



Northamptonshire Archaeology

Archaeological geophysical survey of land to
the south of Colney, Norwich, Norfolk
August 2012



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Report 12/161

ENF 129520

September 2012



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QUALITY CONTROL

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OASIS REPORT FORM**OASIS No 133311**

| PROJECT DETAILS | | |
|---------------------------|---|-------------------------------|
| Project name | Archaeological geophysical survey of land to the south of Colney, Norwich, Norfolk | |
| Short description | Northamptonshire Archaeology was commissioned to carry out a detailed magnetometer survey of a proposed development site to the south of Colney, Norwich, Norfolk. The survey followed on from, and completed, an earlier piece of work undertaken in 2009. Together, the two surveys resulted in the detection of a prehistoric ring ditch, parts of an undated field system, a possible building plot or agricultural yard and a number of former quarries. | |
| Project type | Geophysical survey | |
| Site status | None | |
| Previous work | Geophysical survey (Butler 2009), Fieldwalking (Wolfram-Murray 2009), Desk-based assessment (Francis 2008, Walker 2012) | |
| Current Land use | Arable | |
| Future work | Trial trenching | |
| Monument type/ period | Bronze Age ring ditch, undated boundary ditches, undated quarries | |
| Significant finds | | |
| PROJECT LOCATION | | |
| County | Norfolk | |
| Site address | Hethersett Lane, Colney, Norfolk | |
| Study area | c 28ha | |
| OS grid reference | TG 177 075 | |
| Height OD | c 14m to 27m AOD | |
| PROJECT CREATORS | | |
| Organisation | Northamptonshire Archaeology (NA) | |
| Project brief originator | Norfolk County Council | |
| Project Design originator | NA | |
| Director/Supervisor | John Walford | |
| Project Manager | Charlotte Walker | |
| Sponsor or funding body | Bullen Developments Ltd | |
| PROJECT DATE | | |
| Start date | 20 August 2012 | |
| End date | 5 September 2012 | |
| ARCHIVES | Location | Content |
| Physical | N/A | |
| Paper | NA | Site survey records |
| Digital | NA | Geophysical survey & GIS data |
| BIBLIOGRAPHY | Journal/monograph, published or forthcoming, or unpublished client report | |
| Title | Archaeological geophysical survey of land to the south of Colney, Norwich, Norfolk, August 2012 | |
| Serial title & volume | Northamptonshire Archaeology Reports 12/161 | |
| Author(s) | John Walford | |
| Page numbers | 5 | |
| Date | 5 September 2012 | |

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**ARCHAEOLOGICAL GEOPHYSICAL SURVEY OF LAND TO
THE SOUTH OF COLNEY, NORWICH, NORFOLK
AUGUST 2012**

ABSTRACT

Northamptonshire Archaeology was commissioned to carry out a detailed magnetometer survey of a proposed development site to the south of Colney, Norwich, Norfolk. The survey followed on from, and completed, an earlier piece of work undertaken in 2009. Together, the two surveys resulted in the detection of a prehistoric ring ditch, parts of an undated field system, a possible building plot or agricultural yard and a number of former quarries.

1 INTRODUCTION

Northamptonshire Archaeology (NA) was commissioned by Bullen Developments Ltd to conduct a archaeological geophysical survey in advance of a proposed business park development at Colney, on the western edge of Norwich (NGR TG 177 075; Fig 1). The purpose of the survey was to provide information on the likely archaeological impact of the development. Its methodology was set out in a written scheme of investigation (NA 2012) and was approved by Norfolk County Council's Historic Environment Service.

Fieldwork was undertaken between 20 August and 27 August 2012, and comprised the detailed magnetometer survey of c 12.8ha of land. The data from this survey has been combined with the relevant data from an earlier survey, conducted in 2009, and the two datasets are presented and discussed together in this report.

2 TOPOGRAPHY AND GEOLOGY

The proposed development area is located on the western side of Norwich, to the south of Colney and to the west of Norwich and Norfolk University Hospital. It consists of a block of arable fields, bounded to the north by the B1108 and bisected by Heathersett Lane (Fig 1).

The topography of the proposed development area is somewhat irregular, but may be broadly described as a north-facing slope, dropping down from about 27m to 14m aOD and overlooking the River Yare. The geology consists of glacial sands and gravels overlying chalk (BGS 2012).

