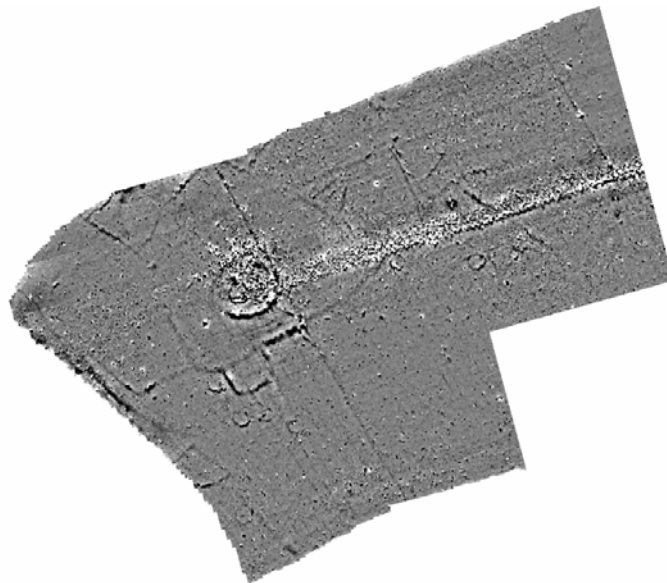




Northamptonshire  
County Council

# Northamptonshire Archaeology

Geophysical Survey  
of land to the north of  
Rothwell, Northamptonshire  
December 2006



John Walford

December 2006

Report 06/184

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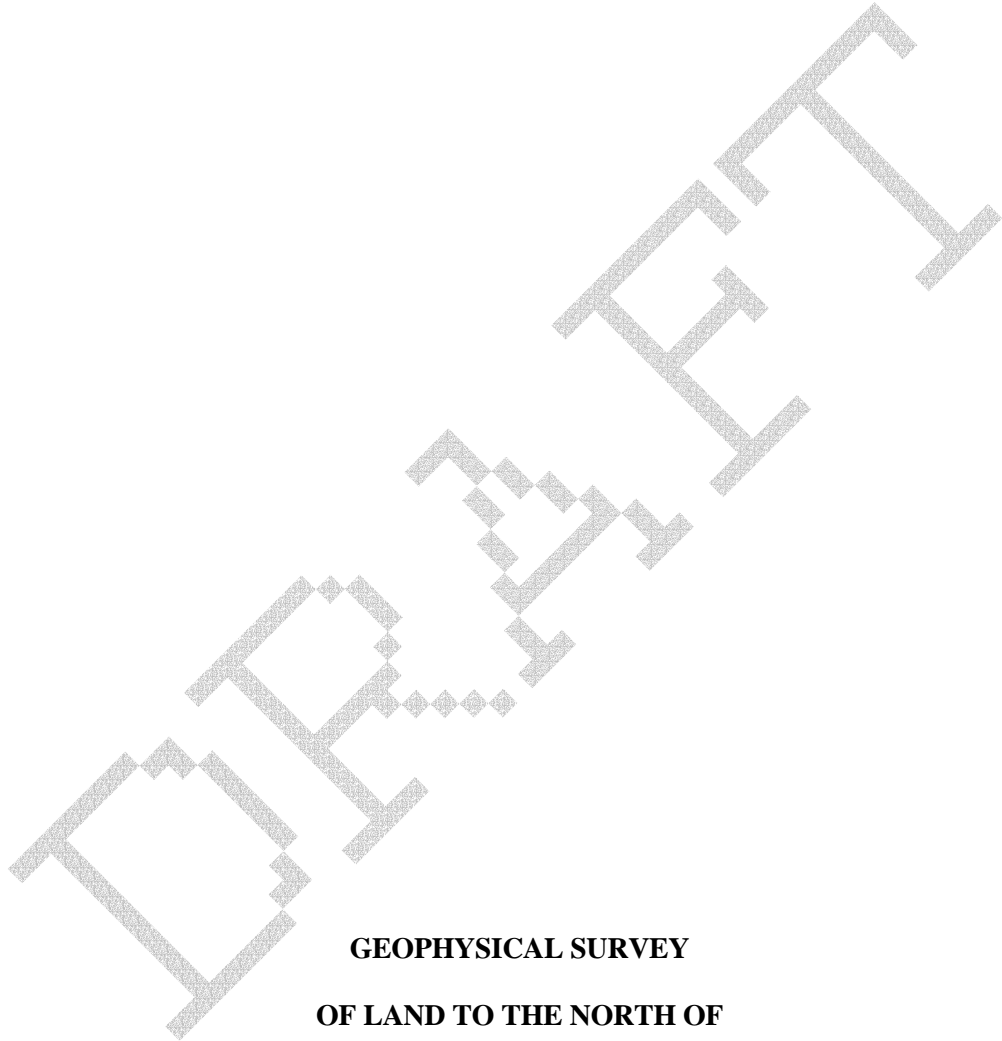
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**NORTHAMPTONSHIRE COUNTY COUNCIL**

