Northamptonshire County Council

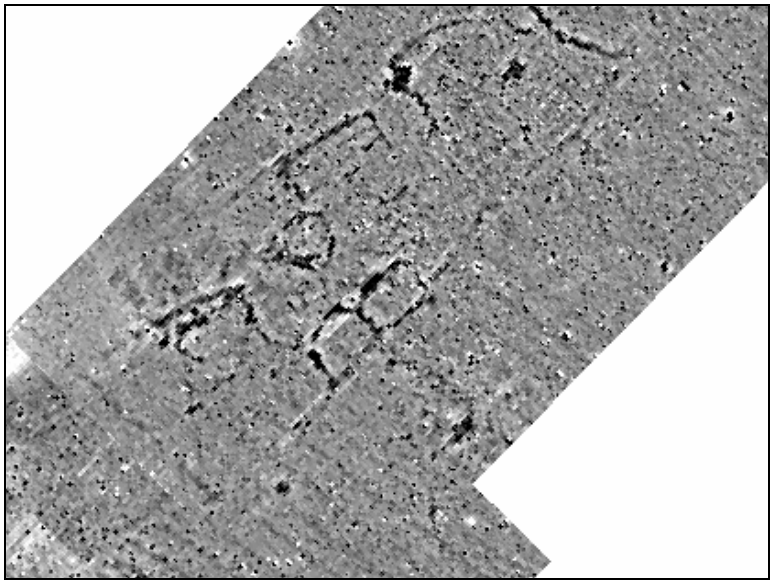
Northamptonshire Archaeology

Geophysical Survey for

A5 – M1 Link Road, Dunstable Northern Bypass

Bedfordshire

April - December 2007



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January 2008

Report 08/23

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***OASIS* REPORT FORM**

PROJECT DETAILS		
Project name	Geophysical Survey for the A5 –M1 Dunstable Northern Bypass, Bedfordshire	
Short description	Northamptonshire Archaeology undertook a magnetometer survey along the route of the proposed A5 – M1 Link Road (Dunstable Northern Bypass), Bedfordshire. The survey covered an area of c 50ha of arable land and pasture north of Dunstable. Archaeological features recorded included enclosures and boundary ditches, possibly relating to later prehistoric or Roman rural settlements, in three of the fields. Single linear anomalies were present elsewhere, and probable geological variations noted. Traces of ridge and furrow were also recorded.	
Project type	Geophysical Survey	
Site status	N/A	
Previous work	Fieldwalking	
Current Land use	Arable and pasture	
Future work	Trial trench evaluation	
Monument type/ period	Iron Age to post-medieval	
Significant finds	Enclosures, field systems and cultivation	
PROJECT LOCATION		
County	Bedfordshire	
Site address	Houghton Regis, Dunstable, Bedfordshire	
Study area	(approx) 50ha	
OS Easting & Northing	TL 010 250	
Height OD	104 - 130m OD	
PROJECT CREATORS		
Organisation	Northamptonshire Archaeology (NA)	
Project brief originator	Scott Wilson Consulting Ltd	
Project Design originator	NA	
Director/Supervisor	Mark Holmes and Ian Fisher	
Project Manager	Andy Mudd (NA), Sean Steadman (Scott Wilson)	
Sponsor or funding body	Costain-Carillion JV	
PROJECT DATE		
Start date	April 2007	
End date	January 2008	
ARCHIVES	**Location**	**Content**
Physical		
Paper	Northamptonshire Archaeology	Survey notes
Digital	Northamptonshire Archaeology	Geophysical data
BIBLIOGRAPHY	Journal/monograph, published or forthcoming, or unpublished client report (NA report)	
Title	Geophysical Survey for the A5 –M1 Link Road, Dunstable Northern Bypass, Bedfordshire, April - December 2007	
Serial title & volume	NA 08/23	
Author(s)	Carol Simmonds, Ian Fisher	
Page numbers		
Date	31 / 01 / 08	

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GEOPHYSICAL SURVEY FOR THE A5-M1 LINK ROAD, DUNSTABLE NORTHERN BYPASS, BEDFORDSHIRE APRIL - DECEMBER 2007

ABSTRACT

Northamptonshire Archaeology undertook a magnetometer survey along the route of the proposed A5 – M1Link Road (Dunstable Northern Bypass), Bedfordshire, for Scott Wilson Consulting Ltd, acting on behalf of their client Costain-Carillion Joint Venture. The survey area covered c 50ha of arable land and pasture north of Dunstable. Archaeological features discovered included enclosures and boundaries, possibly relating to later prehistoric or Roman rural settlement, in three of the fields. Single linear anomalies were present elswhere and geological variations noted. Traces of ridge and furrow were also recorded.

1 INTRODUCTION

Northamptonshire Archaeology was commissioned by Scott Wilson, on behalf of their client Costain-Carillion Joint Venture, to undertake a magnetometer survey along the route of the proposed A5 – M1 Link Road (Dunstable Northern Bypass), Bedfordshire. The site comprised *circa* 50ha of arable land and pasture, immediately to the north of Dunstable, Bedfordshire (NGR TL 010 250, Fig 1).

The principal objectives of the survey were outlined in a written scheme of investigation (Highways Agency/Scott Wilson, 2007). These were :

- To assess the archaeological resource on the route of the proposed scheme, providing further information on the form, location, nature, extent of archaeological crop mark features and find spot areas, as well as unknown sites
- To inform preparation of the Cultural Heritage chapter of the Environmental Statement
- To define the archaeological risk in advance of construction
- To determine the extent of a known burial ground at Thorn Farm

The survey was carried out between April and December 2007. Around 50ha of land was surveyed within the designated road corridor providing almost complete coverage of the proposed land take. The survey programme was determined to a large extent by accessibility to land, including the factor of crop type. The survey area consisted of twenty-two fields, seventeen which were surveyed. Fields omitted included the southern narrowed tip of Field 57 which had a track and was heavily disturbed with debris, and Fields 60, 75, 78 and 63 which formed part of the M1 widening around the proposed junction (Fig 2). This report follows an interim summary on Fields 6, 30, 31, 34, 53, 54 and 55 which was produced in June 2007 (NA 2007).

2 ARCHAEOLOGICAL BACKGROUND

Archaeological remains in the immediate area include a moated enclosure located near Oakwell Park, and a Baptist burial ground and medieval settlement in the vicinity of Thorn Farm. Cropmark evidence indicated a number of areas of interest including enclosures and field systems towards the western end of the proposed route. Find scatters indicated some form of activity from prehistoric to post-medieval times (Steadman 2007).

Previous archaeological fieldwork on land coinciding with the proposed route, comprised fieldwalking undertaken by a local archaeology group, the Manshead Archaeology Society of Dunstable (Steadman 2007).

3 TOPOGRAPHY AND GEOLOGY

Current proposals indicate that the bypass is to form an arc joining the A5 trunk road to the M1 motorway between junctions 11 and 12, approximately 1km north of the town of Dunstable (NGR TL 010250, Fig 1).

