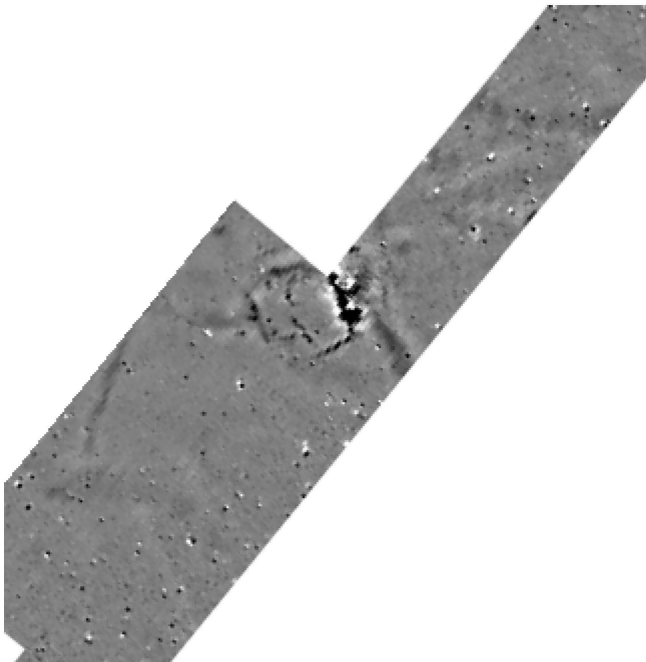




Northamptonshire Archaeology

Archaeological Geophysical Survey on the line of the proposed Western Relief Road, Spalding Lincolnshire



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Report 11/253

November 2011



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QUALITY CONTROL

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Checked by	Pat Chapman	<i>PC</i>	23/11/11
Verified by	Adrian Butler	<i>AB</i>	24/11/11
Approved by	Iain Soden	<i>IS</i>	24/11/11

OASIS REPORT FORM

PROJECT DETAILS		
Project title	Archaeological geophysical survey on the line of the proposed Western Relief Road, Spalding, Lincolnshire	
Short description	Northamptonshire Archaeology was commissioned by Mouchel Ltd to conduct a magnetometer survey of the proposed route of the Spalding Western Relief Road. A total area of 7ha was surveyed, covering all parts of the route that were suitable and accessible for survey. This work identified one small ditched enclosure, associated with a strongly enhanced magnetic anomaly which may represent a saltern. These remains are probably of Iron Age or Romano-British date.	
Project type	Geophysical survey	
Site Status	None	
Previous work	None known	
Current land use	Arable land	
Future work	Unknown	
Monument type and period	Iron Age or Romano-British enclosure and possible saltern.	
PROJECT LOCATION		
County	Lincolnshire	
Site address	Spalding	
Post code		
OS co-ordinates	TF 225 210	
Area	7 ha	
Height aOD	c 2 - 4m AOD	
PROJECT CREATORS		
Organisation	Northamptonshire Archaeology	
Project brief originator	Mouchel Ltd	
Project Design originator	Northamptonshire Archaeology	
Director/Supervisor	Ian Fisher	
Project Manager	Adrian Butler	
Sponsor or funding body	Mouchel Ltd	
PROJECT DATE		
Start date	17 October 2011	
End date	24 November 2011	
ARCHIVES	Location (Accession no.)	Contents
Physical	NA store	Site records
Paper		Client report PDF
Digital		Survey data
BIBLIOGRAPHY	Journal/monograph, published or forthcoming, or unpublished client report (NA report)	
Title	Archaeological geophysical survey on the line of the proposed Western Relief Road, Spalding, Lincolnshire	
Serial title & volume	Northamptonshire Archaeology Reports 11/253	
Author(s)	John Walford	
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Date	24 November 2011	

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**ARCHAEOLOGICAL GEOPHYSICAL SURVEY ON THE LINE OF THE
PROPOSED WESTERN RELIEF ROAD, SPALDING, LINCOLNSHIRE
OCTOBER - NOVEMBER 2011**

Abstract

Northamptonshire Archaeology was commissioned by Mouchel Ltd to conduct a magnetometer survey of the proposed route of the Spalding Western Relief Road. A total area of 7ha was surveyed, covering all parts of the route that were accessible and suitable for survey. This work identified one small ditched enclosure, associated with a strongly enhanced magnetic anomaly which may represent a saltern. These remains are likely to be of Iron Age or Romano-British date.

1 INTRODUCTION

Northamptonshire Archaeology was commissioned by Mouchel Ltd, to conduct a magnetometer survey of the proposed route of the Spalding Western Relief Road. The road corridor was aligned roughly north south, and ran from NGR TF 2293 2203 to NGR TF 2260 2014 (Fig 1).

The fieldwork was carried out in October and November 2011, and covered approximately 7ha of land. Some parts of the route were not investigated, either because access had not been granted or because ground conditions or standing crops rendered them unsurveyable.

