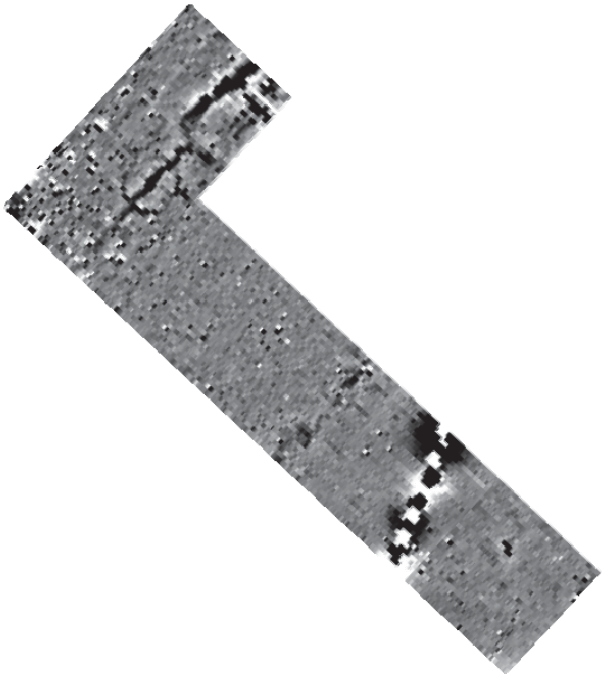
Northamptonshire Archaeology

Archaeological geophysical survey on land proposed for the Orchardway wind farm (Phase 2) at Hill Farm Haversham, Milton Keynes, March-April 2011



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Report 11/92

April 2011

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OASIS REPORT FORM

PROJECT DETAILS		
Project title	Archaeological geophysical survey on land proposed for Orchardway Wind Farm (Phase 2) at Hill Farm, Haversham, Milton Keynes, March-April 2011	
Short description	Northamptonshire Archaeology was commissioned by Entec UK Limited on behalf of RWE Npower Renewables, to carry out an archaeological geophysical survey on land proposed for the construction of a wind farm at Hill Farm, Haversham. As a first phase, six hectare blocks of magnetometer survey over proposed turbine locations, revealed two areas of possible archaeological significance. Three likely industrial features, possibly lime kilns, were identified within a sub-rectangular enclosure which also contained a group of pits within one corner (Area 1). A possible trackway connected to the enclosure on two sides. Ridge and furrow cultivation respected the major features, perhaps suggesting a medieval or early post-medieval date for them. Two pit groups and two likely ditches were located in the eastern-most area (Control Building). If they reflect the surface material, it is likely that the features could be of Romano-British date linked to the known habitation around Hill Farm to the south. Phase 2 of survey, over proposed access roads and relocated turbines, identified a ring ditch and two sub-rectangular enclosures were to the east of Area 1 (Area 6), and ditches and a D-shaped enclosure to the north (Area 5). Possible ditches, a trench and several pits were located in Area 3. A post-medieval field boundary was also identified in Area 2 to the south.	
Project type	Geophysical Survey	
Site Status	None	
Previous work	DBA	
Current land use	Agricultural: Arable	
Future work	Unknown	
Monument type and period	Ring ditch (prehistoric), sub-rectangular enclosures, pit groups & ditches (Roman), Lime kilns & enclosure (med/early post-med),	
PROJECT LOCATION		
County	Milton Keynes	
Site address	Hill Farm, Haversham	
Post code		
OS co-ordinates	SP 830 442	
Area	11.5ha	
Height aOD	*c* 80 – 100m aOD	
PROJECT CREATORS		
Organisation	Northamptonshire Archaeology (NA)	
Project brief originator	Entec UK	
Project Design originator	NA	
Director/Supervisor	Angela Warner (NA)	
Project Manager	Adrian Butler (NA)	
Sponsor or funding body	Entec UK Limited for RWE Npower Renewables	
PROJECT DATE		
Start date	07 March 2011	
End date	11 April 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 land proposed for Orchardway Wind Farm (Phase 2) at Hill Farm, Haversham, Milton Keynes, March-April 2011	
Serial title & volume	11/92	
Author(s)	Adrian Butler	
Page numbers	7	
Date	11 April 2011	

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ARCHAEOLOGICAL GEOPHYSICAL SURVEY ON LAND PROPOSED FOR ORCHARDWAY WIND FARM (PHASE 2) AT HILL FARM, HAVERSHAM, MILTON KEYNES

MARCH - APRIL 2011

Abstract

Northamptonshire Archaeology was commissioned by Entec UK Limited on behalf of RWE Npower Renewables, to carry out an archaeological geophysical survey on land proposed for the construction of a wind farm at Hill Farm, Haversham. As a first phase, six hectare blocks of magnetometer survey over proposed turbine locations, revealed two areas of possible archaeological significance. Three likely industrial features, possibly lime kilns, were identified within a sub-rectangular enclosure which also contained a group of pits within one corner (Area 1). A possible trackway connected to the enclosure on two sides. Ridge and furrow cultivation respected the major features, perhaps suggesting a medieval or early post-medieval date for them. Two pit groups and two likely ditches were located in the eastern-most area (Control Building). If they reflect the surface material, it is likely that the features could be of Romano-British date linked to the known habitation around Hill Farm to the south.

Phase 2 of survey, over proposed access roads and relocated turbines, identified a ring ditch and two sub-rectangular enclosures were to the east of Area 1 (Area 6), and ditches and a D-shaped enclosure to the north (Area 5). Possible ditches, a trench and several pits were located in Area 3. A post-medieval field boundary was also identified in Area 2 to the south.

