



Northamptonshire Archaeology

Archaeological Geophysical Survey at Cardington Airfield, Bedfordshire – Phases 1 & 2



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QUALITY CONTROL

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CARDINGTON AIRFIELD

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 7.4ha, 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, railway track beds 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 7.4ha	
OS Easting & Northing	TL 085 467	
Height OD	c 30 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	19 September 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BIBLIOGRAPHY	Journal/monograph, published or forthcoming, or unpublished client report	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 11/187	
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**ARCHAEOLOGICAL GEOPHYSICAL SURVEY AT
CARDINGTON AIRFIELD, BEDFORDSHIRE
APRIL – AUGUST 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 7.4ha, were subject to detailed magnetometer survey. This work revealed 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, railway track beds 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 (NGR TL 088 469), and the other to the south (NGR TL 085 464) (Fig 1).

The initial phase of fieldwork was conducted on 11th-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 trace the full extent of an enclosure which the survey had revealed.

Following revisions to the construction plans, a second phase of fieldwork was commissioned, and was undertaken on 5th August 2011. Further detailed magnetometer survey was conducted around Area 1, investigating one block of land immediately west of the originally proposed pond location and another block extending to the south and east (Fig 1).

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 land is mainly under rough grass, with tarmac tracks and hardstandings in places. A few small parts of the site are obstructed by thorns and briars, which proved to be a hindrance to the survey.

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 archaeologically rich, with many sites of prehistoric to Romano-British date having 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). Also, just outside the northern boundary of the airfield (but within c 50m of Area 1), excavation on the line of the Bedford Wixams watermain 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 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; 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 suggests the presence of a rectangular ditched enclosure, measuring 36m long by at least 28m wide. Three sides are apparent as weakly positive linear anomalies, whilst the fourth is obscured by intense magnetic noise of more recent origin (see below). The date of this enclosure is uncertain, but it perhaps represents a further part of the site excavated to the north, on the line of the Bedford Wixams watermain.

To the south of the enclosure 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 indicate 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.

The northernmost part of this survey area is dominated by intense magnetic noise, within which four almost parallel linear trends can be discerned. Following examination of the historic mapping for the site, it is clear that three of the alignments coincide with the former locations of railway sidings. The fourth, and most southerly, of the alignments is less readily explicable, but may relate to a disused sewer which passes through the area. Generally speaking, the noisiness of the data in this area can be attributed to the presence of much ferrous debris, clinker and other magnetic hardcore material within the soil.

Similar areas of magnetic noise occur across many parts of Area 1, indicating further areas of disturbed ground with dense scatters of magnetic debris. There are also a number of very large ferrous dipoles which probably indicate the presence of substantial pieces of buried scrap. A particularly regular alignment of small ferrous anomalies occurs towards the southern end of the survey area, and perhaps represents the remains of a lighting installation or some other piece of airfield infrastructure.

One highly magnetic linear anomaly runs through the survey area on a south-east to north-west alignment. Towards its northern end it becomes somewhat disjointed and weakens substantially. It is quite likely that this anomaly represents a pipeline, with the disjointed part perhaps indicating a section which has been disrupted or partially removed.

Away from the areas of intense magnetic disturbance, there are several large but magnetically subdued anomalies. Such anomalies are commonly encountered in magnetic survey data, and are generally attributed to geological or pedological variations. However they have not been well studied, and their precise cause or causes remain obscure.

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. This enclosure measures 80m north-south by 70m east-west and encompasses an area of 0.45ha. It has straight sides to the south and east and a curving side to the north and west. It appears to have a narrow entrance in its eastern side and it contains a number

of internal features, including a ditch forming a D-shaped sub-enclosure within the south-eastern corner.

