

**Archaeological geophysical survey of a proposed
solar park at Grange Farm, Moreton Morrell
Warwickshire
Phases 1 and 2
July and October 2014**

Report No. 14/212

Author: John Walford

Illustrator: John Walford



**Archaeological geophysical survey of a proposed
solar park at Grange Farm, Moreton Morrell
Warwickshire
Phases 1 and 2
July and October 2014**

Report No. 14/212

Quality control and sign off:

Issue No.	Date approved:	Checked by:	Verified by:	Approved by:	Reason for Issue:
1	04/09/14	Pat Chapman	Mark Holmes	Andy Chapman	Client approval

Authors: John Walford

Illustrator: John Walford

© MOLA Northampton 2014

MOLA
Bolton House
Wootton Hall Park
Northampton
NN4 8BN
01604 700 493
www.mola.org.uk
sparry@mola.org.uk

STAFF

Project Manager: John Walford BSc MSc

Fieldwork: Ian Fisher BSc
Grant Bettinson
Olly Dindol BSc
Gemma Hewitt BA
Luke Jenkins
Adam Meadows BSc
Piotr Szczepanik BSc
James West BSc MA

Text: John Walford

Illustrations: John Walford

OASIS REPORT

PROJECT DETAILS		Oasis No. molanort1-194188	
Project name		Archaeological geophysical survey of a proposed solar park at Grange Farm, Moreton Morrell, Warwickshire	
Short description		MOLA was commissioned to carry out a detailed magnetometer survey of the proposed site of a solar farm at Grange Farm, Moreton Morrell, Warwickshire. The survey identified a complex of rectilinear ditched enclosures of probable Iron Age or Roman date. Some linear features of uncertain nature were also detected.	
Project type		Geophysical survey	
Site status		None	
Previous work		Desk-based assessment (Smith 2014)	
Current Land use		Arable	
Future work		Unknown	
Monument type/ period		Iron Age or Roman enclosure complex, undated linear features	
Significant finds		None	
PROJECT LOCATION			
County		Warwickshire	
Site address		Grange Farm, Moreton Morrell	
Study area		c 44ha	
OS Easting & Northing		SP 322 570	
Height OD		c 60-85m aOD	
PROJECT CREATORS			
Organisation		MOLA Northampton	
Project brief originator		Anna Stocks, Warwickshire County Council	
Project design originator		MOLA Northampton	
Director/Supervisor		Ian Fisher (Phase 1), Adam Meadows (Phase 2)	
Project Manager		John Walford	
Sponsor or funding body		CgMs Consulting	
PROJECT DATE			
Start date		24 July 2014	
End date		7 October 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BIBLIOGRAPHY		Journal/monograph, published or forthcoming, or unpublished client report	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 of a proposed solar park at Grange Farm, Moreton Morrell, Warwickshire, Phases 1 and 2, July and October 2014	
Serial title & volume		MOLA Northampton Reports 14/212	
Author(s)		John Walford	
Page numbers		4	
Date		4 November 2014	

Contents

1	INTRODUCTION	1
2	BACKGROUND	1
2.1	Location and geology	
2.2	Historical and archaeological background	
3	METHODOLOGY	2
4	SURVEY RESULTS	2
4.1	Archaeology	
4.2	Agricultural buildings	
4.3	Field boundaries and drains	
4.4	Ferrous anomalies	
4.5	Geological anomalies	
5	CONCLUSION	4
	BIBLIOGRAPHY	4

Figures

Cover Magnetometer survey results (extract)

Fig 1	Site location	1:10,000
Fig 2	Magnetometer survey results (North)	1:2500
Fig 3	Magnetometer survey interpretation (North)	1:2500
Fig 4	Magnetometer survey results (South)	1:2500
Fig 5	Magnetometer survey interpretation (South)	1:2500
Fig 6	Unprocessed magnetometer survey data (North)	1:2500
Fig 7	Unprocessed magnetometer survey data (South)	1:2500

Archaeological geophysical survey of a proposed solar park at Grange Farm, Moreton Morrell, Warwickshire Phases 1 and 2 July and October 2014

ABSTRACT

MOLA was commissioned to carry out a detailed magnetometer survey of the proposed site of a solar farm at Grange Farm, Moreton Morrell, Warwickshire. The survey identified a complex of rectilinear ditched enclosures of probable Iron Age or Roman date. Some linear features of uncertain nature were also detected.

1 INTRODUCTION

MOLA was commissioned by CgMs Consulting to undertake a detailed magnetometer survey on land to the north-east of Grange Farm, Moreton Morrell, Warwickshire (NGR SP 322 570; Fig 1). The purpose of the survey was to contribute towards an assessment of the archaeological impacts of a proposed solar park development. The first phase of fieldwork was undertaken from 24 July to 1 August 2014 and covered two blocks of land with a combined area of c 35ha (Walford 2014). A second phase of fieldwork was undertaken on 6 to 7 October 2014, covering c 7ha of land between the two previous survey areas.