2 TOPOGRAPHY AND GEOLOGY

The proposed road corridor follows a sinuous route southwards from the A151 Bourne Road. It passes through several arable fields and other pieces of land, which are identified in this report according to the developer's plot numbers (Fig 2).

The terrain through which the road corridor passes is broadly flat, and stands at an elevation of c 2 to 4m AOD. It is underlain by locally variable marine and peri-marine sediments of Holocene date.

3 ARCHAEOLOGICAL BACKGROUND

The proposed road corridor passes through an area to the west of Spalding which contains an abundance of archaeological remains. The majority of these are enclosure complexes of Iron Age to Romano-British date and have been identified from cropmark evidence (Mouchel Ltd 2011; Google 2011). Similar remains also exist to the north, in the Wygate area, and some of these have been investigated by trial trenching (Yates 2004; Snee 2003 cited in Yates 2004).

A particular feature of Iron Age and Romano-British sites in the Lincolnshire fens, including those around Spalding, is their frequent association with salterns. These are small industrial features in which salt water, drawn from the formerly existing

network of tidal creeks, was boiled to extract salt (Hall and Coles 1994, 101-2, 115-6).

There are no known archaeological sites of post-Roman date within the proposed road corridor, but the proposed junction with the A151 lies less than 200m from Monk's House, a Grade II* listed property of early sixteenth century date (EH List no. 1063993).

4 METHODOLOGY

The survey was undertaken between 17th October and 3rd November 2011, at which time five plots of land were suitable and accessible for survey. Of the remainder, Plots 149 and 151 were unsurveyable due to crop height and Plot 44 because it was occupied by allotments. Plot 147 was not surveyed because access permission had been withheld.

The survey was conducted with *Bartington Grad 601-2*, twin sensor array, vertical component fluxgate gradiometers (Bartington and Chapman 2003). These magnetometers are standard instruments for archaeological survey and can resolve magnetic variations as slight as 0.1 nanoTesla (nT).

An independent set of 30m survey grids was established within each surveyable plot of land by means of a Leica System 1200 dGPS. The magnetometers 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 written scheme of investigation (NA 2011), and guidelines issued by English Heritage and by the Institute for Archaeologists (EH 2008; IfA 2011).

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 the data was destaggered as necessary.

The processed data is presented in this report in the form of greyscale plots (scale +4nT to -4nT black ~ white) which have been scaled, rotated and resampled (georectified) for display against the Ordnance Survey base mapping (Figs 2, 3, 5 and 7). Interpretative plots have been produced and are overlaid on the data in Figures 4, 6 and 8. Raw data plots are presented in Figure 9.

5 SURVEY RESULTS (Figs 2 to 8)

Plot 150 (Figs 3 and 4)

The data from this plot is dominated by a chaotic mass of irregular magnetic anomalies. These are almost certainly of natural origin, and probably indicate pockets of iron sulphate minerals within the underlying sediments (*cf* Kattenberg and Gaffney 2005).

Plot 26 (Figs 5 and 6)

Nothing of any significance was detected in this plot

Plot 8 (Figs 5 and 6)

There is one discrete positive magnetic anomaly in this plot which could be of archaeological significance. It attains a maximum intensity of 87nT, which might be consistent with a saltern or other thermoremanently magnetised feature. However, such an anomaly could also be caused by a deeply buried piece of iron and the latter interpretation is perhaps the most likely one in this case.

Otherwise, the data contains two insignificant ferrous halos of modern origin, one at the southern end of the plot and the other adjacent to a fence corner.

Plot 145 (Figs 7 and 8)

A complex of anomalies located towards the centre of this plot indicates the presence of an archaeological site of probable Iron Age or Romano-British date. This complex comprises a square ditched enclosure with internal divisions, measuring approximately 20m across, and several other ditches or channels. The eastern edge of the enclosure is of irregular form and exhibits considerable magnetic enhancement, perhaps indicating the presence of a saltern or other highly fired industrial feature.

At the south-western end of the plot there are a few anomalies of more recent date. One slightly ill-defined positive linear anomaly probably represents an old field boundary depicted on early editions of the Ordnance Survey. To the west of this is an organised group of ferrous anomalies of uncertain significance. They seem likely to represent a fairly modern feature – perhaps a set of footings or other structural remains - but they do not coincide with any feature recorded on the available historic mapping.

Plot 46 (Figs 7 and 8)

There are two positive linear anomalies in the data from this plot; one running along the northern edge of the survey area and another, which is partially obscured by ferrous halos, following the line of the southern field boundary. The former can be matched with a boundary ditch shown on the first edition Ordnance Survey and the latter, although not depicted on any available historic map, is also thought likely to represent a relatively recent field boundary.

6 CONCLUSION

The magnetometer survey has identified a single group of archaeological remains, consisting of a small ditched enclosure, a number of other ditches or water channels and a possible saltern, all lying in Plot 145. Nothing else of clear archaeological significance was detected.

