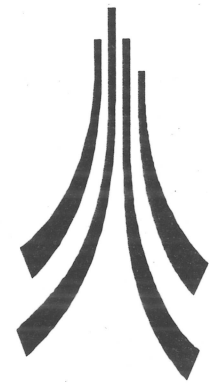


LANCASTER
UNIVERSITY
ARCHAEOLOGICAL
UNIT



September 1997

**BROUGHTON MOOR TO FLIMBY
PIPELINE
CUMBRIA**

Archaeological Evaluation Report

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The field evaluation was undertaken by Ian Scott, Richard Short and Mark Chesterman. The report was compiled by Ian Scott and edited by Jamie Quartermaine and Rachel Newman. The project was managed by Jamie Quartermaine.

EXECUTIVE SUMMARY

The Lancaster University Archaeological Unit (LUAU) was commissioned by North West Water Ltd to undertake an archaeological evaluation in advance of the construction a proposed pipeline between Broughton Moor and Flimby. The evaluation examined two sites which had been highlighted by an earlier assessment (LUAU 1997), the first of these was at the site of Seatonmoor Colliery, near Moorside Farm; the second was at the intersection between the line of the pipeline and a putative Roman road to the south of Cemetery House, near Flimby.

The evaluation of the Seatonmoor Colliery site involved the excavation of seven machine-cut trenches on an alternate 30m grid pattern over the extent of the pipeline corridor. No archaeological features were identified, although however, small sherds of post-medieval pottery were recovered during machining in several of the trenches. It is probable that these had been deposited during manuring and subsequent ploughing and do not necessarily reflect the existence of archaeological features.

The evaluation of the Cemetery House Track site involved the targeted excavation of four 10m x 1.8m trenches on either side of the putative Roman road. No evidence of any road metalling was identified but the only archaeological feature identified was a post-medieval rubbish pit, which contained considerable quantities of nineteenth century ceramics. Within the other trenches small sherds of post-medieval and twentieth century pottery were recovered, which is consistent with their deposition as a result of manuring.

In addition to the trenching programme a walk-over survey was undertaken along the western part of the pipeline route which had been significantly altered since the earlier assessment. This survey did not reveal any new sites.

The archaeological resource, identified during the evaluation of the Seatonmoor Colliery site, was insufficient to justify recommending any further archaeological work. Although the trenching on either side of the putative road did not identify the Roman road, the trenches, by virtue of the local topography, could not be excavated closer than 2.5m away from the present track and consequently there is a possibility that there are extant archaeological remains underneath the track. It is therefore recommended that an archaeological watching brief be undertaken during the topsoil strip for the pipeline construction programme.

1. INTRODUCTION

1.1 Project Background

- 1.1.1 In May 1997 an archaeological assessment was undertaken by Lancaster University Archaeological Unit (LUAU), on behalf of North West Water Ltd (NWW), in advance of the construction of a pipeline between Broughton Moor and Flimby (LUAU 1997). This highlighted two sites of potential archaeological significance, that could be affected by the proposed development: a nineteenth century colliery site (Site 10) and one of several possible lines of the Maryport to Burrow Walls Roman road (Site 16). In July 1997, at the request of North West Water Ltd (NWW), Lancaster University Archaeological Unit (LUAU) was commissioned to undertake an archaeological evaluation of these two sites. It was also required that a further programme of fieldwalking be undertaken to examine the western part of the pipeline route which had been altered since the earlier assessment. 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. This report presents the results of the evaluation.
- 1.1.2 The greenfield trenching, adjacent to the documented site of Seatonmoor Colliery Pit No. 2, was undertaken on 17th July 1997 and the targeted trenching on either side of the putative Roman road was undertaken on 22nd July 1997.

1.2 Topographic and Historical Background

- 1.2. **Location:** the line of the Broughton Moor to Flimby pipeline runs from the sewage works, located to the west of Broughton Moor village, to the coast alongside the Flimby allotment gardens. It extends from the inland hills near Broughton Moor and across to the coastal plain at Flimby. The pipeline corridor crosses the modern railway, a modern road and a metalled trackway to the south of Cemetery House which was the subject of part of the evaluation
- 1.2.2 **Geology:** the solid geology is mainly coal measures and Westphalian Grey Mudstone. The soils on the coast at Flimby are typical Stagnogley soils (711n Clifton), with Cambic Stagnogley soils (713g Brickfield) inland of this, and heavily disturbed soils around the Broughton collieries.
- 1.2.3 **Historical Background:** there is considerable evidence of prehistoric activity along the West Cumbrian coast, but particularly to the south of St Bees, represented for the most part by lithic scatters. At Ewanrigg, to the south of Maryport, a large enclosure was identified by aerial photography, which, on excavation, proved to have been in use from the Late Bronze Age through to the Roman period (Bewley 1992).
- 1.2.4 From the Roman period there was considerable military activity, particularly in this northern part of the coastal plain, as a result of the establishment of the frontier in this region, firstly along the Stanegate, then later in the form of Hadrian's Wall, which was extended by a line of installations along the West Cumbrian coast to Ravenglass. This acted as a protection from the possibility of seaborne attack and comprised a series of defensive structures linked by a road. There was a series of fortlets at intervals of one