1 INTRODUCTION

Northamptonshire Archaeology (NA) was commissioned by Entec UK Limited on behalf of RWE Npower Renewables, to carry out two phases of archaeological geophysical survey on land proposed for a wind farm at Hill Farm, Haversham, Milton Keynes (centred on NGR: SP 830 442; Fig 1). Six separate one hectare blocks, centred on five proposed turbines and a control building, were investigated by detailed magnetometer survey in March 2011 (Butler & Smith 2011). Further to this survey, prospection was carried out over the proposed routes of access roads and the re-sited positions of turbines 2, 3, 4 and 5, a total of approximately 5.5ha.

2 TOPOGRAPHY AND GEOLOGY

The survey area comprised six one hectare blocks, which were located in the arable fields of Hill Farm, Haversham, which is about 5km north of Milton Keynes (1 – 5 and C*ontrol Building*, Fig 1). Additional 30m-wide survey of access roads was positioned in Areas 2, 3, 4, 5, 6 and 7. Where road lines coincided with re-sited turbines (2 and 4), survey was amalgamated into single blocks for ease. Survey of access roads within Area 1 was not possible due to the constraints of ploughing and oil seed rape growth (western and eastern fields respectively, Fig 1).

The site area comprises agricultural land which is bounded on the south-east by the Little Linford to Haversham road and on the north-west by a small stream. The south-west and north-east sides of the site are adjacent to further agricultural fields and Little Linford Wood to the north.

The topography consists of a ridge that extends approximately south-west to north-east, with a maximum height of *c* 100m aOD, and slopes down to a stream at 75m aOD to the north-west and the road to the south-east where the height varies between 70-85m aOD. The general slope of the land continues to the River Great Ouse a few hundred metres to the south-east. A shallow dry valley runs north-west to south-east to the north of the farm buildings, and passes near Area 4 and the Control Building Area.

The five areas selected for proposed wind turbines are situated on the ridge of higher ground between 90-100m aOD. The area selected for the proposed control building is on lower ground about 75m aOD near the road.

The drift geology of the area consists of Till over a varying solid geology of Kellaways Formation (sand and mudstone), Blisworth Clay (mottled mudstone) and Limestone Formations of the Great Oolite group. Cornbrash probably underlies the north-south ridge at the centre of the site, and may outcrop through the till as calcareous stone has been drawn up by ploughing (Entec UK 2011). Pre WWII mapping (1892-1938; old-maps.co.uk) illustrates a gravel pit in the western corner of the Area 1 field. This is somewhat surprising considering the mapped substrata (above). However, it is possible that a layer of sands and gravels may exist at the interface of the limestone solid and superficial till deposit.

3 ARCHAEOLOGICAL BACKGROUND

The archaeological background of the whole site and a surrounding 1 km radius area has been the subject of a desk-based assessment as part of Specification for Geophysical Survey by Entec UK (2011). This revealed that many archaeological artefacts have been found on the site, mainly by metal detecting, and that the artefacts were concentrated in two zones that have been designated Heritage Interest Areas (HIAs) by the local Historic Environment Record (HER).

The first HIA is in the northern part of the site on the ridge and covers much of the ground between the proposed locations for turbines surveyed in Areas 1, 3 and 5. A rectangular enclosure (HER 779-169102000) which is possibly part of a Romano-British settlement (near Area 5) and two ring ditches (HER 781-169200000, 782-169200001 / 989-198900000) that could be Bronze Age round barrows (near Area 1) have been identified from cropmarks on aerial photographs. One of the ring ditches was excavated in 1960 by Wolverton and District Archaeological Society (Entec UK, 2011; Mudd, 2005).

The second HIA is in the eastern part of the site and the area surveyed for the proposed Control Building is located within it. This area is based around a proven Romano-British settlement and although the focus of this settlement lies around Hill Farm, outside of the site, associated remains could extend into the survey area (Entec UK, 2011). Many artefacts have been found extending into the site area studied for the DBA.

It has been suggested that two Roman roads, Viatores 172 (HER 205100000) and Viatores 174, may have crossed the site north-west to south-east, possibly along the line of the existing path along the ridge and north-south respectively (Entec UK, 2011). However, there is no physical evidence for this.

A former farm exists at NGR SP 830 449, called Wood Farm on historic OS mapping and a roofless barn is visible on aerial photographs of the area (bing.com).

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).

Each survey area comprised a square block, 100m across, the corners of which were located by means of a Leica System 1200 dGPS. A tape measure and optical square were then used to divide each block into 20m grid squares, which formed the basic units of survey. The gradiometers 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 1600 measurements per grid.

All fieldwork methods complied with the specification, and guidelines issued by English Heritage and by the Institute for Archaeologists (Entec UK 2011; EH 2008; I*f*A 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 are 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 & 7). Interpretative plots have been produced and overlaid on the data in Figures 4, 6, and 8.

5 SURVEY RESULTS

The overall results for each area are illustrated in Figure 2.

Area 1 (Figs 3 & 4)

Three extremely highly magnetised discrete anomalies in a roughly triangular formation were detected towards the centre of the area. These features, each over 3m in diameter, expressed values of up to 3000nT. Such intensities of magnetisation indicate thermoremnance – a property induced by the heating of particular materials to high temperatures. In this case it is probable that the anomalies represent industrial features such as kilns or furnaces, possibly for the processing of the local limestone.

The industrial features lie within a curved, sub-rectangular ditched enclosure (*c* 35m x 45m) with possible entrances to the north-east, south-east and south-western sides. The ditch anomaly showed a high level of magnetic enhancement, possibly due to the inclusion of material from the putative kilns. Three parallel linear anomalies were orientated north-east from the enclosure, and another pair to the south-west from the opposite side. These anomalies may indicate the side ditches of a trackway. The south-west aligned trackway appears to make a diversion around a possible small sub-rectangular feature detected on the south-western edge of Area 1. A linear ditch anomaly was also identified perpendicular to the track, south-east – north-west.

