ENGLISH HERITAGE

A topographic survey at Ainsbrook, Yorkshire

Trevor Pearson and Abby Hunt

RESTRICTED CIRCULATION

SURVEY REPORT

ENGLISH HERITAGE

A TOPOGRAPHIC SURVEY AT AINSBROOK, YORKSHIRE

Restricted Circulation

County:	Yorkshire
District:	
Parish:	
NGR:	
NMR No:	
SAM/ RSM No:	
SMR No:	
Date of survey:	December 2004
Surveyed by:	Trevor Pearson and Abby Hunt (EH) and Rhona Finlayson and Michael Andrews (YAT)
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TOPOGRAPHIC SURVEY AT AINSBROOK, YORKSHIRE
ENGLISH HERITAGE 2005

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1. INTRODUCTION

Between 29 November and 6 December 2004, members of the English Heritage Archaeological Investigation section based in York worked with a team from York Archaeological Trust to compile a topographic survey of an area of land at 'Ainsbrook' in Yorkshire. Specific details concerning the location have been omitted from this report due to concerns over access to the site and issues with metal detecting. This report is meant to be read in conjunction with a digital copy of the survey plan. The names in bold italic in this report refer to the AutoCad layers forming the digital survey plan which was located to the Ordnance Survey 1:2 500 scale digital map background (*prefixed* ***os***). The AutoCad layers are listed in Appendix 1.

The survey covered an area of 31ha (76 acres), bounded to the west by the top of the slope down to the river and to the east along a 'green lane' which provides access to the site (***slope down to the river*** *and* ***limit of survey***). The survey area is divided into seven fields, which are numbered 1-7 on the AutoCad survey plan (***field numbers***). Individual fields are either defined by hedges (***hedge***) or by post and wire fences (***fence***). The southernmost field, Field 1, has small copses at the north-west and south-west corners (***woodland***) whilst the rest of the area had been ploughed prior to the start of the survey (***edge of ploughing***). A track, used by pig farmers, at the eastern edge of the field was surveyed but was ploughed out shortly afterwards (***track***). The middle two fields (Fields 2 and 3) were used for rearing pigs immediately before the start of survey work. This had left a pattern of temporary plots and trackways (***pig area*** *and* ***pig area access track***) but it was not possible to fully record these as the two fields were ploughed over during the course of the fieldwork, removing all surface traces of that previous land use. Field 4 had been ploughed in the recent past but was fallow at the time of the survey apart from the north-east quarter, which had been used for rearing pigs prior to the start of the fieldwork. This area was ploughed during the course of the survey. At the south-east corner of Field 4, a post and wire fence divides a triangular-shaped plot from the rest of the field. This plot is

rough ground and contains a small, square fenced area. Fields 5 and 6 were under pasture and encompass the north-west and west sides of the high ground respectively and lower ground beyond it. An area of rough, boggy ground on the edge of the high ground within Field 6 had been fenced off (Field 7).

The survey was undertaken to a specification previously agreed between English Heritage and York Archaeological Trust to produce a short, written analytical summary of any earthworks and an AutoCad map of the site showing:-

- topographic features
- erosion features
- a contour model of the area with contours at 0.5m intervals
- the location of the permanently marked survey points positioned around the site during the course of the survey (see Appendix 2)
- the position of the geophysical survey grid established by GSB Prospection
- Significant earthwork features

2. NATURAL TOPOGRAPHY

High ground, formed from glacial sands and gravels, on the south and east of the survey area falls away steeply on the west to the flood plain of the river and to the floor of a tributary valley to the north (***contour-0.5m*** *and* ***contour-5m***). The north facing slope incorporates two distinct terraces picked out by hachures on the survey plan which are probably relict river terraces formed by glacial meltwater (***earthwork-natural***). On the west the there are two quite deeply-incised hollows reaching from the edge of the flood plain to the crest of the escarpment (***earthwork-natural***). They are natural erosion features but it is possible that the sides of the southern hollow have been artificially steepened (see below).

3. LANDSCAPE HISTORY

The boundaries between Fields 1 and 2, Fields 2 and 3 and Fields 3 and 4 have slightly curving alignments which probably perpetuate the reversed 's' pattern of medieval open-field ploughing with oxen. The field pattern does not extend below the escarpment suggesting the medieval open-field did not continue across the low ground on the north and west of the survey area.