3 ARCHAEOLOGICAL BACKGROUND

In recent years, a considerable amount of archaeological research has been carried out in and around the proposed development area. The area itself has been subject to desk-based assessment (Walker 2012, Francis 2008), fieldwalking (Wolfram-Murray 2009) and a partial geophysical survey (Butler 2009). There have also been archaeological excavations to the immediate east and north-east of the area, on the

sites of the John Innes Centre (Whitmore 2004), and the Norwich and Norfolk University Hospital (NHER 31871).

The research has shown that the proposed development area contains a prehistoric ring ditch, several other ditches of unknown date, and an extensive scatter of worked flint. These findings compare well with the evidence from the surrounding area, where further ring ditches are known from cropmarks (NHER 36402), and where excavations have uncovered a Neolithic occupation site (Whitmore 2004) and various ditches of later prehistoric to Roman date (Whitmore 2004, NHER 31871).

The evidence of post-Roman activity in and around the proposed development area consists of little more than scattered finds (Walker 2012), and the available historic mapping records only a small quarry pit and a few field boundaries within the area itself. However, the northern end of the proposed development does closely approach the village of Colney, and it is not impossible that medieval or later remains could be found in this area.

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).

An independent system of 30m grids was established within each of the fields to be surveyed. The grids were established with a tape measure and optical square and were tied in to the Ordnance Survey National Grid by means of a Leica 1200 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. A single grid of data was re-surveyed on each day of the survey, for quality management purposes as required by Norfolk Historic Environment Service (Fig 9).

All fieldwork methods complied with the guidelines issued by English Heritage and by the Institute for Archaeologists (EH 2008; IfA 2011).

The survey data were largely processed using Geoplot 3.00v software. Most of the striping was removed using the 'Zero Mean Traverse' function, but one small area was destriped using an in-house, spreadsheet based, routine, so as to preserve a linear anomaly lying parallel to the traverse direction. Destaggering of the data was performed as necessary.

The processed data is presented in this report in the form of grey-tone plots, at a scale of +/- 4nT black/white. The plots have been scaled, rotated and resampled (georectified) for display against the Ordnance Survey base mapping (Figs 2, 3 and 5). Interpretative overlays have been produced and are shown in Figures 4 and 6. Plots of the minimally processed survey data are presented in Figures 7 and 8, and the repeat survey grids are presented in Figure 9,

5 SURVEY RESULTS

5.1 Field 1 (Figs 2-4)

In the northern part of this field, close to the boundary with Field 2, there is an elliptical anomaly, measuring roughly 30m by 38m across, which almost certainly represents a ring ditch of Neolithic or Bronze Age date. A broad linear anomaly, extending southwards from this, probably represents a natural channel or other feature within the underlying sand and gravel.

At various points within the field there are small positive anomalies of indeterminate origin. These could represent pits, but are perhaps more likely to represent natural hollows or localised pockets of mineralisation within the underlying geology.

At the western edge of the field there is a weakly negative linear anomaly, aligned parallel with the hedgeline, which probably relates to the modern plough headland.

5.2 Field 2 (Figs 2-4)

Close to the southern boundary of this field there is a large amorphous magnetic anomaly which measures about 35m across. It relates to a conspicuous hollow in the field surface, which may either be an old quarry pit or a periglacial landform such as a pingo. To the north of the hollow there is a long linear anomaly which runs from south-east to north-west, then turns onto a more westerly heading. This appears to represent a ditch, and is perhaps a continuation of a similar feature in Field 3 (see below). It cannot be closely dated, but seems unlikely to be modern as it does not relate to anything on the historic mapping of the area.

Many other linear anomalies occur across the field. Two of them may represent sections of ditch, but most of the others have a broad, slightly diffuse, appearance which is generally characteristic of natural channels or geological patterning.

Localised positive anomalies are scattered across the field, with particular concentrations in the east and the north-west. Like the similar anomalies in Field 1, they could represent pits but are more probably of geological origin.

Much of the field is covered by very weak parallel linear anomalies, aligned roughly east to west, which probably relate to modern ploughing. There are also ill defined 'headland' anomalies along the eastern and western edges of the field, similar to the one described in Field 1.

5.3 Field 3 (Figs 2, 5 and 6)

There is a conspicuous area of magnetic noise in the northern corner of this field, coinciding with the location of a former quarry pit marked on early editions of the Ordnance Survey map. Its intensity indicates that the pit has been backfilled with highly magnetic materials (eg ferrous scrap, hearth ash, clinker, brick rubble) rather than infilling by a natural process of silting.

