

Northamptonshire Archaeology

Archaeological Geophysical Survey on land at the former Cranfield University campus, Silsoe Bedfordshire



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Heather Smith Report 11/68 March 2011

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QUALITY CONTROL

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Approved by	Andy Chapman	AC	15/03/2011

OASIS REPORT FORM

PROJECT DETAILS				
Droject title	Archaeological Geophysical Survey on land at the former			
Project lille	Cranfield University campus, Silsoe, Bedfordshire,			
Short description	Northamptonshire Archaeology was commissioned by Bloor			
	Homes and Stamford Homes to carry out an archaeological			
	geophysical survey on 10.3ha of land at the former Cranfield			
	University campus, Silsoe, Bedfordshire. The survey has			
	identified medieval or post-medieval ridge and furrow cultivation			
	patterns. No further archaeological features were found,			
	nowever, many magnetic anomalies were revealed representing			
	various reatures such as land drains, terrous pipelines, terrous			
	disturbance caused by standing buildings fances and other			
	modern installations	y standing buildings, rences and biner		
Project type	Geonhysical Survey			
Site Status	None			
Previous work	Desk-based Assessme	nt		
Current land use	Arable Sports Fields			
Future work	Unknown			
Monument type				
and period				
Significant finds	None			
PROJECT LOCATION				
County	Northamptonshire			
Site address	Former Cranfield Unive	rsity Campus, Silsoe, Bedfordshire		
Post code				
OS co-ordinates	TL 0798 3513			
Area	c10.3ha	c10.3ha		
Height aOD	c 57-65m AOD			
PROJECT CREATORS				
Organisation	Northamptonshire Arch	Northamptonshire Archaeology (NA)		
Project brief originator				
Project Design originator				
Director/Supervisor	Adrian Putlar (NA)			
Spapeer or funding body	Adrian Butler (NA)			
		liora nomes		
PROJECT DATE				
Start date	17 February 2011			
End date	11 March 2011			
ARCHIVES	Location	Contents		
Dhuadaal	(Accession no.)	0'te es souls		
Physical	NA store	Site records		
Digital	4			
Digital	lournal/monograph p	bliched or forthcoming or uppublished		
BIBLIOGRAPHY	client report (NA report)		
	Archaeological Geoph	ysical Survey on land at the former		
Title	Cranfield University campus, Silsoe, Bedfordshire, February			
	2011	· · · · ·		
Serial title & volume	11/68			
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ARCHAEOLOGICAL GEOPHYSICAL SURVEY ON LAND AT THE FORMER CRANFIELD UNIVERSITY CAMPUS, SILSOE, BEDFORDSHIRE FEBRUARY 2011

Abstract

Northamptonshire Archaeology was commissioned by Bloor Homes and Stamford Homes to carry out an archaeological geophysical survey on 10.3ha of land at the former Cranfield University campus, Silsoe, Bedfordshire. The survey has identified medieval or post-medieval ridge and furrow cultivation patterns. No further archaeological features were found, however, many magnetic anomalies were revealed representing various features such as land drains, ferrous pipelines, ferrous or ceramic debris in the soil, larger ferrous objects and magnetic disturbance caused by standing buildings, fences and other modern installations.

1 INTRODUCTION

Northamptonshire Archaeology (NA) was commissioned by Bloor Homes and Stamford Homes to carry out an archaeological geophysical survey on land at the former Cranfield University campus, Silsoe, Bedfordshire (centred on NGR: TL 0798 3513; Fig 1). A total area of approximately 10.3ha was investigated by detailed magnetometer survey. The fieldwork took place in February 2011.

2 TOPOGRAPHY AND GEOLOGY

The survey area covered six small areas comprising fields and sports fields (Fields 1-6, Fig 2), around the west, south and east edges of the former Cranfield University campus, which is located to the south of Silsoe. The site is bounded by agricultural land to the west and a house and gardens and scrub to the south. In the south-west corner is a woodland plantation. The east of the entire site runs alongside the Barton Road.

The ground is mainly level, with an elevation of 57-60m AOD, although Field 1 slopes up towards the north from 61 to 66m AOD.

The geology of the site is Gault Clay, with the possibility of alluvium along the watercourse which is now a drain between the sports fields. The sports fields have probably been levelled (MoLAS 2008).

