

# **POVERTY BOTTOM TO FIRLE WATER MAIN**

## **Archaeological Field Walking Survey**

Prepared by

NETWORK ARCHAEOLOGY LTD

On behalf of

BLACK & VEATCH

For

SOUTH EAST WATER

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Network Archaeology delivers a complete consultancy and field service nationwide. The company's particular expertise is linear infrastructure, such as pipelines, roads, rail and cables. Its emphasis is upon good communication and recognition of client's individual needs and priorities. Network is known for delivering professional support, taking care of the archaeology and enabling projects to keep moving forward.

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## **NON-TECHNICAL SUMMARY**

This archaeological field survey report relates to a proposed water pipeline. The Proposed Route is between Poverty Bottom Water Treatment Works (NGR 546727 102278) and Firle Reservoir (NGR 546722 105914) in East Sussex. A Route Option was also surveyed to the south of Gardener's Hill (NGR 546649 102582 to 546645 103325).

This report presents the results of archaeological field walking of the 15m wide working width of the proposed pipeline. The survey aimed to provide dating evidence for a field system seen on aerial photographs, as well as to identify any previously unknown sites. Field walking covered 1.6km of the Proposed Route and 745m of a Route Option designed to avoid a badger set. A total of 74 finds, weighing 3432g, were recovered including ceramic building material, post-medieval pottery, a sherd of unidentified pottery, six iron objects, two copper-alloy cartridge cases, glass, heat-affected flints and two pieces of ironstone.

The field walking survey produced no additional sites to those already identified in the desk-based assessment (Archaeology South-East 2007). Dating evidence for the field system was not found, though a single sherd of Roman or medieval pottery was recovered from the same plot. From the twenty-one sites identified in the desk-based assessment, the Proposed Route directly impacted upon one regionally important site (an Iron Age or Roman field system at Gardener's Hill), and seven locally important sites. The Route Option directly impacted upon one regionally important site (an Iron Age or Roman field system at Gardener's Hill).

Recommendations are made for the consideration of trench evaluation in advance of construction, following consultation with East Sussex County Council, Transport and Environment Department. Recommendations are also made for a watching brief during construction.

# **1 INTRODUCTION**

## **1.1 Archaeological survey**

### **1.1.1 Scope of archaeological work**

This report presents the results of a structured archaeological field walking survey along 1.6km of a Proposed Route and a 745m Route Option relating to a pipeline being planned for construction between Poverty Bottom Water Treatment Works and Firle Reservoir in East Sussex (Figure 1).

### **1.1.2 Aims of the survey**

The purpose of the archaeological survey was to consider the cultural heritage implications of the proposed pipeline, to assist in the selection of a route which maximises archaeological preservation, and to provide a basis for further stages of investigation.

The objectives were:

- To date the field system seen on aerial photographs in plots N6 and N7, SMR MES1959 (Section 1.4)
- To identify and define the extent of known and hitherto unknown archaeological remains lying within the working width of the proposed pipeline;
- To provide a preliminary assessment of their significance;
- To assess the overall impact of the proposed pipeline on the remains;
- To assess the need for further evaluation and mitigation prior to and during construction; and
- To make recommendations for further evaluation and mitigation, where necessary.

### **1.1.3 Commissioning bodies**

The archaeological survey was commissioned by *Black & Veatch Ltd* for *South East Water*. The archaeological consultant was *Network Archaeology Ltd*, a professional archaeological organisation which specialises in managing archaeological issues associated with the design and construction of pipelines.

### **1.1.4 Resourcing**

The field walking survey was undertaken by Network Archaeology during February 2008. Report writing was undertaken by one individual over a three-week period in March 2008. MapInfo GIS was used to manage and present the data.

## **1.2 Proposed pipeline**

### **1.2.1 Reasons for building the pipeline**

South East Water is planning to construct a 250mm diameter pipeline for the transportation of water between Poverty Bottom Water Treatment Works and Firle

Reservoir in East Sussex. The new water main is intended to replace the existing cast-iron pipeline which lies approximately 5m from the proposed pipeline.

### **1.2.2 Proposed Route and Route Option**

South East Water is currently considering a Proposed Route and a Route Option. Throughout this report references to these specific route designs will be capitalised as above. In discussions that apply to the proposed pipeline in general terms, or to any or all current or future designs of the pipeline it will be described as 'proposed pipeline' without capitalisation.

### **1.2.3 Pipeline construction**

The proposed pipeline is to be built using the spread technique. The working width for the main will be typically 15m. The working width will be reduced at all hedgerows, highways and watercourses and may also be reduced at localised positions as necessary.

Construction activities will be in a phased sequence as follows: surveying the route, demarking/fencing the route, preparing the working width, topsoil stripping, stringing out the pipes, trenching, placing the pipeline in the trench and reinstatement of the working width. All of the pipeline will be constructed in open cut. Construction is planned for April to August 2008.

## **1.3 Legislation, regulations and guidance**

The proposed pipeline and any temporary works fall within the definition of Permitted Development under the Town and Country Planning (General Permitted Development) Order, 1995 (S.I. 1995/418), and therefore do not require planning consent from The Local Planning Authority or any other permission.

The proposed pipeline does not fall within Schedule 1 of the EIA Regulations and nor does it exceed the development area of 1 hectare. However, it falls within the boundary of the Sussex Area of Outstanding Natural Beauty (AONB) and in accordance with South East Water's best practice approach; consideration for an EIA by Lewes District Council was advised and a screening opinion was submitted to Lewes District Council in December 2007. It was determined by Lewes District Council that an EIA was not necessary.

South East Water, however, adheres to the Code of Practice on Conservation, Access & Recreation (Water Industry Act 1991), whereby the Company is obliged to consider, and mitigate the consequences of its activities upon the archaeological resource.

The Hedgerow Regulations (1997) define a set of archaeological and historical criteria used for determining whether hedges are 'Important' (see Appendix B). Intention to remove such a hedge requires prior notification to the local planning authority, which may within 28 days issue a retention notice preventing removal if the hedgerow meets one of the criteria for importance.

## 1.4 Archaeological background

A desk-based study of published archaeological information in the public domain, lying within a 500m Study Corridor of the Proposed Route, identified 21 sites of archaeological importance (Archaeology South-East 2007). Four Scheduled Monuments, comprising prehistoric barrow sites, were recorded to the north of the Proposed Route. No Listed Buildings or Historic Parks and Gardens were recorded. However, the Proposed Route is located within the proposed boundary for the South Downs National Park and within the South Downs Area of Outstanding Natural Beauty.

One Mesolithic flint axe or adze was found at Blackcap Hill (Archaeology South-East 2007, DBA Ref. 11), but no Neolithic finds were recorded within the Study Corridor. However, the late Neolithic or early Bronze Age multiple ring ditch of Mount Pleasant is located roughly 600m to the south-west of Poverty Bottom pumping station. Six Bronze Age sites were recorded within the Study Corridor (see Archaeology South-East 2007 for details). A cremation urn containing burnt bones in a cist, cut into the chalk was found at Snap Hill, 500m from the Proposed Route. This was dated to the middle Bronze Age. Near to this, an assemblage of bronze artefacts was found at Stump Bottom in 1916 (SMR MES 1961). These comprised a socketed axe, a ring, a hollow shield boss and a copper flat axe.

One Iron Age site was recorded within the Study Corridor (SMR MES 1959). It represents a field system, with rectangular soils marks and ploughed-out lynchets, at Gardener's Hill, which lies on the Proposed Route itself. No Roman finds were located within the Study Corridor, but a Roman road is purported to cross the Study Corridor in a south-west to north-east direction near the western foot of Gardener's Hill (Margary 1965, SMR MES4816). Further archaeological remains, in the form of field systems, continuing from the Iron Age, may also exist in the Study Corridor; these include the system seen on aerial photographs at Gardener's Hill (SMR MES 1959, see below).

Anglo-Saxon sites were not recorded within the Study Corridor, but one medieval field boundary has been recorded (SMR MES 1968). This survives as a complex of linear banks and ditches. A 19<sup>th</sup> century chalk pit and lime kiln was located at Home Bottom (Archaeology South-East, DBA Ref. 13). Three Dew ponds of undetermined date were located at Blackcap Hill (immediately to the south of Blackcap Farm), Fore Hill and Stump Bottom (Archaeology South-East, DBA Ref. 2, 12, 14).

Assessment of aerial photographs identified two significant sites. The first site, located to the south and south-east of Blackcap Farm, included a series of linear earthworks and also cropmarks of a field system (SMR MES 1968). The second site was an area of cropmarks defining a rectangular field system (SMR MES 1959), located to the north of Poverty Bottom pumping station. Aerial photographs record both sites being crossed by the existing pipeline (Archaeology South-East 2007). It is likely that these sites represent the remains of Iron Age or Romano-British field systems.

A walkover survey was undertaken by Archaeology South-East (2007) along the Proposed Route. All field boundaries and landscape features observed along the course of the Proposed Route were noted. The field systems identified from aerial photographic analysis on Gardener's Hill were not visible as upstanding earthworks. No evidence confirming that the pathway up Gardener's Hill was aligned upon the position of a Roman road was noted. Seven post-medieval to modern boundaries were

recorded, as well as seven modern boundaries. One other boundary (although modern) may correspond to the line of the Denton-Bopeep Roman road (SMR MES4816).

## **1.5 Physical environment of the pipeline**

### **1.5.1 Location and topography**

The proposed pipeline is located immediately north of Newhaven/Seaford and approximately 5km south-east of the town of Lewes on the southern edge of the South Downs. This chalk ridge separates the Weald from the coastal plain. The proposed pipeline crosses an area comprising steep undulating hills and dry valleys.

The Proposed Route is 3.7km long and runs approximately south to north through open farmland on elevated land to the east of the River Ouse. From the pumping station (*c.* 180m AOD), located to the west of Firle Beacon, the route descends south, passing immediately west of Blackcap Farm, across Blackcap Hill, and down to Home Bottom. It then traverses upslope to Gardener's Hill, finally reaching its southerly extent at the Norton pumping station in Poverty Bottom (*c.* 20m AOD).