**NORTHAMPTONSHIRE ARCHAEOLOGY**

**DECEMBER 2006**



**GEOPHYSICAL SURVEY**

**OF LAND TO THE NORTH OF**

**ROTHWELL, NORTHAMPTONSHIRE**

**OCTOBER 2006**

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## OASIS REPORT FORM

PROJECT DETAILS		
Project name	Geophysical Survey of Land to the North of Rothwell, Northamptonshire	
Short description (250 words maximum)	<i>Northamptonshire Archaeology were commissioned by CgMs Consulting, acting on behalf of clients, to conduct a geophysical survey on an area of land proposed for development at the north of the town of Rothwell, Northamptonshire. An initial magnetometer scan of c 40ha of the development area located a number of magnetic anomalies which were subsequently investigated by detailed gradiometer survey. The detailed survey was conducted in 12 separate areas totalling 12.5ha. An extensive settlement complex, of presumed Iron Age to early Roman date, was found near the north-west corner of the site. This was overlain by anomalies representing post-medieval agricultural features, including a barn, a trackway and several field boundaries. Apart from medieval ridge and furrow cultivation, no further significant archaeological remains were found elsewhere at the site.</i>	
Project type	Geophysical Survey	
Site status	None	
Previous work	None	
Current Land use	Arable and pasture	
Future work	Unknown	
Monument type/ period	Iron Age settlement, medieval ridge and furrow	
Significant finds	N/A	
PROJECT LOCATION		
County	Northamptonshire	
Site address		
Study area (esq. or ha)	43 ha	
OS Easting & Northing	48088 28169 (centre)	
Height OD	130m AOD	
PROJECT CREATORS		
Organisation	CgMs Consulting	
Project brief originator	N/A	
Project Design originator	Northamptonshire Archaeology	
Director/Supervisor	Adrian Butler	
Project Manager	Bill Boismier	
Sponsor or funding body	CgMs Consulting	
PROJECT DATE		
Start date	16 October 2006	
End date	31 October 2006	
ARCHIVES	Location (Accession no.)	Content (e.g. pottery, animal bone etc)
Physical		
Paper		
Digital	N.A.	Magnetic data, CAD, GIS
BIBLIOGRAPHY	Journal/monograph, published or forthcoming, or unpublished client report (NA report)	
Title		
Serial title & volume	Northamptonshire Archaeology Reports 06/184	
Author(s)	John Walford & Mark Holmes	

**GEOPHYSICAL SURVEY OF LAND TO THE NORTH OF  
ROTHWELL, NORTHAMPTONSHIRE**

**OCTOBER 2006**

*ABSTRACT*

*Northamptonshire Archaeology were commissioned by CgMs Consulting, acting on behalf of clients, to conduct a geophysical survey on an area of land proposed for development at the north of the town of Rothwell, Northamptonshire. An initial magnetometry scan of c. 40ha of the development area located a number of magnetic anomalies which were subsequently investigated by detailed gradiometer survey. The detailed survey was conducted in 12 separate areas totalling 12.5ha. An extensive settlement complex, of presumed Iron Age to early Roman date, was found near the north-west corner of the site. This was overlain by anomalies representing post-medieval agricultural features, including a barn, a trackway and several field boundaries. Apart from medieval ridge and furrow cultivation, no further significant archaeological remains were found elsewhere at the site.*

**1 INTRODUCTION**

Northamptonshire Archaeology conducted geophysical survey on land immediately at the north of the town of Rothwell, Northamptonshire. The work was undertaken for CgMs Consulting, acting on behalf of clients, in October 2006. The purpose was to locate and identify any archaeological features present within an area proposed for development. The area lies either side of the B576 Rothwell Road (Fig 1; SP 8088, 8169). The site is bounded by the A6 road at the west and the town of Rothwell to the south. A former quarry, now the Rothwell Gullet Nature Reserve lies at the north-west.

**2 ARCHAEOLOGICAL BACKGROUND**

There are no known archaeological sites, finds or cropmarks from immediately within the survey area. The first edition Ordnance Survey 6" map shows that the land comprised agricultural fields in the last quarter of 19th century (Fig 2). A linear track, leading to a field barn is shown as existing in the western half of the survey area and a small part of the area includes part of the former Rothwell Wood.

Archaeological material, however, was previously found during quarrying in the vicinity of Rothwell Wood, slightly outside the survey area. The county SMR lists finds of Bronze Age, Roman and Saxon date from near SP802817 (Shaw & Sharman 1992, 5) and the Archaeological Data Service has a record of several Saxon interments in the same general area (ADS 2006). More precise detail on these finds is not presently available.

Northamptonshire Archaeology had previously investigated the route of the A6 Rothwell and

Desborough Bypass, which runs approximately 100m west of the development area. Geophysical survey located a pair of ditched enclosures at SP799816 which were shown by excavation to be of Iron Age date (Mudd & Hindmarch 2001, Mudd 2002) (Fig 3). Earthworks of medieval ridge and furrow ploughing survive in several small pasture fields on the eastern side of the development area.

It was discovered, through conversation with a local resident, that part of the eastern side of the development area had been used as rugby pitches in the last century. Slight terracing, believed to mark the site of these, was observed to the east of the present football ground.

