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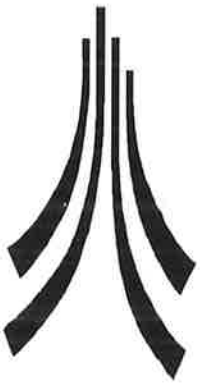

March 1997

OXCLIFFE ROAD PUMPING MAIN

Lancashire

Archaeological Assessment Report

Commissioned by:

North West Water Ltd

OXCLIFFE ROAD PUMPING MAIN,
HEYSHAM TO LANCASTER,
LANCASHIRE

Archaeological Assessment

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The documentary research was undertaken by Bob Middleton and the field survey by Richard Short and Peter Redmayne. The report was compiled by Bob Middleton and Richard Short, and edited by Jamie Quartermaine (Project Manager) and Rachel Newman (Assistant Director). The project was managed by Jamie Quartermaine.

EXECUTIVE SUMMARY

A desk top study and field investigation was carried out by LUAU ahead of the construction of the Oxcliffe Road Pumping Main sewer by North West Water Ltd (SD 4279 6209 to SD 4601 6107). This work assessed the nature and extent of the archaeological and palaeoecological resources affected by the proposed development from both documentary sources and surviving surface traces.

The desk-top study identified a broad, but scattered archaeological resource from the general environs of the study corridor, which included dispersed Bronze Age finds (four axe-hammers). The southern end of the corridor is within the vicinity of the Lancaster Roman fort and associated port facilities; however, there were no identified sites of Roman date on the line of the study corridor. In the early medieval period Heysham was of considerable importance because of the early monastery at Heysham Head. Prior to the post-medieval period Heysham Moss area was only sporadically exploited, but was then drained and brought into agricultural use.

The survey identified eleven sites all of which relate to the post-medieval agricultural landscape, and included narrow ridge and furrow, field boundaries and some small earthworks. Of the identified earthworks only three will be directly affected by the pipeline development. Perhaps the most significant landscape feature that has been identified was the flood defences at Aldcliffe Marsh, which are represented by a single bank separating the reclaimed marsh from the River Lune; it relates to the reclamation of the marsh which occurred prior to 1786.

Although relatively few archaeological sites will be affected by the construction of the pipe, there are two elements of the archaeological resource which will repay further examination:

- If Aldcliffe Marsh flood bank will be affected by the sewerage scheme it is recommended that it should be evaluated by trial excavation, prior to the implementation of the scheme.

- The assessment was not able to evaluate sub-surface survival of archaeological or palaeoenvironmental deposits on the line of the study corridor, particularly within Heysham Moss and Aldcliffe Marsh. It is therefore recommended that the gross stratigraphy be determined by the archaeological supervision of any boreholes or testpits that will be excavated by North West Water Ltd prior to the construction of the pipe. It is also recommended that a watching brief be undertaken during the topsoil strip to identify any sub-surface remains and to examine any exposed sections.

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 sewer pipeline. The work was undertaken between 22nd - 27th January 1997.

1.2 The route ran from Oxcliffe Road Pumping Station, Heysham, to Brookholme Valve Chamber, near Willow Lane, Lancaster. Four main landscape zones were traversed on this 3.5 km route: Heysham Moss, a boulder clay ridge, the River Lune and associated salt marshes, and Aldcliffe Marsh.

1.3 The aim of the work was to assess the impact that construction of the pipe would have upon archaeological remains within the affected area. This was achieved by means of collating all existing archaeological information in a desk-top study. This was undertaken with a rapid scan of the proposed route to identify new archaeological remains and to estimate the potential for the survival of sub-surface features.

1.4 This report sets out the results of the work in the form of a short report which outlines the findings, followed by a statement of the archaeological potential of the area, and an evaluation of the impact of the proposed development. This is complemented by a gazetteer of sites, both new to the record and formerly known, and a bibliography.

2. METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 A Project Design (*Appendix 1)* was submitted by LUAU in response to a request from North West Water Ltd, for an archaeological assessment of the proposed construction of a main sewer between Oxcliffe Road pumping station to Brookholme Valve Chamber, near Willow Lane, Lancaster. This was designed to meet the requirements of a verbal project brief by the Lancashire County Archaeologist.

2.1.2 The Project Design provided for an archaeological assessment involving a desk-top study, a rapid field inspection, 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 water main as the centre-line of a 1km wide corridor, and extant archaeological information was obtained from the Lancashire Sites and Monuments Record (LSMR) on this basis. The results of that search are presented in the Gazetteer (*Section 7*). In addition, the study encompassed the archaeology of the general area to provide a general, period-by-period context.

2.2.2 A search was also made in the LSMR for relevant aerial photographs. 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.

2.2.3 In addition primary documentary sources were consulted from the Lancashire Record Office (LRO), in Preston. Published secondary sources were also examined, which included both papers, books, and, perhaps most importantly, cartographic evidence. The most important sources of cartographic data included Yates' Map of Lancashire (1786), the first accurate representation of the county, and the first edition Ordnance Survey maps of 1844. Some supplementary information was obtained from later editions of Ordnance Survey maps.

2.2.5 There were few documents which have a bearing on the affected area, although some, such as the award relating to the drainage of Poulton and Torrisholme Mosses, provide background historical information which aids the understanding of the historic landscape.

2.2.6 The physical environment has been well described by the Geological Survey (Crofts 1992a, 1992b; BGS 1995) from which the data in this report is derived. It has proved impossible, however, to assess accurately the nature of the buried deposits, particularly in areas of marine and riverine alluviation - notably the clays in Heysham Moss, and Aldcliffe Marsh. Such data can only be obtained through boreholes, such as those which were undertaken ahead of the construction of the Morecambe by-pass (Middleton and Lambert 1993), and the examination of exposed sections. The general

area has been examined as part of the English Heritage funded North West Wetlands Survey, which is being undertaken by LUAU, and the results, where pertinent, have been incorporated within the present desk-top study (Middleton *et al* 1995).

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 the a 50m wide corridor was undertaken to ensure complete coverage of the ground. The whole of the area subjected to field walking was open pasture and was walked on 20m transects to identify earthworks. The archaeological detail, as well as significant topographic detail, was mapped to an accuracy of +- 10m, by measurement with respect to field boundaries.

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

2.4 GAZETTEER OF SITES

2.4.1 All of the information concerning archaeological sites in the affected area has been collated into a Gazetteer (*Section 7*). This provides details of their location, origin, and an assessment of their archaeological potential. The sites have been marked onto a map at a scale of 1:10,000 showing their location (Figs 2 and 3). Locations are given as eight-figure National Grid References where possible. A summary description of each site is provided in conjunction with a reference to the source of the information (SMR, cartographic, documentary, field inspection) with references as appropriate. An assessment has been given of the interpretation and archaeological potential of the site. Other sites beyond the extent of the corridor, which were considered to be of background relevance, are mentioned in the text with appropriate SMR references.

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 Lancashire Record Office with a copy to the Lancashire Sites and Monuments Record and a copy for deposition to the National Monuments Record.

3. THE LANDSCAPE

3.1 The line of the Oxcliffe Road Pumping Main runs from a point north-east of Heysham village to Brookholme Pumping Station on the east side of the River Lune in the western suburbs of Lancaster.

