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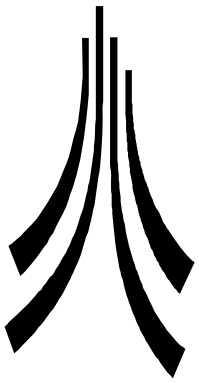

May 1997

BROUGHTON MOOR TO FLIMBY PIPELINE

Cumbria

Archaeological Assessment Report

Commissioned by:

North West Water Limited

BROUGHTON MOOR TO FLIMBY PIPELINE, CUMBRIA

Archaeological Assessment

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Storey Institute
Meeting House Lane
Lancaster
LA1 1TH

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The desk-top study was undertaken by John Westaway and the field survey by Ian Scott. The report was compiled by Ian Scott and John Westaway, and edited by Jamie Quartermaine and Rachel Newman. The project was managed by Jamie Quartermaine.

EXECUTIVE SUMMARY

A desk-top study and field investigation was carried out by Lancaster University Archaeological Unit (LUAU) in advance of the construction of the proposed Broughton Moor to Flimby pipeline (NY 0491 3360 to NY 0175 3328) by North West Water Ltd. This work aimed to assess the nature and extent of the archaeological and palaeoecological resources affected by the proposed development from both documentary sources and surviving surface traces.

Prior to the assessment there was only limited archaeological information available for the study corridor; however, there was the potential that it would cross the line of the Roman road between the forts at Maryport and Burrow Walls and there were known coal mining landscapes in the vicinity of the proposed pipeline. A programme of assessment was therefore recommended by the County Archaeologist to establish if there was any archaeological potential within the corridor of the proposed pipeline. LUAU prepared a project design for this evaluation in accordance with a brief by Philip Holdsworth on behalf of the County Archaeologist. The assessment comprised a desk-based study, compiling data from the Cumbria Sites and Monuments Record and Cumbria Record Office, followed by a walk-over survey of the affected corridor.

The desk-top study identified a broad, but scattered, archaeological resource from the general environs of the study corridor, comprising fourteen sites. The vast majority of these sites related to the industrial exploitation of the area in the eighteenth and nineteenth centuries. These sites are mainly connected with the former coal mining industry and, with a few possible exceptions, will not be affected by the laying of the proposed pipeline. The exceptions are the former workings at Seatonmoor No. 2 Pit (Site 10) and a possible mid-eighteenth century wooden waggonway (Site 14) running from the Standing Stone Pit south of Broughton Moor to the coast at Maryport. There is also documentary evidence indicating the probable presence of a Roman Road from Risehow Tower to Burrow Walls, the route of which will be crossed by the pipeline corridor.

The walk-over survey identified nine sites of archaeological interest which date from potentially the Romano-British period through to the twentieth century. Three of these sites are areas of post-medieval ridge and furrow and two of the sites (Sites 19 and 20) are mounting blocks for machinery relating to the coal industry. The proposed pipeline will cross the line of a trackway which is relatively straight and oriented on the Roman signal station at Risehow; there is therefore the possibility that it had a Roman origin. The track, however, has been in use for a considerable period of time and there are no surface indicators for a Roman origin.

Relatively few archaeological sites will be affected by the construction of the pipe but the potential for surviving below ground features from any of the archaeological remains identified within the assessment cannot be dismissed. However, there are two possible lines of the Roman road, between Maryport and Burrow Walls which will be crossed by the pipeline and would repay further examination:

It is recommended that trial trenching be undertaken on either side of the putative Roman road (Site 16: NY 0212 3315) to identify any potential roadside activity and also establish any movement of the roads alignment. A further trench across the modern track should be excavated immediately prior to the pipeline construction programme to minimise the disturbance impact upon road users. It is also recommended that a limited number of trenches be excavated in the area of Site 10, the Seatonmoor No. 2 pit, in order to investigate the survival of sub-surface deposits.

In addition, following the evaluation, it is recommended that a watching brief during the construction programme be undertaken in the area of a gravel bank (Site 15) which is a putative line of the Roman road as suggested by Bellhouse (1989, 53). This putative line of the road has only a reduced chance of survival because of tidal damage and the adjacent construction of the railway and therefore does not warrant trial trenching.

1. INTRODUCTION

1.1 An archaeological assessment was undertaken by Lancaster University Archaeological Unit (LUAU), on behalf of North West Water Ltd, ahead of the construction of a pipeline which is proposed to run from Broughton Moor Sewage Works to the coast at Flimby (NY 0491 3360 to NY 0175 3328).

1.2 The aim of the work was to assess the impact that the construction of the pipe would have upon archaeological remains within the affected area. This was achieved by collating existing archaeological information in a desk-top study and was undertaken alongside a walk-over survey of the proposed route to identify surface archaeological remains.

1.3 The desk-top study was carried out in advance of the field survey and was undertaken on 17th April 1997; the fieldwork was undertaken on 19th April 1997.

1.4 This report sets out the results of the work as a gazetteer in conjunction with a methodology statement, a textual description of the desk-based and field results and an assessment of the impact that the proposed development will have upon the archaeological resource.

2. METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 A Project Design (*Appendix 2)* was submitted by LUAU in response to a request from North West Water Ltd, for an archaeological assessment of the proposed construction of a main sewer between Broughton Moor Sewage Works and Flimby. It was produced in accordance with a project brief (*Appendix 1*) by Philip Holdsworth of Cumbria County Council. This provided for an archaeological assessment involving a desk-top study, a rapid field inspection, and this written report, which interprets the data discovered during the project and assesses the implications of the development. The work has been carried out in accordance with the project design.

