Northamptonshire Archaeology

Archaeological Geophysical Survey at Cardington Airfield, Bedfordshire

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QUALITY CONTROL

	Print name	Signed	Date
Checked by	Pat Chapman	PC	16/05/11
Verified by	Adrian Butler	AJB	16/05/11
Approved by	Andy Chapman	AC	16/05/11

OASIS REPORT FORM

PROJECT DETAILS		
Project name	Archaeological Geophysical Survey at Cardington Airfield, Bedfordshire	
Short description	Northamptonshire Archaeology was commissioned to carry out magnetometer survey in advance of the construction of two ponds at Cardington Airfield, Bedfordshire. Two blocks of land, with a total area of c 4.4ha, were subject to detailed magnetometer survey. This work revealed at least two enclosures of probable Iron Age or Romano-British date, and various other features including two possible kilns. Further anomalies were detected which indicate the presence of modern pipelines and an area of disturbed ground containing a substantial amount of ferrous debris.	
Project type	Geophysical survey	
Site status	None	
Previous work	Unknown	
Current Land use	Airfield	
Future work	Unknown	
Monument type/ period	Iron Age or Romano-British enclosures. Possible kilns	
Significant finds		
PROJECT LOCATION		
County	Bedfordshire	
Site address	Cardington Airfield	
Study area	*c* 4.4ha	
OS Easting & Northing	TL 085 467	
Height OD	10 – 15 m AOD	
PROJECT CREATORS		
Organisation	Northamptonshire Archaeology (NA)	
Project brief originator	Dr Isabel Lisboa, ArchaeoLogica Ltd	
Project Design originator	NA	
Director/Supervisor	John Walford	
Project Manager	Adrian Butler	
Sponsor or funding body	Fosburn / Bellcross	
PROJECT DATE		
Start date	11 April 2011	
End date	13 May 2011	
ARCHIVES	Location	Content
Physical	N/A	
Paper	NA	Site survey records
Digital	NA	Geophysical survey & GIS data
BIBLIOGRAPHY	Journal/monograph, published or forthcoming, or unpublished client report	
Title	Archaeological Geophysical Survey at Cardington Airfield, Bedfordshire	
Serial title & volume	Northamptonshire Archaeology Reports 11/112	
Author(s)	John Walford	
Page numbers	6	
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ARCHAEOLOGICAL GEOPHYSICAL SURVEY AT CARDINGTON AIRFIELD, BEDFORDSHIRE APRIL 2011

ABSTRACT

Northamptonshire Archaeology was commissioned to carry out magnetometer survey in advance of the construction of two ponds at Cardington Airfield, Bedfordshire. Two blocks of land, with a total area of c 4.4ha, were subject to detailed magnetometer survey. This work revealed at least two enclosures of probable Iron Age or Romano-British date, and various other features including two possible kilns. Further anomalies were detected which indicate the presence of modern pipelines and an area of disturbed ground containing a substantial amount of ferrous debris.

1 INTRODUCTION

Northamptonshire Archaeology (NA) was commissioned by ArchaeoLogica Ltd to conduct an archaeological geophysical survey in advance of the construction of two ponds at Cardington Airfield, Bedfordshire. One of the proposed ponds was to be constructed towards the north-eastern part of the airfield, at NGR TL 088, 469, and the other to the south, at NGR TL 085, 464 (Fig 1).

The fieldwork was conducted on 11-12th April 2011, and comprised a detailed magnetic gradiometer survey of each pond site. Approximately 1.8ha of land was surveyed to cover the footprint of the northern pond. To the south, an area of 2.6ha was surveyed. This comprised a 1.8ha block across the footprint of the second pond, followed by a 0.8ha extension to the north to define the extent of an enclosure which the initial survey had identified.

2 TOPOGRAPHY AND GEOLOGY

Cardington Airfield lies to the south of Bedford, in the parishes of Cardington and Eastcott. It stands at an elevation of *c* 30m aOD and is largely flat, with only a very gradual slope down towards the south and east.

The geology of the site comprises terrace deposits of sand and gravel overlying Oxford Clay (BGS 2011)

3 ARCHAEOLOGICAL BACKGROUND

The landscape around Cardington Airfield is rich in archaeological sites of prehistoric to Romano-British date, many of which have been identified by aerial survey. Within the airfield itself, although at some distance from the present survey areas, archaeological trenching has revealed ditches of Iron Age date (Dodds and Weaver 2004, Lambert 2008). And just outside the northern boundary of the airfield (but within *c* 50m of Area 1) excavation on the line of the Bedford Wixams water main revealed a complex of enclosures of late prehistoric and Romano-British date (I Lisboa, pers comm).