3.2 The route crosses an area of low relief; the maximum height is *c* 10m AOD, with most below 5m AOD. The whole area is underlain by carboniferous sandstones, siltstones, and claystones. There are only limited outcrops of these rocks, such as the millstone grit and claystones exposed at Douglas Park (SD 416 610), and the coarse sandstone exposed at Heysham Head, to the west of the study area (Crofts 1992b).

3.3 The area is predominantly covered in drift deposits which define four topographic zones:

- Heysham Moss;
- low-lying boulder clays;
- the River Lune and its associated active salt marsh systems;
- reclaimed marshland in Aldcliffe Marsh.

3.4 HEYSHAM MOSS

3.4.1 Heysham Moss once covered an area of *c* 400ha. It has been drastically reduced in size over several centuries by reclamation, peat cutting, and drainage, leading to wastage. Only a small remnant of intact peats (*c* 12ha in extent) remains to the south of the original moss area adjacent to Heysham village. Here, peats reach a maximum depth of 3.25m (Middleton *et al* 1995, 121) and support a remnant raised moss flora.

3.4.2 The moss originally extended for *c* 4km north into the area that is now covered by Westgate, Morecambe. A document of 1788 (LRO DDX 70/28) outlines in detail the drainage and reclamation of Poulton and Torrisholme Mosses which formed the northern part of this mossland. Whilst the precise geography and flora of the mosses are unknown, it is clear that the whole wetland formed a contiguous unit.

3.4.3 The moss is underlain by a complex series of marine clays and silts whose history remains unknown, although they reach a maximum depth of *c* 8m and contain intercalated peats representing falls in sea-level. The upper silts may represent a period of high sea level (Lytham VI which has been dated to *c* 4400 - 3600 cal BC (Langridge 1969; Tooley 1969, 1978)). The subsequent fall in sea-level led to the development of peats on exposed, saturated surfaces. At Heysham, basal brushwood peats are overlain by *Phragmites* peats, *Eriophorum/Calluna* peats, and *Simbricatum* peats. The latter suggest that the moss developed into a full raised mire with wet surfaces and a restricted, acid-loving flora.

3.5 LOW-LYING BOULDER CLAYS

3.5.1 The boulder clays border the mossland on its eastern side and lie between the moss and the River Lune. They rise to a maximum height of 25m AOD at Windmill Hill, south of the study area. Whilst detailed studies are lacking, it is thought that the clay was deposited during the latter stages of the Devensian glaciation. It is predominantly red-brown in colour and made up of material derived from Permo-Triassic deposits. A sandy clay matrix holds stones and boulders of limestone and sandstone, along with erratics from the Lake District. It is laid down mainly as north/south orientated drumlins, such as those at Heaton and Snatchem's, reflecting the path of the retreating ice.

3.6 RIVER LUNE AND ASSOCIATED SALT MARSH SYSTEMS

3.6.1 The pipeline will traverse the River Lune and its associated active salt marsh systems. The tidal nature of the river is reflected in the presence of active creek systems. The alluvium is yellowish to greyish brown silt over sand and gravel (BGS 1995). On the route of the pipeline, the northern bank of the river is demarcated by a river cliff caused by the erosion of the side of Oxcliffe Hill; this reflects the changing course of the river over time. Yates' Map (1786), for example, shows Green Ayre, to the north of the line and now a tip, as an island within the river. Boreholes undertaken ahead of the construction of the Morecambe Bypass have revealed a complex sequence of silts and clays at SD 4620 6280 which represented an old river meander. Similar deposits will be met on either side of the river underneath recently-deposited estuarine alluvium.

3.7 RECLAIMED MARSHLAND IN ALDCLIFFE MARSH

3.7.1 On the eastern side of the river, the pipe cuts through Aldcliffe Marsh. This is a large area of reclaimed saltmarsh comprising yellowish-brown silt overlying sand and gravel, which has been termed 'Older Alluvium' by the British Geological Survey (BGS 1995). The nature of deposits under the surface silts is unknown, although it is likely to reflect the movement of the river with fossil river channels.

3.7.2 The marsh itself appears to have been enclosed by the time of Yates' Map of 1786 and a race course is marked on the northern part of Lancaster Marsh west of St George's Quay. This now lies under housing and will not be affected by the development. The marsh remains undeveloped and has the same field pattern as that recorded on the First Series Ordnance Survey map of 1844.

4. ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL

4.1 DESK-TOP SURVEY

4.1.1 ***Prehistory:*** The earliest evidence for activity in the area of the pipeline are some scattered finds of Bronze Age date. Four axe-hammers (LSMR 484, 485, 486, 492) have been found within the area of the River Lune and from Lancaster, although the exact location of the finds is unknown; another is known from Heaton Chapel (LSMR 426). These finds form part of a wider pattern of deposition of bronze and stone objects during the early Bronze Age throughout lowland Lancashire (Middleton *et al* 1995, 205); Lancaster and the River Lune are particularly important (*ibid*).

4.1.2 Finds of other prehistoric material are also known from the general area, but are remote from the study corridor. A late Mesolithic settlement has been discovered on Heysham Head (Salisbury and Sheppard 1994, Sheppard pers comm) and polished axes of Neolithic date are known from Heysham (LSMR 1226, 2040, 2345) and Morecambe (Clough and Cummins 1988, 220).

4.1.3 These finds reflect the beginnings of the, probably continuous, activity and settlement on Heysham Head, but can act as no more than a general guide to the nature of the prehistoric activity in the affected area. Other survey programmes around Heysham and in lowland Lancashire do not suggest that the peats, clays, and silts of the affected corridor would have necessarily been suitable for prehistoric settlement.

4.1.4 ***Romano-British Period:*** Lancaster was, however, a focus for military activity and civilian settlement in the Romano-British period. A fort and associated civilian settlement indicate that it was one of the most important centres in the Roman North West from the first to the fourth century AD. However, activity away from the main centre is scattered, despite the undoubted importance of the River Lune for trade and coastal traffic. However, the roman crossing point is believed to have been at Scaleford which is over 2km up stream of the pipeline crossing point.

4.1.5 Scattered Roman material includes an inscription and coin (LSMR 2004) and two coins from St George's Quay (LSMR 2644). An isolated coin is known from Heysham (LSMR 1219).

4.1.6 Whilst the environment of heavy clays and mosslands mitigates against the discovery of Romano-British rural sites from the air, the number of such sites in the area of the pipeline must also be considered small. The unsuitability of the heavy clays for cultivation and the general avoidance of the mosslands by the Romans means that the area may never have been attractive for settlement.

4.1.7 ***Early Medieval Period:*** In the Early medieval period Heysham Head was one of the key locations in the North West as an early ecclesiastical centre. The ruined St Patrick's chapel (LSMR 0420) dates from the late seventh or early eight century and the chapel may have been enlarged at the time that several burials were inserted, including rock-cut graves (LSMR 4204, 12418) (Bu'Lock 1967; Potter and Andrews 1994). There is a tenth-century hogback in Heysham churchyard and a ninth or tenth

century cross shaft (LSMR 4207) and archway (LSMR 12416). Further Scandinavian period finds include a spearhead from the churchyard (LSMR 1221).

4.1.8 The finds from Heysham Head may suggest the presence of an early monastery (Bu'Lock 1967; Newman 1997). It would have been located on the end of a narrow headland bounded on one side by the sea and on the other by Heysham Moss and the saltmarshes of the Lune estuary. Its positioning is likely to have been deliberate in that it was isolated from the secular world but still accessible.

