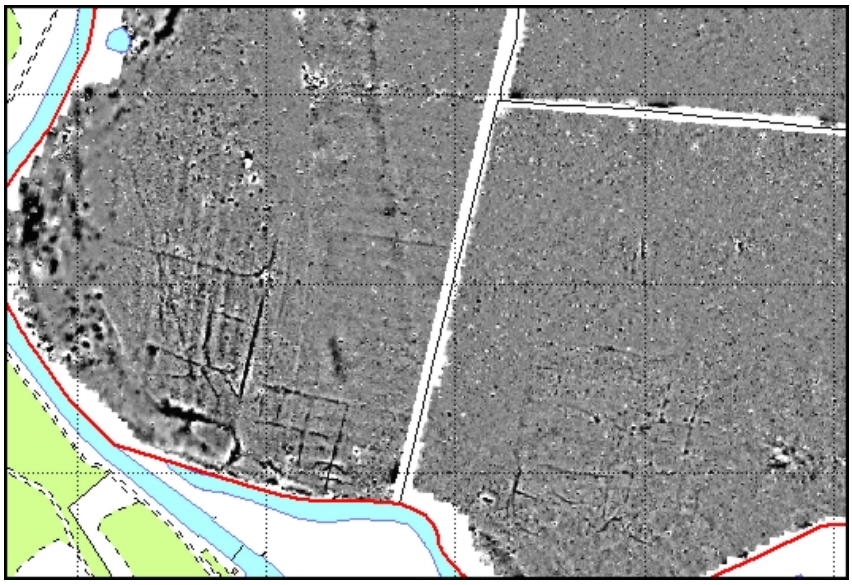

Archaeological geophysical survey at Eaton Leys Farm, Bletchley Milton Keynes February to March 2014

Report No. 14/132

Author: John Walford

Illustrator: John Walford

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ARCHAEOLOGY

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OASIS REPORT FORM

PROJECT DETAILS	Oasis no. molanort1-182601	
Project name	Archaeological geophysical survey at Eaton Leys Farm, Bletchley, Milton Keynes, February to March 2014	
Short description	MOLA was commissioned to carry out a detailed magnetometer survey on 109ha of land at Eaton Leys Farm, Bletchley, Milton Keynes. Approximately 34ha of this site were surveyed in February and March 2014, resulting in the identification of a rectilinear enclosure complex of probable Roman date alongside the River Ouzel. The survey of the remaining 75ha, including the site of the Roman town of Magiovinium, has been postponed until the land becomes accessible after harvest.	
Project type	Geophysical survey	
Site status	Scheduled monument no. 1006943 (Magiovinium Roman town)	
Previous work	Desk-based assessment (Phoenix Consulting 1998) Geophysical survey (Bartlett 1999)	
Current Land use	Pasture and arable	
Future work	Unknown	
Monument type/ period	Roman enclosures, medieval to early post-medieval ridge and furrow, undated palaeochannels	
Significant finds	None	
PROJECT LOCATION		
Counties	Buckinghamshire and Milton Keynes	
Site address	Eaton Leys Farm, Bletchley	
Study area	*c* 34ha	
OS Easting & Northing	SU 888 329	
Height OD	*c* 70-75 m AOD	
PROJECT CREATORS		
Organisation	MOLA	
Project brief originator	CgMs Consulting	
Project design originator	MOLA	
Director/Supervisor	Ian Fisher	
Project Manager	Mark Holmes	
Sponsor or funding body	CgMs Consulting	
PROJECT DATE		
Start date	27 February 2014	
End date	10 March 2014	
ARCHIVES	Location	Content
Physical	N/A	
Paper	MOLA Northampton	Site survey records
Digital		Geophysical survey & GIS data
BIBLIOGRAPHY	Journal/monograph, published or forthcoming, or unpublished client report	
Title	Archaeological geophysical survey at Eaton Leys Farm, Bletchley, Milton Keynes, February to March 2014	
Serial title & volume	MOLA Northampton Reports 14/132	
Author(s)	John Walford	
Page numbers	5	
Date	09 July 2014	

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ARCHAEOLOGICAL GEOPHYSICAL SURVEY AT EATON LEYS FARM, BLETCHLEY, MILTON KEYNES FEBRUARY TO MARCH 2014

ABSTRACT

MOLA was commissioned to carry out a detailed magnetometer survey on 109ha of land at Eaton Leys Farm, Bletchley, Milton Keynes. Approximately 34ha of this site were surveyed in February and March 2014, resulting in the identification of a rectilinear enclosure complex of probable Roman date alongside the River Ouzel. The survey of the remaining 75ha, including the site of the Roman town of Magiovinium, has been postponed until the land becomes accessible after harvest.

1 INTRODUCTION

MOLA was commissioned by CgMs Consulting to conduct a detailed magnetometer survey on 109ha of land at Eaton Leys Farm, Bletchley, Milton Keynes (NGR SU 888 329; Fig 1). The survey area straddles the boundary between Buckinghamshire and Milton Keynes Unitary Authority and encompasses the southern part of the Roman town of Magiovinium (Scheduled monument no. 1006943).

This report describes the initial phase of fieldwork, which was undertaken between 27th February and 10th March 2014 and covered *c* 34ha of pasture fields in the south-west of the survey area. The remaining 75ha, including the site of Magovinium, was under crop at that time and will be covered in a separate phase of fieldwork, following the harvest.

