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NEW SERVICE RESERVOIR
GUIDE
BLACKBURN
LANCASHIRE

Archaeological Survey and Assessment
Report

New Service Reservoir, Guide
Blackburn
Lancashire

Archaeological Assessment and Survey Report

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SUMMARY

An archaeological assessment was carried out in advance of the construction of a new reservoir and pipeline on land south of Belthorn Road in Guide, Lower Darwen, Lancashire (from NGR SD 36985 42540 to SD 37080 42570). The work was carried out by the Lancaster University Archaeological Unit on behalf of the North West Water Ltd, and comprised a desk-based study, followed by an identification survey of the pipe route, and a detailed survey of a quarry site to the south of the proposed reservoir.

The desk-based study established that the most significant archaeological feature in the vicinity of the study area is the Roman road passing through Blackamoor village. This road was an important route during the Roman period connecting Manchester to Ribchester, and probably remained so throughout the medieval period as it was the main road south from Blackburn, a sizeable market town in that period. Immediately to the west of the study area was the possible late medieval farm of Pickering Fold, which was located on the east side of the Roman Road.

There is relatively little evidence of historic settlement in the vicinity of the study area; during the late medieval and post-medieval periods it was occupied by only a few farms. Guide was first referred to in relation to the reservoir built in Guide in 1845-7; and the earliest reference to Blackamoor is in Baines' *Directory* of 1825. Both these villages were probably settled by people working in the cotton industry centred on Blackburn; the Lancashire Sites and Monuments Record includes entries to a row of handloom cottages in Guide.

Vertical aerial photographs showed three features of potential interest, one a large rectangular enclosure close to Aspinall Fold, the second was an area of field boundaries which was centred, but not aligned to, the Aspinall Fold farmhouse, and the third feature was a sandstone quarry in the vicinity of the proposed new reservoir. The enclosure and area of early field boundaries pre-date those marked on the 1st edition OS map (1844).

The field survey identified seven sites, all of which relate to sandstone quarrying or the post-medieval agricultural landscape. The most significant landscape feature identified was the Scar Edge Delves sandstone quarry which is on the site of the proposed reservoir and was subject to a detailed hachure survey, serving as mitigation for the impact of the proposed development.

Although relatively few archaeological sites will be affected by the construction of the pipe, the survey has demonstrated the relative importance of the area for sandstone extraction during the late eighteenth and nineteenth centuries.

No further work is recommended for the Scar Edge Delves quarry, but detailed surveys are recommended for Quarry Sites 12 and 18. It is also recommended that a limited number of evaluation trenches be excavated in the immediate vicinity of Aspinall Fold farm to investigate any sub-surface elements of this possible medieval farming landscape.

1. INTRODUCTION

- 1.1 An archaeological assessment has been carried out in advance of the construction of a new reservoir and pipeline on land north and south of Belthorn Road in Guide, Lower Darwen, Lancashire (from NGR SD 36985 42540 to SD 37080 42570), which is four kilometres south-east of Blackburn (Fig 1). The proposed pipeline will lead from the new reservoir north of the Belthorn Road, continuing south of Benson House and Aspinall Fold through farmland to the new M65 motorway. Beyond this point, its route will be around the edge of the Walker Industrial Park. The archaeological assessment was carried out by the Lancaster University Archaeological Unit (LUAU) on behalf of the North West Water Ltd. The work was undertaken during late November and early December 1997.
- 1.2 The aim of the work was to assess the impact that the construction of the pipe and reservoir would have upon archaeological remains within the affected area. It involved a desk-based study to examine the presence of archaeological features within the study corridor and to provide an historical context for the area. This was followed by a field inspection of the proposed route to identify any further archaeological remains and to estimate the potential for the survival of sub-surface features. An earthwork survey was undertaken of an area of sandstone quarrying to mitigate its destruction by the construction of the proposed new reservoir .
- 1.3 This report sets out the results of the work, followed by a statement of the archaeological potential of the area, and an evaluation of the impact of the proposed development. This is complemented by a gazetteer of sites, and a bibliography.

2. METHODOLOGY

2.1 PROJECT DESIGN

- 2.1.1 A project design (*Appendix 1*) was submitted by LUAU in response to a request from North West Water Ltd, for an archaeological assessment and survey of the proposed construction of a new service reservoir and pipeline at Guide, Lancashire. This was designed to meet the requirements of a project brief by the Lancashire County Archaeologist.
- 2.1.2 The project design provided for an archaeological assessment involving a desk-top study, a rapid field inspection, a detailed hachure survey of the area of the proposed reservoir, and this written report, which interprets the data collated during the project and assesses the implications of the development.
- 2.1.3 None of the fields within the study corridor had been ploughed at the time of the field inspection and it was therefore not possible to undertake an artefact survey. Otherwise work has been carried out in accordance with the updated project design (*Appendix 1*).

2.2 DESK-BASED STUDY

- 2.2.1 The study area for this aspect of the project used the proposed water main as the centre-line of a one kilometre wide corridor, and extant archaeological information was obtained from the Lancashire Sites and Monuments Record (LSMR) on this basis. The results of that search are presented in the Site Gazetteer (*Section 7*). In addition, the study examined the archaeology of the general area to provide a general, period-by-period context.
- 2.2.2 Catalogues, indexes, maps and some secondary sources were studied in the Lancashire Record Office (LRO) in Preston, but very little information was found relating to Lower Darwen, the township containing Guide and Blackamoor, and still less was found for the study area. For the most part the sources related to post-medieval land transactions and some enclosure awards. There was no tithe map available for the area and the earliest survey was that of the Ordnance Survey (OS) in 1844. Although a member of the Hawkshead family is known to have created a survey of his estates in c1750 no corresponding map or plan was accessible. Further information relating to the building of the reservoirs in 1845 and potentially also information associated with any exploitation of the coal measures south of the study area may exist but none of this documentation could be located or studied within the scope of the present study. Other published antiquarian sources available in the LRO and the Lancaster University Library were examined.
- 2.2.3 Existing archaeological information was obtained from the Lancashire Sites and Monuments Record (SMR) and aerial photographs held by Lancashire County Council (LCC) were examined (1:10,000 verticals, 1963 and 1989). In the timescale of the project it was deemed unnecessary for contact to be made with the Royal Commission for Historical Monuments (England) who hold the national collection of aerial photographs.

2.2.4 Also consulted were two reports by Greater Manchester Archaeological Contracts (GMAC 1994; 1995) which formed an assessment of the M65 scheme south of Blackburn. Site nos. 37, 39-50 (GMAC 1995) are of potential archaeological significance within the designated area of this present study. Site 37 is the Roman Road, sites 44-45 refer to Aspinall Fold and its barn, and site 49 corresponds with Lower Copster farm. All the other sites refer to field boundaries and quarries, which were principally located by field walking. Three of these, 42, 43 and 46, show up on the aerial photographs held by the LCC (*Section 4.5*).

2.3 IDENTIFICATION SURVEY

2.3.1 **Site Inspection:** a systematic surface inspection of a 50m wide corridor was undertaken to ensure complete coverage of the ground. The whole of the area subjected to field walking was open pasture and was walked on 20m transects to identify earthworks. The section of the study corridor to the west of the M65 was through the Walker Industrial Park and no inspection was undertaken here as it was entirely covered by modern buildings.

2.3.2 The archaeological detail, as well as significant topographical detail, was mapped to an accuracy of +/- 1m, using differential Global Positioning System (GPS) techniques. This uses electronic distance measurements along radio frequencies to satellites to enable a fix in Latitude and Longitude, which were subsequently converted mathematically to Ordnance Survey National Grid.

2.3.3 **Artefact survey:** none of the field walking study area was ploughed at the time of the visit and artefact survey was therefore not possible.

2.4 DETAILED SURVEY - NEW RESERVOIR

2.4.1 A level 2b survey (see LUAU survey levels, *Appendix 2*) was undertaken on the area of quarrying within the extent of the proposed New Guide Reservoir. This entailed the detailed mapping of the surface features, but only selective topographic detail was recorded. Survey control was established over the site by closed traverse and internally was accurate to +/- 15mm; it was located with respect to field boundaries. The surface features were surveyed by Electronic Distance Measurement (EDM) tacheometry using a total station linked to a data logger; the accuracy of detail generation was appropriate for a 1:500 output. The digital data were transferred onto a portable computer for manipulation and transfer to other digital or hard mediums. Film plots were then output via a plotter. The archaeological detail was subsequently drawn up in the field as a dimensioned drawing on the plots with respect to survey markers and the survey drawings were then generated within a CAD system which allows output at any scale.

2.5 GAZETTEER OF SITES

2.5.1 All of the information concerning archaeological sites in the affected area has been collated into a Site Gazetteer (*Section 7*). This provides details of their location, origin, and an assessment of their archaeological potential. Locations are given as eight-figure National Grid References where possible. A summary description of each site is provided in conjunction with a reference to the source of the information (SMR, cartographic, documentary, field inspection), and assessment has been given of the archaeological potential of each site. Other sites beyond the extent of the corridor, which were considered to be of background relevance, are mentioned in the text with appropriate SMR references. Apart from Sites 1 and 2, all sites are depicted on Figure 3 showing their locations.

2.6 **ARCHIVE**

2.6.1 A full archive has been produced to a professional standard in accordance with current English Heritage guidelines (English Heritage 1991). The archive will be deposited in the Lancashire Record Office with a copy to the Lancashire Sites and Monuments Record. A copy of the archive will also be available for deposition with the National Monuments Record in Swindon.

3. TOPOGRAPHICAL AND HISTORICAL BACKGROUND

3.1 GEOLOGY

- 3.1.1 The study area is on the flank of the Hercynian Rossendale Anticline, with a solid geology of Upper Carboniferous (Lower Westphalian) Coal Measures at the southern edge of the study area and Sandstone outcrops at the northern edge of the area (Ordnance Survey 1979). The glacial drift cover consists of boulder clay and mixed sand and gravel deposits. The soils at the south-eastern end of the study area are Rivington brown earths, whereas those to the north-west at Guide crossroads are Brickfield earths of the Cambic Stagnogley series (Lawes Agricultural Trust 1983).