The 745m Route Option is located to the north of Poverty Bottom Water Treatment Works and runs the length of Plot N6.

### **1.5.2 Geomorphology**

The proposed pipeline crosses an area comprising undulating hills, with steep slopes to dry valleys in between.

### **1.5.3 Solid geology**

The proposed pipeline is located upon Upper and Middle Chalk of the South Downs.

### **1.5.4 Superficial geology**

The proposed pipeline crosses several isolated patches of Clay-with-Flint deposits.

### **1.5.5 Soils**

The proposed pipeline traverses two soil associations (Andover 1 and Upton 1), both of which are shallow, well-drained calcareous silty soils over chalk.

### **1.5.6 Land use**

The proposed pipeline is dominated by a mixture of grassland and arable land attached to small dispersed farms.

### **1.5.7 Hydrogeology and hydrology**

The Chalk strata of the South Downs are overlain by generally shallow permeable soils which encourage rainfall to rapidly infiltrate into the underlying chalk aquifers. Groundwater often emerges at the base of the scarp slope as springs.

The hills crossed by the pipeline are drained west and south by the River Ouse and east and south by the Cuckmere River.

## **1.6 Staged approach to archaeological investigation and route selection**

### **1.6.1 Work to date**

A staged multi-discipline approach has been adopted for the archaeological investigation of this pipeline, beginning with:

- Archaeological Desk-Based Assessment and Walkover Survey (Archaeology South-East, 2004).
- Updated and Expanded Archaeological Desk-Based Assessment and Walkover Survey (Archaeology South-East, 2007).

### **1.6.2 The current works**

This archaeological field survey forms the third archaeological stage in what is expected to be a detailed investigative programme of archaeological research, investigation and mitigation during the Conceptual Design Phase, Detailed Design Phase and Construction Phase of the pipeline (see Appendix A).

## **1.7 Terms of reference**

This report will be issued to Penny Coombes and Laura Baines of Black & Veatch, and Guy Spence of South East Water.  
This report will also be subject to external review by East Sussex County Council, Archaeology Section.

## **1.8 Report structure**

This field survey report is divided into five chapters forming three main sections:

*Chapters 1-2* serve to introduce the organisations involved, the proposed development, the context, method and standards of field survey, and the layout of this report.

*Chapter 3* presents the results of the survey.

*Chapters 4-5* deal with the impacts of the proposed development on the archaeological sites within the proposed working width of the pipeline and discuss approaches which should be adopted for dealing with them.



## **2 PROCEDURES**

### **2.1 Standards**

This assessment has been conducted according to relevant standards and guidance documents by the Institute of Field Archaeologists' (IFA 2000, 2001i, 2001ii).

### **2.2 Plot numbering**

A series of consecutive numbers (prefixed by the letter N) was assigned by the archaeological survey team to all plots crossed by the proposed pipeline, beginning with N1 at Poverty Bottom Water Treatment Works and finishing with N27 at Firle Reservoir.

### **2.3 Field walking survey on site**

#### **2.3.1 Survey areas**

The fieldwalking survey covered a 1.3km section of the Proposed Route between 546651 102578 and 546625 103904 and a 300m section of the Proposed Route between 546595 104420 and 546609 104705. All ploughed fields in these areas were surveyed. The survey width was 22m wide, except in Plot N6 where the survey widened to encompass the Route Option (see Figure 2). Land use and health & safety issues were recorded on pro-forma Plot Record Sheets, a summary of which appears in Appendix C.

#### **2.3.2 Survey transect layout**

In plots other than Plot N6 the survey transects were aligned with the Proposed Route. Five transects were laid out at 5m intervals. This is equivalent to a 45% sample of the 22m survey width.

In Plot N6 the survey transects were aligned with the Route Option. Ten transects were laid out at 5m intervals. The survey reached a maximum width of 48m and was equivalent to a 41% sample.

The survey transects were laid out using a GPS to sub 10m accuracy.

#### **2.3.3 Operational procedures**

The survey was undertaken by a team of two archaeologists. Each transect was walked once with finds being collected up to one metre on either side of each transect. Finds were picked up from the ground surface and placed within plastic bags marked with a unique find number identifier. Finds were recorded by hand-held GPS, to sub 10m accuracy.

Details of each field walked (including weather/light conditions, ground visibility, relief, walkers present) were recorded on pro-forma record sheets. These form part of the project archive and a summary appears in Appendix C.

Further details of the survey methodology can be found within the WSI (Network Archaeology 2008).

## 2.4 Data management and presentation

### 2.4.1 Definition of a 'site'

The term 'site' is used throughout this report to refer to ancient monuments, buildings of architectural and historical importance, parks, gardens, designed landscapes, battlefields, public spaces, historic landscapes, historic townscapes, findspots of artefacts and any other heritage asset. Unless otherwise stated the term 'site' refers to the location where a site was situated and not to extant remains (e.g. a windmill means the location of a former windmill, and a pond means the location of a former pond). The only exception is listed structures, which can be taken to be extant unless otherwise stated.

### 2.4.2 Reference conventions

The information gathered from Archaeology South-East's desk-based assessment and the field survey carried out by Network Archaeology Ltd is uniquely referenced throughout this report and on all the figures (Table 2.1).

**Table 2.1 Summary of site reference codes**

Reference code	Terms of reference	Example site reference
ASE	Desk-based assessment site identified by Archaeology South-East	ASE: A
SMR MES	East Sussex Sites and Monuments Record	SMR MES 1968

### 2.4.3 Archaeological sites

Sites located within the working width of the proposed pipeline are summarised in Chapter 4. Table 4.1 provides the description, period and location of each site. The location is given as a 12 figure National Grid Reference to centre of the point, area or linear. This table also gives a category of importance (Section 2.5.1), an assessment of impact (Section 2.5.2), and an assessment of the significance of impact (Section 2.5.3).

### 2.4.4 Field survey site figures

The archaeological finds are presented on three A3 figures (2-4). Each find is represented by a symbol indicating the find type. Each symbol is coloured according to the date of the find.

## 2.5 Impact assessment process

Archaeological impact assessment is the process by which the impacts of a proposed development upon the archaeological resource are identified. Each site has been assessed in its wider heritage landscape, taking account of identity, place, and past and present perceptions of value.

A three stage process was adopted:

- Stage 1: assessment of importance (see 2.5.1)
- Stage 2: assessment of the impact of the proposed development (see 2.5.2)
- Stage 3: assessment of significance of impact (see 2.5.3)

### 2.5.1 Importance

The sites have been rated according to their perceived importance into categories A to D and U (as shown in Table 2.3). Where possible, each site has been assessed on the following characteristics:

- complexity (i.e. diversity of elements and relationships)
- condition (i.e. current stability and management)
- period
- physical form
- rarity
- setting
- survival (i.e. level of completeness)

The grade awarded to each site considered the scale at which the site may be judged significant (i.e. in terms of local, regional and national policies, commitments and objectives); representational value, diversity and potential; and existing local, regional and national designations (e.g. Scheduled Ancient Monuments). Some sites may benefit from statutory protection and other protection (see Archaeology South-East 2007, Appendix B).

The process of importance categorisation has been adopted as a tool in determining appropriate mitigation. The categories should not be taken as a statement of fact regarding the importance or value of a particular site. The use of examples of types of site is simply a guideline. The inclusion of a site in a particular category often involves a degree of subjective judgment and is based upon the current level of information. Categories are not fixed or finite, and there is every possibility that the classification of a site may change as a result of findings made during later stages of investigation.

Although sites in the desk-based assessment were not graded they have been graded in this report for the purposes of impact assessment and making recommendations.

**Table 2.2 Site category definitions**

Grade	Description	Examples	Investigation and mitigation
A	Statutory protected	Conservation Area, Listed Building, Scheduled Ancient Monument, World Heritage Site	To be avoided
B	Nationally important	Grade I and II* Registered Park and Garden, Registered Battlefield, Major settlements (e.g. villas, deserted medieval villages), Burial grounds, Standing historic buildings (non-listed)	To be avoided
C	Regionally important	Grade II Registered Park and Garden, Some settlements, finds scatters, Roman roads, sites of historic buildings	Avoidance desirable, otherwise investigation recommended

Grade	Description	Examples	Investigation and mitigation
D	Locally important	Field systems, ridge and furrow, trackways, wells	Avoidance /investigation may or may not be envisaged at this stage
U	Ungraded	Non-archaeological site held by data source	N/a

## 2.5.2 Impact of the proposed development

The potential impact of the proposed scheme upon a site has been assessed at three levels:

- nature of impact (see Table 2.4)
- type of impact (see Table 2.5): a nominal 15m working width has been allowed.
- magnitude of impact (see Table 2.6)

**Table 2.3 Nature of impact definitions**

Impact	Description
Positive	Beneficial contribution to the protection or enhancement of the archaeological and historical heritage
Negative	Detrimental to the protection of the archaeological and historical heritage
Neutral	Where positive and negative impacts are considered to balance out
None	No or negligible impact due to distance from proposed scheme, and/or construction technique which negates the impact

**Table 2.4 Impact type definitions**

Type	Description
Direct	Physical damage, including compaction and/or partial or total removal. Severance, in particular linear sites
Indirect	Visual intrusion affecting the aesthetic setting of a site. Disturbances caused by vibration, dewatering, or changes in hydrology etc.
Uncertain	Where the physical extent or survival of a site is uncertain, or where the visual impact of the proposed scheme on the setting of sites or the landscape has not been determined

**Table 2.5 Magnitude of impact definitions**

Magnitude	Description
Severe	Entire or almost entire destruction of the site
Major	A high ratio of damage or destruction to the site
Minor	A low ratio of damage to the site
Indeterminate	Where the data level does not allow any secure calculation (e.g. because the quality and extent of the site is unknown, or because construction techniques have not yet been decided)

Factors affecting the assessed magnitude of impact include:

- the proportion of the site affected
- the integrity of the site; impacts may be reduced if there is pre-existing damage or disturbance of a site

- the nature, potential and heritage value of a site

### 2.5.3 Significance of impact

The ‘significance’ of the impact has been assessed as the product of the importance of each site, and the impact of the proposed scheme upon each site. The levels of significance of impact are defined in Table 2.7. Significance of impact definitions are provided only for negative impacts, as these were the only type on this particular scheme. The significance of impact rating takes no account of potential mitigation.

