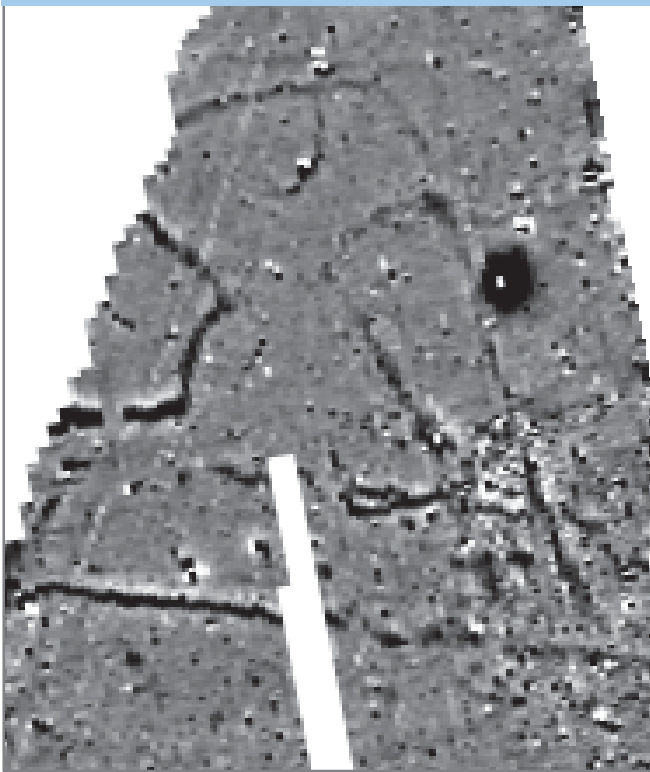




Northamptonshire Archaeology

Archaeological geophysical survey of land at Stifford
Clays Road, North Grays, Thurrock, Essex
October 2011



Northamptonshire Archaeology

2 Bolton House
Wootton Hall Park
Northampton NN4 8BE
t. 01604 700493 f. 01604 702822
e. sparry@northamptonshire.gov.uk
w. www.northantsarchaeology.co.uk



Northamptonshire
County Council

Adrian Butler

Report 11/223

October 2011



STAFF

Project Manager: Adrian Butler MA BSc AIfA

Fieldwork: John Walford MSc BSc
Robyn Pelling BA
Simon Wood BA MSc MA
Adam Meadows BSc

Text and Illustrations: Adrian Butler
John Walford

QUALITY CONTROL

	Print name	Signed	Date
Checked by	Pat Chapman	<i>PC</i>	27/10/11
Verified & Approved by	Andy Chapman	<i>AC</i>	27/10/11

OASIS REPORT FORM

PROJECT DETAILS		
Project name	Archaeological geophysical survey of land at Stifford Clays Road, North Grays, Essex	
Short description	Northamptonshire Archaeology was commissioned to carry out magnetometer survey in advance of a proposed development scheme at Stifford Clays Road, North Grays, Essex. An area of c 22.5ha was subject to detailed magnetometer survey. Survey of the two areas located likely archaeological features in the north of Field 1. The local geology of river terrace sands and gravels was very well detected in both areas, particularly Field 2. An east – west ditch apparently cuts a chord across the north of the area in which a long sub-rectangular enclosure is intersected by an irregular ditch around which pits and a possible activity area was located. Further enclosures were identified to the north and west and a line of pits aligns west – east apparently as a northern limit to the archaeology. 18th and 19th century land divisions were reconstructed in Field 2.	
Project type	Geophysical survey	
Site status	None	
Previous work	Desk-based assessment (Dicks 2011)	
Current Land use	Arable	
Future work	Unknown	
Monument type/ period	Pits, ditches and enclosures of unknown date	
Significant finds		
PROJECT LOCATION		
County	Essex	
Site address	Stifford Clays Road	
Study area	c 22.5ha	
OS Easting & Northing	TQ 610 805	
Height OD	c 15-20 m AOD	
PROJECT CREATORS		
Organisation	Northamptonshire Archaeology (NA)	
Project brief originator	CgMs Consulting	
Project Design originator	NA	
Director/Supervisor	John Walford	
Project Manager	Adrian Butler	
Sponsor or funding body	CgMs	
PROJECT DATE		
Start date	03 October 2011	
End date	27 October 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 of land at Stifford Clays Road, North Grays, Essex	
Serial title & volume	Northamptonshire Archaeology Reports 11/223	
Author(s)	Adrian Butler	
Page numbers	5	
Date	2 November 2011	