### **3 GEOLOGY AND TOPOGRAPHY**

The development area occupies the relatively flat crest of a ridge between two north-east trending river valleys. It lies at a height of approximately 135m AOD. Immediately to its north the natural topography has been significantly disturbed by 19th and 20th century quarrying.

The geology of the development area is dominated by Boulder Clay, overlying lower and middle Jurassic strata. There is an outcrop of the ferruginous Northampton Sand in the east of the area and a more extensive outcrop of the same stratum occurs immediately beyond the survey area to the north (BGS Sheet EW 170).

### **4 GEOPHYSICAL SURVEY**

#### **Methodology**

Geophysical survey was carried out in accordance with English Heritage and the Institute of Field Archaeologists Guidelines (EH 1995 & Gaffney, Gater and Ovendon 2002).

An initial geophysical reconnaissance survey using magnetometer scanning was carried out over the entire application area, with the exception of land where ground conditions or vegetation growth precluded such survey (Fig 3). An area of some 40ha was thus surveyed. The scanning was undertaken in parallel transects spaced 20m apart using Geoscan Research FM-series Gradiometers. Where anomalous readings ( $>3nT$  above the background) were encountered, their immediate surroundings were scanned to investigate their extent and trace-form. Anomalies of ferrous origin were ignored, but all others were marked and their locations tied in to the Ordnance Survey National Grid. Plots of these data were made available to CgMs Consulting and the Northamptonshire County Council Growth Management Team in order to agree areas for subsequent detailed geophysical survey.

Following the scanning, nine sample areas, with a combined area of slightly under 5ha, were chosen for initial detailed survey. The discovery of archaeological features within one of these areas prompted further detailed survey, so that the final coverage totalled c12.5ha, spread across twelve sample areas (A to L; Fig. 3).

Each survey area was divided into 30m x 30m grid-squares, apart from Area C, where the use of 20m x 20m grids was more logistically suitable. Each area was laid out by tape-measure, and those containing archaeology were subsequently recorded to an accuracy of +/- 0.05m in relation to Ordnance Survey National Grid by use of a Leica System 1200 GPS.

All detailed magnetometer survey was undertaken using Bartington Grad601-2 fluxgate gradiometers. The Grad601-2 is constructed as a dual-sensor instrument with two vertical gradiometers separated on a yoke to enable two lines of survey to be recorded in tandem.

Within each 30m grid square 3600 measurements (or 1600 in the case of a 20m grid) were taken. The instruments were carried at a brisk but steady pace along 1m spaced traverse lines, with measurements being automatically triggered every 0.25m.

The data were analysed using Geoplot 3.00s software. Low (negative) magnetism is shown as white and high (positive) magnetism as black in the resultant greyscale plots. In accordance with established practice, minimal processing was carried out on the data. The 'Zero Mean Traverse' function was applied as a standard in order to balance the data to zero. Other functions were applied as necessary to deal with specific data flaws.

The processed data is presented here in the form of greyscale graphics highlighting the magnetic anomalies (scale +5nT / -5nT or +3nT / -3nT , black ~ white, Figs 5 & 7). It was considered that other plotting regimes such as 'stacked trace' would be uninformative for the majority of this survey. Interpretative plots (Figs 6 & 8) have been generated from the greyscales to aid in the discussion.

## **Survey Results**

### ***Reconnaissance survey***

Scanning with the magnetometers identified only a few notable anomalies (Fig 3). Two of these were related to recent features - an underground pipe and a band of magnetic hardcore from the ploughed out track shown on the 1<sup>st</sup> edition Ordnance Survey map. The other anomalies were more localised and subtle and were thought more likely to be of archaeological origin.



**Detailed survey**

Detailed survey was undertaken in twelve survey areas (Fig 3). Some of these were sited to investigate anomalies detected during scanning, the remainder to ensure an even coverage of the development area and confirm the absence of archaeology from areas where no anomalies were detected by the scanning. The detailed survey results from the western side of the survey area (Areas A-C and J-L) are presented and interpreted in Figures 5 and 6. Those from the eastern side (Areas D-I) are presented and interpreted in Figures 7 and 8.

**Western survey area** (Areas A to C and J to L; Figs 3-6)

The features identified across these survey areas can be attributed to at least two broad phases of activity: prehistoric settlement and medieval to post-medieval agriculture. Some possible geological features are also apparent.

An extensive complex of anomalies representing enclosure ditches and related features occurs in Area A, with elements spreading out into the surrounding survey areas (Figs 5 & 6). The corners of two possible roughly rectilinear enclosures occur at the north of the Area A, truncated by the former quarry. Immediately to the south of these, and perhaps a continuation of this system, is a more curvilinear ditched enclosure measuring approximately 80m x 30m. Within this is an oval ditch, c 35m x 45m, which in turn contains a smaller possible ring ditch. Interpretation of these latter features is complicated by overlying post-medieval activity. A small 'D'-shaped ditched enclosure is appended to the southern end of the curvilinear enclosure.

Further ditches and smaller enclosures occur at the west and east. There is a faint semi-circular anomaly, c 25m in diameter, located in the eastern half of Area A (Figs 3 & 6). The feature's low magnetic response makes it difficult to interpret but it may possibly represent the vestigial remains of a barrow ring ditch.