3.2 HISTORICAL BACKGROUND

- 3.2.1 **Prehistory:** in Lancashire the majority of known prehistoric sites are either on the lowland moorlands or along the main river valleys, such as the Ribble and Lune. There is little documented evidence of prehistoric sites in the marginal uplands to the south of the Ribble Valley, and there are no sites identified within the SMR in the Guide area.
- 3.2.2 **Early medieval:** the church at Blackburn is popularly supposed to have been founded in AD 596, but otherwise there is no evidence for earlier settlement although the presence of the Roman road from Manchester to Ribchester probably remained a routeway of some significance (*Section 4.1.2*).
- 3.2.3 **Medieval:** the study area lies within the township of Nether (or Lower) Darwen in the parish of Blackburn; in the medieval period, it was within the Hundred of Blackburn, a division of Lancashire. Little is known of this part of East Lancashire until Domesday Book (1086), which refers to the Hundred of Blackburn as being divided into 28 manors held by freemen; this type of division of the Hundred with responsibility for the collation of dues being given to freemen is likely to have been based on the Danish system of land tenure, similar to that used in the adjacent Hundred of Derby (Farrer and Brownbill 1911).
- 3.2.4 Roger de Poitou had been granted the Hundred of Blackburn by William I but shortly afterwards it was passed on (perhaps involuntarily) to Albert Gresli and Roger de Busli. By 1102 the whole of the Hundred was given, by Henry I, to Robert de Lacy (Wightman 1966, 37), who it seems established feudal tenure (Smith 1961). These lands were given to de Lacy to hold as tenant in chief because they had been forfeited by Roger of Poitou, for his support of Robert Belleme in a failed rebellion against Henry's rule (Greenwood and Bolton 1955, 8). The family did not, however, hold them for long because by 1118 Robert de Lacy's estates were declared forfeit and he was banished (Smith 1961, 24). His estates were held from the King by Hugh de la Val until his death c1130, when his widow married William Maltravers who obtained a fixed term grant of the estates. Sometime after the accession of Stephen, in 1135, the forfeited estates were restored to Robert II de Lacy (Farrer 1897, vi). The de Lacy estates, which included Blackburnshire, were administered in the early twelfth century from Clitheroe and formed part of the de Lacy Honour of Pontefract. It would appear that during Robert's forfeiture the castle was built at Clitheroe.

- 3.2.5 During the medieval period Blackburn became a major market town with several fairs held throughout the year (Freeman *et al* 1966), but there was a corresponding rise in the importance of Clitheroe, and by 1311 Blackburn had declined in status, from being a 'royal demesne' in 1080, to a 'homage vill' (Smith 1961).
- 3.2.6 During the reign of Henry II, Upper and Lower Darwen, together with Eccleshill, were part of a grant, from Henry de Lacy, to Robert Banastre. These estates eventually passed to the Langton family in 1569. By 1637, Lower Darwen was owned by Sir Thomas Walmesley (the OS 1st edition 1" map has marked "Walmesley Fold" just west of the study area, *Section 4.1.3*) and thereafter to the family of Lord Petre, who still owned the estate by the later nineteenth century (Baines 1893).
- 3.2.7 Beyond the major market town of Blackburn there seems to have been little occupation of the region during the medieval and early post-medieval periods. The township of Lower Darwen seems to have comprised large tracts of uncultivated moor and moss lands, and for the most part was not reclaimed by draining and cultivating until the nineteenth century. Yates' 1786 map shows few nucleated settlements, although there were some scattered farms along the roads. The documentary evidence indicates that there was much "assarting", ie the clearance of land, mainly for pasture or grazing (Freeman *et al* 1996). This is also indicated by the common use of name 'fold' in this area. There was little arable farming; the land was used for grazing for cattle rearing and it is probable that there was little incentive for an established field system. It is likely that the population was very sparse (Baines 1825).
- 3.2.8 **Post-medieval:** during the later post-medieval period the land was more intensively utilised and populated. Blackburn became a cotton town drawing a large population. The outlying areas were also settled and many of the outlying villages were established at this time. The earliest reference to Blackamoor is in Baines' *Directory* of 1825 and the first reference to Guide is in connection with the reservoir constructed there in 1845 (Farrer and Brownbill 1911). In Guide there were cottages with ground floor loom shops (Site 03). The study area lies adjacent to coal measures, and there is documentary evidence for an old coal mine in the study area (Site 12).
- 3.2.8 There is little evidence as to the individual land holdings and land use in the later post-medieval period, either on Yates' 1786 map or the OS 1st edition map. Blackamoor is not on Yates' map, but is in Baines' *Directory* of 1825, when a Laurence Whittaker is recorded as living in the township of Lower Darwen and owning a house or piece of land known as Black'a'moor. Later sources record that in 1875 the Vicar of Blackburn, Dr. Whittaker, appealed for money for building a school on a piece of Glebe land at Blackamoor (Horne 1929), which is an indication of the increasing population of this locality.
- 3.2.9 Much of the study corridor is now built over by modern developments including, most recently, the M65 and the Walker Industrial Park.

4. ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL

4.1 DESK-BASED STUDY (FIGS 2 AND 3)

- 4.1.1 **Cartographic Sources:** Yates' 1786 map of Lancashire shows the Roman road from the south leading through Blackamoor and into Blackburn. This was built in cAD 80 to link the Roman forts at Manchester and Ribchester.
- 4.1.2 There are a number of farms depicted on Yates' map of 1786 and the OS 1st edition map (1844) which include Pickering Fold, Walmesley Fold and Aspinall Fold, the latter being within the study corridor. Pickering Fold has a date-stone of 1689, which almost certainly refers to the date of the erection of the stone building during a period when many farms of earlier origin were rebuilt in stone during the seventeenth century (Pevsner 1969). Walmesley Fold is marked to the east and was probably named as such during the tenure of Lower Darwen by Sir Thomas Walmesley in the early seventeenth century. To the south of these farms is Aspinall Fold, where trial trenches were undertaken by GMAC in 1995 prior to the building of the M65; the earliest archaeological material identified here dated to the eighteenth century (GMAC 1995). Around these farms, Aspinall Fold and Walmesley Fold in particular, the fields are smaller than the large rectangular parliamentary enclosure fields found at the western end of the study corridor. Some of these small fields display sub-radial patterns centred on the farms and these often reflect the initial intake into an area of unimproved land. Near Aspinall Fold is a relict example of an intake field (Site 07, *Section 4.1.8*), which is overlain by boundaries of the parliamentary enclosure field system. It is evident that these field-systems are of some antiquity (*Section 4.1.2*) and there is a possibility that the field systems and associated farms may have later medieval origins.
- 4.1.3 To the east of the study area, close to the proposed new reservoir, was Copster Hill Farm, also marked on the 1st and 2nd edition OS maps. The buildings here were surveyed by GMAC in 1994/5 and found to be of laithe construction and were possibly built in c 1789, subsequent to the enclosure of the moorland in 1779 (GMAC 1995).
- 4.1.4 The earliest cartographic mention of Guide is on the 1":1 mile 1844 1st edition OS map where it is marked "The Guide". Place names such as Guide or Post are generally taken to mark a place where there was a sign post (Field 1993).
- 4.1.5 Considerable landscape developments have taken place subsequent to 1844 as evidenced by comparison between this OS map and that published by the OS c50 years later in 1891. Two reservoirs had by then been sited to the east of the Roman road and north of the Blackamoor Road. The crossroads at Guide had an Inn and a Smithy marked in addition to other unmarked buildings. Within the study area the farms were still in existence, but there were additional quarries marked on the 1891 map.
- 4.1.6 **Lancashire Sites and Monuments Record:** an examination of the Lancashire Sites and Monuments Record (SMR) revealed one entry relating to the Roman road (Site 01), four entries sited south-east of Blackamoor and in the vicinity of the Roman road,

although only one of these lies within the area to be affected by the proposed development (Site 02), and five entries sited on the Blackamoor road and in Guide (Sites 03-06, and 14). The sites in the vicinity of the Roman road includes the (post-medieval) site Pickering Fold Farm (Site 02). There is also a well (PRN 7416), a cobbled yard surface below the Blackamoor Public House (PRN 4837) and the Methodist School (PRN 7413) at Blackamoor, but these are well beyond the study area and have not been included in the site gazetteer. The sites on Blackamoor Road and in Guide comprise a row of hand loom weavers' cottages (Site 03) and an inn (Site 04), both located on the crossroads of Guide, and the copper works east of Guide (Site 05). The two sites within the study area are the sandstone quarry near Benson House (Site 14) and a well between Copster and Guide Farm (Site 06). The pertinent SMR entries are listed in the Site Gazetteer (*Section 7*).

- 4.1.7 **Aerial photographs:** three features (Sites 07-09) of potential interest were located on the vertical aerial photographs held by LCC. Two of them (Sites 07 and 08) are overlain by field boundaries marked on the 1st edition OS map and were clearly earlier. The first site (Site 07) was a large rectangular enclosure close to Benson House with the west side parallel to the Roman road to the west; the south-west corner has been eroded or disturbed. The north-west corner has been delineated by a short row of trees, possibly an old field boundary, and a greater extent of the boundary was marked on the 1:2500 map (1891). The site was possibly an early intake prior to the main enclosure movement. The enclosure has now been largely destroyed by the construction of the M65, but was not evaluated during the archaeological programme prior to the construction of the motorway (GMAC 1994).
- 4.1.8 The second feature of interest (Site 08) was a field boundary or trackway centred on, but not aligned to, the Aspinall Fold farmhouse, possibly continuing westward towards the site of Pickering Fold Farm. This may have been identified by the GMAC 1994 assessment (GMAC 1994 nos. 42-43). The third feature (Site 09) is a series of sub-circular earthworks which reflect an area of sandstone quarrying to the east of the Belthorn Road., but were also not recorded by the GMAC assessment (1994). Clearly seen on the aerial photographs is the sandstone quarry east and south of Benson House (Site 14), which is already recorded on the SMR and on the OS maps.