2 TOPOGRAPHY AND GEOLOGY

The survey area comprises a compact block of land located immediately east of Bletchley (including land in the historic townships of Water Eaton and Fenny Stratford). The northern boundary of the area is defined by Watling Street, the eastern one by the A4146 Little Brickhill Bypass, and the southern and western ones by the River Ouzel. Eaton Leys Farm itself stands just inside the survey area, midway along its western edge (Fig 1).

The survey area lies between the 70m and 80m contours on a gentle and irregular west-facing slope. Its geology consists of Oxford Clay, overlain in places by terrace gravels, alluvium and head (BGS 2014). The head deposits are likely incorporate material derived from the Lower Greensand ridge which rises above the survey area to the east.

3 ARCHAEOLOGICAL BACKGROUND

The remains of the Roman town of Magiovinium (Scheduled monument no. 1006943) partially underlie the far northern end of the survey area, straddling the line of Watling Street (Fig 1). Previous archaeological investigations on this site (Neal 1987, Bartlett 1999) have shown that it dates from the 1st to the 4th centuries AD and comprises a defended core with suburbs extending along the road to the south-east. A possible Roman fort, identified from cropmarks, also lies to the south-east and may represent the original focus from which the settlement developed.

In the far south of the survey area, cropmarks indicate the presence of a small sub-rectangular enclosure which may be of Iron Age or Roman date (Phoenix Consulting 1999, fig 2). No other prehistoric or Roman sites are known from within the survey area, but a scatter of worked flints, pottery and other chance finds have been recorded from locations all along the line of the Ouzel Valley to the west (Phoenix Consulting 1999). Notable amongst these finds are the concentration of Iron Age material from Saffron Gardens (MK HER MMK1166) and the half-dozen Palaeolithic handaxes which have been recovered from various exposures of the river terrace gravels (Millard 1965).

Whilst no Saxon remains are known within the survey area, two sites of this date have been recorded to the west, on the opposite side of the River Ouzel. One site, at Saffron Gardens, comprised a cluster of apparently late Saxon pits and ditches investigated under salvage conditions (MK HER MMK1987). The other, further south at Stoke Road, produced evidence for 8th to 9th century settlement (Hancock 2006). Medieval settlement seems to have followed a similar pattern, with the main settlement foci lying to the west of the river, around Water Eaton and the former site of Bletchley manor house (Phoenix Consulting 1999). Within the survey area the only known medieval remains are the ridge and furrow earthworks which lie in the field immediately east of Eaton Leys Farm. The original date of the farm itself is unknown, although it was clearly extant by 1813, when it was depicted on the Ordnance Survey surveyor's draft.

4 METHODOLOGY

The magnetometer 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).

An independent network of 30m grid squares was established within each of the fields to be surveyed. The grids were set out 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. All fieldwork methods complied with the guidelines issued by English Heritage and by the Institute for Archaeologists (EH 2008; IfA 2011).

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 greyscale plots at a range of +4nT (black) to -4nT (white). These have been have been scaled, rotated and resampled (georectified) for display against the Ordnance Survey base mapping (Figs 2 and 4). Interpretive overlays are presented in Figures 3 and 5, and plots of the unprocessed survey data are presented in Figure 6.

5 SURVEY RESULTS

5.1 Archaeological features

The survey has detected two adjacent, and apparently related, archaeological sites at the southern ends of Fields 11 and 14. Each is denoted by a rectilinear arrangement of positive linear anomalies representing enclosure ditches with internal partitions. The regularity of the two layouts, and their near identical alignments, suggests that both sites are likely to be Roman in date.

The site in Field 11 is L-shaped and bounded on its southern and western edges by a bend in the floodplain of the River Ouzel. A pair of linear ditches pass north to south along its central axis, perhaps indicating the line of a trackway. To the east of this there is a very regular group of ditches defining small rectangular and square plots of land, and to the west there is a more loosely defined block of larger rectangular plots. A few of the detected features do not conform to this general arrangement, and may derive from earlier or later phases of activity on the site.

The ditches in Field 14 have produced a generally weak and indistinct set of anomalies which give only a broad impression of the site's layout. At its core there is a rectangular enclosure, approximately 90m x 100m with various internal divisions and hints of intersecting features of either earlier or later date. To its north and south there are short disjointed linear anomalies which suggest the presence of radiating boundary ditches or parts of further enclosures, and to its south-west there is a small dipolar anomaly, with a maximum intensity of *c* 90nT, which may represent a kiln, a corn-dryer or some other burnt structure. To its west, where cropmarks suggest that a further enclosure should occur (Phoenix Consulting 1999, fig 2) nothing has been detected except for an undiagnostic patch of weak magnetic noise.

Four other features of possible archaeological interest have been detected in other fields. In Field 6, there is a small, sub-rectangular positive anomaly, measuring approximately 10m x 15m, which possibly represents a small ditched enclosure of indeterminate date. Immediately adjacent to it there is an anomaly which may represent a pit, and elsewhere in the same field there is a very weak negative linear anomaly which is of uncertain significance but may represent a headland or a former boundary. In Field 8 a broken band of intense magnetic noise has been detected along the line of a ditch which survives as a shallow earthwork. This noise does not represent the ditch itself, but accumulations of presumably modern debris within its upper fill.