2 BACKGROUND

2.1 Location and geology

The proposed development area is located north-east of Grange Farm and immediately west of the B4455 Fosse Way (Fig 1). It encompasses two adjacent arable fields together with two small copses and a 30m wide strip of overgrown fallow ground. The total extent of the area is c 44ha, of which c 42ha proved suitable for survey.

The majority of the proposed development area lies on a very gentle west-facing slope between the 60m and 65m contours, but the north-eastern corner rises up more abruptly to an elevation of c 85m aOD. The underlying geology is mapped as Mercia Mudstone capped by a layer of river terrace gravels (BGS 2014). The earliest available map, dating from 1767, depicts a stream meandering across the northern part of the area, and also depicts a small pond or pool (Smith 2014, fig 3). Neither of these features is now extant.

2.2 Historical and archaeological background

An archaeological desk-based assessment of the survey area (Smith 2014) identified no known archaeological remains within its boundaries, but noted that a Roman road, the Fosse Way, defines its eastern edge. No other remains of direct relevance are located in the near vicinity, and a study of historic mapping suggested that the site has been in agricultural use for at least the last three centuries. The only features of note depicted on the historic mapping are a group of barns or sheds which first appear on the 1887 Ordnance Survey map and were demolished some time after 1954 (Smith 2014, figs 6-9).

3 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 Viva RTK GPS. 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 and the generic brief for geophysical survey issued by the Warwickshire Planning Archaeologist (EH 2008; IfA 2011; WCC 2014) .

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 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 Figures 6 and 7.

4 SURVEY RESULTS

4.1 Archaeology

The survey has detected a set of linear and discrete positive anomalies in the western half of the southern field (Figs 4-5). These represent a complex of rectilinear ditched enclosures and associated remains, probably dating from the Iron Age or Roman period. The form and extent of the site cannot be fully determined, because many of the magnetic anomalies are weak and indistinct, but it would appear to cover at least 1.5ha and to have a moderately regular layout.

The most clearly defined element of the site is a trapezoidal enclosure measuring approximately 50m from east to west by 60m north to south. Its south-eastern corner has a slightly complex form, and may have been re-cut on at least one occasion. To the north and north-west of this enclosure, a pattern of other ditches define a large sub-rectangular area with multiple sub-divisions including a set of small cellular units along the northern edge of the complex.

Towards the southern edge of the complex, there are a few weak linear anomalies which intersect with the trapezoidal enclosure and may represent fragmentary elements of a separate phase of remains. A few discrete positive magnetic anomalies in the same general vicinity probably represent pits.

Many of the archaeological anomalies exhibit regularly spaced weaknesses or interruptions which probably represent points of truncation by medieval plough furrows (Fig 4). The furrows themselves have not produced discernible anomalies, but the

pattern of the interruptions is sufficient to indicate that the direction of ploughing was roughly north to south.

Other evidence for medieval ridge and furrow occurs in the eastern half of the southern field, where the survey has detected a set of field drains with elongated S-curves that resemble the typical curvature of medieval plough furrows. It seems likely that these drains were laid along the bases of furrows when they still survived as earthworks and that, having been flattened by subsequent ploughing, the furrows themselves retain no intrinsic magnetic expression.

In the south-eastern corner of the southern field the survey has detected a positive linear anomaly which may represent a ditch of indeterminate date. Two similar positive anomalies in the northern field may also represent undated ditches. The northern field also contains a weakly negative linear anomaly which extends for c 160m across its south-eastern corner. The most likely interpretation would be that this represents a stone-lined drain or culvert, although alternative interpretations, such as a modern service trench, cannot be completely excluded.

4.2 Agricultural buildings

The site of the former agricultural buildings depicted on the first edition Ordnance Survey map (1887) is indicated by a zone of intense magnetic disturbance located near the northern edge of the southern field. This disturbance will represent a residual deposit of brick rubble, scrap metal and other debris deriving from the buildings themselves and from the make-up of the yard around which they stood.

4.3 Field boundaries and drainage

The survey has detected some weakly positive linear anomalies in the northern field which correlate with parts of the arrangement of field boundaries depicted on the first edition Ordnance Survey map (1887) (Figs 2-3). Other parts of these former boundaries are indicated by broad linear bands of weak magnetic noise, representing accumulations of scrap metal other magnetic debris around the field margins. Similar anomalies mark the lines of two former boundaries radiating south and east from the former agricultural buildings in the southern field.

The weak linear anomalies with alternating magnetic polarity which occur in various places across both fields are diagnostic of field drains. Some of those in the southern field have a distinctive S-shaped pattern which may reflect an earlier pattern of ridge and furrow (see above). Others, at the southern end of the northern field, are restricted to a relatively narrow swathe of land which roughly coincides with the line of the former stream channel (Smith 2014, fig 3).

4.4 Ferrous anomalies

The survey has detected a large number of dipolar anomalies distributed randomly across the entire survey area. Most of these will relate to minor pieces of scrap metal within the ploughsoil, but a few of the larger examples in the northern field represent telegraph poles.

4.5 Geological anomalies

The data from the northern field contain a widespread cluster of discrete positive anomalies extending south from the stream which forms the northern field boundary. Individually, such anomalies could represent pits, but when clustered in this way they are usually diagnostic of gleyed alluvial soils.