Roman mile between larger forts and in between these fortlets there were two signalling stations set at exactly $\frac{1}{3}$ Roman mile intervals, echoing the system used on Hadrian's Wall. The most southerly of the signal stations (Tr 26b), so far identified, is just to the north of Flimby at Risehow, and it is thought that a milefortlet may exist under Flimby although this has not yet been identified (Wooliscroft 1994, 57). It has been argued by Bellhouse (1989) and Wooliscroft (1994) that the fortlet and signalling system terminated at Flimby rather than continuing on to the next major fort at Burrow Walls (Workington); however, this is based largely on negative evidence and the possibility of further defensive sites to the south of Flimby can not be dismissed.

- 1.2.5 Like many of the villages in this part of west Cumbria, Flimby has a medieval origin which is reflected in its associated sinuous reverse 's'-shaped long fields that were shown on the OS 1st edition map (1865); these are typically a product of medieval cultivation. The settlement has, however, expanded considerably to the north and west since the early mapping. Similarly, Broughton Moor (formerly Wyndham Row) has expanded considerably since 1865.
- 1.2.6 From the middle of the seventeenth century the West Cumberland coastal plain experienced an economic acceleration based increasingly on industrial-scale exploitation of coal measures, which serviced not only an expanding domestic market but was also for export. The larger regional landowners began to establish coastal ports to exploit the export potential of coal, notably the Lowthers at Whitehaven in the 1660s and the Senhouses at Maryport in the 1740s. The coal measures around Broughton Moor in the early eighteenth century were some of the richest in the British Isles; owned by the Duke of Wharton, the Broughton pits were so profitable that they were the objects of frequent take-over bids by the Lowther family (Beckett J V 1981). From 1780 the significance of the coalfield declined and in 1913 output only amounted to 0.8% of the national total with the last remaining colliery closing in 1986 (Wood 1988).

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 two sites (LUAU 1997: sites 10 and 16) that will be affected by the proposed pipeline between Broughton Moor and Flimby, Cumbria.
- 2.1.2 The project design provided for an archaeological trenching programme to investigate a putative Roman road and an area of nineteenth century coal mining. In addition it was required that field walking be undertaken to examine the westernmost section of the proposed pipeline, which had been altered subsequent to completing the assessment (LUAU 1997).

2.2 Field Survey

- 2.2.1 A systematic surface inspection of a 50m wide corridor of the westernmost section of the proposed pipeline (Fig 2), was undertaken to complete the earlier assessment. The whole of the area subjected to field walking was open pasture and was walked on 20m transects to identify any earthworks. The archaeological detail was mapped using a Global Positioning System (GPS). This system 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 accuracy of the method is +/- 1.0m and is adequate for the general location of the sites.

2.3 Trial Trenching

- 2.3.1 **Greenfield Trenching:** a programme of greenfield trenching was formulated in consultation with the County Archaeologist, who requested that trenches be excavated in a 30m grid pattern across the area adjacent to the documented site of Seatonmoor Colliery No. 2 Pit. This was intended to examine c5% of the moderately 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 either north/south or east/west (downhill or across slope) depending on the local topography.
- 2.3.2 A total of seven trenches was excavated measuring 30m by 1.80m and the trenches were on average 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. The continued use of the field as grazing for cattle after the excavations may affect the quality of the regrowth over the disturbed ground.
- 2.3.3 **Targeted Trenching:** four trenches were excavated perpendicular to the line of the putative Roman road, which is currently in use as a metalled trackway (Cemetery House Track). The trenches measured 10m by 1.8m and were excavated to a depth of c 0.35m. Because of restrictive local topography (hedges and ditches) it was not possible to

excavate the trenches right up to against the edge of the track.

- 2.3.4 **Excavation Methodology:** the excavation trenching 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.
- 2.3.5 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.
- 2.3.6 The positions of the trenches were recorded using a Global Positioning System (GPS) which allows for the generation of Ordnance Survey coordinates to an accuracy of better than 1m.

2.4 Health and Safety

- 2.4.1 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. However, it is LUAU standard practice to scan the positions of all trenches for underground cables using a U-scan meter.

3. ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL

3.1 Identification Survey Results

- 3.1.1 The identification survey started during the earlier assessment was completed during the present programme by the examination of the westernmost section of the proposed pipeline route, which had been altered subsequent to the assessment (Fig 2).
- 3.1.2 No features of archaeological significance were encountered during this supplementary phase of fieldwork. The landscape traversed was relatively poor quality agricultural land and was under pasture at the time of the survey. There was no evidence of residual ridge and furrow and may never have been subject to cultivation.

