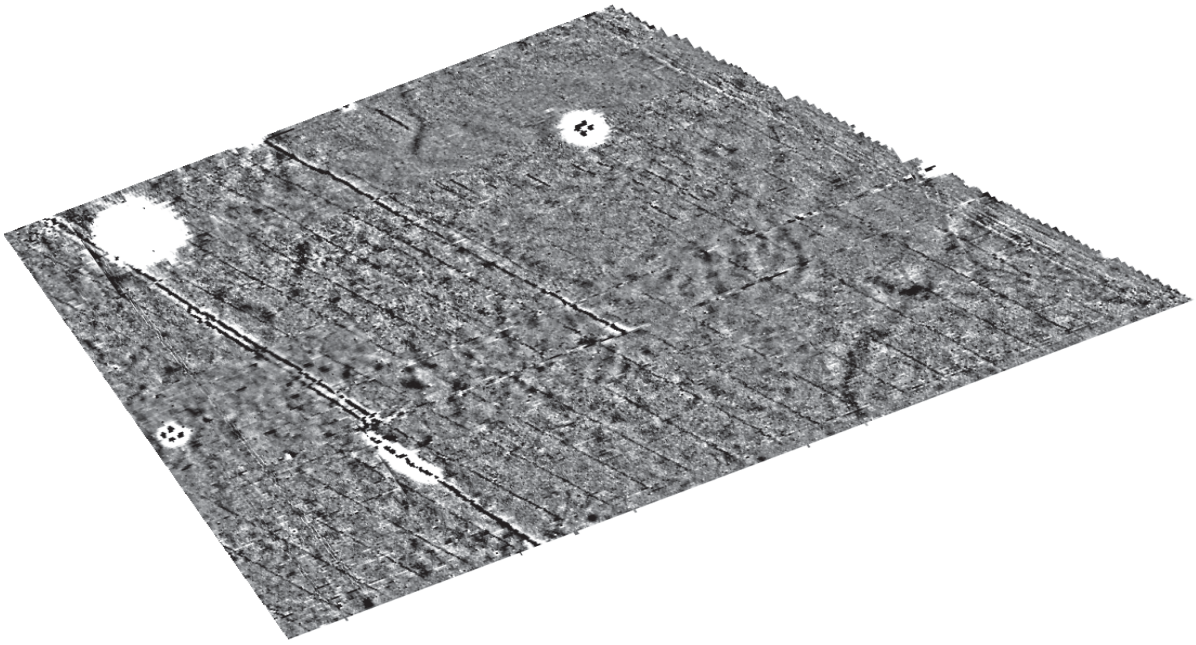
Northamptonshire Archaeology

Archaeological Geophysical Survey at Morris Fen, Peterborough May – June 2013



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Report 13/132

July 2013

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OASIS REPORT FORM **OASIS No 155315**

PROJECT DETAILS		
Project name	Archaeological geophysical survey at Morris Fen, Peterborough	
Short description	Northamptonshire Archaeology was commissioned to undertake an archaeological geophysical survey at Morris Fen, Peterborough. The survey covered approximately 48.5ha of former fen. The survey detected one small pennanular anomaly of possible (though uncertain) archaeological significance, and many other anomalies relating to dykes, pylons and other recent features. These results may not reflect the true archaeological potential of the site, as the local geology is particularly unfavourable for geophysical survey.	
Project type	Geophysical survey	
Site status	None	
Previous work	Geophysical survey (Stratascan Ltd)	
Current land use	Arable	
Future work	Trial trenching	
Monument type/ period	None	
Significant finds	None	
PROJECT LOCATION		
County	Peterborough	
Site address	Lodge Farm, Black Drove, Morris Fen, Peterborough	
Study area	*c* 48.5 ha	
OS grid reference	TF 288 064	
Height OD	*c* 0-3m aOD	
PROJECT CREATORS		
Organisation	Northamptonshire Archaeology (NA)	
Project brief originator	AECOM Environment	
Project Design originator	AECOM Environment	
Director/Supervisor	Ian Fisher	
Project Manager	Mark Holmes	
Sponsor or funding body	AECOM Environment	
PROJECT DATE		
Start date	13 May 2013	
End date	22 July 2013	
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BIBLIOGRAPHY	Journal/monograph, published or forthcoming, or unpublished client report	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 Morris Fen, Peterborough, May – June 2013	
Serial title & volume	Northamptonshire Archaeology Reports 13/132	
Author(s)	John Walford & Ian Fisher	
Page numbers	5	
Date	22 July 2013	

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ARCHAEOLOGICAL GEOPHYSICAL SURVEY AT MORRIS FEN, PETERBOROUGH MAY - JUNE 2013

ABSTRACT

Northamptonshire Archaeology was commissioned to undertake an archaeological geophysical survey at Morris Fen, Peterborough. The survey covered approximately 48.5ha of former fen. The survey detected one small pennanular anomaly of possible (though uncertain) archaeological significance, and many other anomalies relating to dykes, pylons and other recent features. These results may not reflect the full archaeological potential of the site, as the local geology is particularly unfavourable for geophysical survey.

1 INTRODUCTION

Northamptonshire Archaeology was commissioned by AECOM Environment to conduct an archaeological geophysical survey at Morris Fen, Peterborough (NGR TF 288 064; Fig 1). This survey, together with a survey of adjacent fields by Stratascan Ltd, contributed towards an evaluation of the archaeological impact of a proposed development scheme.