Contents

1	INTRODUCTION	1
2	TOPOGRAPHY AND GEOLOGY	1
3	ARCHAEOLOGICAL BACKGROUND	2
4	METHODOLOGY	3
5	SURVEY RESULTS	3
6	CONCLUSION	5
	BIBLIOGRAPHY	6

Figures

Fig 1	Site Location	1:20,000
Fig 2	Magnetometer Survey Results: Field 1	1:2,500
Fig 3	Magnetometer Survey Results: Field 2	1:2,500
Fig 4	Magnetometer Survey Interpretation: Field 1	1:2,500
Fig 5	Magnetometer Survey Interpretation: Field 2	1:2,500

**ARCHAEOLOGICAL GEOPHYSICAL SURVEY OF LAND AT
STIFFORD CLAYS ROAD, NORTH GRAYS, THURROCK, ESSEX
OCTOBER 2011**

ABSTRACT

Northamptonshire Archaeology was commissioned to carry out magnetometer survey in advance of a proposed development scheme at Stifford Clays Road, Grays, Thurrock, Essex. An area of c 22.5ha was subject to detailed magnetometer survey. Survey of the two areas located likely archaeological features in the north of Field 1. The local geology of river terrace sands and gravels was very well detected in both areas, particularly Field 2. An east – west ditch cuts across the north of the area, and to the north of this there is a complex of further ditches some forming a long sub-rectangular enclosure intersected by an irregular ditch around which pits and a possible activity area was located. Further sub-enclosures were identified to the north and west and a line of pits aligns west – east as a northern limit to the detected archaeology. 18th and 19th century land divisions were reconstructed in Field 2.

1 INTRODUCTION

Northamptonshire Archaeology (NA) was commissioned by CgMs Consulting to conduct an archaeological geophysical evaluation in advance of a proposed development scheme at Stifford Clays Road, Grays, Thurrock, Essex. The survey area consisted of two arable fields, totalling c 22.5ha in extent, centred at NGR TQ 610 805 (Fig 1). The aim of the survey was to determine whether the site contained archaeological remains which could be damaged or destroyed by the proposed development.

2 TOPOGRAPHY AND GEOLOGY

The two survey areas lie on the northern side of Grays (Fig 1). The total area is divided between Field 1 (west) approximately 7.75ha and Field 2 (east) c 14.75ha. Field 1 is bounded on the north-west by Stifford Clays Road, the A1012 to the west and Long Lane and Treacle Mine Roundabout at the southern end. The eastern side of Field 1 borders a suburban housing estate and playing field.

The same housing estate is situated to the south of Stifford Clays Road and then Field 2. The road continues around the southern and eastern boundary of Field 2 and to the north is the A13.

The survey areas are on the north-west facing southern slope of the Mar Dyke valley, falling from the ridge at approximately 20m aOD along the axis of Field 2 to c 15m at the A13. A strip of Field 1 aligned along the axis of the area had been left fallow, rendering this part not surveyable (Fig 3).

The British Geological Survey maps the solid geology of the site as Lambeth Group clays, silts, sands and gravels, and the drift as Thames Group river terrace sands and gravels (BGS 2011)

3 ARCHAEOLOGICAL BACKGROUND

A desk-based assessment of the proposed development area has been carried out by CgMs Consulting (Dicks 2011). Although no archaeological remains are known from the site area itself, a number of discoveries have been made within the general vicinity.

Early prehistory

A number of lithic finds of Neolithic date have been made to the east and south of the proposed development area. No archaeological features of the Neolithic period have been identified from the locality to date. Middle to Late Bronze Age enclosures are contained within a Scheduled cropmark complex (Grey Goose Farm) 470m east of Field 2. A possible Bronze Age enclosure has been identified by aerial photography immediately across Stifford Clays Road, east of Field 1. Limited excavation at William Edwards School, east of Field 2, has revealed evidence of Bronze Age barrows, and other features. A Late Bronze Age settlement is suggested in the vicinity of Fields 1 and 2, based on the presence of Early Iron Age pottery.

Later prehistory

The cropmark complex east of Field 2 (above) contains evidence of an Iron Age field system. A possible Late Iron Age/Roman farmstead has been identified from cropmarks at William Edwards School and a large, Mid-Late Iron Age, hilltop enclosure ditch

immediately north-west of Field 1 from excavations on Stifford Clays Road (Dicks 2011, 16).

