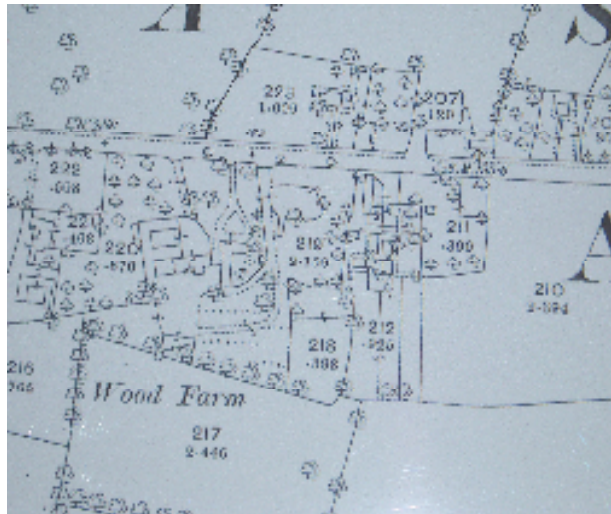


Client Report CP822

January 2009

## **GEOPHYSICAL SURVEY OF LAND AT WOOD FARM, ASHWELLTHORPE, NORFOLK**

*on behalf of*  
**NAU ARCHAEOLOGY**



NGR: TM 1379 9748

OASIS ID: northpen3-54071

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## SUMMARY

In January 2009, North Pennines Archaeology Ltd, commissioned by NAU Archaeology, undertook geophysical surveys of *c.*1.54ha of land to the South of Wood Farm (NGR TM 1379 9748). The survey was undertaken at the site of a proposed residential development and community hall construction, situated in the village in Ashwellthorpe, Norfolk. The objective of the geophysical surveys was to determine the presence/absence, nature and extent of any archaeological anomalies at the site. The work was conducted in accordance the relevant English Heritage and IFA guidelines.

Modern agricultural features were detected over the majority of the survey area. A field drainage system was detected on the east side of the site in Area 2. No definite archaeological anomalies were detected within the study area, suggesting that the area may have remained agricultural land throughout the occupation of the farm. Given the results of the survey, no further geophysical survey is recommended at the site.



## **1 INTRODUCTION (*Figure 1*)**

- 1.1 In January 2009, North Pennines Archaeology Ltd, commissioned by NAU Archaeology, undertook a geophysical survey of c.1.54ha of land, on the south side of Wood Farm. The survey was undertaken at the site of a proposed residential development, situated in the village of Ashwellthorpe, 10 miles southwest of Norwich.
- 1.2 The site is situated over two arable fields to the south of Wood Farm, Ashwellthorpe (NGR TM 1379 9748).
- 1.3 Ashwellthorpe lies on the south Norfolk and high Suffolk claylands. The geology of the area comprises chalky boulder clay underlying sand and gravel, which gives the area a much flatter topography than that of central Norfolk (Countryside Character 1999).
- 1.4 The objective of the geophysical survey was to determine the presence/absence, nature and extent of any archaeological anomalies within the proposed development area, and the presence/absence of any known modern anomalies within the study area, which may affect the results. The results of the geophysical survey were to be used to inform the need for any further evaluation work within the proposed development area. The work was conducted in accordance the relevant English Heritage and IFA guidelines.
- 1.5 The geophysical surveys were conducted by Angus Clark and Kevin Mounsey, between 7<sup>th</sup> and 8<sup>th</sup> January 2009, and managed by Martin Railton, NPA Project Manager. This report was prepared and illustrated by Angus Clark.

## 2 METHODOLOGY

### 2.1 Standards

- 2.1.1 The geophysical survey and reporting were conducted in accordance with English Heritage guidelines (English Heritage 2008), and the recommendations of the Institute of Field Archaeologists (IFA 2002).

### 2.2 Technique Selection

- 2.2.1 Geomagnetic survey was selected as the most appropriate technique, given the non-igneous environment, and the possible presence of cut archaeological features at depths of no more than 1.5m.
- 2.2.1 This technique involved the use of hand-held gradiometers, which measure variations in the vertical component of the earth's magnetic field. These variations can be due to the presence of sub-surface archaeological features. Data was recorded by the instruments and downloaded into a laptop computer for initial data processing in the field using specialist software.

### 2.3 Field Methods

- 2.3.1 The study area was located in two arable fields, located to the south of Wood Farm, Ashwellthorpe. A 30m grid was established within each area and tied-in to known Ordnance Survey points using a Trimble 3605DR Geodimeter total station with datalogger.
- 2.3.2 Geomagnetic measurements were determined using a Bartington Grad601-2 dual gradiometer system, with twin probes set 1m apart. It was expected that significant archaeological features at a depth of up to 1.5m would be detected using this arrangement. The survey was undertaken using a zig-zag traverse scheme, with data being logged in 30m grid units. A sample interval of 0.25m was used, with a traverse interval of 1m, providing 3600 sample measurements per grid unit. The data was downloaded on site into a laptop computer for processing and storage.