Fieldwork commenced on 13 May 2013 and was completed on 6 June 2013. A total area of 48.5ha was surveyed.

2 TOPOGRAPHY AND GEOLOGY

The proposed development area consists of a largely rhomboidal block of arable land, *c* 106ha in extent, located 1.5km to the north of Thorney It is bounded to the south by Thorney Golf Course, and much of its south-western boundary is defined by Black Drove. The present report concerns the survey of a 48.5ha block of land which covers the central and eastern parts of this area, the remainder having been surveyed by Stratascan Ltd (Fig 1).

The proposed development area is underlain by a sequence of Holocene sediments, the uppermost of which are the Barroway Drove Beds. These are salt marsh deposits, consisting primarily of clays and silts, which were laid down in the period between 3500BC and 1000BC (Hall and Coles 1994: 14-16). Beneath these occur the Lower Peat and Crowland Beds which, in turn, overlie sands and gravels of pre-Holocene date. Oxford Clay, of upper Jurassic date, is present at a depth of *c* 8m below ground (AECOM 2012: Table 9.8).

Although the proposed development site is low lying, with much of its surface close to Ordnance Datum, it has a relatively complex surface topography. It is crossed by a number of broad and sinuous ridges, or roddons, which indicate the line of channels within the former salt marsh.

3 ARCHAEOLOGICAL BACKGROUND

Due to its recent geological history, the Fenland is believed to contain very substantial tracts of prehistoric landscape sealed and preserved beneath late Holocene sediments. However, much of this lies beyond the range of conventional archaeological prospection and its full extent and character remain unknown. The most notable sites to have been investigated thus far, at Flag Fen and Must Farm, are associated with the freshwater peat and alluvium of the Peterborough area, and so do not provide a direct analogy for Morris Fen, where marine deposits predominate.

Investigation of the drainage dykes which cut through Morris Fen has led to the identification of a former gravel island sealed beneath the Barroway Drove beds. A few worked flints of Mesolithic or Neolithic date were recovered in association with the island, indicating that human activity was occurring in the area at an early date (AECOM 2012a)

No Roman or Saxon archaeology is known to occur within Morris Fen, but evidence from the surrounding area shows that the former salt-marshes were sufficiently dry in those periods for settlement to be possible. A small area of Roman earthworks occurs, for instance, at Chestnut Farm, approximately 3km to the north-east of the proposed development area. (Hall and Coles 1994, 110). Evidence for medieval activity within Morris Fen is currently lacking, and the main focus of settlement in that period was on the higher ground at Thorney, approximately 2km to the south.

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). All fieldwork methods complied with the guidelines issued by English Heritage and by the Institute for Archaeologists (EH 2008; IfA 2011), and with the written scheme of investigation for the project (AECOM Environment 2012b).

An independent system of 30m grids was established within each of the fields to be surveyed. The grids were established with a tape measure and optical square and were tied in to the Ordnance Survey National Grid by means of a Leica 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 square.

The survey data was largely processed using Geoplot 3.00v software. Most of the striping was removed using the ‘Zero Mean Traverse’ function but some areas had to be de-striped separately, using a spreadsheet based routine, in order to preserve linear anomalies lying parallel to the traverse direction. Destaggering of the data was performed where necessary. The processed data is presented in this report in the form of grey-tone plots, at a scale of +/- 4nT black/white. These plots have been scaled, rotated and resampled (georectified) for display against the Ordnance Survey base mapping (Figs 2, 4 and 6). Interpretive diagrams (Figs 3, 5 and 7) and plots of the unprocessed survey data (Fig 8) have also been produced.

5 SURVEY RESULTS

5.1 Geological background

The data is dominated by a very complex and irregular palimpsest of magnetic anomalies arising from the underlying peri-marine sediments. Research on similar sites has shown that such patterning arises, in part, because iron sulphide (which is weakly magnetic) forms readily in tidal mud deposits and less readily in channel fills and other pockets of coarser sediment (Kattenberg 2008, 171-4). Other factors, such as gleying, variable depths of sediment, and the presence of peat lenses or other inclusions, may also contribute to the overall distribution of anomalies. Because of this potential complexity, it is not possible to offer a detailed and reliable geological interpretation of the data.

5.2 Archaeology

A small penannular anomaly, measuring *c* 9m in diameter, is present midway along the southern side of Field 1 (Figs 3-5). It could be interpreted as a small ring ditch or roundhouse gully, perhaps of Iron Age date. However, considering the irregularity of the magnetic background, and the absence of any other plausible archaeological anomalies, it is more likely that the anomaly is no more than an unusually regular element within the geological patterning of the data.

5.3 Dykes and drains

The survey has identified a regular network of linear anomalies which represent former drainage dykes. Whilst some can be correlated with dykes depicted on the first edition of the six inch Ordnance Survey map (1887), others cannot, even though they appear, by their position and orientation, to form part of the same system. This would suggest that, by the late nineteenth century, the process of field amalgamation was already underway and a number of dykes had been infilled.

Other positive linear anomalies, representing field drains, occur in sets aligned parallel to the modern field boundaries. The spacing of the different sets is variable, which suggests the drains may be of different types and dates, and were not laid out as a single coherent system.

5.4 Pylons and other ferrous objects

The survey area is bisected by a power line. Regularly spaced pylons with associated magnetically negative halos around the base of each pylon are visible in the survey results. The footings of former pylons have been identified to the south-east of the power line. These are represented by three ferrous anomalies, each consisting of four clustered dipoles.