To the immediate south of the pit is a positive, L-shaped anomaly, which seems to represent an enclosure ditch, perhaps surrounding a building plot or farm yard. It aligns fairly closely with the agricultural buildings on the opposite side of Heathersett Lane, and this observation tends to suggest a fairly recent date. However, there is no yard or structure marked in this location on any of the available historic maps, and for that reason a medieval or early post-medieval date for the feature cannot be entirely excluded.

Ditches, represented by weakly positive linear anomalies, extend westwards and southwards from the corner of the L-shaped boundary. They meet with other ditches, defining what seems to be part of a rectilinear field system. They may also link up with ditches to the south, which have a more irregular, curvilinear arrangement. One linear anomaly which crosses the field from east to west does not relate to the putative field system, but can instead be identified with a former field boundary depicted on all Ordnance Survey maps up to 1995.

Approximately 50m south of the recent field boundary, there is a large and irregular positive anomaly which, like the similar anomaly in Field 2, coincides with a depression in the field surface. It could represent either a quarry pit or a naturally formed periglacial hollow.

Geological anomalies, similar to those in Fields 1 and 2, occur across the northern and eastern parts of the field.

There are frequent gaps in the data from Field 3, indicating places where the survey was obstructed by straw bales. These gaps appear as small white marks on the data plot. A more persistent white line through the data marks part of the join between the areas surveyed in 2009 and 2012.

5.4 Field 4 (Figs 2, 5 and 6)

There are no anomalies of obvious archaeological significance in this field. Instead, the data is dominated by a large area of amorphous and moderately intense magnetic anomalies. These cannot be interpreted in detail, but seem likely to be of geological origin.

Two substantial dipolar anomalies are present within the area of magnetic noise; each representing a large buried ferrous object. Elsewhere, a few smaller dipolar anomalies probably indicate fairly minor pieces of ferrous debris.

5.5 Field 5

This field was inaccessible for survey, due to a well-developed maize crop.

6 CONCLUSION

The survey has located a ring ditch of probable Neolithic or Bronze Age date, and a number of undated boundary ditches which may define parts of a former field system. It has also located part of an enclosure ditch which may define a former building plot or agricultural yard at the junction of Heathersett Lane with the B1108.

The survey results are thought likely to provide a reasonable overview of the main archaeological features within the proposed development area. But it should not be assumed that all significant remains have been detected. Magnetometer survey is best suited to the detection of substantial features with strong magnetic contrasts (EH 2008, 14), and can struggle to map early prehistoric sites which are often characterised by little more than postholes and scatters of occupation debris.