Weakly positive linear anomalies extend to the east and west of the enclosure, apparently representing 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 a rectilinear ditched enclosure which is probably related to the enclosure ditches 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 pipeline 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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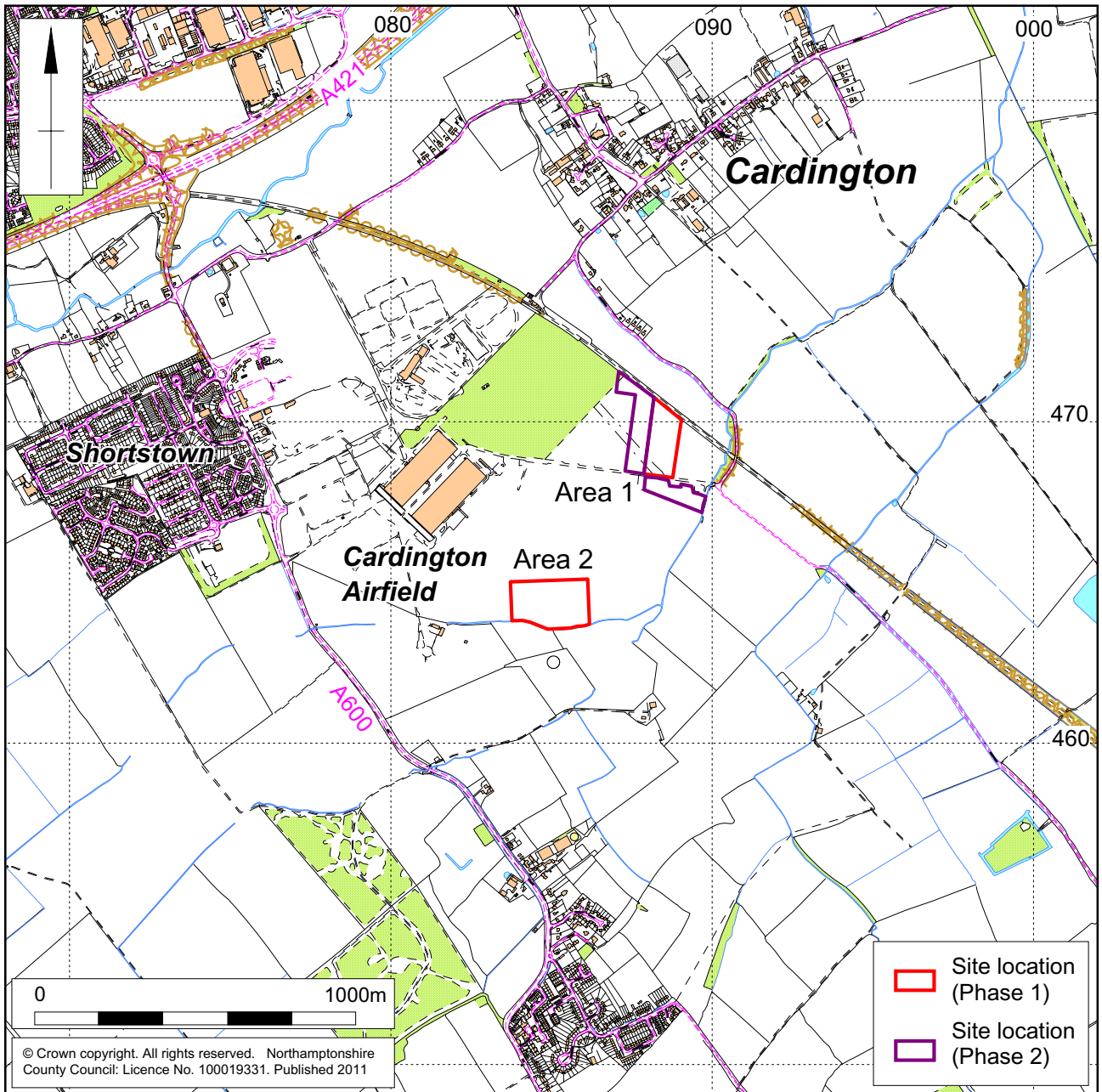