The survey has also identified other ferrous anomalies, of unknown origin. Some are concentrated along the former dykes and probably represent rubbish fallen into the dykes when open or backfilled.

6 CONCLUSION

Apart from one small penannular feature of possible (though uncertain) archaeological significance, the survey has only detected features relating to the modern (post-drainage) landscape. These features include former dykes, field drains, and the bases of three former electricity pylons.

The minimally informative nature of these results can be attributed to the unfavourable geological conditions on the site. Any early prehistoric remains that may be present will be sealed beneath the peri-marine sediments of the Barroway Drove Beds, beyond the depth at which magnetometer survey could be expected to detect them. And whilst later remains may exist at a shallower depth, a number of factors, including groundwater fluctuations and mineralogical changes will have rendered them very difficult, and perhaps impossible, to detect by magnetic means (Kattenberg 2008, Armstrong 2010).

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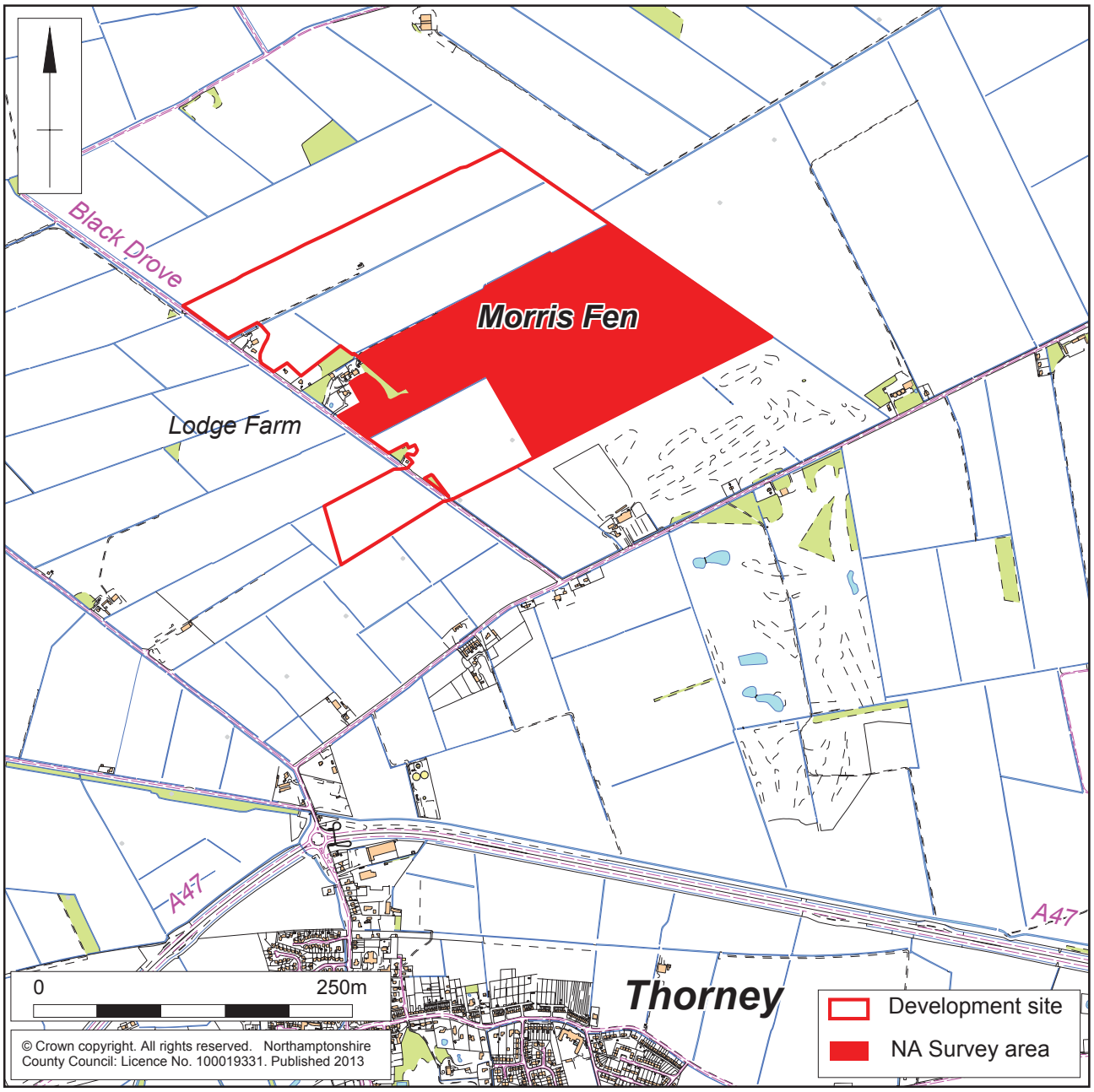
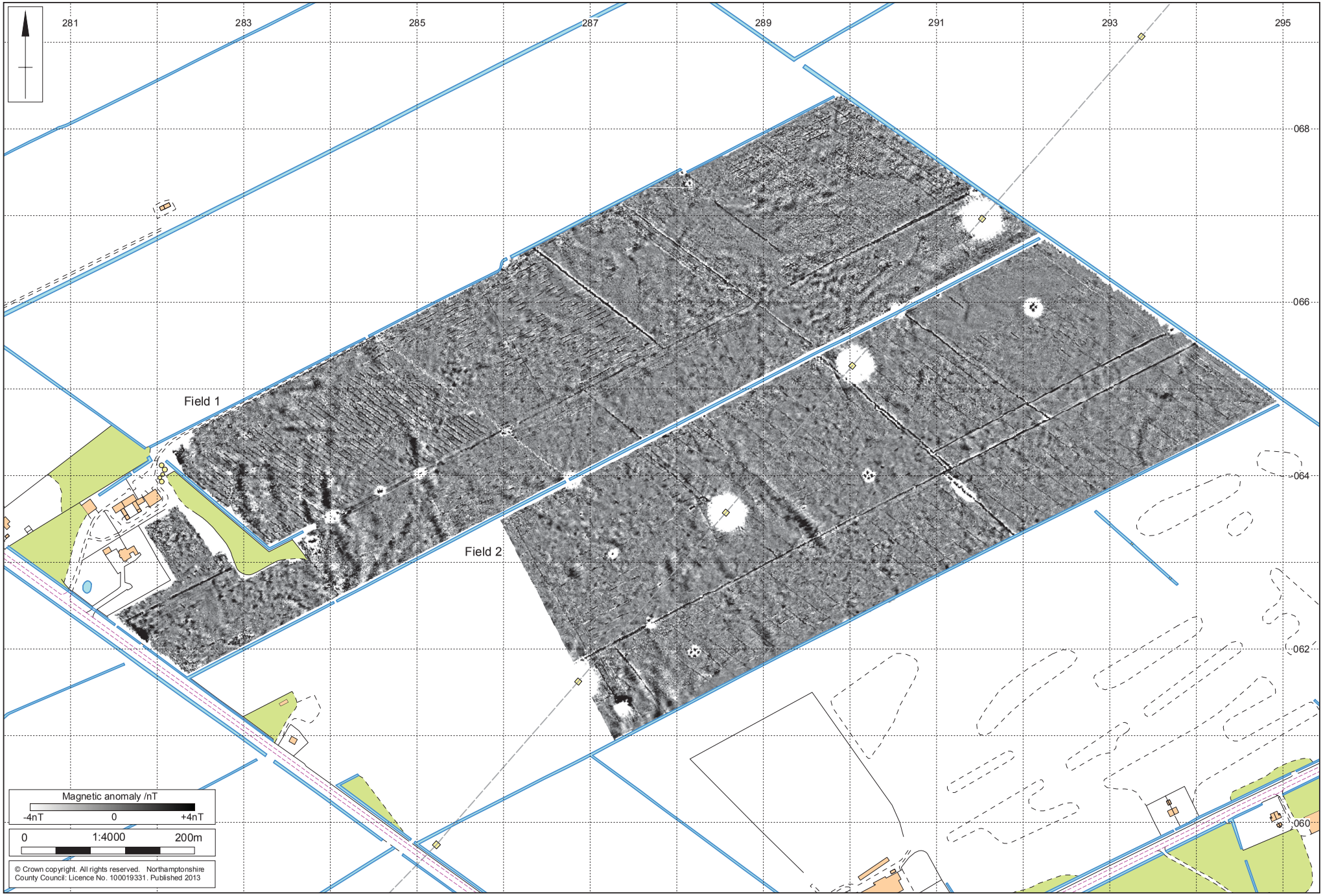