At least eight or nine small circular anomalies, each about 10m diameter, occur in the southern half of Area A and are interpreted as ring ditches. Such features typically represent the gullies surrounding timber roundhouses of Iron Age date.

There are several anomalies which are interpreted tentatively as kilns, furnaces or other such industrial features, including a cluster within a possible enclosure to the west in Area J (Figs 3 & 6). However, these anomalies can be hard to distinguish from those of ferrous origin and so the interpretation is not definitive. Industrial activity is also hinted at by the unusually strong magnetic signatures (c 20nT in places) of certain sections of enclosure ditch (cf Gaffney & Gater 2003, 126).

Medieval and post-medieval features are represented by plough lines, field boundaries and trackways. Two north-west to south-east aligned linear anomalies in Area A match the locations of former field boundaries shown on the first edition Ordnance Survey 6" map and a north-east to south-west aligned band of magnetic noise with a square terminal equates to a former track leading to a now demolished barnyard (Fig 6). Two further anomalies may also represent similar field boundaries, although they are not shown on the Ordnance Survey mapping. One is a linear anomaly lying midway between the two field boundaries and on a common alignment with them. The other is a somewhat broader and more diffuse anomaly running perpendicular to the old field boundaries and parallel with the northern edge of the modern field.

Two directions of plough furrows are apparent, albeit faintly, in the data. One is aligned with the old field boundaries in Area A and also with the possible ridge and furrow cultivation in Area C. The other runs perpendicular to this.

The data contains many ferrous anomalies, likely in most instances to represent modern iron debris. A few of the largest are highlighted in the interpretation plot. It is possible that some of the features tentatively interpreted above as thermo-remnant industrial features may in fact be modern ferrous objects.

The broad circular areas of positive and negative magnetism apparent at the western corner of Area J do not appear to be archaeological. Given their location at the foot of a slope they could indicate geological outcropping or modern disturbance.

#### **Eastern survey area** (Areas D to I; Figs 3, 4, 7 & 8)

Sample Areas D to H show clear evidence of the medieval ridge and furrow which survives as earthworks across much of the eastern side of the development Area. Area D also contains a band of magnetic disturbance, which may indicate either the hardcore of an old track or the line of an old ditch infilled with brick rubble and other modern debris. Isolated ferrous anomalies, indicative of buried iron, can be seen in several locations. Area I contains no anomalies of note.

## **5 CONCLUSIONS**

The geophysical survey identified and mapped an area of extensive settlement and related activity of probable Iron Age to early Roman date. The features included enclosed and unenclosed elements, possibly suggesting more than one phase or period of activity. There was no prior knowledge of this site and nothing on the field surface suggested its presence.

All significant archaeological anomalies were located in the western half of the development area. No significant features (other than ridge and furrow cultivation) were found to the east of the B576 Rothwell to Desborough road.

It is important to note, however, that the survey results indicate only a minimum extent of the archaeology and may not have detected every significant feature. It is often the case that, whilst the settlement part of an archaeological site is detected by magnetometer, outlying features, such as field systems, tracks and boundary ditches, remain invisible due to the relatively weak magnetic enhancement of their fills (Gaffney & Gater 2003, 126). The way that many features on this site appear to fade away and become disjointed, rather than coming to an abrupt and satisfactory end, suggests that such may be the case here.