5 CONCLUSION

The survey results indicate that a complex of rectilinear ditched enclosures of probable Iron Age or Roman date lies within the south-western part of the proposed solar park site. The total extent of this site appears to be around 1.5ha but, given the weakness of the magnetic anomalies, there is a possibility that some undetected peripheral elements may extend more widely.

Relatively little archaeology has been detected across the rest of the survey area, amounting to no more than a few disjointed sections of ditch, a possible drain or culvert, traces of medieval ridge and furrow cultivation and some 19th-century agricultural buildings and field boundaries.

BIBLIOGRAPHY

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

BGS 2014 *Geoindex*, <http://www.bgs.ac.uk/geoindex/home.html>, British Geological Survey, consulted July 2014

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

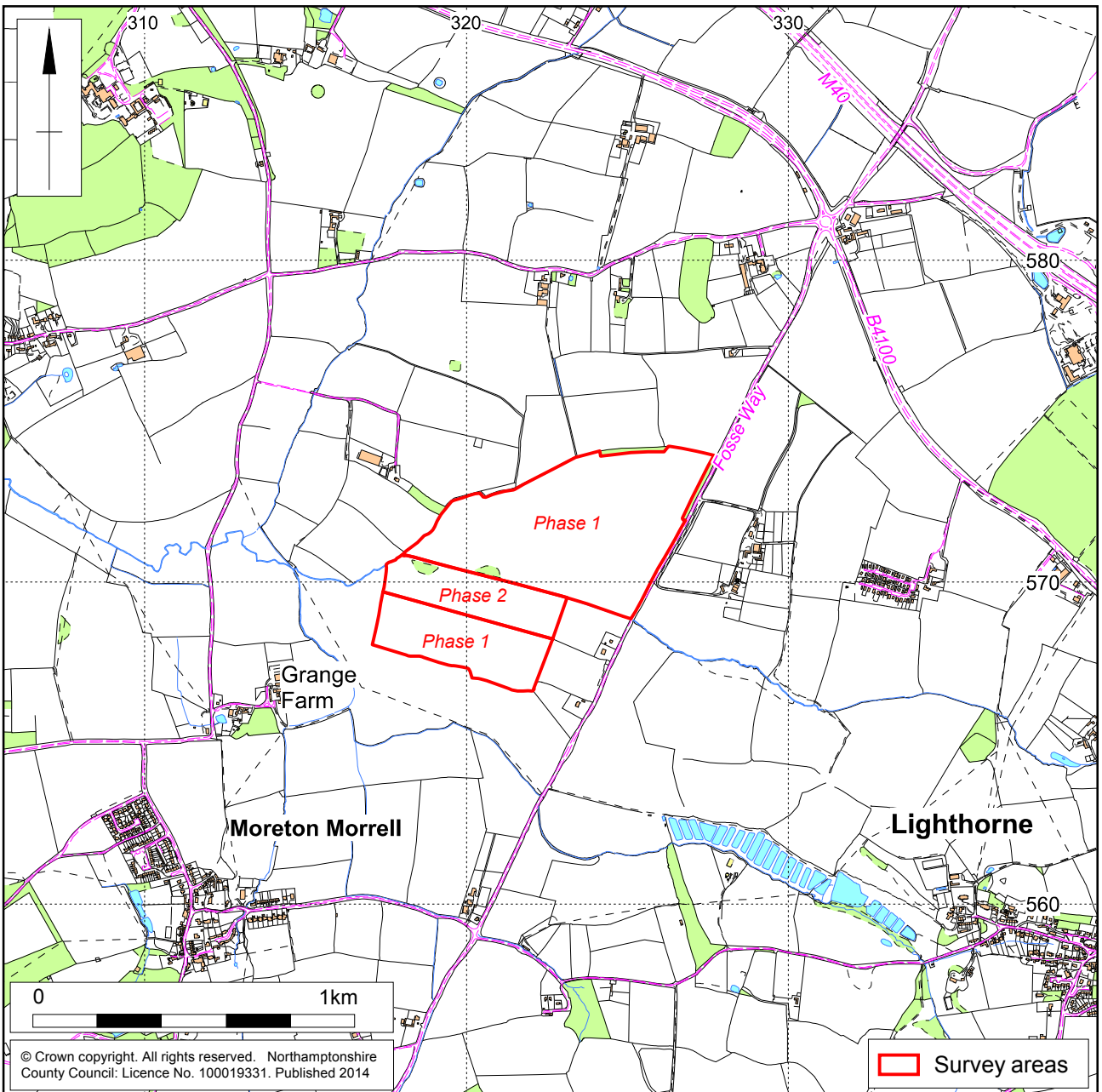
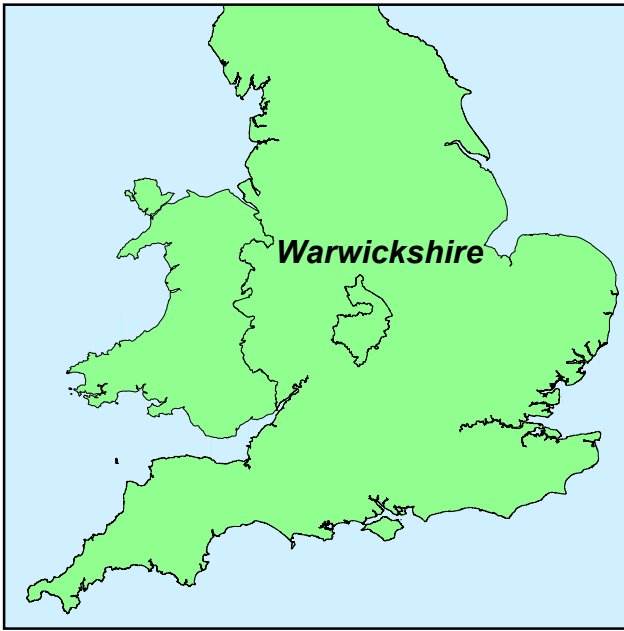
IfA 2011 *Standard and Guidance for Archaeological Geophysical Survey*, Institute for Archaeologists