4.2 IDENTIFICATION SURVEY (FIGS 3 AND 4)

- 4.2.1 Five sites were identified on the line of the pipeline, and one on the site of the reservoir; all were under pasture. The two fields to the south-west of Aspinall Fold were on flat ground, whereas there is a relatively steep gradient (from c190m AOD to 230m AOD) between there and Benson House. To the east of Benson House the ground rose gradually to the east to c260m AOD. It was in the area above 200m AOD that all the extraction sites were observed (Sites 10, 12-14). All comprised sandstone extraction sites varying from single extractions (c15m diameter, Site 13), to multiphase small-scale extractions over a wider area (Site 12) and larger scale extractions (Site 10). Possible coal extraction was also observed within one site (Site 12). An unmarked trackway, c1.5m wide on a stone-built bank 0.5m high (Site 11), was also observed between extraction sites 10 and 12.

- 4.2.2 **Scar Edge Delves:** by far the largest of the extraction sites was that located on the site of the proposed reservoir (Site 10). This is shown on the 1st edition OS map of 1844 as two separate quarries named 'Scar Edge Delves'. These quarries have subsequently been expanded to become a single quarry with one working face around the northern, western and southern sides of Scar Edge Delves. The area was fully vegetated, and it was therefore unfeasible to inspect either the working face, which survived from between c1m and 4m height, or the working areas, where processing/extraction features may survive. Three trackways were observed within the proposed reservoir area. One track was observed to the west of the quarry (10A), on an approximately north/south alignment, and appears to be the track shown on the 1st edition Ordnance Survey map of 1844 leading to the 'Old coal pit' to the north of the study area. A second track (10B), from the south-west corner of the field running towards the working face at the south-west corner up a slight incline, appears to be part of the track shown on the 1st edition Ordnance Survey map of 1844 leading to both earlier quarries. A third trackway was observed around the western and northern faces of the quarry (10C), possibly leading out to the north-west and towards trackway 10A to the west. To the north and west of this trackway small spoil heaps were observed up to 40m in length or 15m diameter, but only c1m in height. The amount of spoil indicates that only stone of a high quality was removed from the site and would suggest that the quarries were supplying quality building stone rather than walling stone.
- 4.2.3 Further to the west an extraction area, comprising two possibly separate components, was observed. The eastern of these had an overgrown, western, working face c20m in length and 2.5m high. A trackway was observed leading up past the northern end of the working face towards a gateway to the north-west. A levelled working area (c8m wide) was also observed to the west of the working face, though it was not possible to identify any features within it. At the rear (west) of the platform, cut into the spoil heaps, which were c0.6m high, was a smaller flat platform (Site 12B: c7m x 2.5m). No structural remains were observed on the platform, but its shape and position suggest that this was a building platform.
- 4.2.4 Further to the west several horseshoe-shaped pits were observed (Site 12C), forming a ridge c25m long and 1.2m high. Although these have the appearance of early small quarrying pits (c3m in diameter), the area is shown on the 1st edition Ordnance Survey map of 1844 as 'Old coal pit'. It would therefore appear that these were early nineteenth century coal extraction shafts. There is a large area of low spoil heaps, up to 1m high, to the west of these shafts, and there is also subtle evidence of multi-fingered spoil heaps, up to c1m wide and 0.4m high, at the western end of the site, underlying the later spoil. A hollow-way was also observed along the northern edge of the spoil heaps which appears to follow the line of a field boundary shown on the 1st edition Ordnance Survey map of 1844.
- 4.2.5 To the north of the sandstone extraction, at the eastern end of Site 12, a similar horseshoe-shaped pit, c3m diameter and 1.2m deep, was observed (Site 12A). However, due to its position along the same break of slope as the quarry to the south it is most likely that this was a small sandstone extraction site, which was probably earlier than the main quarry.
- 4.2.6 Two further extraction sites were observed within the pipeline corridor. Site 14 comprised two horseshoe-shaped extraction sites on either side of a field boundary

wall. The part to the north-west is shown on the 1st edition Ordnance Survey map of 1844 as 'Sandstone quarry', and appears to be approximately the same size as that observed during the survey. It had a working face all around the northern end up to 2m high, with an extant stretch *c*1m high underneath the boundary wall. The working face continued along the north-western side for *c*20m, but was very overgrown. Partially worked material / processing waste was observed against and above the working face, as well as some modern dumped material, mainly vehicle parts, within the working area. The trackway leading out from the north-western corner to the track from Aspinall Fold shown on the 1st edition Ordnance Survey map of 1844 was also observed. The later quarry, to the south-east of the field boundary, was similar but smaller (*c*10m long) and had a trackway leading out to the south-west.

- 4.2.7 The other extraction site, immediately to the east of Benson House, was a horseshoe-shaped extraction pit *c*9m in diameter and with an overgrown working face *c*2.5m high (Site 13). This is the southernmost part of a large quarry complex shown on the 1:2500 map (1891); however, is not shown on the 1st edition Ordnance Survey map of 1844. This suggests that the quarry is later, although, it may not have been shown if it was a local, rather than commercial, quarry.
- 4.2.8 The two sites at the western end of the study area (Sites 15 and 16) comprised a small sub-rectangular, flat-bottomed depression with an associated small spoil heap, which appears to have been a recent machine-cut feature (Site 16), and a headland/lynchet at the top of the slope by Benson House (Site 15). The latter corresponds with the position of a field boundary shown on the 1st edition Ordnance Survey map of 1844. The field enclosure (Site 07) noted on aerial photographs to the north of Aspinall Fold was for the most overlain by the M65 motorway and was beyond the study corridor; it was therefore not investigated in the field.

5. DISCUSSION

5.1 INTRODUCTION

5.1.1 The assessment has revealed the presence of archaeological material in the area around the proposed pipeline and reservoir, which dates mainly from the post-medieval period. The moors were not cultivated on a large scale until, perhaps, the enclosure in the late eighteenth and early nineteenth centuries. Similarly, it was only with under drainage in the mid-nineteenth century that the heavy boulder clays would have realised their full agricultural potential. Thus the overall sub-surface archaeological potential of the land affected by the proposed development is likely to be relatively low. Although the assessment has identified some earlier sites these are for the most part on the lower land on the eastern side of the study area.

5.2 PREHISTORY

5.2.1 The assessment has demonstrated no evidence of prehistoric sites within the study area. Such negative evidence in upland areas can sometimes reflect obscuration by deep peat deposits, but in this instance the peat is of insufficient depth to prevent prehistoric features being exposed on the surface. Areas of intensive prehistoric upland settlement in Cumbria (Quartermaine and Leech forthcoming) have been found to be associated with areas of intensive contemporary lowland settlement. In the case of the present study area there are no known areas of lowland prehistoric settlement nearby and it is probable therefore that the general paucity of prehistoric sites within the study area reflects a genuine lack of prehistoric activity.

5.3 ROMAN

5.3.1 The Roman road is of significance in that it provided a route through the region and may have encouraged some rural development. However, to date there is no evidence for any Roman development between Manchester and Ribchester, the only associated activity in the vicinity being the postulated signalling station at Melling to the north of Blackamoor (Kenyon 1991). The excavations at Davy Field Brow (SD 36994 42461) revealed that the Roman road was immediately west of the modern road (GMAC 1995).

5.4 MEDIEVAL

5.4.1 Aspinall Fold and Pickering Fold (Site 02) are early post-medieval farms; Pickering Fold has a late seventeenth century date stone, which could relate to a rebuilding rather than a newly established farm site (Pevsner 1969) and Aspinall Fold has an associated intake field (Section 4.1.8; Sites 07 and 08), which predates the establishment of the large rectangular fields established as a result of parliamentary enclosure (late eighteenth/early nineteenth centuries). The east side of this field enclosure may correspond to Site 46 located in the M65 assessment (GMAC 1994). Both farms are likely even to be older than their current structures and may potentially have medieval origins.

5.4.2 Additionally the place names here display a degree of homogeneity; it is possible that the land was cleared during a brief episode and then divided and named after the individual tenants (*Section 4.1.4*). The documentary evidence suggests that the farm houses (Dickens Fold, Walmsley Fold, Aspinall Fold) were built during the late seventeenth and early eighteenth centuries (*Section 4.1.2*). These three farms comprise the earliest evidence for settlement in the area of the study corridor, and probably result from the trend towards enclosure of marginal land in that period; this would appear to demonstrate the beginning of the slow increase in population and development of the region.

5.5 INDUSTRIAL EXTRACTION

5.5.1 In the late eighteenth and early nineteenth centuries, at the same time as the moorlands were being enclosed, the east Lancashire moors were also becoming subject to an expanding commercial quarrying industry, supplying sandstone for building and road surfacing in the expanding local industrialised towns. Although no large scale quarries were located within the study area, the observed landscape of small quarries with localised coal extraction from the small seams within the sandstone geology is typical of the early/mid-nineteenth century extraction.

6. ARCHAEOLOGICAL IMPACT AND RECOMMENDATIONS

6.1 IMPACT

- 6.1.1 This assessment has highlighted the archaeological resource within and around the assessment area. The archaeological material is for the most part of local importance, comprising examples of early commercial sandstone and coal extraction in the region, as well as relict elements of early field systems.
- 6.1.2 The Scar Edge Delves Quarry (Site 10) will be adversely affected by the construction of the new reservoir; the southern part of the former quarry will be destroyed although the northern extent will be preserved under the present proposals.
- 6.1.3 The track at Elton Road (Site 11) will be cut by the proposed pipeline. The Site 12 quarries will similarly be cut by the proposed pipeline; these are on the centre line of the proposed pipe and a significant proportion of the workings may be destroyed by the topsoil strip in advance of the laying of the pipe. The quarry at Benson House (Site 13) is on the edge of the study corridor and the majority of the quarry is outside the study corridor; it may therefore not be directly affected by the laying of the pipeline. Quarry 14 at Aspinall Fold Farm is on the centre line of the proposed pipe; it is relatively small and it is likely that this will be wholly destroyed during the top-soil strip and pipe-laying operations. Site 16 at Aspinall Fold is a small depression which is probably of modern date. It is on the edge of the study corridor and may not be affected by the proposed topsoil strip in advance of the pipe laying.
- 6.1.4 Sites 01-06 and 09 are too remote from the proposed reservoir and pipeline to be affected. Site 07, the Aspinall Fold field system is now largely destroyed by the construction of the M65 and is in any case just beyond the extent of the pipeline corridor.