5.2 Ridge and furrow

Weak, parallel linear anomalies representing medieval to early post-medieval ridge and furrow have been identified in Fields 8 and 11. Those in Field 8 correspond well with the earthworks which survive in that field but those in Field 11 represent features which have been entirely levelled by modern ploughing. No ridge and furrow has been detected in the other fields surveyed, but this is more likely to reflect poorly developed contrasts in soil magnetism than an actual absence of remnant furrows.

5.3 Recent / modern features

In Field 6, the survey has detected a 30m long linear anomaly with positive and negative elements. It seemingly corresponds with a modern farm track which crosses the field on a similar alignment. Forty metres to its north-west there is an area of weak magnetic

disturbance, approximately 15m across, which resembles the anomalies which typically result from the scorching of ground by bonfires. Also in Field 6 there are various dipolar anomalies of ferrous origin, three of which correspond to telegraph poles.

An intensely positive linear anomaly with a negative halo runs along the northern edge of Field 8, indicating the course of a modern pipe. A second, smaller, pipe may be represented by the intense anomaly of alternating polarity which runs south through the north-western corner of the same field. Further south in the there are two large dipolar anomalies of similar appearance to each other which represent a pair of cattle troughs.

An area of blank data in the north-eastern corner of Field 8 indicates an area that, at the time of the survey, was obstructed by a muck heap. To its west, an area of magnetic noise has been detected, indicating a residual scatter of ferrous and ceramic debris on the site of a former muck heap. Other irregular areas of magnetic noise in this field, and in the two small fields to either side of Eaton Leys farmhouse, indicate further scatters of near-surface debris. However, the more tightly defined area of noise at the western edge of Field 8 probably represents a backfilled feature, such as a pond or small quarry pit, rather than a surface scatter.

In the centre of Field 11 there is an L-shaped feature, defined by an irregular chain of small dipolar anomalies, which marks the line of a former field boundary depicted on the first edition Ordnance Survey map. In Field 12 there is a very large dipolar anomaly which represents a buried ferrous object of unknown nature. Field 14 contains set of modern field drains, represented by very weak linear anomalies of alternating polarity

5.4 Geology

The western edge of the survey area, alongside the River Ouzel, is dominated by a narrow band of irregular and amorphous positive anomalies set against a very smooth magnetic background. Such data is characteristic of alluvial soils. Few of the anomalies can be tied in to specific features, but it is possible that the broad positive linear anomaly midway up the edge of Field 11 represents a cut-off and infilled segment of river channel.

Two broad but weak and ill-defined positive linear anomalies run on parallel north to south headings through Field 11, delimiting a 40m wide band. Their cause is unknown, but one plausible suggestion would be that they represent the edges of a large, pre-Holocene palaeochannel cutting through the terrace gravels.

Some parts of the survey data exhibit weak background patterning which is likely to be of geological origin but cannot be interpreted more specifically. A more intense area of irregular magnetic disturbance in Field 14 is poorly diagnostic but may also have a geological origin.

6 CONCLUSION

Magnetometer survey of the south-western part of the proposed Eaton Leys development area has revealed a complex of ditched enclosures lying alongside the River Ouzel. These are suggested to date from the Roman period, due to their strongly rectilinear arrangement. The survey has also detected some areas of former ridge and furrow cultivation, two possible palaeochannels, and some minor features of unknown archaeological relevance.

A notable feature of the results is the markedly differing responses arising from the archaeological sites in Fields 11 and 14. Whilst the former is represented by very distinct anomalies, the latter is represented by anomalies so weak that, in places, they are scarcely discernable. Something of the same variability can be seen with the ridge and furrow anomalies, which are moderately clear in Field 8 and the southern end of Field 11, arguably present at the northern end of Field 11, and seemingly absent elsewhere. These observations suggest that the soils across the survey area are not consistently favourable for magnetic survey, and in some places they may not support the formation of clear magnetic contrasts between archaeological layers and undisturbed natural sediment.