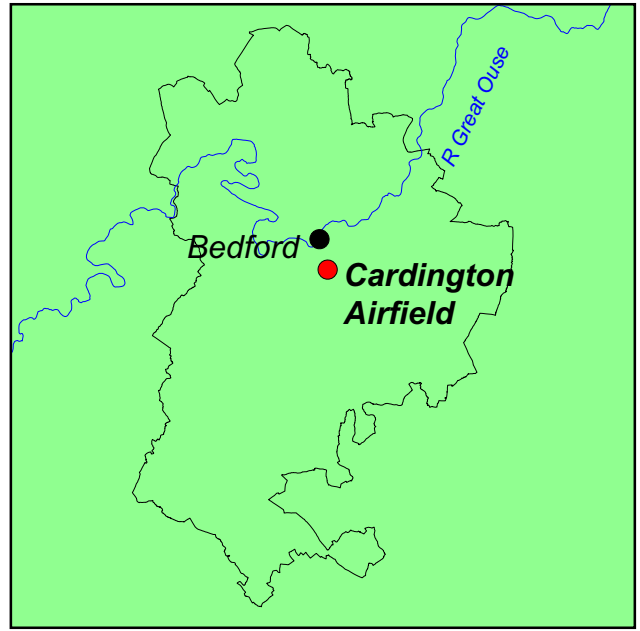
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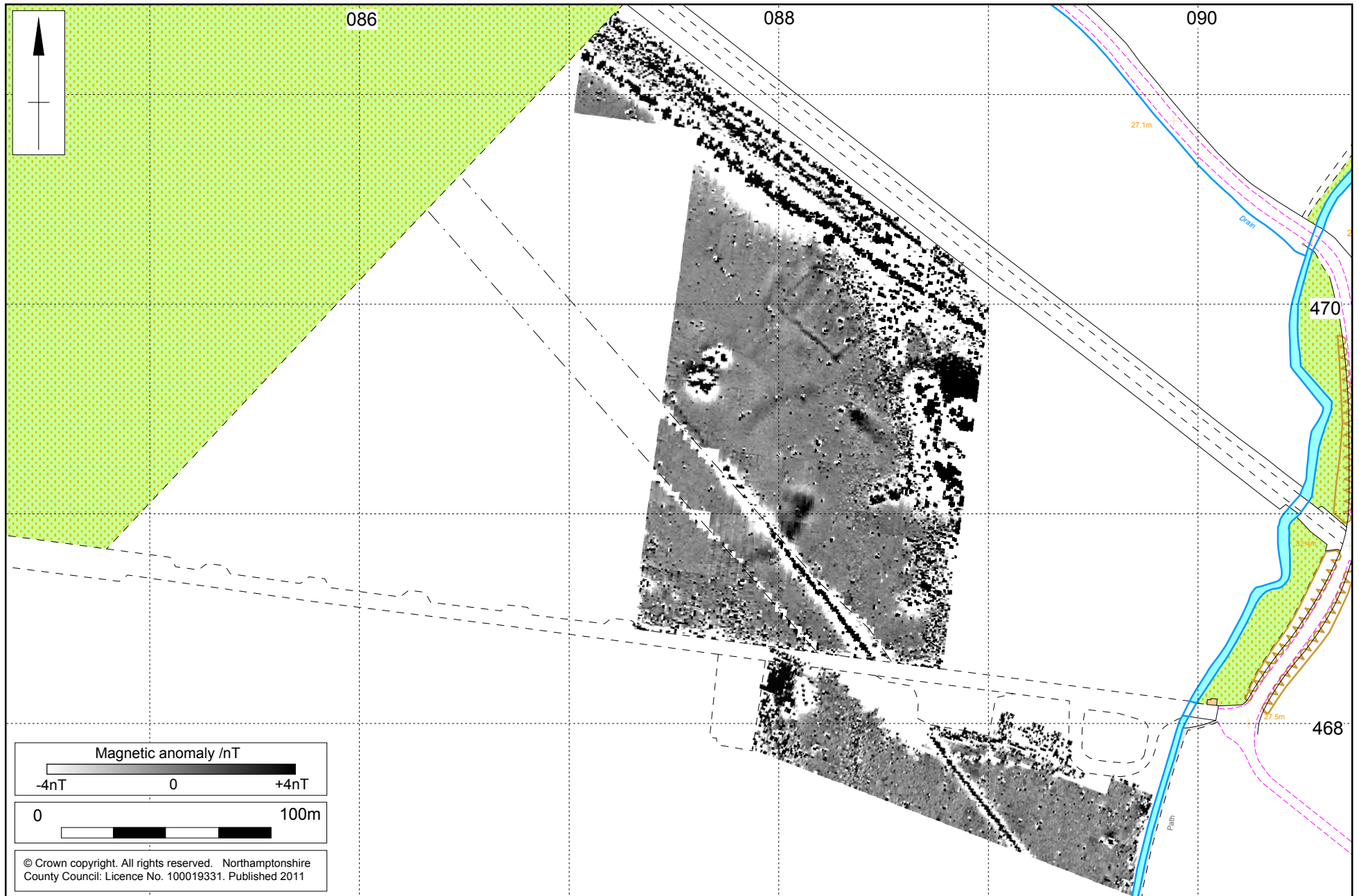
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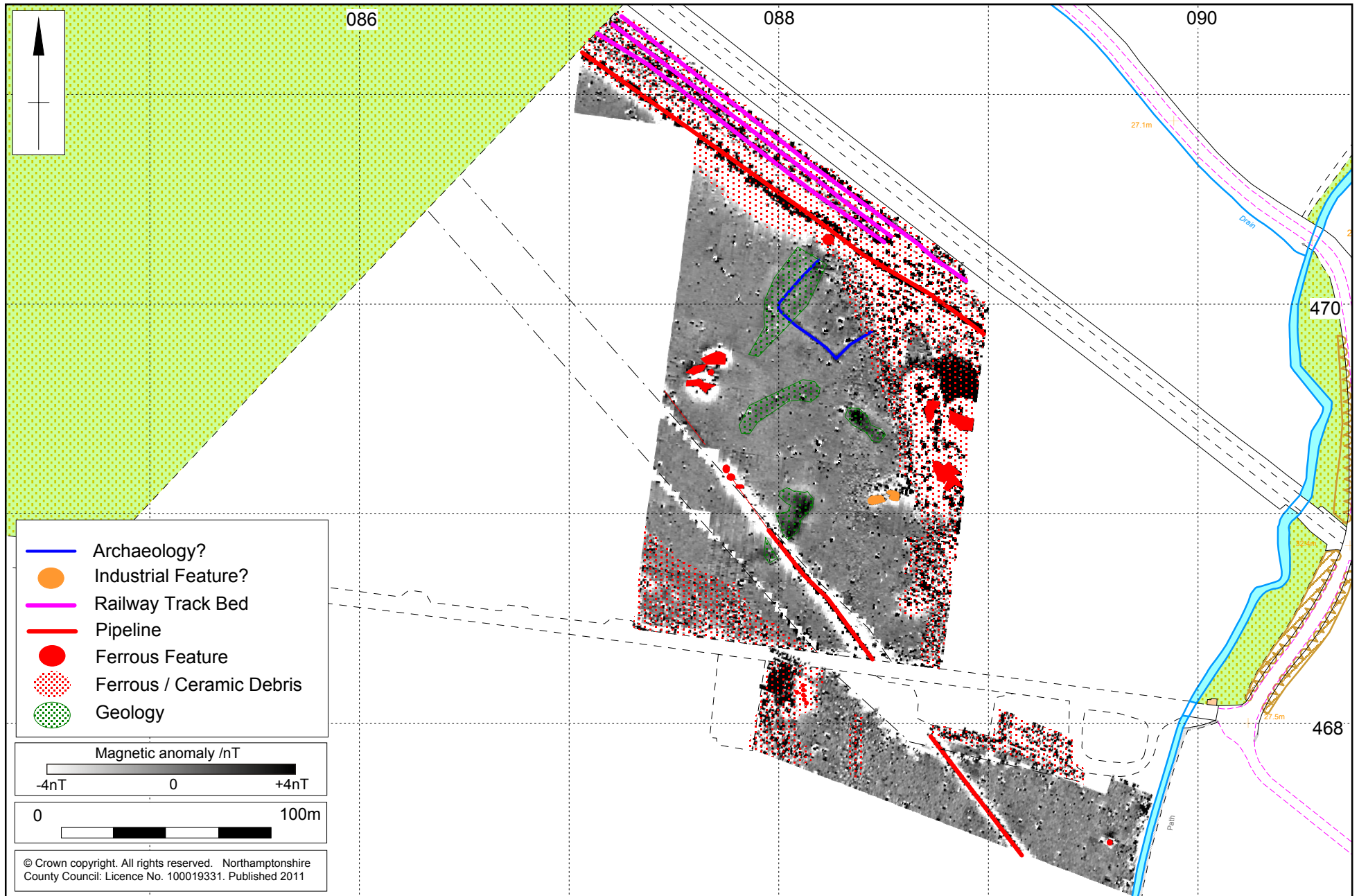
Scale 1:20,000