6.2 RECOMMENDATIONS

- 6.2.1 Current policy suggests that, wherever possible, archaeological remains are preserved *in situ*. This is embodied in the Institute of Field Archaeologists *Code of Conduct* and the Department of the Environment *Planning Policy Guidance Note 16*. There may be a requirement by the Lancashire County Archaeologist for a further programme of work which will be required to identify, locate, and document the existence and extent of surviving archaeological features.
- 6.2.2 The Scar Edge Delves sandstone quarry (Site 10) has now been subject to mitigation recording and it is recommended that no further recording be undertaken here. Quarry sites 12 and 18 have now been identified by the assessment of the proposed pipeline route and it is recommended that a programme of detailed survey be undertaken to mitigate their destruction.
- 6.2.3 It has been established that Aspinall Fold potentially has pre-enclosure period origins, and thus there is some possibility of finding ancillary structures and further field systems surviving as sub-surface remains. It is therefore recommended that a limited

number of evaluation trenches be excavated in the section of pipeline in the vicinity of the farm to investigate for a potential sub-surface archaeological resource.

- 6.2.4 Subject to the results of the evaluation trenching it may be also recommended that a watching brief be undertaken during the topsoil strip for the pipeline.

7. SITE GAZETTEER

Site number 01
Site name Roman Road
NGR SD 6977 2500 - 6766 3000
Site type Road
Period Roman
Source SMR 15,508; Yates 1786; 1st edition 1":1 mile OS 1844
Figure no Not shown on attached figures
Description
Section of Roman Road between Manchester and Ribchester.
Assessment
Outside the area of assessment.

Site number 02
Site name Pickering Fold Farm
NGR SD 36970 42522
Site type Farm
Period Medieval/Post-medieval
Source SMR 0985; Yates, 1786; 1st edition 1":1 mile OS 1844
Figure no Not shown on attached figures
Description
A two-storey stone building with associated barns. There is a datestone marked 1689.
Assessment
Outside the area of assessment.

Site number 03
Site name Guide: Handloom Weavers cottages
NGR SD 7070 2580
Site type Cottages: industrial
Period Post-medieval
Source SMR 4909; Timmins 1977
Figure no Fig 3
Description
A terrace of three handloom weavers cottages in Guide.
Assessment
This site lies to the east of the area of assessment.

Site number 04
Site name Guide Inn and well
NGR SD 7063 2587
Site type Inn
Period Post-medieval
Source SMR 7172; 1st edn 1":1 mile OS map 1844
Figure no Figs 2 and 3
Description
An inn shown on the OS 1st edition 6" and 1" maps at the Guide cross-roads.
Assessment
The site is immediately north of the area of assessment.

Site number 05
Site name Copperas Works near Guide crossroads
NGR SD 7082 2590
Site type Copper works

Period Post-medieval
Source SMR 7171; 1st edition 6": 1 mile OS map 1844
Figure no Figs 2 and 3
Description
 A copper works shown on the OS 1st edition map.
Assessment
 The site is outside the area of assessment.

Site number 06
Site name Well between Copster and Guide Farm
NGR SD 7078 2567
Site type Well
Period Medieval?/Post-medieval
Source SMR 7173; 1st edition 6": 1 mile OS map 1844
Figure no Figs 2 and 3
Description
 A well shown on the OS 1st edition 6" and 1" maps.
Assessment
 To the east of the area of assessment. It has now been destroyed by the construction of the M65 motorway.

Site number 07
Site name Aspinall Fold
NGR SD 7062 2548
Site type Large rectangular enclosure
Period Medieval/Post-medieval
Source Air photo LCC 1989/29 89 77; OS 2nd edition 1891 1:2500 map
Figure no Fig 3
Description
 A large rectangular enclosure close to Aspinall Fold farm; the south-west corner has been eroded or disturbed. The north-west corner was shown as delineated by a short row of trees, on the 1989 air photograph, and a more substantial section is shown on the OS 2nd edition 1:2500 map. Some of the boundaries have evidently been used in recent history, although they are now crossed by the present field system. The field is adjacent to Aspinall Fold farm and it is possible that this is an early intake associated with that farm which was superseded by the establishment of the enclosure field system.
Assessment
 The enclosure is just north of the proposed pipeline, but has already largely been destroyed by the construction of the M65 motorway.

Site number 08
Site name Aspinall Fold
NGR SD 7060 2540
Site type Field Boundaries?; Trackways?
Period Medieval/Post-medieval?
Source Air photo LCC 1989/ 29 89 77
Figure no Fig 3
Description
 A series of field boundaries adjacent to the Aspinall Fold farmhouse, at least one of which is within the Site 07 enclosure. This boundary is shown lined with trees on the 1989 aerial photograph.
Assessment
 The boundaries are located just north of the proposed pipeline corridor.

Site number 09
Site name Spring Farm
NGR SD 7100 2565
Site type Old Sandstone Quarry
Period Post-medieval

Source Air photo LCC 1963 6/9985; OS 2nd edition 1891 1:2500

Figure no Fig 3

Description

A series of circular earthworks which are the remains of a nineteenth century sandstone quarry. It is shown on the OS 2nd edition map as an old quarry.

Assessment

The site is to the north of the proposed reservoir and pipeline.

Site number 10

Site name Scar Edge Delves

NGR SD 3716 4252 (Centred)

Site type Sandstone quarry

Period Post-medieval

Source Identification Survey 1997; first edition OS map 6" to 1 mile map 1844; second edition OS map 1:2500 (1891)

Figure no Figs 2, 3, 4

Description

This quarry is shown as two separate quarries on the OS 1st edition map (1844) and as one larger all embracing quarry on the 2nd edition 1:2500 map (1891) demonstrating considerable quarry activity in the intervening period.

The quarry survives as a single working face around the northern, western and southern sides of Scar Edge Delves and in part corresponds to the layout shown on the 1:2500 map, suggesting that only a limited amount of quarrying has taken place subsequent to 1891.

The area was fully vegetated, making it difficult to inspect the working face, which survived from between c1m and 4m in height, and the working areas, where processing/extraction features may survive. Three trackways were observed within the area of the proposed reservoir. One track was observed to the west of the quarry (Site 10A), on an approximately north/south alignment, and corresponds to the track shown on the first edition Ordnance Survey map of 1844 leading to the 'Old coal pit' to the north of the study area. A second track (Site 10B) runs from the south-west corner of the field towards the working face at the south-west corner up a slight incline. It corresponds to the track shown on the 1st edition Ordnance Survey map of 1844 leading to both earlier quarries. A third trackway was observed around the western and northern faces of the quarry (Site 10C), possibly leading out to the north-west and the trackway to the west. To the north and west of this trackway small spoil heaps were observed up to 40m in length or 15m diameter, but only c1m in height. Although these spoil heaps contain a significant amount of spoil, a much greater quantity would have been produced, and must therefore have been transported away from the site.

Assessment

The site in part lies within the area of the proposed reservoir and will be partly destroyed.

Site number 11

Site name Elton Road

NGR SD 3714 4252 (Centred)

Site type Track

Period Unknown

Source Identification Survey 1997

Figure no Fig 3

Description

A trackway 1.5m wide on a stone-built embankment 0.3m high. It appears to be a continuation of the track on the other side of Elton Road, but it is unclear where it led.

Assessment

The site lies within the pipeline corridor and will be partially destroyed.

Site number 12

Site name Old coal pit

NGR SD 3714 4253 (Centred)

Site type Coal and Sandstone extraction

Period Post-medieval

Source Identification Survey 1997; first edition OS 6" to 1 mile map of 1844

Figure no Figs 2 and 4

Description

An extraction area comprising two possibly separate components. The eastern of these had an overgrown, west-facing, working face c20m in length and 2.5m high. A trackway c0.8m wide, was observed leading up past the northern end of the working face towards a gateway to the north-west. A flattened working area was also observed to the west of the working face, c8m wide, though it was not possible to identify any features within it. At the rear (west) of the platform was a smaller flat platform (Site 12B) c7m x 2.5m which was cut into the spoil heaps (c0.6m high). No structural remains were observed on the platform, but its shape and position suggest that there may have been a building here. Further to the west several horseshoe-shaped pits were observed (Site 12C), forming a ridge c25m long and 1.2m high. Although these have the appearance of typical early small quarrying pits c3m in diameter, the area is shown on the first edition Ordnance Survey map of 1844 as 'Old coal pit'. It would therefore appear that these were early nineteenth century coal extraction shafts. There is a large area of low spoil heaps, up to 1m high, to the west of these shafts, and there is slight evidence of multi-fingered spoil heaps, up to c1m wide and 0.4m high at the western end of the site, underlying the later spoil. A hollow-way c0.7m wide was also observed along the northern edge of the spoil heaps which appears to follow the line of a field boundary shown on the first edition Ordnance Survey map of 1844. To the north of the sandstone extraction, at the eastern end of Site 03, is a similar horseshoe-shaped pit c3m diameter and 1.2m deep (Site 12A). However, due to its position along the same break of slope as the quarry to the south, it is most likely that this was a small sandstone extraction site, possibly earlier than the main quarry.