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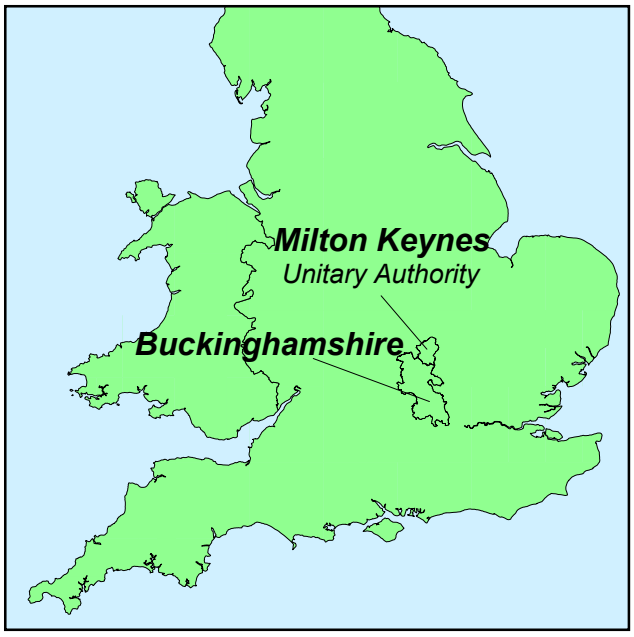
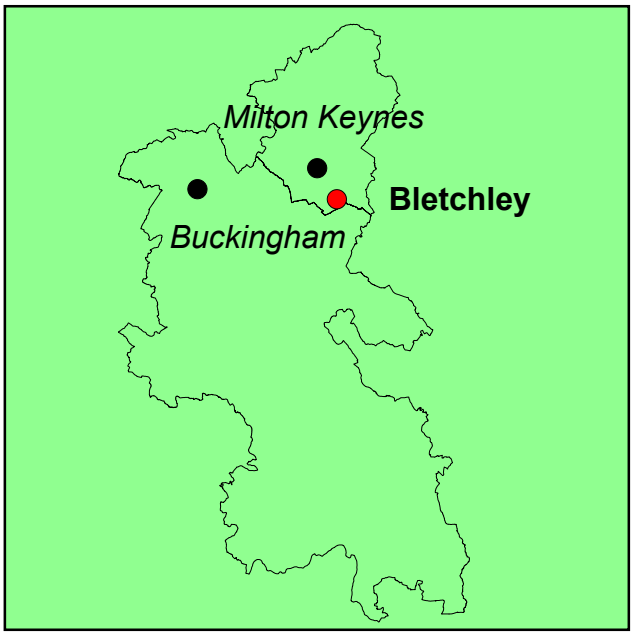
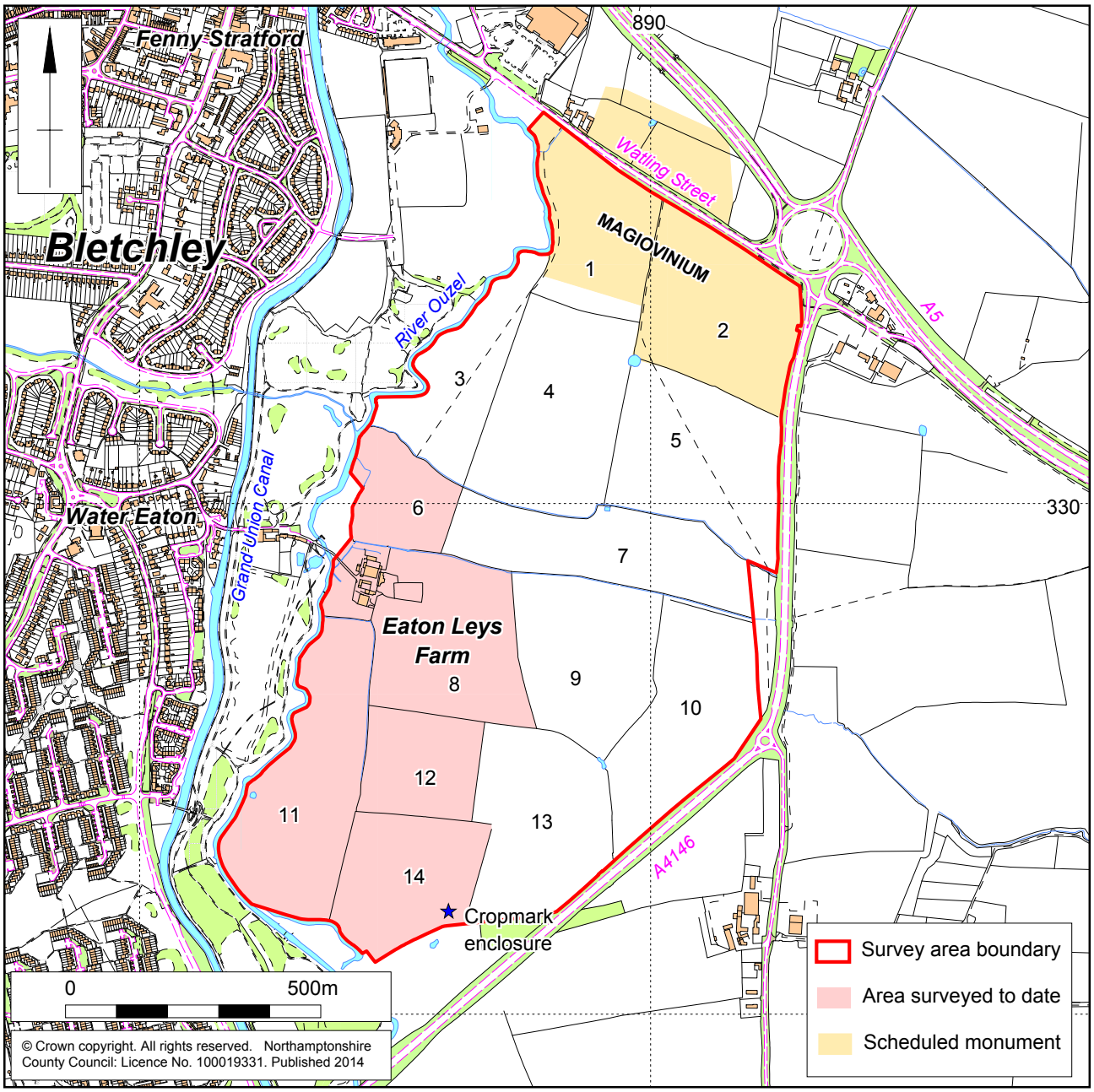
09 July 2014