Site Location Fig 1



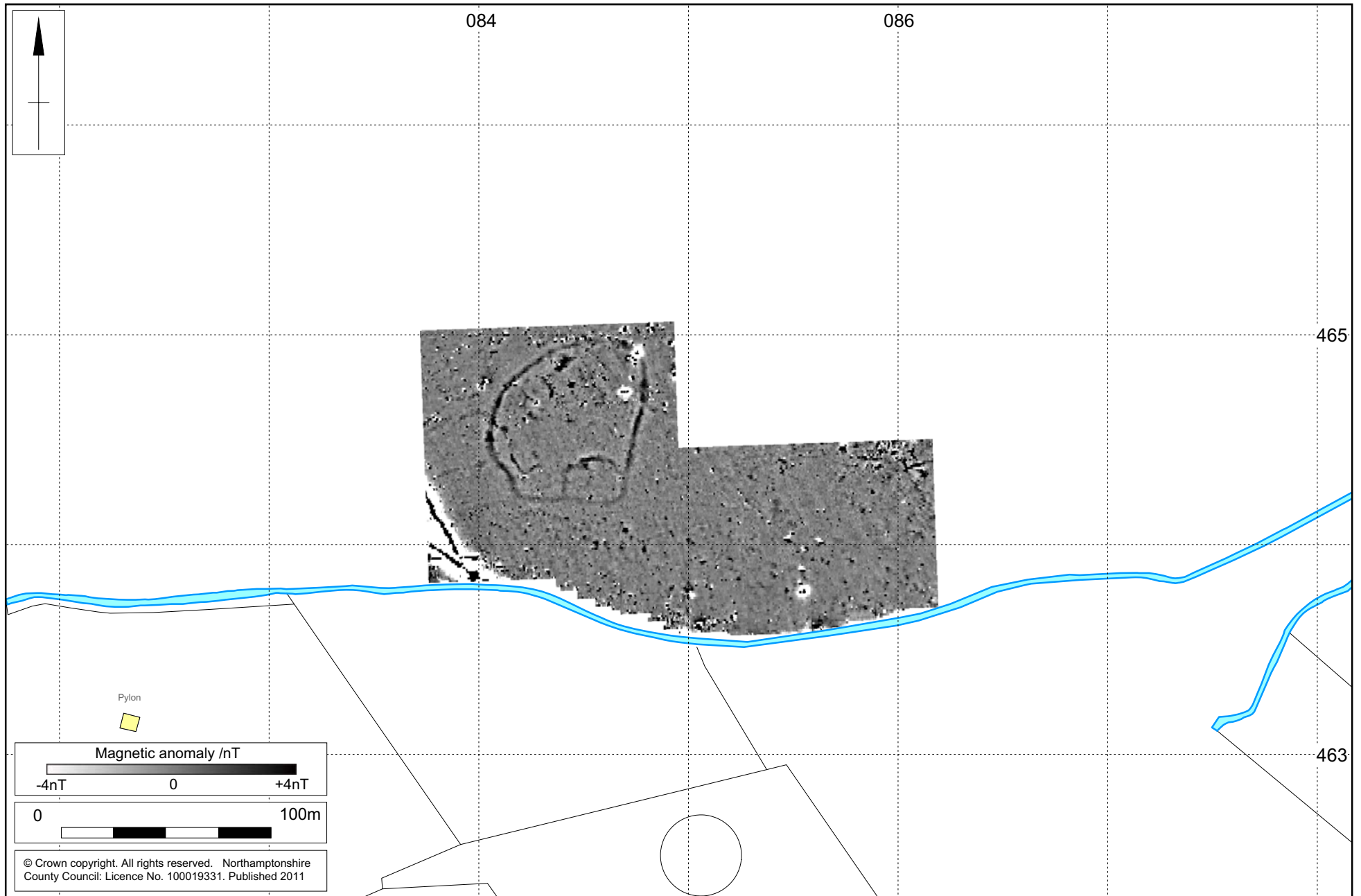
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Magnetometer Survey Results, Area 1 Fig 2