Site number 13

Site name Benson House

NGR SD 3709 4254 (Centred)

Site type Quarry

Period Post-medieval

Source Identification Survey 1997; OS 2nd edition 1891 1:2500 map

Figure no Fig 3

Description

A horseshoe-shaped extraction site c9m in diameter and with an overgrown working face c2.5m high. There is no quarry shown here on the OS 1st edition map (1844), but there is an extensive quarry shown on the OS 2nd edition map (1891). This would appear to be the southernmost element of the large quarry.

Assessment

The site lies within the pipeline corridor and will be partly destroyed.

Site number 14

Site name Benson House

NGR SD 3708 4253 (Centred)

Site type Sandstone Quarry

Period Post-medieval

Source SMR 7174; identification Survey 1997; first edition OS map of 1844; OS second edition 1:2500 map (1891); LCC 1989/29 89 77

Figure no Figs 2 and 3

Description

Two horseshoe-shaped extraction sites on either side of a field boundary wall. The part to the north-west is shown on the first edition Ordnance Survey map of 1844 as 'Sandstone quarry', and appears to be approximately the same size as observed during the survey. By the time of the second edition map (1891) the quarry had expanded to the northern side of the boundary wall. The south-eastern section had a working face all around the northern end up to 2m high, with an extant stretch c1m high underneath the boundary wall. The working face continued along the north-western side for c20m, but was very overgrown. Partially worked material/processing waste was observed against and above the working face, as well as some modern dumped material, mainly vehicle parts, within the working area. There is a trackway leading out of the north-western corner to the track from Aspinall Fold which is shown on the first edition Ordnance Survey map of 1844. The later quarry, to the south-east of the field boundary, was similar but smaller (c10m long), with a trackway leading out to the south-west.

Assessment

The site lies within the pipeline corridor and may be destroyed.

Site number 15
Site name New Barn
NGR SD 3706 4253 (Centred)
Site type Earthwork
Period Unknown (Post-medieval?)
Source Identification Survey 1997; OS 1st edition map 6" to 1 mile (1844)
Figure no Figs 2 and 3

Description

A headland/lynchet, c0.5m high, by 1m wide and c50m in length, at the top of the slope by Benson House. This corresponds to the position of a field boundary shown on the first edition Ordnance Survey map of 1844.

Assessment

The site lies within the pipeline corridor and may be partly destroyed.

Site number 16
Site name Aspinall Fold
NGR SD 3706 4252
Site type Earthwork
Period Unknown
Source Identification Survey 1997
Figure no Fig 3

Description

A small sub-rectangular, flat-bottomed depression, c2m x 1.5m and 0.5m deep, with an associated small spoil heap c0.6m high on the eastern side. This appears to have been a recent machine-cut feature and was very boggy.

Assessment

The site lies within the pipeline corridor and may be destroyed.

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APPENDIX 1
PROJECT DESIGN

Updated December 1997

Lancaster
University
Archaeological
Unit

NEW SERVICE RESERVOIR, GUIDE

BLACKBURN, LANCASHIRE

ARCHAEOLOGICAL SURVEY

Proposals

The following project design is offered in response to a request from North West Water ltd, for an archaeological survey at the site of a proposed service reservoir at Guide, near Blackburn.

1. INTRODUCTION

1.1 The proposed reservoir on the north side of Elton Road, Guide, near Blackburn, Lancashire, will affect an area containing known coal mining landscapes. The site is between two former access roads, one leading to sandstone quarries (Scar Edge Delves) and the other to an old coal pit as shown on the OS 1st edition mapping. There are extensive mining remains scattered across the fields to the north and east of the Belthorn township and these probably post-date the enclosure award which is dated to 1774. By virtue of the archaeological potential of the area the County Archaeologist has recommended that an archaeological survey be undertaken to identify and record any upstanding surface features within the extent and environs of the proposed reservoir.

1.2 The Lancaster University Archaeological Unit has considerable experience of the evaluation and survey 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 have undertaken many surveys of mining landscapes notably the Kidburngill mining landscape in West Cumbria. 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

2.1 The following programme has been designed in accordance with a brief provided by Lancashire County Archaeological Service (LCAS), and verbal guidance by the County Archaeologist, to provide an accurate archaeological survey of the designated area within its broader context. The principal purpose of the survey is to identify the archaeology of the site, within a broad context and to record in greater detail the more significant archaeological features.

2.2 IDENTIFICATION SURVEY - RESERVOIR

2.2.1 An identification survey to record the character of the extant earthworks within the study area and provide an assessment of the archaeological significance of the earthwork remains. This would examine earthworks within the extent of the whole field, not just the area directly affected by the proposed reservoir, in order to provide an appropriate archaeological context for those features directly affected by the proposed development.

2.3 DETAIL SURVEY - RESERVOIR

2.3.1 A further program of detailed survey will be required to record the character of any extant earthworks within the vicinity of the proposed service reservoir. This will provide an assessment of the archaeological significance of the surface remains.

2.4 DESK-TOP STUDY - PIPELINE

2.4.1 A desk-top study will examine the potential for archaeological remains on the line of the proposed pipeline between the proposed new service reservoir and the Guide Pumping Station

2.5 WALK OVER SURVEY - PIPELINE

2.5.1 A walk over survey will be undertaken along the eastern section of the proposed pipeline. The western section, to the west of the M65, is presently covered by buildings of the Walker Industrial Park.

2.6 SURVEY REPORT

2.6.1 A written survey report will assess the significance of the data generated by this programme within a local and regional context. It will advise on the requirements for further evaluation or recording measures as necessary.

3. METHODS STATEMENT

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

3.2 FIELD INSPECTION - RESERVOIR

3.2.1 It is proposed to undertake a level 1 survey of the study area. This rapid survey is an initial site inspection which serves as the basis for undertaking and planning further archaeological work on the site. It represents the minimum standard of record and is appropriate to exploratory survey aimed at the discovery of previously unrecorded sites. Its aim is to record the existence, location and extent of any such site. The emphasis for the recording is on the written description which should record type and period and would not normally exceed c50 words. The extent of a site is defined for sites or features greater than 50m in size and smaller sites are shown with a cross.

3.2.2 The reconnaissance will be undertaken in a systematic fashion, walking on approximately 30m wide transects. In accordance with the verbal requirements of the County Archaeologist the study area is defined as the area of the field within which the reservoir will be located; the larger area will provide a broader topographic and archaeological context for the remains within the immediate extent of the affected area. It is proposed to use Global Positioning System (GPS) techniques to locate and record the features. GPS instrumentation uses electronic distance measurement along radio frequencies to satellites to enable a positional fix in latitude and longitude which can be converted mathematically to Ordnance Survey National Grid. The use of GPS techniques has proved to be an essential and extremely cost effective means of locating monuments, which can achieve accuracy of better than +/- 1m.

3.2.3 An early surface inspection such as this is highly recommended, as such work can frequently double the amount of archaeological information for an area. This fieldwork will result in the production of plans at a scale of 1:1,250, recording the location of each of the sites listed in the gazetteer. All archaeological information collected in the course of the field inspection will be recorded in standardised form, and will include accurate national grid references. This will form the basis of a gazetteer, to be submitted as part of the report.

3.3 FIELD SURVEY - RESERVOIR

3.3.1 Subject to the recommendations of the interim statement a programme of detailed survey will be undertaken to record any significant archaeological resource that will be affected by the proposed development. This will be a level 2b survey (see LUAU survey levels, Appendix 2) of this identified resource. The survey will involve the detailed mapping of these surface features, but will only survey selective topographic detail. Although the survey data will include altitude information this will not be used for the production of the level 2 survey. In accordance with the requirements of the brief, the detailed survey is costed on the basis of a single days fieldwork.

3.3.2 Survey control will be established over the site by closed traverse and internally will be accurate to +/- 15mm; the control network will be located with respect to field boundaries.

3.3.3 The surface features will be surveyed by EDM tacheometry using a total station linked to a data logger, the accuracy of detail generation will be appropriate for a 1:500 output. The digital data is transferred onto a portable computer for manipulation and transfer to other digital or hard mediums. Film plots will be output via a plotter. The archaeological detail is drawn up in the field as a dimensioned drawing on the plots with respect to survey markers. Some topographic detail is also surveyed if it is archaeologically significant or is in the vicinity of archaeological features. The survey drawings will be generated within a CAD system and can be output at any scale. The survey would be plotted as wet ink drawings on stable polyester film sheets, using RCHM(E) draughting conventions and line thicknesses appropriate for reproduction and reduction.

3.3.4 In conjunction with the archaeological survey a photographic archive will be generated, which will record significant features and general landscapes.