The generally bland nature of the magnetometer data is at odds with the cropmark evidence, which suggests archaeological remains should be fairly widespread along the proposed road corridor (Section 3, above). This discrepancy is probably best explained by the frequently waterlogged nature of the underlying sediments, which would tend to promote the leaching of iron minerals, and thus depletion of the soil magnetism (EH 2008, 16). This process can render archaeological features undetectable, except where they contain fired clay or other especially magnetic materials.

A second factor which may have reduced the reliability of the survey results is the localised presence of iron sulphate deposits within the soil. Previous work has shown that these can produce complex magnetic anomalies, such as those encountered in plot 150, and that these may obscure weaker archaeological anomalies (Kattenberg and Gaffney 2005).

Furthermore, magnetometer survey is a relatively shallow-seeking technique, which can rarely 'see' features below 1m depth (EH 2008, 16). Thus it is unlikely to detect the deeply buried prehistoric remains which are sometimes found interstratified amongst fenland sediments.

Because of the particular limitations and difficulties outlined above, the data presented in this report is thought unlikely to give a full impression of the archaeological potential of the proposed road corridor. Whilst the features which have been detected are very likely to prove 'real', it may transpire that the 'blank' areas are less archaeologically sterile than the magnetometer data would suggest.

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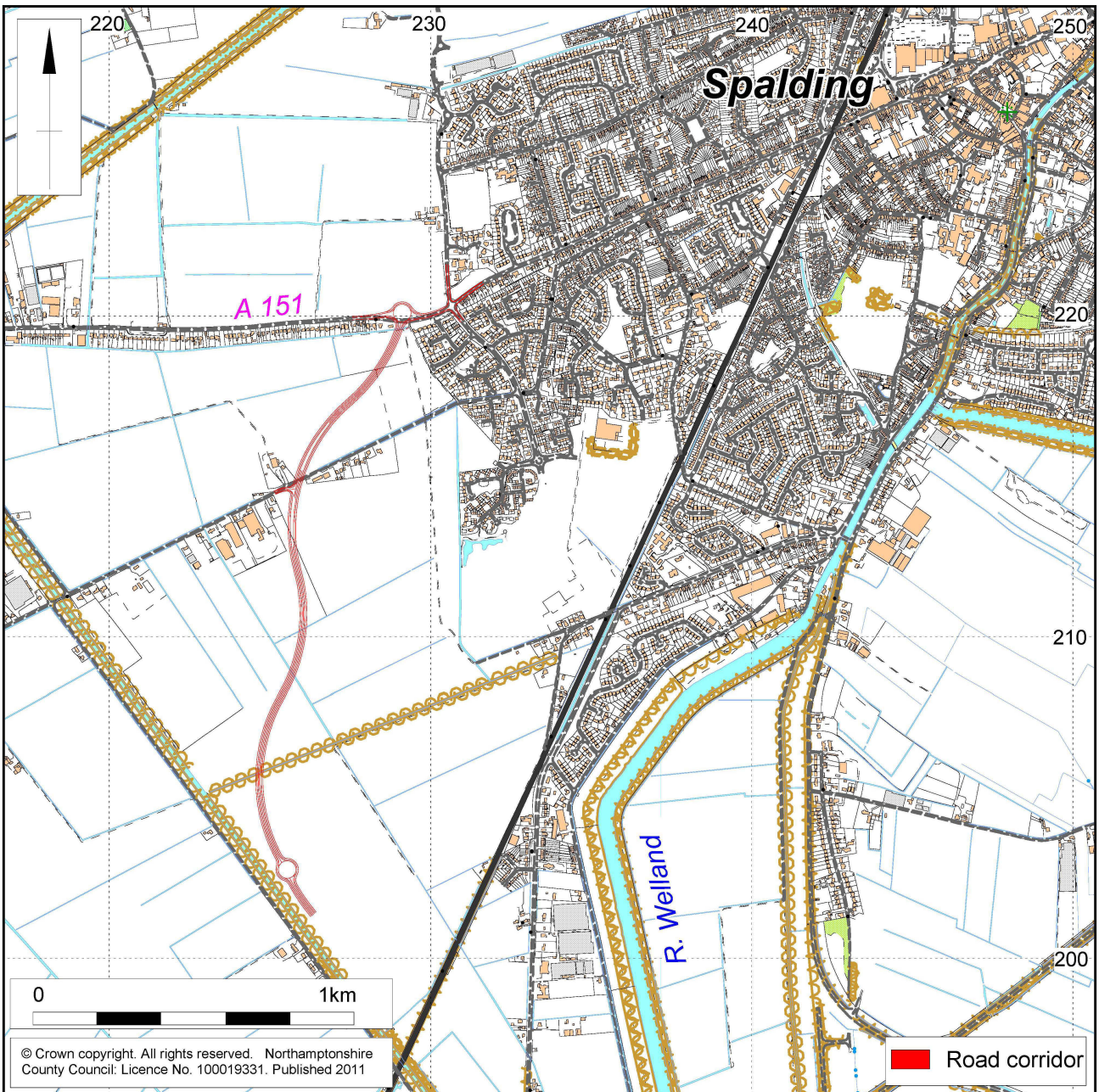
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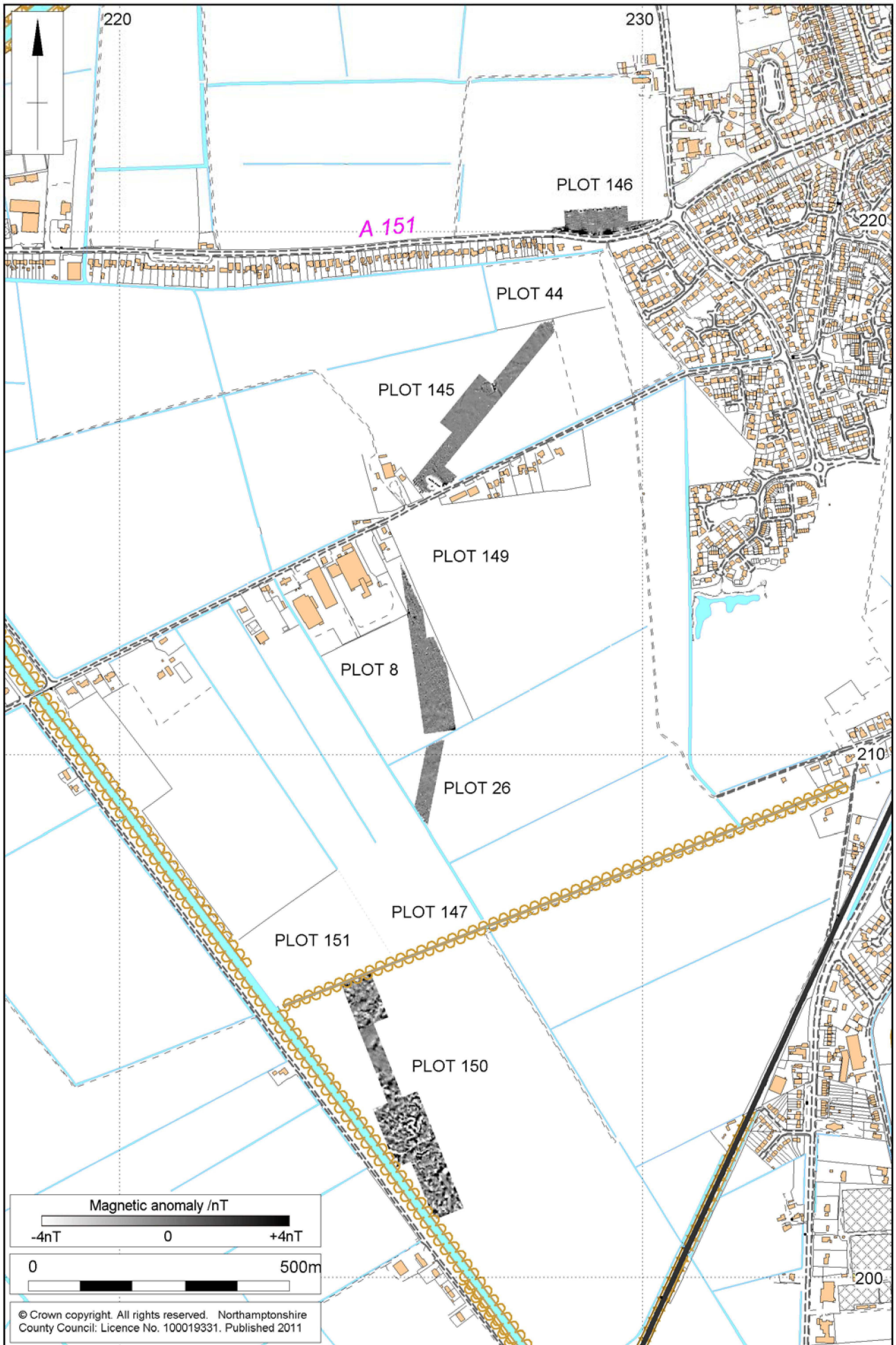
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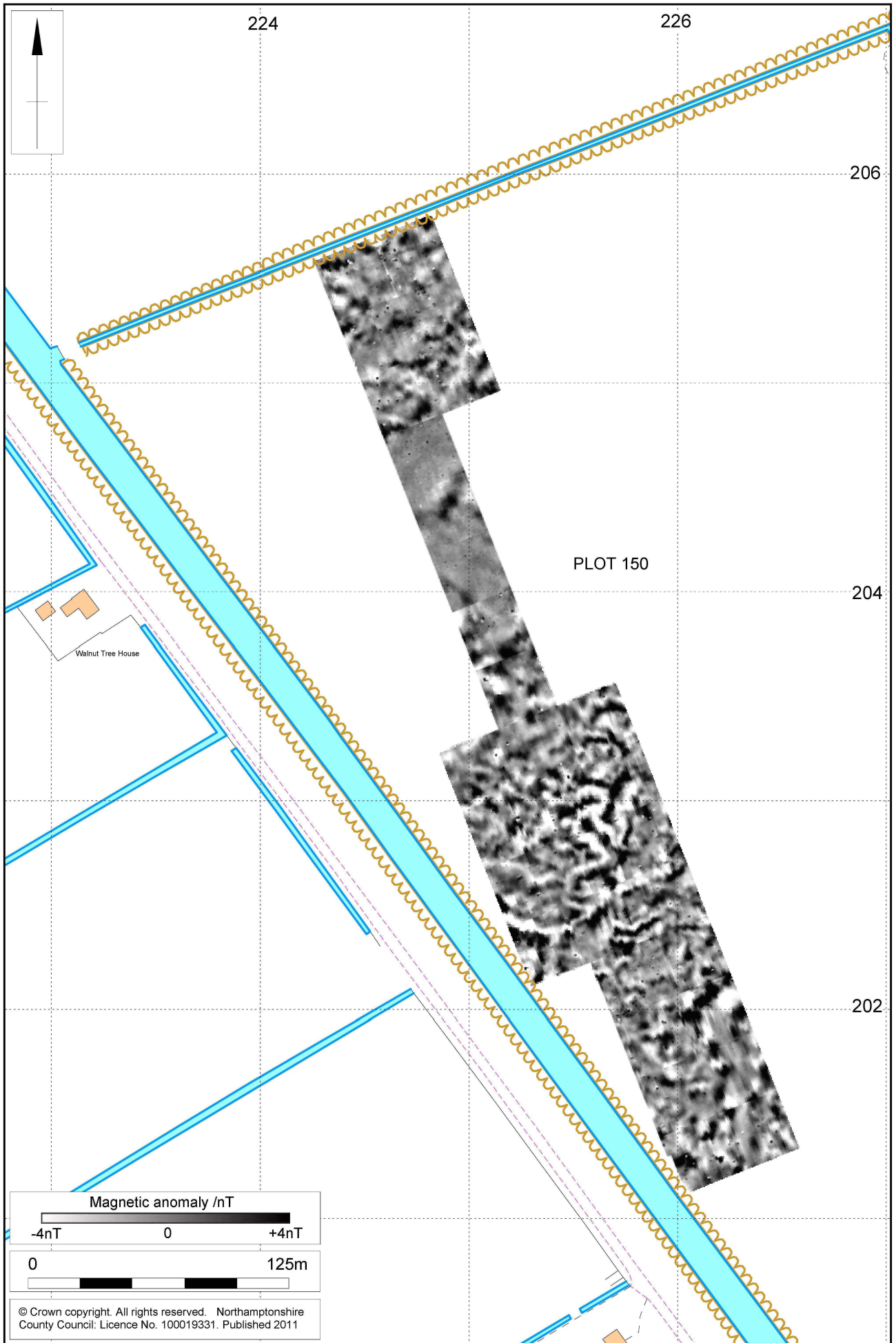
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Site Location Fig 1