3.2 Trial Trenching Results

- 3.2.1 Eleven trenches were excavated; seven of these (Trenches 1 to 7) were at the Seatonmoor Colliery site (NY 0407 3340) (Fig 3) and the remaining four (Trenches 8-11) were excavated on either side of the Cemetery House track (NY 0211 3297) (Fig 4). The general stratigraphy and summary results of the trenches are described below and the detailed descriptions for each trench are given in *Appendix 1*.
- 3.2.2 **Seatonmoor Colliery Site:** All trenches within the area of the Seatonmoor colliery site (Trenches 1-7), were 30m long unless constrained by topography or health and safety requirements. The trenches were laid out in an alternate 30m grid pattern within the corridor of the proposed pipeline and covered 5% of this corridor.
- 3.2.3 The soils within all trenches were broadly similar. The geological deposits encountered were a light, yellowish brown sandy silt, which contained occasional coal fragments and small to medium sub-rounded and sub-angular stones. They were typically located at a depth of c 0.2m below the surface. The topsoil comprised a dark reddish brown sandy silt loam, also with coal fragments. No solid deposits were exposed in the trenches and the deposits were all of a glacial or post-glacial origin.
- 3.2.4 No dateable archaeological features were identified within any of the trenches; however, small quantities of post-medieval or twentieth century pottery were recovered which were probably a product of night-soiling.
- 3.2.5 **Cemetery House Track Site:** four trenches (Trenches 8 to 11) were excavated on either side of the track to investigate the possibility of a Roman road in this location. Each trench was 10m long and they were located at a distance of 2-4m away from and perpendicular to the edge of the track.
- 3.2.6 The soils within all four trenches were similar. The geological deposits encountered were a yellowish brown sandy silt, which contained occasional coal fragments and small to medium sub-rounded stones. They were typically located at a depth of c 0.25m below the surface. The topsoil comprised a reddish-brown silty loam with small to medium sub-rounded stones. The deposits were all of a glacial or post glacial origin and

significantly the stratigraphy was very similar to that at the Seatonmoor Colliery site.

- 3.2.7 The trenches did not recover any evidence of metalling or any road side features; however, the trenches were located at a distance from the road and it is possible that the former road was under the present track.
- 3.2.8 A sub-circular pit was identified within Trench 8; it contained a large quantity of post-medieval material and is interpreted as a late nineteenth century rubbish tip. Otherwise no dateable archaeological features were identified from the trenches. A general scatter of post-medieval ceramic was recovered but this again is consistent with night-soiling practices.

4. DISCUSSION

- 4.1 The archaeological evaluation at the Seatonmoor Colliery site did not reveal evidence of any archaeological activity and significantly did not reveal any evidence of coal waste. This would suggest that the activity on the adjacent colliery site was restricted to within the present field boundaries, which are also shown on nineteenth century mapping. This would suggest that the field of the study area was in separate ownership to that of the mine and that the boundary was strictly adhered to.
- 4.2 The association of known Roman activity at Risehow and at Burrow Walls would suggest that a communication link existed between these two sites and the most probable of the several lines suggested in the past (LUAU 1997; Bellhouse 1989) follows that of the Cemetery House track. Although no evidence for a Roman road was identified by the trenches excavated on either side of the track does not necessarily indicate that the Roman road did not follow the line of the track. The trenches could not be located closer than 2.5m away from the track because of a combination of hedges and ditches and it is possible that the line of the former road extended along the line of the metalled track itself, in which case the trenches may have been too remote from the centre line to encounter evidence for the former road.

5. IMPACT STATEMENT AND RECOMMENDATIONS

5.1 Impact

- 5.1.1 The evaluation has established that there was no mining activity within the area of the Seatonmoor Colliery No 2 pit, that will be affected by the proposed pipeline.
- 5.1.2 The evaluation of the Cemetery House Track did not identify any evidence for a former Roman road, but neither did it demonstrate that there was not a Roman road along the line of the modern track. Further archaeological work would be necessary to establish if the road followed this line.

5.2 Recommendations

- 5.2.1 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.
- 5.2.1 As the evaluation of the proposed pipeline has not revealed any dateable archaeological features within the area of Seatonmoor Colliery, which would be compromised by the proposed pipeline, it is recommended that no further archaeological recording will be undertaken.
- 5.2.2 It is, however, recommended that a watching brief be undertaken during any excavation work enacted through the line of the modern Cemetery House trackway in order to investigate the potential for earlier phases of road construction.

