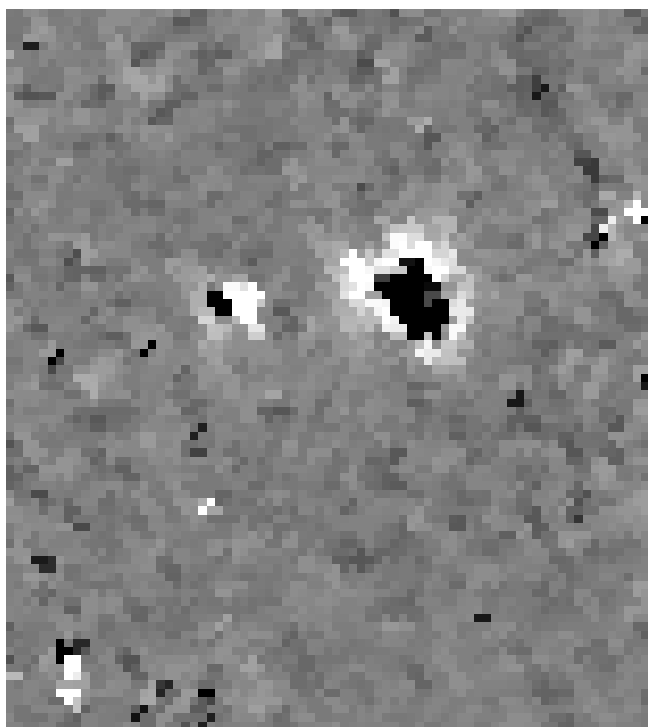




Northamptonshire Archaeology

Archaeological Geophysical Survey on land at Arkwright Avenue, Belper, Derbyshire



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Report 10/206

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QUALITY CONTROL

	Print name	Signed	Date
Checked by	Pat Chapman	<i>PC</i>	01/12/10
Verified & Approved by	Andy Chapman	<i>AC</i>	01/12/10

OASIS REPORT FORM

PROJECT DETAILS		
Project name	Archaeological Geophysical Survey on land at Arkwright Avenue, Belper, Derbyshire	
Short description	Northamptonshire Archaeology was commissioned to carry out a magnetometer survey on approximately two hectares of land on the north-eastern edge of Belper, Derbyshire. Survey results identified an archaeological feature representing a pit or kiln 4m in diameter in the centre of the site. A geological change was also located towards the south of the site.	
Project type	Geophysical survey	
Site status	None	
Previous work	Unknown	
Current Land use	Arable	
Future work	Unknown	
Monument type/ period	None	
Significant finds	None	
PROJECT LOCATION		
County	Derbyshire	
Site address	Arkwright Avenue, Belper	
Study area	2ha	
OS Easting & Northing	4364 3486	
Height OD	105m – 122m aOD	
PROJECT CREATORS		
Organisation	Northamptonshire Archaeology (NA)	
Project brief originator	CgMs Consulting	
Project Design originator	NA	
Director/Supervisor	Heather Smith	
Project Manager	Adrian Butler	
Sponsor or funding body	CgMs Consulting	
PROJECT DATE		
Start date	15 November 2010	
End date	01 December 2010	
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BIBLIOGRAPHY	Journal/monograph, published or forthcoming, or unpublished client report	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 on land at Arkwright Avenue, Belper, Derbyshire	
Serial title & volume	Northamptonshire Archaeology Reports 10/206	
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Front Cover: Magnetometer data plot detail

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Fig 3	Detailed Magnetometer Survey Interpretation	1:2,500

ARCHAEOLOGICAL GEOPHYSICAL SURVEY ON LAND AT ARKWRIGHT AVENUE, BELPER, DERBYSHIRE

November 2010

ABSTRACT

Northamptonshire Archaeology was commissioned to carry out a magnetometer survey on approximately two hectares of land on the north-eastern edge of Belper, Derbyshire. Survey results identified an archaeological feature representing a pit or kiln 4m in diameter towards the centre of the site. A geological change was also located towards the south of the site.