**Table 2.6 Significance of impact definitions**

Stage 1	Stage 2a	Stage 2b	Stage 2c	Stage 3
Importance of site	Nature of impact	Type of impact	Magnitude of impact	Significance of impact
<b>A</b>	negative	direct	severe	high
			major	high
			minor	high
			indeterminate	high
		indirect	severe	high
			major	high
			minor	medium
			indeterminate	high or medium
		uncertain	n/a	unknown
		<b>B</b>	negative	direct
major	high			
minor	medium			
indeterminate	high or medium			
indirect	severe			high
	major			medium
	minor			medium
	indeterminate			high or medium
Uncertain	n/a			unknown
<b>C</b>	negative			direct
		major	medium	
		minor	low	
		indeterminate	low or medium	
		indirect	severe	medium
			major	low
			minor	low
			indeterminate	low or medium
		uncertain	n/a	unknown
		<b>D</b>	negative	direct
major	low			
minor	low			
indeterminate	low or medium			
indirect	severe			medium
	major			low
	minor			low
	indeterminate			low or medium
uncertain	n/a			unknown

### 3 RESULTS

#### 3.1 Survey summary

Of the plots surveyed, four of the plots were arable, one set-aside and one set-aside/woodland (Table 3.1). Conditions for field walking ranged from poor to excellent depending on the land use of the plot and prevailing ground conditions at the time of survey (Table 3.2). Set-Aside plots were not suitable for fieldwalking survey.

Table 3.1 Summary of land use

Landuse	No. of plots	Length walked (m)	% of Length walked
Arable	4	9099	100%
Set-Aside	1	0	0%
Set-Aside/Woodland	1	0	0%
<b>Totals</b>	<b>6</b>	<b>9099</b>	<b>100%</b>

Table 3.2 Summary of field survey conditions

Visibility	No. of plots	Length walked (m)	% of Length walked
Excellent	1	1490	16%
Moderate	2	2410	26%
Poor	2	0	0%
Poor/Excellent	1	5199	57%
<b>Totals</b>	<b>6</b>	<b>9099</b>	<b>100.0</b>

#### 3.2 Find types and quantifications

A total of 74 finds, weighing 3432g, were retrieved from the fields which were suitable for walking. Of six different material types, ceramic building material (CBM) accounts for 68% by count and 85% by weight of all the finds (Table 3.3).

Table 3.3 Summary quantifications by find type

Material type	Count	Weight (g)	Find specialist
CBM	50	2927	Alan Vince and Kate Steane
Glass	1	29	Richard Moore
Heat affected flint	2	26	Richard Moore
Metal	8	334	Alan Vince and Kate Steane
Pottery: Undetermined	1	5	Alan Vince and Kate Steane
Pottery: Post-medieval	10	53	Alan Vince and Kate Steane
Unworked stone	2	58	Alan Vince and Kate Steane
<b>Totals</b>	<b>74</b>	<b>3432</b>	

A fuller summary of finds can be found in Appendix D. A brief summary of each material type is presented below and further detail can be found in the technical finds reports in Appendix E.

**Ceramic building material (CBM):** The CBM assemblage consisted of fifty fragments of flat roof tiles and brick. The bricks were either hand-made or, in a few case,

machine-made with a frogged upper surface. A single fragment of hip tile was recorded. The flat and hip tiles are either of medieval or post-medieval date. Hip tiles seem to have been present by the early 14<sup>th</sup> century. The bricks and roof tiles appear to be of 'local' manufacture and date to the post-medieval period. The frogged bricks date to the mid 19<sup>th</sup> century (Appendix E, Vince and Steane).

**Glass:** This piece of glass came from the base of a moulded bottle. The numbers "199..." are embossed on the base and is probably the manufacturer's part number. This piece would have been made in the late nineteenth or early to mid- twentieth century (Appendix E, Moore).

**Heat affected Flint:** One of the pieces was reddened on one side and coarsely shattered, indicating that it has been heated to a relatively high temperature, probably in direct and prolonged contact with a fire. The other piece was grey with a finely crazed surface, more typical of flint that has been heated and quenched in water. This is similar in appearance to flints from prehistoric burnt mounds but, as it was an isolated find, it may perhaps derive from a more domestic setting, as a 'pot-boiler' used to heat water. If it does originate from a burnt mound, this is unlikely to be in close proximity to the proposed pipeline, the piece having been displaced from its original location, presumably up-slope of the find-spot (Appendix E, Moore).

**Metal:** Two copper alloy objects were recorded; a cartridge case of 19<sup>th</sup> or 20<sup>th</sup> century date and a circular disk of sheet metal. Six iron objects were identified. These included a nail and a fragment from a globular walled cauldron. The remaining fragments appear to be cast iron and fragments of larger objects, which cannot be identified (Appendix E, Vince and Steane).

**Pottery:** Eleven sherds of pottery were found. One is unidentifiable, but its chalky crust and general appearance suggest that it was Roman or medieval in date. This sherd was found in the same plot as the field system SMR MES1959 and could be relevant to dating it, though a definite link has not been demonstrated. Four pottery fragments are unglazed red earthenware dating to the 16<sup>th</sup> and early 17<sup>th</sup> centuries. A single fragment of Frechen stoneware comes either from a drinking of mid 16<sup>th</sup> to mid 17<sup>th</sup> century date or from a Belarmine bottle of early to mid 17<sup>th</sup> century date. A fragment of black-glazed ware and two fragments of glazed red earthenware are post-medieval in date. The two remaining sherds date to the late 18<sup>th</sup> century and comprise a small fragment of transfer printed ware and a sherd of white-slipped Sunderland Coarseware bowl (Appendix E, Vince and Steane).

**Stone:** Two fragments of ironstone were identified. Both appear to replace fossil sponges and probably had too low an iron content to have been used as a source of iron (Appendix E, Vince and Steane)

### 3.2.1 Artefact distribution

A summary table of finds is presented in Appendix D, and their distribution is illustrated on Figures 2 to 4. A summary of material type within plots is presented below (Table 3.4).

**Table 3.4 Summary of finds distributions by material type by plot**

<b>Material type</b>	<b>No. plots containing material type</b>	<b>No. plots with possibly significant finds/ concentrations</b>	<b>Plots with possibly significant finds/ concentrations</b>
CBM	2	0	n/a
Glass	1	0	n/a
Heat affected flint	2	0	n/a
Metal	2	0	n/a
Pottery: Undetermined	1	0	n/a
Pottery: Post-medieval	1	0	n/a
Stone	1	0	n/a

None of the material types showed displayed significant concentrations. The ceramic building material, pottery and iron are probably the result of manuring scatters, while the flint is probably the result of some transitory activity.

### **3.3 Observation of desk-based sites**

Cropmarks of a Romano-Celtic field system (SMR MES 1959) identified in the original desk-based assessment (Archaeology South-East 2007) were seen during the fieldwalking survey. However it should be noted that this was not the purpose of the fieldwalking survey and as such does not form part of the results of the survey.

### **3.4 Reliability and potential limitations of surveys**

Field survey data collection and interpretation is limited for a number of reasons:

- Differential levels of ‘archaeological visibility’ along the proposed pipeline. Visibility in some plots was poor due to crop cover (Section 3.1);
- Making subjective interpretations of the archaeological significance of field observations is problematic. For example, a sherd of pottery was found that cannot be reliably dated and may be of either Roman or Medieval date (Section 3.2).



## **4 ASSESSMENT OF IMPACT**

### **4.1 Impacts of the proposed scheme**

Construction activities related to this particular scheme are likely to include:

- Pre-construction drainage
- Fencing
- Topsoil stripping
- Subsoil benching
- Soil storage
- Movement of heavy machinery
- Excavation of the pipe trench
- Working width reinstatement (e.g. subsoil ripping)
- Post-construction drainage

Archaeological remains could be subject to short-term, medium-term and/or long-term impacts.

- Short-term impacts (i.e. during construction): Direct impacts upon known and potential archaeological remains within the working area of the reservoir.
- Medium- and long-term impacts: Indirect impacts upon known and potential archaeological remains within and immediately outside the working area, resulting from compaction damage.

### **4.2 Summary of known impacts**

No sites have been identified by this survey and hence there are no impacts either beneficial or adverse.

### **4.3 Uncorroborated desk-based sites**

Eight sites identified by the desk-based assessment and crossed by the proposed pipeline working width were not corroborated by the field walking survey (Table 4.1). It should be noted that the field walking survey was not aimed at carrying out field reconnaissance and therefore this table merely represents sites identified during the desk-based assessment that lie within the working field of the proposed pipeline. These sites should be considered during future investigation and mitigation.

Cropmarks of SMR MES1959 were observed by the team in the field, but as this was not the purpose of the fieldwalking survey this site is not corroborated by it. A single sherd of pottery of either Roman or Medieval date was found in the same plot as SMR MES1959 and may be relevant to dating the site. However it does not agree with the previously supposed date and is only a single find.