4.1.9 This suggests that the level of contemporary settlement in the hinterland of Heysham Head is likely to have been limited, although there is a small amount of place-name evidence to suggest that the land was at least identified, if not settled. Scandinavian period place-names in the area, for example, include Great Fearkla, a drumlin on which now stands a post-medieval farm. It is likely that settlement of this period may have been scattered with isolated farms in the drier, more favourable areas of the landscape.

4.1.10 ***Medieval and Post-Medieval periods:*** In the medieval period, the pattern of dispersed settlement continued; villages developed to the north of the area at Poulton, Bare Torrisholme, and to the west at Heysham. Since the mid-nineteenth century these were agglomerated into Morecambe, a name that was formally adopted in 1906.

4.1.11 Examination of Yates' map (1786) and the First Series Ordnance Survey map (1844) suggests that the landscape has seen a number of changes in the post-medieval period. Notable is the drainage of Heysham Moss and the reduction of the peat area by domestic cutting for fuel. Whilst there are no documents which give a full picture of this practice, there is some evidence to hint at its scale and extent. A drainage agreement of 1788 (LRO DDX 70/28) suggests that much of the moss to the north of the pipeline route was already reclaimed and that peat cutting was actively underway. The pattern of long fields on the moss, where it is traversed by the pipe, may be indicative of reclaimed 'turf dales' or 'moss-rooms'. These were long, thin allotments granted to tenants from which they could remove peat for their own use. Although local circumstances were variable, in Lancashire these were going out of widespread use in the late nineteenth century. By the time the second series Ordnance Survey maps were produced, in 1896, the modern field pattern was established. Some field boundaries have been removed in recent years leaving banks as the only traces (Sites 03, 04 and 08). Drainage of relatively recent date has also led to a distinctive pattern of narrow ridges in some fields along the route (Site 05) and has been found elsewhere in the area (Middleton and Lambert 1993).

4.1.12 A number of features has been noted from the first series Ordnance Survey maps which either no longer exist, or have been substantially re-modelled over the last 150 years. These include farms (LSMR 4570/4574, 4575, 4576, 4578, 4585), ferries across the River Lune (LSMR 4586, 4587), wells (LSMR 4572, 4579), bridges on Aldcliffe and Lancaster Marshes (LSMR 4588, 4606), a boundary stone (LSMR 4571), and fishing equipment (LSMR 4608, 4609). Also worthy of mention are the large factories alongside the River Lune at Lune Mills (LSMR 10258) and an associated quay (LSMR 4611). A Delft Ware pottery was shown on Binns' Map of 1821.

4.1.13 Perhaps the most significant landscape features of the past hundred years have been the construction of flood defences and the Lancaster to Glasson Railway across

Aldcliffe Marsh. The flood defence is represented by a single bank separating the reclaimed marsh from the River Lune (Site 06). The date of the original bank is unknown, although it is likely to have been substantially re-modelled on several occasions. The marsh had been reclaimed by 1786. The award for the drainage of Poulton and Torrisholme Mosses (LRO DDX 70/28) mentions embankments along the west bank of the river in 1788.

4.1.15 The Lancaster - Glasson Railway was constructed in 1883 across Aldcliffe Marsh (LSMR 4685) by the Little North Western Railway from its station at Lancaster Green Ayre. It was closed to passengers in 1930 and freight in 1964 and the track was lifted in 1967. Whilst most of its length has now been adopted as a cycle path, in the affected area it is represented by a remnant embankment which has been incorporated into the neighbouring fields (Site 09).

4.2 IDENTIFICATION SURVEY (FIGS 2 AND 3)

4.2.1 Twelve fields were examined on the line of the Oxcliffe Road Pumping Main, all of which were under pasture. The five fields west of the A683 and east of Oxcliffe Road were on flat ground, across Heysham Moss. In this area three sites were located (Sites 01-03). Site 01 was located adjacent to the proposed line of the pipeline and comprised a large dump (*c* 1.2ha) of nineteenth to twentieth century bottles and jars which stood approximately 0.75m higher than the surrounding fields. Site 02 was a stone surface around the edge of a pond, presumably to allow stock to water without sinking into the mud. Site 03 was identified by a dip in the eastern boundary hedge and may well represent a dried-up stream bed.

4.2.2 The other four fields investigated west of the River Lune were on more rolling topography. The two fields between Oxcliffe Road and the Oxcliffe Road Pumping Station revealed no sites. The westernmost of the two fields, east of the A683 and west of the River Lune, contained Sites 04 and 05. Site 04 consisted of two linear earthworks which may represent field boundaries, that were rearranged after the construction of the A683, or alternatively may have been trackways. To the east of this was located an area of narrow ridge and furrow (Site 05), bounded by the top of the field to the north and east and by an ill-defined lynchet to the south-west. The ridge peaks were approximately 3m apart, and the particularly straight shape of the ridges suggest a Post-medieval date.

4.2.3 The three fields located east of the River Lune were on flat ground, rising up sharply towards the Brookholme Valve Chamber and within them six sites were identified (Sites 06-11). Site 06 was the Lune flood defence bank, which stood approximately 2m above the surrounding ground level. Site 07 was an irregular depression in the field (approximately 1m in diameter) which the farmer had fenced off, presumably to protect stock. This may well be a natural feature, but there is also a possibility that it had an archaeological origin. Site 08 is a linear earthwork and is a continuation of the field boundary in the adjacent field. A dismantled railway embankment also crosses this area (Site 09) and which measures 4-6m across and stands approximately 1.5m above the surrounding ground level. Sites 10 and 11 were identified as dried-up stream beds, the latter of which was canalised to form a straight drainage ditch along the edge of the field.

4.2.4 The location of a site reported by one of the landowners as being a collection of stone fragments could not be identified, but it is possible that this relates to an archaeological site.

5. CONCLUSIONS

5.1 INTRODUCTION

5.1.1 The assessment has revealed the presence of archaeological material in the area around the proposed pipeline, which dates from the Neolithic through to the nineteenth century. It is clear, however, that the earlier material occurs in certain areas away from the proposed pipeline – notably on the eastern bank of the River Lune south of Lancaster and on Heysham Head.

5.1.2 The landscape traversed by the pipeline route has never seen intensive settlement, a pattern perhaps largely dictated by the relatively wet and unproductive land in the area. The mosses were not cultivated on a large scale until, perhaps, the eighteenth century. Similarly, it was only with under drainage in the mid-nineteenth century that the heavy boulder clays would have realised their full agricultural potential. Thus the overall archaeological potential of the land affected by the proposed development is likely to be relatively low.

5.1.3 There are, however, two aspects of the affected landscape which warrant further examination:

5.2 BURIED REMAINS

5.2.1 In two locations, Heysham Moss and Aldcliffe Marsh, the pipeline will cut through wetland and former wetland deposits. Little is known about the stratigraphy of these areas and thus their archaeological potential is similarly unknown. It is likely, depending upon the depth of the pipe, that buried peat deposits may be encountered which, owing to their properties of preservation, may contain important archaeological and palaeoecological remains. Every opportunity should be taken to examine exposures through these deposits wherever possible.