6. BIBLIOGRAPHY

6.1 Primary Sources

Cumbria County Record Office, Carlisle

1841 Tithe Plan of the Township of Camerton in the Parish of Camerton, Cumberland

1830 Tithe Plan of the Township of Dearham in the Parish of Dearham, in the County of Cumberland

1847 Tithe Plan of the Parish of Flimby in the County of Cumberland

6.2 Published Cartographic Sources

OS 1865 6": 1 mile *Cumberland, Sheet 44, Flimby, 1st edn.*

OS 1865 6": 1 mile *Cumberland, Sheet 45, Broughton, 1st edn.*

OS 1955 1:2500 *Cumberland Plan NY 0433 and NY 0533, revised 1960.*

OS 1967 6" : 1 mile *Cumberland, NY 03 SW*

OS 1967 6" : 1 mile *Cumberland, NY 03 SE*

Institute of Geological Sciences, 1:625,000: *Geological Map of the United Kingdom, North*, 3rd edn Solid, 1979

Soil Survey 1:250,000, *Soils of Northern England*, 1983

6.3 Secondary Sources

Beckett, J V, 1981 *Coal and Tobacco: The Lowthers and the Economic Development of West Cumberland, 1660-1760*

Bellhouse, R L, 1983 Roman Sites on the Cumberland Coast: A new Schedule of Coastal Sites, *Cumberland Westmorland Antiq Archaeol Soc, Res Ser, 3*, Kendal

Bewley, RH, 1992 Excavations on two crop-marked sites in the Solway Plain, Ewanrigg Settlement and Swarthy Hill, 1986-1988, *Trans Cumberland Westmorland Antiq Archaeol Soc, n ser, 92*, 23-48

Department of Environment, 1985 *List of Buildings of Special Architectural or Historic Interest: District of Allerdale, Cumbria*, London

Lancaster University Archaeological Unit, 1997 *Broughton Moor to Flimby Pipeline, Archaeological Assessment Report*, unpubl rep

Wood, O, 1988 West Cumberland Coal, 1600-1982/3 *Cumberland Westmorland Antiq Archaeol Soc, extra ser*, **24**, Kendal

Woolliscroft, D J, 1994 Signalling and the design of the Cumberland coast system, *Trans Cumberland Westmorland Antiq Archaeol Soc, n ser*, **94**, 55-64

APPENDIX 1 DETAILED TRENCH DESCRIPTIONS

Trench No. Tr 1
Site Seatonmoor Colliery
Alignment north/south
Length 30.04m

Natural deposits of light yellowish brown sandy silt, with occasional coal fragments and very occasional small to medium sub-rounded and sub-angular stone, were established at 0.20m below the surface. The topsoil comprised a layer of dark reddish brown sandy silt loam with occasional coal fragments. No archaeological features were identified.

Trench No. Tr 2
Site Seatonmoor Colliery
Alignment east/west
Length 33.1m

Natural deposits of light yellowish brown sandy silt, with occasional coal fragments and very occasional small to medium sub-rounded and sub-angular stone, were established at 0.20m below the surface. The topsoil comprised a layer of dark reddish brown sandy silt loam with occasional coal fragments. No archaeological features were identified.

Trench No. Tr 3
Site Seatonmoor Colliery
Alignment north/south
Length 30.4m

Natural deposits of light yellowish brown sandy silt with very occasional coal fragments and very occasional small sub-rounded and sub-angular stones were established at 0.20m below the surface, and there was evidence of podsolisation. Topsoil comprised a layer of dark reddish brown sandy silt loam. No archaeological features were identified.

Trench No. Tr 4
Site Seatonmoor Colliery
Alignment east/west
Length 29.2m

Natural deposits of a light yellowish brown sandy silt, with occasional coal fragments and occasional medium sub-rounded and sub-angular stone were established at 0.20m below the surface. Topsoil comprised a layer of dark reddish brown sandy silt loam. A single sherd of post-medieval pottery was recovered from the top-soil, but no archaeological features were identified.

Trench No. Tr 5
Site Seatonmoor Colliery
Alignment north/south
Length 31.1m

Natural deposits of light yellowish brown sandy silt, with occasional coal fragments and very occasional small to medium sub-rounded and sub-angular stone, were established at 0.20m below the surface. The topsoil comprised a layer of dark reddish brown sandy silt loam with occasional coal fragments. No archaeological features were identified.

Trench No. Tr 6
Site Seatonmoor Colliery
Alignment east/west
Length 29.5m

Natural deposits of light yellowish brown sandy silt, with occasional coal fragments and some small to medium sub-rounded and sub-angular stone, were identified a depth of 0.20m. The topsoil comprised a layer of dark reddish brown sandy silt loam with occasional coal fragments. No archaeological features were identified.

Trench No. Tr 7
Site Seatonmoor Colliery
Alignment north/south
Length 30.2m

Natural deposits of light yellowish brown sandy silt, with occasional coal fragments and very occasional small to medium sub-rounded and sub-angular stone, were established at 0.20m below the surface. The topsoil comprised a layer of dark reddish brown sandy silt loam. No archaeological features were identified.