**Table 4.1 Summary of uncorroborated desk-based assessment sites**

Reference	Description	Period	Importance	Impact	NGR	Figs
ASE:A	Possibly course of furrow from OS 1874 map	?Post-medieval	D	-d min, low (Proposed Route)	546774 105532	4
ASE:G	Possibly furrow, boundary from OS 1899 map	?Post-medieval	D	-d min, low (Proposed Route)	546618 104420	3
ASE:I	Sunken trackway on OS 1874 map	Post-medieval to Modern	D	-d min, low (Proposed Route)	546480 103879	3
ASE:M	Field boundary or lynchet	Post-medieval to Modern	D	-d min, low (Proposed Route)	546944 102802	2
ASE:N	Lynchet	Post-medieval to Modern	D	-d min, low (Proposed Route)	546707 102423	2
SMR MES1959	Field system at Gardener's Hill	Iron Age, Roman	C	-d min, low (Proposed Route); -d min, low (Route Option)	546922 103321	2
SMR MES1968	Field system south of Blackcap Farm	Medieval, Post-medieval	D	-d min, low (Proposed Route)	547021 104382	3
SMR MES4816	Possible Roman road from Denton to Bopeep	?Roman	D	-d min, low (Proposed Route)	547256 103770	2, 3

## 5 RECOMMENDATIONS

### 5.1 Liaison with statutory consultees

Liaison should be maintained with Grey Chuter of East Sussex County Council – Transport and Environment Department in order to agree future archaeological investigation, approve and monitor the implementation of any archaeological Written Scheme of Investigation (WSI), review reports, monitor fieldwork in progress, and also to visit the construction site.

### 5.2 Written Schemes of Investigation

An archaeological WSI should be produced for each stage of any future archaeological work (see 5.3).

### 5.3 Staged approach to investigation and mitigation

The most cost-effective means of managing archaeological risk is to implement a staged approach to investigation and mitigation, as laid out below in Table 5.1 and explained in greater detail in Appendix A. It is important, however, to avoid an overly mechanistic approach and to ensure a focus on gaining understanding and information relevant to key issues.

This report represents the conclusion of Stage 3

Table 5.1 Staged approach to investigation and mitigation

Archaeological Stages of Investigation		Phase of works
Stage 1	<b>Route Corridor Investigation Study.</b> An appraisal of archaeological potential	feasibility assessment
Stage 2	<b>Desk-based assessment</b> of route corridor. A thorough synthesis of available archaeological information	conceptual design
Stage 3	<b>Field surveys</b> of preferred pipeline route, including field reconnaissance survey, field walking survey, geophysical survey as appropriate	detailed design
Stage 4	<b>Field evaluation</b> of targeted areas along preferred pipeline route, including machine-excavated trenches, hand-dug test-pits, auger survey, as appropriate	
Stage 5	<b>Open-area excavation</b> e.g. detailed investigation of those sites which it is not possible to avoid or desirable to preserve (e.g. excavation, topographic survey)	
Stage 6	<b>Watching brief.</b> Permanent presence monitoring of all ground disturbing activities	construction
Stage 7	<b>Archive and publication.</b> Synthesis and dissemination of results, leading on from each of the stages outlined above	post-construction

## **5.4 Summary of recommendations**

A number of uncorroborated desk-based assessment sites merit further archaeological investigation. Targeted trench evaluation is recommended for selected areas to be agreed in consultation with Greg Chuter, East Sussex County Council. A watching brief is recommended for the remainder of the proposed pipeline and this should provide an opportunity to record those sites which do not merit further investigation and/or recording in advance of construction.

## **5.5 Recommendations for further archaeological investigation**

### **5.5.1 Trench evaluation**

It is recommended that target trench evaluation take place, with particular focus on field system to the south of Blackcap Farm (SMR MES1968), the possible Iron Age or Roman field system at Gardener's Hill (SMR MES1959) and the possible Roman road (SMR MES4816). Appropriate mitigation should be determined for any of these sites which are found to be archaeological in origin and significant. This might include avoidance and/or minimisation of impact (Section 5.6.1), open-area archaeological excavation (Section 5.6.2) or a watching brief (Section 5.6.3).

## **5.6 Mitigation**

### **5.6.1 Avoidance**

#### ***Route Selection***

The final route selection should be determined in relation to sites of national and regional importance (i.e. sites of category A, B and C) and to sites where the significance of impact is deemed to be medium or high. At this stage, the proposed pipeline affects no sites of national or regional importance (Chapter 4).

#### ***Total avoidance by modification of the route***

No sites are recommended for avoidance at this stage.

Minor alterations to the proposed pipeline or the engineering design should be considered to avoid impacts upon nationally important archaeological remains should any come to light during subsequent archaeological investigations.

#### ***Minimisation of impact***

Where feasible, the impact upon unavoidable archaeological sites having a significance of impact of medium or high should be minimised by reduction of the working width to the minimum practical level, and/or the laying of geotextile matting or bog mats, and/or careful reinstatement procedures (e.g. avoidance of subsoil 'ripping' at archaeological sites).

No sites currently have a significance impact of high, but eight sites have a low impact.

### **5.6.2 Open-area excavation**

No sites are recommended for open-area excavation at this stage.

### **5.6.3 Watching brief**

#### ***Known and unexpected archaeological sites***

A watching brief should be maintained during all ground disturbing activities of the construction phase of the project, to record unexpected discoveries, and known sites which did not merit investigation in advance of construction. Those sites which have not been flagged up for further investigation should be closely monitored during a watching brief. The level and intensity of the watching brief should be agreed in consultation with South East Water, Black & Veatch and East Sussex County Council.

Contingencies should allow for appropriate excavation of significant, unexpected archaeological remains found during construction.

#### ***Historic Landscapes and Boundaries***

##### *Ridge and furrow*

No known areas of ridge and furrow earthworks are impacted by the proposed pipeline. Strategies for the recording of ridge and furrow have been devised to assist in the determination of issues such as importance, management and preservation. The level of recording of ridge and furrow, should any come to light during subsequent stages of work, should be considered with reference to existing systems and in consultation with East Sussex County Council, Transport and Environment Department.

##### *Existing parish and field boundaries*

The construction programme should aim to minimise the disturbance of existing 'historic' boundaries (township, parish, shire and estate or park), especially those which are later shown to incorporate an Important Hedge and/or early drystone wall. This might be achieved through minimisation of the working width. Cross sections of significant boundaries which are unavoidable should be recorded during the course of a watching brief, as this might lead to an understanding of land use, environment and construction methods.

Archaeologically significant layers, such as old land surfaces, sealed beneath banks may require sampling. Earthworks, such as banks and ditches, should be sensitively reinstated. Particular attention should be paid to township, parish and shire boundaries, some of which may have Saxon or medieval origins.

##### *Former field boundaries*

Former field boundaries identified as potentially 'historic' could also be targeted for detailed recording during the course of a watching brief.

#### ***Built environment***

No specific recommendations are made at present, although this situation should be reviewed if built remains are encountered on the proposed pipeline during

construction. Particular attention should be paid to those known structures which lie close to the proposed pipeline, such as roads and buildings.

***Reinstatement***

Land should be reinstated to its previous condition, in consultation with the land owner.

## 6 ACKNOWLEDGMENTS

Network Archaeology Ltd would like to thank the following for their contribution to the project:

**Table 6.1 Acknowledgements**

<b>Organisation</b>	<b>Name</b>	<b>Position</b>
Alan Vince Consultancy	Alan Vince	Finds specialist
	Kate Steane	Finds specialist
Black & Veatch	Penny Coombes	Project Manager
	Laura Baines	Environmental Scientist
East Sussex County Council, Transport and Environment Department	Greg Chuter	Archaeological Consultant
Network Archaeology Ltd	David Bonner	Company Director and Project Manager
	Anni Byard	Project Officer
	Susan Freebrey	GIS Officer
	Sarah Mounce	Project Supervisor
	Sarah Ralph	Reports Officer
	Janey Brant	Finds Officer
	Richard Moore	Finds specialist
South East Water	Guy Spence	Project Manager

## 7 BIBLIOGRAPHY

### 7.1 Secondary Sources

Table 7.1 Published and unpublished sources

Author	Year	Title	Journal/ Publishers
Archaeology South-East	2004	An Archaeological Desk-Based Assessment and Walkover Survey of Land between Firle Beacon and Poverty Bottom, near Lewes, East Sussex	Unpublished client report, No. 1878
Archaeology South-East	2007	An Archaeological Desk-Based Assessment and Walkover Survey of Land between Firle Reservoir and Poverty Bottom (Norton Pumping Station), East Sussex	Unpublished client report, No. 2007/259
IFA (Institute of Field Archaeologists)	2001i (1994, revised 1999 and 2001)	Standard & Guidance documents (Desk-based Assessments, Watching Briefs, Evaluations, Excavations, Investigation and Recording of Standing Buildings, Finds, Waterlogged Wood)	IFA
IFA (Institute of Field Archaeologists)	2001ii (1985, revised 1997 and 2001)	Code of Conduct	IFA



## **APPENDIX A**

### **Explanation of Phased Approach to Archaeological Investigation and Mitigation**

## **EXPLANATION OF PHASED APPROACH TO ARCHAEOLOGICAL INVESTIGATION AND MITIGATION**

### **Stage 1: Study Corridor Investigation Study**

An appraisal of archaeological potential

### **Stage 2: Desk-based Assessment**

A thorough desk based synthesis of available information

Aerial photographic study:

Identification and mapping of palaeochannels from aerial photographs should be undertaken as part of the desk-based assessment.

### **Stage 3: Field Surveys**

#### **Field reconnaissance survey**

This is a visual inspection of the proposed pipeline route, in order to:

- locate and characterise archaeology represented by above ground remains (e.g. earthworks and structures); and
- record the nature and condition of existing field boundaries within the working width of the pipeline, to establish their potential antiquity.
- A walkover of the entire development area should normally take place.

#### **Fieldwalking survey**

The distribution of finds found by fieldwalking can indicate areas of archaeological activity, which are not represented by above ground remains.

A programme of structured fieldwalking should normally take place across all available arable land to recover archaeological artefacts. A minimum of five transects at 10m separation should normally be walked.

#### **Geophysical survey**

Geophysical survey methods are non-intrusive and can detect and precisely locate buried archaeological features.