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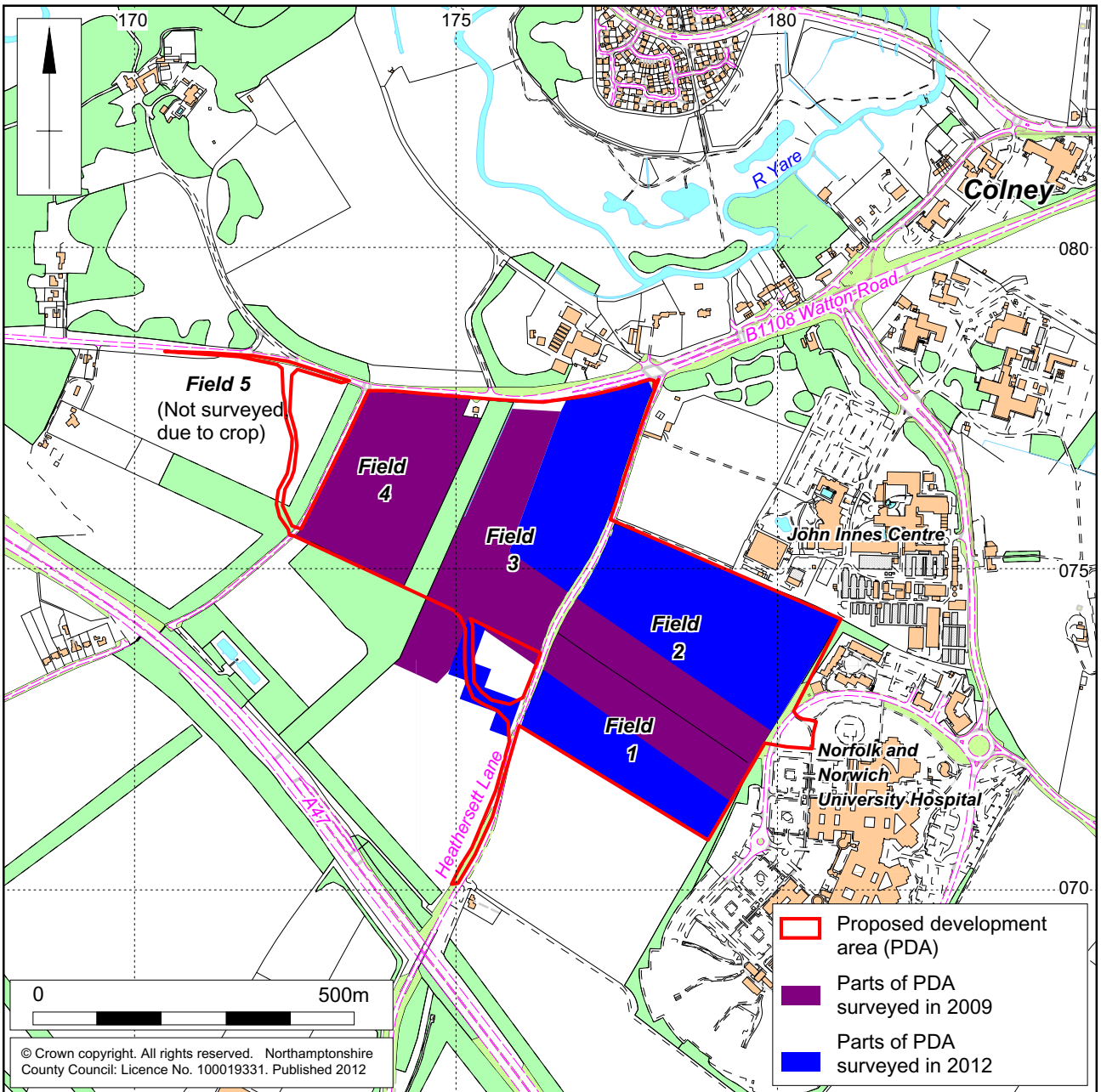