On the western (A5) side, the land is flat, maintaining a consistent level at *c* 104m above Ordnance Datum. On the east (M1) side the elevation is 120-130m OD, with only the fields around Chalton Cross Farm being on sloping ground.

During the survey, most fields were under winter wheat or oil seed rape crops. The fields around Grove Farm (Fields 54 and 55, Fig 2) were under pasture at the time of survey. Land divisions are marked by modern drainage ditches and hedgerows often incorporating metal wire fencing. A overhead power line is aligned parallel with the route, with another aligned over Fields 34 and 30.

The underlying geology is superficial drift of silts and clays with Chalk at depth (BGS 2007).

4 METHODOLOGY

Fieldwork

The development area was surveyed on a field by field basis, each field being allocated a separate block number (Fig 2). Each block was sub-divided into 30m x 30m grid-squares, which formed the basic unit of survey. Base points for each block were located using a Leica 1200 GPS (with potential precision of 0.02 m).The grids themselves were laid out manually, using tapes and an optical square.

The survey was conducted with Bartington Grad601-2, twin sensor array, vertical component fluxgate gradiometers or Geo Scan FM36 and FM256 single sensor gradiometer. These instruments were carried at a brisk but steady pace through each grid, collecting data along 1m spaced traverse lines. Measurements were automatically triggered every 0.25m along the traverses, giving a total of 3600 measurements per grid.

All fieldwork was carried out in accordance with the guidelines issued by English Heritage and by the Institute of Field Archaeologists (EH 1995; Gaffney, Gater and Ovendon 2002)

Data processing

The data was displayed and processed using Geoplot 3.00s software. In accordance with NA's normal policy, minimal processing was carried out on the data in order to limit biases. The 'Zero Mean Traverse' function was applied as a standard in order to balance the data to zero. Other functions were applied only where necessary to correct specific data flaws.

The processed data is presented in this report in the form of greyscale plots (scale +4nT to -4nT black ~ white; Figs 3, 5, 7, 9, 11, 13 and 15). It was considered that other plotting regimes such as 'stacked trace' would be uninformative for the majority of this survey as they emphasise the majority stronger magnetic anomalies to the detriment of the weaker, over a large area. Interpretative plots (Figs 4, 6, 8, 10, 12, 14 and 16) have been overlaid on the greyscales to aid in the discussion.

5 SURVEY RESULTS

In general, the survey produced good results and recorded extensive archaeological patterns of enclosures and field boundaries in three areas. Additionally, ridge and furrow indicating medieval to post-medieval cultivation was found sporadically across the survey area. Later features included

field drains, high and low pressure pipelines, magnetic noise probably reflecting off the roads and substantial disturbance radiating from overhead powerlines which affected the survey.

The results are listed on a field by field basis with accompanying figures.

Field 5
The survey results for Field 5 have in places been affected by the magnetic field induced by overhead power cables and by three high pressure pipelines. There are also a number of smaller areas affected by magnetic and ferrous noise and disturbance (Figs 3 and 4).

Nevertheless extensive archaeological anomalies were found, covering an area of approximately 3ha. The anomalies consist of four small penannular ditches averaging 14m in diameter, each with entrances facing south or south-east. and several small enclosures of sub-rectangular or ovoid form.

The principal cluster of features lies to the west, approximately 100m from the western field boundary. It consists of a number of enclosures, with occasional sub-divisions. To the south lie a pair of conjoined sub-rectangular enclosures. Indistinct anomalies of possible archaeological significance lie immediately north-west of the conjoined enclosures. There are also a number of identifiable pit-like features in the area of archaeology.

Ridge and furrow aligned north-west to south-east has also been identified to the south-west and in the centre part of the field. In places it appears to disturb or affects the archaeological anomalies.

Field 6
The survey results in Field 6 have been adversely affected by the magnetic field induced by overhead power cables. Nevertheless, archaeological features have been detected (Figs 5 and 6).

Two areas of archaeological features have been recorded. These comprise three curving ditches, possibly an enclosure, within which is a further curvilinear anomaly representing a second enclosure.

To the south-east, were two parallel linear ditches, aligned north-west to south-east. They are in association with a pair of conjoined ovoid ditched enclosures. Two pits have been detected between the major clusters of anomalies.

Ridge and furrow has been detected further to the north-east of the curvilinear enclosures, and also against the north-eastern field boundary.

An area of ferrous disturbance, probably radiating off a metal fence, is present immediately north of Thorn Farm.

Field 10
Archaeological anomalies included extensive ridge and furrow towards the eastern part of the field. In the main, faint linear cultivation lines were noted aligned north-west to south-east with a further set aligned north-east to south-west (Figs 7 and 8).

Adjacent to the road there was a spread of magnetic noise which could indicate below ground disturbance connected to the road contruction or disturbance from a magnetic field boundary fence. To the north, was a single ferrous anomaly with a halo of approximately 14m, probably indicating buried scrap metal from farm implements.

Field 46
No archaeological anomalies were recorded. An area of magnetic noise adjacent to the road indicates probable disturbance or reflection from the road (Figs 9 and 10).

Field 48
A linear feature, aligned west-north-west to east-south-east was recorded and measured approximately 100m (Figs 9 and 10). An area of magnetic noise adjacent to the road indicates probable disturbance or reflection from the road. A single ferrous anomaly with a halo of approximately 10m was noted against the stream/drain, probably indicating buried scrap metal from farm implements.

Field 49
No archaeological anomalies were recorded. An area of magnetic noise adjacent to the road indicates probable disturbance or reflection from the road (Figs 9 and 10).

Field 50
A single faint curving ditch, aligned south to north can be seen parallel with the field boundary between Fields 50 and 53 (Figs 9 and 10). This may represent an earlier field boundary which was superseded when the current boundary was put in place, or a ploughing hollow by a headland.

Two field drains aligned north-east to south-west were recorded.

Field 53
Archaeological anomalies included sporadic ridge and furrow aligned north-east to south-west across the field (Figs 9 and 10).

Field 54
No archaeological anomalies were noted apart from ridge and furrow aligned north-east to south-west (Figs 9 and 10).

Field 55
No archaeological remains were recorded (Figs 9 and 10).

Field 34
Two linear anomalies, orientated south-east to north-west, were detected in the middle of Field 34 (Figs 11-14). they are aligned parallel with the track which follows the line of the parish boundary. The anomalies may represent a shifting of the track or an ancient boundary. To the south a solitary pit was identified. To the west lie possible ridge and furrow features, but these are very faint.

A single sinuous east to west aligned anomaly was recorded to the east of the field and this may represent a natural feature.

Field 30
The overhead power cables affected the survey where it crossed the track between Fields 34 and 30 (Figs 13 and 14).

No archaeological features were noted in this field. However, the sinuous natural feature that was seen in Field 34 was also noted in Field 30.

Field 31
Again a overhead cable affected the survey data and a halo surrounding a pylon was noted in the survey (Figs 13 and 14).

Three linear features probably denoting field boundaries were noted in Field 31.

Field 64
The anomalies in Field 64 comprised archaeology, ferrous anomalies and a potential change in geological substrate (Figs 15 and 16).