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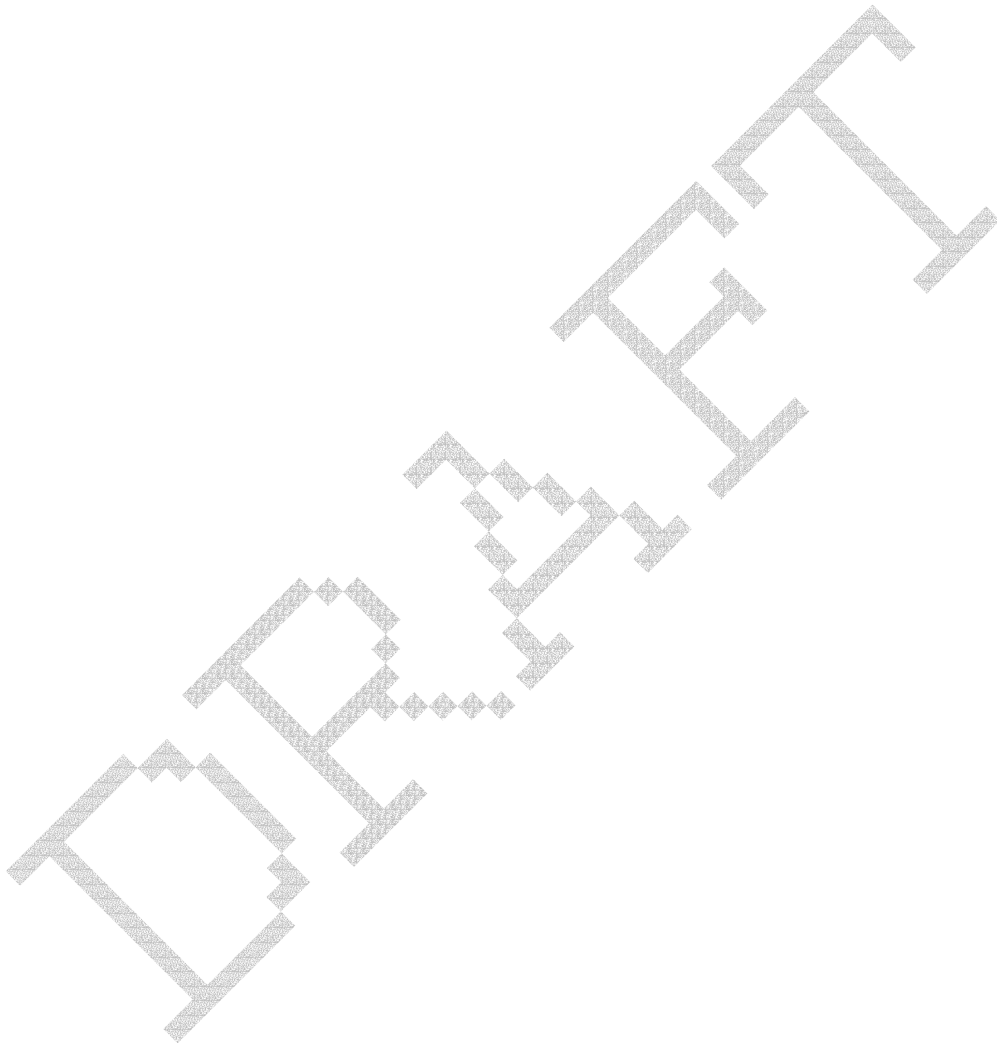
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