Smith, M, 2014 *Archaeological desk-based assessment: Land at Moreton Morrell Solar Park, Moreton Morrell, Warwickshire*, CgMs Consulting report, **MS/17134a**

Walford, J, 2014, Archaeological geophysical survey of a proposed solar park at Grange Farm, Moreton Morrell, Warwickshire, July 2014, MOLA Northampton, report **14/167**

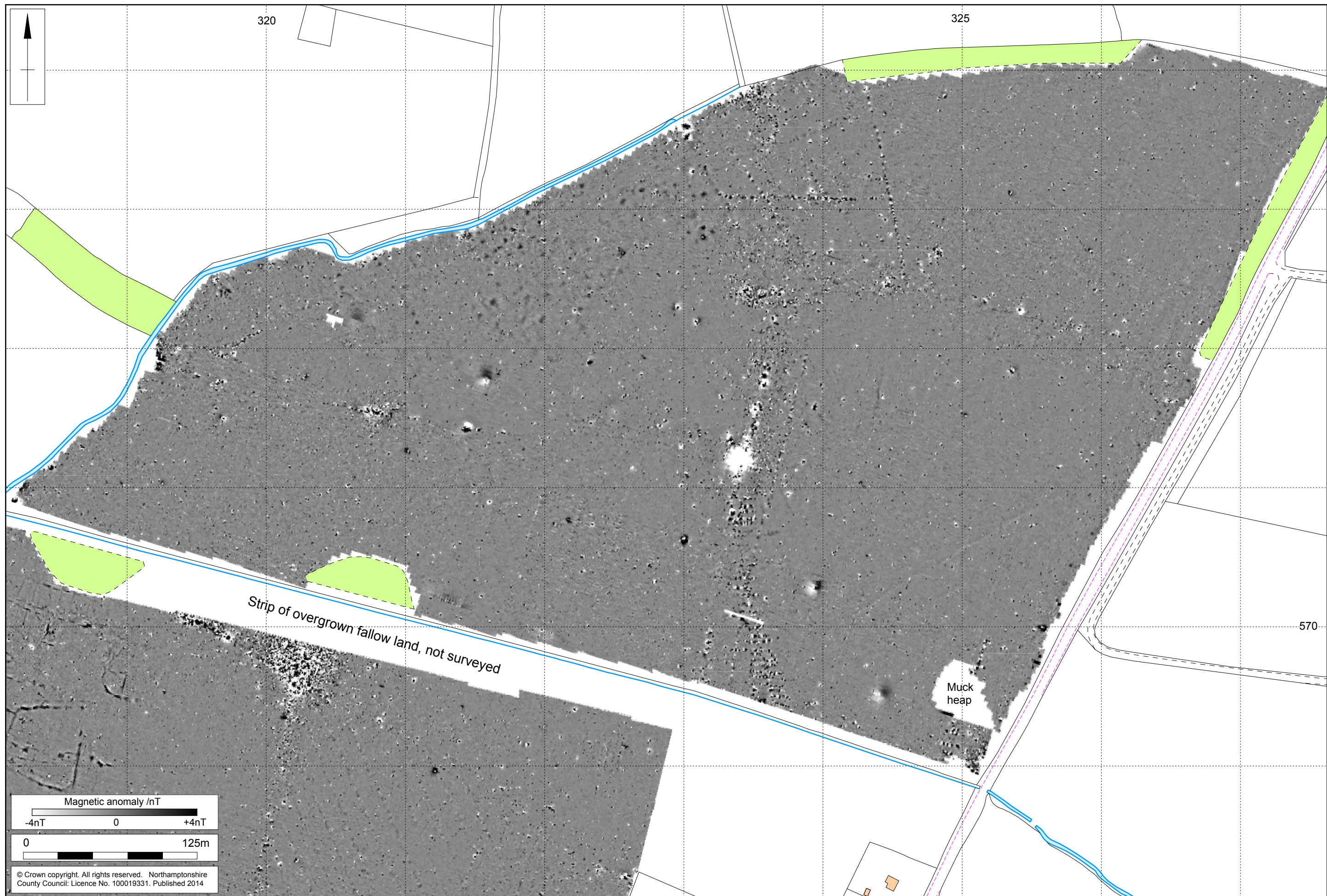
WCC 2014, *Generic Archaeological Geophysical Survey Guidelines*, Warwickshire County Council Planning Archaeologist