The archaeological features in the western part of the field comprised a single partially surveyed rectangular enclosure with a series of linear ditches radiating out from it.

Field 72
This field was heavily disturbed by two parallel pipelines adjcacent to the M1 motorway (Figs 15 and 16). Further disturbance to the survey data was caused by overhead power cables and the location of a pylon.

A single archaeological linear anomaly aligned north-east curving to the south-west was recorded. This may represent an old field boundary. To the south was an area of magnetic noise.

Field 74
The survey data was disturbed by the presence of a pipeline aligned parallel to the M1 motorway (Figs 15 and 16). There were two small areas of ferrous disturbance adjacent to the pipeline.

A mixture of archaeological and geological features were noted in the data. These comprise a curving anomaly which has been identified as probably geological, and three linear features and a single pit which appear to be archaeological, perhaps forming part of an enclosure.

Field 81
There were two linear ditch features in Field 81, one aligned north to south was located towards the south of the field (Figs 15 and 16). The second which can be sen on the edge of the survey area was aligned north-west to south-east.

The field was disturbed by ferrous and magnetic noise often coinciding with the location of field boundaries. Additionally, the survey noted a series of sinous anomalies which are likely to be geological in nature.

6 CONCLUSIONS

This survey has identified and mapped three principal groups of archaeological features in Fields 5, 6 and 64, which had been previously identified by cropmarks, earthworks and find scatters. As a whole, together with the occasional linear ditch, they may represent a later prehistoric to Roman agrarian landscape of farmsteads, enclosures and fields. The four penannular ditches in Field 5 may date from the Bronze Age onwards, but are most likely to be Iron Age.

Archaeological features have been overlain or truncated by medieval to post-medieval cultivation which is at its most extensive in Field 10.

The extent of the burial ground near Thorn Farm was not defined, and none of the anomalies in Fields 5 or 6 are likely to represent graves. It is likely that the most northern extent of the burial ground lies to the south of the survey area.

However, the majority of the anomalies recorded during the survey are clearly of non-archaeological origin, relating instead to field drains, ferrous materials and geological deposits. The additional hindrance provided by the sensitivity of the survey machines to the overhead power lines may have masked further archaeology, especially in Fields 5 and 6.

It must be stressed that the survey results indicate only a minimum extent of the archaeology within the development area. The weakness of some of the magnetic responses should be taken as a reminder that archaeological features do not always produce clear anomalies and that some may be so weak as to prove invisible to magnetometer survey.

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Northamptonshire Archaeology

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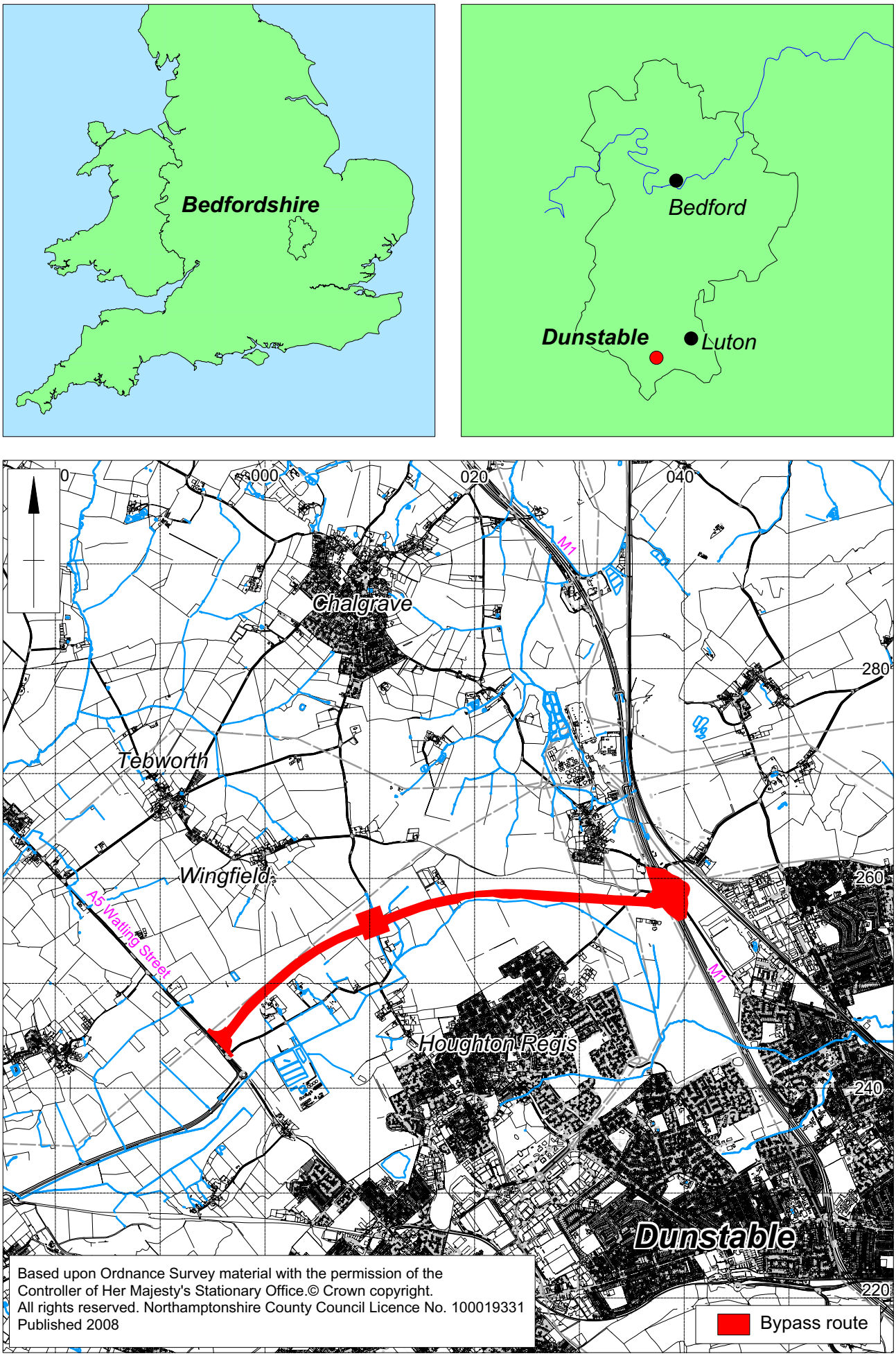
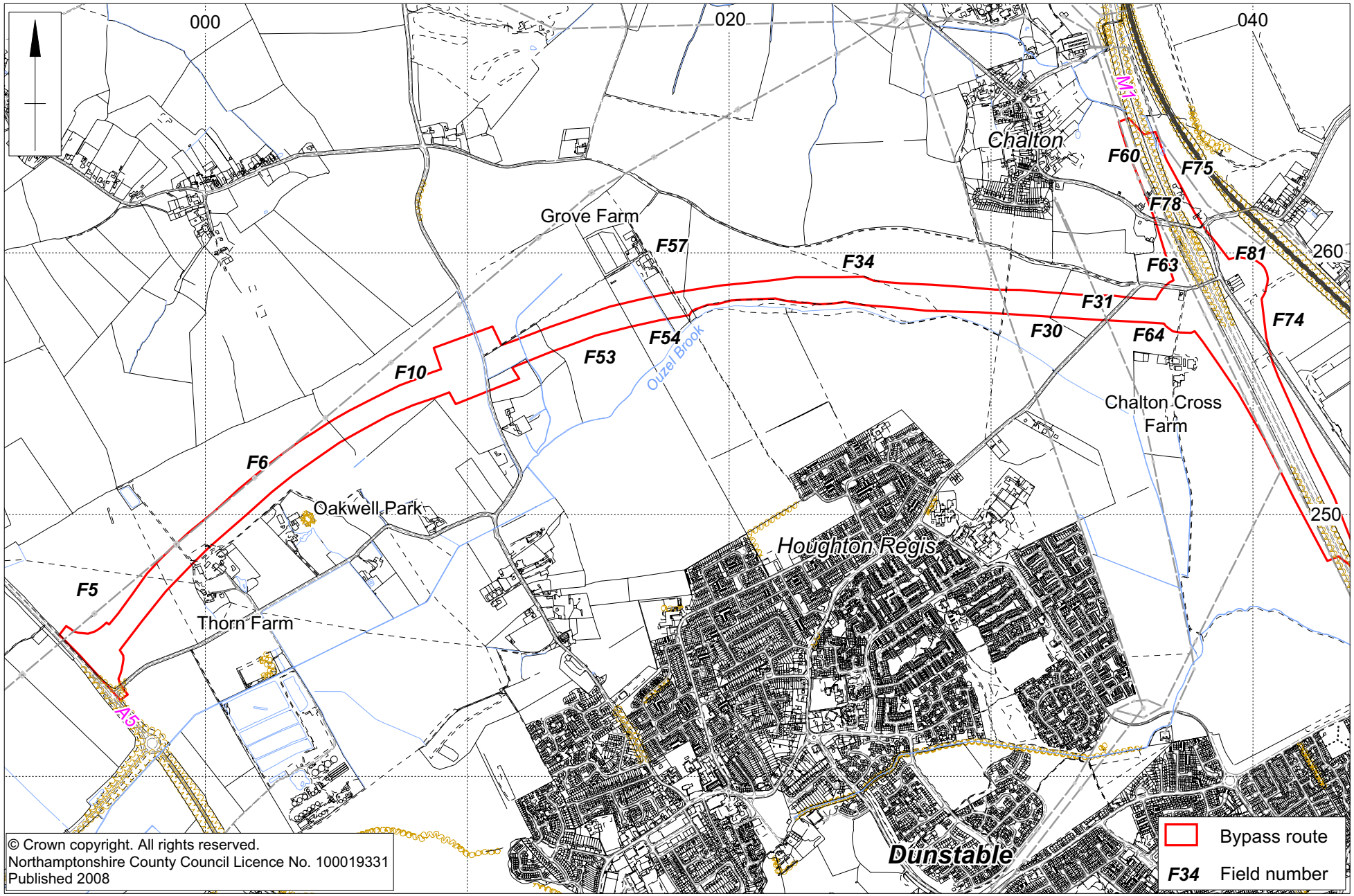