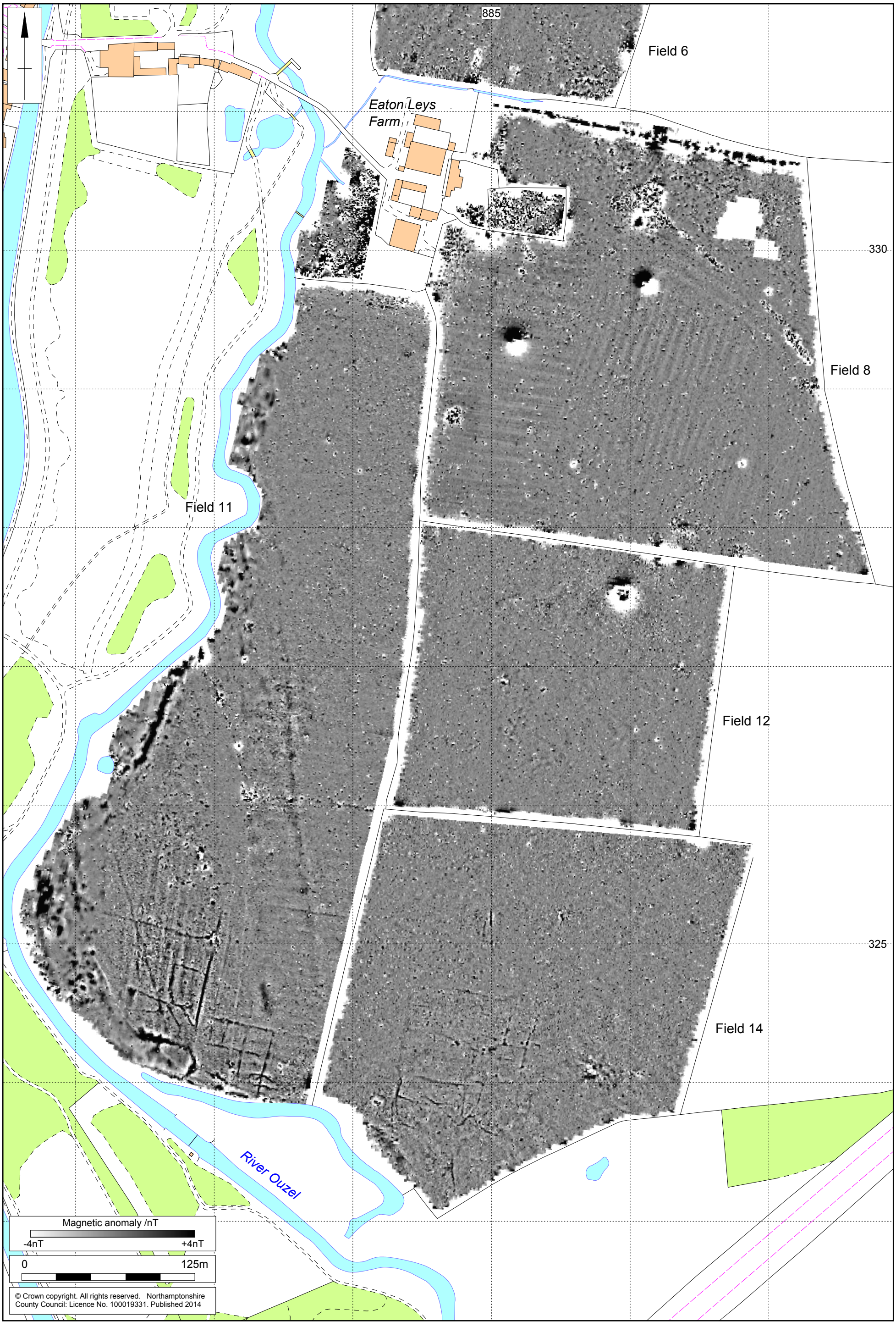






Scale 1:12,500 (A4)