The project design specifies that YAT are to undertake background cartographic and documentary research of this site. Consequently, background historical research in support of this report has been restricted to a search of the 1:10 560 Ordnance survey maps of the area. The map sequence from the First Edition 1:10 560 survey published in 1855-6 to the that published in 1952-3 does not reveal any significant landscape change during the past 150 years. The maps show the same basic field pattern as today, though cross divisions in Fields 1 and 2 and sub-divisions within Field 6 have disappeared in the last 50 years.

4. SURVEY RESULTS

4.1 Erosion gullies

Before the survey commenced, there were a number of erosion gullies visible in Field 2 which had been created by surface run-off down the escarpment (***erosion-gully***). However, there was no opportunity to map all of these before they were filled in and the field ploughed over. As a result, only Gully 1 was surveyed in its entirety. This started as a slight, narrow channel about 7m from, and running parallel to, the southern boundary, but became deeper to the west as it went further down slope and joined with Gully 2 from the north. Gully 2 consisted of a narrow, 30m long channel contained in a much wider, shallow-sided linear depression that continued on northwards beyond the end of the gully. The wider depression was probably the combined result of water erosion and the use of the feature as access by pig farmers.

There were a further four narrow, gullies 50m to the west of Gully 2 running roughly parallel from east to west down the slope. There was no opportunity to completely survey these and it is possible there were other gullies in this area which were ploughed out before the start of the survey.

4.2 Earthworks

The ploughed fields (Fields 1-4) were devoid of any significant earthwork traces, apart from in Field 1 where a slight curving depression towards the west side of the field (Earthwork 1) is most likely to be a continuation of the southernmost of the two natural hollows cutting the escarpment (***earthwork-archaeology***). However, there is the possibility that it indicates the line of a partially infilled ditch.

Earthwork 2 in Field 5 is a roughly oval mound, around 22m in length and 17m wide, situated on the crest of the slope at the north-west angle of the escarpment. The mound is around 0.4m high on the west and north but is less

prominent on the south and east. The mound has no obvious interpretation but probably has an agricultural origin.

Towards the south of the same field at the bottom of the slope, Earthwork 3 is a prominent, flat-topped bank which starts on the slope of the escarpment on the east and extends across the low ground to the west outside the limits of the survey area, to end at the top of the river bank. The bank is a quite long-lived feature of the landscape as it is depicted on the first edition 1:10 560 Ordnance survey map published in 1855-6.There are slight traces of a ditch on the north side of the bank and which presumably provided material for construction. The bank is quite low on the slope but increases in height to 0.5m at the foot of the escarpment, though it is cut by several erosion hollows, presumably caused by livestock (***earthwork-erosion***). The tributary stream on the west and north sides of Field 5 passes beneath the earthwork in a culvert. This would suggest that the bank was not constructed to act as a dam to retain the flow of this watercourse. This interpretation is supported by two other observations. Firstly, on the east, the feature rises over 2m in height up the slope which is further than would have been necessary to impound the flow of the stream. Secondly, for the bank to have functioned as a dam, it would have had to have turned to the north for a considerable distance in order to prevent water from escaping into the river and there is no evidence that it did this. The siting of the bank seems significant as it acts as a barrier across a narrow strip of land between the river and the tributary valley to the north. This suggests that it was constructed as a flood bank dividing poorly drained land to the south from improved pasture to the north.

Earthwork 4 is a short length of very slight bank on the slope in Field 5, immediately to the east of Earthwork 3 and on a slightly more southerly alignment, parallel with the southern edge of the field. There is no actual contact between the two earthworks that might indicate a relative chronology, though it appears on plan that Earthwork 4 could be cutting across the line of Earthwork 3 and may therefore be later. At one point, the bank bulges out slightly to the south and could indicate the start of a second bank at right angles heading towards the existing field edge. If this interpretation is correct,

then it might be evidence that the bank formed part of an animal pen or small enclosure along the edge of the field.

Earthwork 5 is in the south-west corner of Field 5. It consists of a wide bank with a shallow ditch part way down the middle. The bank aligns with a manhole 5m to the east in Field 6 and is presumably connected with an underground drain (***manhole***).

Earthwork 6 in Field 6 is a narrow bank that carries on the line of the fence on the south side of Field 7. The bank presumably indicates this enclosed area has been larger at some time although there is no plan evidence of this on the Ordnance Survey mapping consulted.

Earthwork 7 is a broad, south-facing scarp on the west side of Earthwork 6. This could be a continuation of the north side of the hollow on the escarpment further to the east or possibly the remnant of a trackway heading towards the foot of the escarpment from the edge of the river.