2.2 DESK-TOP STUDY

2.2.1 The study area for this aspect of the project used the pipeline as the centre-line of a 1km wide corridor, and archaeological information was obtained from the Cumbria Sites and Monuments Record (CSMR) on this basis. In addition primary documentary sources were consulted from the Cumbria County Record Office, Carlisle, (CCRO). Copies of maps at 1:10,560 and 1:2,500 were obtained from the CCRO, along with other supporting primary and secondary sources. The relevant results of the study are presented in the Gazetteer (*Section 7.1*). In addition the study examined the archaeology of the area to provide a general context for the assessment.

2.2.2 A search was also made in the CSMR for relevant aerial photographs although none were available for the study area. The timescale of the project was not sufficient for contact to be made with the Royal Commission for Historic Monuments for England who hold the national collection of aerial photographs.

2.3 FIELD SURVEY

2.3.1 ***Access:*** Access to the study area was negotiated by North West Water Ltd. Land owners were, however, contacted by LUAU as a courtesy, prior to the survey taking place.

2.3.2 ***Identification Survey:*** A systematic surface inspection of a 50m wide corridor, centred on the proposed pipeline, 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 any earthworks. The archaeological detail was mapped by 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.

2.3.3 ***Artefact survey:*** Only one area within the field walking study area was ploughed at the time of the visit and an artefact survey was undertaken. Transects were walked at 10m intervals in order to identify and collect any exposed artefacts.

2.4 GAZETTEER OF SITES

2.4.1 All information concerning archaeological sites in the affected area has been collated into a Gazetteer (*Section 7*). This provides details of the location, origin, and an assessment of each site's archaeological potential. The sites have been marked onto a map at a scale of 1:10,000 showing their location (Fig 2), which are shown in the Gazetteer 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) with references as appropriate. 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.

2.5 ARCHIVE

2.5.1 A full archive of the desk-top study and the field inspection has been produced to a professional standard in accordance with current English Heritage guidelines (English Heritage 1991). The archive will be deposited in the Cumbria Record Office and a copy for deposition to the National Monuments Record. A copy of the report and drawings will be submitted to the Cumbria Sites and Monuments Record.

3. TOPOGRAPHIC AND HISTORICAL BACKGROUND

3.1 LOCATION AND TOPOGRAPHY

3.1.1 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 the coastal plain to Flimby. For the most part the study area is currently under pasture although they have been subjected to recent cultivation; one area has been ploughed although this did not make up an entire field. The pipeline corridor crosses the modern railway, a modern road and a metalled trackway.

3.2 GEOLOGY

3.2.1 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, with heavily disturbed soils around the Broughton collieries (Crofts 1992a, 1992b; BGS 1995).

3.3 HISTORICAL BACKGROUND

3.3.1 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).

3.3.2 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 1/3 Roman mile intervals, very much reflecting 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 onto 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.

3.3.3 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.

3.3.4 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. 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 (Davies Shiell and Marshall 1969, Wood 1988).

3.3.3 Following the reduction of importance of the extraction of coal throughout the region, much of the previously industrially-managed land was simply allowed to revert back to more widespread agricultural use, a trend which has continued up to the present day.

4. ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL

4.1 DESK-TOP STUDY

4.1.1 Whilst there are no CSMR sites within the 50m wide corridor of the proposed pipeline, there are two documentary sites immediately adjacent to it (Sites 06 and 10). The sites are mostly associated with the development of the mining industry in the locality and some of the associated structures may have a bearing on the proposed development.

4.1.2 ***Roman:*** There was an important network of Roman coastal defences in the region. The proposed pipeline meets the coast midway between the Roman forts of Maryport and Burrow Walls, which were linked by a system of signal towers and milecastles, as well as a road. There is, therefore, the potential for encountering Roman archaeological remains within the study corridor.

4.1.3 A pair of associated Roman signal towers has been located at Risehow (NY 0267 3502), just north of Flimby, and a milefortlet may be expected to be situated within the extent of present day Flimby (Bellhouse 1989, 53); however, no evidence for one has as yet been discovered. It is probable that the sequence of fortlets and turrets continued at least as far as the fort at Burrow Walls, north of Workington, but this has yet to be confirmed by archaeological evidence. Bellhouse (1989) suggested two routes for the Roman road south from Flimby, one along the line of the ancient raised cliffs, a little inland from the coast, and the other, which he favoured, following the gravel ridges of the raised beach.

4.1.4 ***Industrial Activity:*** In his fieldwork around Flimby, Bellhouse (1989) emphasised that 'suspicious *aggers*, cuttings and mounds are more often than not the last traces of vanished industrial activity' and it is evident from both the documentary and surface surveys that most of the known archaeological sites within the immediate vicinity of the proposed pipeline are related to modern coal extractive industries.

4.1.5 Several collieries and associated workings were identified from the CSMR and from the OS 1st edition 6" map. The proposed route of the pipeline passes approximately 200m to the north of the Gillhead Colliery (Site 01), a pit sunk in 1867 by Messrs Lucock and Carlton. This became the Gillhead Coal and Firebrick Company and was taken over in the early twentieth century by the Workington Iron and Steel Company, engaged in obtaining coal, fireclay and ganister (Wood 1988, 171). The pipeline could potentially also encroach on workings associated with the former Seatonmoor Colliery No. 2 Pit (Site 10) and its associated tramway linking it with Maryport (Site 11), which were constructed in the mid-nineteenth century (Wood 1988, 166-94). In addition, there are air shafts of an unknown period adjacent to these workings (Sites 5 and 6) and former blast furnaces in Flimby Great Wood (Site 12). These sites and others noted in the Gazetteer provide a context for the pipeline route and, with the possible exception of the workings at Seatonmoor No. 2 pit (Site 10), fall outside the 50m wide corridor of the pipeline.