Roman

The possible Late Iron Age/Roman farmstead has been identified from cropmarks at William Edwards School and the large hilltop enclosure ditch immediately north-west of Field 1 also contains Roman material.

Saxon

A sunken featured building was identified in excavations immediately north of Field 1. More of the same have been seen in the aerial photography of Grey Goose Farm.

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).

A tape measure and optical square were used to divide the survey area into a grid of 30m squares, and this grid was tied in to the Ordnance Survey National Grid with a Leica Systems 1200 dGPS. The gradiometers were then 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 forthcoming).

The survey data was processed using Geoplot 3.00v 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 a grey-tone plot, at a scale of +/- 4nT black/white. The plot has been scaled, rotated and resampled (georectified)

for display against the Ordnance Survey base mapping (Fig 2). An interpretative overlay has been produced and is shown in Figures 3 and 5.

5 SURVEY RESULTS

The results and interpretations for the magnetometer surveys can be found in Figures 2 to 5. In places around the edge of the field there are small magnetic halos. These relate to various adjacent fences, gates and buildings, and are not of any archaeological significance. Both fields were covered by a similar background level of dipolar (small paired positive-negative) anomalies representing pieces of ferrous and ceramic –based material in the topsoil, such as horseshoes, broken plough shares, brick and tile.

Field 1

A chain of alternating intensely magnetised positive/negative anomalies, likely to indicate a buried ferrous pipeline, was identified, crossing Field 1 on a north-east to south west alignment from Palins Way at the eastern boundary. A second ferrous pipeline was detected along the south-western boundary of Field 1.

Broad, weakly positive and negative magnetic trends in the data followed south-east to north-west and south-west to north-east orientations in the central third of Field 1. It is most likely that these represent variation in the underlying substrate.

The northern third of Field 1 was found to contain anomalies putatively of archaeological origin (see Fig 4 Detail). A positive linear anomaly, likely to reflect a 20m-long ditch, was detected on a south-west to north-east orientation across the fallow strip in the centre of the field. Working from south to north, the main archaeological anomalies are thus: a semi-continuous positive linear anomaly, probably a ditch, orientated from west to east across the field. This ditch effectively marks the southern boundary of archaeological activity. Positive anomalies describe a sub-rectangular ditched enclosure, approximately 65m long, on a south-east to north-west orientation on the eastern side of the field. An intense anomaly was detected to the east of the enclosure, representing a buried ferrous object.

Discrete positive anomalies indicating possible pits were located around the south of the enclosure, where it was crossed west to east by an extremely irregular ditch anomaly. A

'noisy' area of magnetism (c 12m diameter) was detected where the eastern end of the ditch intersects the eastern enclosure ditch. It is possible that this represents an area of archaeological activity, such as features too small to be resolved by the survey (postholes, small hearths etc). Further north, a curving ditch-type anomaly continues the north-western alignment of the long enclosure, turning to the west, with a semi-circular positive, ditch, anomaly on its southern side. These in turn appear to be shadowed by very weakly positive anomalies on the northern and eastern side.

Positive anomalies on the western side of Field 1 probably represent three sides of a slightly concave enclosure that runs into the road. Six discrete positive anomalies, likely to reflect small pits, were recorded on a west to east orientation across the northern tip of Field 1.

Field 2

The most striking aspect of the magnetometer results from Field 2 were the long, broad and sinuous positive and negative anomalies, detected on a generally south-west to north-east orientation in the eastern half of the field. As with similar examples located in Field 1, these anomalies are likely to relate to the geological base of the site – river terrace sands and gravels (see Para.2).

In recent history, Field 2 was part of four larger fields (Dicks 2011, 19). Indications of the three former north - south boundaries were located by the survey, two as linear positive anomalies with ferrous dipolar anomalies along the length, and centrally as a band of dipoles where the boundary has apparently been removed and further spread around by ploughing.

Two ferrous pipelines were identified in Field 1. One centrally, orientated south to north and branching north-west near the northern end. The second was at the eastern end of the area, orientated south-east to north-west across the field, branching eastwards for 10m towards a large ferrous anomaly, the main line terminating with a south-west turn along the side of the A13.