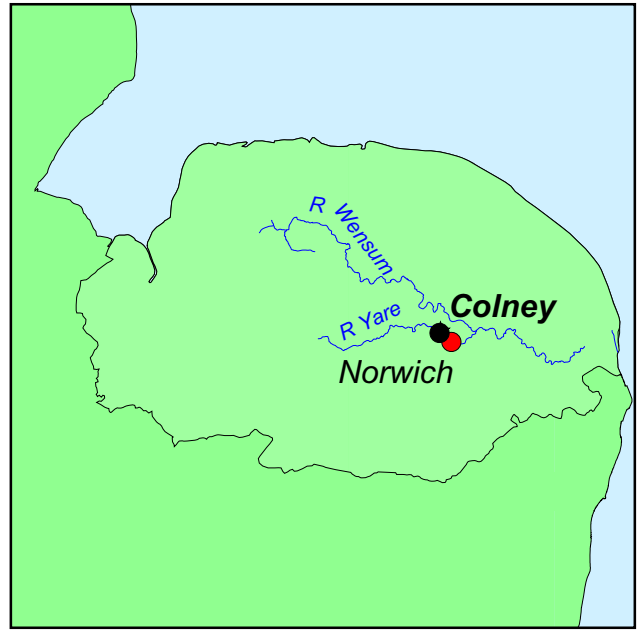
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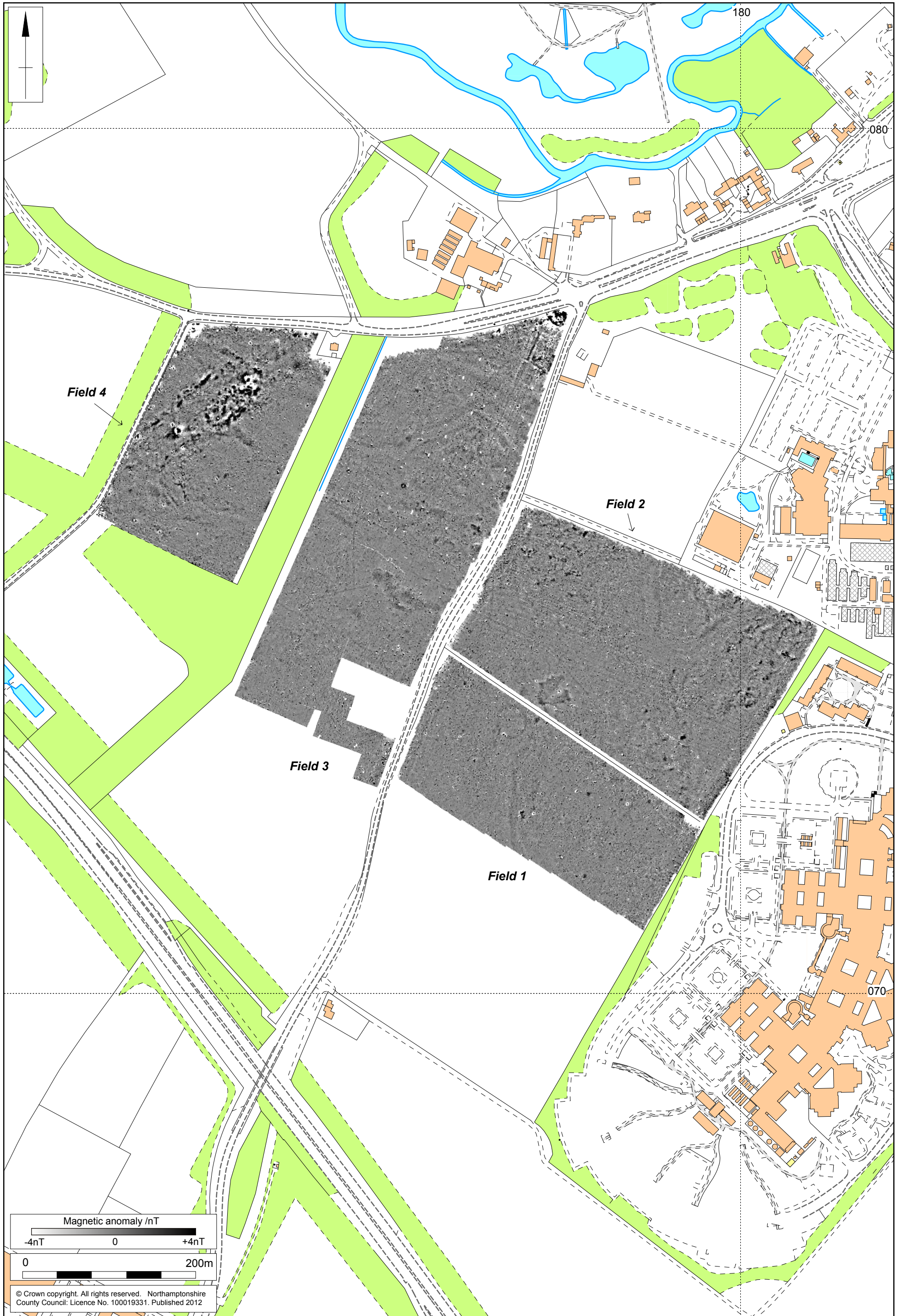