4.1.6 The Standing Stone Pit at Broughton Moor (NY 0530 3300) is slightly remote from the line of the pipeline, but has a relatively early date; it was sunk in the mid-eighteenth century, and as such is relatively important. There is known to have been a wooden waggonway linking it to Ellenfoot (modern Maryport) and part of this waggonway was excavated on the pit site in 1989 (Gale 1989), prior to opencast mining. The line of the waggonway (Site 04), however, extends to the east of the eastern end of the proposed pipeline.

4.2 IDENTIFICATION SURVEY

4.2.1 The identification survey of this pipeline corridor has enabled the recording of the extent and location of surviving surface features by non-intrusive methods.

4.2.2 Located to the south of Cemetery House a modern trackway (Site 16) may mark the route of an earlier Roman road. The trackway forms part of a linear group of boundaries and tracks which runs approximately parallel to the coastline, at *c*20m above sea-level, and is orientated towards both the signal station at Risehow and the Burrow Walls fort. Although no surface indications of a Roman road were identified during the present survey, evidence for it may be obscured by the present track. The alternative line of the Roman road, proposed by Bellhouse (1989), potentially follows a gravel bank along the coast-line below Flimby (Site 15) and, whilst this cannot be discounted, physical evidence of such a route in this area has also remained elusive. Overall this coastline route is considered to be the less likely option, being within the range of present day tides as demonstrated by the amount of material used during construction of the railway to raise it above the tide line. While there is likely to have been some changes in sea level since the Roman period, it is nevertheless likely that this line would have been affected to some extent by extreme tides. In any case tidal activity over the last two millennia is likely to have washed away or obscured any evidence for a road. In any case the coast route is not the most probable line for a road; it does not follow a direct line between the southernmost known signal station (Risehow) and the Burrow Walls fort; and the higher route is more typical of other Roman roads identified along other *limes*. It is therefore considered that the most likely intersection between the road and the proposed pipeline is at Site 16.

4.2.3 Three of the sites identified were ridge and furrow (Sites 17, 21 and 22) and are concentrated on the sloping land above the narrow coastal plain. The ridge and furrow of Sites 17 and 21 is up to 6m wide (ridge to ridge), a width normally characteristic of medieval cultivation; however, much of the ridge and furrow is narrow and straight, rather than with an arataral curve, and is also confined within existing fields, which would suggest that it represents post-medieval cultivation within enclosed fields. This type of cultivation is often attributed to the late eighteenth to early nineteenth centuries, when the Napoleonic war led to high grain prices and the subsequent cultivation of land previously held for grazing.

4.2.4 Two of the survey sites (19 and 20) were mounting blocks for now removed structures; they related to the coal mining industry, which was particularly active in this area during the eighteenth century (*Section 3.3.2*). However, given the good

survival of these two features it would seem probable that they relate to a later phase of mining (nineteenth or early twentieth centuries). These two sites were located within an area of pasture alongside Buckbank Wood and, whilst it is clear that they were designed to act as mountings for a now removed structure, the precise form and function of the structure is unclear. They could potentially represent the remains of mounting blocks around the mouth of a shaft which would have contained the uprights for wooden colliery headgear; however, the small scale of these features would seem to make this unlikely. These sites may also represent the remains of a rodway designed for the transmittal of power to a number of shafts from a single point. The usual practice for pumping was through the use of reciprocating flat rods which were counterbalanced by a balance bob, a heavy weight moving up and down in a bob pit.

4.2.6 Despite the proximity of the pipeline to the Seatonmoor Colliery No. 2 Pit (Site 10), there was no evidence of any associated earthworks identified by the survey within the study corridor. To an extent this is not surprising as the proposed pipeline follows a line through a field that was shown as pasture on the 1st edition OS map (1865), despite its proximity to the colliery. In general there is very little evidence of mining activity along the proposed pipeline route, an impression reinforced by the documentary evidence which shows that the route follows a line which has, apparently, remained free of above ground colliery activity and has been in agricultural use since the earliest cartographic source.

4.3 ARTEFACT SURVEY

4.3.1 No artefacts were recovered within the area (Area A) that was subjected to an artefact survey. Whilst this would appear to discount the presence of activity within the area such surveys in the North West, typically provide a low return of artefacts and a single find can often reflect the existence of archaeological deposits below ground.

5. CONCLUSIONS

5.1 INTRODUCTION

5.1.1 The West Cumbrian coastal plain has been settled for a considerable period of time as evidenced by the lithic scatters found to the south, the Iron Age enclosures around Maryport, the Roman defensive works extending along much of the coast, the medieval villages (such as Flimby) and the post-medieval industrial activity of the eighteenth and nineteenth centuries. The flat, good quality coastal land has clearly been of agricultural use during this time and some of the fields to the south of Flimby demonstrate the typical form of enclosed medieval strip fields. Such persistent, and subsequently intensive, agricultural activity has probably either destroyed or obscured evidence for early settlement and it is perhaps not surprising that the survey did not reveal significant surface features relating to medieval or earlier settlement.