The airfield at Cardington was opened as an airship base during the First World War and was developed further during the 1920s to provide facilities for the design and construction of the R100 and R101 (AHT 2011). It appears that the majority of the airfield buildings were located around and to the north of the two large airship sheds, and that the remainder of the airfield (including the present survey areas) was always relatively open and undeveloped.

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 survey area was manually divided into 30m grid squares by means of a tape measure and optical square. Tie in measurements were taken to field boundaries and other relevant points of detail. The gradiometers were carried at a brisk but steady pace through each grid square, 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 guidelines issued by English Heritage and by the Institute for Archaeologists (EH 2008; Gaffney, IfA forthcoming).

The survey data was processed using Geoplot 3.00u 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 is presented in this report in the form of grey-tone plots, at scales appropriate to the dataset (+/- 4nT black/white, or otherwise as stated). The grey-tone plots have been scaled, rotated and resampled (georectified) for display against the Ordnance Survey base mapping (Figs 2 and 4). Interpretative overlays have been produced and are shown in Figures 3 and 5.

5 SURVEY RESULTS

5.1 Area 1 (Figs 2-3)

The data from this area is dominated by intense magnetic anomalies (discussed below) which relate to pipelines and various modern debris. But there is also a set of less pronounced positive linear anomalies, located towards the northern end of the area, which represent parts of a rectilinear ditched enclosure. The date of this enclosure is uncertain, but it perhaps represents a further part of the Wixams site excavated almost immediately to the north.

Further south are a pair of positive anomalies which attain a maximum intensities of 18nT and 31nT. These are much less magnetic than typical ferrous anomalies, and most probably relate to concentrations of burnt sediment or ceramic material. It is possible, although by no means certain, that they represent kilns or similar high-temperature industrial features.

Three large but magnetically subdued anomalies in this dataset are of probable geological origin. Such anomalies are commonly encountered in magnetic survey data, but they have not been well studied and their precise cause or causes remain obscure.

One intensely positive linear anomaly, which passes from north-west to south-east through the southern part of this survey area, represents a pipeline. A broader, but similarly aligned, anomaly located towards the northern edge of the area coincides with the known location of a sewer. Three other linear anomalies on similar alignments perhaps also represent pipes, although they are somewhat less magnetic than typical pipeline anomalies.

A general spread of magnetic 'noise' occurs across much of the northern and eastern parts of the survey area. Much of this probably indicates a relatively superficial scatter of ferrous debris and / or ceramic rubble. But there is one large group of intense ferrous anomalies which appears to indicate more substantial pieces of iron or steel debris. Also three clusters of very large positive anomalies are suggestive of rubbish pits backfilled with considerable amounts of magnetically enhanced ferrous and/or ceramic materials.

5.2 Area 2 (Figs 4-5)

The survey of this area detected a set of positive linear and curvilinear anomalies which represent a large ditched enclosure of probable Iron Age or Romano-British date. The enclosure has linear sides to the south and east and is curvilinear to the north and west, measuring 80m north-south by 70m east-west, an area of 0.45ha. It appears to have a narrow entrance in its eastern side. It contains a number of internal features, including a ditch forming a D-shaped sub-enclosure in the south-eastern corner of the main enclosure.

Weakly positive linear anomalies extend to the east and west of the enclosure, apparently represent continuations of its southern boundary ditch. To the south of this there are a few localised positive anomalies, which may indicate small pits, and also a very tenuous curvilinear anomaly which is tentatively suggested to represent a second, much smaller, ditched enclosure.

There are further anomalies of possible archaeological interest at the north-eastern corner of the survey area. Several intersecting linear anomalies may represent short lengths of ditch, and there some magnetic noise of uncertain significance.

Two intensely positive linear anomalies which cut across the south-western corner of the survey area represent a pair of pipelines. A similarly magnetic anomaly which passes across the pipes from west to east, before terminating abruptly, is of obscure significance.

6 CONCLUSION

The survey has located features of archaeological significance in both of the proposed pond areas. In Area 1 there is part of a rectilinear ditched enclosure which is probably related to the enclosure ditch excavated immediately to the north (I Lisboa, pers comm). There are also two smaller anomalies which are of uncertain significance but could represent kilns. In Area 2 there is a large ditched enclosure, of probable Iron Age or Romano-British date, part of which overlaps with the footprint of the proposed pond. Several other anomalies of potential archaeological interest were also identified.

