Archaeological geophysical survey at Pineham Expansion Zone H Northampton July - August 2014

Report No. 14/200

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NGR: SP 705 588

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OASIS REPORT

PROJECT DETAILS	Oasis No. molanort1-193060	
Project name	Archaeological geophysical survey at Pineham Expansion Zone H, Northampton	
Short description	MOLA Northampton was commissioned by Prospect Archaeology to carry out a detailed magnetometer survey of land to the south-west of Northampton, designated as Pineham Expansion Zone H. The survey recorded a number of features of probable late prehistoric or Roman origin, comprising three pit alignments and several ditched enclosures with an associated trackway or linear boundary. Medieval ridge and furrow was also recorded across the survey area, along with traces of field boundaries post-dating parliamentary enclosure. A probable palaeochannel was detected in the far north of the area, and modern disturbance was detected from overhead cables and a gas pipeline.	
Project type	Geophysical survey	
Site status	None	
Previous work	None	
Current Land use	Arable	
Future work	Trial trench excavation	
Monument type/ period	Prehistoric boundary and pit alignments. Prehistoric and/or Roman enclosures. Medieval ridge and furrow. Post-medieval field boundaries	
Significant finds	None	
PROJECT LOCATION		
County	Northamptonshire	
Site address	Pineham	
Study area	*c*34ha	
OS Easting & Northing	SP 705 588	
Height OD	*c* 67m – 79m aOD	
PROJECT CREATORS		
Organisation	MOLA Northampton	
Project brief originator	-	
Project design originator	MOLA Northampton	
Director/Supervisor	Adam Meadows	
Project Manager	John Walford	
Sponsor or funding body	Prospect Archaeology Ltd	
PROJECT DATE		
Start date	July 2014	
End date	August 2014	
ARCHIVES	Location	Content
Physical	N/A	None
Paper	MOLA Northampton ENN107573	Site survey records
Digital	ADS & MOLA Northampton	Geophysical survey & GIS data
BIBLIOGRAPHY	Journal/monograph, published or forthcoming, or unpublished client report	
Title	Archaeological geophysical survey at Pineham Expansion Zone H, Northampton, July - August 2014	
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ABSTRACT

MOLA Northampton was commissioned by Prospect Archaeology to carry out a detailed magnetometer survey of land to the south-west of Northampton, designated as Pineham Expansion Zone H. The survey recorded a number of features of probable late prehistoric or Roman origin, comprising three pit alignments and several ditched enclosures with an associated trackway or linear boundary. Medieval ridge and furrow was also recorded across the survey area, along with traces of field boundaries post-dating parliamentary enclosure. A probable palaeochannel was detected in the far north of the area, and modern disturbance was detected from overhead cables and a gas pipeline.

1 INTRODUCTION

MOLA was commissioned by Prospect Archaeology Ltd to conduct a geophysical survey on land at Pineham Expansion Zone H on the south-western edge of Northampton (NGR SP 705 588; Fig 1). The site, comprising *c* 34ha of arable farmland, is situated to the west of an industrial and commercial estate which has been continuously under development for 10 years. A considerable amount of prehistoric and Roman archaeology has been uncovered in advance of this wider development.