Site location Fig 1



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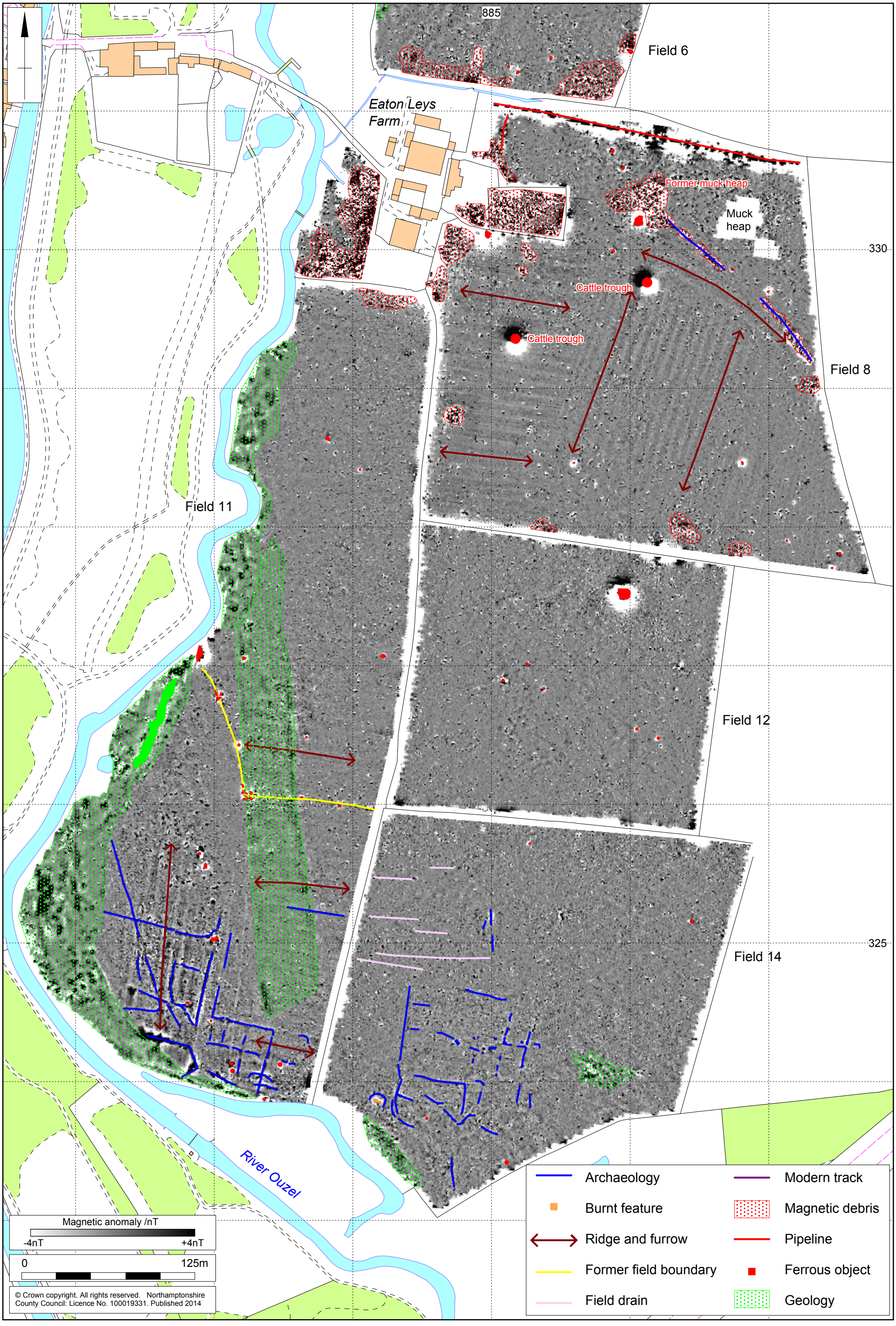
Magnetometer survey results (south) Fig 2



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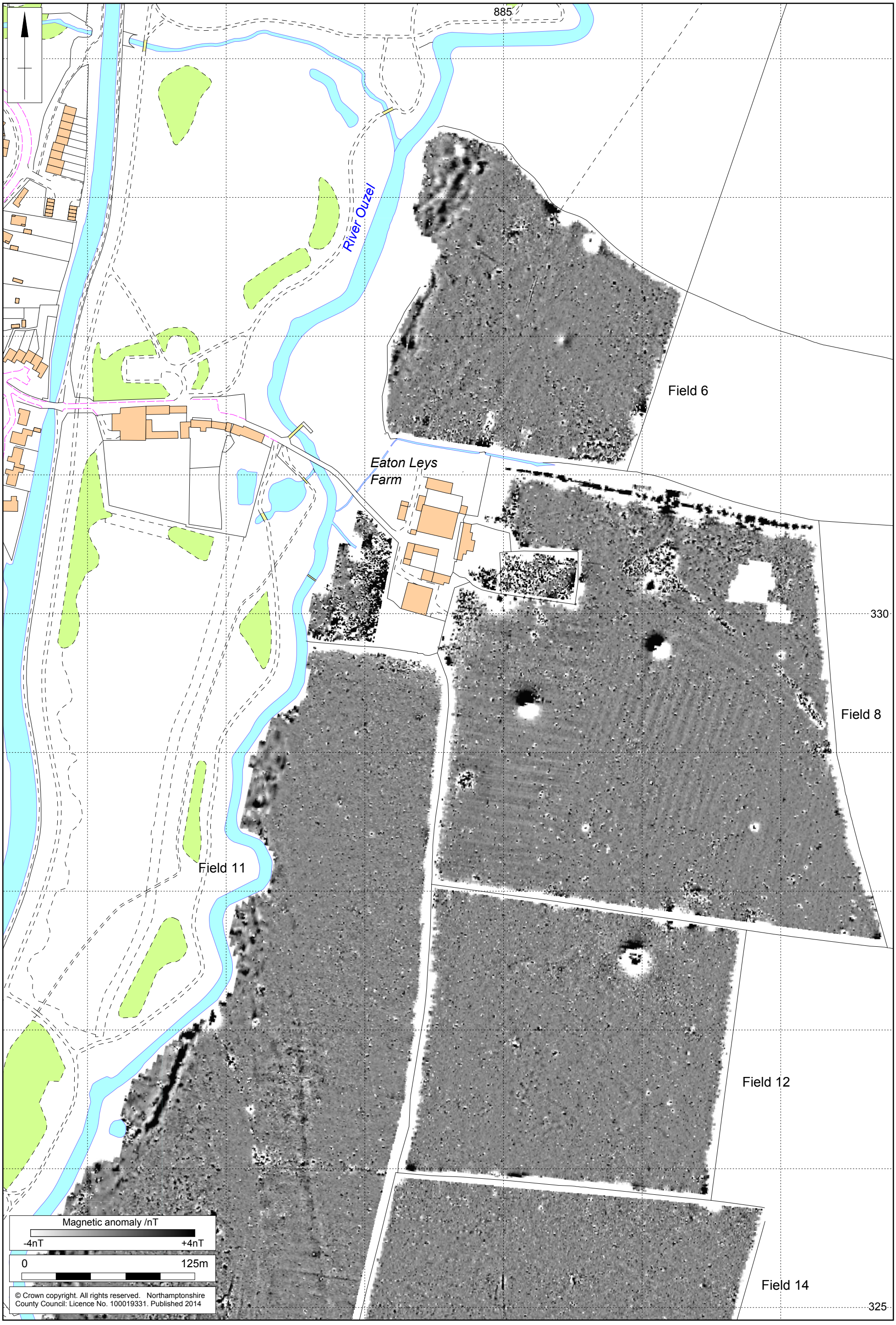
Magnetometer survey interpretation (south) Fig 3