Scale 1:50,000

Site location Fig 1

Scale 1:2000 at A4



Road corridor and field numbering

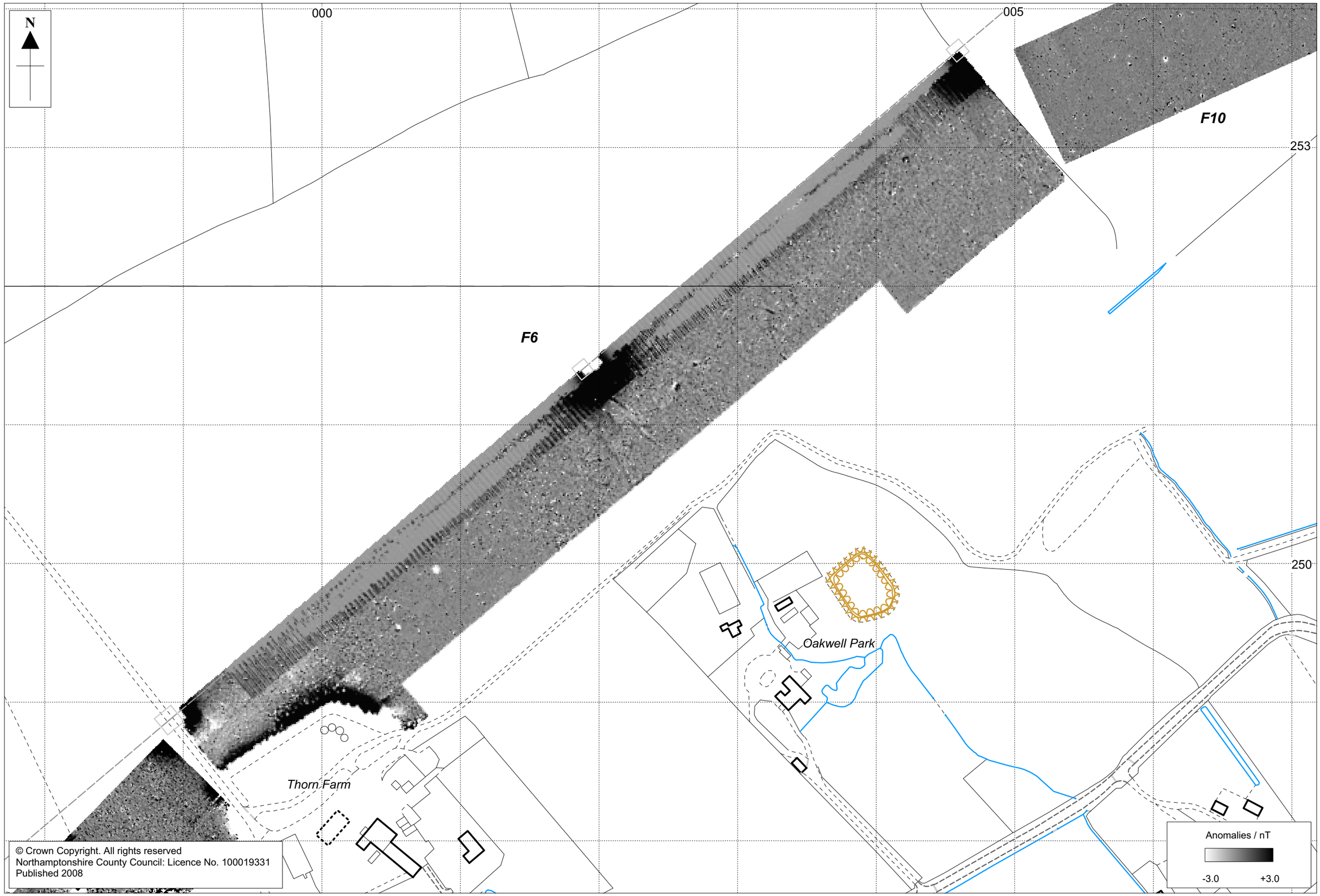
Fig 2

Scale 1:2500 at A3

Detailed gradiometer survey results, Field 5 Fig 3

Scale 1:2500 at A3

Detailed gradiometer survey interpretation, Field 5 Fig 4



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Detailed gradiometer survey results, Field 6 Fig 5