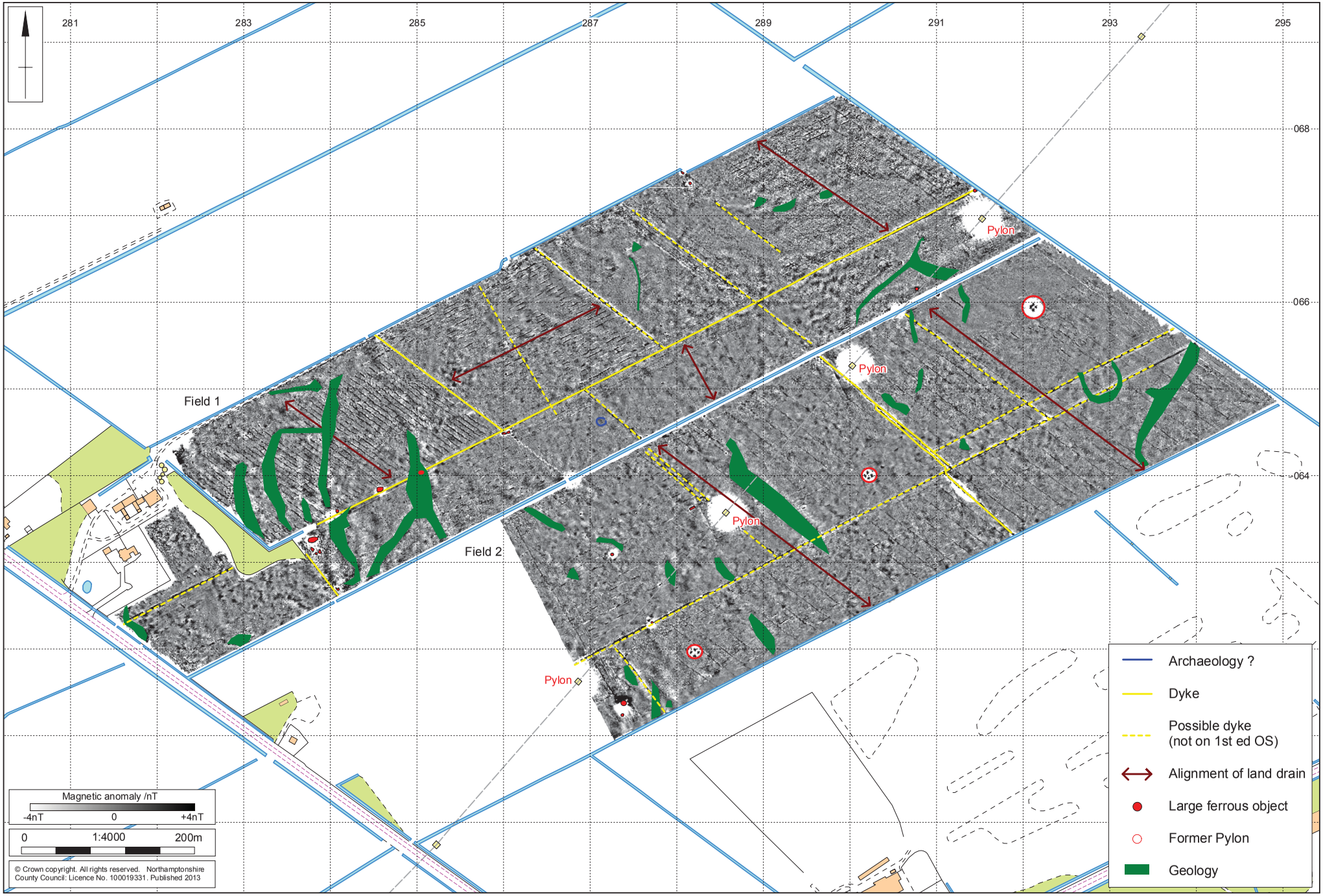
Scale 1:20,000

Site Location Fig 1



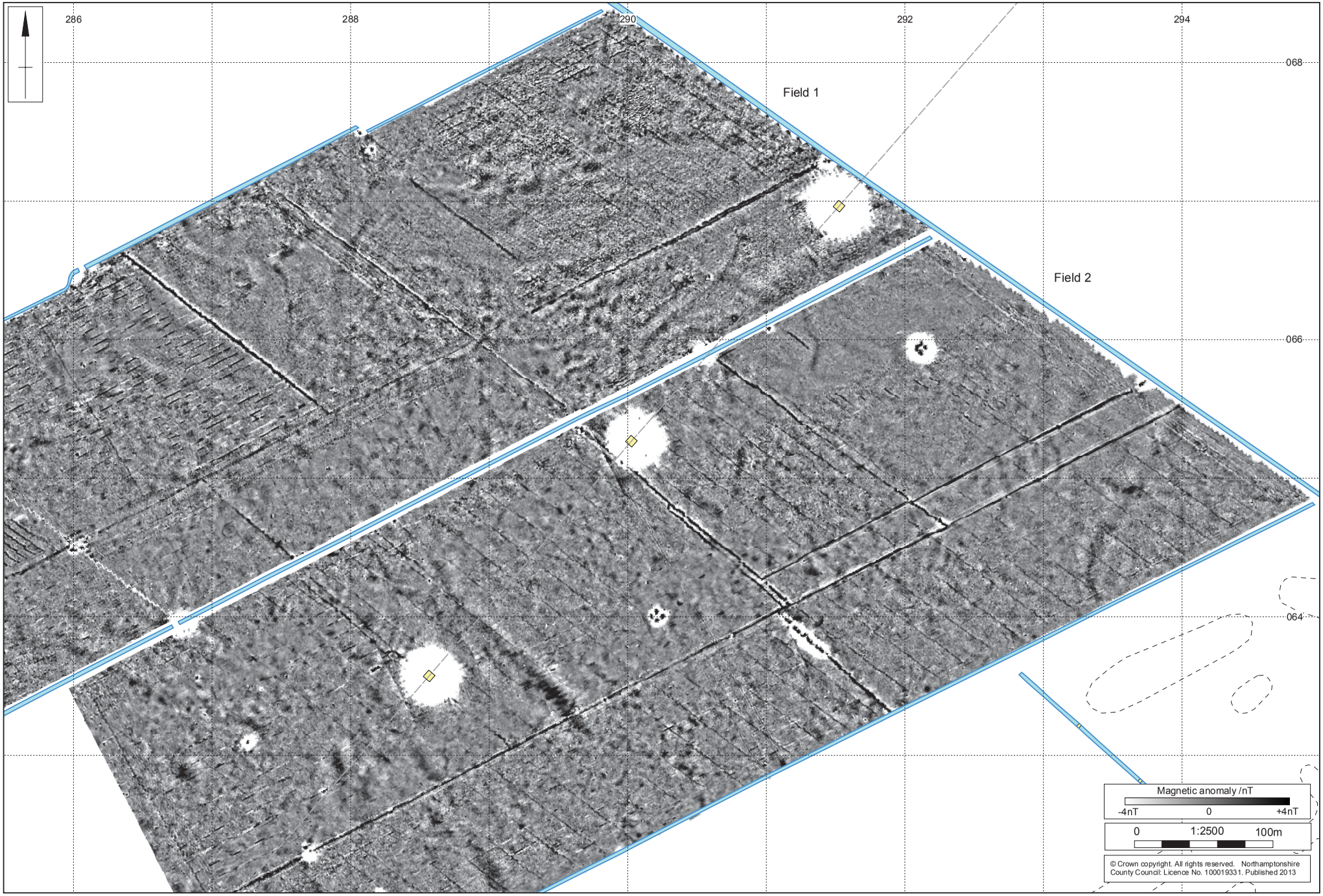
Scale 1:4000 (A3)