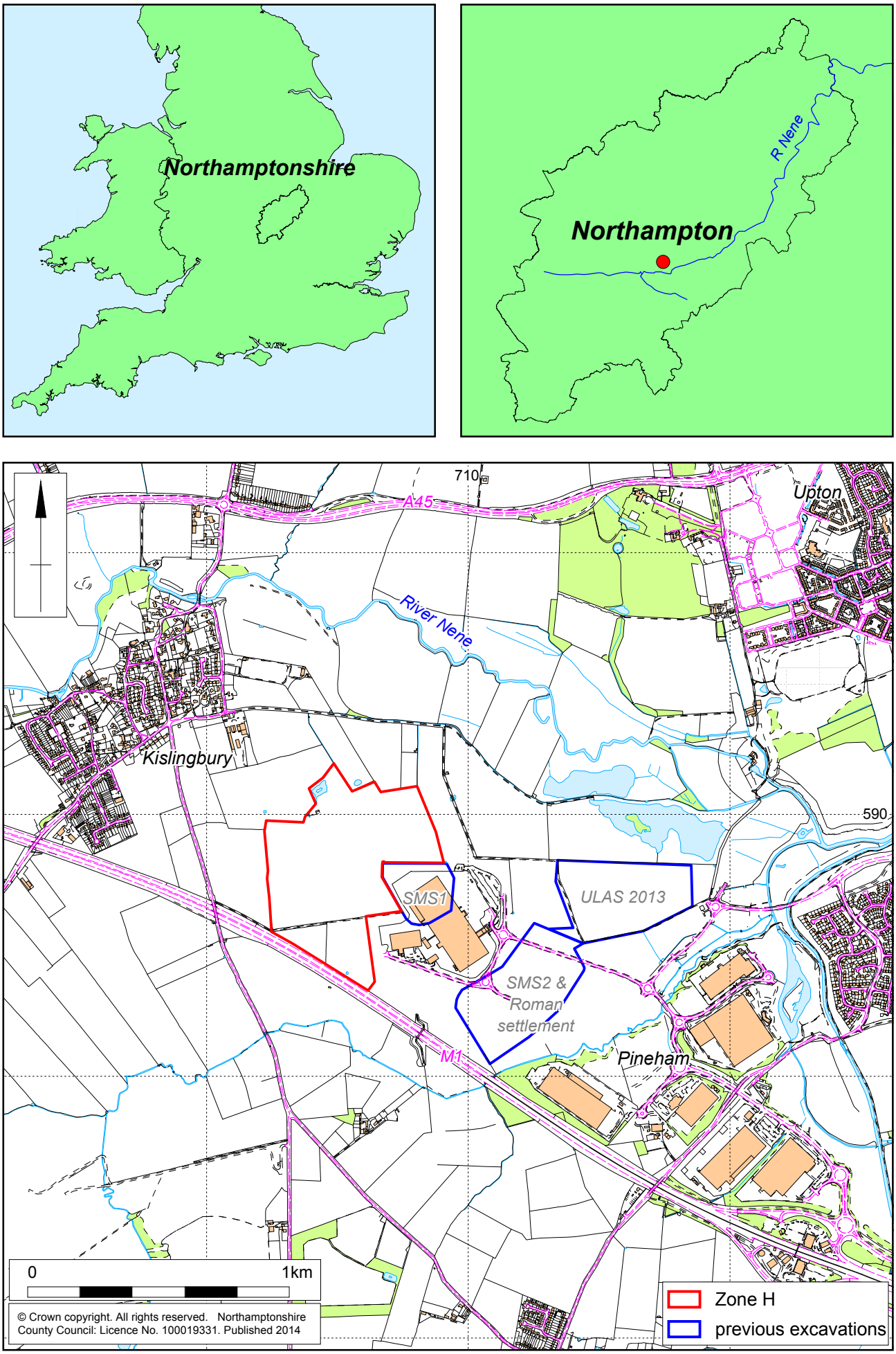
The fieldwork comprised a detailed magnetometer survey, and was undertaken during July and August 2014. It was recorded on the Northamptonshire Historic Environment Record (HER) under the event number ENN107473. The data from the survey will be lodged with the Archaeology Data Service (ADS), in accordance with Northamptonshire County Council archiving requirements.

2 BACKGROUND

2.1 Location and geology

The survey area comprised three arable fields, defined by hedges, on the western fringes of the existing industrial development at Pineham. The M1 motorway forms its southern boundary and arable fields lie to the north and west. The northern field (Field 2) is separated from the south-western (Field 3) and south-eastern (Field 1) fields by a farm track.

The site is situated on a north-east facing slope rising from 67m aOD up to 79m. The geology of the area is recorded as an interbedded siltstones and mudstones of the Dyrham Formation (Middle Lias), overlain by Oadby Member Diamicton deposits containing tills, sands, gravels and laminated clays of Pre-Devensian age (BGS 2014).



Scale 1:20,000

Site location Fig 1

2.2 Historical and archaeological background

The survey area lies in the Nene valley, in an area containing extensive palimpsests of Iron Age and Roman archaeology. Large areas have been investigated prior to the development of the Pineham industrial estate and other sites on the western fringes of Northampton.