Apart from archaeological remains, the survey has detected some modern features which may have an impact on the proposed development. In particular, Area 1 is crossed by a number of pipelines and shows evidence of extensive modern disturbance on its eastern side. The large number of intense ferrous anomalies in this area suggests the presence either of large rubbish pits or, less likely, structural remains (such as reinforced concrete foundations, etc).

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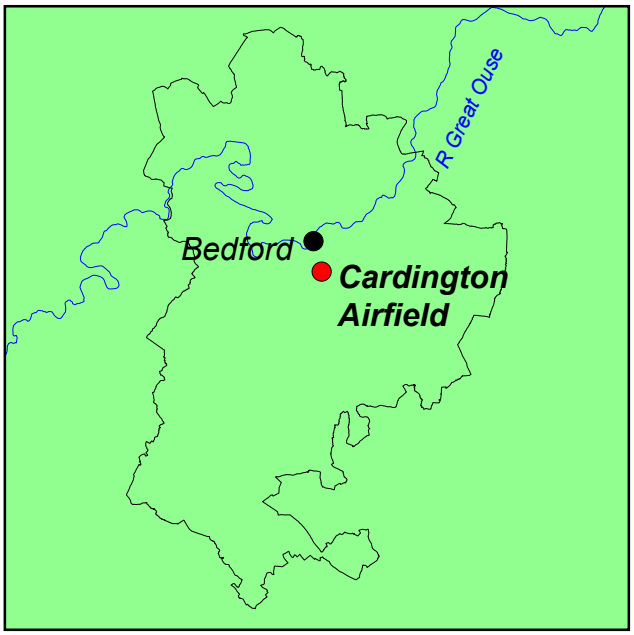
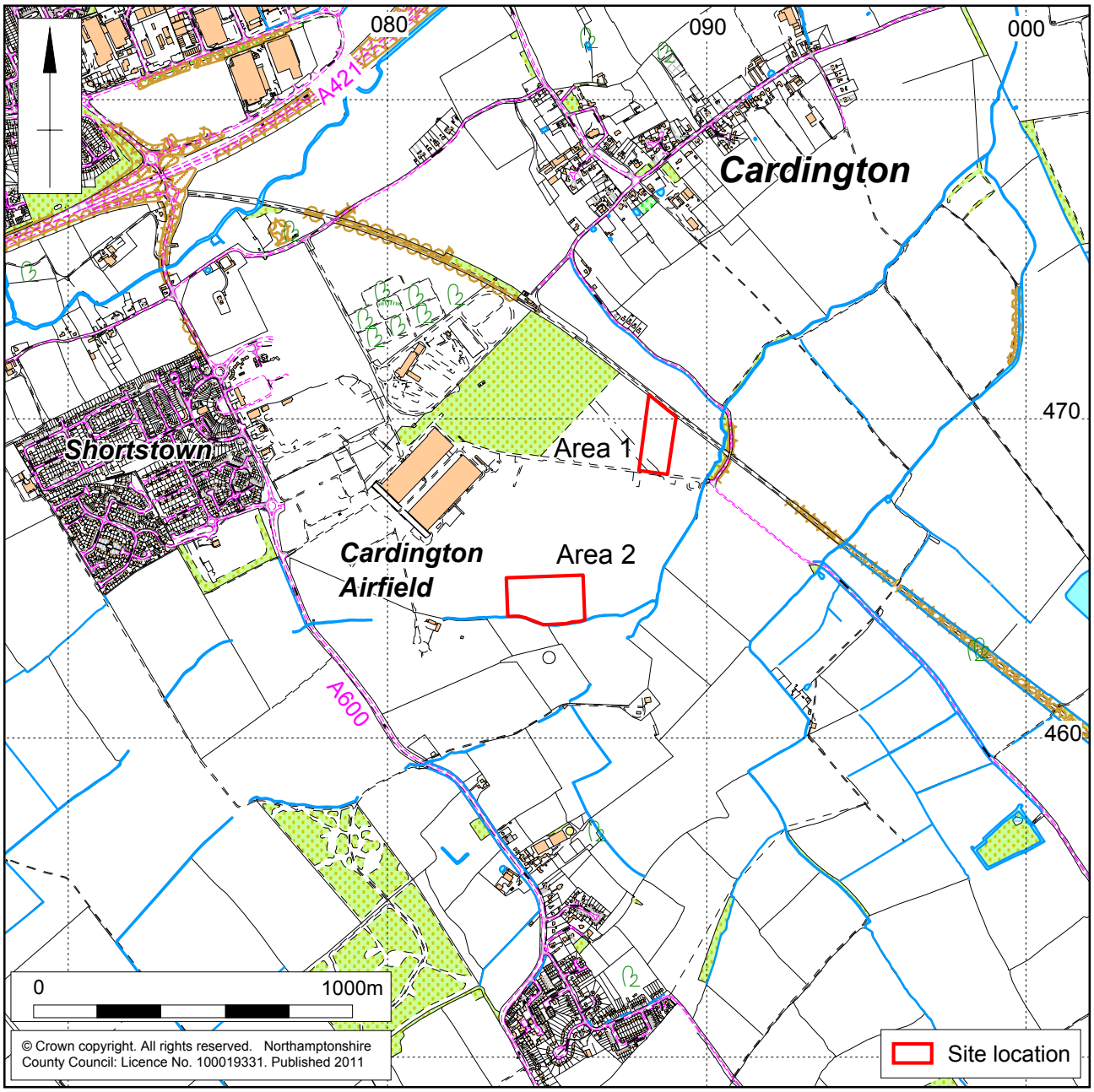
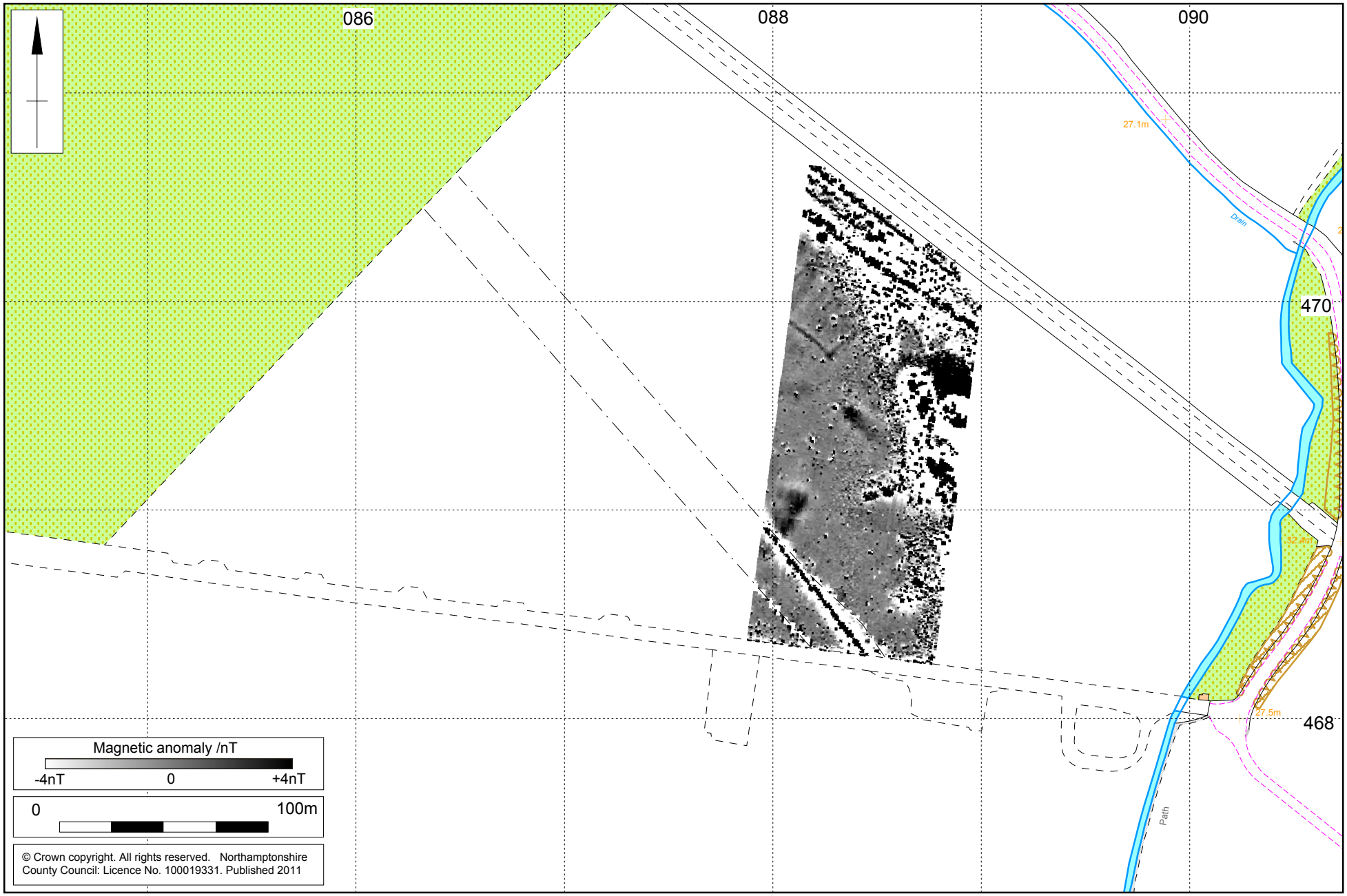
A Service of Northamptonshire County Council 16 May 2011