In addition to these definite earthworks, the sides of the southernmost of the two natural hollows on the escarpment in Field 6 appear to have been artificially steepened, perhaps to incorporate the hollow in a land boundary or defensive ditch extending eastwards in Field 1.

4.3 MISCELLANEOUS FEATURES

In Field 6, the survey recorded the position of a small trench on the probable line of a buried drain indicated by two manholes further to the north in the same field (***drainage trench*** *and* ***manhole***).In Field 2, the approximate position of one of the two YAT excavation trenches from March 2004 was mapped along with an iron spike on the line of the southern field boundary which had been used as the excavation datum (***YAT-trench*** *and* ***YAT-datum***). The positions of a number of temporary pegs in Fields 1-4 used during the course of the geophysical survey were also located (***geophysics grid***).

5. SURVEY METHODOLOGY

The field survey was carried out using Trimble 4800 and 4700 dual frequency Global Positioning Satellite (GPS) systems related to a base station on site. The base station had previously been established using the GPS equipment and related to the National Grid (OSGB36) through a transformation programme which calculated its position relative to three Ordnance Survey active GPS stations at Carlisle, Glasgow and Newcastle. Ten permanent and intervisible stations were established on the site to allow future work with conventional survey equipment. The positions of the stations are marked by 1m long metal ground anchors and their positions are indicated on the English Heritage survey plan (***permanent-station***) and further details are recorded in Appendix 2. Additional survey details were provided in areas with poor satellite visibility using a Trimble 5600 series Total Station theodolite, and the plan position fixed by reference to the permanently marked survey stations. The 2D plot of the site was produced from the GPS data using Key Terra-Firma and AutoCad software. Sufficient 3D GPS points were surveyed to generate contours on the survey plot at 0.5m intervals.

The survey was undertaken by Trevor Pearson and Abby Hunt (English Heritage) and Rhona Finlayson and Michael Andrews (York Archaeological Trust). The report was edited by Stewart Ainsworth (English Heritage).

APPENDIX 1: LIST OF AUTOCAD LAYERS

Layer name	*Colour*	*Line Type*
0	white	continuous
3d GPS points	white	continuous
contour-0.5m	252	continuous
contour-5m	white	continuous
drainage trench	white	continuous
earthwork-archaeology	white	continuous
earthwork-erosion	red	continuous
earthwork-natural	white	continuous
edge of ploughing	magenta	continuous
erosion-gully	white	continuous
fence	white	continuous
field numbers	white	continuous
geophysics grid	white	continuous
gps base	white	continuous
hedge	green	continuous
limit of survey	red	continuous
manhole	white	continuous
os-buildings	red	continuous
os-earthwork-bottom	34	dashed
os-earthwork-top	red	continuous
os-edge of wood	green	dashed
os-field boundary	white	continuous
os-gate	white	continuous
os-grid	white	dot
os-lane	blue	dashed
os-licence agreement	white	continuous
os-local authority boundary	magenta	dashed
os-map sheet	white	dot
os-track	white	dashed
os-water flow arrow	cyan	continuous
os-watercourse	cyan	continuous

permanent station	white	continuous
pig area	magenta	continuous
pig area access track	magenta	dashed
slope down to river	green	continuous
temp-EDM-stations	red	continuous
track	white	dashed
woodland	105	continuous
yat-datum	white	continuous
yat-trench	white	continuous

APPENDIX 2: LOCATION OF PERMANENT SURVEY POINTS

SURVEY STATION INFORMATION

ENGLISH HERITAGE

SITE NAME	AINSBROOK		
Station number	01	**Status**	permanent
Type of mark	ground anchor	**NMR number**	
Date of survey	December 2004	**SAM/RSM no.**	
Office of origin	York	**Surveyors**	MA/RF/AH/TP

OS National Grid	**Eastings**	**Northings**	**Height**
	446044.641	464264.609	22.025

(1) looking east

(2) looking south-west

SURVEY STATION INFORMATION

ENGLISH HERITAGE

SITE NAME	AINSBROOK		
Station number	02	**Status**	permanent
Type of mark	ground anchor	**NMR number**	
Date of survey	December 2004	**SAM/RSM no.**	
Office of origin	York	**Surveyors**	MA/RF/AH/TP

OS National Grid	**Eastings**	**Northings**	**Height**
	445882.728	464400.223	21.624