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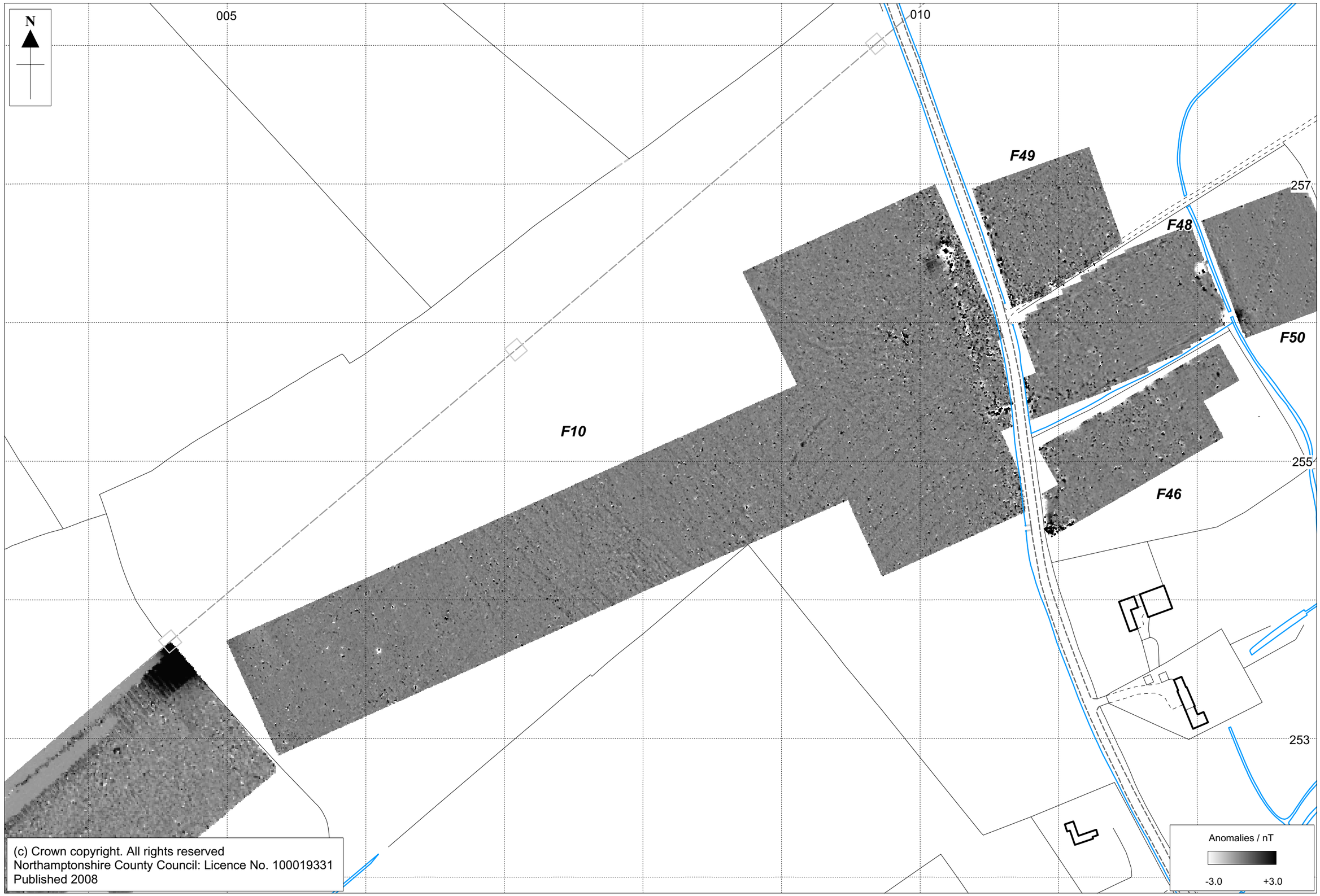
Detailed gradiometer survey interpretation, Field 6 Fig 6



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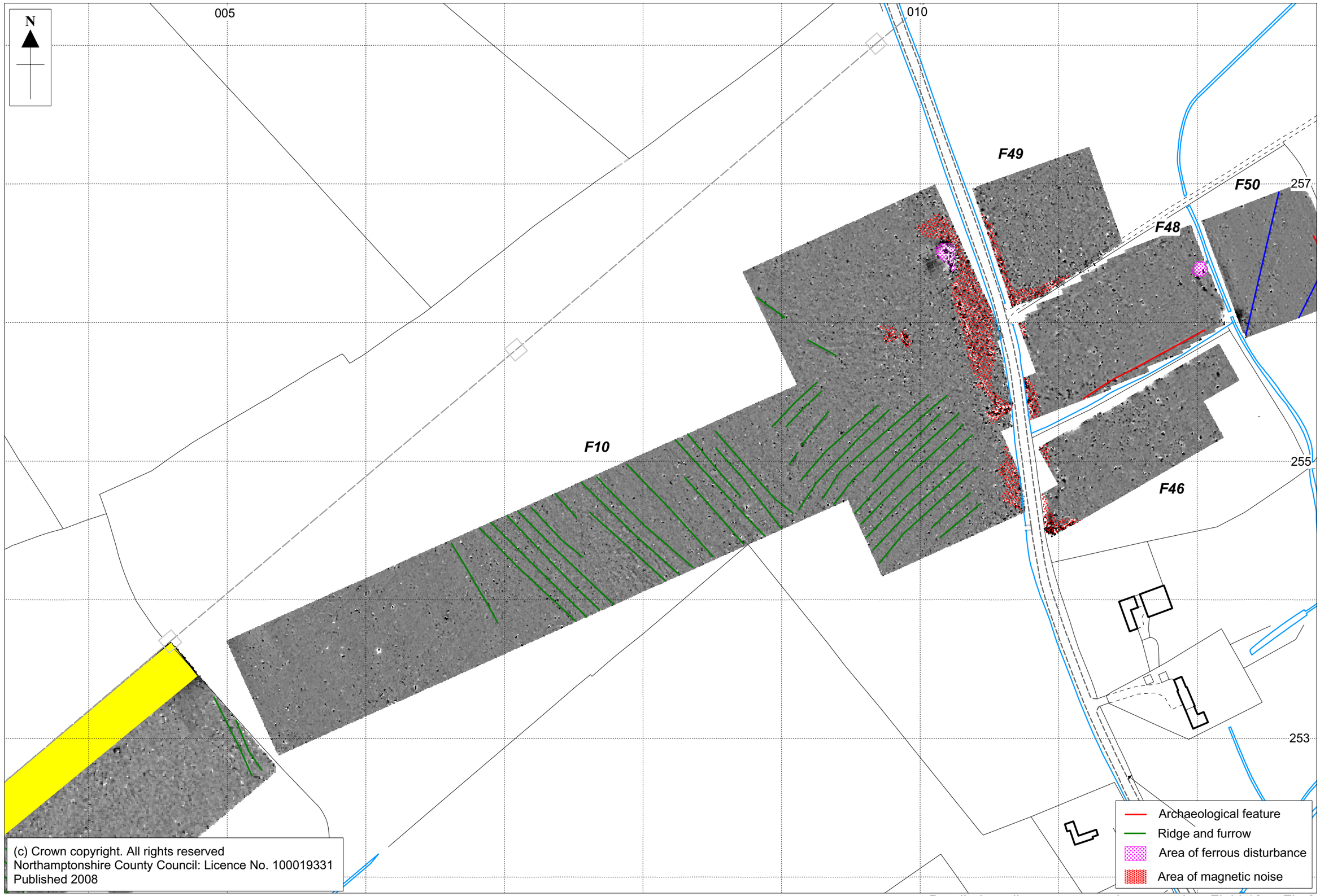
Detailed gradiometer survey results, Field 10 Fig 7