Trench No. Tr 8
Site Cemetery House Track
Alignment east/west
Length 10.25m

Natural deposits of yellowish brown sandy silt with occasional coal fragments and very occasional small to medium sub-rounded stone were established at 0.25m below the surface. The topsoil comprised a layer of very dark reddish brown sandy silt loam with occasional small to medium sub-rounded stone. At the eastern part of the trench was part of a pit with a fill comprising very dark greyish brown loam containing glass shards, iron and post-medieval pottery. This was encountered to a depth of 1.15m and extended 2.06m across the trench. No archaeological features were identified.

Trench No. Tr 9
Site Cemetery House Track
Alignment east/west
Length 10.25m

Natural deposits of yellowish brown sandy silt, with occasional coal fragments and occasional small sub-rounded stones, were established at a depth of 0.25m. Topsoil comprised a layer of very dark reddish brown sandy silt loam with small to medium sub-rounded stone. Two sherds of post-medieval pottery were recovered, but no archaeological features were identified.

Trench No. Tr 10

Site Cemetery House Track

Alignment east/west

Length 10.4m

Natural deposits of a yellowish brown sandy silt, with occasional coal fragments and very occasional small to medium sub-rounded stones, were established at a depth of 0.25m. Topsoil comprised a layer of very dark reddish brown sandy silt loam. with occasional small to medium sub-rounded stone, but no archaeological features were identified.

Trench No. Tr 11

Site Cemetery House Track

Alignment east/west

Length 9.95m

Natural deposits of yellowish brown sandy silt, with occasional coal fragments and very occasional small to medium sub-rounded stone, were established at 0.25m. Topsoil comprised a layer of very dark reddish brown sandy silt loam with occasional small to medium sub-rounded stone. No archaeological features were identified.

APPENDIX 2
PROJECT DESIGN

June 1997

Lancaster
University
Archaeological
Unit

BROUGHTON MOOR TO FLIMBY PIPELINE

CUMBRIA

ARCHAEOLOGICAL EVALUATION

Proposals

The following project design is offered in response to a request from Ms Ann Kolodziejski, of North West Water Limited, for an archaeological evaluation in advance of the laying of a pipeline from Broughton Moor to Flimby, Cumbria.

1. INTRODUCTION

- 1.1 An archaeological assessment was undertaken by LUAU in advance of the laying of a 3.5km pipeline from Broughton Moor village to the coast south of Flimby, Allerdale, Cumbria (LUAU 1997). The corridor is in between the Roman forts at Maryport and Burrow Walls, which were part of the Roman *limes* extending south-west down the coast from the western end of Hadrian's wall. The assessment report identified the possibility that the proposed pipeline would cross the line of the Roman Road and that it may disturb coal mining remains. As a result the County Archaeologist has recommended an archaeological evaluation to examine a possible line of the Roman road (Site 16, LUAU 1997) and a section of the pipeline that will near to a coal mining site (Site 10).
- 1.2 The Lancaster University Archaeological Unit has considerable experience of the assessment and excavation of sites of all periods, having undertaken a great number of small and large scale projects during the past 18 years. Evaluations and assessment 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

- 2.1 The following programme has been designed to provide an accurate archaeological evaluation of the designated areas, and is in accordance with a verbal brief by Philip Holdsworth on behalf of the Cumbria County Archaeologist. The required stages to achieve these ends are as follows:

2.2 **Field Evaluation**

- 2.2.1 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. This will involve the excavation of two trenches on either side of the putative roman road at NY 0212 3315. There is also a requirement for the excavation of a 5% sample of the pipeline corridor adjacent to Site 10 (NY 0407 3350). Suitable samples recovered will be assessed for their palaeoenvironmental potential.

2.3 **Evaluation Report**

- 2.3.1 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. METHODS STATEMENT

3.1 The following work programme is submitted in line with the stages and objectives of the archaeological work summarised above. There is a requirement for targeted trenching on either side of the putative Roman road (Site 16) and for greenfield trenching within the section of pipeline corridor adjacent to mining complex Site 10.

3.2 **Field Evaluation**

3.2.1 **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.

3.2.2 **Greenfield Trenching:** 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 section of the proposed study corridor that is adjacent to Site 10, 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.

3.2.3 The trenching is required to evaluate a 150m section of the corridor at NY 0407 350 which is adjacent to the coal mining complex Site 10. The 'greenfield' trenching would be undertaken using a conventional 30m alternate trench configuration, which provides a 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 pipeline corridor will be 50m wide and therefore an area of 0.75 hectares will need to be evaluated. This would require the excavation of 7 trenches (30m x 2m). The precise locations of the trenches may be subject to discussions with the client and County Archaeologist at the outset of the project.