(1) looking east

(2) looking north-west

SURVEY STATION INFORMATION

ENGLISH HERITAGE

SITE NAME	AINSBROOK		
Station number	03	**Status**	permanent
Type of mark	ground anchor	**NMR number**	
Date of survey	December 2004	**SAM/RSM no.**	
Office of origin	York	**Surveyors**	MA\RF\AH\TP

OS National Grid	Eastings	Northings	Height
	445763.017	464322.473	17.144

(1) looking north-west

(2) looking west

SURVEY STATION INFORMATION

ENGLISH HERITAGE

SITE NAME	AINSBROOK		
Station number	04	**Status**	permanent
Type of mark	ground anchor	**NMR number**	
Date of survey	December 2004	**SAM/RSM no.**	
Office of origin	York	**Surveyors**	MA\RF\AH\TP

OS National Grid	Eastings	Northings	Height
	445751.783	464592.928	22.706

(1) looking west

(2) looking north-east

SURVEY STATION INFORMATION

ENGLISH HERITAGE

SITE NAME	AINSBROOK		
Station number	05	**Status**	permanent
Type of mark	ground anchor	**NMR number**	
Date of survey	December 2004	**SAM/RSM no.**	
Office of origin	York	**Surveyors**	MA\RF\AH\TP

OS National Grid	**Eastings**	**Northings**	**Height**
	446017.840	464666.540	27.086

(1) looking north

(2) looking east

SURVEY STATION INFORMATION

ENGLISH HERITAGE

SITE NAME	AINSBROOK		
Station number	06	**Status**	permanent
Type of mark	ground anchor	**NMR number**	
Date of survey	December 2004	**SAM/RSM no.**	
Office of origin	York	**Surveyors**	MA\RF\AH\TP

OS National Grid	**Eastings**	**Northings**	**Height**
	445758.177	464922.271	14.998

(1) looking south-east

(2) looking north-west

SURVEY STATION INFORMATION

ENGLISH HERITAGE

SITE NAME	AINSBROOK		
Station number	07	**Status**	permanent
Type of mark	ground anchor	**NMR number**	
Date of survey	December 2004	**SAM/RSM no.**	
Office of origin	York	**Surveyors**	MA\RF\AH\TP

OS National Grid	Eastings	Northings	Height
	445556.064	464761.253	11.247

(1) looking north-east

(2) looking south-east

SURVEY STATION INFORMATION

ENGLISH HERITAGE

SITE NAME	AINSBROOK		
Station number	08	**Status**	permanent
Type of mark	ground anchor	**NMR number**	
Date of survey	December 2004	**SAM/RSM no.**	
Office of origin	York	**Surveyors**	MA\RF\AH\TP

OS National Grid	**Eastings**	**Northings**	**Height**
	445750.861	464515.537	24.723

(1) looking north-east

(2) looking west

SURVEY STATION INFORMATION

ENGLISH HERITAGE

SITE NAME	AINSBROOK		
Station number	09	**Status**	permanent
Type of mark	ground anchor	**NMR number**	
Date of survey	December 2004	**SAM/RSM no.**	
Office of origin	York	**Surveyors**	MA\RF\AH\TP

OS National Grid	Eastings	Northings	Height
	445579.951	464422.822	12.342

(1) looking east

(2) looking south-east

SURVEY STATION INFORMATION

ENGLISH HERITAGE

SITE NAME	AINSBROOK		
Station number	10	**Status**	permanent
Type of mark	ground anchor	**NMR number**	
Date of survey	December 2004	**SAM/RSM no.**	
Office of origin	York	**Surveyors**	MA\RF\AH\TP

OS National Grid	**Eastings**	**Northings**	**Height**
	445896.439	464143.852	16.990

(1) looking north

AINSBROOK
YORKSHIRE

scale 1:1 250

FIELD 4

FIELD 3

FIELD 5

FIELD 2

FIELD 7

FIELD 1

FIELD 6

Earthwork 2

fenced area

Earthwork 4

Earthwork 3

Earthwork 5

manhole

Gullies

Gully 1

Gully 2

YAT Trench (approx)

YAT datum

manhole

Earthwork 6

drainage trench

Earthwork 7

Earthwork 1

1 2 3 4 5 6 7 8 9 10

ENGLISH HERITAGE

NATIONAL
MONUMENTS
RECORD

The National Monuments Record
is the public archive of English Heritage.
It contains all the information in this report - and more:
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the results of all field surveys, indexes
of archaeological sites and historical buildings,
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