6 CONCLUSION

Survey of the two areas located likely archaeological features in the north of Field 1. The local geology of river terrace sands and gravels was very well detected in both areas, particularly Field 2. An east – west ditch cutting across the north of the area in which a long sub-rectangular enclosure is intersected by an irregular ditch around which pits and a possible activity area was located. Further enclosures were identified to the north and west and a line of pits aligns west – east as a northern limit to the detected archaeology. Land divisions of the 18th and 19th centuries were reconstructed in Field 2.

BIBLIOGRAPHY

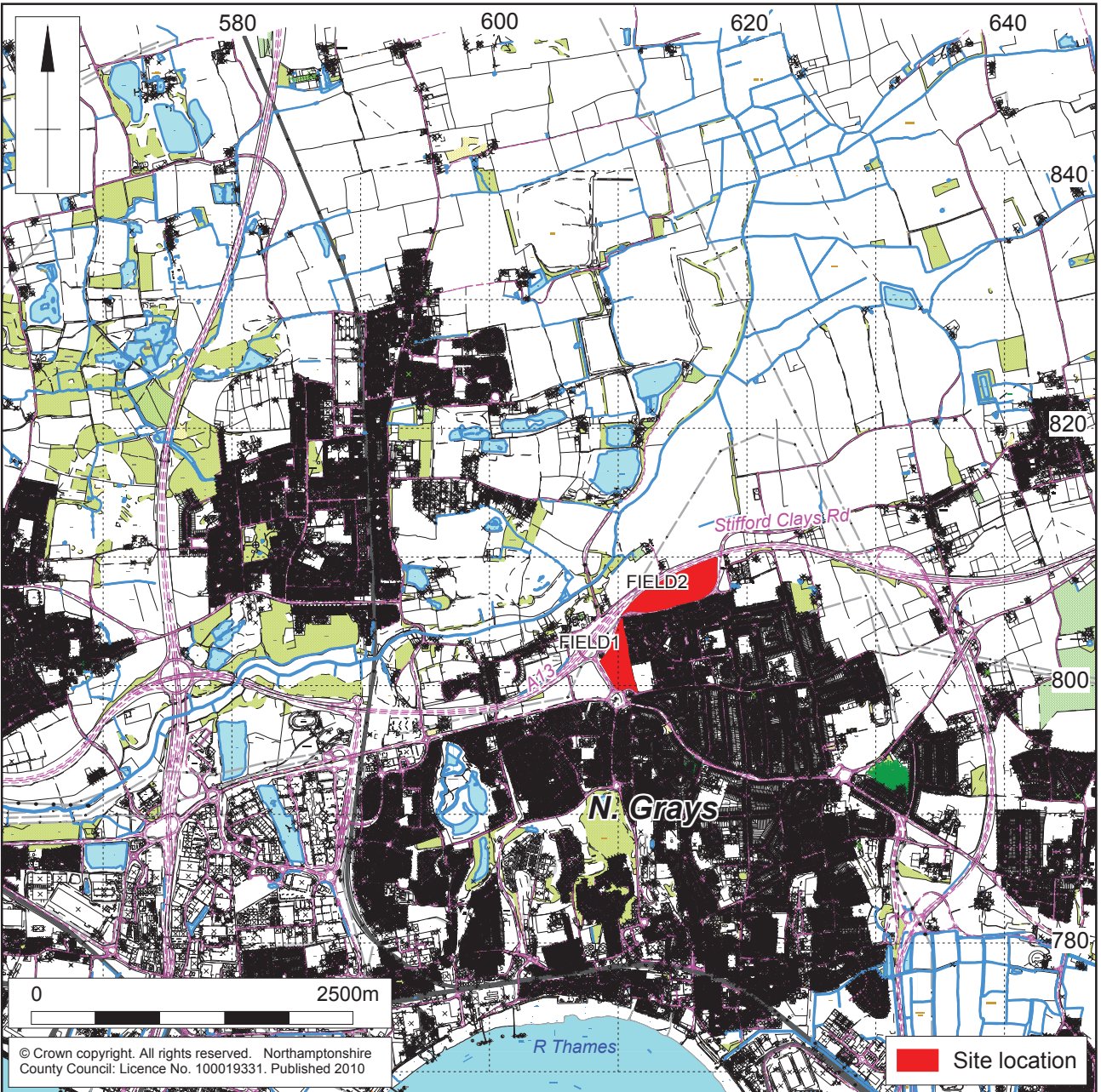
Bartington, G, and Chapman, C, 2003 A high-stability fluxgate magnetic gradiometer for shallow geophysical survey applications, *Archaeological Prospection*, **11**, 19-34