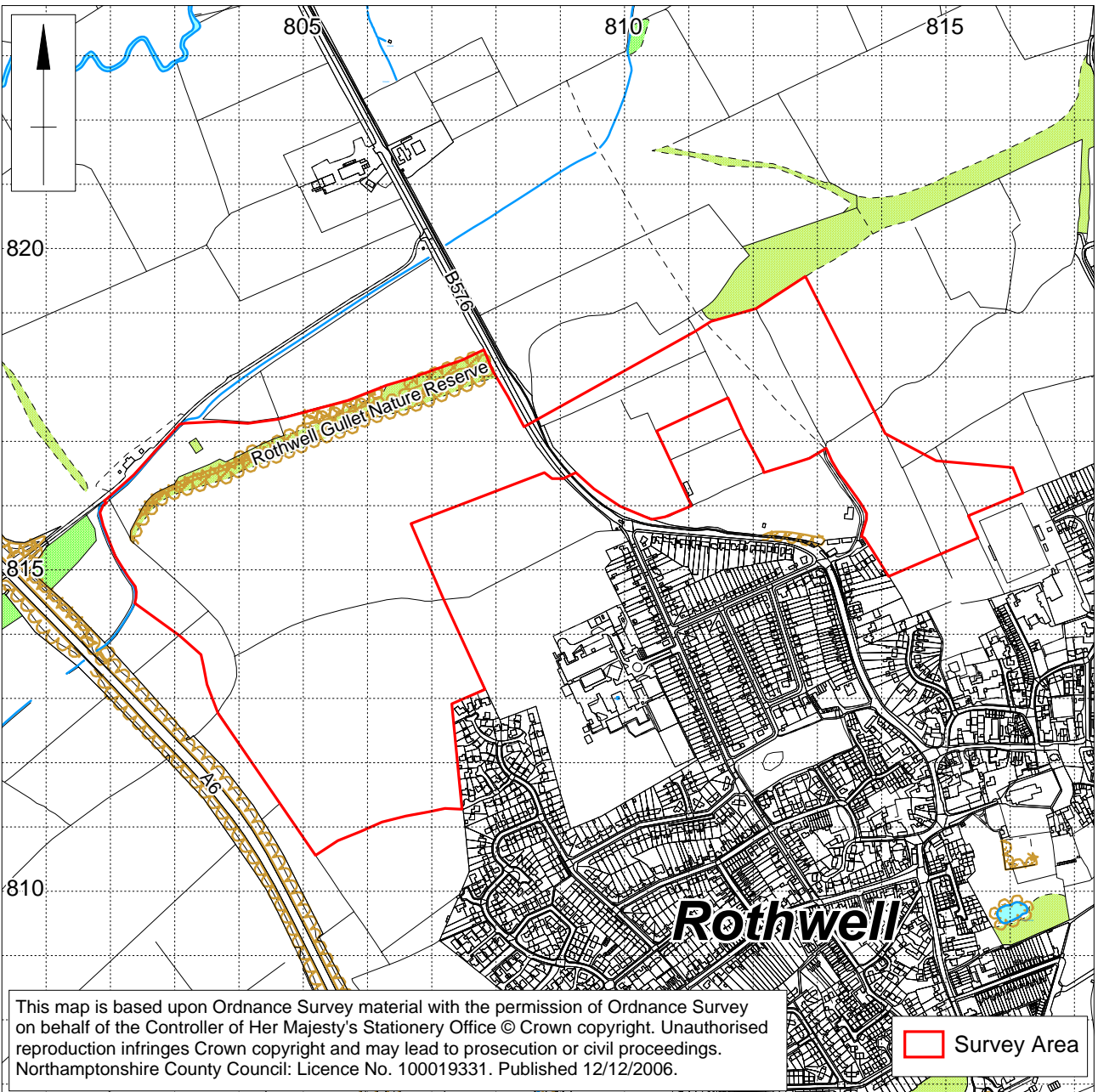
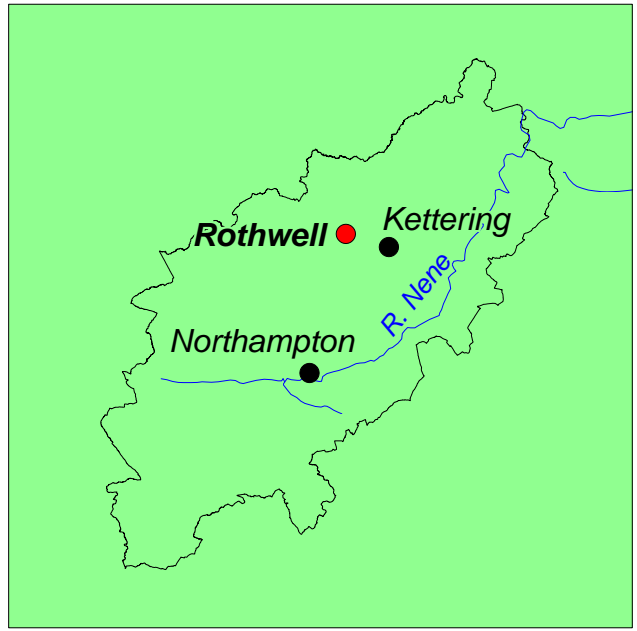
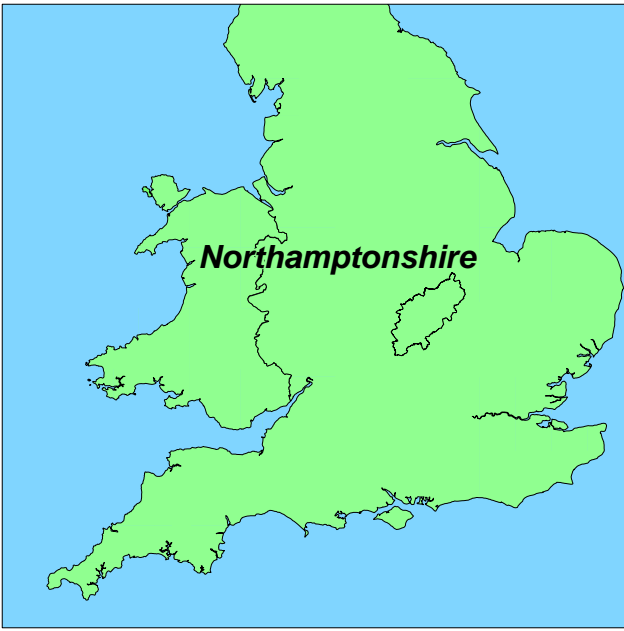