5.3 ALDCLIFFE MARSH FLOOD BANK

5.3.1 The construction of the pipeline may cut through the flood bank which was constructed to reclaim Aldcliffe Marsh, an event that occurred before 1786. This bank may be relatively ancient, dating perhaps back to the early post-medieval or even medieval periods. Little is known about this structure and, if it is to be affected by the proposals, should be investigated in order to date the construction of the bank and therefore the reclamation of the marsh.

6. ARCHAEOLOGICAL IMPACT AND RECOMMENDATIONS

6.1 IMPACT

6.1.1 This assessment has highlighted the archaeological resource within and around the assessment area. The archaeological material has the potential to be of local and possibly even regional importance; it includes the Aldcliffe Marsh flood bank and the buried deposits of Heysham Moss and Aldcliffe Marsh.

6.1.2 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 Lancashire County Archaeologist for a further programme of work which will be required to identify, locate, and document the existence and extent of surviving archaeological features.

6.2 RECOMMENDATIONS

6.2.1 ***Aldcliffe Marsh Flood Bank:*** There is a clear need to document this structure to determine its date of construction, history of development, and the effects of subsequent re-buildings. If the bank is to be affected by the proposed development, it should be evaluated by trial trenching prior to laying the sewerage pipe.

6.2.2 ***Heysham Moss and Aldcliffe Marsh:*** The archaeological and palaeoecological potential of buried deposits in Heysham Moss and Aldcliffe Marsh needs to be assessed. It is likely that they both contain important and complex stratified wetland deposits and may incorporate sequences documenting past human interaction with the environment.

6.2.3 It is recommended that the gross stratigraphy be investigated by the archaeological supervision of any testpits that will be excavated by North West Water Ltd prior to the laying of the pipe. Furthermore any borehole information available to North West Water Ltd would provide an additional insight into the stratigraphic character of the area.

6.2.4 It is also recommended that a watching brief be undertaken during the topsoil strip to identify any sub-surface remains and to examine any exposed sections.

7. SITE GAZETTEER

7.1 IDENTIFICATION SURVEY SITES

Site number **01**
Site name Oxcliffe Road
NGR SD 4279 6209 (Centred)
Site type Earthwork
Period Post-medieval
Source Identification Survey 1997
Figure no: Fig 2
Description
A nineteenth / twentieth century bottle dump, covering an area of approximately 1.2ha and standing approximately 0.75m higher than the surrounding ground surface.
Assessment
The site lies immediately outside the assessment area.

Site number **02**
Site name Heaton-with-Oxcliffe
NGR SD 4350 6181 (Centred)
Site type Pond
Period Unknown
Source Identification Survey 1997
Figure no: Fig 2
Description
A ground hardened layer of stone around the outside of a pond.
Assessment
Within the extent of the study area.

Site number **03**
Site name Heaton-with-Oxcliffe
NGR SD 4455 6161 (Centred)
Site type Earthwork
Period Unknown
Source Identification Survey 1997
Figure no: Fig 2
Description
A former field boundary/dried-up stream bed identified by a dip in the field boundary hedge line and an ill-defined earthwork.
Assessment
Within the extent of the study area.

Site number **04**
Site name Golden Ball
NGR SD 4455 6166 (Centred)
Site type Earthwork
Period Unknown
Source Identification Survey 1997
Figure no: Fig 3
Description

Some former field boundaries/trackways comprising linear earthworks.

Assessment
Within the extent of the study area

Site number **05**
Site name Golden Ball
NGR SD 4475 6185 (Centred)
Site type Earthwork
Period Post-medieval?
Source Identification Survey 1997
Figure no: Fig 3
Description
An area of narrow rig, bounded on the north and east sides by the extant field boundaries and on the south-west side by a lynchet; the lynchet is well defined to the north-west, becoming less well defined towards the south-east. The ridges are approximately 3m apart and are very straight, suggesting a post-medieval date.
Assessment
Within the extent of the study area.

Site number **06**
Site name Brookholme
NGR SD 4518 6139 (Where crosses line of pipeline)
Site type Earthwork
Period Unknown (Modern?)
Source Identification Survey 1997
Figure no: Fig 3
Description
A flood defence bank standing approximately 2m higher than the surrounding ground level.
Assessment
Within the extent of the study area.

Site number **07**
Site name Brookholme
NGR SD 4540 6129
Site type Earthwork
Period Unknown
Source Identification Survey 1997
Figure no: Fig 3
Description
An irregular circular depression, measuring approximately 1m in diameter. The landowner had fenced it off presumably to protect stock. It is probably a natural feature but an archaeological explanation cannot be ruled out.
Assessment
Within the extent of the study area.

Site number **08**
Site name Brookholme
NGR SD 4584 6110 (Centred)
Site type Earthwork

Period Unknown
Source Identification Survey 1997
Figure no: Fig 3
Description
A former field boundary. It is a low bank following the line of the field boundary in the adjacent field.
Assessment
Within the extent of the study area.

Site number **09**
Site name Brookholme - Lancaster to Glasson Railway
NGR SD 4591 6107 (Where it crosses the line of the pipeline)
Site type Railway
Period Post-medieval
Source Identification Survey 1997, Lancashire Sites and Monuments Record
SMR No 4685
Figure no: Fig 3
Description
The line from Glasson Dock to Lancaster was opened in 1883 by the Little North Western Railway from its station at Lancaster Green Ayre, and closed to passengers in 1930. It was closed to freight in 1964, and the line lifted in 1967. It is now used as a cycle way to Glasson Dock (opened 1984) and most of its earthworks, bridges and culverts are still intact. The railway embankment, measures between 4m and 6m in width and is approximately 1.5m in height.
Assessment
Within the extent of the study area.

Site number **10**
Site name Brookholme
NGR SD 4601 6107 (Centred)
Site type Earthwork
Period Unknown
Source Identification Survey 1997
Figure no: Fig 3
Description
A possible dried-up stream bed characterised by a small curvilinear earthwork.
Assessment
Within the extent of the study area.

Site number **11**
Site name Brookholme
NGR SD 4532 6139 (Centred)
Site type Earthwork
Period Unknown
Source Identification Survey 1997
Figure no: Fig 3
Description
A series of two sections of dried-up stream beds characterised by small curvilinear earthworks. The original stream, which drains a pond in the same field, appears to have been canalised to serve as a field drain.
Assessment

Within the extent of the study area.

7.2 SMR SITES

Site number **12**
Site name Lancaster
NGR SD 4000 6000 SE
Site Type Perforated stone axe
Period Bronze Age
Source Lancashire Sites and Monuments Record
SMR No 484
Figure no: Not shown on location mapping
Description
The axe-hammer, found near Lancaster, is 9.75inches long and divided very unequally by the perforation. Though chipped at each end, it is designed as a simple axe with one end rounded, and the surface hollows towards the hole, which is placed at one third of the length from the rounded end. The exact provenance of this axe was not discovered during recording or field investigation. It is not preserved at Lancaster Museum and the present location is unknown.
Assessment
Outside the study area.

Site number **13**
Site name Bed of the River Lune, Lancaster
NGR SD 4000 6000 SE
Site type Perforated stone axe hammer
Period Bronze Age
Source Lancashire Sites and Monuments Record
SMR No 485
Height AOD Below 0m
Figure no: Not shown on location mapping
Description
The Lancaster axe-hammer, found in the bed of the Lune, is 9.25 inches long, with a width of 4.75 inches and a depth of 2.75 inches. The material is fine gritstone. The edge is much dulled and the flat hammer end shows signs of use. The exact provenance of this hammer was not discovered during recording.
Assessment
Outside the study area.