Overall magnetometer survey results Fig 2



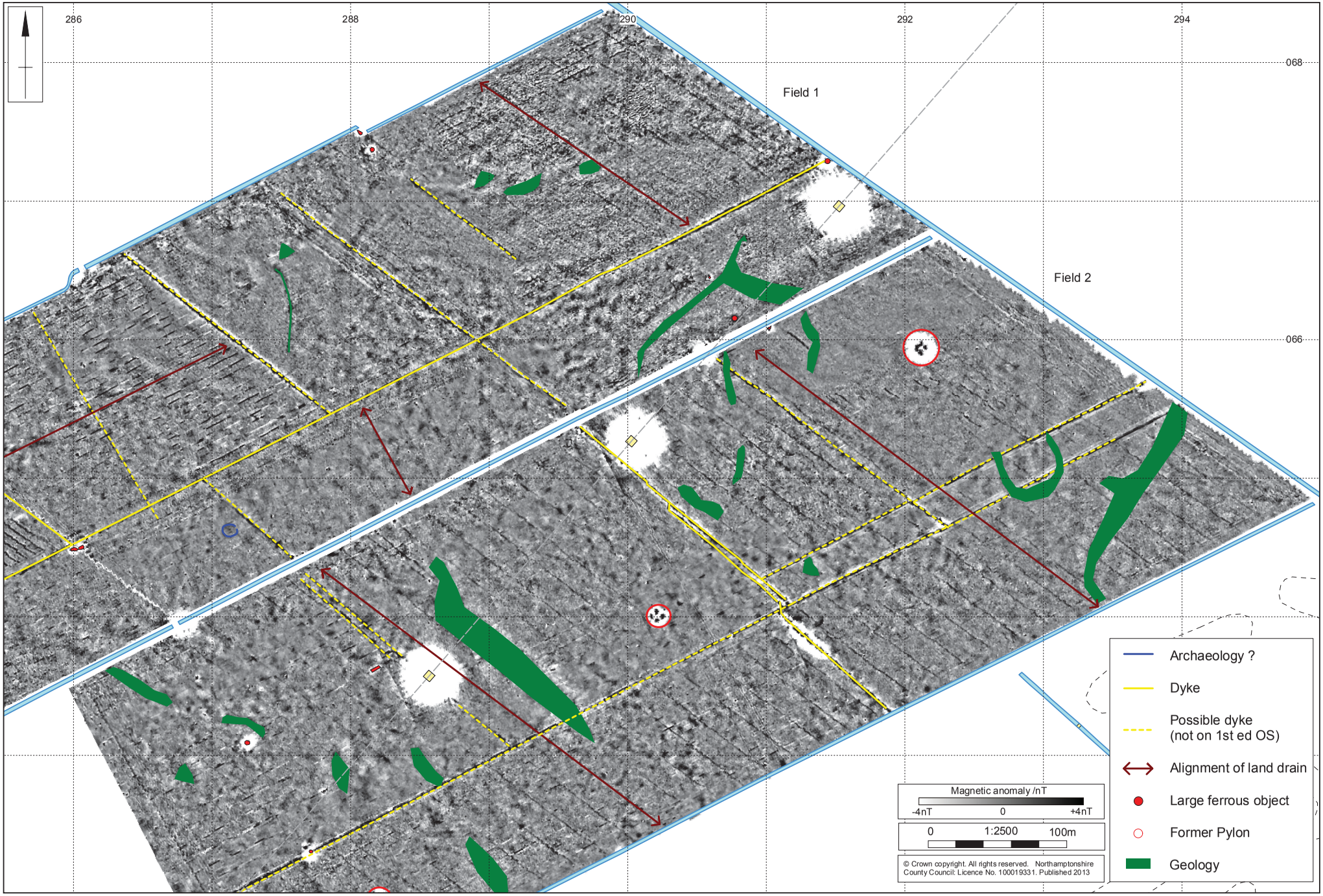
Scale 1:4000 (A3)