3.2.4 **Targeted Trenching:** This programme of trenching will establish the presence or absence of suspected 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 parts, within the proposed study area, where there is a potential for archaeological deposits to survive which are not visible on the surface.

3.2.5 Trial trenching will be required to target the putative line of the Roman road, near Cemetery House (Site 16). The trenching will investigate the intersection between the proposed pipeline and the modern roadway; two 10m x 2m trenches will be excavated on both sides of the modern roadway, and at perpendicular angles to the line of the roadway. The precise locations of the trenches would be determined in discussions

with the County Archaeologist at the outset of the project.

- 3.2.6 **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. 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.
- 3.2.7 **Health and Safety:** 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.
- 3.2.8 **Reinstatement and Security:** 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.
- 3.2.9 **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.
- 3.2.10 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.

3.3 Evaluation Report

- 3.3.1 **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 (Whitehaven), 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.
- 3.3.2 **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.
- 3.3.3 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).
- 3.3.4 **Proposals:** The report will make a clear statement of the likely archaeological implications of the pipeline development. 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.

- 3.3.5 **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.

4. PROJECT MONITORING

4.1 North West Water Limited

- 4.1.1 LUAU will consult with North West Water Limited regarding access to land within the study area. This consultation will include, if required, the attendance of a representative of the client at any meetings convened with the Cumbria County Archaeologist or his representative to discuss progress or the report.

4.2 Cumbria Sites and Monuments Record

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

5. WORK TIMETABLE

- 5.1 The phases of work would comprise:

5.2 **Evaluation**

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

5.2 **Prepare Evaluation Report**

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

- 5.3 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 three weeks from the commencement of the project.

6. OUTLINE RESOURCES

- 6.1 The following resource base will be necessary to achieve the proposals detailed above.
- 6.2 ***Evaluation***
2 man-days Project Supervisor
2 man-days Project Assistant
- 6.3 ***Evaluation report***
2 man-days Project Supervisor
1.5 man-days Draughtsman
- 6.4 The project will be under the management of **Jamie Quartermaine, BA, Surv Dip, MIFA** (Unit Project Manager) to whom all correspondence should be addressed.

ILLUSTRATIONS

- Fig 1 Broughton Moor to Flimby Pipeline Location Plan
- Fig 2 Site Location Main
- Fig 3 Trench Location Plan, Cemetery House Trackway
- Fig 4 Trench Location Plan, Seatonmoor Colliery Site