Site number **14**
Site name Lancaster
NGR SD 4000 6000 SE
Site type Perforated axe-hammer
Source Lancashire Sites and Monuments Record
Period Bronze Age
SMR No 486
Figure no: Not shown on location mapping

Description
A perforated stone axe-hammer of unusual form is described as being found near Lancaster. It is of massive appearance, 9inches wide with a depth of 3inches at the cutting edge and 2.5 inches at the butt. It seems to have one side almost flat while the other increases suddenly just beyond the hole towards the edge, giving the appearance of an angle in the side and a general lack of symmetry. The edge is chipped and the head smoothed and somewhat rounded. It is of Bronze Age date. The exact provenance and present location of the axe hammer was not established during the present assessment.
Assessment
Outside the study area.

Site number	**15**
Site name	Near Lancaster
NGR	SD 4000 6000 SE
Site type	Perforated stone axe hammer
Source	Lancashire Sites and Monuments Record
Period	Late Bronze Age
SMR No	492
Figure no:	Not shown on location mapping

Description
A late Bronze Age hammer found by Mr J Thompson near Lancaster. This axe hammer measures 9.5 inches in length by 4.75 inches at its widest part and is 2.25 inches deep. The hole for the handle is 1.75 inches wide and is one third of the way along from the butt. The hammer has a slight hollow in the top surface.
Assessment
Outside the study area.

Site number	**16**
Site name	New Quay Road, Lancaster
NGR	SD 4620 6200
Site type	Inscription and coin found
Height AOD	8m
Source	Lancashire Sites and Monuments Record
Period	Roman
SMR No	2004
Figure no:	Fig 3

Description
A portion of a Roman inscription was found in 1976 on a rubbish tip at the Western end of New Quay Rd. The fragment, which is in millstone grit, consists of part of the right hand side of an inscription, apparently a tombstone inscribed :

ELIC OPATRI.

The only recognisable word is Patri, suggesting the stone is a memorial for someone's father. The lettering suggests a second century date. The coin, found at a different time to the stone, is a denarius of Domitian (AD 81-96). There is the site of a Roman cemetry at nearby Westfield Memorial Village, which is associated with Lancaster, but it is not known if there is a relationship between the memorial stone and the cemetry.
Assessment
Outside the study area.

Site number	**17**
Site name	St George's Quay, Lancaster

NGR SD 4610 6200
Site type Two bronze coins found
Height AOD 8m
Period Roman
SMR No 2644
Figure no: Fig 3
Description
Two bronze coins were found:
a) Worn coin, diameter 16mm: obverse, Constantinopolis: reverse, Victory on prow.

b) Coin showing wear, diameter 15mm: obverse, Constantinus IVNNOBC: reverse, *Gloria exercitus.*
Assessment
Outside the study area.

Site number **18**
Site name New Quay, Lancaster
NGR SD 4620 6200
Site type Clay pipe found
Height AOD 8m
Source Lancashire Sites and Monuments Record
Period Post-medieval
SMR No 3524
Figure no: Fig 3
Description
A clay pipe with a heavy bowl, substantial spur, and an indelible ink stamp was found by T Knowles of Lancaster in an old refuse tip at Lancaster New Quay. The ink stamp reads:
HERBERT.LANCASTER
and carries a crown motif. According to Bulmer's Directory of Lancaster for 1913 J. Herbert was Licensee of the Crown Inn, St Leonard's Gate.
Assessment
Outside the study area.

Site number **19**
Site name White Lund Hill Farm
NGR SD 4420 6254
Site type Farm
Height AOD 8m
Source Lancashire Sites and Monuments Record; OS 1st edition map (1844)
Period Post-medieval
SMR Nos 4570 and 4574
Figure no: Fig 2
Description
White Lund Hill Farm is shown on the Ordnance Survey 1st edition map but is not on the current sheet.
Assessment
Outside the study area.

Site number **20**
Site name White Lund
NGR SD 4425 6287

Site type Boundary stone
Height AOD 8m
Source Lancashire Sites and Monuments Record; OS 1st edition map (1844)
Period Post-medieval
SMR No 4571
Figure no: Not shown on location mapping
Description
The boundary stone between 'Heaton with Oxcliffe' and 'Morecambe and Heysham' at White Lund is shown on the Ordnance Survey 1st edition map but is not on the current sheet.
Assessment
Outside the study area.

Site number **21**
Site name Higham's Tenement (now Mellishaw Farm)
NGR SD 4482 6245
Site type Farm
Source Lancashire Sites and Monuments Record; OS 1st edition map (1844)
Period Post-medieval
Height AOD 8m
SMR No 4575
Figure no: Fig 3
Description
Higham's tenement is shown on the Ordnance Survey 1st edition map as being on the same site as Mellishaw Farm on the current sheet.
Assessment
Outside the study area.

Site number **22**
Site name Whittam House
NGR SD 4271 6242
Site type House
Height AOD 8m
Source Lancashire Sites and Monuments Record; OS 1st edition map (1844)
Period Post-medieval
SMR No 4576
Figure no: Fig 2
Description
Whittam House, is shown on both the Ordnance Survey 1st edition and the current sheet.

Site number **23**
NGR SD 4272 6243
Site name Whittam House Pump
Site type Pump
Height AOD 8m
Source Lancashire Sites and Monuments Record; OS 1st edition map (1844)
Period Post-medieval
SMR No 4577
Figure no: Fig 2
Description
The pump is shown on the Ordnance Survey 1st edition map as being just North of Whittam House. It is not shown on the current sheet.

Assessment
Outside the study area.

Site number **24**
Site name Fanny's House
NGR SD 4265 6225
Site type House
Height AOD 8m
Source Lancashire Sites and Monuments Record; OS 1st edition map (1844)
Period Post-medieval
SMR No 4578
Figure no: Fig 2
Description
Fanny's House is shown on the Ordnance Survey 1st edition map and although a building is shown on the current sheet in the same position, it is not named.
Assessment
Within the study corridor.

Site number **25**
Site name Near Fanny's House
NGR SD 4263 6227**,** SD 4265 6224
Site type Wells
Height AOD 8m
Source Lancashire Sites and Monuments Record; OS 1st edition map (1844)
Period Post-medieval
SMR No 4578
Figure no: Fig 3
Description
The wells are shown on the Ordnance Survey First Edition. map as being close to Fanny's House. They are not shown on the current sheet.
Assessment
Within the study corridor.

Site number **26**
Site name Snatchem's (Golden Ball Inn)
NGR SD 4489 6155
Site type House
Height AOD 8m
Source Lancashire Sites and Monuments Record; OS 1st edition map (1844)
Period Post-medieval
SMR No 4585
Figure no: Fig 3
Description
Snatchem's (now the Golden Ball Inn) is shown on both the Ordnance Survey first edition map and the current sheet.
Assessment
Within the study corridor.