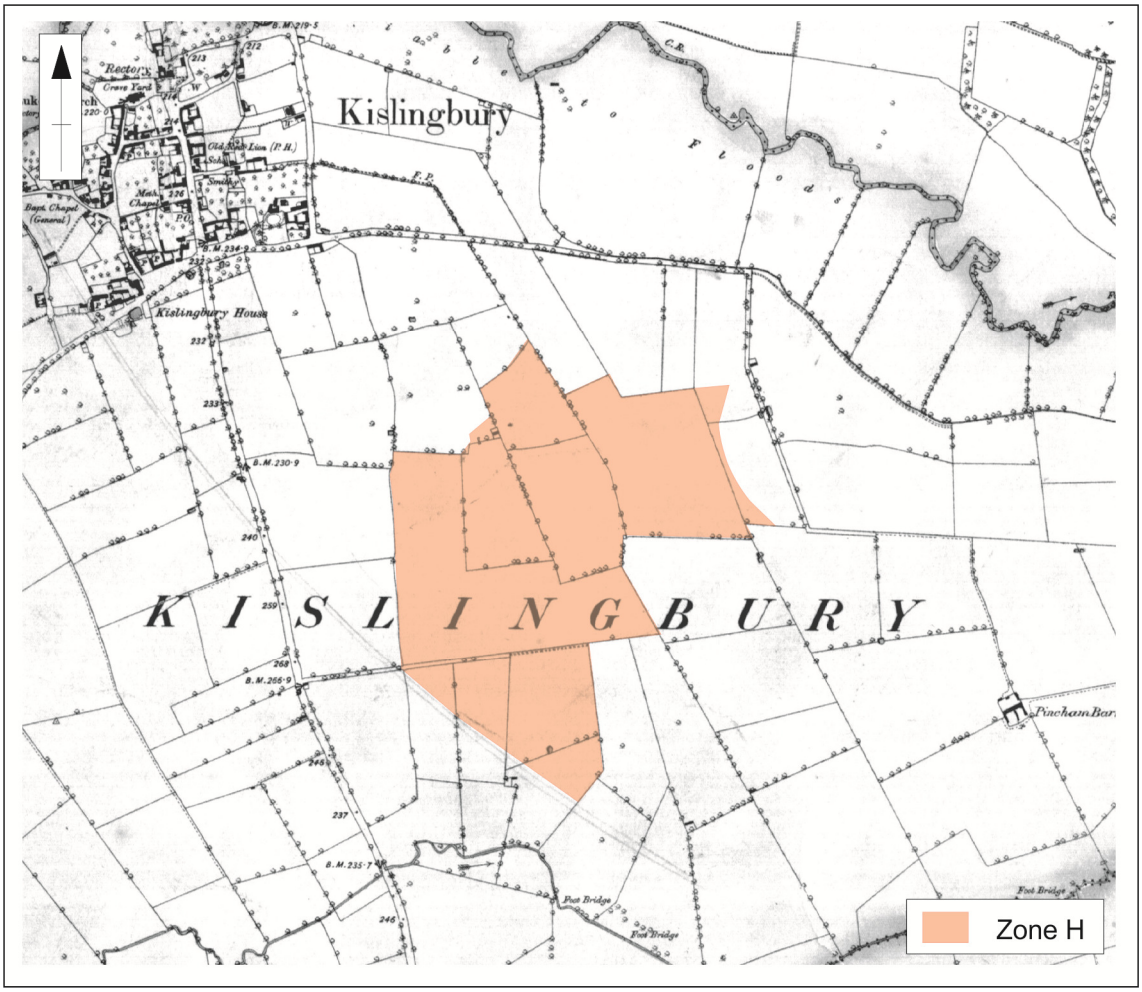
Between 2006 and 2007 two phases of open area excavation at Pineham North were carried out by Northamptonshire Archaeology (Carlyle 2007; Brown 2007). Bronze Age artefacts were found together with a number of burials, and a possible round barrow ring ditch. Later activity comprised an Iron Age settlement containing several roundhouses and an adjacent area of Roman settlement enclosures, with multiple phases of redefinition and maintenance. Some of these features could extend within the survey area, though with the amount of plough scaring and groundworks in the last 100 years they may have been severely reduced (Brown 2007).

To the east of Pineham, further settlement remains of middle to late Iron Age and Roman date were excavated prior to the construction of the Swan Valley industrial park, near Junction 15a of the M1 (Holmes and Chapman 2005).

Further to the north, excavations around Upton recorded Iron Age and Roman settlement and a length of Iron Age pit alignment (Walker and Maull 2010). This line was respected by later landscape units such as Roman field boundaries and also the projected line of the Roman road travelling westwards from Duston Roman town.

Following parliamentary enclosure the area to the south-east of Kislingbury was divided into a pattern of small rectangular fields, as depicted on the first edition Ordnance Survey map (Fig 2). During the 20th century the small rectangular fields were subsumed into larger units and some were bisected by the construction of the M1 motorway.

During the Second World War, a ‘Starfish’ bomb decoy site stood close to the eastern edge of the survey area (Cadman 1999). However, the site may have been a relatively short-lived and ephemeral one, as there is no obvious trace of it on the 1945 aerial photograph coverage available on Google Earth, and excavation recorded only superficial traces of wartime debris and scorched earth (Brown 2007, 11).



Excerpt from the first edition Ordnance Survey Fig 2

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 across 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 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 processed using Geoplot 3.00v software. The striping was removed using the 'Zero Mean Traverse' function and 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 3, 4 and 6) and are shown with an interpretative overlay in Figures 5 and 7. Separate plots of the unprocessed data are presented in Figures 8 and 9.