A group of discrete positively magnetised anomalies were located in the eastern corner of the large enclosure ditch. As with the ditch, it would appear that these pits have been enhanced by magnetic material from the industrial features. It is, however, unclear whether the pit group is constrained by the large enclosure ditch or by a smaller rectilinear ditched enclosure that connects with further ditches extending to the south-east edge of the area, which appears to represent a separate phase of activity. In addition, two parallel curving ditches extend south and south-eastward from the two larger industrial features and towards a possible curving enclosure, which lay at the edge of the survey area.

Alternate weak positive and negative magnetic bands indicated the presence of a former medieval or post-medieval ridge and furrow cultivation system, apparently respecting the enclosure and also possibly the track.

Area 2 (Figs 5 & 6)

A *c* 80m long positive linear anomaly aligned north-west to south-east was identified in the south of the survey block. A spread of paired positive and negative (dipolar) anomalies, probably representing small ferrous or ceramic debris, was located in a band from the north-western field boundary, parallel with and to the south of the linear feature. It is possible that the ditch and the dipolar anomalies represent a former field boundary identified in historic mapping (Ordnance Survey 1900, old-maps.co.uk). Additional positive linear anomalies were detected orientated north-east from the previous alignment, mapping the south-east side of the field described above.

Scattered dipolar anomalies also appear in the results, these probably indicate ferrous or ceramic debris in the plough soil. Weak positive anomalies in the south of the area represent variation in the underlying substrate, such as exposed limestone. Positive/negative striations within the data aligned north-east to south-west and east west probably reflect modern cultivation trends.

Area 3 (Figs 3 & 4)

A highly magnetic sub-rectangular anomaly was identified in the northern corner of the survey. It is unclear what this object may represent, although the data indicates a likely ferrous source. A rectangular positive anomaly was detected adjacent to the east, possibly reflecting an approximately 9m x 2m pit or trench. Two short positive linear anomalies, possibly ditches were located roughly parallel orientated south-west to north-east in the north-eastern quarter of Area 3. A pair of more discrete anomalies was situated between these features, conceivably two pits.

As in previous survey areas, scattered dipolar anomies indicate ferrous or ceramic debris in the ploughsoil. Weak positive anomalies were detected in the centre and south-east of Area 3 probably indicate geological features, such as solution features in the limestone.

Area 4 (Figs 5 & 6)

Five linear chains of dipolar anomalies were located aligned south-west to north-east across the block. As before these indicate the presence of ceramic land drains. A spinal drain was identified perpendicular to the north-east at the terminus of the others.

Weak positive anomalies in the north of the area are likely to represent a variation in the local geology. Once again, scattered dipolar anomies indicate ferrous material in the topsoil.

Area 5 (Figs 3 & 4)

Two linear positive anomalies were identified in the proposed turbine survey area, one aligned north-west to south-east in the south of the survey area, and the other orientated north-north-west to south-south-east in the west of the area. Both features are likely to represent ditches, although of no obvious relation to each other. However, survey of the proposed access road to the south-east located positive anomalies describing a ditch aligned north-east to south-west with a possible D-shaped enclosure associated with it and orientated towards the north-west.

Scattered dipolar anomies indicate ferrous debris in the ploughsoil.

Area 6 (Figs 3 & 4)

Survey of the proposed access road in this area revealed a wealth of anomalies. The north-west of the area was found to contain positive magnetic anomalies describing a linear ditch aligned south-west to north-east. The ditch crossed a 10m diameter circular feature, a putative ring ditch, to become part of a likely sub-rectangular ditched enclosure that continued outside the area to the east and north-east. A small rectangular enclosure was identified to the north of the ring ditch. Considerable dipolar noise was located in the western corner of Area 6.

A linear ditch anomaly was identified on a north-east to south-west orientation to the south of the other features. West of that, a chain of intense positive/negative anomalies aligned north-east to south west indicates a ferrous pipeline.

Area 7 (Figs 3 & 4)

A single linear positive magnetic ditch anomaly was detected aligned west-east across the north of Area 7. A chain of dipolar anomalies orientated west-east across the south of the area was likely to represent a ceramic land drain. A ferrous anomaly was located in the northern corner of Area 7, the source unknown but conceivably associated with the adjacent pond.

Control Building Area (Figs 7 & 8)

A linear chain of intense positive/negative anomalies aligned south-west to north-east was revealed in the south-east of the survey area. This is the typical response of a buried ferrous pipeline.

A linear negative anomaly across the north-east corner is likely to reflect the ploughing edge in this corner of the field. The extreme north-east corner was not surveyed as it was covered with saplings and heavy undergrowth.

The bulk of the area was found to contain many anomalies that are of possible archaeological origin. A positive linear anomaly aligned from south to north-east is likely to represent a ditch. Another positive linear anomaly situated close-by to the east; aligned north-west to south-east is also likely to represent a ditch. There are many discrete positive anomalies, scattered across the survey block, but concentrated in two groups, one almost semi-circular to the north, and one more contained to the south. These are likely to indicate pits. All of the features have relatively high levels of magnetic enhancement, often a result of the inclusion of a density of cultural artefacts. It is possible that these features could be part of a nearby Romano-British settlement. Amounts of Romano-British ceramics were noted on the field surface during the survey.

6 CONCLUSION

Magnetometer survey for the proposed Orchardway Wind Farm has revealed up to four areas of possible archaeological features. Three putative lime kilns within a sub-rectangular ditched enclosure were identified at the planned site of Turbine 1 (Figs 3 & 4). The enclosure connected to a trackway on a north-east to south-west orientation. A group of pits was located in the eastern corner of the enclosure, although a second enclosure surrounded them which, with a number of other ditches may indicate activity prior or subsequent to the larger enclosure.