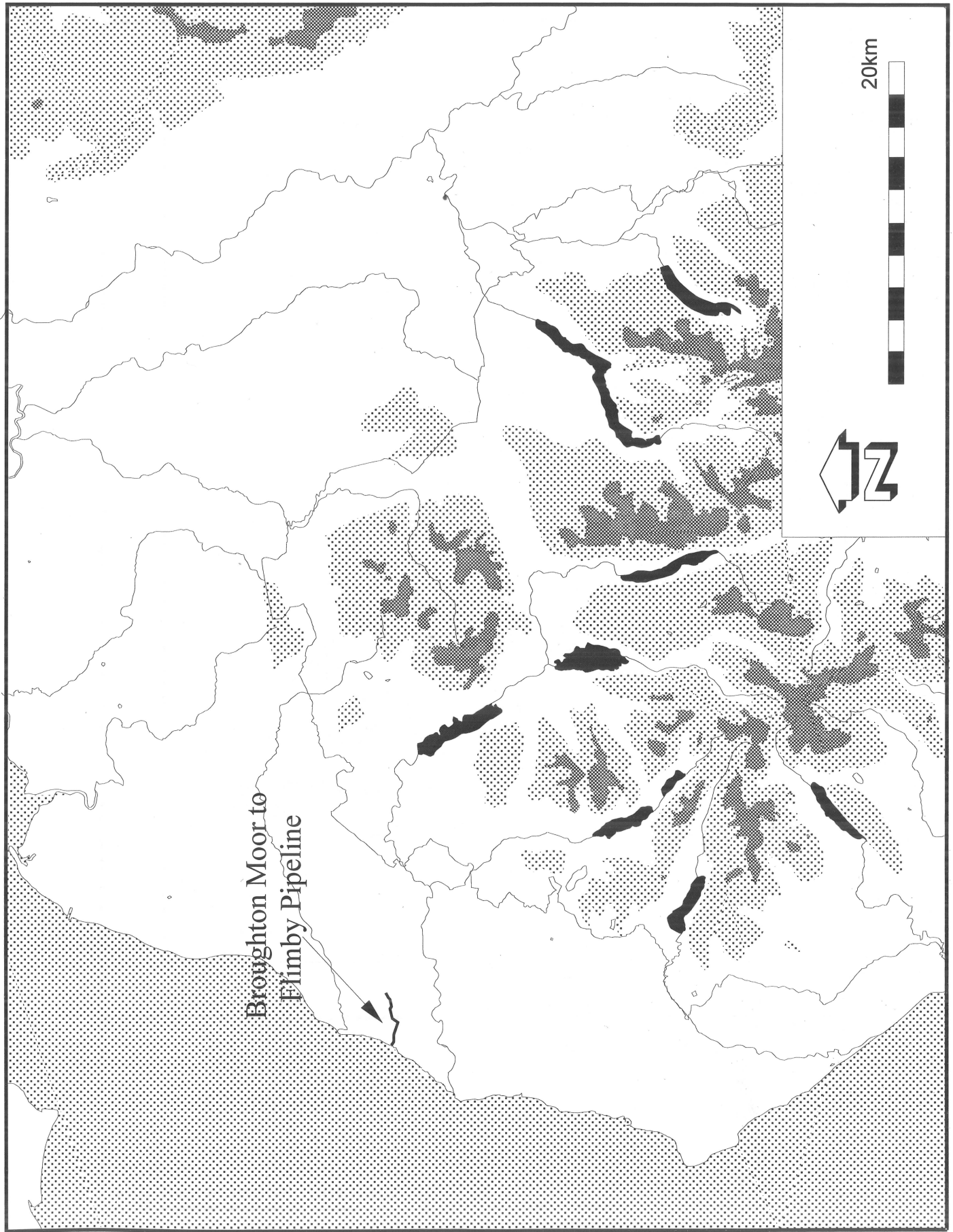
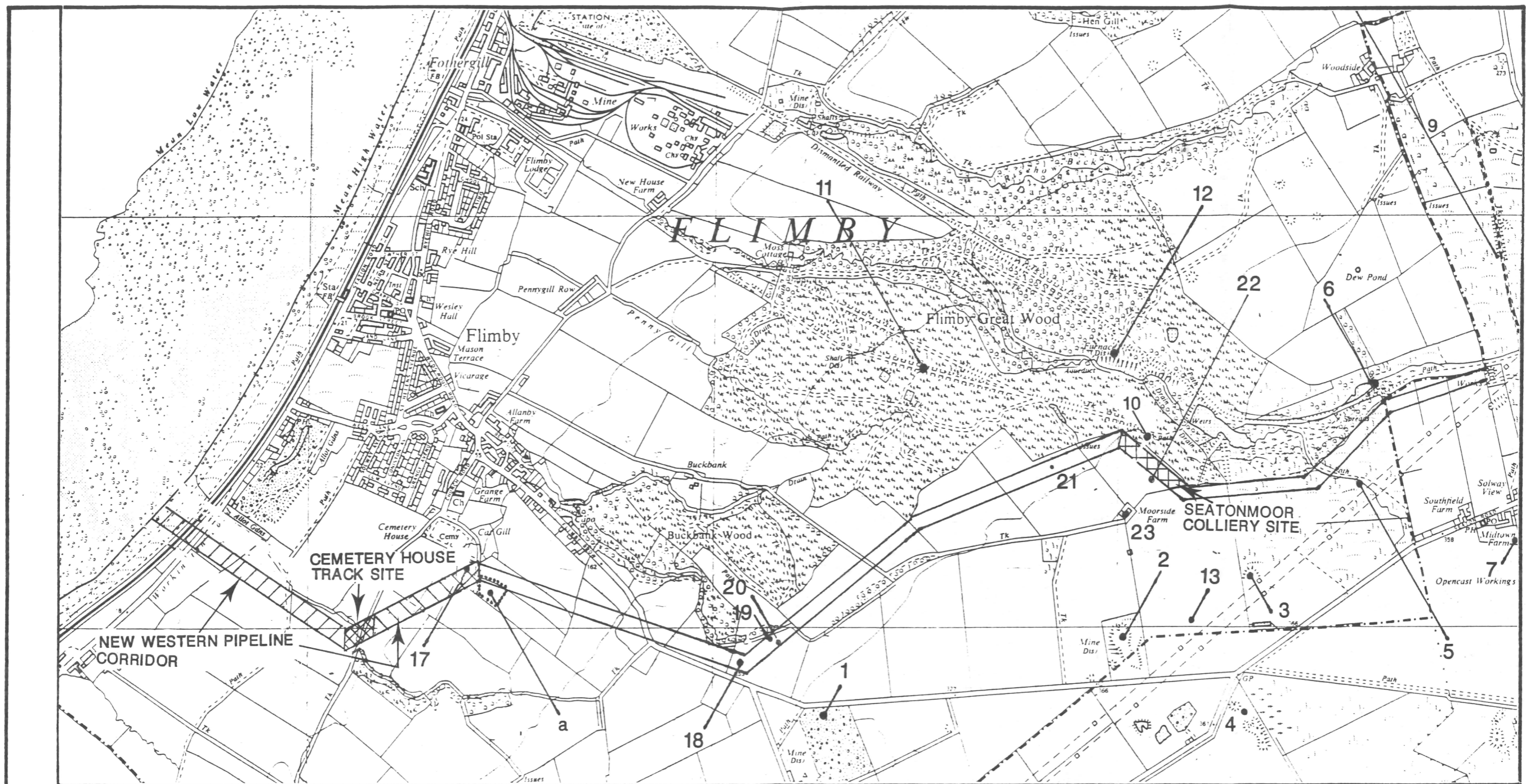