MOLA
4 November 2014



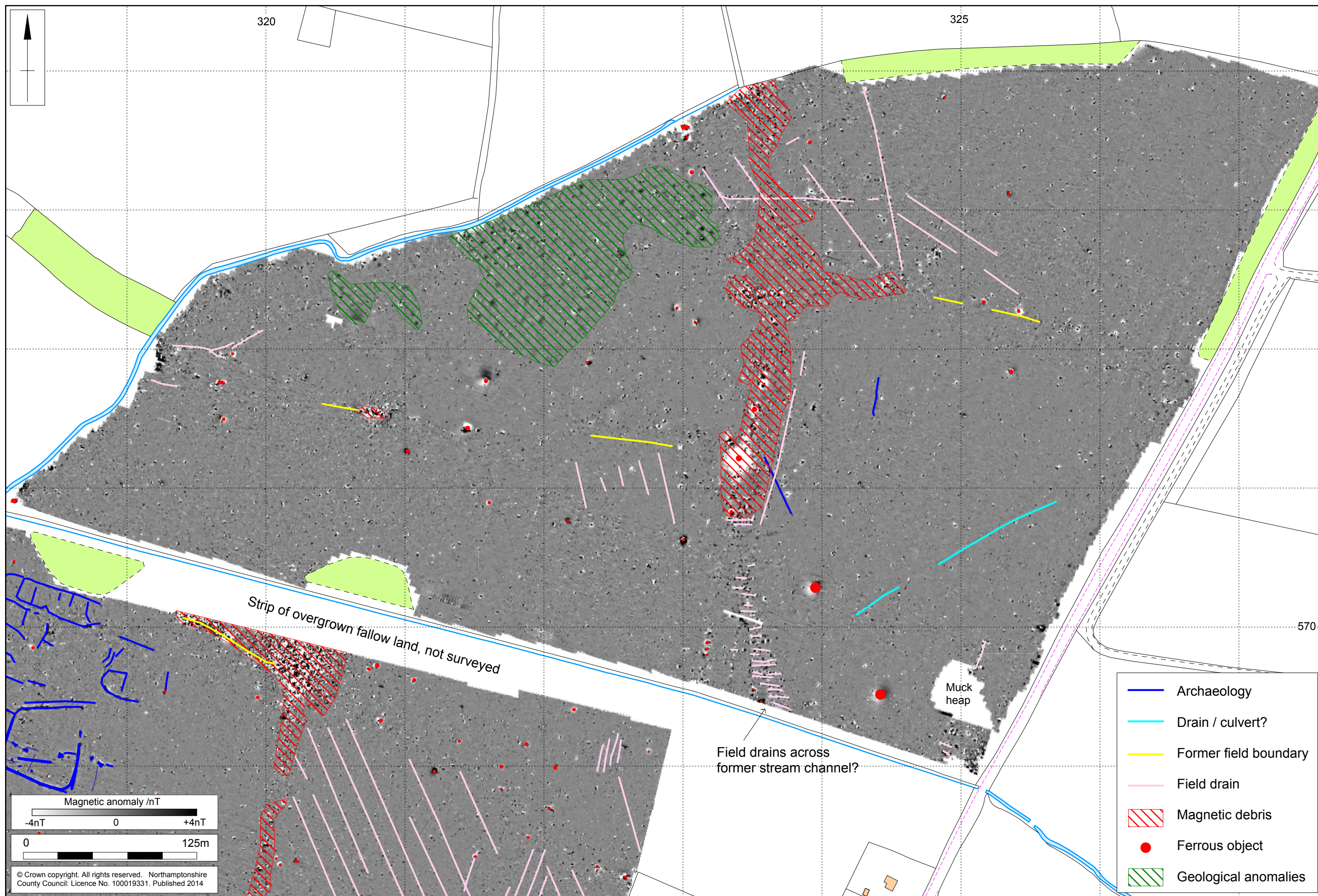
Scale 1:20,000

Site location Fig 1