4 SURVEY RESULTS

4.1 Prehistoric and Roman features

The survey has detected fragmentary remnants of ditches, represented as positive magnetic anomalies, across Fields 1 and 2. The ditches form two distinct sets of features: a trapezoidal enclosure and associated features in Field 1 and a group of rectilinear enclosures arrayed along a linear boundary or trackway in Field 2. Three sections of pit alignment, denoted by chains of small discrete positive anomalies, have also been detected. All of these features can be broadly assigned to a late prehistoric or Roman date.

The main enclosure in Field 1 measures *c* 125m from north to south and is *c* 100m across at its widest point. Its southern arm is shadowed by a parallel ditch, *c* 10m to the south, with the two together perhaps defining the edges of a trackway Within the enclosure there are two east-west partitions and a group of small pits, but the full extent and arrangement of these features is obscured by the magnetic halos from a modern gas pipe.

To the south-east of the main enclosure there is a much smaller enclosure, *c* 13m across, with an entrance gap in its northern side. Further south, on the opposite side of the putative trackway, a group of disjointed magnetic anomalies suggest the presence of other, less well defined, small enclosures.

The archaeological remains in Field 2 encompass at least 3.5ha of ground and focussed on a discontinuous ditch aligned east to west. This extends for at least 460m and may be a continuation of a boundary recorded in the excavations at Pineham North (Brown 2007). A series of other ditches extend to its north, forming an extensive complex of rectilinear enclosures which are largely devoid of internal features and may represent parts of a field system rather than a settlement. The full arrangement of the enclosures has not been clearly detected (perhaps due to disruption by later ploughing), but there are places where different elements intersect, suggesting that more than one phase of development is represented.

The survey has detected parts of three pit alignments, all of which are likely to define boundaries of late prehistoric date. The main one of these (PA1) follows a sinuous course through the eastern half of Field 1, intersecting with two enclosures, before continuing north into Field 2 and terminating against the east-west boundary ditch. At the southern edge of the Field 2 it follows a particularly sharp curve, seeming to avoid a large, irregularly-shaped feature which is likely to be an infilled quarry pit. This would suggest that the quarry pit is itself prehistoric, and pre-dates the creation of the pit alignment. The other two pit alignments are much shorter. One, in Field 2 is approximately 20m long (PA2). The other, in Field 3 can be traced for a distance of *c* 40m, although it may continue further beneath an area of modern disturbance to the north (PA3).

It may also be noted that two of the pit alignments appear to terminate at the linear boundary associated with the complex rectilinear field system. This might suggest that the field system may have had an origin in the later Bronze Age, pre-dating the introduction of the pit alignments.

In addition to these features, there are a few linear magnetic anomalies which may represent ditches but are too scattered and disjointed to discuss in any meaningful way. Not all of them need have ancient origins, and it is possible that some actually represent field drains or other modern features.

4.2 Medieval and post-medieval features

Across the survey area there are many parallel positive magnetic linear anomalies that represent the remnants of ridge and furrow. Their predominant orientation is north to south, although some sets of furrows with an east to west orientation occur in the northern half of Field 2. The anomalies are particularly strong in the western part of the site, for reasons that are not immediately apparent.

One of the former field boundaries depicted in Figure 2 has been detected as a distinct linear anomaly crossing the north-eastern part of Field 2. To its west, three other boundaries have been detected as indistinct linear clusters of small dipoles, suggestive of small pieces of ferrous debris accumulated along former fence or hedge lines. To the south, in Field 3, an anomaly aligned north to south coincides with another of these former boundaries, and can be distinguished from the adjacent ridge and furrow by its marginally greater magnetic intensity.

Four small areas of magnetically disturbed data occur in Field 2, and a fifth area occurs in Field 3. Most of these are closely associated with former or existing field boundaries, and this suggests that they represent 19th to 20th century features. Possible causes include bonfire sites, disturbed ground around former gateways, and spreads of rubble from small agricultural structures.

4.3 Modern features

A broad band of magnetically disturbed data occurs along the northern edge of Field 1. Such disturbance typically represents hardcore or made ground containing brick rubble, clinker, small pieces of scrap iron or other magnetic debris.

A twin gas pipeline which crosses the southern end of the survey area on a south-east to north-west alignment has produced a very intense magnetic response. This comprises two closely spaced linear anomalies of alternating polarity surrounded by large magnetic halos to either side. A much smaller pipeline (possibly a field drain) runs obliquely across the westernmost corner of Field 2. It is also represented by an alternating linear anomaly, but has no associated halo.

Small, discrete dipolar anomalies are widespread across the survey area. They are of ferrous origin, and most will represent insignificant pieces of scrap metal within the ploughsoil. However, two of them represent the poles supporting a set of overhead electricity cables, as indicated on Figure 8.