5.1.2 The assessment has, however, identified the potential for Romano-British sites and mining activity from the post-medieval period. It is clear, however, that this later material occurs in certain areas away from the proposed pipeline, particularly within the area of Flimby Great Wood.

5.2 ROMAN ROAD

5.2.1 The construction of the pipeline may cut through the route of the Roman road from Risehow, just north of Flimby, to the Roman fort at Burrow Walls, north of Workington. Bellhouse suggested two routes for the Roman road south from Flimby, one along the line of the ancient raised cliffs (Site 16), and the other, following the gravel ridges of the raised beach (Site 15). Both of these routes will be crossed by the proposed pipeline although the possible route along the raised beach would be less promising for the survival of archaeological remains. It is not expected that a major site, such as a milefortlet or signal station, will be affected by the pipeline, on the basis of predicted spacing between such structures (Bellhouse 1989).

5.3 COAL MINING

5.3.1 Whilst the visible remains of the West Cumberland coalfield are largely unaffected by the proposed pipeline, the presence of two associated features within the corridor does demonstrate some mining activity. The area was dominated by the Seatonside and Flimby collieries during the latter part of the nineteenth century and there is a possibility that further remains may be encountered during construction of the pipeline, particularly in association with the large Seatonmoor No. 2 pit (Site 10). Although this pit is very close to the line of the pipeline a field boundary that separates the field containing the proposed pipeline from the former colliery was in existence at the same time as the pit (OS 1st edition 1865) and would appear to have restricted the expansion of the surface coal workings. Therefore there may not have been any industrial features within this part of the study corridor. However, the deep subterranean adits from the mine may pass within the study area.

6. ARCHAEOLOGICAL IMPACT AND RECOMMENDATIONS

6.1 IMPACT

6.1.1 This assessment has highlighted the potential for archaeological remains within the study corridor, which are of local and potentially of regional importance. This includes the possible remains of the Roman road which runs from Risehow to the Roman fort at Burrow Walls and the remains associated with the mining activity of the West Cumberland coalfield. Any sub-surface remains would be vulnerable to disturbance caused by the proposed pipeline. In addition other sites, not detectable by documentary study or surface inspection, may exist.

6.1.2 The proposed pipeline will undoubtedly cut the line of the former Roman road which linked the Maryport and Burrow Walls forts; however, no physical evidence for a Roman road was discovered by the identification survey or by Bellhouse (1989) who has undertaken a detailed examination of this area for any features connected with the Roman *limes*. It is not known whether the road survives as a sub-surface feature. It is, however, probable that the line of the former road extended, either along the line of a track to the south of Cemetery House (Site 16) or along a gravel bank (Site 17), to the east of the railway. Both of these sections will be cut by the proposed pipeline.

6.1.3 Considering the density of mining remains in this area it is surprising how little of this industrial landscape will be affected by the proposed pipeline, but even so there is the potential that mining remains, particularly adjacent to Seatonmoor colliery No. 2 pit (Site 10), will be affected by the laying of the pipeline. However, the line of the proposed pipe is just to the south-west of a field boundary, which appears from the 1st edition OS map (1865) to have edged the mining complex, and therefore it is possible that the mining activity did not extend into the area of the study corridor.

6.1.4 The areas of ridge and furrow (Sites 17, 21 and 22) will be partly affected by the proposed pipeline; however these are indicative of relatively late (post-medieval) cultivation and are only of local significance.

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*. Should the development proposals be put forward in this area, there may be a requirement by the Cumbria County Archaeologist for a further programme of work which will aim to identify, locate, and document the existence and extent of surviving archaeological features.

6.2.2 It is recommended that both potential routes of the Roman road be investigated in order that any sub-surface remains are identified and that a positive location for the road may be established. However, by virtue of the greater archaeological potential of the higher, inland route (Site 16) it is suggested that this receive the greater emphasis.

It is proposed that a series of trial trenches be excavated on either side of the modern track to investigate any sub-surface remains that could relate to a former road. However, in order to limit disturbance to the actively used track it is proposed that a trench be archaeologically excavated across the track immediately prior to the topsoil strip of the construction programme.

6.2.3 For the most part the mining remains identified from the assessment are remote from the study corridor; however, the proposed pipeline does extend close to the former Seatonmoor colliery No. 2 pit (Site 10) and there is a possibility that sub-surface remains associated with the coal workings survive on the line of the proposed pipeline. It is therefore recommended that a limited number of trenches are excavated adjacent to Site 10 to explore the sub-surface deposits.

6.2.4 There is a reduced likelihood of finding the Roman remains along the westernmost putative line of Roman road (Site 15) and it therefore does not warrant pre-construction evaluation trenching. However, it is recommended that a watching brief be undertaken along this possible intersection between the proposed pipeline and the possible Roman road during the construction programme.

7. SITE GAZETTEER

7.1 DESK-TOP STUDY SITES

Site Number	**1**
Site Name	Gillhead
NGR	NY 0330 3270
Site Type	Colliery
Period	CSMR 10975; OS 1967 map
Description	Colliery shown as a disused mine on the OS 1967 map but is not marked on the OS 1st edition (1865) map. A well is marked at this site on the 1865 map but not on the 1967 map.
Assessment	This site lies outside the proposed survey area.

Site Number	**2**
Site Name	Seatonmoor Pit
NGR	NY 0405 3290
Site Type	Colliery
Period	Post-medieval
Source	CSMR 10977; OS 1967 map
Description	A Colliery shown as a disused mine on OS 1967 map, but not marked on OS 1st edition.
Assessment	This site lies outside the proposed survey area.