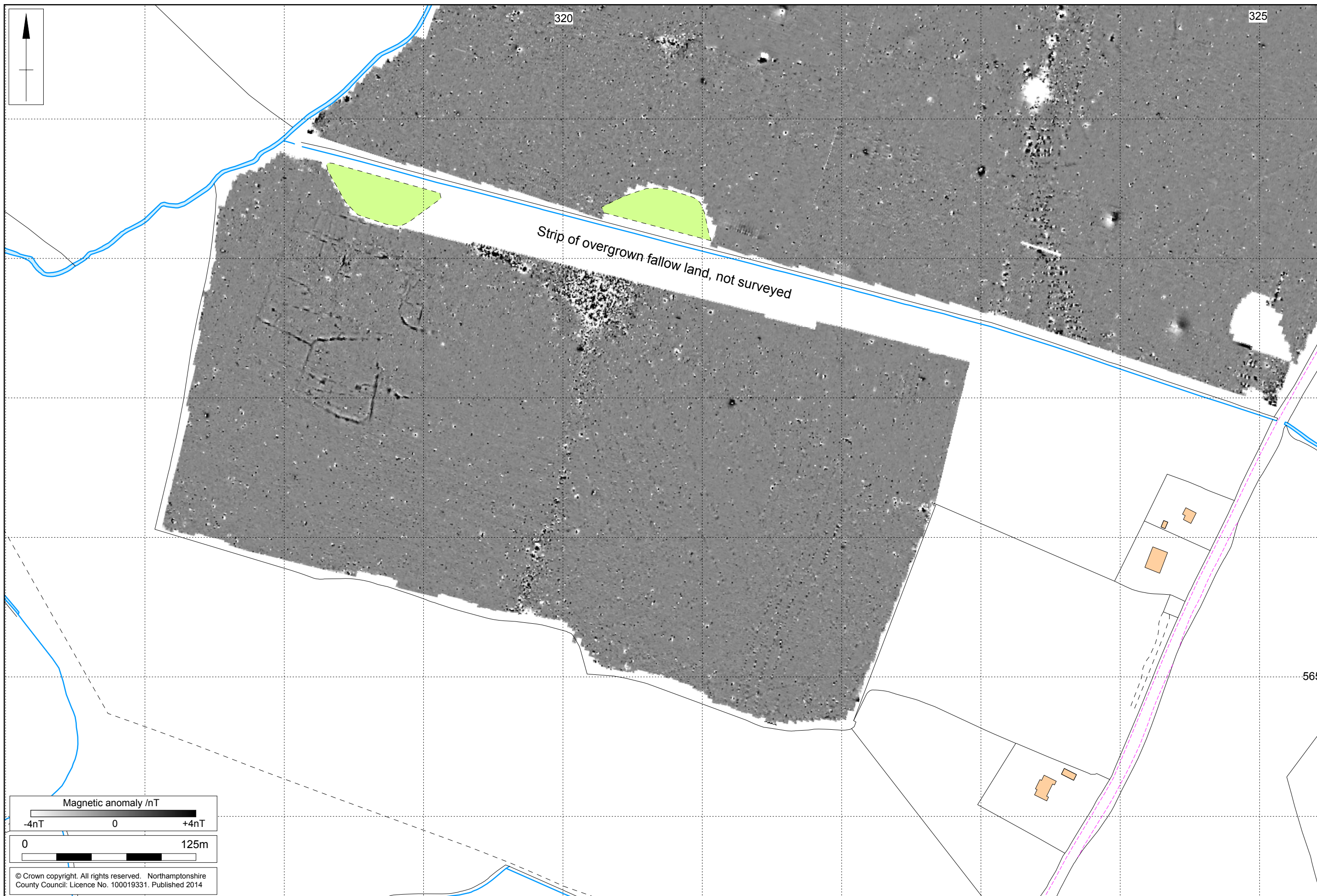
Scale 1:2500

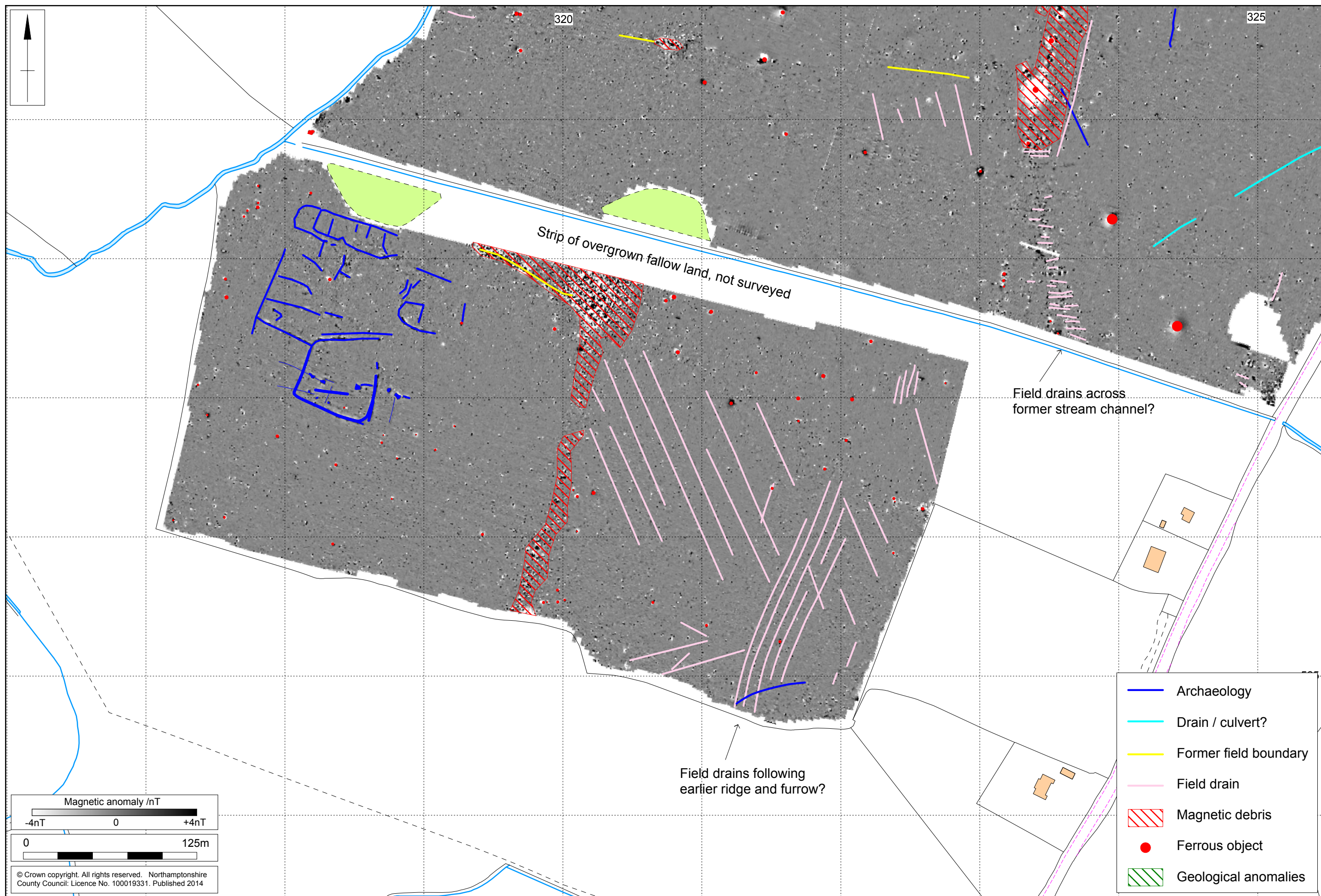
Magnetometer survey results (North) Fig 2