Scale 1:2500

Magnetometer survey results (north) Fig 4

885

River Ouzel

T.Pole

T.Pole

T.Pole

Field 6

Eaton Leys Farm

Former muck heap

Muck heap

330

Cattle trough

Cattle trough

Field 8

Field 11

Field 12

Magnetic anomaly /nT

-4nT +4nT

0 125m

Archaeology

Burnt feature

Ridge and furrow

Former field boundary

Field drain

Modern track

Magnetic debris

Pipeline

Ferrous object

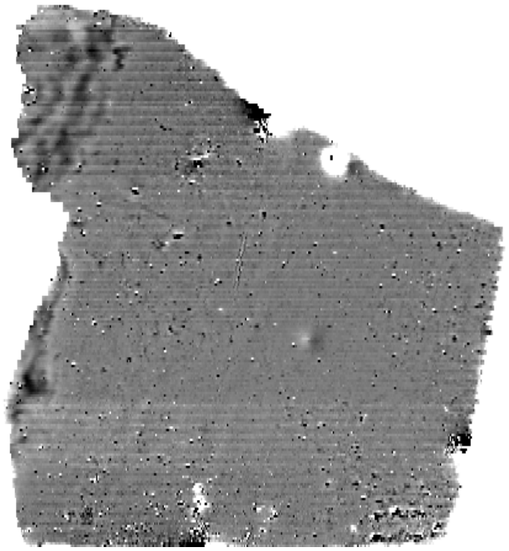
Geology

Scale 1:2500

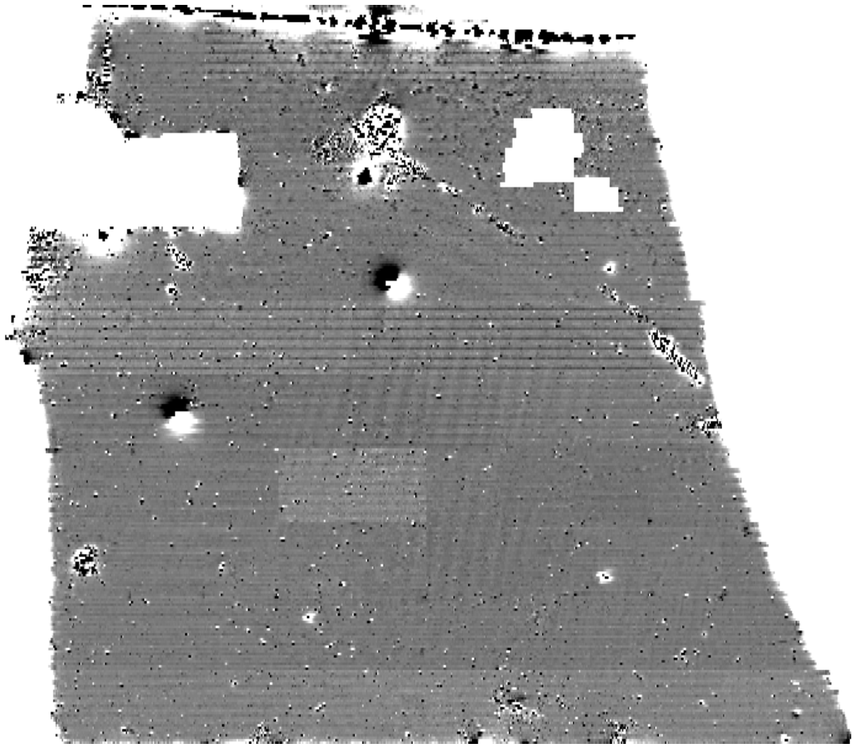
Magnetometer survey interpretation (north) Fig 5