Site Number	**3**
Site Name	Southfield
NGR	NY 0436 3311
Site Type	Oven
Period	Post-medieval
Source	CSMR 10978; OS 1st edition (1865) map
Description	A Cinder Oven with a nearby earthwork shown on OS 1st edition map; only the earthwork is shown on the OS 1967 map.
Assessment	This site lies outside the proposed survey area.

Site Number	**4**
Site Name	Seatonmoor Colliery (Buchan or Number One Pit)
NGR	NY 0435 3275
Site Type	Colliery
Period	Post-medieval
Source	CSMR 10976; OS 1st edition (1865) map
Description	A Colliery shown on the OS 1st edition map as buildings and earthworks; only some of the earthworks are shown on the OS 1967 map.
Assessment	This site lies outside the proposed survey area.

Site Number	**5**
Site Name	Flimby
NGR	NY 0450 3330
Site Type	Air shaft
Period	Post-medieval
Source	CSMR 10979; OS 1st edition (1865) map
Description	An air shaft is shown on the OS 1st edition map but is not marked on the OS 1967 map.
Assessment	This site and associated shafts may be encountered within the 50m corridor width of the proposed pipeline.

Site Number	**6**
Site Name	Southfield
NGR	NY 0461 3359
Site type	Airshaft
Period	Post-medieval
Source	CSMR 10980; OS 1st edition (1865) map
Description	An air shaft is shown on the OS 1st edition map, but is not marked on the OS (1967) map.
Assessment	This site and associated shafts may be encountered within the 50m corridor width of the proposed pipeline.

Site Number	**7**
Site Name	Broughton Moor
NGR	NY 0510 3325
Site Type	Standing stone
Period	Unknown
Source	CSMR 781; OS 1st edition (1865) map
Description	A standing stone shown on the OS 1st edition map adjacent to some buildings and *c* 100yds from a primitive Methodist Chapel about 1/4 mile west of Broughton Moor. It is not marked on the OS 1967 map, although a public house 1/4 mile south of Broughton Moor is labelled the 'Standing Stone Inn'.
Assessment	This site lies outside the survey area.

Site Number	**8**
Site Name	Broughton Moor
NGR	NY 0570 3340
Site Type	Quarry
Period	Post-medieval
Source	CSMR 11787; OS 1st edition (1865) map
Description	Broughtonmoor Quarry is shown on the OS 1st edition map; the OS 1967 map shows earthworks but they are not labelled.
Assessment	This site lies outside the survey area and is not shown on Fig 2.

Site Number	**9**
Site Name	Broughton Moor
NGR	NY 0500 3365 - 0445 3500
Site Type	Dismantled tramway
Period	Post-medieval
Source	OS 1st edition (1865) map
Description	The OS 1st edition map shows the line of a tramway; the OS 1967 map labels it as a dismantled tramway. It originally ran from Broughton Moor to Maryport.
Assessment	This site lies outside the survey area.

Site Number	**10**
Site Name	Seatonmoor Colliery No. 2 Pit
NGR	NY 0407 3350
Site Type	Colliery
Period	Post-medieval
Source	CSMR 10983; OS 1st edition (1865) map
Description	A pit shown on the OS 1st edition map. It is marked as an antiquity on the OS 1967 map.
Assessment	The proposed pipeline may cross areas of these former workings.

Site Number	**11**
Site Name	Flimby Tramway
NGR	NY 0407 3350; NY 0285 3400
Site Type	Tramway
Period	Post-medieval
Source	CSMR 10984; OS 1st edition (1865) map
Description	A dismantled tramway linking Site 10 to the main coastal line. It is marked as a tramway on the OS 1st edition map and as an unfenced track on the OS 1967 map.
Assessment	This tramway line is outside the study corridor.

Site Number	**12**
Site Name	Flimby Great Wood
NGR	NY 0392 3364
Site Type	Blast Furnace
Period	Post-medieval
Source	OS 1st edition (1865) map
Description	A site marked as 'Old Furnace' on the OS 1st edition map and as a 'disused furnace' on the OS 1967 map.
Assessment	This site is outside the survey area.

Site Number	**13**
Site Name	Monksmoor's Cross
NGR	NY 0410 3300
Site Type	Cross/boundary stone?
Period	Unknown
Source	OS 1st edition (1865) map
Description	A site shown on the OS 1st edition map; it is not marked on the OS 1967 map.
Assessment	This site is outside the survey area.

Site Number	**14**
Site Name	Standing Stone Pit
NGR	NY 0530 3300
Site Type	Colliery/wooden waggonway
Period	Post-medieval
Source	Gale (1989)
Description	An excavation was undertaken at Standing Stone pit (Gale 1989) in advance of a open cast mining. The excavation report describes the discovery of elements of a mid-eighteenth century wooden waggonway which ran from Standing Stone Pit to Ellenfoot (Maryport). The waggonway (Site 09) is shown on the OS 1st edition map extending to the east of the eastern terminus of the proposed pipeline.
Assessment	This site is outside the survey area.

7.2 IDENTIFICATION SURVEY SITES

Site Number	**15**
Site Name	Flimby railway
NGR	NY 0172 3335
Site Type	Drainage tunnel
Period	Post-medieval
Source	Identification survey
Length 10m	**Width** 1.2m **Height** 1.3m

Description: A single stilted arched drainage tunnel of stone construction built through the embankment for the west coast railway line. This tunnel is now partially filled with silts and it is likely that it originally stood to a greater height.