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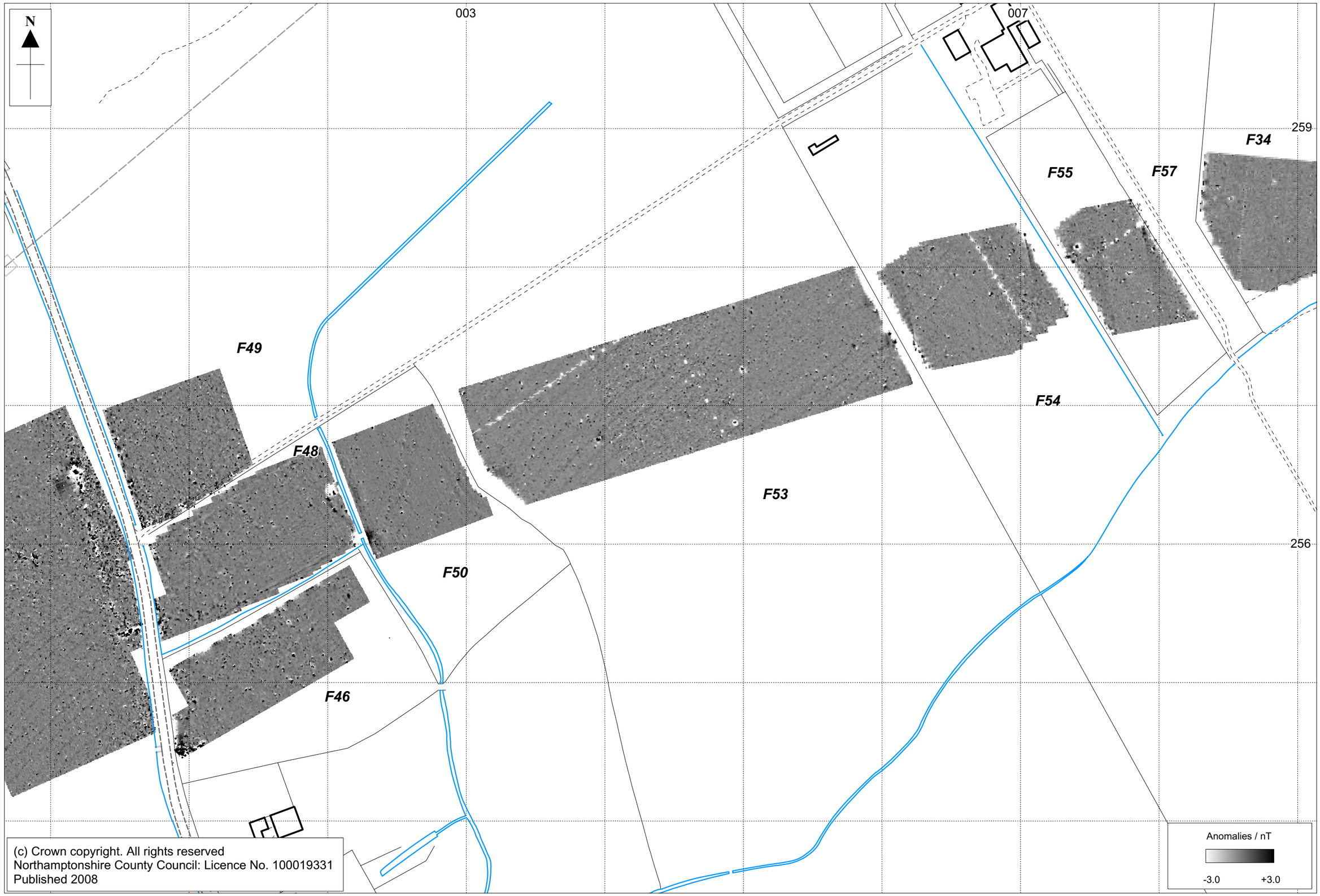
Detailed gradiometer survey interpretation, Field 10 Fig 8



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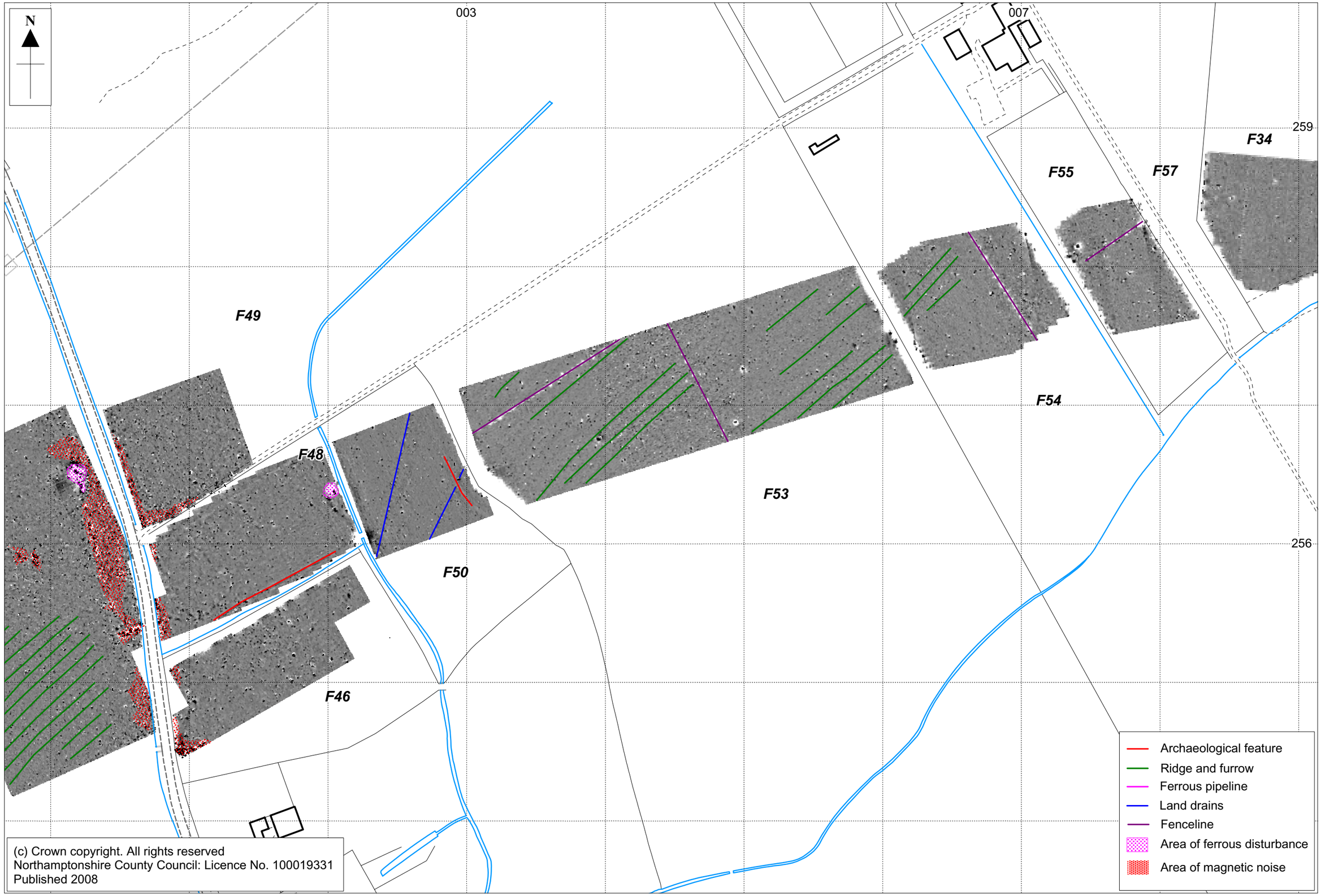
Detailed gradiometer survey results, Fields 46, 48-50, and 53-55 Fig 9