3.4 DESK-TOP STUDY - PIPELINE

- 3.4.1 The following will be undertaken as appropriate, depending on the availability of source material. The level of such work will be dictated by the timescale of the project.
- 3.4.2 **Documentary and Cartographic Material:** This work will rapidly address the full range of potential sources of information. It will include an appraisal of the Lancashire Sites and Monuments Record, as well as appropriate sections of County histories, early maps, and such primary documentation (tithe and estate plans etc.) as may be reasonably available. Particular attention will be paid to field and place names recorded on early cartographic sources as these often provide important evidence of archaeological activity. It will examine evidence for the relict industrial landscapes in the vicinity of the corridor. Any photographic material lodged in either the County Sites and Monuments Record or the County Record Office (Carlisle) will also be studied. Published documentary sources will also be examined and assessed.
- 3.4.3 **Aerial Photography:** A survey of the extant air photographic cover will be undertaken. This may indicate the range and survival of archaeological and structural features in the designated area. It will also facilitate the rapid recognition and plotting of archaeological features including those no longer visible at ground level. Identified features will be accurately plotted at 1:10,000.
- 3.5 **WALK OVER SURVEY - PIPELINE**
- 3.5.1 **Survey Methodology:** It is proposed to undertake an identification survey of the study corridor. This is a rapid site investigation undertaken alongside a desk top study as part of a site assessment. It represents the minimum standard of record and is appropriate to exploratory survey aimed at the discovery of previously unrecorded sites. Its aim is to record the existence, location and extent of any such site. An early surface inspection such as this is highly recommended, as such work can frequently double the amount of archaeological information for an area.
- 3.5.2 Any ploughed fields within the study corridor will be subjected to a detailed artefact survey to identify surface exposed artefacts. Fields under pasture at the time of the survey will be examined for extant earthworks. The survey will not be able to examine any fields under crop at the time of the survey, unless the crop is very low and permission has been granted by the farmer.
- 3.5.3 **Artefact Survey:** The artefact survey will involve walking along an average of 10m wide transects, which will identify the exposed artefacts, although only pre-nineteenth century material will be collected. Isolated artefacts will be individually bagged and allocated a unique record number; however, clearly defined artefact scatters will be collectively bagged and numbered. Analysis of the artefacts will be undertaken by in-house lithics and ceramic specialists.
- 3.5.4 **Earthwork Survey:** The earthwork survey reconnaissance will be undertaken in a systematic fashion, walking on approximately 20m wide transects. It will examine any surface indications of archaeological activity and will assess the significance, condition, chronology and topographic context of any archaeological features.
- 3.5.5 **Survey Recording:** The emphasis for the recording is on the written description which should record type and period and would not normally exceed c50 words. The extent of a site is only defined for sites greater than 50m in size and smaller sites are shown with a cross. The sites, be they earthworks or artefacts, will be located by pacing with respect to field boundaries and will achieve coordinates to an accuracy of +/- 10m. All archaeological information collected in the course of field inspection will be recorded in standardised form. The fieldwork will result in the production of plans at a scale of 1:2,500 and will record the location and distribution of any artefact scatters, and/or surface monuments, as well as documentary sites. All archaeological information collected in the course of field inspection will be recorded in standardised form, and will include eight figure national grid references. This will form the basis of a gazetteer, to be submitted as part of the report.
- 3.6 **SURVEY REPORT**
- 3.6.1 **Archive:** The results of Stages 3.2-3.5 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 any features and finds 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.
- 3.6.2 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 (as appropriate), and a synthesis (in the form of the index to the archive and the report) will be deposited with the Lancashire Sites and Monuments Record. A copy of the archive will also be available for deposition in the National Archaeological Record in London. LUAU practice is to deposit the original record archive of projects (paper, magnetic, and plastic media) with the appropriate County Record Office, and a full copy of the record archive.
- 3.6.3 **Collation of data:** The data generated by 3.2-3.5 (above) will be collated and analysed in order to provide an assessment of the nature and significance of the known surface and subsurface remains within the designated area. It will also serve as a guide to the archaeological potential of the area to be investigated, and the basis for the formulation of any detailed field programme and associated sampling strategy, should these be required in the future.
- 3.6.4 **Survey 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 Lancashire County Archaeologist. The report will present the results of the survey and desk-top work for the reservoir and pipeline. The report will include a copy of the project brief, 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, together with appropriate illustrations, including a map and gazetteer of known or suspected sites identified within or immediately adjacent to the study area. As appropriate, it will incorporate the detail survey drawings at 1:500 scale. It will also include a complete bibliography of sources from which the data has been derived, and a list of further sources identified during the programme of work, but not examined in detail.
- 3.6.5 This report will identify areas of defined archaeology, an assessment and statement of the actual and potential archaeological significance of any features within the broader context of regional and national archaeological priorities will be made. Illustrative material will include a location map, which 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).
- 3.6.6 **Proposals:** The report will make a clear statement of the likely archaeological implications of the intended development. It will also make recommendations for any further evaluation of the identified archaeological potential deemed necessary or desirable for individual sites. It will seek to achieve, as a first option, the preservation *in situ* of all significant archaeological features, and possible strategies for the mitigation of the development, including design modifications, will be considered. Where conservation is neither possible, nor practical, it may be appropriate to recommend a further stage of more intensive archaeological work in order to mitigate the effects of development.
- 3.6.7 **Confidentiality:** The survey report is designed as a document for the specific use of the client, for the particular purpose as defined in the project brief and this 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.
- 3.6 **GENERAL MATTERS**
- 3.6.1 **Access:** Liaison for basic site access will be undertaken through North West Water Limited (NWW). It is assumed that NWW will make initial contact with the land-owners and tenants.
- 3.6.2 **Health and Safety:** 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 now being implemented for all projects.

3.7 PROJECT MONITORING

3.7.1 **North West Water Ltd:** LUAU will consult with the Client regarding access to land within the study area. This consultation will include, if required, the attendance of the Lancashire County Archaeologist.

3.7.2 **Lancashire County Council:** Any proposed changes to the project brief or the project design will be agreed with the County Archaeologist, Lancashire County Council, in conjunction with the client. LUAU will arrange a preliminary meeting, if required.

4. WORK TIMETABLE

The phases of work will comprise:

4.1 **Field Inspection**

A one day period is required for the identification survey.

4.2 **Detail Survey**

A one day period is required for the detail survey.

4.3 **Desk Top Survey - Pipeline**

A 1 day period will be required to collate the data for the desk-top study

4.4 **Walk Over Survey - Pipeline**

A 1 day period will be required to undertake the field work

4.5 **Prepare Survey Report**

A four day period would be required to complete this element (assuming the detail survey has been undertaken)

4.6 LUAU can execute projects at very short notice once an agreement has been signed with the client.

5. OUTLINE RESOURCES

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

5.1 **Identification Survey - Reservoir**

1 man-day Project Supervisor
1 man-day Project Assistant

5.2 **Detail Survey - Reservoir**

1 man-day Project Supervisor
1 man-day Project Assistant

5.3 **Desk Top Study - Pipeline**

2 man-days External Contractor

5.4 **Walk-Over Survey - Pipeline**

1 man-day (in the field) Project Supervisor

5.5 **Survey Report** (incorporating both identification and detail surveys)

3 man-days Project Supervisor
0.5 man-days Project Officer

- 5.6 The costs for the detail survey provide for a single day of fieldwork (as outlined in the brief), for post-survey drawing production and additional report production. The results of all phases of fieldwork will be incorporated within a single survey report.
- 5.7 The project will be under the management of **Jamie Quartermaine, BA, Surv Dip, MIFA** (Unit Project Manager) to whom all correspondence should be addressed. All Unit staff are experienced, qualified archaeologists, each with several years professional expertise.

APPENDIX 2

LUAU LEVELS OF ARCHAEOLOGICAL SURVEY RECORDING

This describes the types of survey appropriate for the various stages of archaeological evaluation undertaken in advance of development as practised by the Lancaster University Archaeological Unit. They are based on survey levels defined by the Royal Commission on the Historical Monuments of England (RCHM(E)) and are in accordance with stages of evaluation defined by the Association of County Archaeological Curators (ACAO 1993).

Level 1 Survey (Assessment)

This is a rapid level of survey (Site Inspection in project design) typically undertaken alongside a desk top study as part of the site assessment (ACAO 1993, 14). It is an initial site inspection which helps the local planning authority to consider fully the archaeological implications of a planning proposal and also serves as the basis for undertaking and planning further archaeological work on the site.

The Level 1 survey represents the minimum standard of record and is appropriate to exploratory survey aimed at the discovery of previously unrecorded sites. Its aim is to record the existence, location and extent of an archaeological site. The emphasis for the recording is on the written description which should record type and period and would not normally exceed c50 words.

The location and extent of the sites is typically shown on 1:2,500 or 1:10,000 OS maps as requested by the client. The extent of a site is only defined for sites greater than 50m in size and smaller sites are shown with a cross.

There are two alternative techniques (Levels 1a and 1b), which provide different accuracy levels and have different applications:

Level 1a

The sites are located by manual distance measurement techniques (eg pacing) with respect to field boundaries and provide an accuracy of +/- 10m (8 figure grid ref.). The loss of accuracy is offset by the slightly reduced costs; however, it is only appropriate for enclosed land, because of the paucity of usable topographic detail.

Level 1b

The sites are located using Global Positioning System (GPS) techniques, which uses electronic distance measurements along radio frequencies to satellites to enable a fix in Latitude and Longitude, which can be converted mathematically to Ordnance Survey National Grid. As long as differential GPS techniques are employed then it is possible to achieve accuracies of better than +/- 1m. There is a slightly increased cost implication by comparison with Level 1a survey, but it can be undertaken in most terrains, even some woodland.

Level 2 Survey (Evaluation)

Level 2 survey defines the extent of all surface archaeological features on site in relation to topographic elements (eg field walls) and accurately defines the extent of the overall archaeological site. It is produced in conjunction with a full objective and interpretative description of the features. The Level 2 survey defines an archaeological context for any trial excavations and shows the location of the trenches in relation to the surface features. This level is used to assess the archaeological significance of the site and serves as the basis, along with other evaluation techniques, for the submission of recommendations to the District or County Planning Officer.

There are two sub-divisions of evaluation survey (2a and 2b), which define different levels of detail and complexity. The appropriate application of these levels depends on the extent of the survey areas, the complexity of the archaeological features and the requirements of the survey product.

Level 2 survey methodology

The difference between the two sub-levels (2a and 2b) is primarily in the density of raw data and the detail of the field draughting; and the basic survey methodology is essentially the same. The surveys are undertaken using Total Station survey equipment and are located either using Global Positioning Survey (GPS) techniques or by traverse with respect to Ordnance Survey control. The internal accuracy is typically $\pm 0.05\text{m}$ but is located with respect to the OS National Grid to an accuracy of $\pm 1.0\text{m}$ or better.

The survey methodology is designed to enable ease of upgrading of the survey levels as required. All Level 2 survey methods rely upon a permanent survey control and the raw survey data is produced with sufficient accuracy to enable their re-use on more detailed drawings at higher scales than originally intended. Fundamental to this process is that all draughting is undertaken within a Computer Aided Draughting (CAD) environment, which retains the primary accuracy of the raw data and allows flexibility of enhancement. Upgrading from Level 2a to 2b will require the provision of additional raw survey data as well as the enhancement of field drawing, but the upgrading from Level 2b to 3 will only require drawing enhancement, in the field, with respect to the raw survey data.