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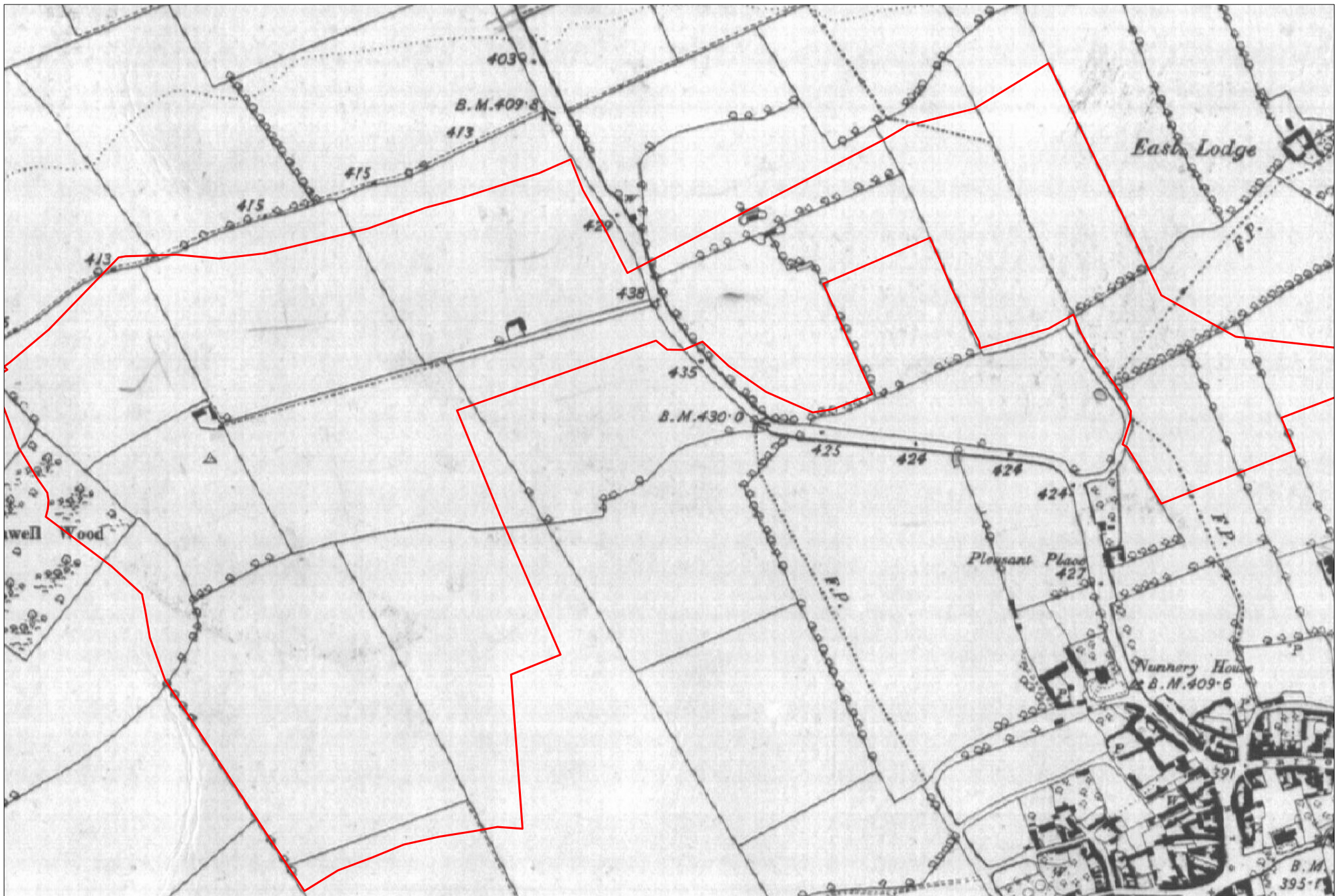
20 December 2006