Site number **27**

Site name Snatchem's Ferry
NGR SD 4497 6151
Site type Ferry
Height AOD 0m
Source Lancashire Sites and Monuments Record; OS 1st edition map (1844)
Period Post-medieval
SMR No 4586
Figure no: Fig 3
Description
Snatchem's Ferry is shown on the Ordnance Survey 1st edition map as running from the house of Snatchem's (4585) to the opposite bank of the River Lune. It is not shown on the current sheet, although a small jetty is shown some small way downstream of Snatchem's.
Assessment
Outside the study area.

Site number **28**
Site name Lythe Bridge Oxcliffe
NGR SD 4463 6138
Site type Bridge
Height AOD 4m
Source Lancashire Sites and Monuments Record; OS 1st edition map (1844)
Period Post-medieval
SMR No 4587
Figure no: Fig 3
Description
Lythe Bridge, over Oxcliffe Pool, is shown on both the Ordnance Survey 1st edition map and the current sheet.
Assessment
Outside the study area.

Site number **29**
Site name High Bridge, Peggy Marsh Pool
NGR SD 4446 6113
Site type Bridge
Height AOD 4m
Source Lancashire Sites and Monuments Record; OS 1st edition map (1844)
Period Post-medieval
SMR No 4588
Figure no: Fig 2
Description
High Bridge over Peggy Marsh Pool is shown on both the Ordnance Survey 1st edition map and the current sheet.
Assessment
Outside the study area.

Site number **30**
Site name Oxcliffe Marsh bridges
NGR SD 4562 6253, SD 4537 6246, SD 4518 6217
Site type Three bridges
Height AOD 6m
Source Lancashire Sites and Monuments Record; OS 1st edition map (1844)

Period Post-medieval
SMR No 4606
Figure no: Fig 3
Description
The three Oxcliffe Marsh bridges (at SD 45626253; SD 45376246 and SD 45186217) are all shown on the Ordnance Survey 1st edition map and the 1958 sheet but have since been either culverted or completely replaced by modern structures.
Assessment
Outside the study area.

Site number **31**
Site name River Lune, Oxcliffe
NGR SD 4555 6235, SD 4583 6190
Site type Stake nets
Height AOD 0m
Source Lancashire Sites and Monuments Record; OS 1st edition map (1844)
Period Post-medieval
SMR No 4608
Figure no: Fig 3
Description
Two stake nets are shown in the channel of the river at Oxcliffe, on the Ordnance Survey 1st edition map. One is in the 'New Channel', the other is in the 'North Channel'. The river course at this point is quite different now, due to the emplacement of training walls. Cuckold Island, just downstream of New Quay, has become part of the South bank. The Salt Ayre has become part of the North Bank, and North Channel is now only a drain for the marsh.
Assessment
Outside the study area.

Site number **32**
Site name River Lune, Oxcliffe
NGR SD 4520 6162
Site type Stake Fence
Height AOD 0m
Source Lancashire Sites and Monuments Record; OS 1st edition map (1844)
Period Post-medieval
SMR No 4609
Figure no: Fig 3
Description
The stake fence is shown across the River Lune at Freeman's Wood (Municipal and Freeman's Wood) on the Ordnance Survey 1st edition map. It is not shown on the current sheet.
Assessment
Outside the study area.

Site number **33**
Site name New Quay, Lancaster
NGR SD 4621 6205
Site type River Quay

Height AOD 1m
Source Lancashire Sites and Monuments Record; OS 1st edition map (1844)
Period Post-medieval
SMR No 4611
Figure no: Fig 3
Description
New Quay Lancaster is shown as projecting into the River Lune by Lancaster Marsh on the Ordnance Survey 1st edition map. Subsequent changes in the course of the Lune have allowed the bank to be built up, so that the quay is now level with the bank. Cuckold Island, slightly downstream from the quay, has also been incorporated in the bank. It accommodated the Lune Mills, and the former ill-fated Lune Shipbuilding Co; the quay itself was used by Williamson's (linoleum manufacturers) to import raw materials.
Assessment
Outside the study area.

Site number **34**
Site name The Municipal and Freeman's Wood, Lancaster
NGR SD 4532 6153, SD 4613 6117
Site type Wood
Height AOD 5m
Source Lancashire Sites and Monuments Record; OS 1st edition map (1844)
Period Post-medieval
SMR No 4612
Figure no: Fig 3
Description
The Municipal and Freeman's Wood, in the Marsh area of Lancaster, is shown on the Ordnance Survey 1st edition map. It consists of a long strip of trees alongside the lane running from Brookholme Farm to the River Lune. On the current sheet the lane is shown and is called Freeman's Wood, but no trees are shown.
Assessment
Outside the study area.

Site number **35**
Site name Lune Mills
NGR SD 4630 6170
Site type Mill
Height AOD 8m
Source Lancashire Sites and Monuments Record
Period Post-medieval
SMR No 10258
Figure no: Fig 3
Description
Lune Mills is an extensive area of works once owned by Lord Ashton (James Williamson). It contains many buildings, many rebuilt, storage lodges etc. It was known locally as the Dockyard as it was built on the site of the Lune Shipbuilding Co's yard in 1863-1869. Records of the mill are scarce as James Williamson disliked publicity.
Assessment
Outside the study area.

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APPENDIX 1
PROJECT DESIGN

Lancaster University Archaeological Unit

January 1997

OXCLIFFE ROAD PUMPING MAIN HEYSHAM MOSS,

LANCASHIRE

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 a sewerage scheme at Oxcliffe Road Pumping Main, Heysham Moss in Lancashire.

1. INTRODUCTION

1.1 An archaeological assessment is required in advance of a sewerage scheme in the area of Heysham Moss, Lancashire, between Oxcliffe Road, Heysham and Brookholme Farm, Lancaster. The development will involve the laying of an 8.6km long (excluding the river crossing) sewer main across the wetlands of Heysham Moss. The broad area has been occupied since the prehistoric period; there are prehistoric lithic find spots from the locality, but none identified to date within the study corridor. There is a Roman fort within the vicinity of the eastern end of the study corridor and there is the potential for the discovery of features associated with the fort or the port. The study area is within the hinterland of the early medieval church sites at Heysham and there is the possibility that there was associated, contemporary settlement. From the medieval period onwards there was the establishment of dispersed settlement and there is the potential to find evidence of associated agricultural features. The palaeo-environmental potential of the area has been established by the LUAU North West Wetlands Survey (Middleton *et al* 1995) which examined part of the study corridor and a small section of the route has been examined during an evaluation in advance of the construction of the A683 Morecambe Bypass. Although there is no identified archaeological resource within the study area at present; there is considerable archaeological potential and consequently the Lancashire County Archaeologist has recommended that an archaeological assessment be undertaken to further investigate the area.

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 15 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 is familiar with the area through its North West Wetlands Survey and has also undertaken an evaluation in advance of the A683 (Morecambe Bypass) road construction which crosses the study corridor. 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 verbal brief by the Lancashire 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 Sewer main, during which any artefact or earthwork remains will also be examined.

2.3 ***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 Lancashire Sites and Monuments Record, as well as appropriate sections of County histories, early maps, and such primary documentation (tithe and estate plans etc.) as may be reasonably available. Particular attention will be paid to field and place names recorded on early cartographic sources as these often provide important evidence of archaeological activity. It will examine evidence for the draining of the moss and will assess the potential for survival of palaeoenvironmental deposits. It will incorporate the results of archaeological work undertaken by the North West Wetlands Survey and also those of the evaluation undertaken in advance of the construction of the A683. Any photographic material lodged in either the County Sites and Monuments Record or the County Record Office (Preston) will also be studied. Published documentary sources will also be examined and assessed. This work will involve a visit to the County Record Office in Preston and to the Lancaster City Museum.