3 ARCHAEOLOGICAL BACKGROUND

The whole site was agricultural fields before the construction of the campus in the 1970s (MoLAS 2008). There is plough damaged ridge and furrow visible on aerial photographs in the northern portion of the campus, and a roof tile which could be Roman was found near the playing fields (MoLAS 2008).

Saxon and medieval remains were found in evaluations to the north of Field 1 (Oake 2011). The Brief states that there is high potential for Saxon and medieval settlement, especially in the northern part of the site, ie Field 1. There is also potential for prehistoric and Roman remains across the site (Oake 2011).



Scale 1:10,000

4 METHODOLOGY

The survey was conducted with Bartington Grad 601-2, twin sensor array, vertical component fluxgate gradiometers (Bartington and Chapman 2003). These are standard instruments for archaeological survey and can resolve magnetic variations as slight as 0.1 nanotesla (nT).

Each field within the survey area was divided into 30m grid squares by means of a tape measure and optical square. The grids were tied into the Ordnance Survey national grid by measurement to field boundaries and other points of detail. The gradiometers were carried at a brisk but steady pace through each grid, collecting data along 1m spaced traverse lines. Measurements were automatically triggered every 0.25m along the traverses, giving a total of 3600 measurements per grid.

All fieldwork methods complied with the Method Statement, and guidelines issued by English Heritage and by the Institute for Archaeologists (NA 2011; EH 2008; IfA forthcoming).

The survey data was processed using Geoplot 3.00v software. Striping, caused by slight mismatches in sensor balance, was removed using the 'Zero Mean Traverse' function and destaggering of the data was performed as necessary.

The processed data are presented in this report in the form of greyscale plots (scale $\pm 4nT$ to -4nT black ~ white) which have been scaled, rotated and resampled (georectified) for display against the Ordnance Survey base mapping (Fig 2). An interpretative plot has been produced and is shown overlain onto the data in Figure 3. It is to these two figures that the following results refer.

5 SURVEY RESULTS

Field 1

This was the largest and the only arable field surveyed. It is situated between the university campus to the east and agricultural land to the west, separated by a hedge and a track. A new housing development was underway to the north, and the south side is bounded by a hedge and drain. At the south of the field were three low overgrown bunds or heaps of soil aligned west to east, and the ground in between them was very muddy. As a result this part of the field was not surveyed. Two similar low heaps were situated parallel to and near the middle of the western field boundary. The eastern lower one was evidenced by a line of noise in the data, while the larger western one was not walked over.

The data indicates several linear chains of paired positive and negative (dipolar) anomalies, which cross the field aligned north-west to south east. These are likely to represent ceramic land drains. Along the southern half of the eastern boundary is an area of magnetic disturbance. This could have been caused by a ferrous metal pipe which was lying above the ground surface along the edge of the neighbouring piece of land. Another area of magnetic disturbance was detected near the middle of the northern part of the eastern boundary, which runs up to the lawns at the back of the university housing. This magnetic disturbance could be caused by a deposit of ceramic waste (brick/tile) in the plough soil.

Across the field are several dipolar magnetic anomalies, these are likely to indicate pieces of ferrous debris in the plough soil. A stronger dipolar anomaly near the north of the field probably reflects a larger piece of ferrous material. Near to this item are two areas of magnetic noise (many positive and negative anomalies), which could represent areas of ferrous or ceramic debris.

In the south-east corner of the field a patchy linear anomaly probably indicates a ferrous pipe.

Field 2 and Field 3

These two areas are open pasture to the north (Field 2) and east (Field 3) of a woodland plantation in the south-west of the site. Parts of the south of Field 3 were not surveyable as they were overgrown or covered with cut wood.

A dipolar anomaly detected in the middle of the field is likely to represent a piece of ferrous debris. A group of dipolar anomalies are similarly likely to represent ferrous debris near the entrance to Field 1.

A linear chain of dipolar anomalies is aligned north-west to south-east; this is likely to be caused by a ceramic land drain.

Field 4

This is a small rectangular sports field in the middle of the surveyed area. It lies to the east of Field 2 and north of a larger sports field (Field 5), from which it is separated by a drain. Sports pavilions and other buildings are immediately adjacent to the field to the east and tennis courts to the north are separated by a conifer hedge.