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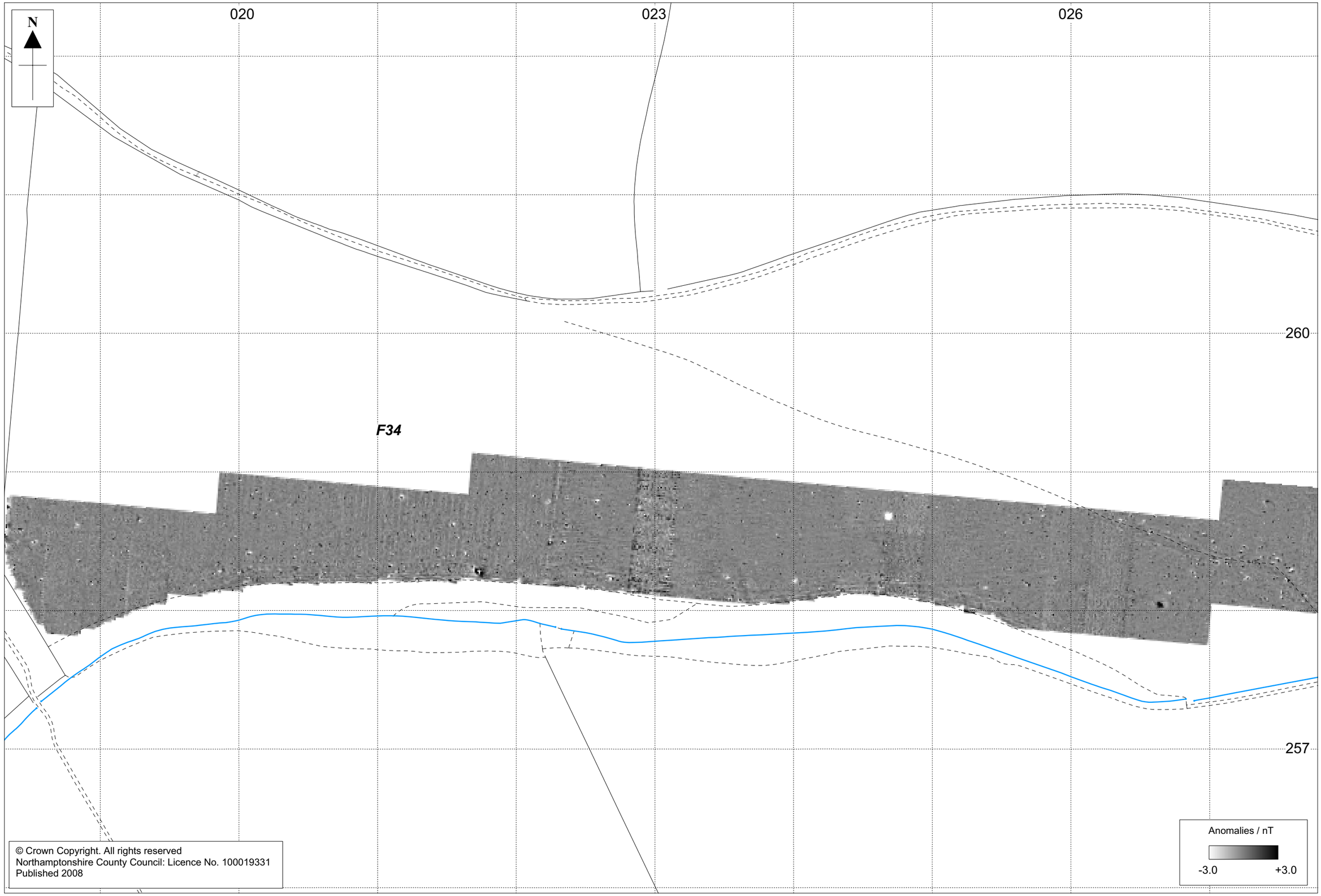
Detailed gradiometer survey interpretation, Fields 46, 48-50, and 53-55 Fig 10