Magnetometry is the most cost-effective technique for large scale surveys. *Recorded* magnetometer survey, supplemented by background magnetic susceptibility survey is normally recommended.

*Unrecorded* magnetometer scanning is not recommended because it requires spontaneous, subjective interpretation as the unrecorded scanning survey progresses. This method does not therefore provide a secure basis for eliminating areas that produce negative results from further consideration.

#### **Auger survey**

Geotechnical borehole survey supplemented by hand auger survey could:

- generate stratigraphic profiles and establish the depth of alluvium;
- look for 'islands' of solid geology which are elevated in comparison with their contemporary landscape;
- look for former river channels;
- look for evidence of buried land surfaces;
- assess the viability of using targeted magnetometer survey on the floodplain.

Ideally, an environmental archaeologist would consult with the geotechnical team in order to develop a strategy which would enable the opportunistic and immediate examination of the geotechnical team's soil cores, in conjunction with a *hand auger survey* tailored to meet archaeological objectives listed above.

### **Radiocarbon dating and palaeo-environmental assessment**

Soil samples recovered may require radiocarbon dating and assessment of potential for preservation of palaeo-environmental important remains.

### **Stage 4: Evaluation**

Field evaluation should normally take place at the sites of positive findings made during earlier stages of archaeological assessment and field survey, which it may not be possible or desirable to avoid. Evaluation might involve machine-excavated trenches, hand-dug test-pits and/or hand auguring. The objectives are to confirm the presence or absence of archaeological remains, to determine their character, extent, date and state of preservation, and to produce a report on the findings. The choice of technique(s) will depend upon site-specific factors.

### **Stage 5: Mitigation**

#### **Excavation**

It may not be possible or desirable to avoid significant archaeological sites identified by previous survey work and/or evaluation. Ideally, *excavation* of such sites should take place in advance of construction. Excavation would involve machine-stripping of limited, open areas, followed by archaeological investigation. The objectives would be to obtain a full record of the archaeological remains prior to construction, and to produce a report on the findings.

#### **Earthwork survey**

This work is undertaken to produce a topographic record of extant earthworks. These sites might include known earthworks identified by the Desk based Assessment, or previously unknown earthworks found during the Field Reconnaissance Survey. The sites may include settlement earthworks or agricultural earthworks (such as, ridge and furrow and lynchets).

Two methods are commonly employed; plane table survey which obtains a hachure survey, or total-station theodolite survey which produces a close contour plot.

### **Stage 6: Watching Brief**

A permanent-presence watching brief will be required during all ground disturbing activities of the construction phase of the project, to record unexpected discoveries, and known sites which did not merit investigation in advance of construction. The main phases of monitoring for the pipeline will be topsoil stripping, trench excavation and the opportunistic observation of the pre-construction drainage. The objectives are to obtain a thorough record of any archaeological remains found during construction, and to produce a report on the findings.

Contingencies should allow for salvage excavation of significant, unexpected archaeological sites found during construction.

### **Stage 7: Archive, Report and Publication**

On completion of all archaeological fieldwork associated with the development scheme, a comprehensive programme of post-excavation assessment, analysis, reporting and publication will be implemented. The post-excavation programme will be subject to a written scheme of investigation to be agreed in advance with the Senior Planning Archaeologists and will be in line with 'The Management of Archaeological Projects', English Heritage 1991.

## **APPENDIX B**

### **Statutory and Non-Statutory Protection of Archaeological Sites**

## STATUTORY AND NON-STATUTORY PROTECTION OF ARCHAEOLOGICAL SITES

### Legislation

#### **Ancient Monuments and Archaeological Areas Act 1979 (as amended by the National Heritage Act of 1983)**

Under this Act, the Secretary of State, in consultation with English Heritage, maintains a schedule of monuments deemed to be of national importance. In practice, most Scheduled Monuments fall into the category of Scheduled Ancient Monuments (SAMs), defined as 'any Scheduled Monument and any other monument which in the opinion of the Secretary of State is of public interest by reason of the historic, architectural, traditional, artistic or archaeological interest attaching to it' (Section 61 [12]). Scheduled Monuments also includes Areas of Archaeological Importance (AAIs). Only portable items are beyond the protection of scheduling.

The present schedule of just over 13,000 sites has been compiled since the first statutory protection of monuments began in 1882. The criteria for scheduling have been published but there are many sites of schedulable quality, which have not yet received this status.

Any action which affects the physical nature of a monument requires Scheduled Monument Consent, which must be sought from the Secretary of State. Consent may be granted after a detailed application to the Secretary of State. Failure to obtain Scheduled Monument Consent for any works is an offence, the penalty for which may be a fine, which may be unlimited.

#### **The National Heritage Act 2002**

This enables English Heritage to assume responsibilities for maritime archaeology in English coastal waters, modifying the agency's functions to include securing the preservation of ancient monuments in, on, or under the seabed, and promoting the public's enjoyment of, and advancing their knowledge of ancient monuments, in, on, or under seabed. Initial duties will include those formerly undertaken by the Government's Department of Culture, Media and Sport (DCMS), in respect to the administration of The Protection of Wrecks Act 1973.

<http://accessibility.english-heritage.org.uk/default.asp?WCI=Node&WCE=8197>

#### **Planning (Listed Buildings and Conservation Areas) Act, 1990**

Listed Buildings and Conservation areas benefit from statutory protection under this Act.

#### ***Listed buildings***

Under this Act, the Secretary of State, in consultation with English Heritage, is responsible for the compilation of the List of Buildings (and other structures) of Special Architectural or Historic Interest. Listing gives buildings important statutory protection.

Buildings are classified in grades to show their relative importance as follows:

- Grade I Buildings of exceptional interest
- Grade II\* Particularly important buildings of more than special interest
- Grade II Buildings of special interest, which warrant every effort being made to preserve them

The grading of listed buildings is non-statutory; the awarding of grades is simply a tool to assist in the administration of grants and consents. The list is used by local planning authorities in conjunction with PPG 15 Planning and the Historic Environment as the basis upon which decisions on the impact of development are made on historically and architecturally significant buildings and their settings.

Any work that involves the demolition, alteration or extension of a listed building (or its curtilage) requires listed building consent, which must be sought from the Secretary of State, usually via the local planning authority. Consent may be granted after a detailed application to local planning authority or the Secretary of State. Carrying out work on a listed building (or its curtilage) without consent is an offence and can be punishable by an unlimited fine.

### ***Conservation Areas***

There are activities that may be considered inappropriate within or adjacent to Conservation Areas; for example by disrupting important views, or generating excess traffic. Development within a Conservation Area is likely to be resisted if considered inappropriate in terms of scale, setting, massing, siting, and detailed appearance in relation to surrounding buildings and the Conservation Area as a whole. High standards of design are expected in all Conservation Areas, whether for new or replacement buildings, extensions, alterations or small scale development. Planning permission is normally resisted for small scale development which could lead to a number of similar applications, the cumulative effect of which would be detrimental to the character and appearance of the area. Demolition of unlisted structures within Conservation Areas is usually only permitted where removal or replacement would preserve or enhance the character and appearance of the area, or where the structure is beyond economic repair. Development which would adversely affect the character or appearance of buildings of local interest is likely to be resisted. Demolition would almost certainly only be permitted in exceptional circumstances.

### **The Protection of Military Remains Act 1986**

This Act makes it an offence to interfere with the wreckage of any crashed, sunken or stranded military aircraft or designated vessel without a licence. This is irrespective of loss of life or whether the loss occurred during peacetime or wartime. All crashed military aircraft receive automatic protection, but vessels must be individually designated. Currently, there are 21 vessels protected under this Act, both in UK waters and abroad, and it is likely that the Ministry of Defence will designate more vessels in the future.

There are two levels of protection offered by this Act, designation as a Protected Place or as a Controlled Site.

Protected Places include the remains of any aircraft which crashed while in military service or any vessel designated (by name, not location) which sank or stranded in military service after 4th August 1914. Although crashed military aircraft receive automatic status as a Protected Place, vessels need to be specifically designated by name. The location of the vessel does not need to be known for it to be designated as a Protected Place.

Diving is not prohibited on an aircraft or vessel designated as a Protected Place. However, it is an offence to conduct unlicensed diving or salvage operations to tamper with, damage, remove or unearth any remains or enter any hatch or other opening. Essentially, diving is permitted on a 'look but don't touch' basis only.

Controlled Sites are specifically designated areas which encompass the remains of a military aircraft or a vessel sunk or stranded in military service within the last two hundred years. Within the controlled site it is an offence to tamper with, damage, move or unearth any

remains, enter any hatch or opening or conduct diving, salvage or excavation operations for the purposes of investigating or recording the remains, unless authorised by licence. The effectively makes diving operations prohibited on these sites without a specific licence.

### **The Protection of Wrecks Act 1973**

The Protection of Wrecks Act is in two sections. Section 1 provides protection for designated wrecks which are deemed to be important by virtue of their historical, archaeological or artistic value. Approximately 56 wrecks around the coast of the UK have been designated under this section of the Act. Each wreck has an exclusion zone around it and it is an offence to tamper with, damage or remove any objects or part of the vessel or to carry out any diving or salvage operation within this exclusion zone. Any activities within this exclusion zone can only be carried out under a licence granted by the Secretary of State, who receives advice from the Advisory Committee on Historic Wreck Sites (ACHWS). There are four levels of licences: a visitor licence, a survey licence, a surface recovery licence and an excavation licence.

Administration of this Act and associated licenses is the responsibility of English Heritage in England, Historic Scotland in Scotland, Cadw: Welsh Historic Monuments in Wales and the Environment and Heritage Service in Northern Ireland. Any of these organisations will be able to provide more in depth information (see useful addresses).

Section 2 of the Protection of Wrecks Act provides protection for wrecks that are designated as dangerous by virtue of their contents. Diving on these wrecks is strictly prohibited. This section of the Act is administered by the Maritime and Coastguard Agency through the Receiver of Wreck.