Scale 1:20,000

Site Location Fig 1



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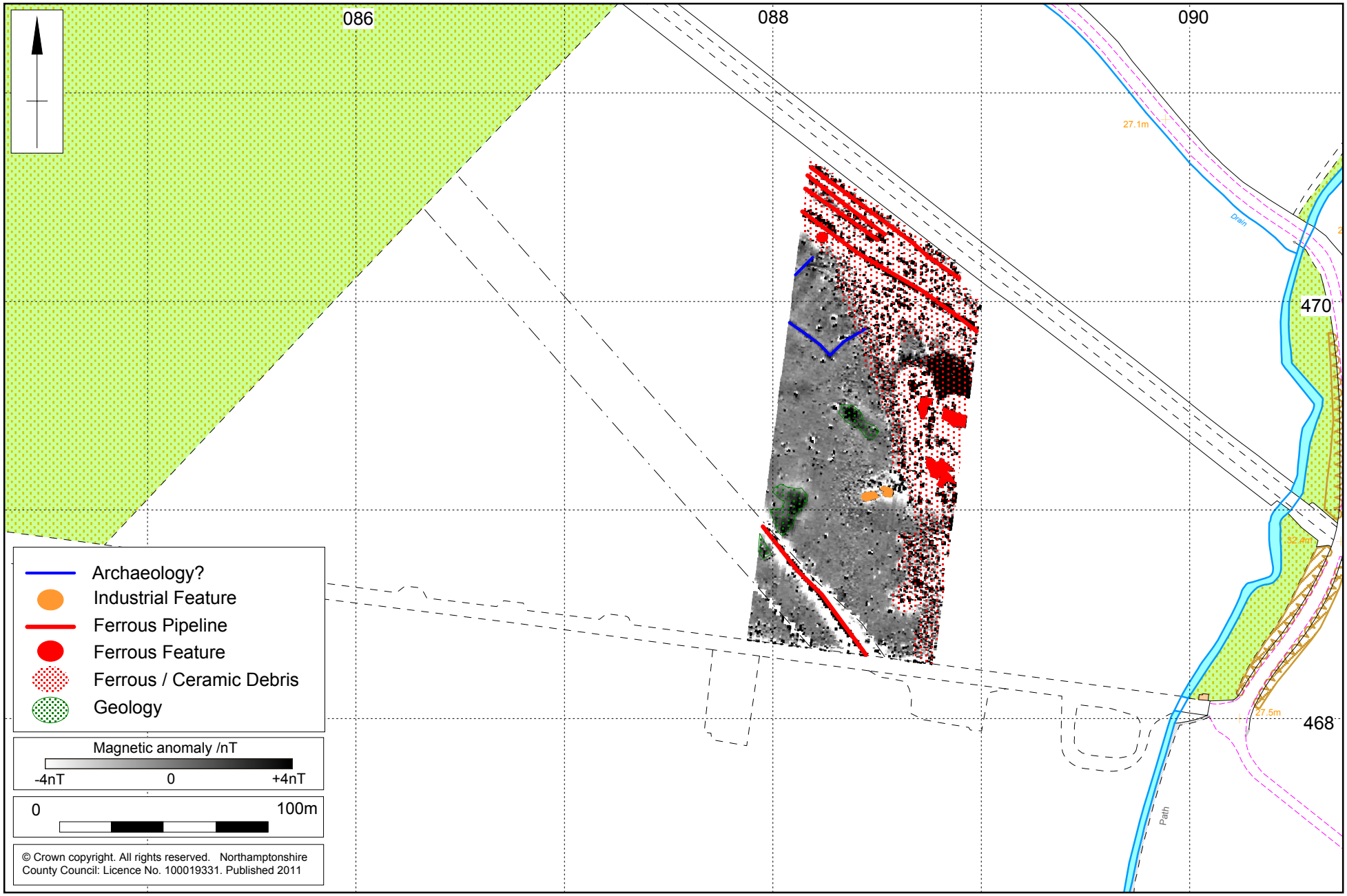
Magnetometer Survey Results, Area 1 Fig 2