Assessment This site may be encountered within the 50m wide corridor of the proposed pipeline.

Site Number **16**
Site Name Cemetery House Trackway
NGR NY 0212 3315
Site Type Trackway
Period Romano-British?
Source OS 1st edition (1865), OS 1967 maps; identification survey
Width 5m

Description: A trackway between Eaglegill farm and Flimby which is marked on both the OS 1st edition and 1967 maps. A modern metalled road now covers the site, although the presence of hedgerows on either side, the straight course of this trackway and the associated field boundaries suggest an earlier date. Its orientation with the Roman signal station at Risehow may point to a Roman date of origin.

Assessment This site may be encountered within the 50m wide corridor of the proposed pipeline.

Site Number **17**
Site Name Cemetery House Ridge and Furrow
NGR NY 0235 3320
Site Type Ridge and Furrow
Period Post-medieval
Source Identification survey
Length 50m **Width** 45m **Height** 0.3m

Description: An area of ridge and furrow, each *c* 6m in width, running north-west/south-east, which respects the modern field boundaries, although the headland was identified within this field. It is likely that the ridge and furrow post date the current boundary.

Assessment This site may be encountered within the 50m wide corridor of the proposed pipeline.

Site Number **18**
Site Name Buckbank Wood
NGR NY 0297 3288
Site Type Tipping
Period Post-medieval
Source Identification survey
Length 25m **Width** 8m **Height** 0.45m

Description: An area of tipping along Buckbank Wood. It comprises brick rubble, stone, slate and iron, now partially earthfast, and it has clearly been undertaken to level the slope into the woods below.

Assessment This site may be encountered within the 50m wide corridor of the proposed pipeline.

Site Number **19**
Site Name Buckbank Woods
NGR NY 0313 3297
Site Type Mounting Block
Period Post-medieval
Source Identification survey
Length 4m **Width** 4m **Height** 0.3m
Description: A partially earthfast mounting block located within an area of pasture to the south of Buckbank Wood. This comprised a square platform with a stone block placed at each corner. Each block is approximately 0.75m by 0.75m and has an iron bolt protruding from the centre. To the north of the platform an iron benchmark with the inscription '288 feet' was noted. It is associated with Site 20.
Assessment This site may be encountered within the 50m wide corridor of the proposed pipeline.

Site Number **20**
Site Name Buckbank Woods
NGR NY 0316 3296
Site Type Mounting Block
Period Post-medieval
Source Identification survey
Length 4m **Width** 4m **Height** 0.3m
Description: A partially earthfast mounting block located within an area of pasture to the south of Buckbank Wood. This comprised a square platform with a stone block placed at each corner. Each block is approximately 0.75m by 0.75m and has an iron bolt protruding from the centre.
Assessment This site is outside the 50m wide corridor of the proposed pipeline.

Site Number **21**
Site Name Ridge and Furrow
NGR NY 0385 3337
Site Type Ridge and Furrow
Period Post-medieval
Source Identification survey
Length 50m **Width** 45m **Height** 0.2m
Description: An area of ridge and furrow (*c*6m ridge to ridge) running north-west/south-east, which respects the modern field boundaries, although

	the headland was identified within the field. It is likely that the ridge and furrow post-dates the current boundary.
Assessment	This site is within the 50m wide corridor of the proposed pipeline.

Site Number	**22**
Site Name	Ridge and Furrow
NGR	NY 0408 3334
Site Type	Ridge and Furrow
Period	Post-medieval
Source	Identification survey
Length 50m	**Width** 45m **Height** 0.2m
Description:	A well-defined area of ridge and furrow (*c*4.5m ridge to ridge) running north-west/south-east, which respects the modern field boundaries, although the headland was identified within this field. It is likely that the ridge and furrow post dates the current boundary.
Assessment	This site is within the 50m wide corridor of the proposed pipeline.

Site Number	**23**
Site Name	Moorside Farm
NGR	NY 0405 3332
Site Type	Building
Period	Post-medieval
Source	OS 1st edition (1865), OS 1967 maps; identification survey
Length 10m	**Width** 1.2m **Height** 1.3m
Description:	Moorside Farm is marked on the OS 1st edition and 1967 maps. This is now disused and in derelict condition.
Assessment	It is outside the survey area.

8. BIBLIOGRAPHY

8.1 PRIMARY SOURCES

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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

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APPENDIX 1
PROJECT BRIEF

APPENDIX 2
PROJECT DESIGN

Lancaster University Archaeological Unit

April 1997

BROUGHTON MOOR TO FLIMBY PIPELINE

CUMBRIA

ARCHAEOLOGICAL ASSESSMENT

Proposals

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

1. INTRODUCTION

1.1 An archaeological assessment is required in advance of the laying of a 3.5km pipeline from Broughton Moor village to the coast south of Flimby, Allerdale, Cumbria. 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. There is, therefore, the potential to find further elements of this defensive system such as a road or signal towers in the area. More recently the area has been heavily exploited for coal, from the eighteenth century onwards, and there are considerable relict remains of mining activity in the vicinity of the study area and potentially also within the affected corridor.

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 17 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 assessment of the designated area within its broader context, and is in accordance with a brief for an archaeological assessment by Philip Holdsworth on behalf of the Cumbria County Archaeologist. The required stages to achieve these ends are as follows:

2.2 ***Desk Top Survey***

To accrue an organised body of data to inform the field inspection.