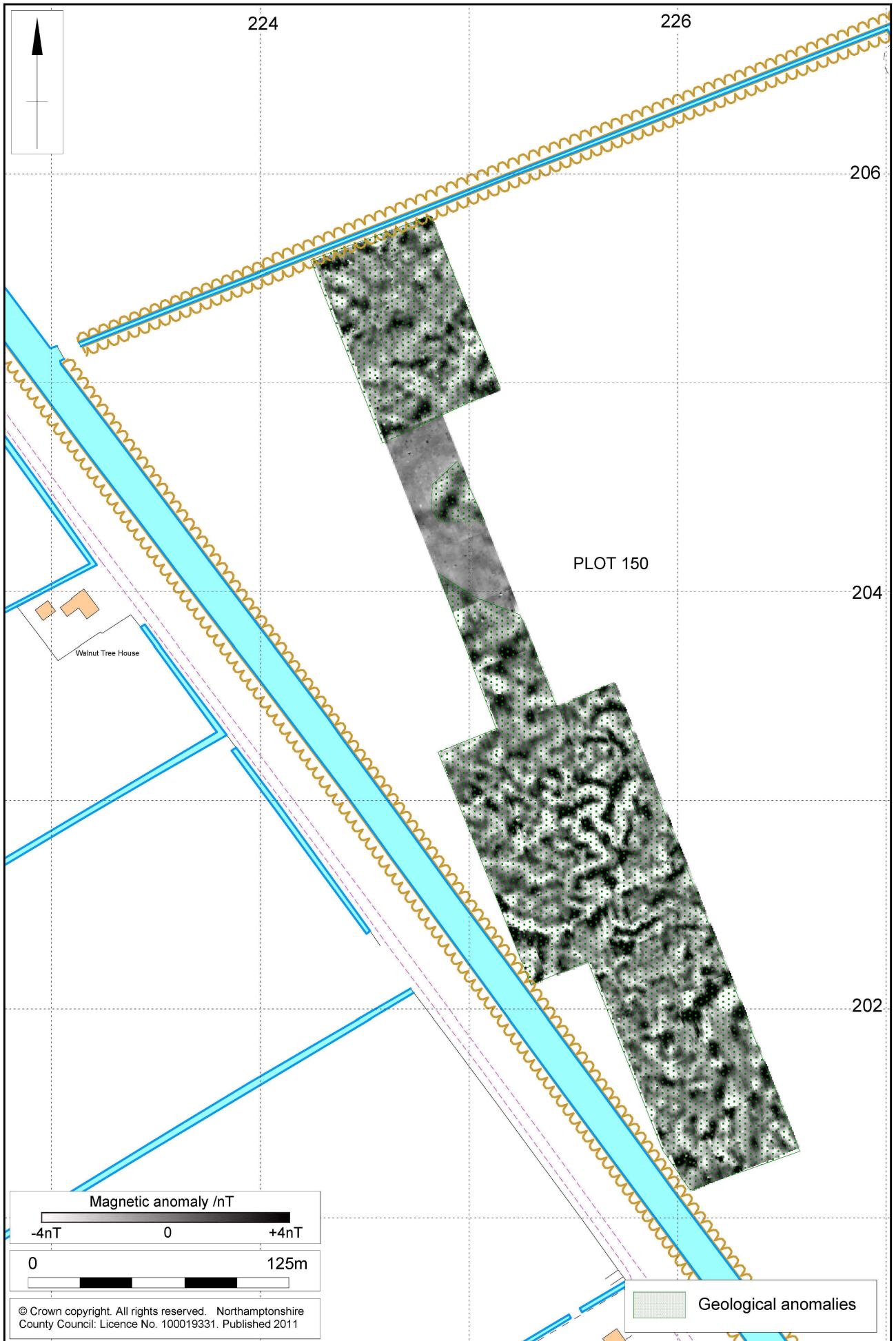
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Overview of Magnetometer Survey Results Fig 2