Scale 1:2500

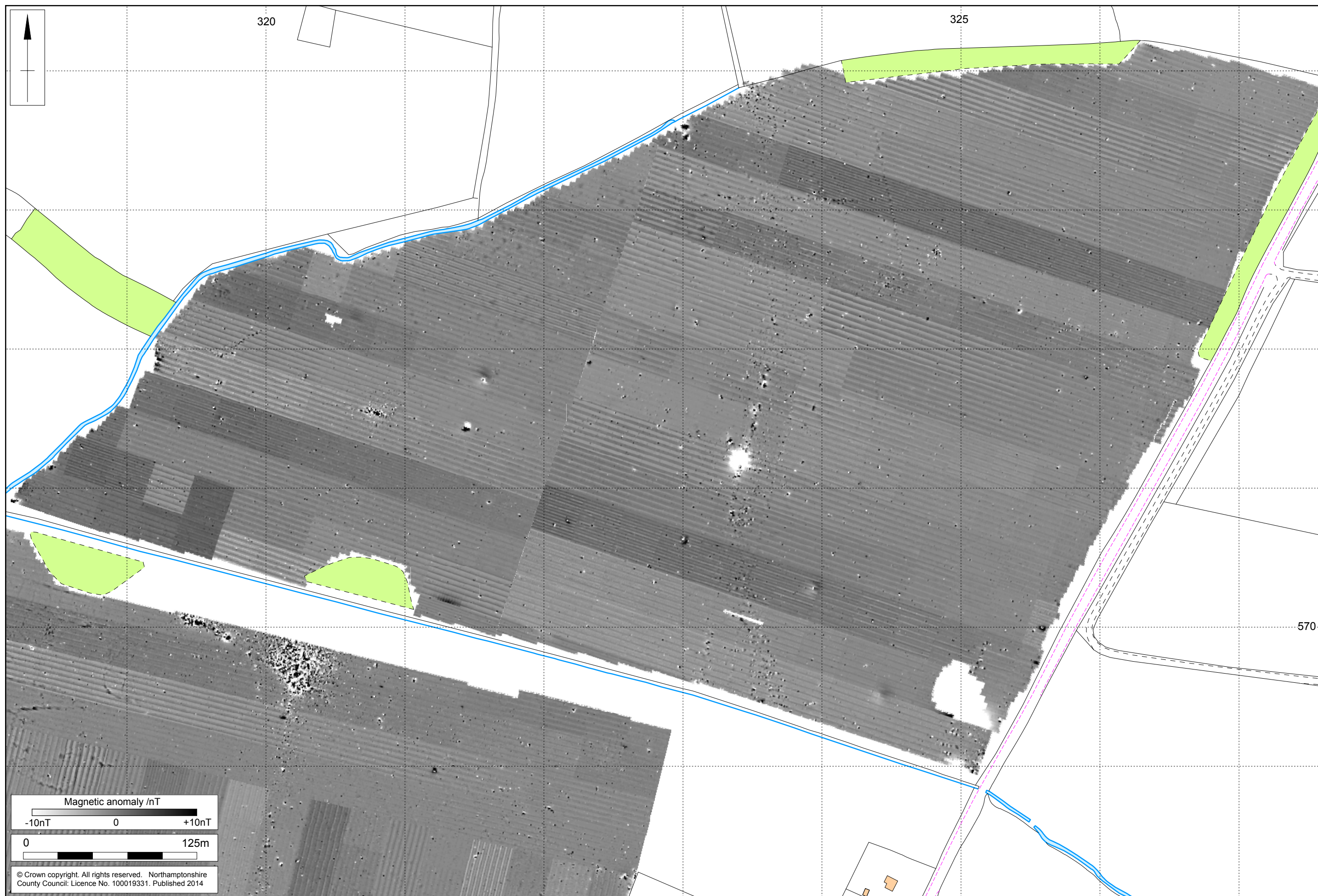
Magnetometer survey interpretation (North) Fig 3