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, which 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 The 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 from 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. A photographic record will be undertaken simultaneously.

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 their 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 coordinates to an accuracy of +- 10m. All archaeological information collected in the course of field inspection will be recorded in standardised form. The fieldwork will result in the production of plans which can be output at any appropriate scale and will record the location and distribution of any artefact scatters, and/or surface monuments, as well as documentary sites.

3.3.7 This fieldwork will result in the production of plans at a scale of 1:2,500, recording the location of each of the sites listed in the gazetteer. All archaeological information collected in the course of field inspection will be recorded in standardised form, and will include accurate national grid references. This will form the basis of a gazetteer, to be submitted as part of the report.

3.3.8 ***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 Lancashire Sites and Monuments Record. A copy of the archive will also be available for deposition in the National Archaeological Record in London. LUAU practice is to deposit the original record archive of projects (paper, magnetic, and plastic media) with the appropriate County Record Office, and a full copy of the record archive, 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 ***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 Lancashire 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, 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.

3.4.5 This report will identify areas of defined archaeology, an assessment and statement of the actual and potential archaeological significance of any features within the broader context of regional and national archaeological priorities will be made. Illustrative material will include a location map, and site plans; 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).

3.4.6 ***Proposals:*** The report will make a clear statement of the likely archaeological implications of the intended development. It will also make recommendations for any further evaluation of the identified archaeological potential deemed necessary or desirable for individual sites. It will seek to achieve, as a first option, the preservation *in situ* of all significant archaeological features, and possible strategies for the mitigation of the development, including design modifications, will be considered. Where conservation is neither possible, nor practical, it may be appropriate to recommend a further stage of more intensive archaeological work in order to mitigate the effects of development.

3.4.7 ***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 Lancashire County Archaeologist, or her representative to discuss progress or the report.

4.2 LANCASHIRE SITES AND MONUMENTS RECORD

4.2.1 Any proposed changes to the project brief or the project design will be agreed with the Lancashire County Archaeologist in coordination with the client. LUAU will arrange a preliminary meeting, if required, and the Lancashire 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 two 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. LUAU would be able to submit the report to the client within four weeks of awarding the contract.

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

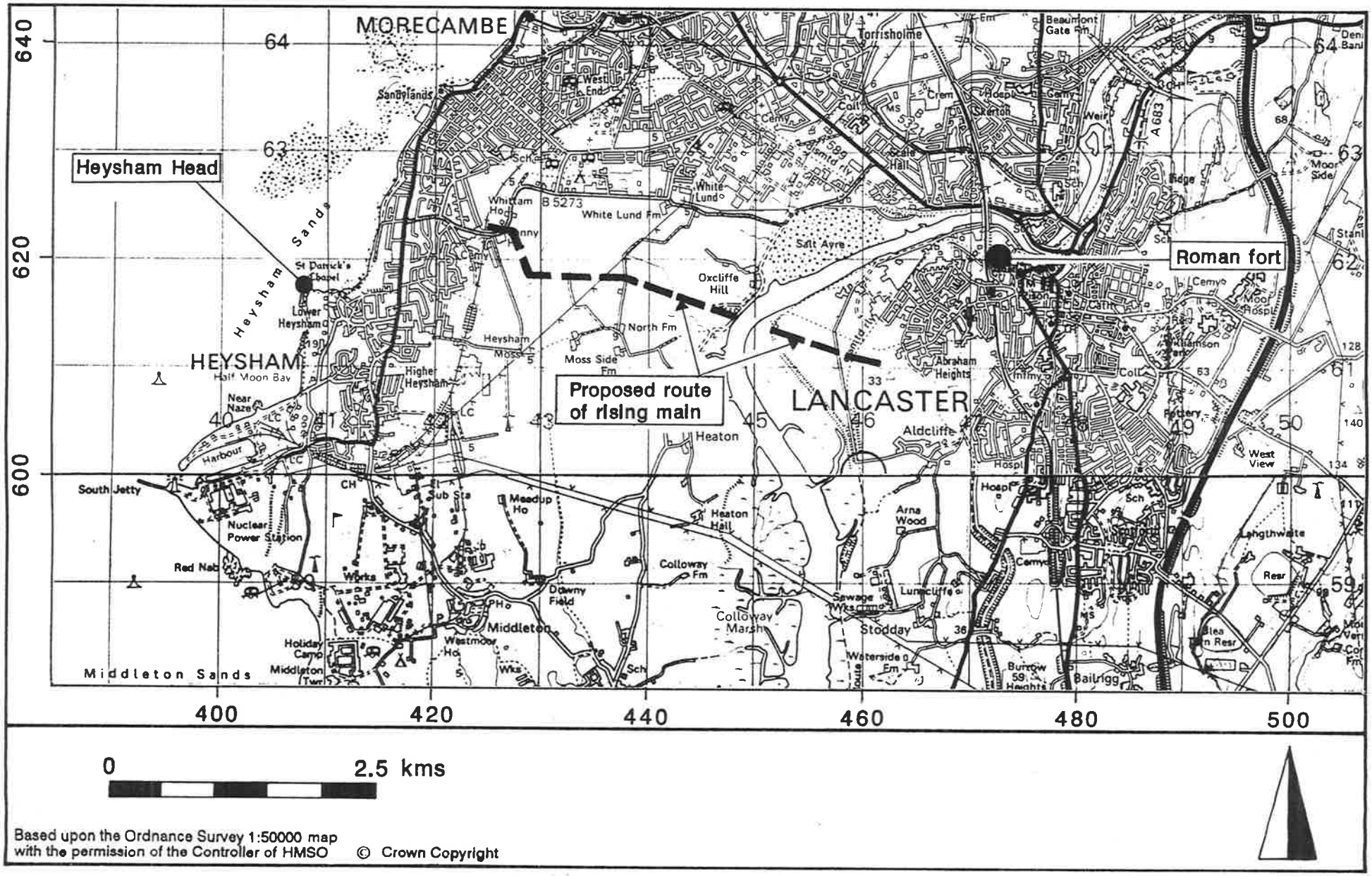
6.2 ***Field Survey***
2 man-day Project Supervisor
2 man-day Project Assistant

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

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.

The project will be directed by **Bob Middleton, BA MA MIFA** (Unit Project Officer) who has previously undertaken the survey of the area as part of the North West Wetlands Survey and has also undertaken the archaeological evaluation in advance of the construction of the A683.