Overall magnetometer survey interpretation Fig 3



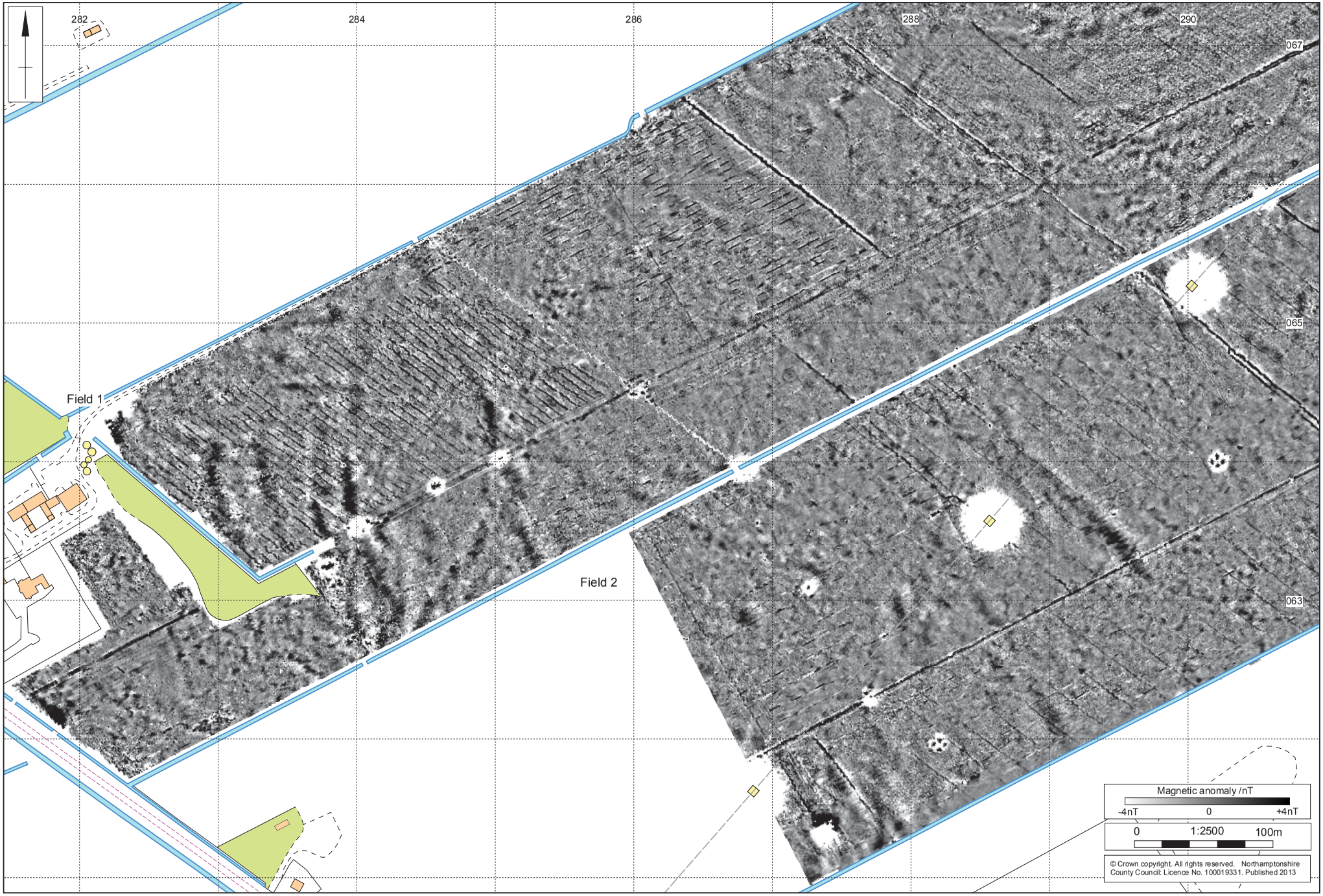
Scale 1:2500 (A3)

Magnetometer survey results (north-east) Fig 4



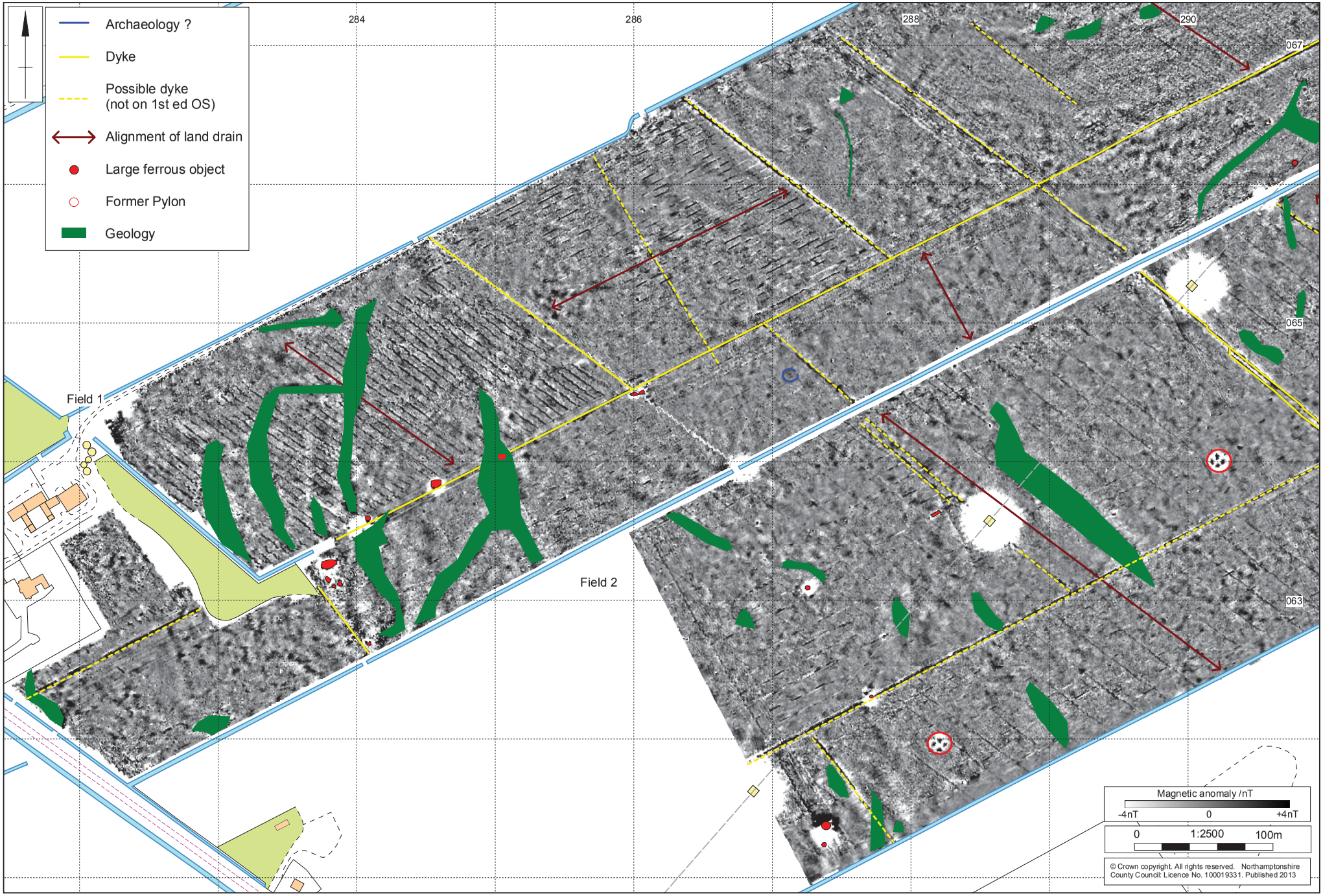
Scale 1:2500 (A3)