### **The Town and Country Planning Act 1990**

Section 54a of the Act requires planning decisions to be taken in accordance with policies contained in the appropriate Local Development Plan. Material considerations, including national guidelines, should also be taken into account as they provide an overall context for the consideration of planning applications and set out Government policy.

## **Regulations**

### **Hedgerow Regulations 1997 (Section 97 of the Environment Act 1995)**

Under these Regulations, prior to work, which may damage or remove hedgerows, it is required to categorise the hedgerows according to a number of historical and ecological criteria which are laid out in the Regulations. District Councils are required to administer the Regulations and to maintain a map of hedgerows deemed to be ‘important’ under the criteria of the Regulations.

Under the regulations, a hedgerow is regarded as ‘important’ on archaeological or historical grounds if it:

- marks a pre-1850 parish or township boundary;
- incorporates an archaeological feature;
- is part of, or associated with, an archaeological site
- marks the boundary of, or is associated with, a pre-1600 estate or manor; or
- forms an integral part of a pre-Parliamentary enclosure field system (DOE, 1997).

An archaeological site is defined as a Scheduled Ancient Monument (SAM) or a site recorded in a County Sites and Monuments Record (SMR);



The Hedgerow Regulations define a pre-Parliamentary enclosure field system as any field boundary predating the *General Enclosure Act of 1845*.

The implication of this legislation is that virtually all hedgerows can be classified as being ‘important’ for historical purposes under the Hedgerows Regulations 1997.

The historical criteria, however, are presently under review.

## **Guidance Notes**

Central government guidance on archaeological remains and the built historic environment include:

- Planning Policy Guidance Note 15 (PPG 15): Planning and the Historic Environment (1994)
- Planning Policy Guidance Note 16 (PPG 16): Archaeology and Planning (1990).

The key policy statements in PPG16 are that “where nationally important archaeological remains, whether Scheduled or not, and their settings, are affected by proposed development there should be a presumption in favour of their physical preservation”.

For less important sites, PPG16 states that, “the desirability of preserving a scheduled monument and its setting is a material consideration in determining planning applications whether that monument is scheduled or unscheduled”.

The County Sites and Monuments Record is used in conjunction with PPG 15 and PPG 16, as the basis upon which decisions on the archaeological impact of development are made. The basic premise of the Guidance is that archaeological deposits are a finite non-renewable resource that must be protected. It also points out the unknown nature of archaeological deposits and allows Planning Authorities to include within planning conditions, archaeological evaluation, to determine the full impact on the archaeological resource. The evaluation can be required prior to determination of the planning decision. This evaluation may detail any measures that can be implemented to mitigate the damage and help to decide whether excavation is required of the threatened archaeological remains.

## **Structure Plan and Local Plan Protection**

Scheduled and non-scheduled sites of archaeological importance, listed buildings, and historic parks and gardens and their settings are also protected under policies contained within the relevant Structure Plan and Local Plans for the area:

- East Sussex and Brighton & Hove Structure Plan 1991–2011
- Lewis District Local Plan (adopted March 2003)

## **Guidance for sites having no statutory protection**

### ***The Register of Parks and Gardens of Special Historic Interest in England***

This register was compiled by English Heritage between 1984 and 1988 and is maintained by them. Parks and gardens of special historic interest have no statutory protection.

Listed parks and gardens are classified in grades to show their relative importance as follows:

- Grade I –international historic interest
- Grade II\* - exceptional historic interest

- Grade II –national historic interest

The listing and grading process is designed to draw attention to important historic parks and gardens as an essential part of the nation's heritage for use by planners, developers, statutory bodies and all those concerned with protecting the heritage. However, no new controls apply to parks and gardens in the register, nor are existing planning controls to listed building affected in any way. It follows that structures such as fountains, gates, grottos and follies within gardens can also be listed as 'Listed Buildings' and whole parks and gardens can also be scheduled as Ancient Monuments.

Any work that affects the physical nature of registered parks and gardens requires consultation with the Garden History Society. English Heritage should be consulted in the case of those designated as Grade I or Grade II\*.

### ***The Register of Historic Battlefields***

This register is maintained by English Heritage and currently includes forty sites. Registered battlefields have no statutory protection. Planning Policy Guidance note 15, however, offers a degree of protection to many of the known battle sites within England.

## **APPENDIX C**

### **Summary Table of Plot Data**

<b>Plot No</b>	<b>Landuse</b>	<b>Ground Conditions</b>	<b>Visibility</b>	<b>Weather</b>	<b>H &amp; S</b>	<b>Length walked</b>	<b>% of Length walked</b>
N1	Not targeted for field walking						
N2	Not targeted for field walking						
N3	Not targeted for field walking						
N4	Not targeted for field walking						
N5	Not targeted for field walking						
N6	Arable	Ploughed, harrowed, shoots	Poor to Excellent	Sun	n/a	5199	57%
N7	Arable	Shoots	Moderate	Sun	n/a	2260	25%
N8	Not targeted for field walking						
N9	Set-aside	Grass	Poor	Sun	n/a	0	0%
N10	Arable	Shoots	Moderate	Sun	n/a	150	2%
N11	Set-aside, wood	Grass, weeds, mixed woodland	Poor	Sun	Marshy, Brambles	0	0%
N12	Not targeted for field walking						
N13	Not targeted for field walking						
N14	Not targeted for field walking						
N15	Not targeted for field walking						
N16	Not targeted for field walking						
N17	Arable	Ploughed, harrowed	Excellent	Sun	n/a	1490	16%
N18	Not targeted for field walking						
N19	Not targeted for field walking						
N20	Not targeted for field walking						
N21	Not targeted for field walking						
N22	Not targeted for field walking						
N23	Not targeted for field walking						
N24	Not targeted for field walking						
N25	Not targeted for field walking						
N26	Not targeted for field walking						
N27	Not targeted for field walking						

N.B. 'Visibility', which takes account of ground visibility (for the detection of archaeological remains) and also weather conditions, is graded in the range, poor, moderate, good, and excellent.

## **APPENDIX D**

### **Summary Table of Finds**

## SUMMARY TABLE OF FINDS

Plot	Data	CBM	Pottery		Heat affected flint	Glass	Copper-alloy	Iron	Stone	Totals
			Post-medieval	Unidentified						
N6	count	47	10	1	1	1	1	2	2	<b>65</b>
	weight (g)	2553	53	5	13	29	11	48	58	<b>2770</b>
N17	count	3	0	0	1	0	1	4	0	<b>9</b>
	weight (g)	374	0	0	13	0	43	232	0	<b>662</b>
<b>Total Count</b>		<b>50</b>	<b>10</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>2</b>	
<b>Total Weight (g)</b>		<b>2927</b>	<b>53</b>	<b>5</b>	<b>26</b>	<b>29</b>	<b>54</b>	<b>280</b>	<b>58</b>	

**APPENDIX E**  
**Specialist Finds Reports**

## Heat-affected flint assessment

### *Richard Moore*

Two pieces of heat-affected flint, both weighing 13g, were recovered during fieldwalking. One of these (3171001) is reddened on one side and coarsely shattered, indicating that it has been heated to a relatively high temperature, probably in direct and prolonged contact with a fire.

The other piece (3131008) is uniformly grey with a finely crazed surface, more typical of flint that has been heated and quenched in water. This is similar in appearance to flints from prehistoric burnt mounds but, as it was an isolated find, it may perhaps derive from a more domestic setting, as a 'pot-boiler' used to heat water. If it does originate from a burnt mound, this is unlikely to be in close proximity to the survey corridor, the piece having been displaced from its original location, presumably up-slope of the find-spot.

While these two pieces have negligible significance or potential for further study, the presence of find 3131008 in particular indicates that there is some potential for the discovery of prehistoric burnt mounds in the area, and this should be borne in mind during subsequent stages of investigation.

### Catalogue

Context	Plot	Weight/g	Description
3131008	N6	13	Smooth, finely crazed pale grey surface layer spalling off at edges to reveal underlying off-white matrix.
3171001	N17	13	One side with smooth, white outer layer over grey matrix; opposite side reddened with one face coarsely fractured and the other corticated with patch of tiny 'bubbles' from out-gassing.



## Glass assessment

### *Richard Moore*

One piece of glass, weighing 29g, was recovered. This is the greater part of the base of a moulded bottle with an oval cross-section of at least 50mm by 70mm. The numbers “199...” are embossed on the base, with a ‘ghost’ of the first two digits, probably picked up from residue left on the mould, displaced above and to the right. The embossed numbers are probably the manufacturer’s part number.

This piece would have been made in the late nineteenth or early to mid- twentieth century and as an isolated unstratified find is of no archaeological significance.

### Catalogue

Context	Plot	Weight/g	Description
3131019	N6	29	Moulded bottle glass; clear with bluish cast. 67mm x 51mm; up to 7.5m thick. Embossed numbers up to 14mm high in centre of underside of oval recessed base.

## Assessment of the Finds from Poverty Bottom to Firle Main

*Alan Vince and Kate Steane*

A small quantity of finds was recovered from the fieldwalking survey carried out on the line of the Poverty Bottom Water Treatment Works to the Firle Reservoir pipeline by Network Archaeology (PBF 13).

The finds consist mainly of fragments of ceramic building material with a smaller quantity of pottery and metal finds. The majority of the finds probably date to the 19th century or later but include a few sherds of post-medieval pottery and a fragment of an iron cauldron which is probably of similar date.

### Description

Seventy-one fragments were submitted, representing seventy objects and weighing in total 3.377 Kg (Table 1). The finds were identified as ceramic building material (CBM); copper alloy (COPP); unworked stone (GEO); iron (IRON) and pottery (POTTERY).