The putative limekilns are situated in a good position for the utilisation of the local Oolitic limestone, sitting as it does beneath a cap of boulder clay. A nearby ‘gravel pit’ known from historic mapping (above, section 2) may be a mis-identified limestone extraction site. The indication that ridge and furrow respects the position of the track and enclosure suggests that the industrial complex may be of medieval or early post-medieval date. Other work on lime burning sites (MacAree 2007) has indicated that kilns of the dimensions similar to those in Area 1, *c* 3+m diameter, may date to the early eighteenth century.

Survey demonstrated that the north-west sector of the site has potential for archaeological remains, Area 1 being the particular example. Ditches have been detected in Areas 7, 3 and 5, and also in Area 6 where sub-rectangular enclosures and a ring ditch have been identified. A small D-shaped enclosure was identified attached to a ditch in Area 5.

Pit groups and two possible ditches were located in the proposed Control Building area. Considering the surface material, it is likely that the features could be of Romano-British date, extensively linked to the habitation around Hill Farm to the south, although they form no readily identifiable pattern. A further pair of ditches of unknown date or function were identified in Area 5 would appear to have little

obvious function. A post-medieval field boundary, present on Ordnance Survey mapping of 1900, was also located.

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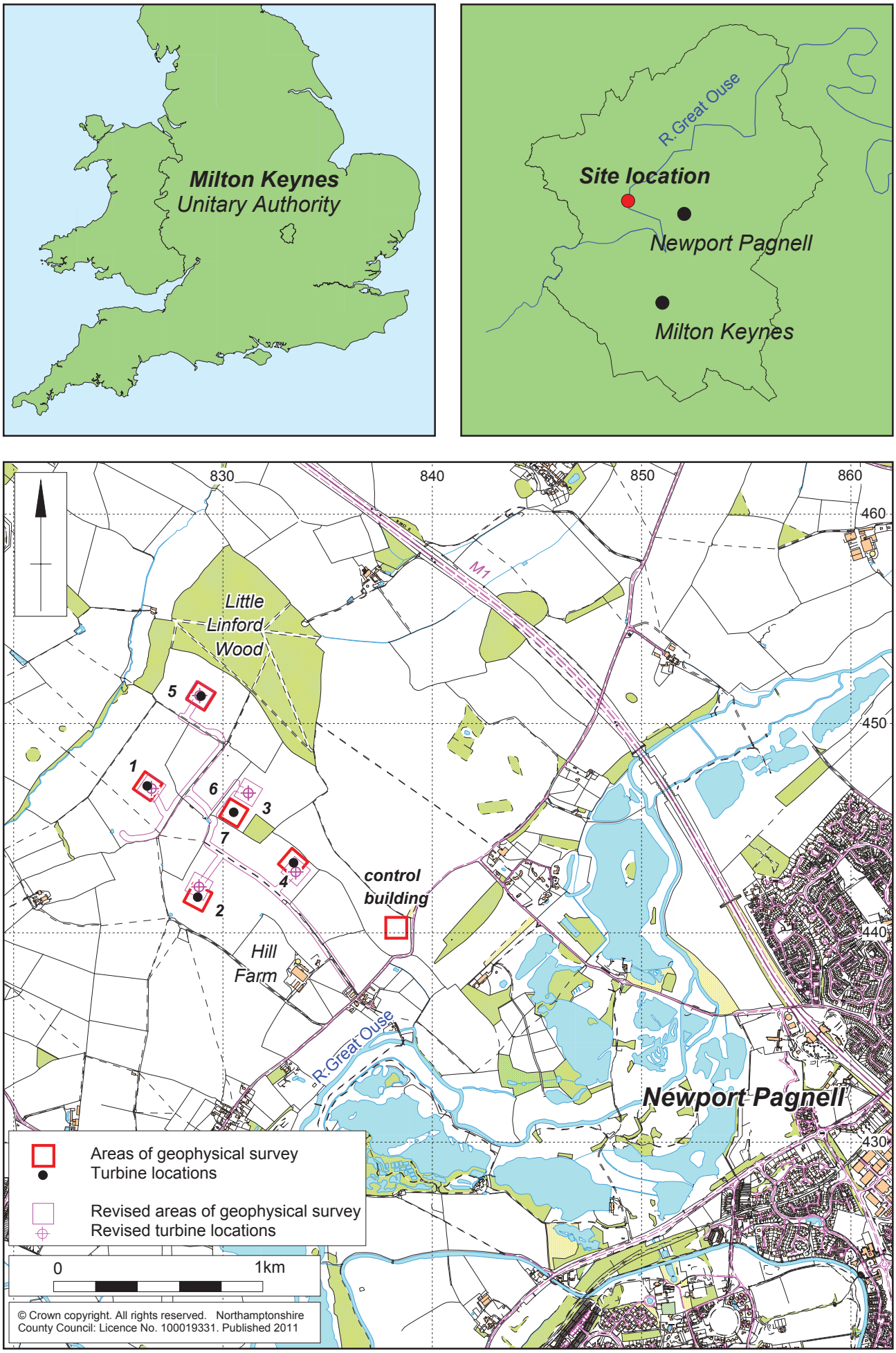
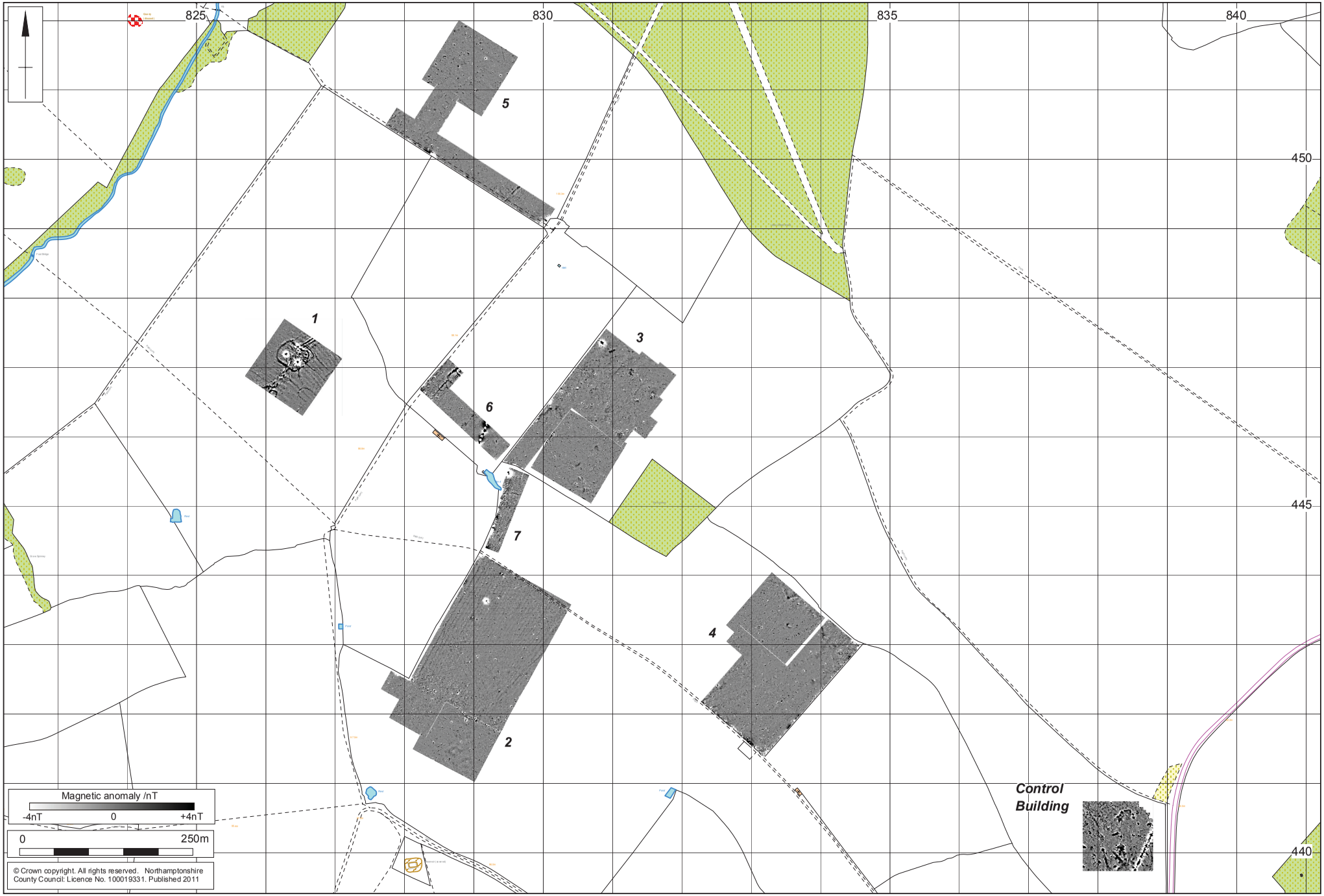