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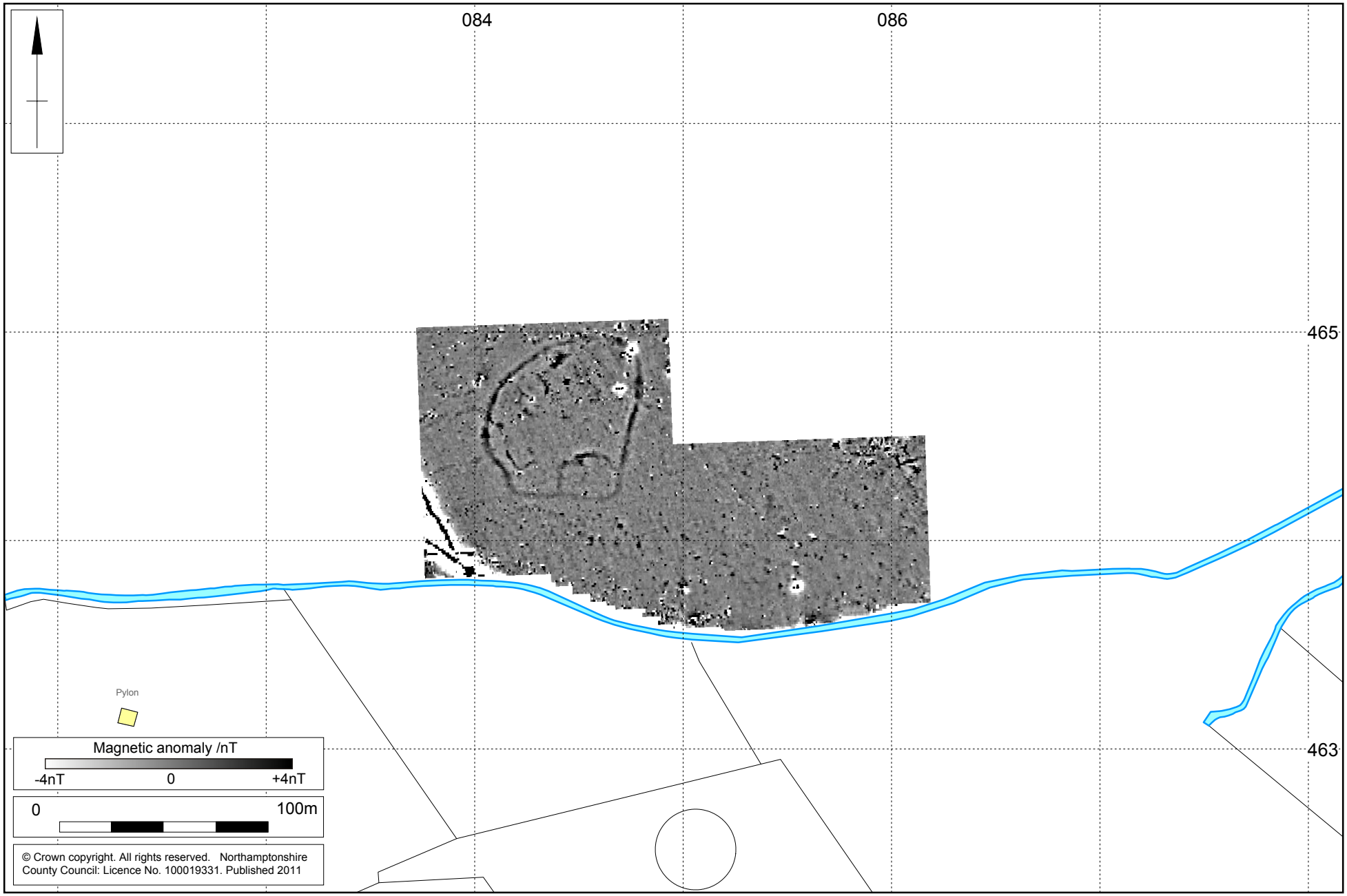
Magnetometer Survey Interpretation, Area 1 Fig 3