1 INTRODUCTION

Northamptonshire Archaeology (NA) was commissioned by CgMs Consulting to carry out an archaeological geophysical survey on approximately two hectares of land on the north-eastern edge of Belper, Derbyshire (NGR: SK 364 486; Fig 1). The fieldwork comprised a detailed magnetometer survey of the site and was carried out in November 2010.

2 TOPOGRAPHY AND GEOLOGY

The survey area comprised a single, sub-rectangular, arable field, bounded by houses on Arkwright Avenue to the south-west and fields on the other three sides. The land is at an elevation of between 105m and 122m aOD. The solid geology of the survey area comprises Pennine Lower Coal Measures. This is overlain by a drift of boulder clay (BGS 2010).

3 ARCHAEOLOGICAL BACKGROUND

A review of information available on the Archaeology Data Service (ADS 2010), showed few archaeological finds known from the immediate surroundings of the site.

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).

The survey area was divided into a grid of 29 whole and partial 30m x 30m squares which were established by means of a tape measure and optical square. The locations of key points within this grid were subsequently recorded with a Leica System 1200 dGPS.

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, Gater and Ovendon 2002).

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 greyscale plots (+/- 4nT black/white). These have been scaled, rotated and resampled (georectified) for display against the Ordnance Survey base mapping (Fig 2). Interpretative overlays have been produced and are shown in Figure 3.

5 SURVEY RESULTS (Figs 2 and 3)

The majority of the data from the site (Fig 2) was found to have a background that was 'textured' in a weak positive/negative magnetic corrugation aligned north – south, stopping at an east – west line in the south of the field, beyond which the readings were steady. This effect is thought unlikely to be agricultural in origin, due to its orientation, but rather reflecting two geological or pedological zones.

A number of intensely magnetic dipolar (paired positive-negative) anomalies detected around the survey area were likely to indicate shallow buried ferrous debris. A discrete, highly positive, magnetic anomaly was identified towards the centre of the area. The anomaly was of an amplitude that could indicate a thermoremanently magnetised (burnt/fired) feature such as a hearth or kiln. However, a pit filled with ceramic material such as brick and tile may give a similar signal.

6 CONCLUSION

The survey has detected evidence for an archaeological feature towards the centre of the development area. It is unclear exactly what this anomaly will be, but the likelihood is of a feature of up to 4m in diameter, fired, such as a kiln or a pit containing ceramics. Evidence for a change in the geological substrate was also identified in the south of the site.

