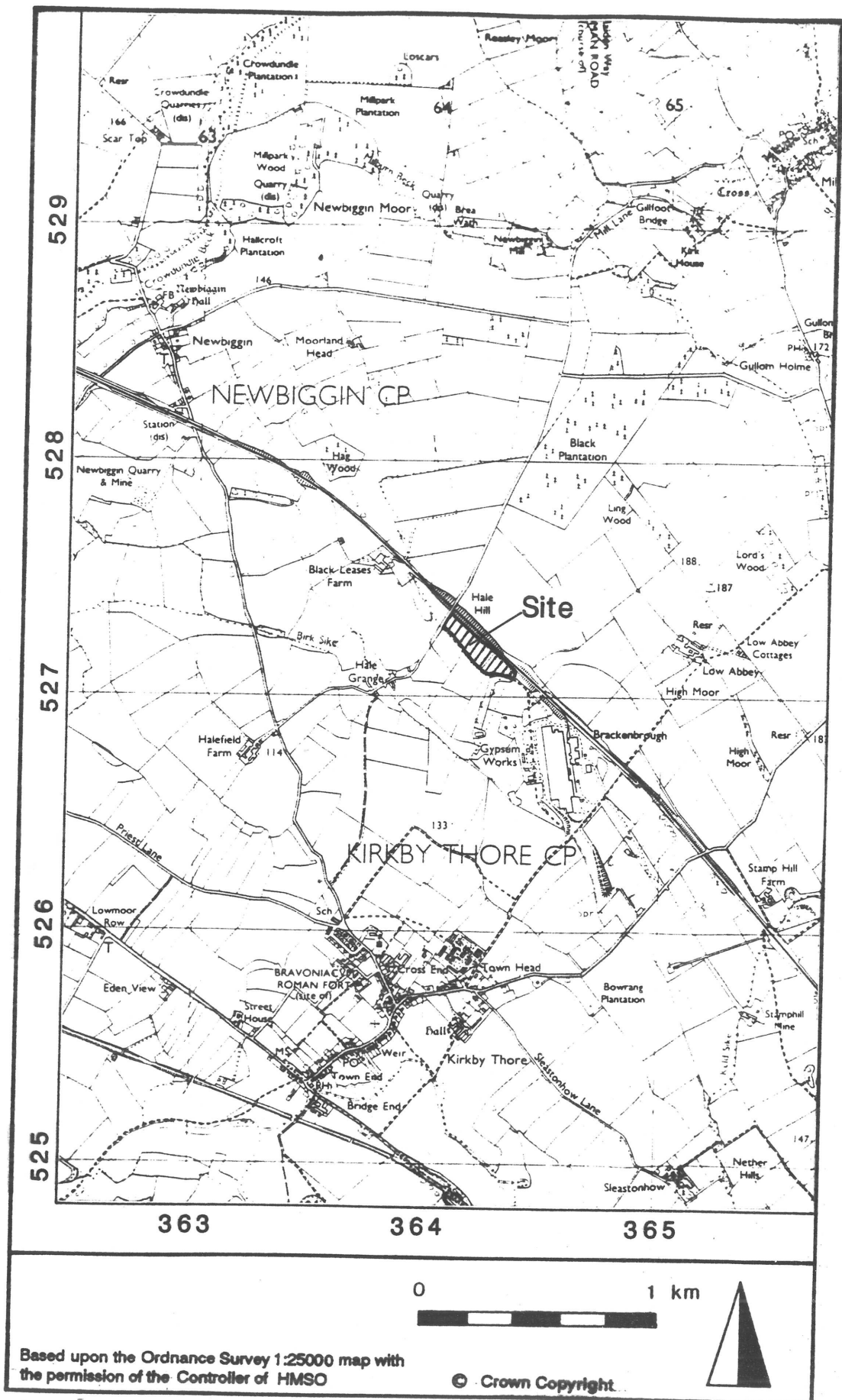


Fig.1 Site location map

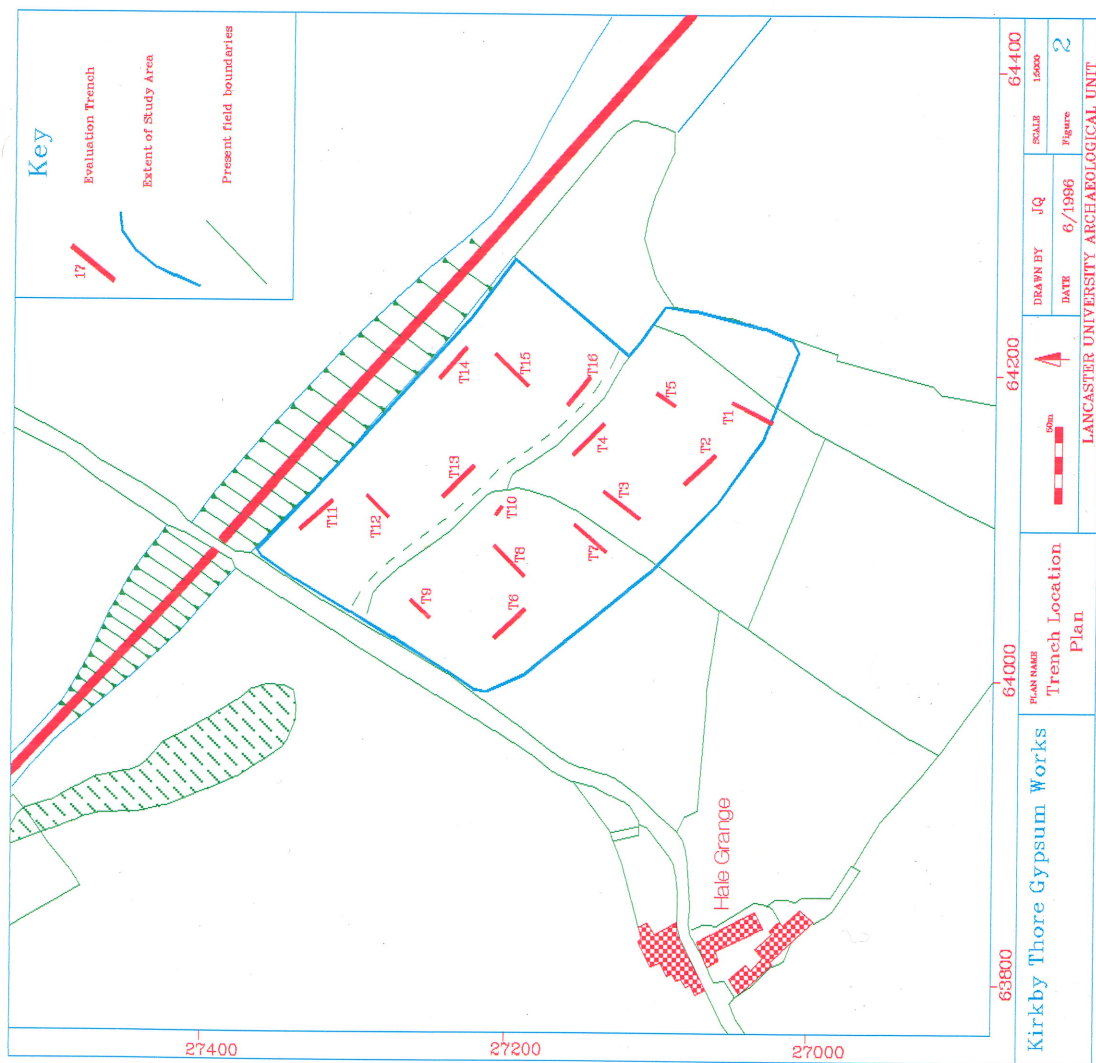


Fig 2 General Trench Location Plan



Fig 3 Detailed Trench Location Plan