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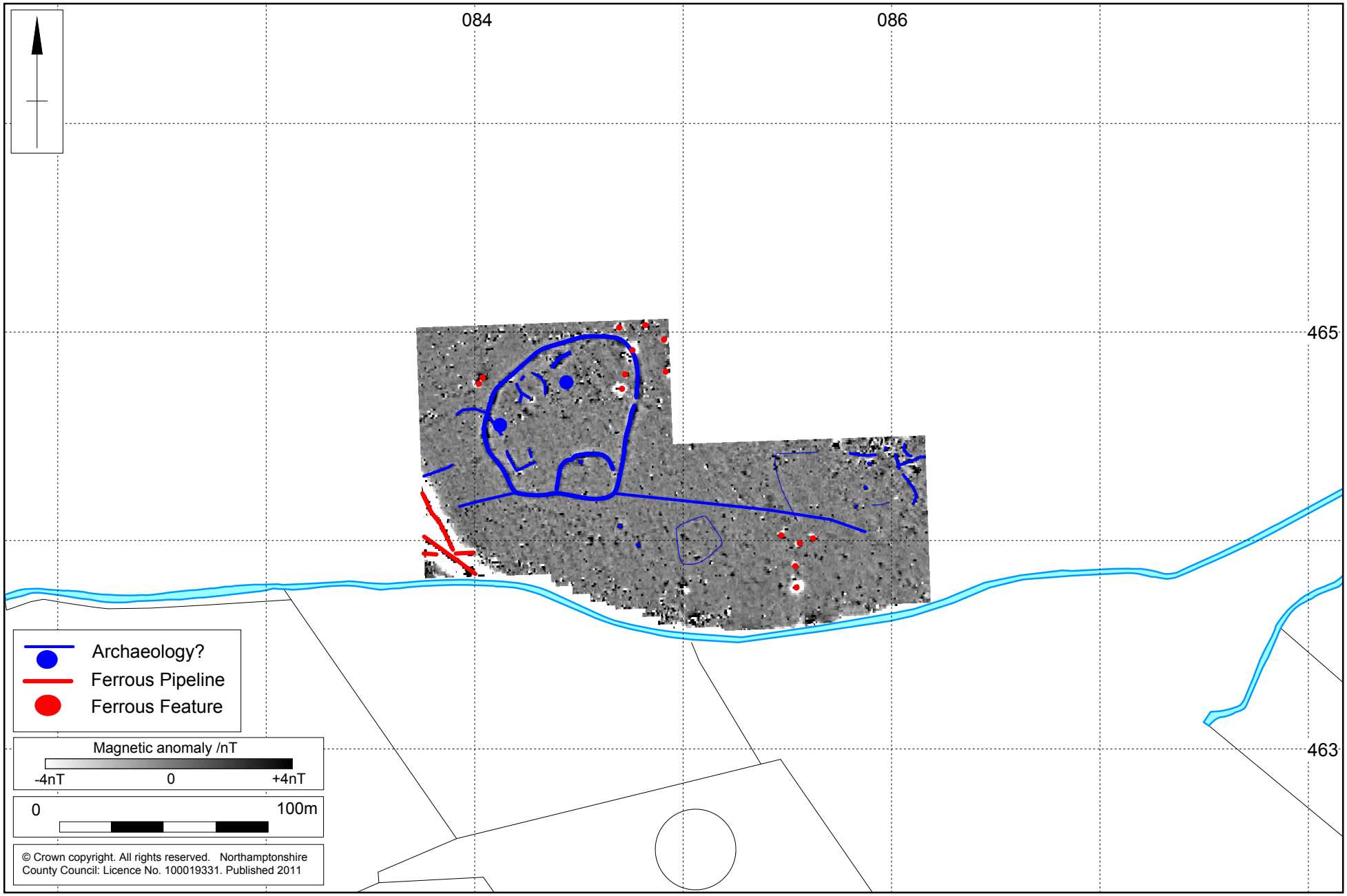
Magnetometer Survey Results, Area 2 Fig 4



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Magnetometer Survey Interpretation, Area 2 Fig 5

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