Field 11A

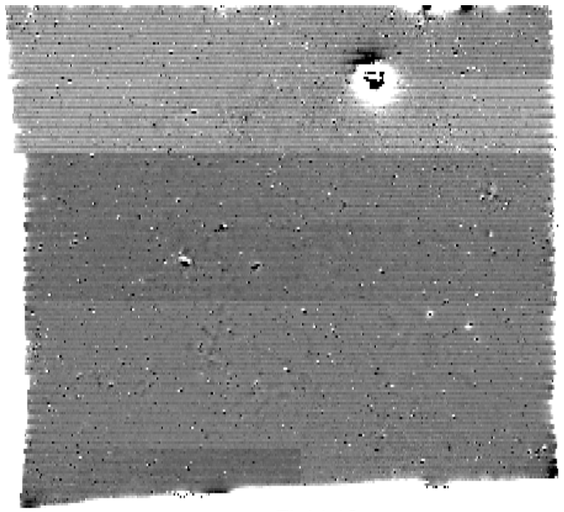
Field 8A



Field 6



Field 8



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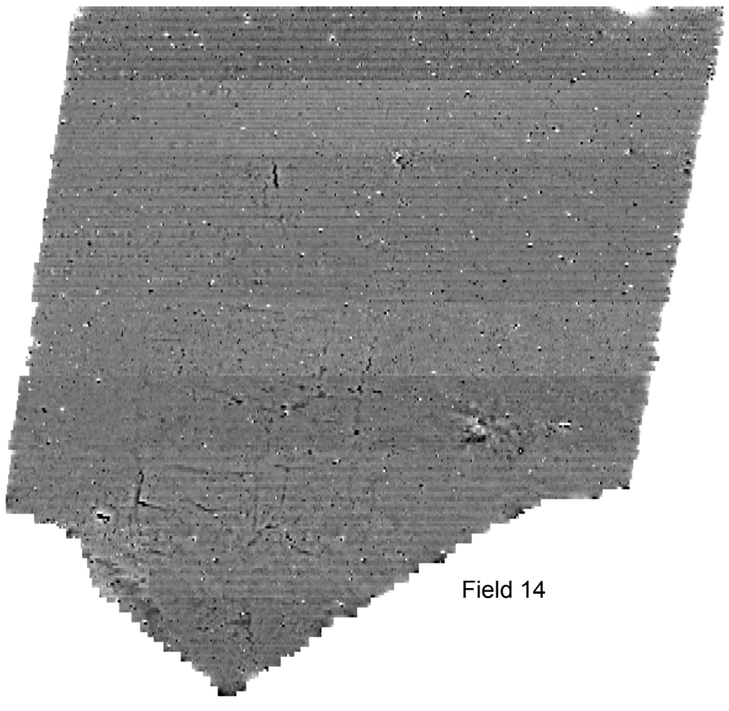
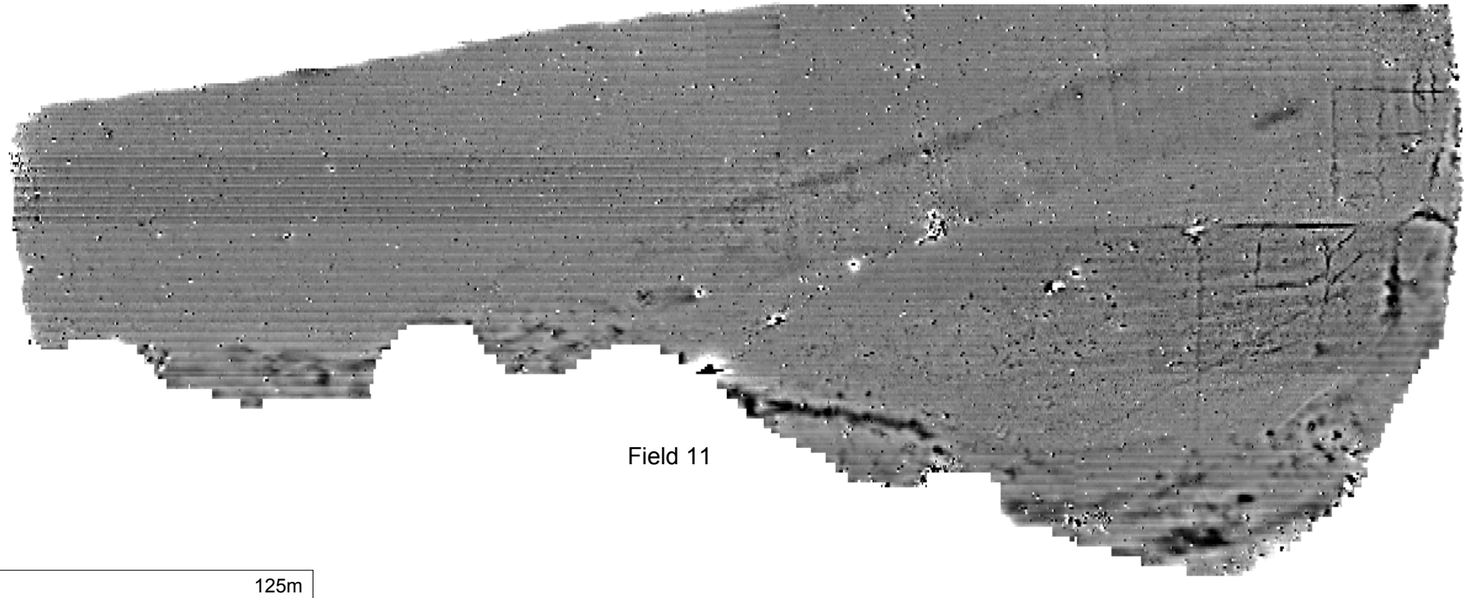


Field 14



Field 11

0 125m

Magnetic anomaly /nT
-10nT 0 +10nT

1:2500

Unprocessed magnetometer data Fig 6

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