BIBLIOGRAPHY

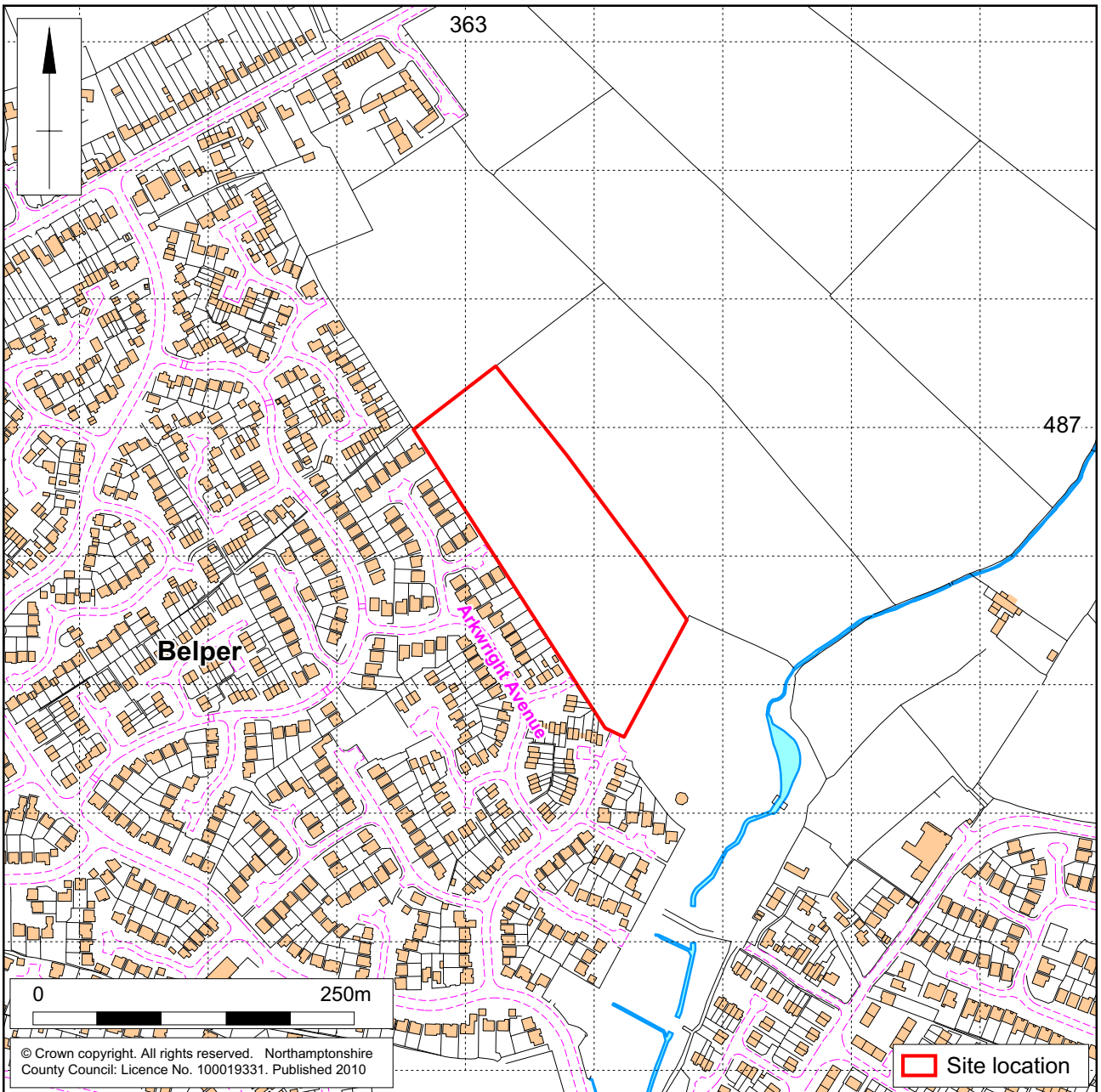
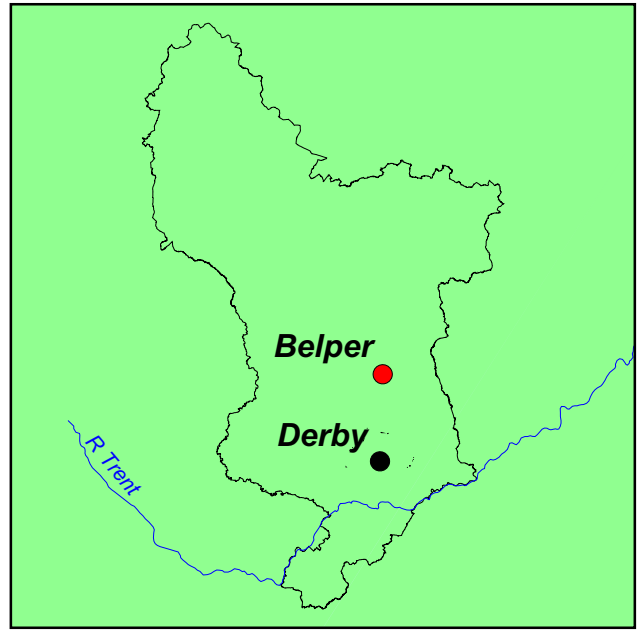
Bartington, G, and Chapman, C, 2003 A high-stability fluxgate magnetic gradiometer for shallow geophysical survey applications, *Archaeological Prospection*, **11**, 19-34

EH, 2008 *Geophysical Survey in Archaeological Field Evaluation*, English Heritage

Gaffney, C, Gater, J, and Ovendon, S, 2002 *The Use of Geophysical Techniques in Archaeological Evaluations*, Institute of Field Archaeologists Technical Paper, **6**