Scale 1:25,000

Site location Fig 1



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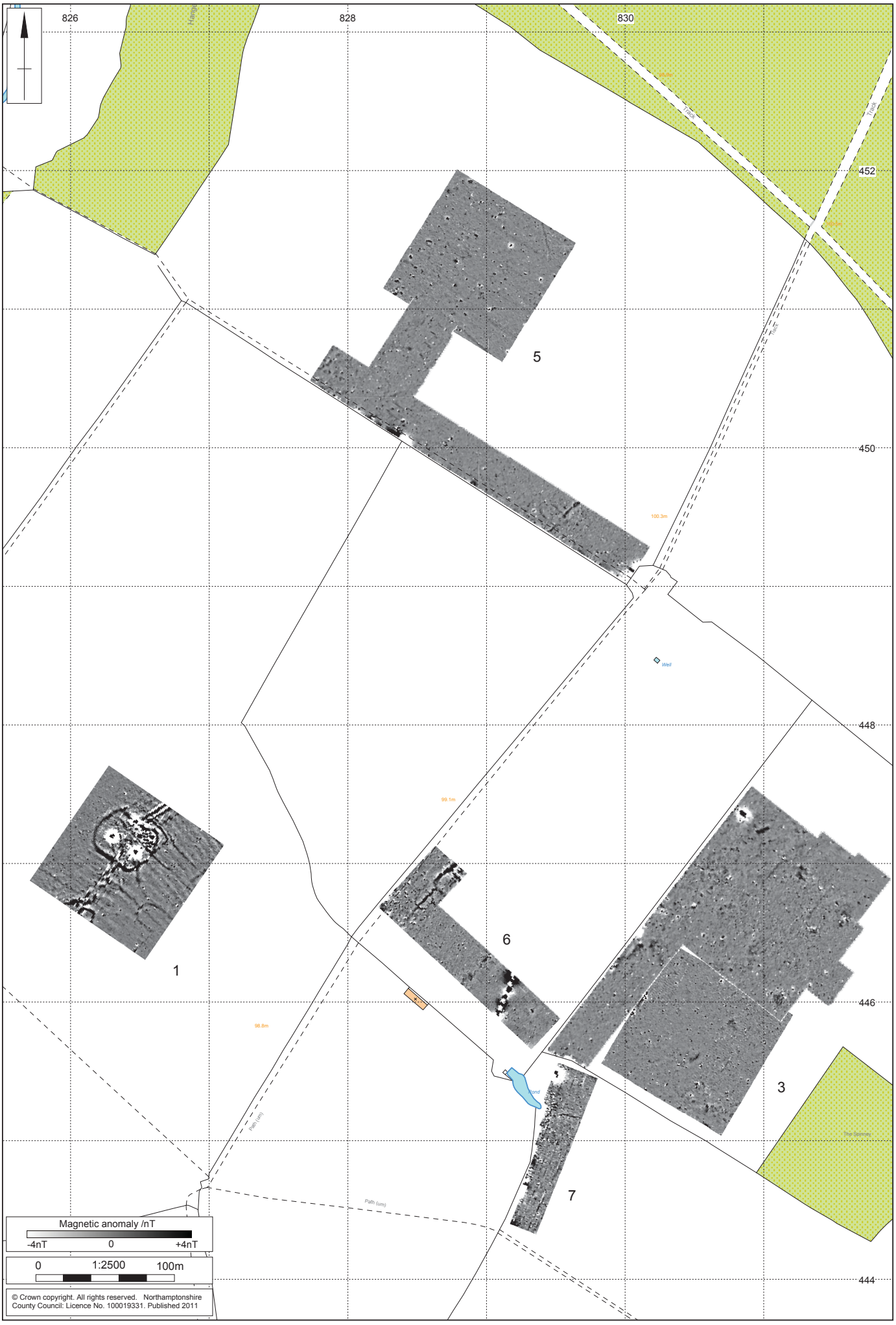
Overall Magnetometer Survey Results Fig 2