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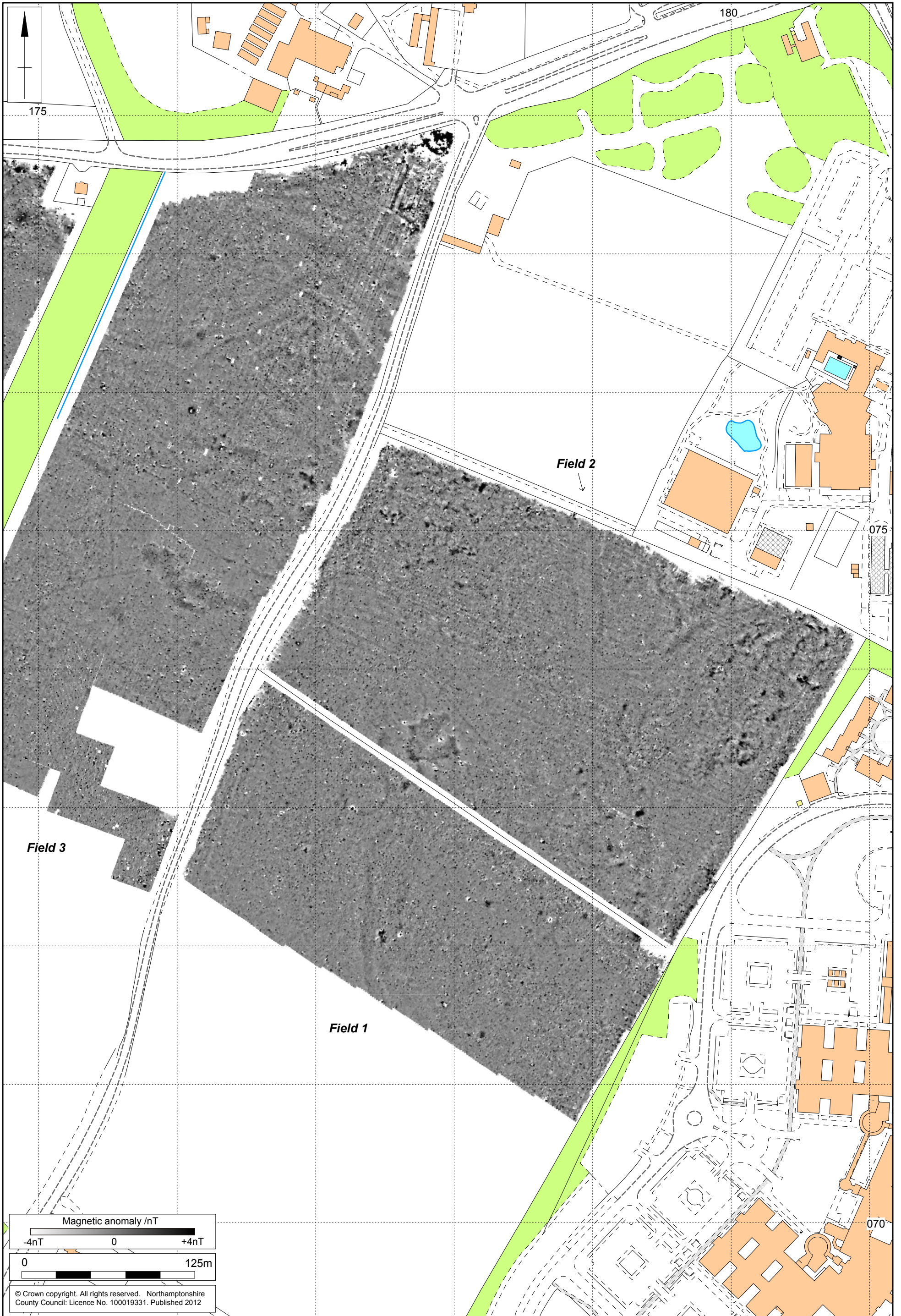
Scale 1:10,000