**Table 1.**

<b>Class</b>	<b>Sum of Nosh</b>	<b>Sum of NoV</b>	<b>Sum of Weight</b>
CBM	50	49	2927
COPP	2	2	54
GEO	2	2	58
IRON	6	6	280
POTTERY	11	11	58
<b>Grand Total</b>	<b>71</b>	<b>70</b>	<b>3377</b>

### Ceramic Building Material

The 50 fragments of ceramic building material consisted either of flat roof tile fragments, some of which had square pegholes, and brick fragments. The bricks were either hand-formed in a mould or in a few cases machine made with a frogged upper surface. A single fragment of hip tile, also with a square peghole, was present.

The flat tiles and hip tiles are either of medieval or post-medieval date. Hip tiles seem to have been present by the early 14th century but are definitely more common in later medieval contexts. The bricks appear to be of “local” manufacture (as do the roof tiles) and in Sussex this probably implies a post-medieval date. The frogged bricks will be of mid 19th century or later date.

### Copper Alloy

Two copper alloy objects were recorded. A cartridge case of 19th or 20th-century date (3131028) and a circular disk of sheet metal (3171003) which also appears to be of late date, although its identity and function are unknown. The disk has a slight groove or indentation about 1mm from the edge and could have been mounted, perhaps as part of a piece of machinery.

### Iron

Six iron objects were recorded. One of these was a nail (3171020) which from its low level of corrosion (given a shallow, chalky substrate) is probably of recent date. A fragment from a globular walled cauldron was found. This has “kettle fur” on the interior and was used for

boiling water (3171007). The remaining fragments appear to be cast iron and are fragments of larger objects, although none can be identified (3131001, 3131004 (two), and 3171002).

### **Pottery**

Eleven fragments of pottery were recorded. One is unidentifiable although to judge by the chalky crust and general appearance it could be of Roman or medieval date (3131021).

Four fragments appear to be of unglazed red earthenware, of the general type produced at Harefield and Lower Parrock in the 16th and early 17th centuries (3171016, 3131029, 3131010 and 3131009). Three of these were noticeably abraded.

A single fragment of Frechen stoneware comes either from a drinking jug of mid 16th to mid 17th century date or from a Belarmine bottle of early to mid 17th century date (3171023). A fragment of black-glazed ware and two fragments of glazed red earthenware are probably of post-medieval date, but cannot be closely dated (3131028 and 3131020 and 3131023 respectively).

The remaining two sherds are of early modern date (i.e. late 18th century or later). They consist of a small fragment of transfer printed ware (3171019) and a sherd of a white-slipped Sunderland Coarseware bowl (3171005).

### **Stone**

Two fragments of ironstone were submitted. Both appear to replace fossil sponges and probably had too low an iron content to have been used as a source of iron (3131018).

### **Assessment**

The flat roof tile and hip tile could be of late medieval or post-medieval date and pottery of similar date is present. The remaining finds are either natural or of early modern date, except for the possible Roman or medieval sherd.

### **Retention**

None of the brick or metal finds is likely to be worth further study in the future and could therefore be discarded. The pottery should be retained, excluding the two early modern sherds, together with a selection of flat roof tile (to represent the visual range of fabrics present) and the hip tile.

### **Further work**

No further work is recommended for this material.

## Catalogue

Ref No.	Trench	class	Cname	Description	Form	Part	Nosh	NoV	Weight	Condition	Use
3131001	N17	IRON	IRON	CAST INTO A MOULD; ROUGH TRIANGULAR SECTION	AGRIC MACHINERY	PART	1	1	40		
3131002	N17	CBM	MOD	FROGGED	BRICK	BS	1	1	335		
3131003	N17	CBM	PMED	FRAGS	BRICK	BS	2	2	39		
3131004	N17	IRON	IRON	CURVED WITH RECTANGULAR SECTION	AGRIC MACHINERY	BS	1	1	95		
3131004	N17	IRON	IRON	CAST INTO A MOULD; ROUGH TRIANGULAR SECTION	AGRIC MACHINERY	BS	1	1	45		
3131007	N6	CBM	MED		FLAT	BS	1	1	16		
3131007	N6	CBM	MED		FLAT	BS	1	1	31	ABRA	
3131009	N6	CBM	PMED		BRICK	BS	1	1	459	ABRA	
3131009	N6	CBM	PMED	FRAG	BRICK	BS	1	1	92		
3131009	N6	CBM	MED		FLAT	BS	1	1	5		TRACES OF MORTAR ON SURFACE
3131009	N6	POTTERY	PMLOC	UNGLAZED	FLP	B	1	1	1		
3131010	N6	CBM	MED		FLAT	BS	1	1	12		
3131010	N6	POTTERY	PMLOC	UNGLAZED	JAR?	BS	1	1	1	ABRA	
3131010	N6	CBM	MED		FLAT	BS	1	1	88		
3131011	N6	CBM	MTIL		FLAT	BS	1	1	32		
3131012	N6	CBM	MED		FLAT	BS	1	1	18		
3131012	N6	CBM	PMED	FRAG	BRICK	BS	1	1	26		MORTAR ON SURFACE
3131014	N6	CBM	PMED	FRAG	BRICK	BS	1	1	11		
3131015	N6	CBM	MED/PMED	FRAG	BRICK/FLAT	BS	1	1	3		

Ref No.	Trench	class	Cname	Description	Form	Part	Nosh	NoV	Weight	Condition	Use
3131016	N6	CBM	MTIL		FLAT	BS	1	1	45	ABRA	
3131018	N6	GEO	GEO		GEO	BS	2	2	58		
3131020	N6	POTTERY	GRE		BOWL	BS	1	1	4		
3131021	N6	POTTERY	MEDLOC	UNGLAZED	JAR?	BS	1	1	5	ABRA; SOIL DEP	
3131022	N6	CBM	MTIL		FLAT	BS	1	1	8	ABRA	
3131023	N6	POTTERY	GRE		BOWL	B	1	1	18	LOST SOME GLAZE	
3131024	N6	CBM	MED/PMED	FRAG	BRICK/FLAT	BS	1	1	11		
3131025	N6	CBM	MED		FLAT	BS	1	1	6	ABRA	
3131026	N6	CBM	MED		FLAT	BS	1	1	4	ABRA	
3131027	N6	CBM	MED		FLAT	BS	1	1	40		
3131028	N6	COPP	COPP	13 BASE DIA	CARTRIDGE CASE	B/BS	1	1	11		
3131028	N6	POTTERY	BL		BOWL	BS	1	1	7		
3131029	N6	POTTERY	PMLOC	UNGLAZED	JAR?	BS	1	1	3	ABRA	
3171002	N17	IRON	IRON	RECTANGULAR SECTION	AGRIC MACHINERY	BS	1	1	52		
3171003	N17	COPP	COPP	MARK 1.5 FROM RIM; 1 THICK AND 71 DIA	CIRCULAR SHEET	WHOLE	1	1	43		
3171004	N6	CBM	MED		FLAT	BS	1	1	8	ABRA	
3171004	N6	CBM	PMED	FRAG	BRICK	BS	1	1	46		
3171004	N6	CBM	MED		FLAT	BS	1	1	8	ABRA	
3171005	N6	CBM	MED		FLAT	BS	1	1	18		
3171005	N6	POTTERY	TPW		PLATE	R	1	1	1		
3171005	N6	CBM	MED		FLAT	BS	1	1	6	ABRA	
3171006	N6	CBM	MED		FLAT	BS	1	1	16		
3171006	N6	CBM	MED	CIRCULAR HOLE NEAR TOP	HIP	BS	1	1	77		
3171006	N6	CBM	MED		FLAT	BS	1	1	18		

Ref No.	Trench	class	Cname	Description	Form	Part	Nosh	NoV	Weight	Condition	Use
3171006	N6	CBM	MED		FLAT/MORTAR	BS	1	1	642		LOT OF MORTAR SUGGESTING USE IN WALL
3171006	N6	CBM	MED		FLAT	BS	1	1	26		
3171007	N6	IRON	IRON		CAULDRON	FRAG	1	1	45	NOT VERY RUSTY	WHITE DEP INT
3171008	N6	CBM	MED		FLAT	BS	2	1	14	ABRA	
3171008	N6	CBM	PMED	FRAG	BRICK	BS	1	1	8		
3171008	N6	CBM	MED		FLAT	BS	1	1	13		
3171013	N6	CBM	PMED	FRAG	BRICK	BS	1	1	29		MORTAR ON SURFACE
3171014	N6	CBM	MED		FLAT	BS	1	1	79		
3171014	N6	CBM	MED		FLAT	BS	1	1	19		
3171015	N6	CBM	PMTIL		BRICK	BS	1	1	201	VITRIFIED SURFACE/ASH GLAZE	
3171015	N6	CBM	MED		FLAT	BS	1	1	26		
3171016	N6	POTTERY	PMLOC	UNGLAZED	JAR?	BS	1	1	1	VABRA	
3171017	N6	CBM	MTIL	SQUARE PEG HOLE 8 BY 8	FLAT	BS	1	1	28		
3171018	N6	CBM	MED	BLACK GLAZE	FLAT	BS	1	1	22		
3171019	N6	POTTERY	SUND		BOWL	BS	1	1	8		
3171020	N6	IRON	IRON	REMAINS OF SHANK 22 LONG	NAIL	PART	1	1	3	NOT VERY RUSTY	
3171021	N6	CBM	PMED	FRAG	BRICK	BS	1	1	220		
3171021	N6	CBM	PMED	FRAG	BRICK	BS	1	1	19		
3171022	N6	CBM	MTIL		FLAT	BS	1	1	39		
3171023	N6	POTTERY	FREC		DJ	BS	1	1	9		
3171024	N6	CBM	PMED	FRAG	BRICK	BS	1	1	4		MORTAR ON SURFACE



Ref No.	Trench	class	Cname	Description	Form	Part	Nosh	NoV	Weight	Condition	Use
3171024	N6	CBM	MED		FLAT	BS	1	1	7	ABRA	MORTAR ON SURFACE
3171024	N6	CBM	MED		FLAT	BS	1	1	10		
3171024	N6	CBM	MED/PMED	FRAG	BRICK/FLAT	BS	1	1	4	ABRA	
3171025	N6	CBM	PMTIL		DRAIN	BS	1	1	39		