### 2.4 Data Processing

- 2.4.1 Geophysical survey data was processed using ArchaeoSurveyor II software, which was used to produce a 'grey-scale' image of the raw data. Positive magnetic anomalies are displayed as dark grey, and negative magnetic anomalies are displayed as light grey. A palette bar shows the relationship between the grey shades and geomagnetic values in nT.
- 2.4.2 Raw data was processed in order to further define and highlight the archaeological features detected. The following basic data processing functions were used:

*Despike:* to locate and suppress random iron spikes in the gradiometer data

*Clip:* to clip data to specified maximum and minimum values, in order to limit large noise spikes in the gradiometer data

*Destagger:* to reduce the effect of staggered gradiometer data, sometimes caused by difficult working conditions, topography, or operator error

## 2.5 *Interpretation*

### 2.5.1 Three types of geophysical anomaly were detected in the gradiometer data:

*positive magnetic:* regions of anomalously high or positive magnetic gradient, which may be associated with the presence of high magnetic susceptibility soil-filled features, such as pits or ditches.

*negative magnetic:* regions of anomalously low or negative magnetic gradient, which may be associated with features of low magnetic susceptibility, such as stone built features, geological features, land-drains or sub-surface voids.

*dipolar magnetic:* regions of paired positive-negative magnetic anomalies, which typically reflect ferrous or fired materials, including fired/ferrous debris in the topsoil, modern services, metallic structures, or fired structures, such as kilns or hearths.

## 2.6 *Presentation*

2.6.1 The grey-scale images were combined with site survey data and Ordnance Survey data to produce the geophysical survey plans. Colour-coded geophysical interpretation diagrams are provided, showing the locations and extent of positive, negative and dipolar magnetic anomalies.

2.6.2 An archaeological interpretation diagram is provided, which is based on the interpretation of the geophysical survey results, in light of the archaeological and historical background of the site.

2.6.3 Trace plots of the unprocessed geophysical data are also available if required.

## 2.7 *Project Archive*

2.7.1 The data archive for this project has been created in accordance with the recommendations of the Archaeology Data Service (ADS 2001). The archive is currently held at the company offices at Nenthead, Cumbria.

2.7.2 One copy of the survey report will be deposited with the County Historic Environment Record, where viewing will be available on request. The project is also registered with the **Online Access to the Index of archaeological investigationS (OASIS)**. The OASIS reference for this project is **northpen3-54071**

### 3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

#### 3.1 *Historical Background*

- 3.1.1 The South Norfolk and High Suffolk Claylands are predominantly farming country that maintain a traditional and utilitarian character, seen well through its churches, moated farmhouses and irregular field patterns. The medieval church in Ashwellthorpe is dated to the late C14<sup>th</sup> (Countryside Character 1999).
- 3.1.2 In a 1890 trade directory, Ashwellthorpe '*has a station on the Wymondham and Forncett branch of the Great Eastern Railway, and is in Depwade union. It had 371 inhabitants in 1881, living on 979 acres, and has a rateable value of £1,528. It was anciently two parishes, called Ashwell and Thorpe, and was held for a long period by the family of de Thorpe, from whom the manor passed to the Bouchier, Knyvett and Wilson families*'. Wood Farm is not named in this directory, although there are several farmers in the parish listed who do not have farm names attributed to them. In a 1904 directory, Norton Dunthorne is listed as a farmer at Wood Farm (Wooler 2008).
- 3.1.3 The proposed area of development is visible on the first edition Ordnance Survey map dated to 1882 and its boundaries appear unchanged to this day.

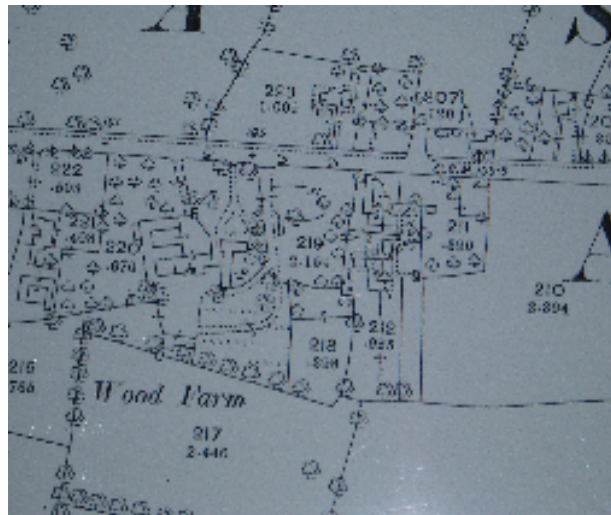


Plate 1: First Edition 25" Ordnance Survey Map of 1882

#### 3.2 *Previous Archaeological Works*

- 3.2.1 A 'Level 2' archaeological building survey, as described by English Heritage, was undertaken by Fiona Wooler on 27<sup>th</sup> June 2008. The focus of which was two farm buildings situated to the south of the Wood Farm complex. The buildings were recorded as an old cart shed, visible on the first edition Ordnance Survey map of 1881, and an old military hut, recovered from an unknown origin (Wooler 2008).
- 3.2.2 No known archaeological works have previously taken place within the boundary of the proposed development area.