BGS, 2011 *Online Geology Mapping* www.bgs.ac.uk/geoindex.htm ; British Geological Survey accessed 24/10/11

Dicks, S, 2011 *Archaeological Desk Based Assessment: Land at Stifford Clays Road, North Grays, Essex*; CgMs report **SD/12915**

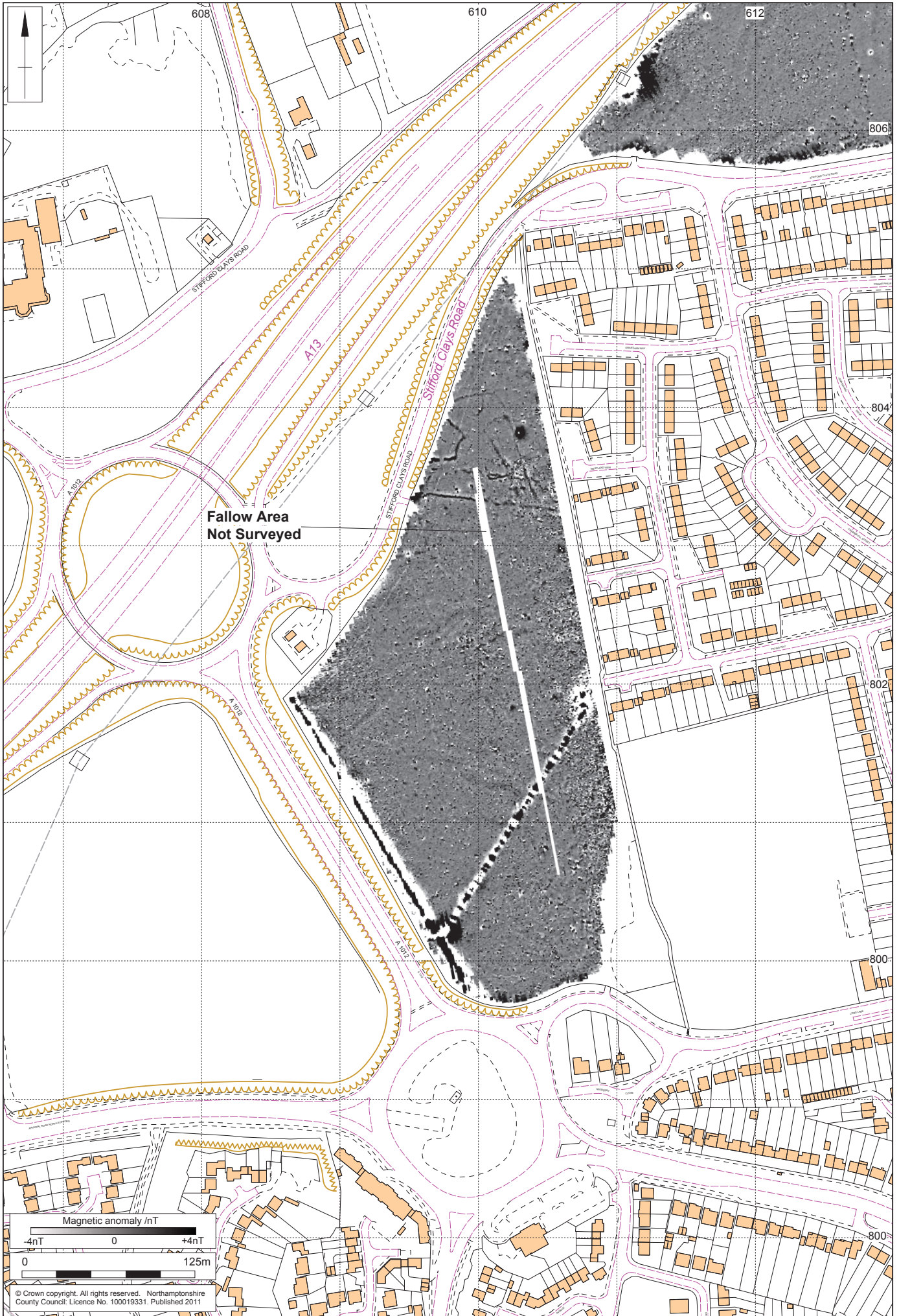
EH 2008 *Geophysical Survey in Archaeological Field Evaluation*, English Heritage