Areas of magnetic disturbance occur along the east and south sides of the field. The disturbance on the east is probably related to the buildings. The disturbance along the south side is probably related to some apparently derelict electrical installations, while the strong positive anomaly in the south-west corner could be related to the footbridge.

A linear chain of dipolar anomalies aligned north-west to south-east, is likely to indicate another ceramic land drain.

Several strong dipolar anomalies occur in the results for this field. As previously mentioned these are likely to represent ferrous objects. One in the south-east corner was probably caused by a lawn roller, another one along the eastern side was a metal sheet covering a void. Others may represent post sockets for goal posts.

Field 5

This is a large sports field in the south-east of the surveyed area. It is separated from Field 4 and Field 6 by a ditch along its northern side, and the eastern side is separated from the Barton Road by a bank with a line of trees and a ditch on the road side. The south and west boundaries are formed of metal fences.

Parallel linear positive anomalies aligned north-west to south-east were located across the whole field. These are typical of the response of medieval or post-medieval ridge and furrow cultivation patterns.

Other linear anomalies aligned west to east in the middle of the field, are likely once again to be land drains. Slightly stronger linear anomalies aligned south-west to north-east are also likely to be land drains, perhaps main spinal drains fed by the smaller drains.

A linear feature consisting of strong dipolar anomalies aligned almost north to south indicates the presence of a ferrous pipeline.

Many intense dipolar anomalies occur across the field, probably reflecting ferrous objects, perhaps sporting equipment. A number of them were caused by goal posts standing in the field at the time of the survey, as depicted on Figure 3.

An area of magnetic disturbance along the middle of the northern side is probably linked to the adjacent drain, footbridge and building. Another area of magnetic disturbance, in the south-east corner is probably caused by the small gas installation building there.

A short stretch of strong dipolar anomalies in the south-west corner perhaps indicate another ferrous pipeline and seem to coincide with the location of two concrete slabs on the ground.

Field 6

This field is a grassed area within the campus grounds. Much of the field is covered by an area of magnetic noise, likely to be caused by ferrous or ceramic debris, with some stronger dipolar anomalies representing larger ferrous objects. The area of magnetic disturbance to the north of the field is probably related to ferrous installations in the weather station. Another area of magnetic disturbance occurs to the east of the field perhaps indicating some ferrous object in the ditch.

A linear feature consisting of strong dipolar anomalies aligned north-west to southeast in the south-east corner indicates a ferrous pipeline, which appears to turn towards the south and continue into Field 5.

6 CONCLUSION

The magnetometer survey results did not show any anomalies that represent obvious archaeological features. However, medieval or post-medieval ridge and furrow cultivation patterns were detected in the south-eastern field (Field 5). Other magnetic anomalies were revealed which probably indicate ceramic land drains and ferrous pipelines. There were several areas of magnetic disturbance mainly reflecting standing buildings, fences, electrical installations and an above ground pipe. Several areas of magnetic noise indicate spreads of ferrous or ceramic debris in the soil. While many discrete dipolar anomalies reflect ferrous debris or larger ferrous objects, especially on the two sports fields.

BIBLIOGRAPHY

Bartington, G, and Chapman, C, 2003 A high-stability fluxgate magnetic gradiometer for shallow geophysical survey applications, *Archaeological Prospection*, **11**, 19-34

EH 2008 Geophysical Survey in Archaeological Field Evaluation, English Heritage

If A forthcoming *Standard and Guidance for Archaeological Geophysical Survey*, Institute for Archaeologists Technical Paper

MoLAS 2008 Cranfield University, Silsoe Campus, Silsoe, MK45, County of Bedfordshire, Technical Annex 3: Archaeology, Museum of London Archaeology Service June 2008

Oake, M 2011 Brief for a programme of archaeological investigation, recording, analysis and publication of Land at Barton road, Silsoe, Bedfordshire, Archaeology Team, Development Management, Sustainable Communities, Central Bedfordshire Council, 18 January 2011

Northamptonshire Archaeology 2011 Former Cranfield university campus, Silsoe, Bedfordshire, archaeological geophysical survey, method statement, 09 February 2011





Magnetometer Survey Results Fig 2





Magnetometer Survey Interpretation Fig 3



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