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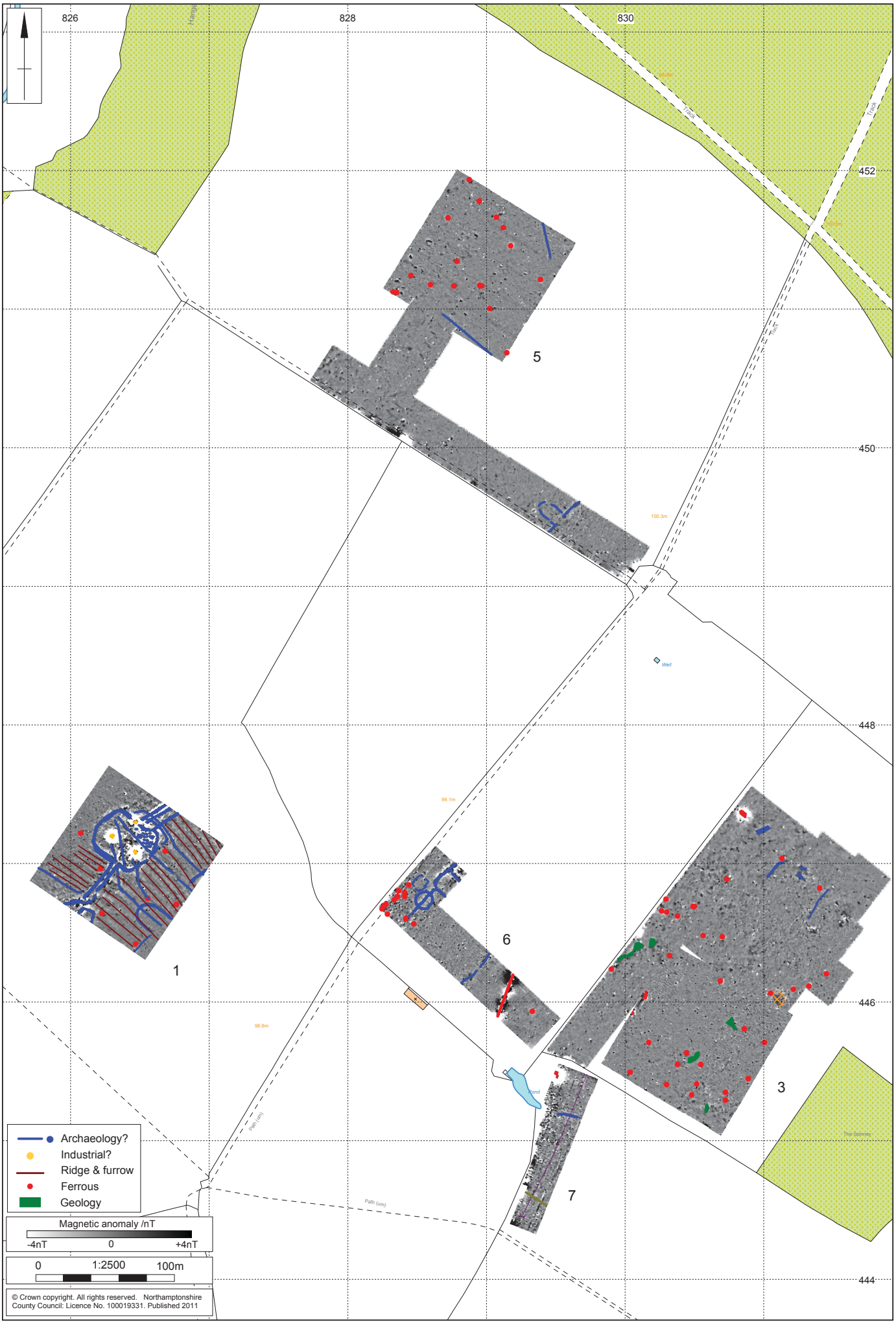