4.4 Geological features

A linear trend of diffuse, irregular and slightly disjointed magnetic anomalies crosses Field 2 from south-west to north-east, and is likely to represent a band of colluvial sediments along the base of a minor dry valley. In the northernmost part of the same field a broader band of amorphous positive magnetic anomalies is most likely to represent part of a palaeochannel of the River Nene.

5 CONCLUSION

The survey results have identified archaeological features of probable Bronze Age to Roman date which are likely to represent a continuation of the multi-period landscape remains already investigated as part of the wider Pineham developments. Evidence for medieval and post-medieval cultivation of the area has also been identified.

The boundary ditch aligned east to west across Field 2 may be a continuation of a feature investigated in 2006-7 (Brown 2007). The block of rectilinear enclosures to the north respect this boundary, which may suggest that the boundary and field system had an origin as early as the late Bronze Age, with the pit alignments perhaps a later landscape addition of the late Bronze Age/early Iron Age.

Pit alignments are a relatively common but enigmatic landscape feature around Northampton, with other examples found at Upton (Walker and Maull 2010; Carlyle 2010) and Harlestone/Dallington (Field and Chapman 2006; Walker and Wolframm-Murray 2012). The three lengths of pit alignment may extend further but this is unclear owing to the impact of later features and changes in geology.

The enclosures to the south, in Field 1 are likely to be a continuation of the Iron Age and Roman occupation recorded to the east (Brown 2007, Carlyle 2007).

The ridge and furrow recorded in the survey may be post-medieval in date as its pattern is similar to the straight 'lands' characteristic of the 19th century. After the parliamentary enclosure of the parishes the landscape was realigned into smaller rectangular fields. This pattern continued into the 1940s when it is still visible on aerial photographs which area publicly accessible on Google Earth. In the later part of the 20th century fields were merged into larger units. The areas of disturbance recorded in Field 2 may be indicative of the rubble of former buildings or debris ploughed in when the hedgerows between fields were removed.

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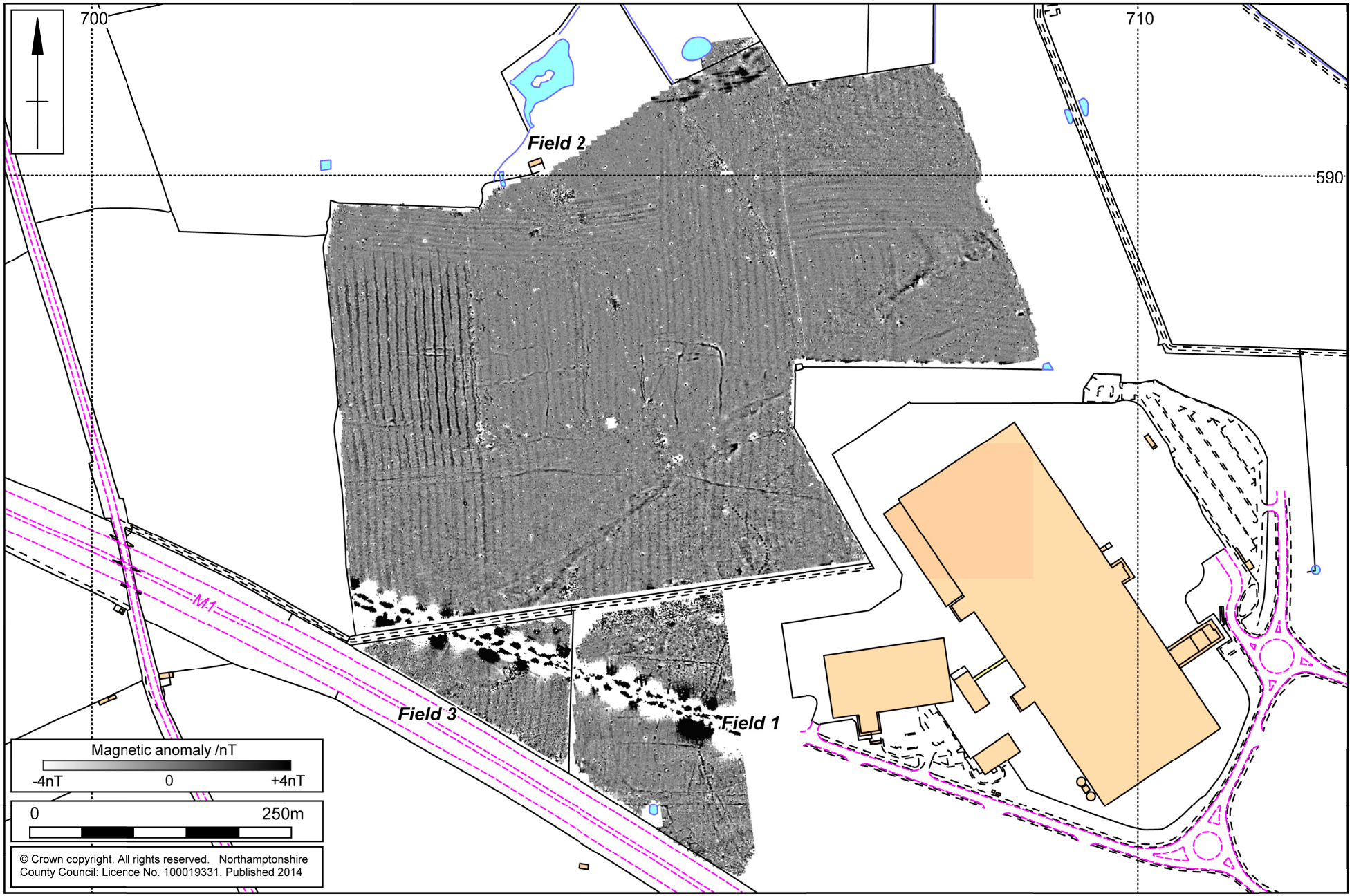