Site location Fig 1



Scale 1:4,000

Overview of magnetometer survey results Fig 2



Scale 1:2,500

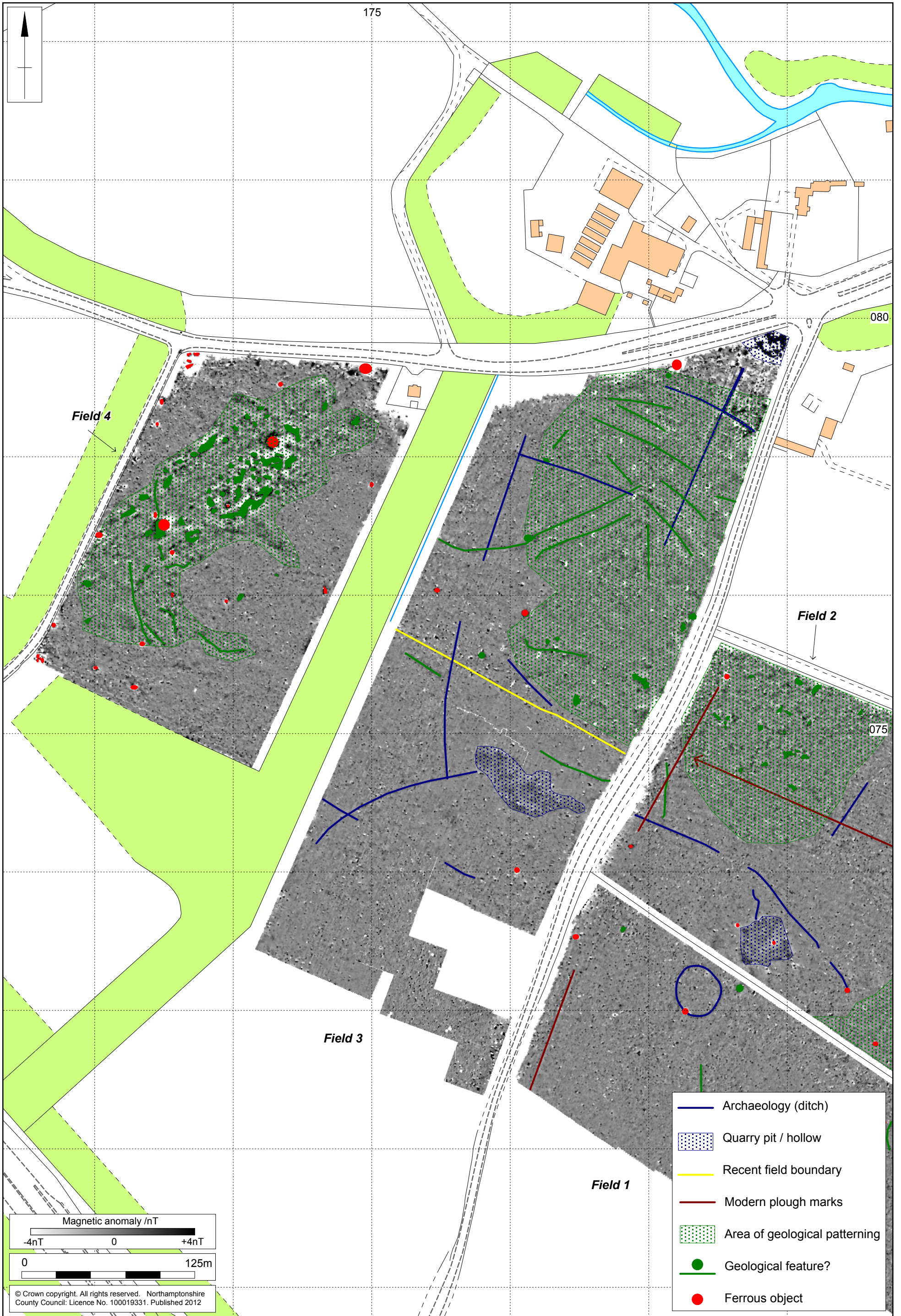
Magnetometer survey results, Fields 1-3 Fig 3