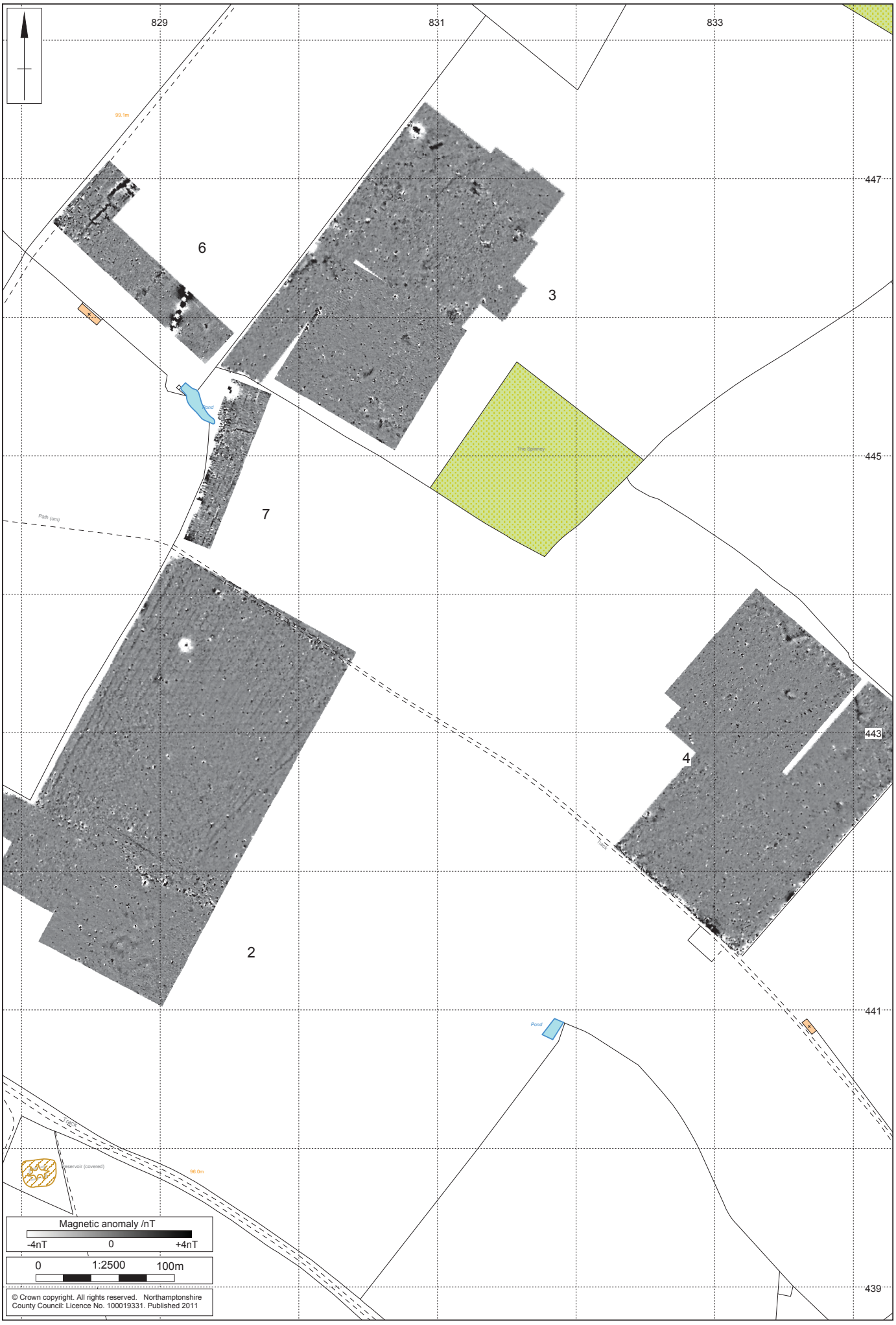
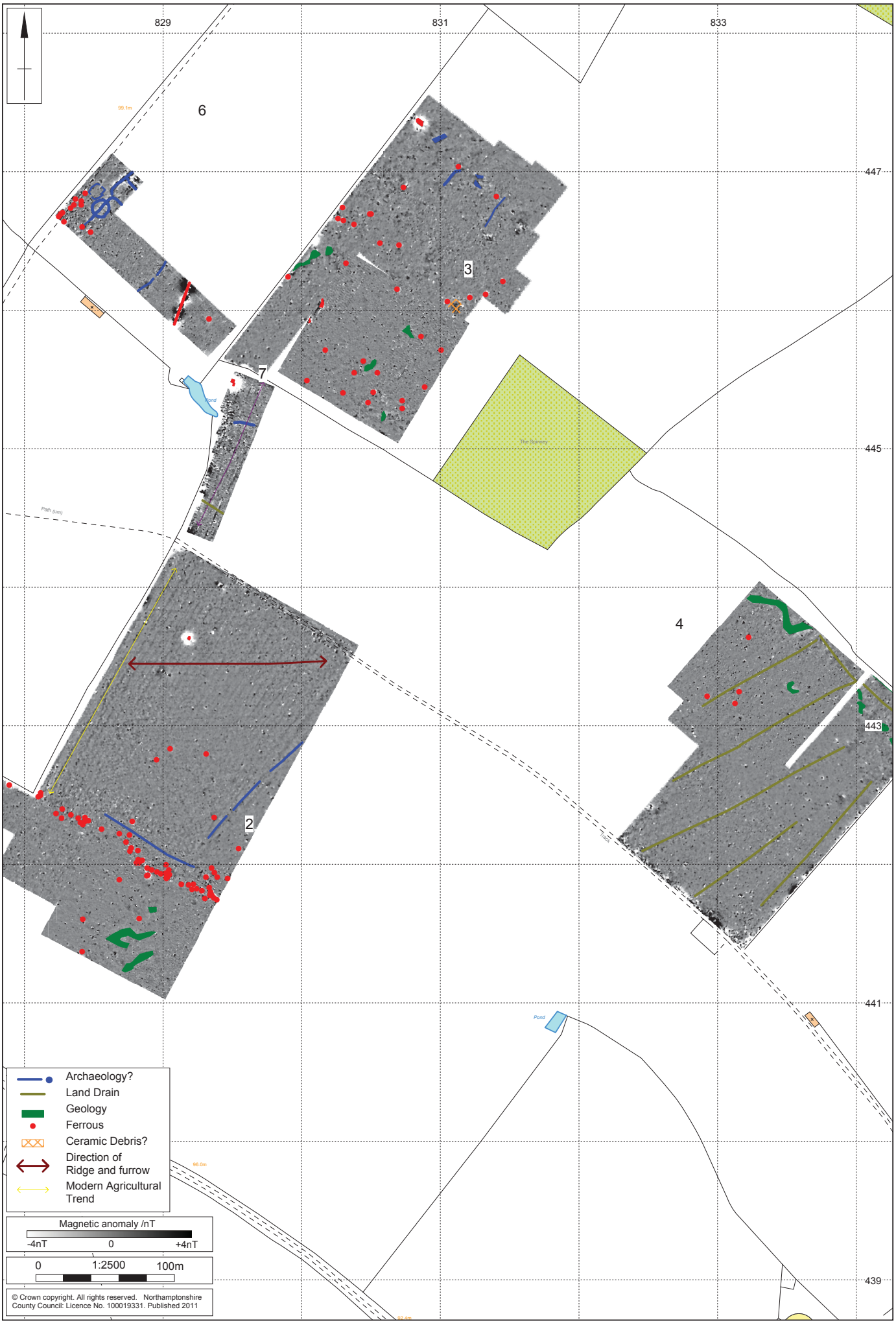
Magnetometer Survey Results Fields 1, 3 & 5 Fig 3