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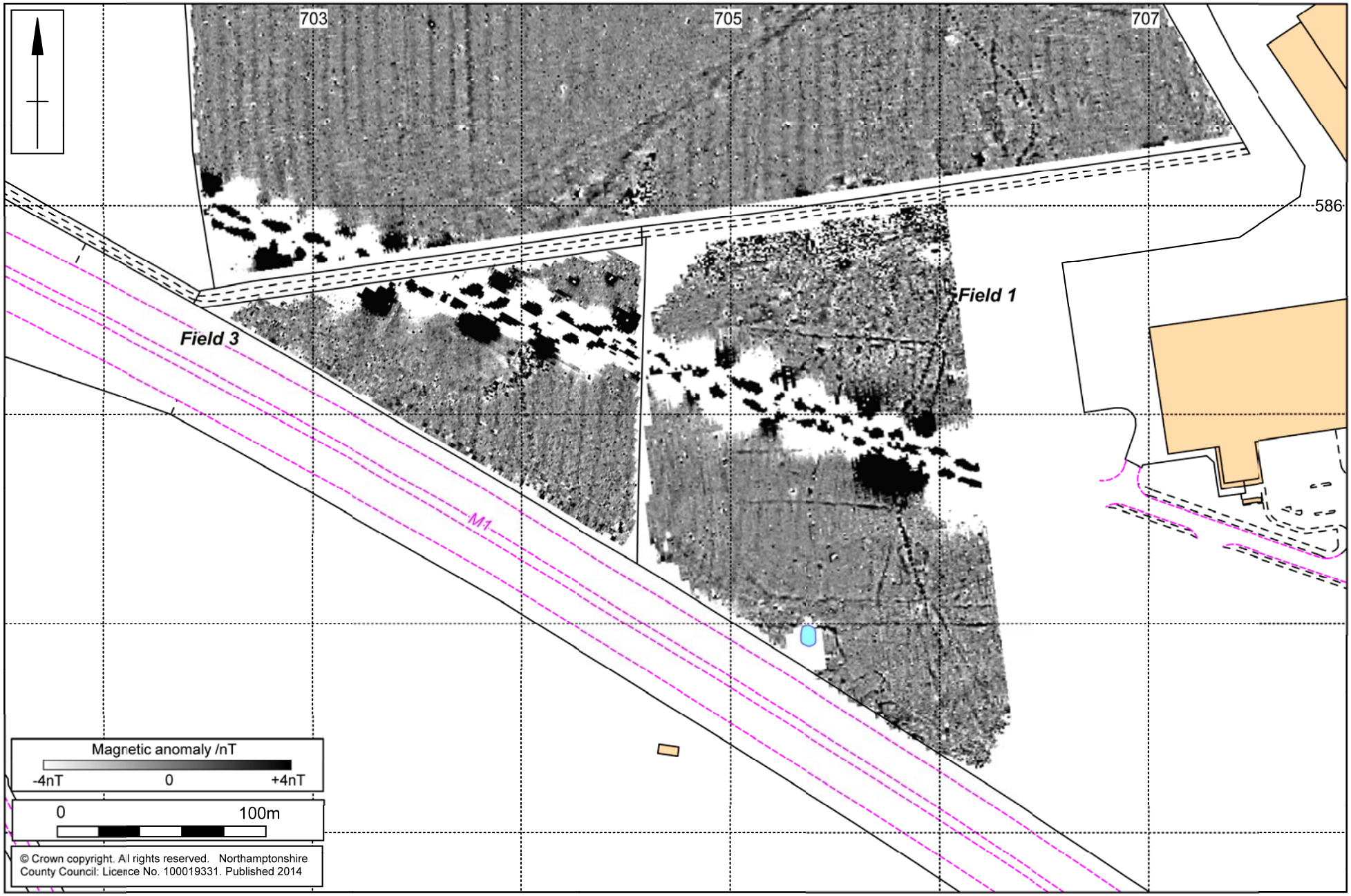
Magnetometer survey results overview Fig 3