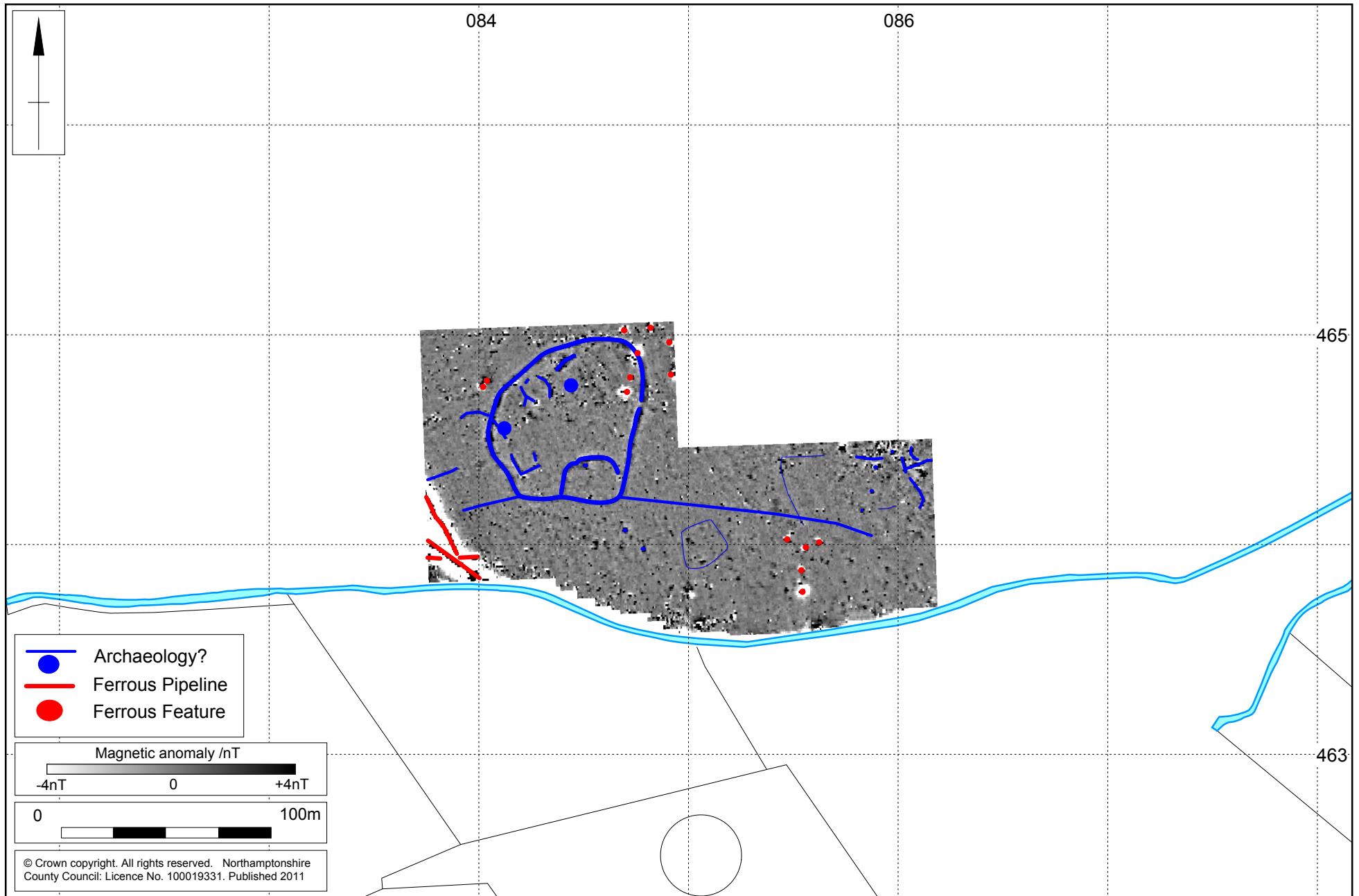
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Magnetometer Survey Interpretation, Area 1 Fig 3



1:2500

Magnetometer Survey Results, Area 2 Fig 4



1:2500

Magnetometer Survey Interpretation, Area 2 Fig 5



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