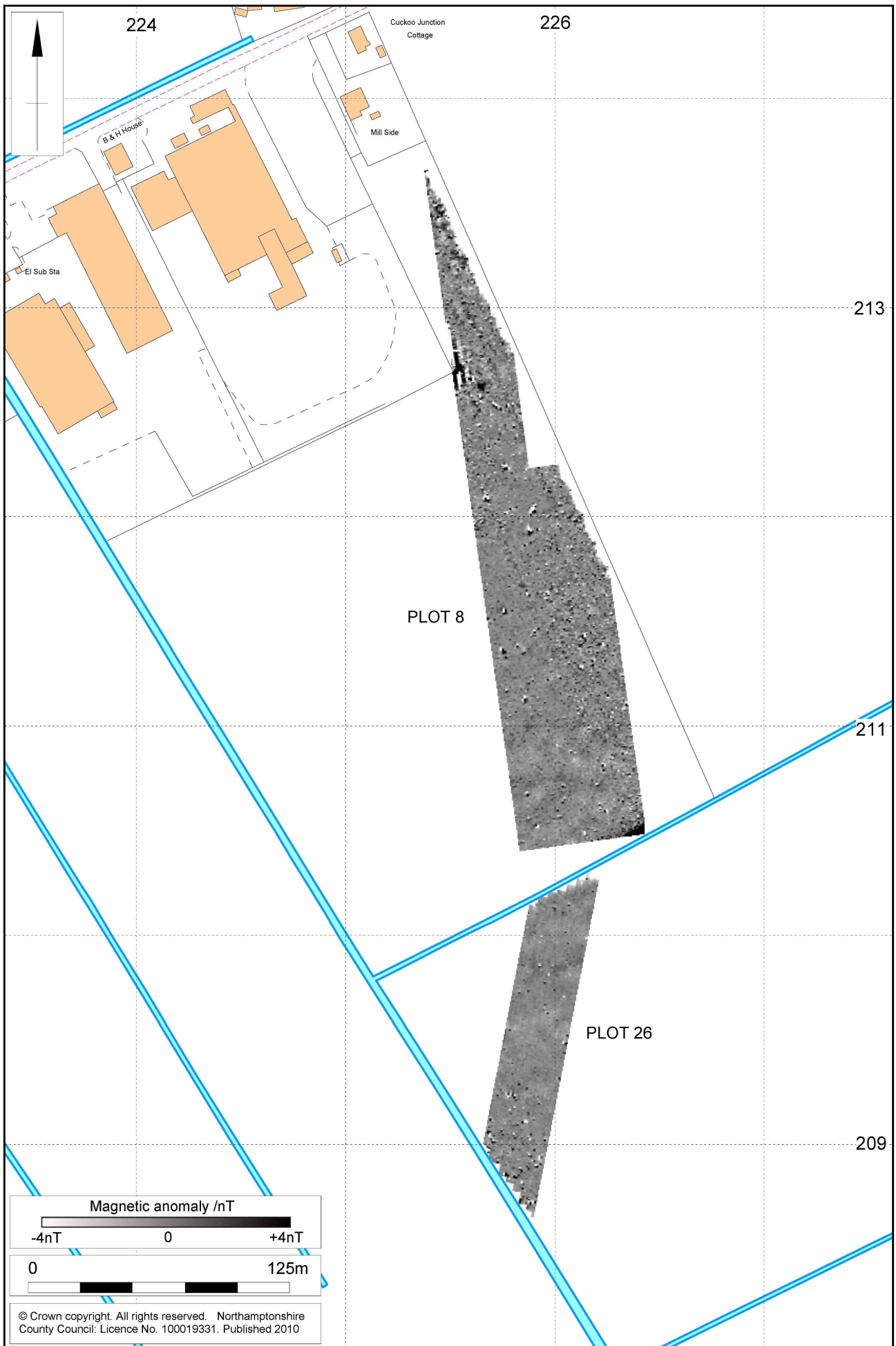
1:2500

Magnetometer Survey Results, Plot 150 Fig 3



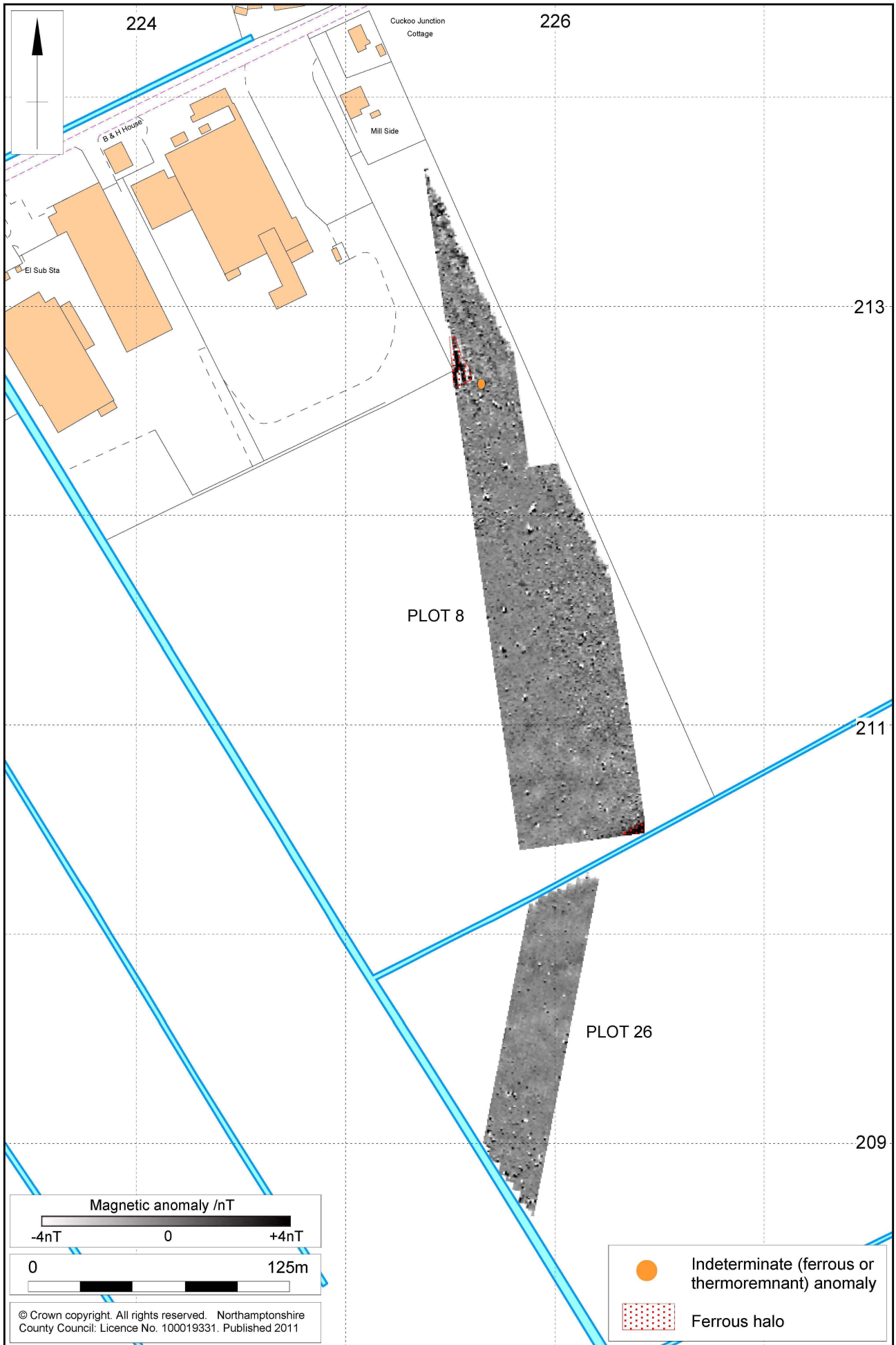
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Magnetometer Survey Interpretation, Plot 150 Fig 4