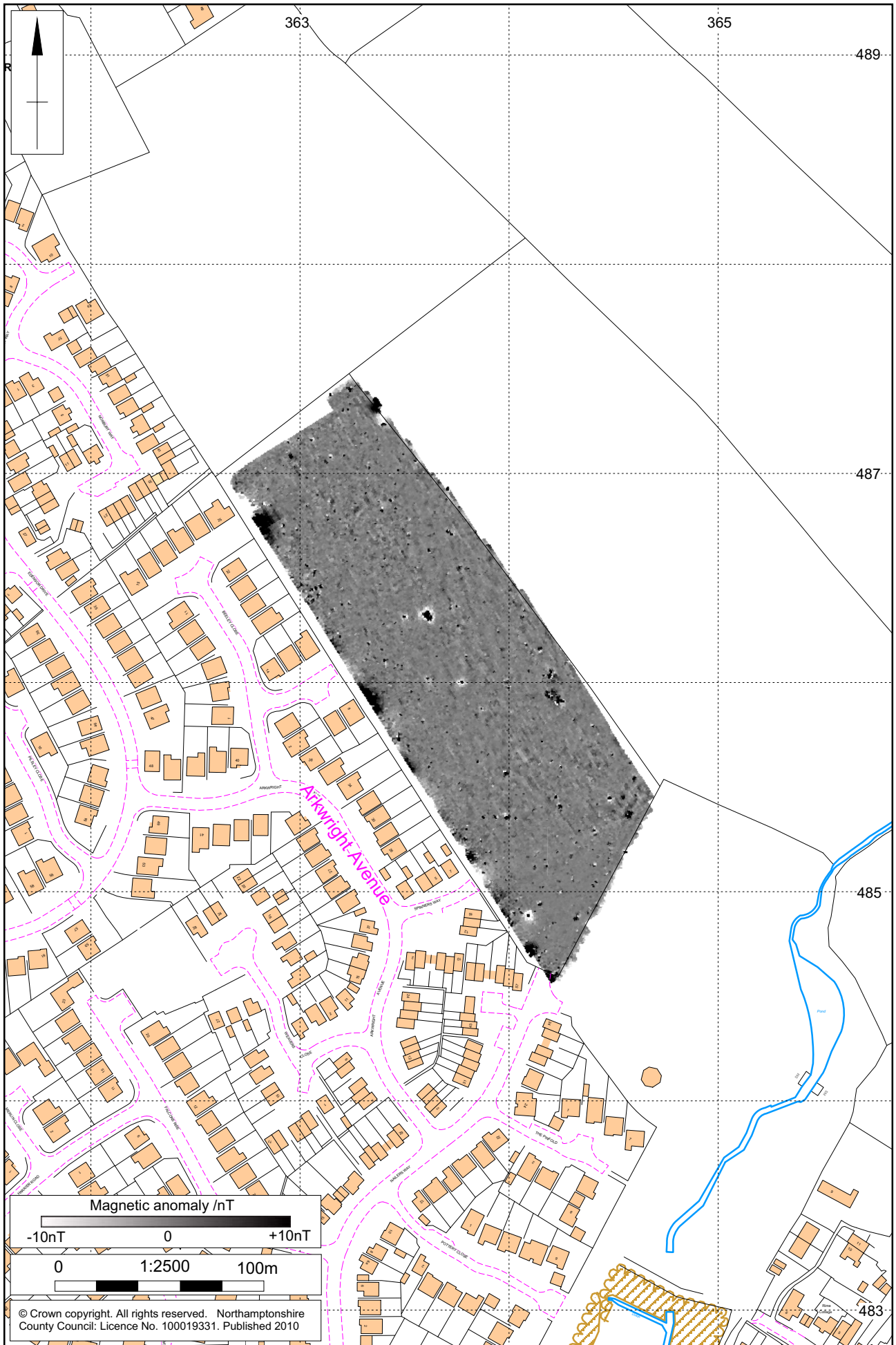
ADS, 2010 <http://ahds.ads.ac.uk>; Archaeology Data Service

Old-Maps, 2010 <http://www.old-maps.co.uk/maps.html>; Ordnance Survey Historic Mapping, Leicestershire, accessed 17/10/2010