IfA forthcoming (2011) *The Use of Geophysical Techniques in Archaeological Evaluations*, Institute for Archaeologists Technical Paper



Scale 1:50,000

Site Location Fig 1



Scale 1:2500

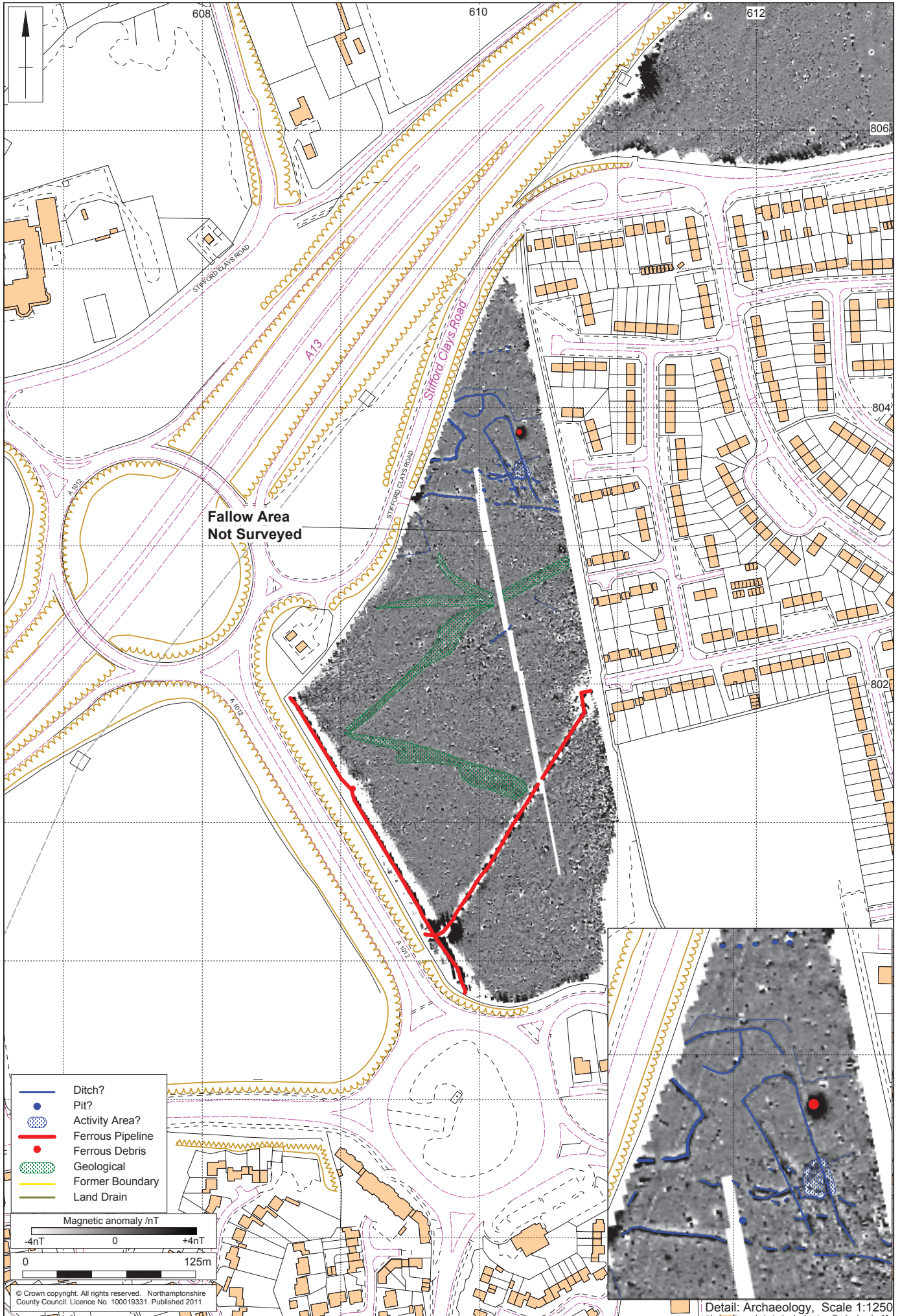
Magnetometer survey results: Field 1 Fig 2