Magnetometer survey interpretation (north-east) Fig 5



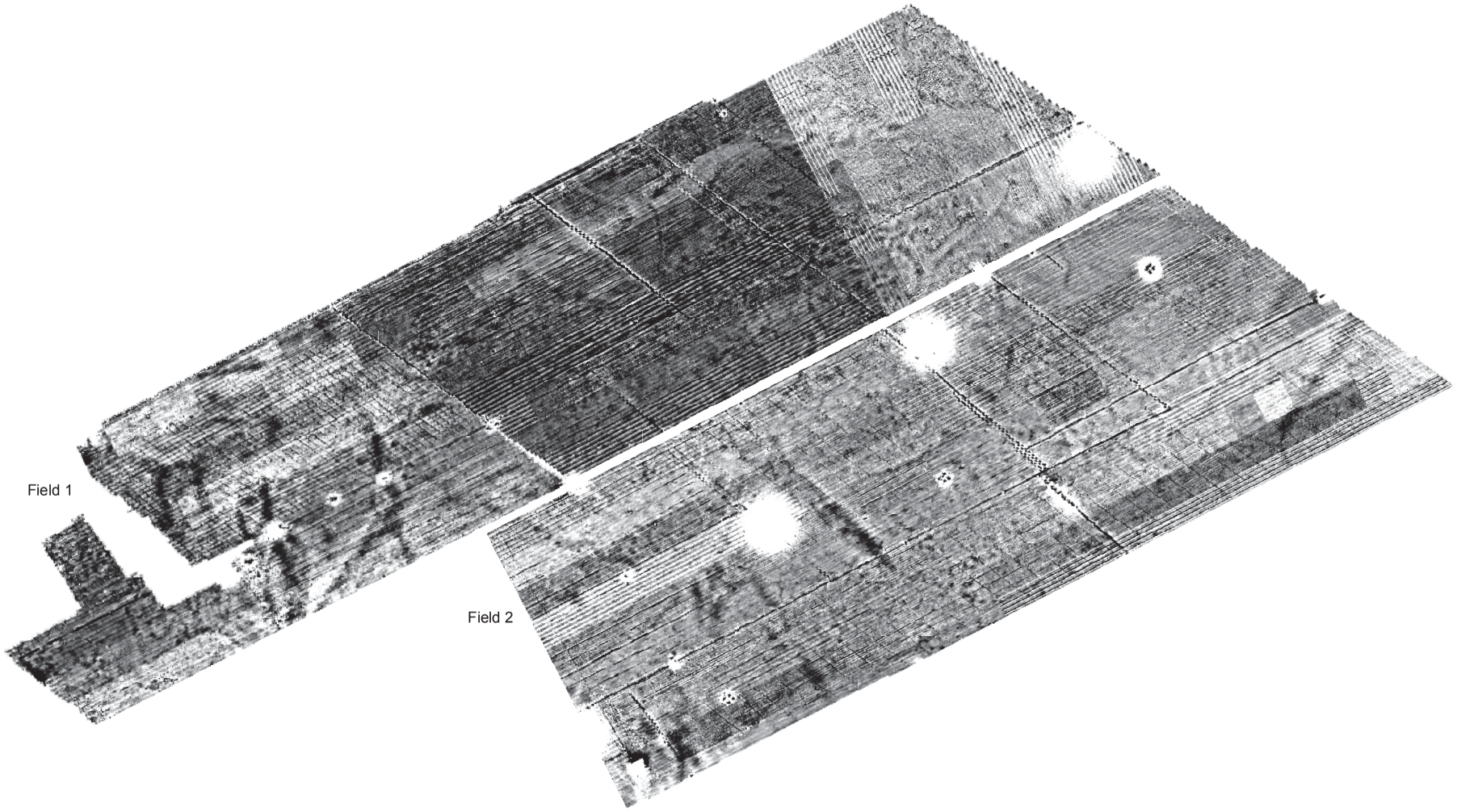
Scale 1:2500 (A3)

Magnetometer survey results (south-west) Fig 6



Scale 1:2500 (A3)

Magnetometer survey interpretation (south-west) Fig 7



1:4000 (A3)

Unprocessed magnetometer survey data Fig 8

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