Magnetometer Survey Interpretation Fields 1, 3 & 5 Fig 4

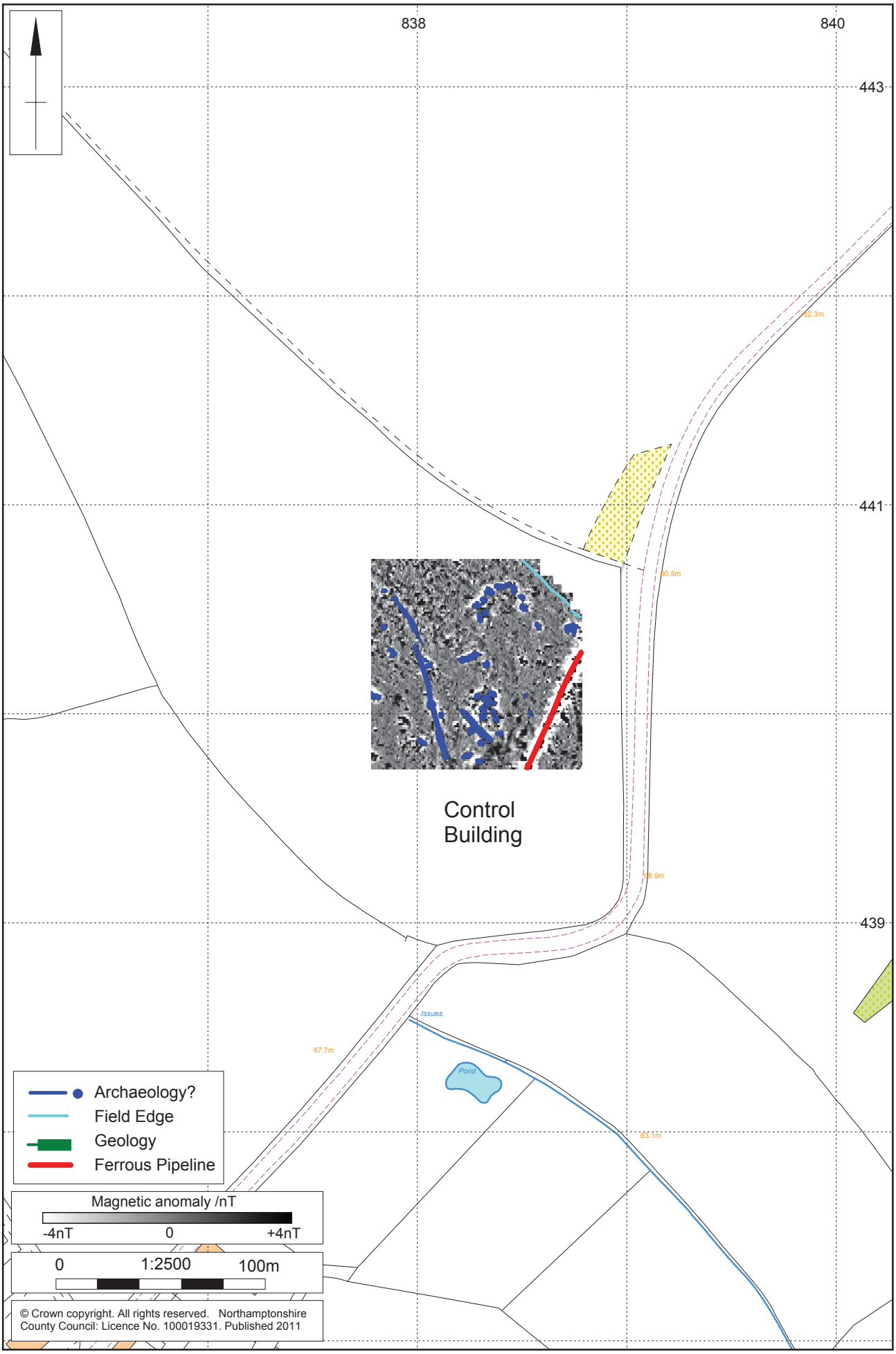


Magnetometer Survey Results Fields 2, 3 & 4 Fig 5



Magnetometer Survey Interpretation Fields 2, 3 & 4 Fig 6

1:2500 Magnetometer Survey Results Control Building Fig 7



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Magnetometer Survey Interpretation Control Building Fig 8

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