Level 2a

This defines the most basic level of instrument survey and is appropriate for the recording of scattered, low complexity archaeological features, typically those found during an extensive open area survey. Archaeological features are defined in outline and earthworks are shown with only minimal hachure annotation. Topography is for the most part extracted from an OS base, although topographic detail in the vicinity of archaeological features is recorded by instrument survey. The raw survey data is typically captured with sufficient density to enable the mapping of the resource appropriate for a 1:500 or reduced scale output. A requirement to output at a greater scale, would involve the provision of additional survey data and enhanced recording. The record incorporates a basic level of textual description of individual features and an overall interpretative assessment of complete site groups.

Level 2b

This enhanced level of evaluation survey recording incorporates a relatively large quantity of raw survey data, which can define the extent and form of individual monuments in considerable detail. The detail of earthworks are defined in sufficient detail, to show the character and form of individual earthworks, but does not provide a full interpretative record. The local topography is recorded in greater detail, but also incorporates OS data where spatially remote from the archaeological features. The primary distinction between the Level 2b and Level 2c survey is in the intricacy of the detail draughting. The Level 2b recording is appropriate for an upgrade of a cairnfield survey, for example, but would be inappropriate for the recording of complex earthworks for which a Level 3 survey would be more appropriate. The level of detail would enable appropriate reproduction up to a scale of 1:250. An upgrade from a Level 2b to a Level 2c survey would not need additional instrument survey data, but would require extensive field enhancement of the CAD record. This basic level of survey would typically be undertaken alongside trial excavation work as part of an evaluation (ACAO 1993). It can serve as a mitigation measure for smaller sites with poor surface survival and should be applied where sites of limited significance are under threat.

Level 3 Survey (Detailed Recording)

This is the most detailed level of purely interpretative survey and is equivalent to the RCHM(E) Level 3 survey. It involves very detailed interpretative hachure draughting of surface features and is intended for output at scales of up to 1:50. Because of the intricacy of detailed draughting it is inappropriate for large scale generalised mapping but instead is typically applied to the recording of complex earthworks, which involve considerable spatial analysis. Textually the relationship between individual features is contextually assessed and provides for detailed, internal analysis of a complex site. This is undertaken in addition to the description and overall assessment appropriate for the Level 2a survey.

Surveys undertaken at Level 3 from the outset involve the use of similar basic instrument methodologies as the Level 2b survey, although the draughting is more detailed and analytical. However, if a Level 3 survey is produced by upgrading a level 2b survey, then it is typically possible to use manual field survey techniques to enable the graphic enhancement of the more basic survey. An upgraded Level 3 survey is generally depicted on separate layers from the original Level 2b survey to enable subsequent more generalised output at lower scales if required. The design of the Level 3 survey is designed to be enhanced by the provision of contour detail into a Level 4 surface modelled survey. Subject to the requirements of the ACAO, the Level 3 survey can serve as a mitigative record for intermediary graded monuments.

Level 4 Survey (Comprehensive Recording)

Level 4 survey is a comprehensive record of the archaeological features in relation to the surface topography. It incorporates an interpretative hachure survey alongside a full computer generated model of the ground surface enacted when a full survey is needed in conjunction with excavations or in cases where detailed survey of fragile upstanding earthworks is the only appropriate mitigative measure.

The Level 4 survey is designed to record the archaeological site as fully as current technology will allow and is the appropriate mitigation response where significant sites are threatened with destruction. It is applied selectively to sites of particular importance and which have a good survival of surface features.

It is generated by the provision of additional survey data to the Level 2 or 3 surveys and is of an equivalent level of accuracy (+/- 0.05m). In many cases only a relatively limited amount of additional data is required to upgrade the Level 2 survey to the full surface modelled Level 4 and therefore this can be an economic recording option.

The Level 4 survey output is generated on CAD which maintains the original accuracy of the survey data and allows flexibility of drawing output at any scale. The drawing file will record the contour detail at different height separations and the final survey drawings can therefore be tailored to meet any requirements of the client.

ILLUSTRATIONS

- Fig 1 Guide Site Location Map
- Fig 2 OS 1st edition 6 to 1 mile Map 1844
- Fig 3 Guide Assessment Site map
- Fig 4 Detail Survey Map of Scar Edge Delves Sandstone Quarry (Site 10)
- Fig 5 1:10,000 Vertical Air Photograph 1989 (2989/77), Lancashire County Council