2.3 ***Field Inspection***

An identification survey is required to examine a 50m corridor along the line of the proposed pipeline, during which any artefact or earthwork remains will also be examined.

2.4 ***Assessment Report***

A written assessment 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 DESK TOP SURVEY

3.2.1 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.

3.2.2 ***Documentary and Cartographic Material:*** This work will rapidly address the full range of potential sources of information. It will include an appraisal of the Cumbria 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.

3.2.3 ***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. Aerial photographic work may entail liaison with the Royal Commission on the Historical Monuments (England), although, within the timescale available, it is unlikely that prints will be forthcoming from this body for inclusion in this report.

3.2.4 ***Physical Environment:*** A rapid desk-based compilation of geological (both solid and drift), pedological, topographical and palaeoenvironmental information will be undertaken. This will not only set the archaeological features in context, but also serves to provide predictive data that will increase the efficiency of the field inspection.

3.3 FIELD INSPECTION

3.3.1 ***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, although LUAU will, as a courtesy, contact them prior to undertaking the survey.

3.3.2 ***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.

3.3.3 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.

3.3.4 ***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.

3.3.5 ***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.

3.3.6 ***Survey Recording:*** The emphasis for the recording is on the written description which should record type and period and would not normally exceed *c*50 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 co-ordinates 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.

3.3.7 ***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 implemented for all projects.

3.4 ASSESSMENT REPORT

3.4.1 ***Archive:*** The results of Stages 3.2-3.3 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.

3.4.2 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 Cumbria 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, should any material be recovered, with the material archive (artefacts, ecofacts, and samples, at this stage from surface collections) with the County Museums Service.

3.4.3 ***Collation of data:*** The data generated by 3.2 and 3.3 (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.

3.4.4 ***Summary Report:*** A brief summary report will be submitted immediately following the completion of the fieldwork and the documentary study. It will summarise the results of the assessment and will define proposals for further recording where appropriate.

3.4.5 ***Assessment 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 final 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, together with appropriate illustrations, including a map and gazetteer of known or suspected sites identified within or immediately adjacent to the study area. 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. Any finds recovered from the identification survey will be assessed with reference to other local material. 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.

3.4.6 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, and site plans it can be tailored to the specific requests of the client (e.g. 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).

3.4.7 ***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.

3.4.8 ***Confidentiality:*** The assessment 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.

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 her 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 co-ordination 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

The phases of work will comprise:

5.1 ***Desk Top Study***
A two day period is required to collate all the available data.

5.2 ***Field Inspection***
A one day period is required for the identification survey.

5.3 ***Prepare Assessment Report***
A three day period would be required to complete this element.

5.4 LUAU can execute projects at very short notice once an agreement has been signed with the client. As long as the work is awarded by the 16th April it will be possible to submit the summary report by the end of April.

6. OUTLINE RESOURCES

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

6.1 ***Desk Top Study***
2 man-days Project Officer

6.2 ***Field Survey***
1 man-day Project Supervisor
1 man-day Project Assistant

6.3 ***Assessment Report***
3 man-days Project Officer
2 man-days Project Assistant