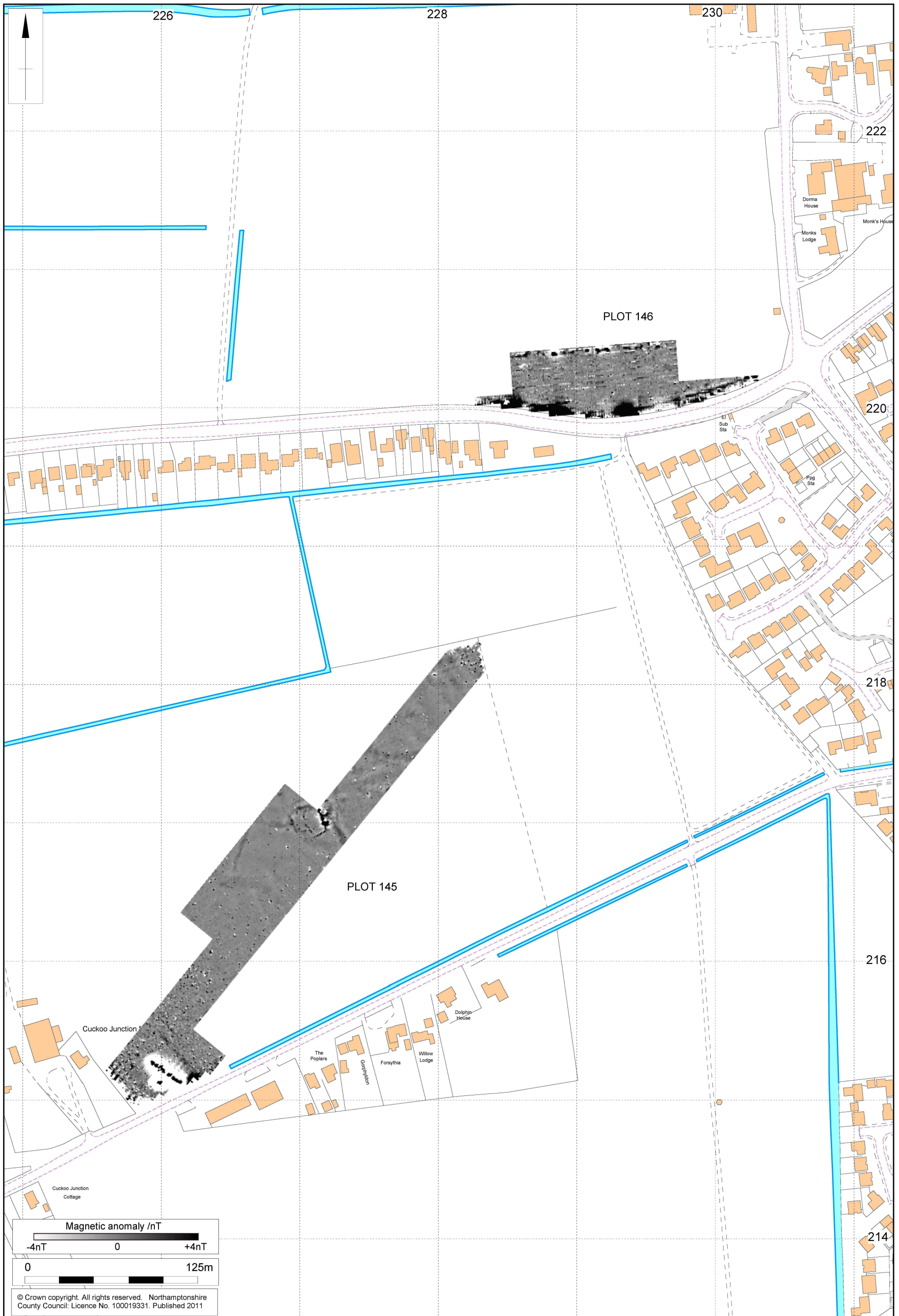
1:2500

Magnetometer Survey Results, Plots 8 and 26 Fig 5



1:2500

Magnetometer Survey Interpretation, Plots 8 and 26 Fig 6



Scale 1:2,500

Magnetometer Survey Results: Plots 145 and 146 Fig 7



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