Scale 1:2,500

Magnetometer survey interpretation, Fields 1-3 Fig 4

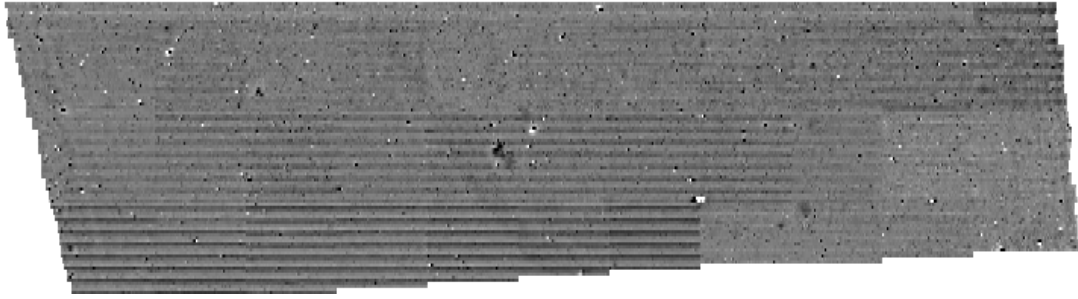




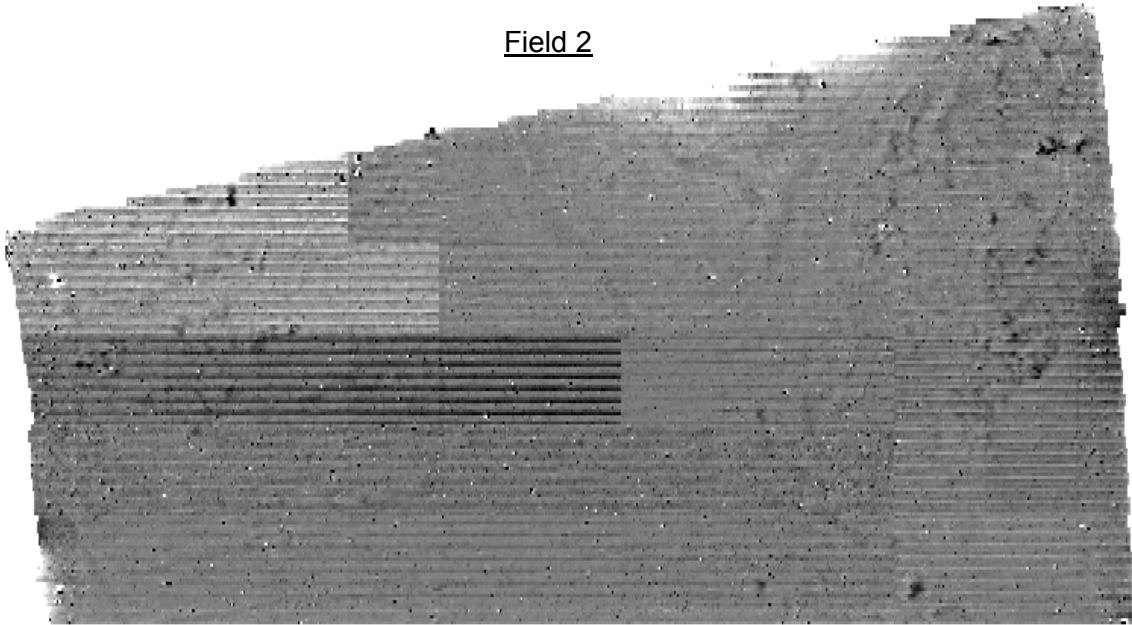
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Magnetometer survey interpretation, Fields 3-4 Fig 6

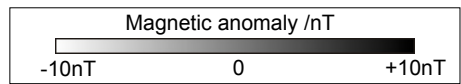
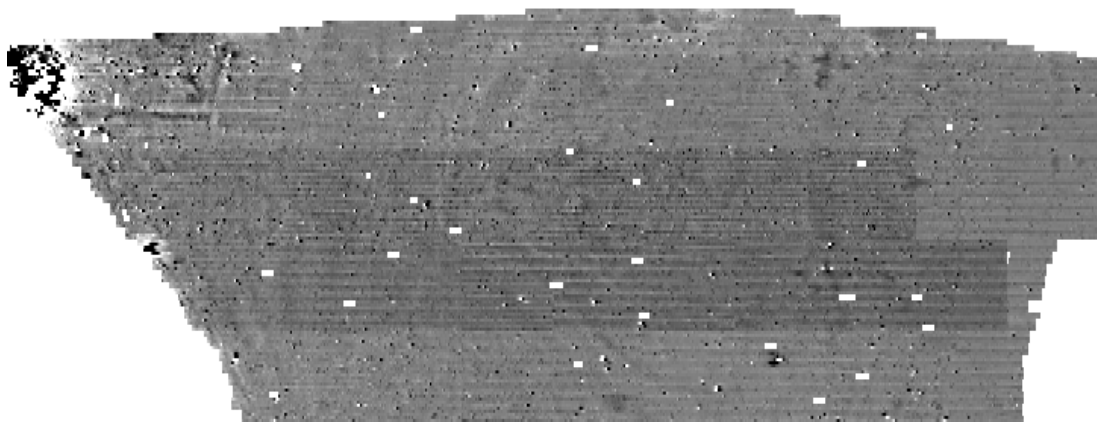
Field 1



Field 2

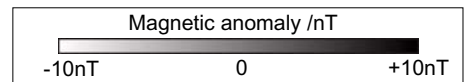
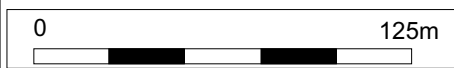


Field 3





Field 3, part 2



Monday 20/8/12



Tuesday 21/8/12



Wednesday 22/8/12



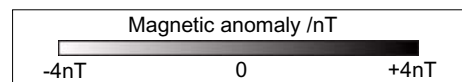
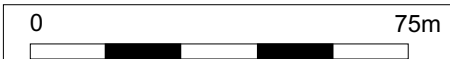
Thursday 23/8/12



Friday 24/8/12



Thursday 30/8/12



Scale 1:1,500

Repeated survey grids Fig 9



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