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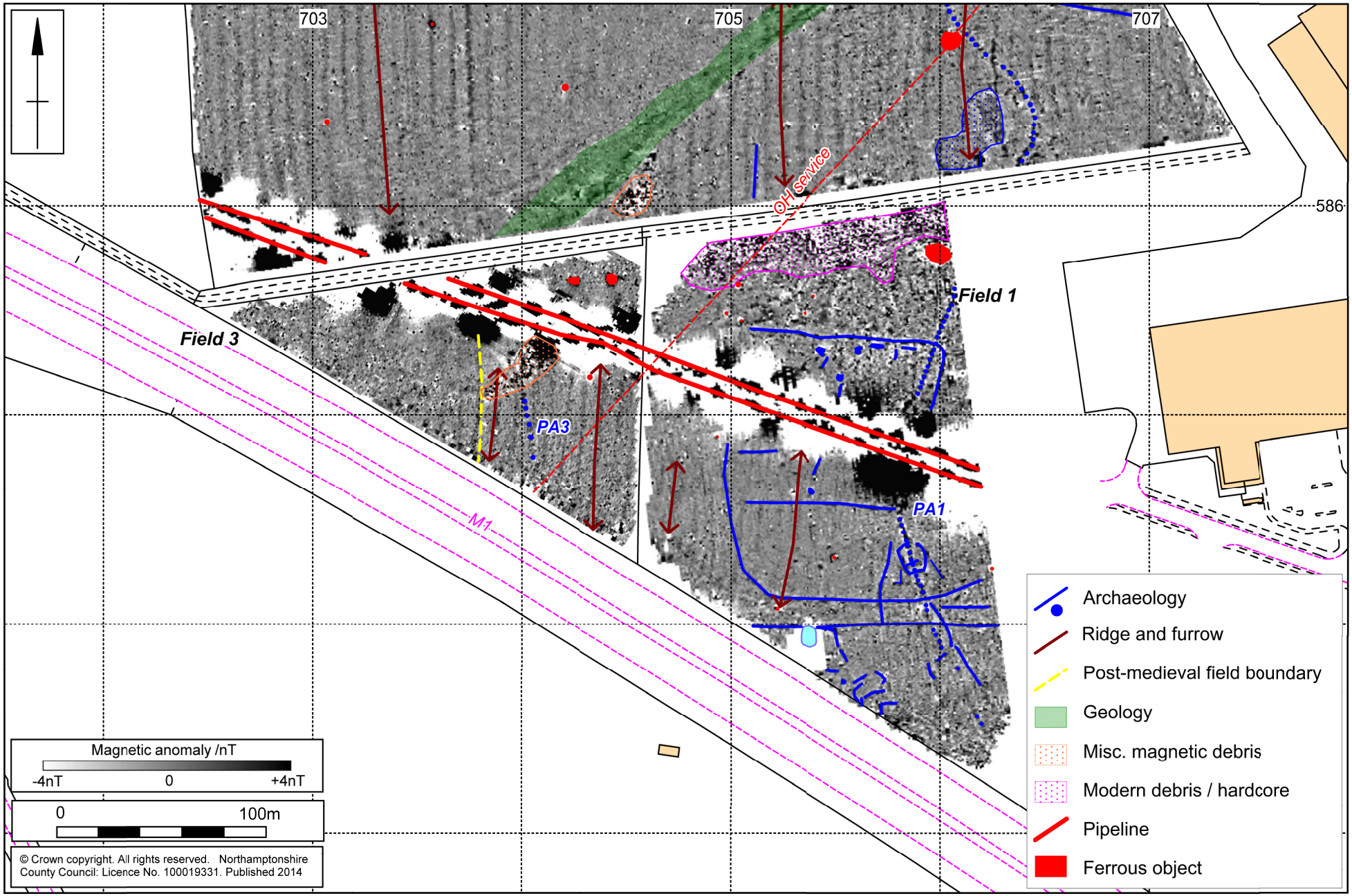
Magnetometer survey results, Fields 1 and 3 Fig 4



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Magnetometer survey interpretation, Fields 1 and 3 Fig 5