Site location 1:10000

Fig 1

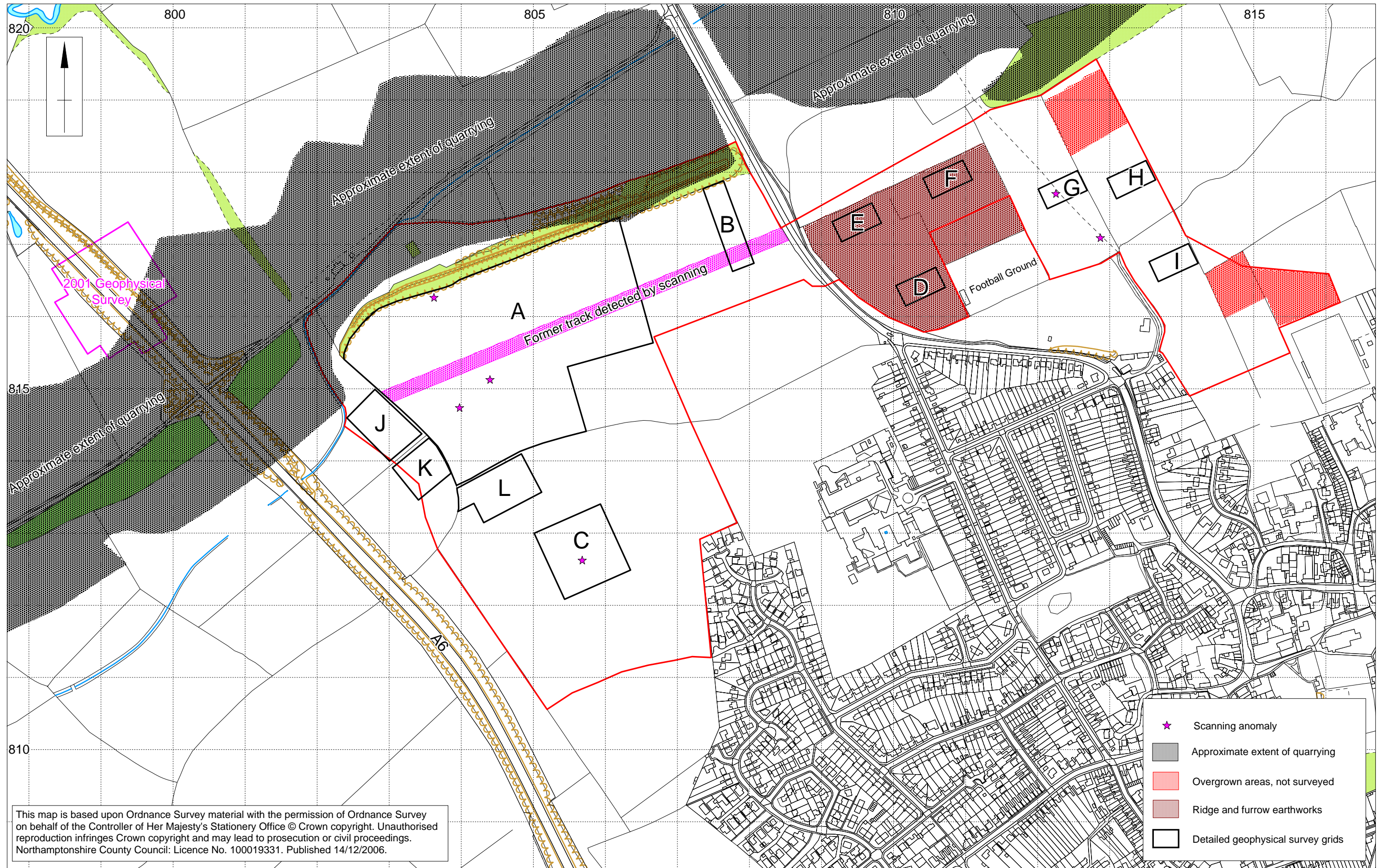




1st Edition Ordnance Survey 6" map (with survey area superimposed) 1:5000

Fig 2

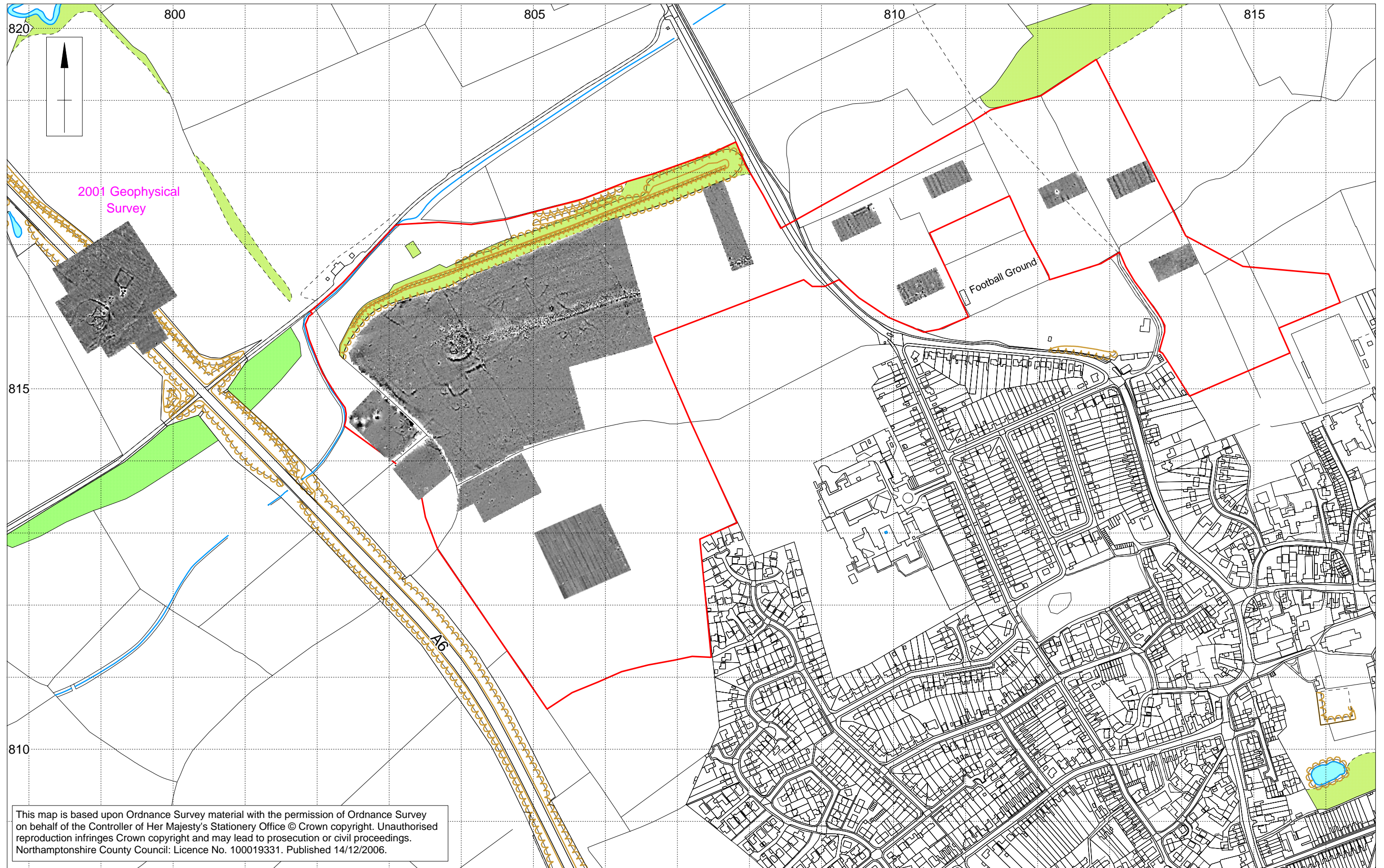




Areas of survey 1:5000

Fig 3





Results of Geophysical Survey 1:5000

Fig 4





Geophysical Survey: western survey area (Areas A to C and J to L) 1:2500





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- Interpretation**
- Isolated ferrous anomaly
  - Thermo-remnant anomaly
  - Ditch
  - Cultivation and plough lines
  - Field boundary
  - ▨ Trackway
  - ▨ Modern magnetic disturbance

Interpretation: western survey area (Areas A to C and J to L) 1:2500

Fig 6



Geophysical Survey: eastern survey area (Areas D to I) 1:2500





Interpretation: eastern survey area (Areas D to I) 1:2500

Fig 8