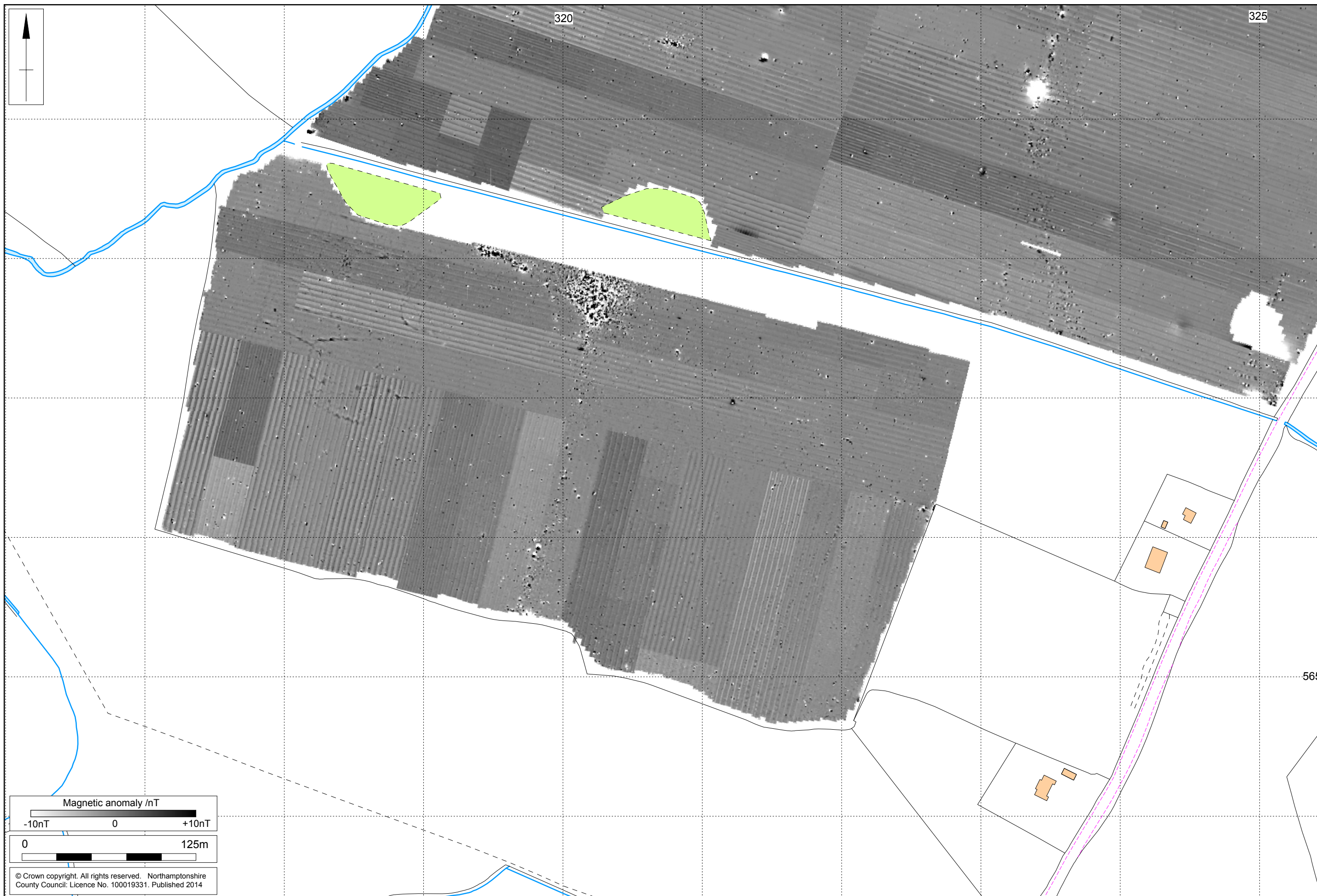
Scale 1:2500

Magnetometer survey interpretation (South) Fig 5



Scale 1:2500

Unprocessed magnetometer survey data (North) Fig 6



Scale 1:2500

Unprocessed magnetometer survey data (South) Fig 7

MOLA



MOLA
Bolton House
Wootton Hall Park
Northampton
NN4 8BN
01604 700 493
www.mola.org.uk
business@mola.org.uk