Fig 1 Broughton Moor to Flimby Pipeline Location Plan



Broughton Moor to Flimby Pipeline
Cumbria

Site Location Plan

1:10560



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Fig. 2 Site Location Plan

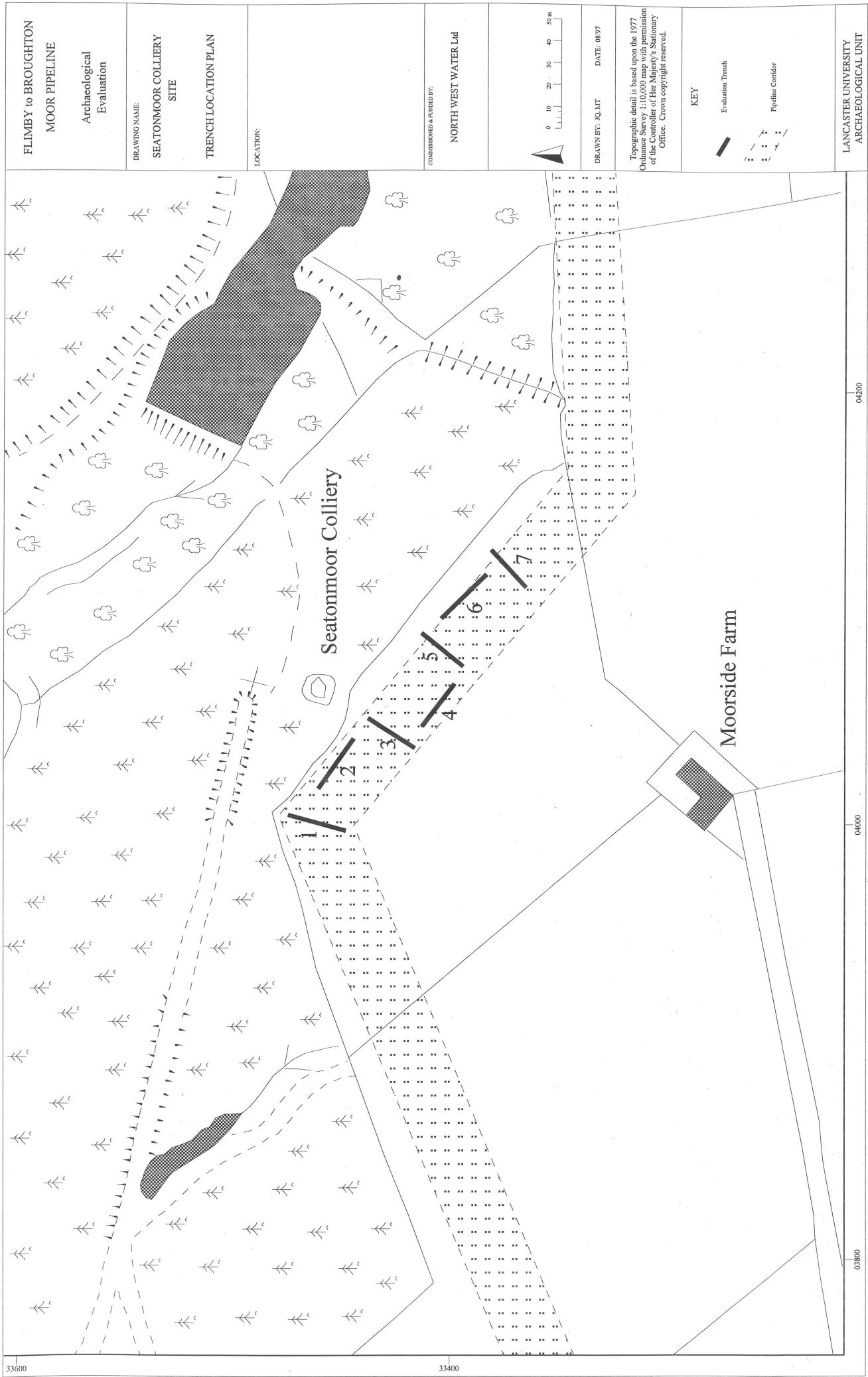


Fig 3 Seatonmoor Colliery Site, Trench Location Plan



Fig 4 Cemetery House Trackway Site, Trench Location Plan