Magnetometer survey results: Field 2 Fig 3

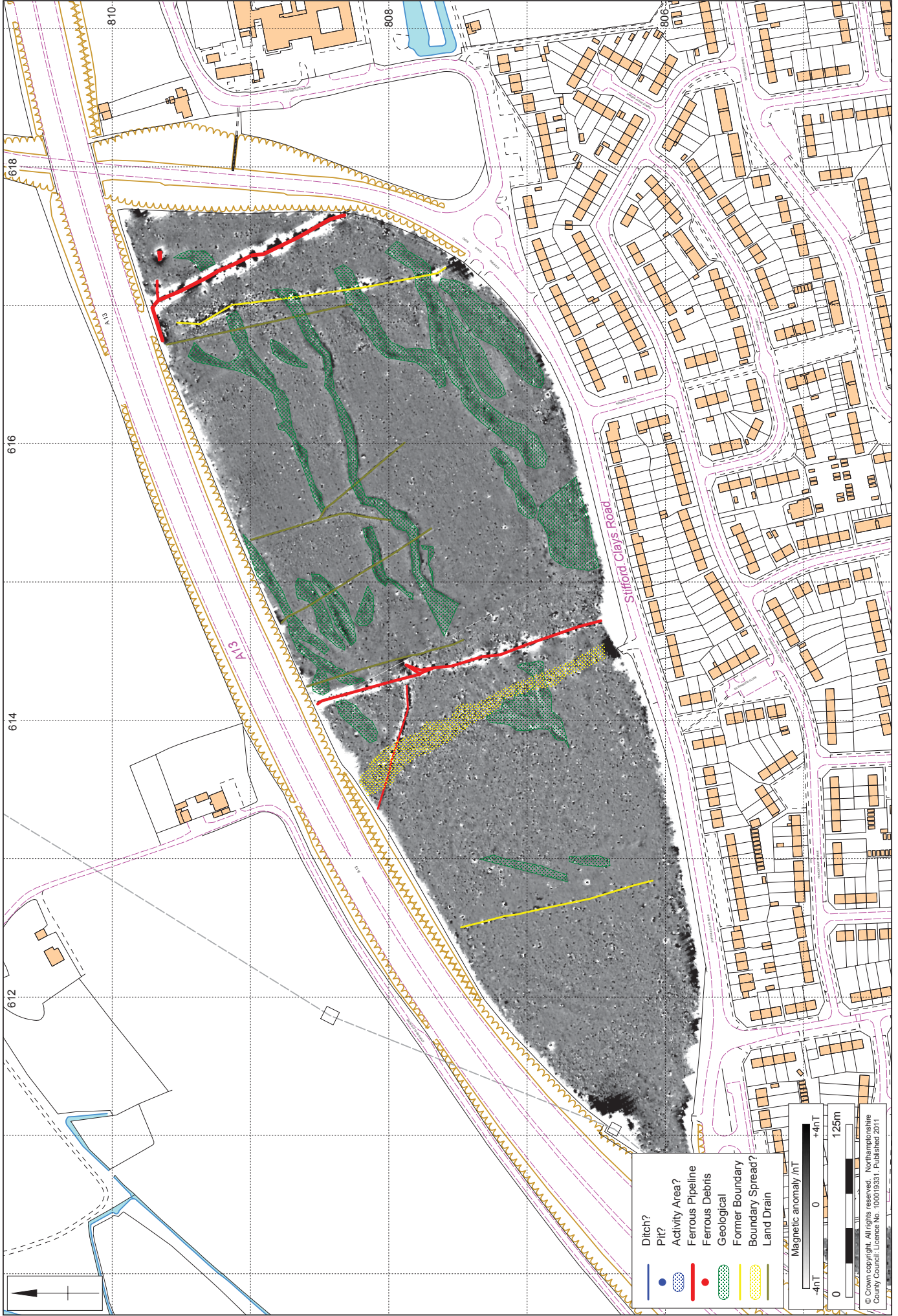
Scale 1:2500

© Crown copyright. All rights reserved. Northamptonshire County Council. Licence No. 100019331. Published 2011



Scale 1:2500

Magnetometer survey interpretation: Field 1 Fig 4



Magnetometer survey interpretation: Field 2 Fig 5

Scale 1:2500



Northamptonshire County Council

Northamptonshire Archaeology

Northamptonshire Archaeology

2 Bolton House
Wootton Hall Park
Northampton NN4 8BE

t. 01604 700493 f. 01604 702822

e. sparry@northamptonshire.gov.uk

w. www.northantsarchaeology.co.uk



Northamptonshire
County Council