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

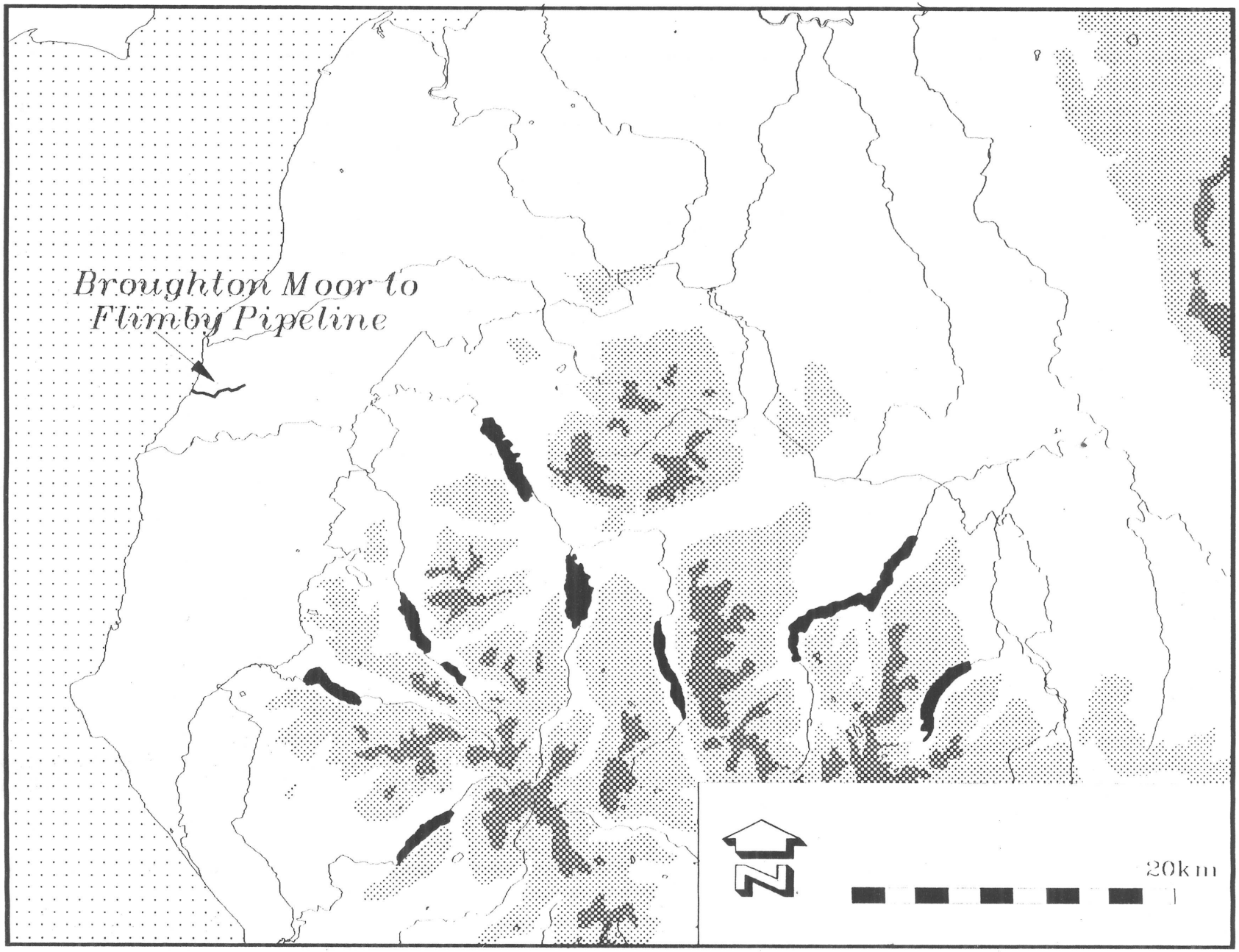
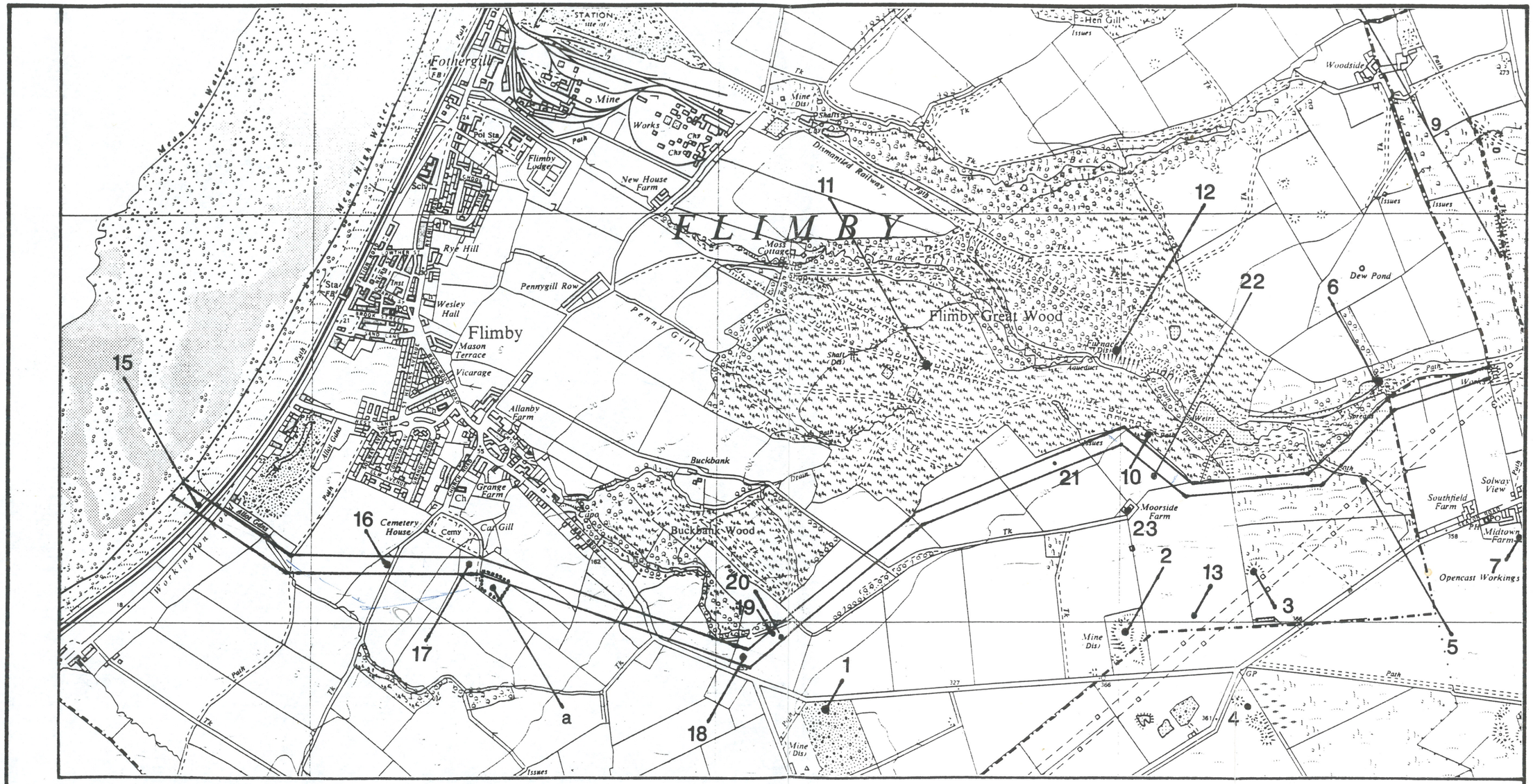


Fig 1 Broughton Moor to Flimby Pipeline Location Plan



Broughton Moor to Flimby Pipeline

Cumbria

Site Location Plan

1:10560

Fig. 2 Site Location Plan