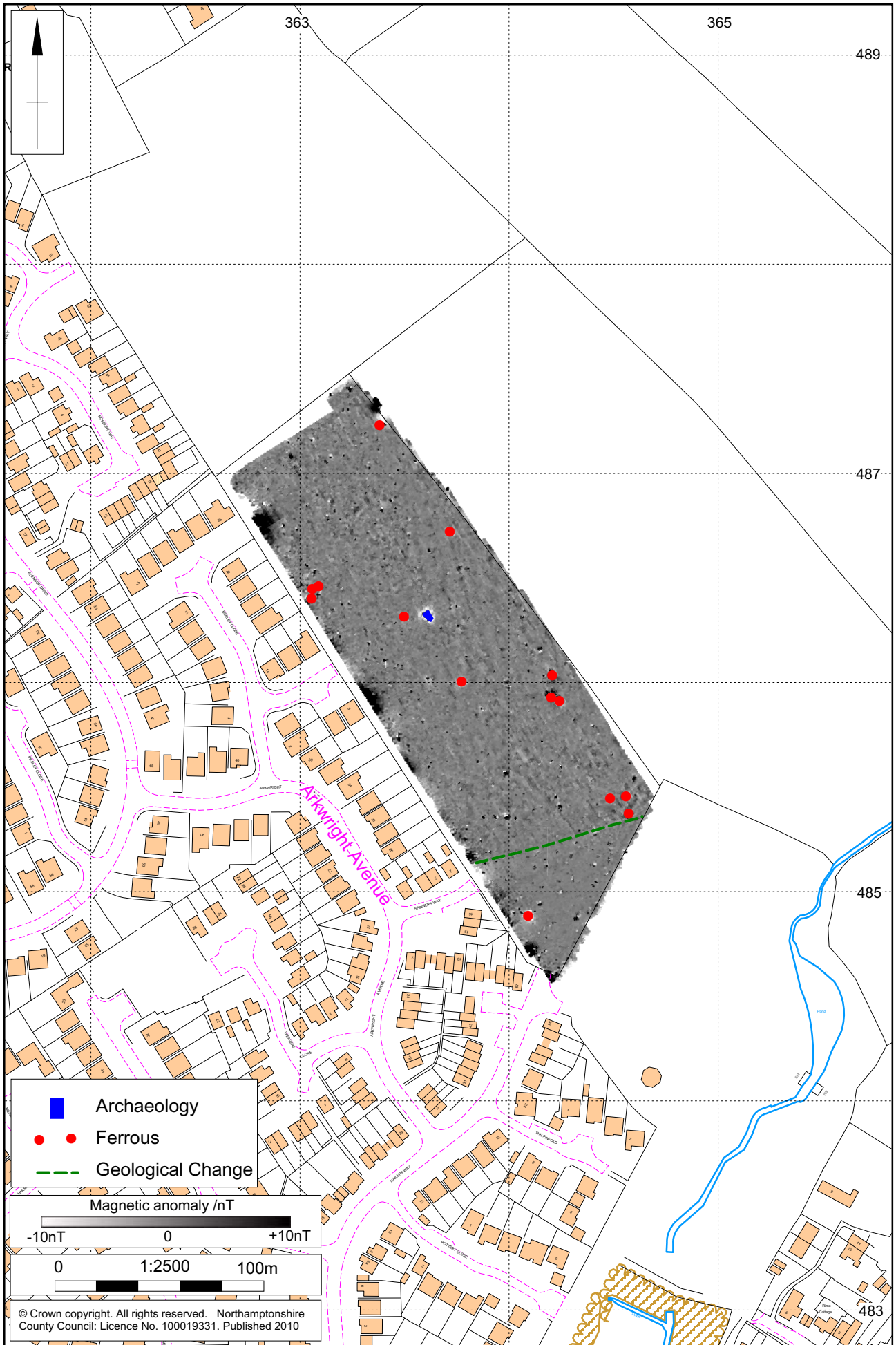
1:5000

Site location Fig 1



1:2500

Magnetometer Survey Results Fig 2



1:2500

Magnetometer Survey Interpretation Fig 3



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