ILLUSTRATIONS



Based upon the Ordnance Survey 1:50000 map with the permission of the Controller of HMSO

Fig.1 Oxcliffe Road Pumping Main Location Plan

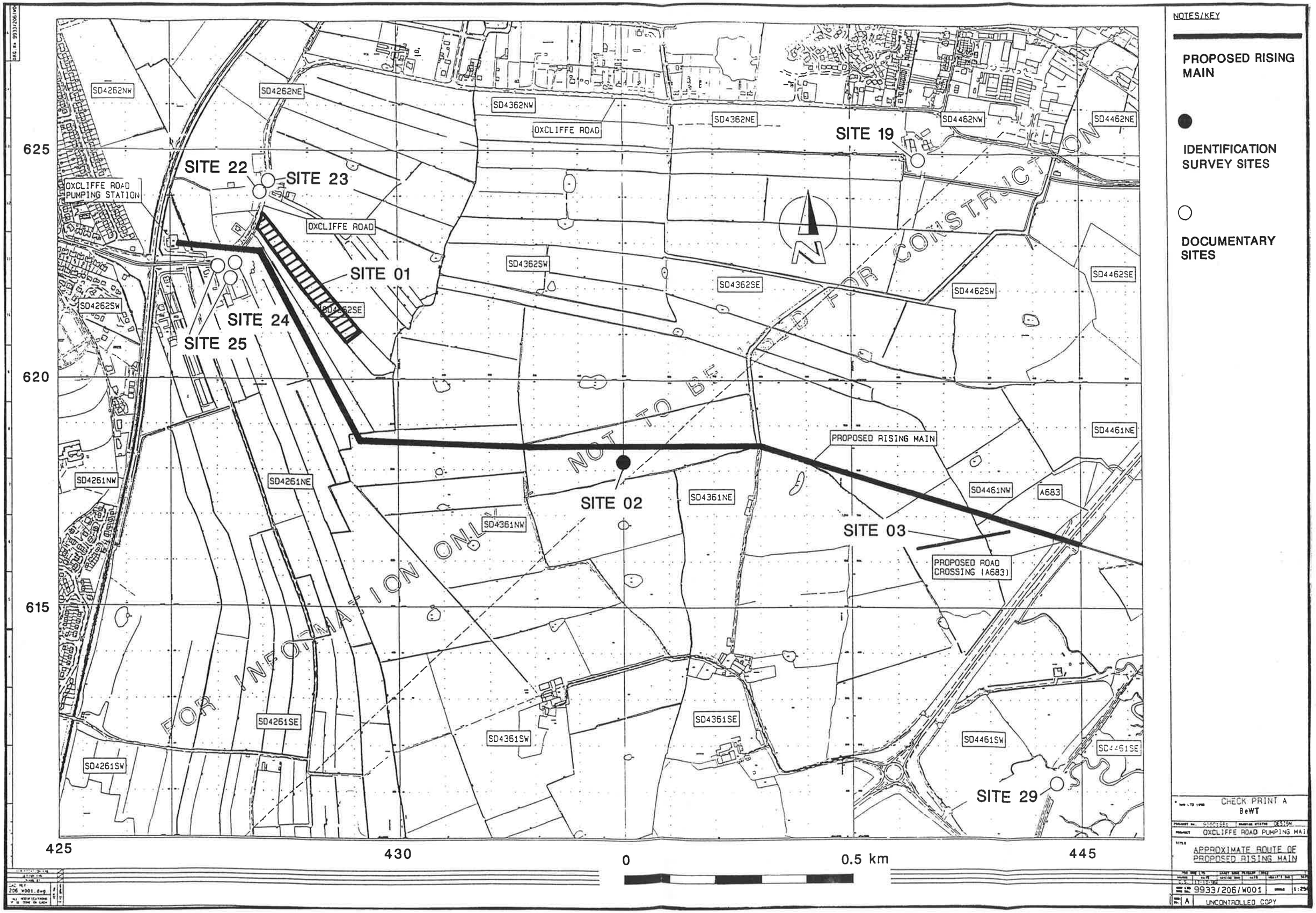


Fig.2 Study Corridor – Western Section

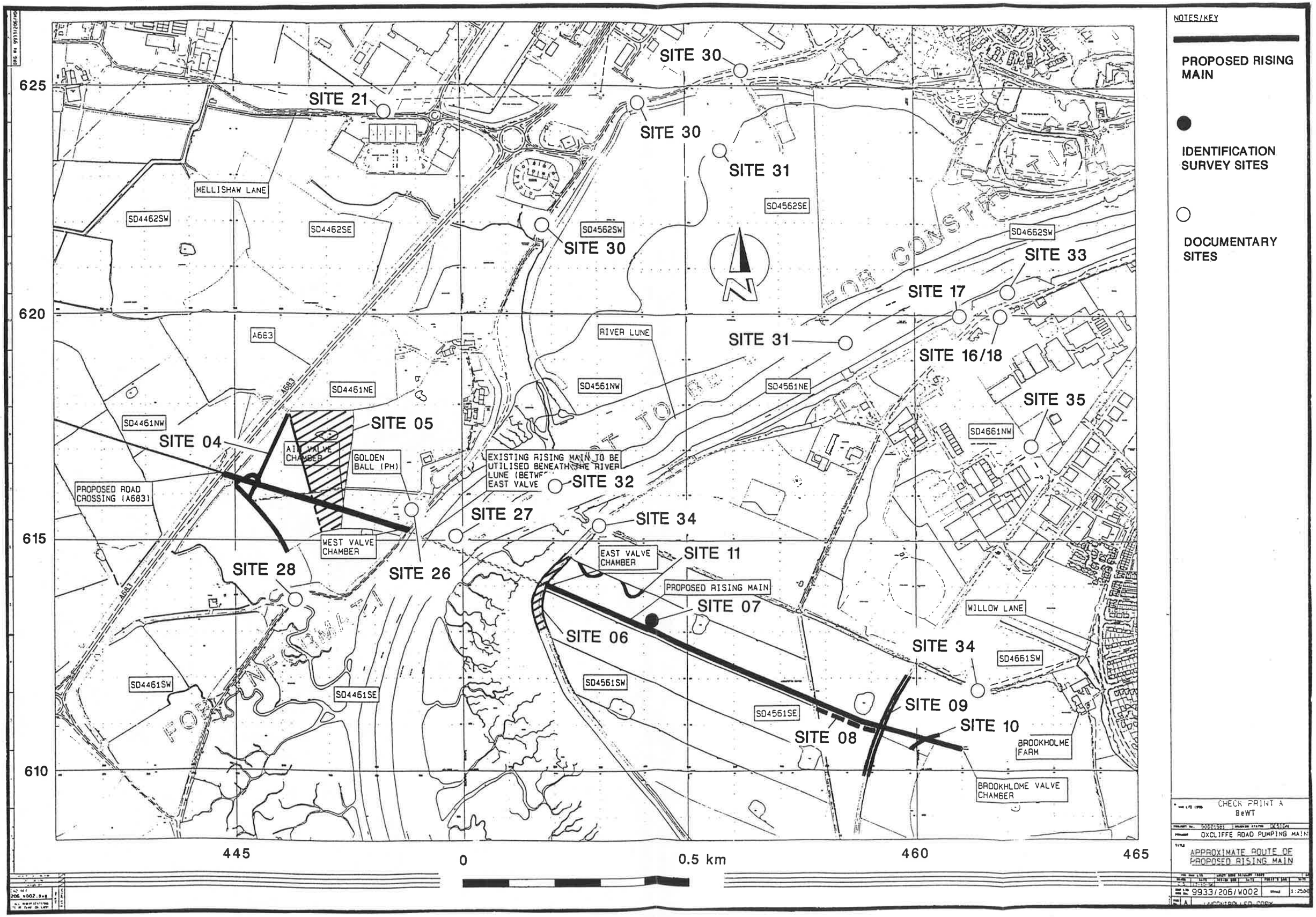


Fig.3 Study Corridor – Eastern Section