## **APPENDIX F**

### **Figures 1-4**





-  Proposed pipeline
-  Proposed reroute

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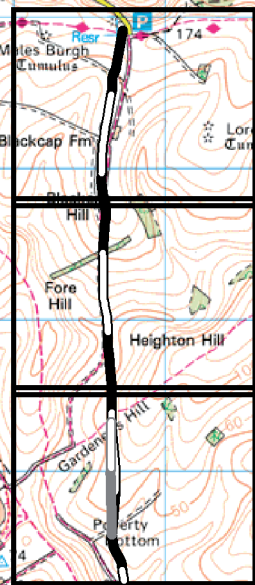


Figure 4

Figure 3

Figure 2

Ver	Date	Description	Drn	Chk	App
1.00	20/03/08	First issue	SAF	AH	DB



Poverty Bottom to Firle Water Reinforcement Main  
Figure 1  
Location of proposed pipeline

Scale: 1:50 000

VEHICLE FERRY FROM NEWHAVEN TO Dieppe 4 hours  
CATAMARAN FROM NEWHAVEN (summer only) Dieppe (V) 2 hours





1.00	20/03/08	First issue	SAF	AH	DB
Ver	Date	Description	Drn	Chk	App

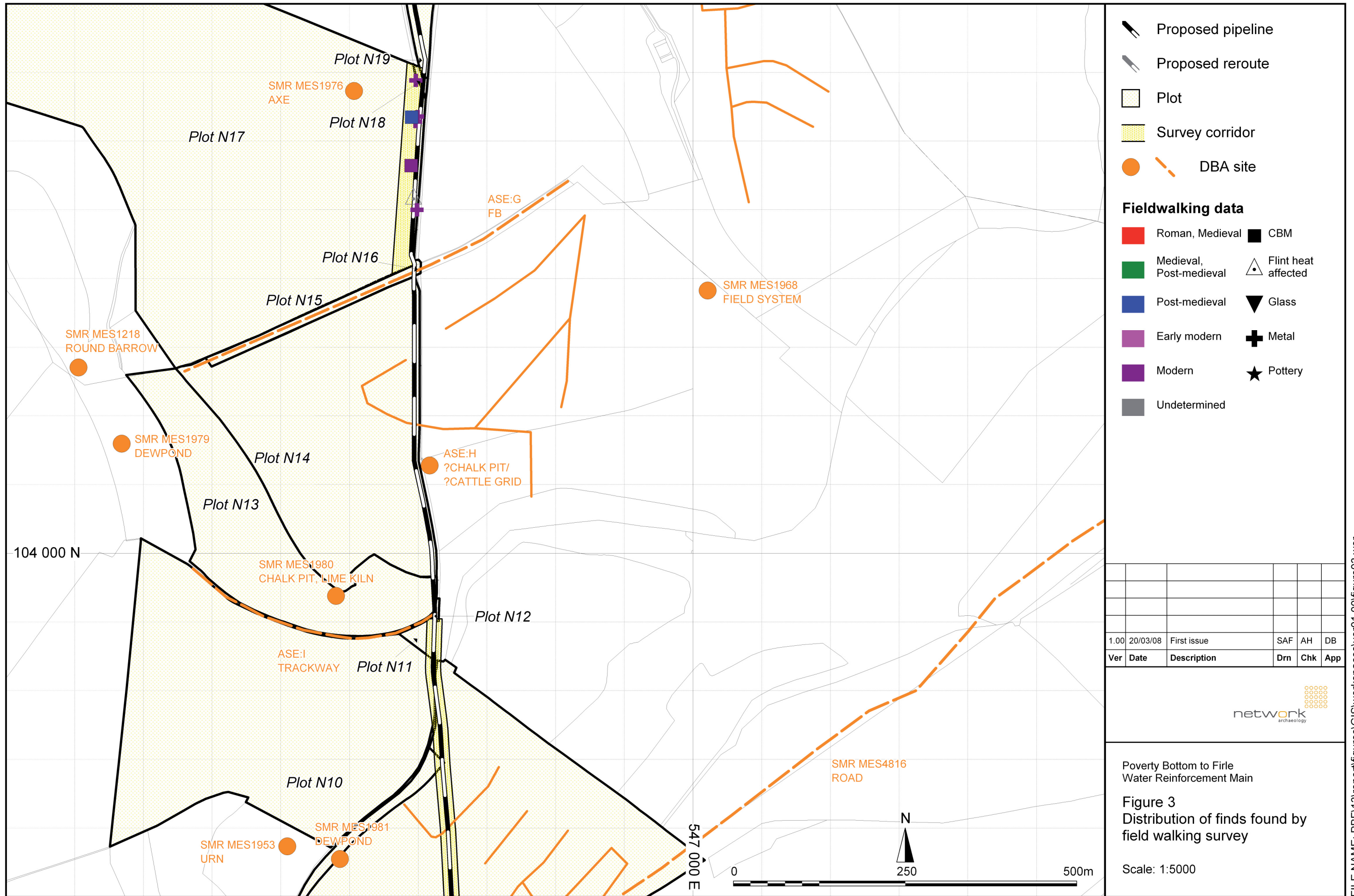


Poverty Bottom to Firle Water Reinforcement Main

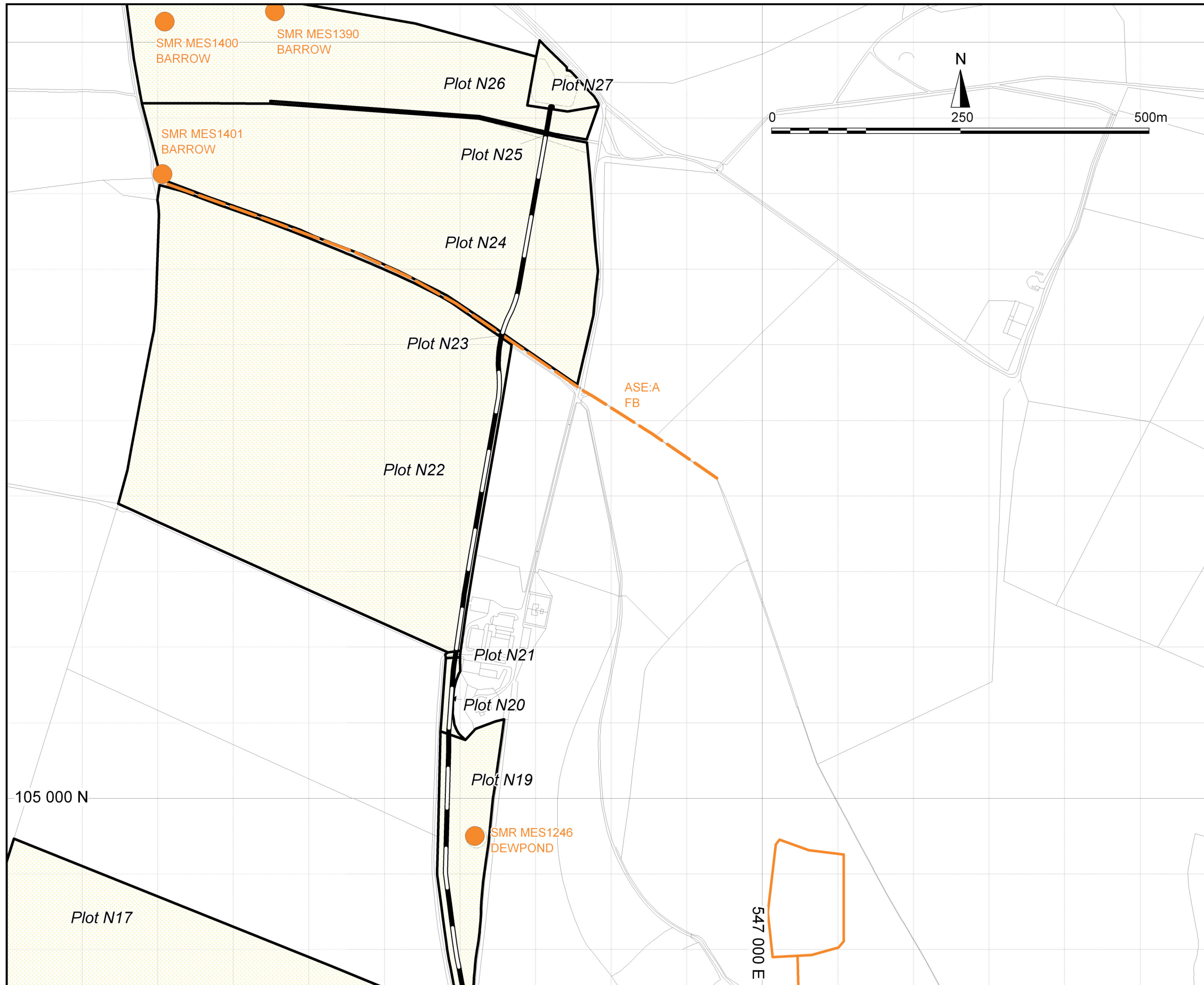
**Figure 2**  
 Distribution of finds found by field walking survey

Scale: 1:5000









- Proposed pipeline
- Proposed reroute
- Plot
- Survey corridor
- DBA site

- Fieldwalking data**
- Roman, Medieval
  - Medieval, Post-medieval
  - Post-medieval
  - Early modern
  - Modern
  - Undetermined
  - CBM
  - Flint heat affected
  - Glass
  - Metal
  - Pottery

1.00	20/03/08	First issue	SAF	AH	DB
Ver	Date	Description	Drn	Chk	App



Poverty Bottom to Firle  
Water Reinforcement Main

**Figure 4**  
Distribution of finds found by  
field walking survey

Scale: 1:5000