703
705
707
709
590
588
Magnetic anomaly /nT
-4nT
0
+4nT
0
100m

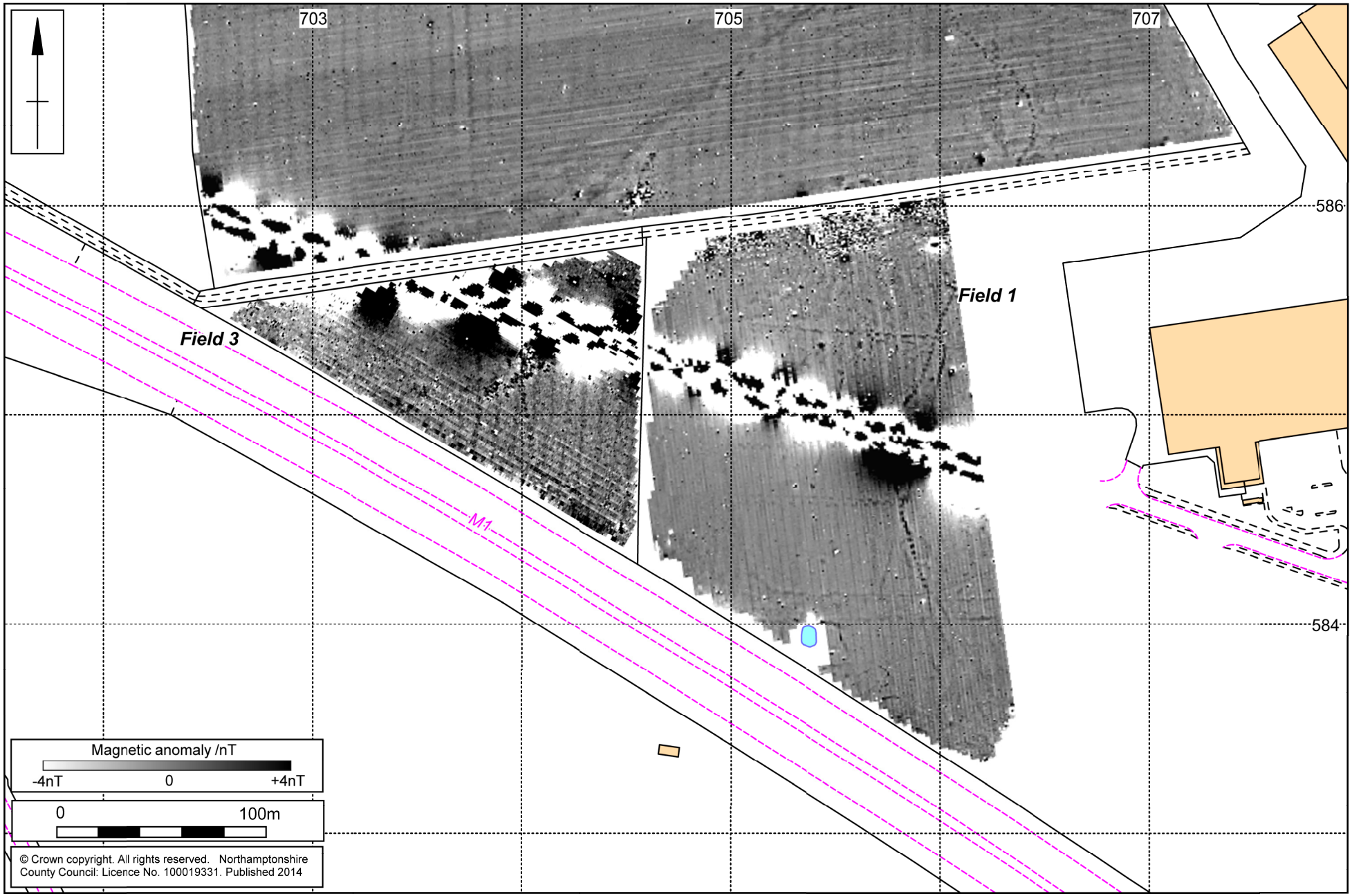
Scale 1:2,500

Magnetometer survey results, Field 2 Fig 6

703
705
707
709
590
588
boundary
PA2
PA1
Archaeology
Ridge and furrow
Post-medieval field boundary
Geology
Misc. magnetic debris
Modern debris / hardcore
Pipeline
Ferrous object
Magnetic anomaly /nT
-4nT
0
+4nT
0
100m

Scale 1:2,500

Magnetometer survey interpretation, Field 2 Fig 7



Scale 1:2,500

Unprocessed magnetometer data, Fields 1 and 3 Fig 8

703

705

707

709

590

588

Magnetic anomaly /nT

-4nT 0 +4nT

0 100m

Scale 1:2,500

Unprocessed magnetometer data, Field 2 Fig 8

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