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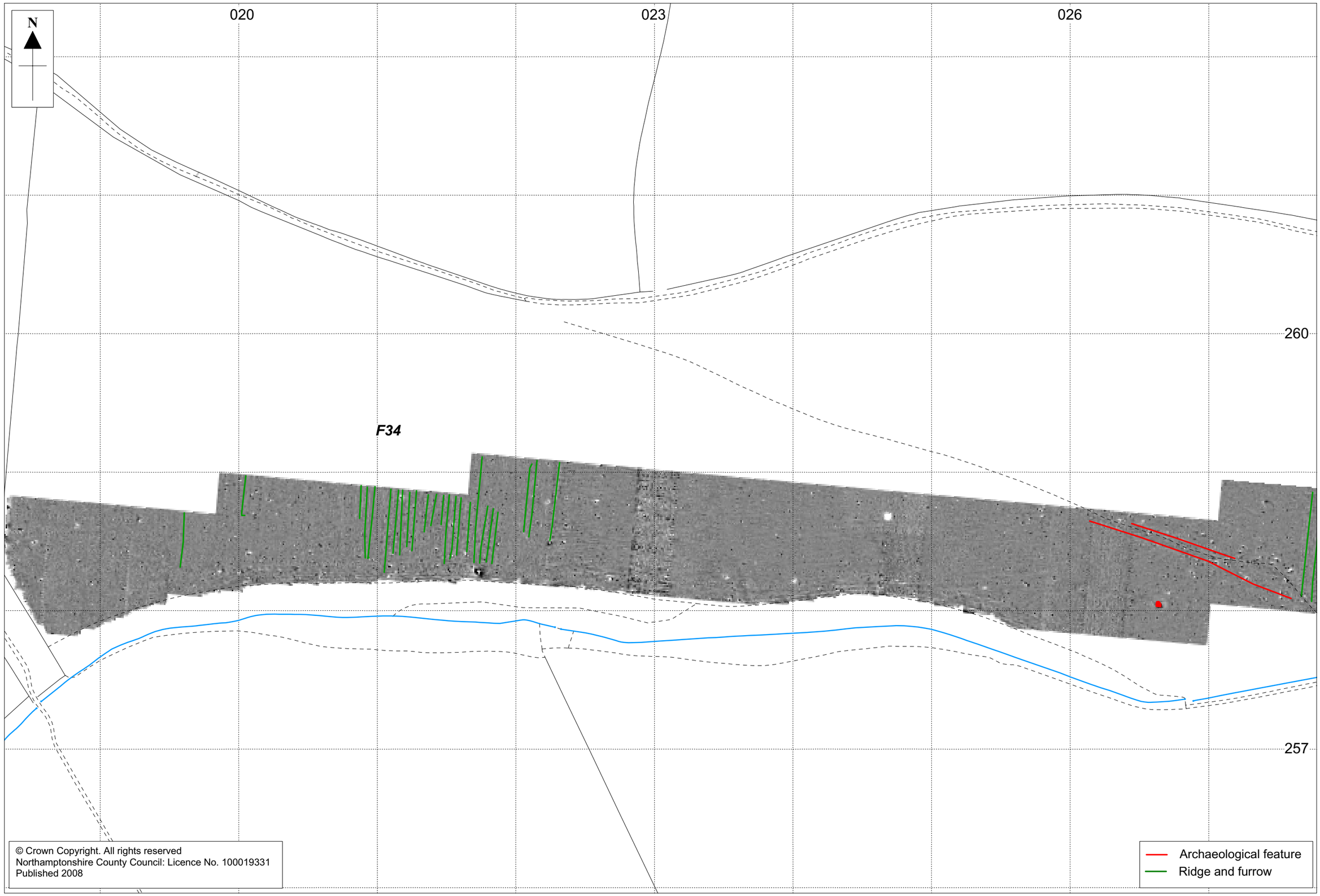
Detailed gradiometer survey results, Field 34 west Fig 11



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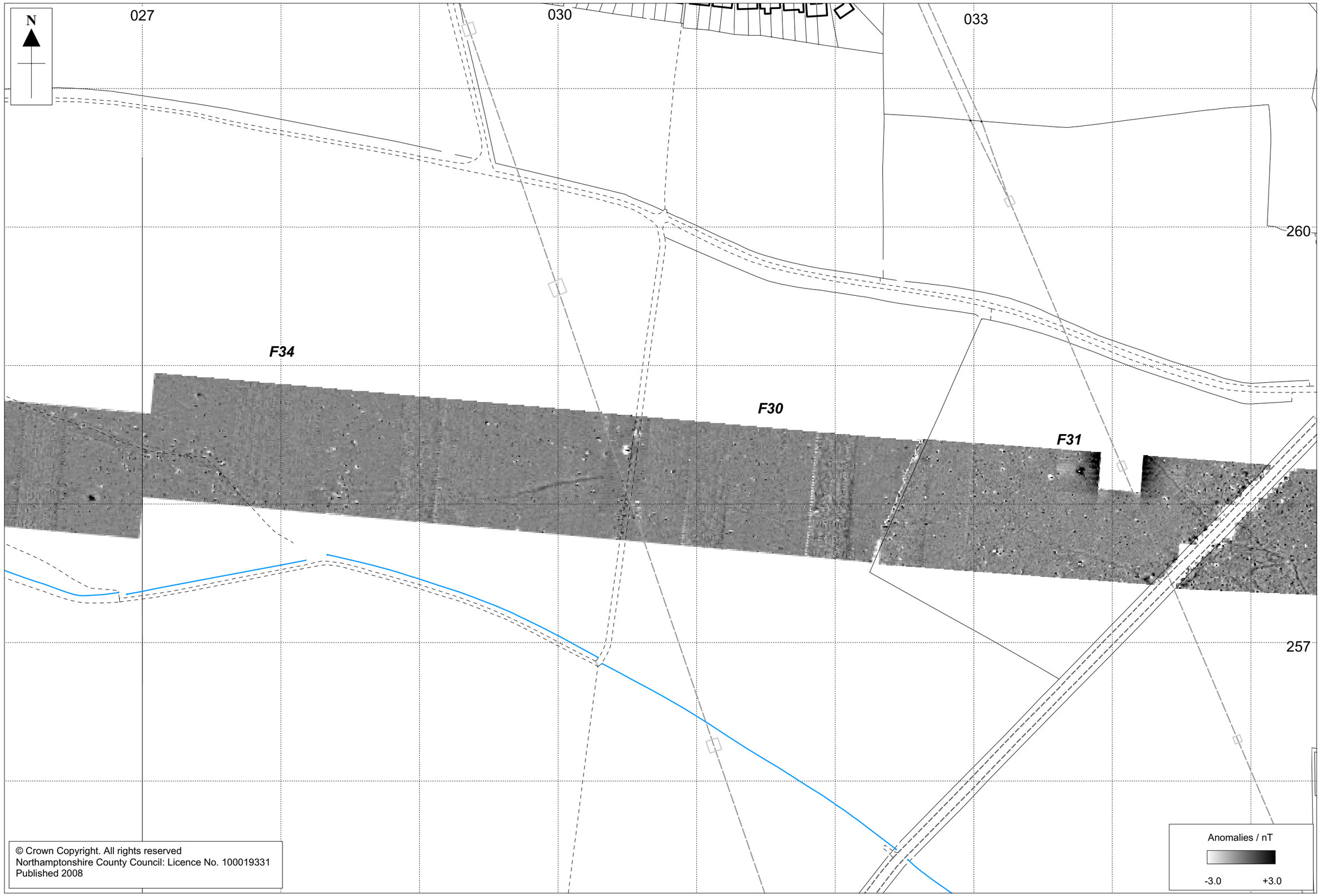
Detailed gradiometer survey interpretation, Field 34 west Fig 12



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Detailed gradiometer survey results, Fields 34 east, 30 and 31 Fig 13

Scale 1:2500 at A3

Detailed gradiometer survey results, Fields 34 east, 30 and 31 Fig 14

Scale 1:2,500 at A3

Detailed gradiometer survey results, Fields 64, 72, 74 and 81 Fig 15

N

F81

F74

F64

F72

Archaeological feature
Ridge and furrow
Ferrous pipeline
Area of ferrous disturbance
Area of magnetic noise
Change in geological substrate
Geological?

Scale 1:2,500 at A3

Detailed gradiometer survey interpretation, Fields 64, 72, 74 and 81 Fig 16