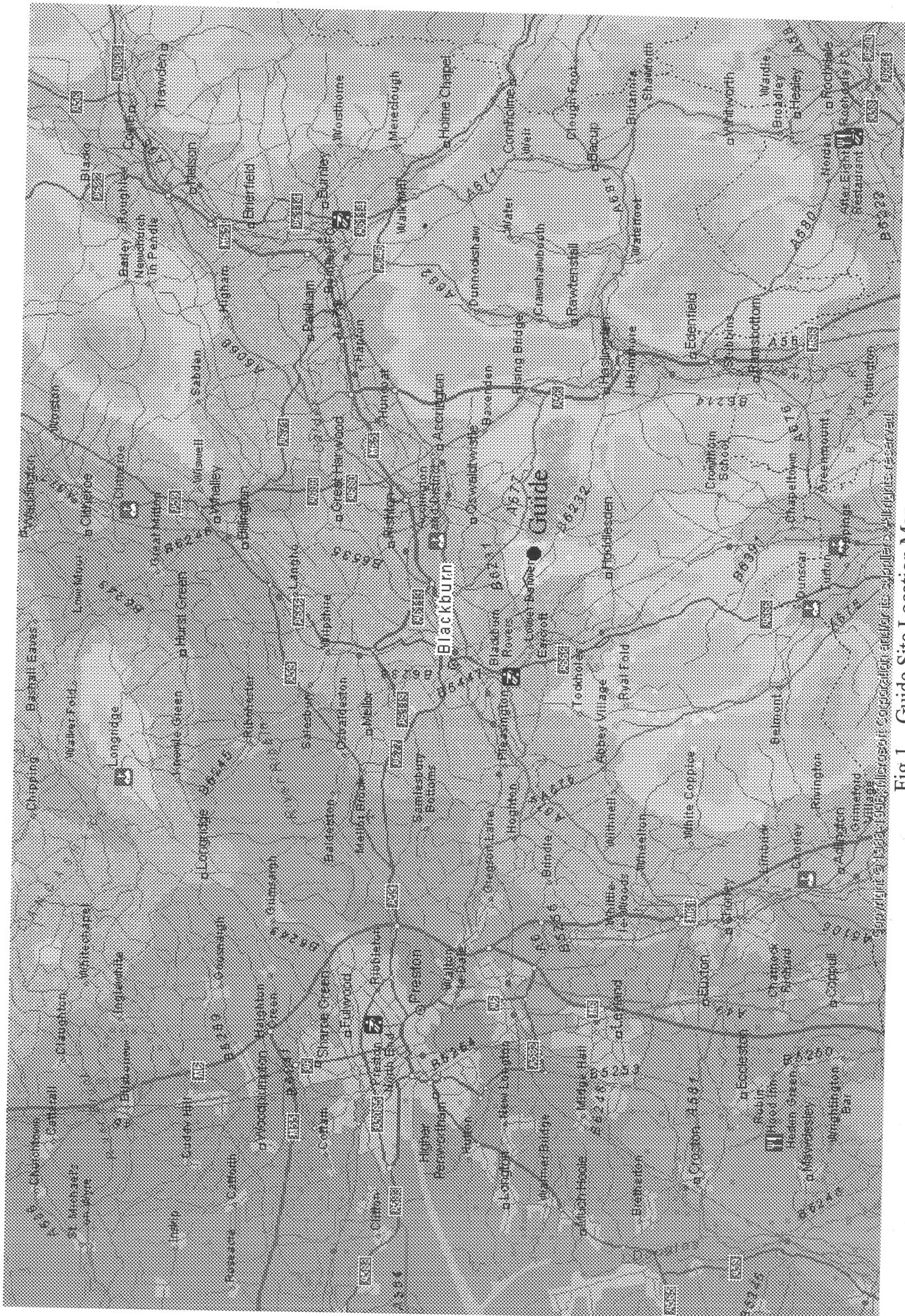


Fig 1 Guide Site Location Map

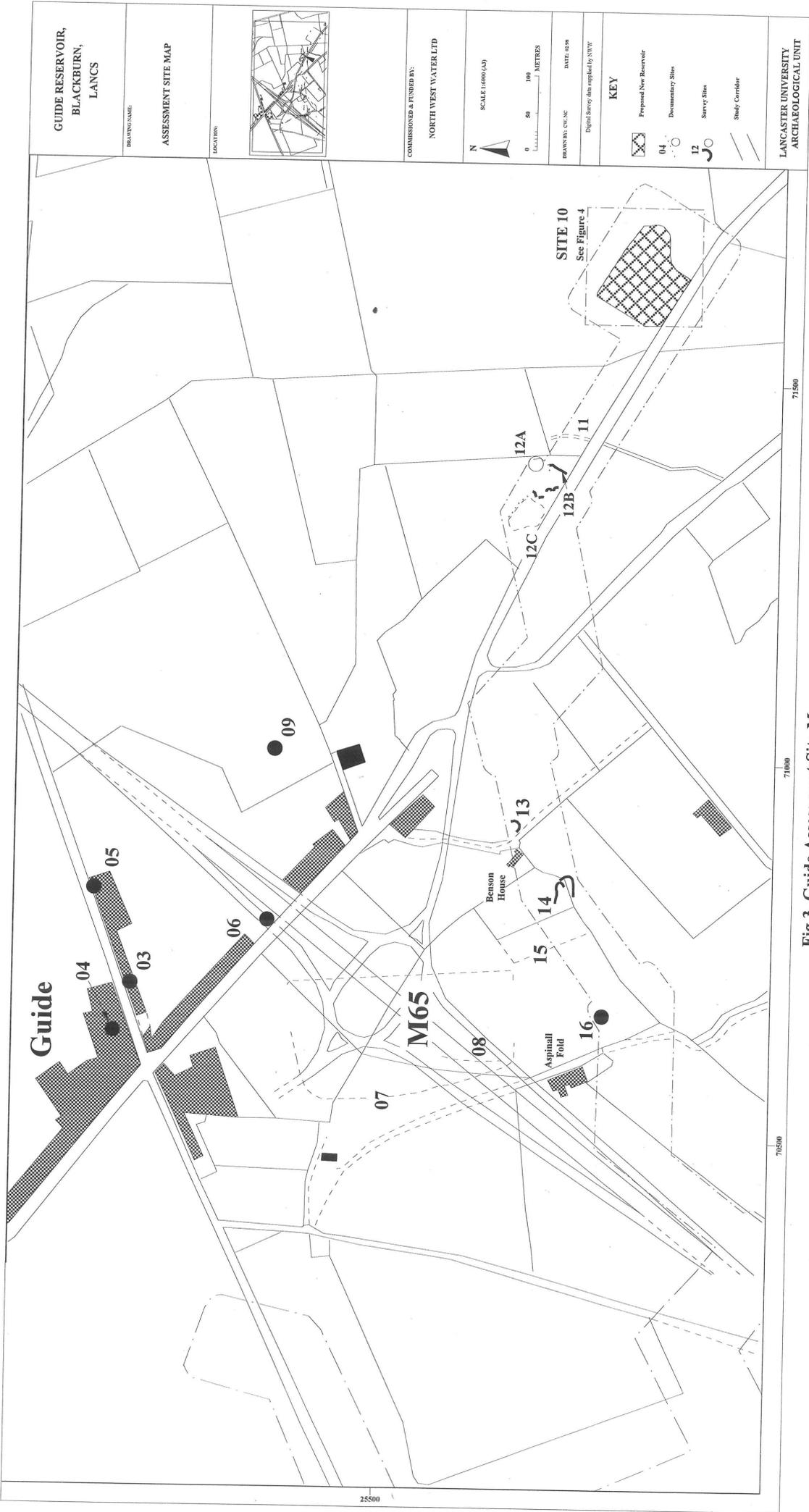


Fig 3 Guide Assessment Site Map

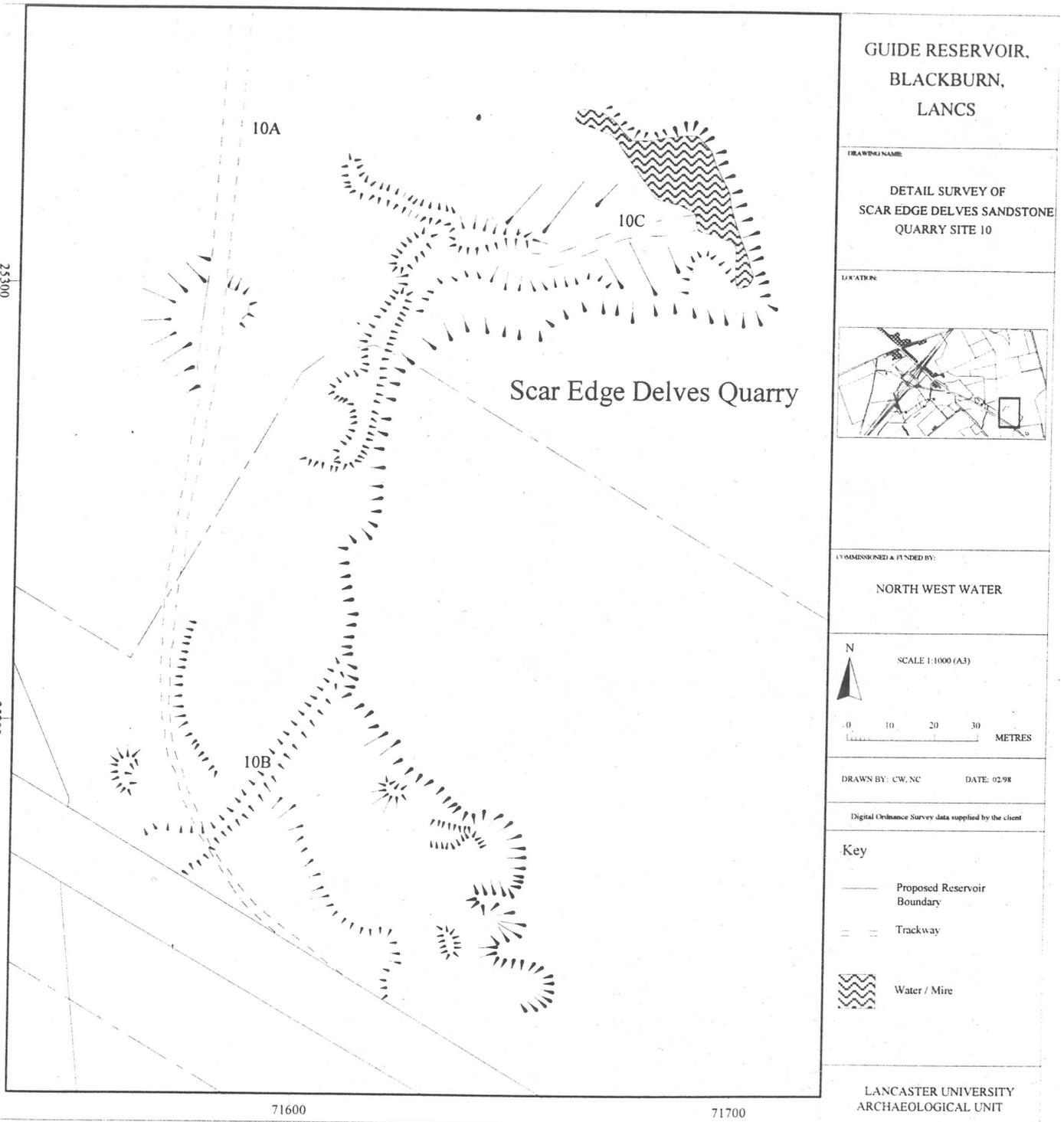


Fig 4 Detail Survey of Scar Edge Delves Sandstone Quarry - Site 10

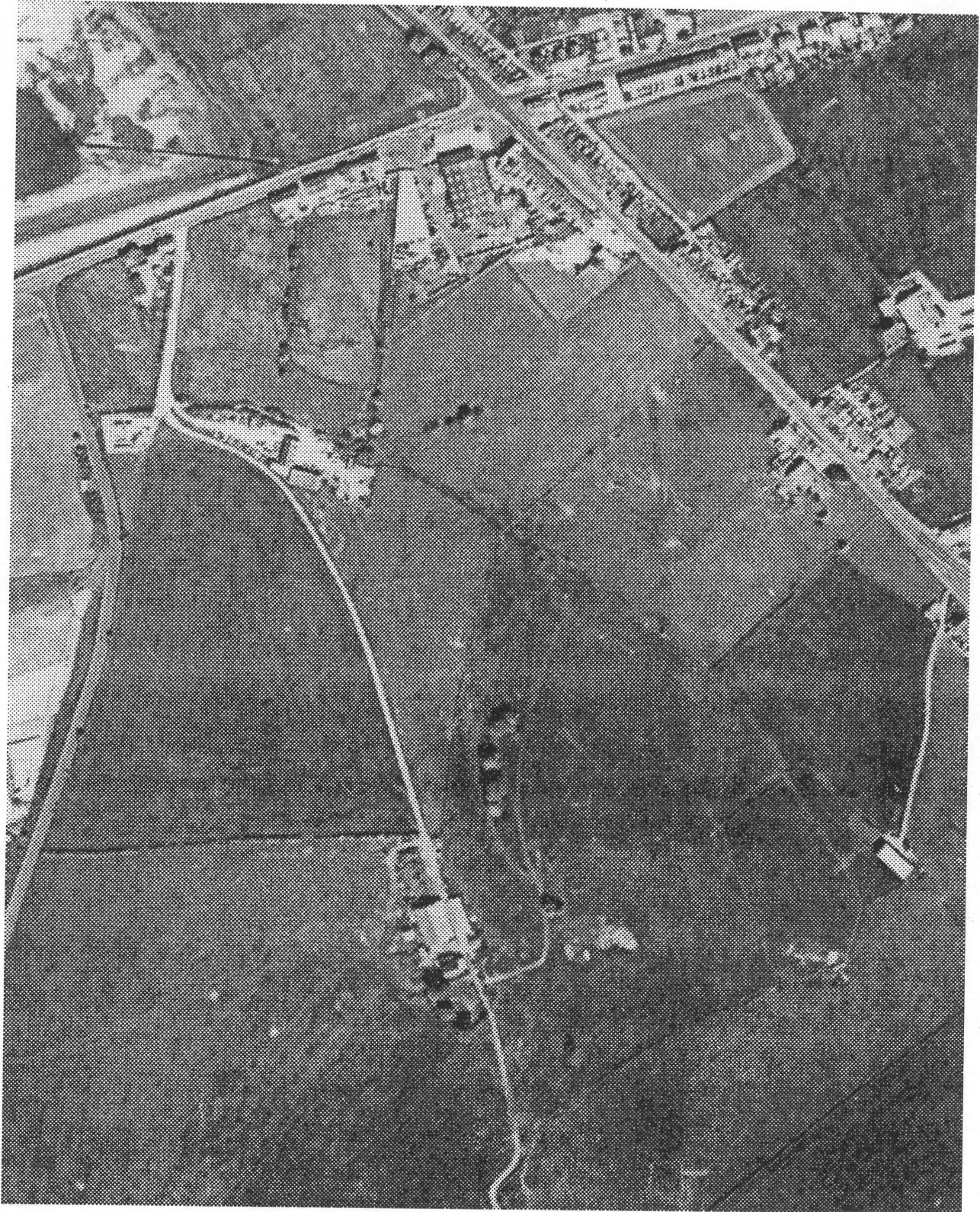


Fig 5 1:1:10,000 Vertical Air Photograph 1989 (2989/77) – Centred on Site 07 (Aspinall Fold)