## **4 SURVEY RESULTS (*Figures 2-6*)**

### *4.1 Introduction*

4.1.1 The survey was undertaken in two pastoral fields, Area 1 and Area 2, with the proposed survey site covering an area of 1.54 ha to the south of Wood Farm. Area 1 is the proposed location for the construction of a new housing scheme, and Area 2 is to be used for parking and the construction of a new village hall and tennis court.

4.1.2 Area 1 was situated to the south of Wood Farm, in a single pastoral field and was bound by hedgerows to the west, a newly dug ditch to the north, and an electric fence to the south and the east. In the north west corner of the field was a corrugated iron animal shelter, and along with the creation of a ditch along the north boundary and the electric fence to the east of this area, this meant that the survey was unable to extend across the entirety of the field. An area of 0.68ha was covered by the survey.

4.1.3 Area 2 was situated within a field to the southeast of Wood Farm. The survey was conducted in the northwest corner of the field and covered an area of 0.65 ha. The survey area was bordered by a boundary hedge to the east and by houses to the north. The field itself was littered with debris. To the north of the surveyed area, next to the field boundary, was a collection of old farm machinery. In the northeast corner of Area 2 was the visible spread of burnt remains from a bonfire. At the centre of the survey area were numerous iron gates, possibly discarded from the farm.

### *4.2 Area 1*

4.2.1 Small discrete dipolar magnetic anomalies were detected across the whole of the survey area. These were almost certainly caused by fired/ferrous litter in the topsoil, which is typical for modern agricultural land.

4.2.2 Strong dipolar magnetic anomalies were detected along the southwest extent of the survey area, due to the presence of a modern electric fence. In the northwest corner of the survey area strong dipolar magnetic anomalies were also recorded and these are attributed to the corrugated iron animal shelter. An area of strong dipolar magnetic anomalies was also detected in a central position close to the northern extent of the survey. Subsurface metallic objects, possibly related to farm activity, or an area of previous firing activity, are the probable cause of these results.

4.2.3 Two weak linear positive magnetic anomalies were detected in the centre of the survey area, one aligned north-south and the other northeast-southwest. Both anomalies have been interpreted as possible land drains.

### *4.3 Area 2*

4.3.1 Numerous small dipolar magnetic anomalies were detected across the entirety of the survey area, almost certainly due to fired/ferrous material in the topsoil, which is common for modern agricultural land.

4.3.2 Two areas produced a large amount of magnetic disturbance within the survey area. In the northwest corner a large area of dipolar magnetic anomalies was recorded which can be attributed to a number of discarded farm machinery. Although a distance of c2m was maintained from the machinery when setting out the base line, the magnetic disturbance was great enough to be recorded during the survey. Adding to the disturbance was the remnants of a fairly recent bonfire, situated in the northwest

corner. In the centre of the survey area a strong dipolar anomaly was caused by a number of discarded iron farm gates.

- 4.3.3 Two strong positive magnetic linear anomalies were detected running east-west, one at the northern edge of the survey, and one at the southern extent. These are believed to be field drains. Numerous regularly spaced linear positive magnetic anomalies were also recorded; these are all on a northwest-southeast alignment. Due to the regular arrangement of the anomalies these are believed to be part of a field drain network.
- 4.3.4 A weak linear negative magnetic anomaly was detected, running northeast-southwest, which is believed to relate to the aforementioned field drain system.
- 4.3.5 No definite archaeological features were detected by the geophysical survey.

## **5 CONCLUSIONS**

- 5.1 Geomagnetic surveys covering *c.*1.54ha of land have been conducted within two pastoral fields to the south of Wood Farm, Ashwellthorpe, covering the proposed location of a new residential development, and a village hall. In Area 1 two probable land drains were detected and in Area 2 modern drainage features were detected over the majority of the survey area.
- 5.2 Given the results of the survey, no further geophysical survey is recommended at the site.

## **6 ACKNOWLEDGEMENTS**

North Pennines Archaeology are grateful to David Whitmore of NAU Archaeology for commissioning the geophysical surveys, and to Mr Peter Musket of Wood Farm for facilitating the fieldwork. The digital mapping used during the survey was provided courtesy of NAU Archaeology.

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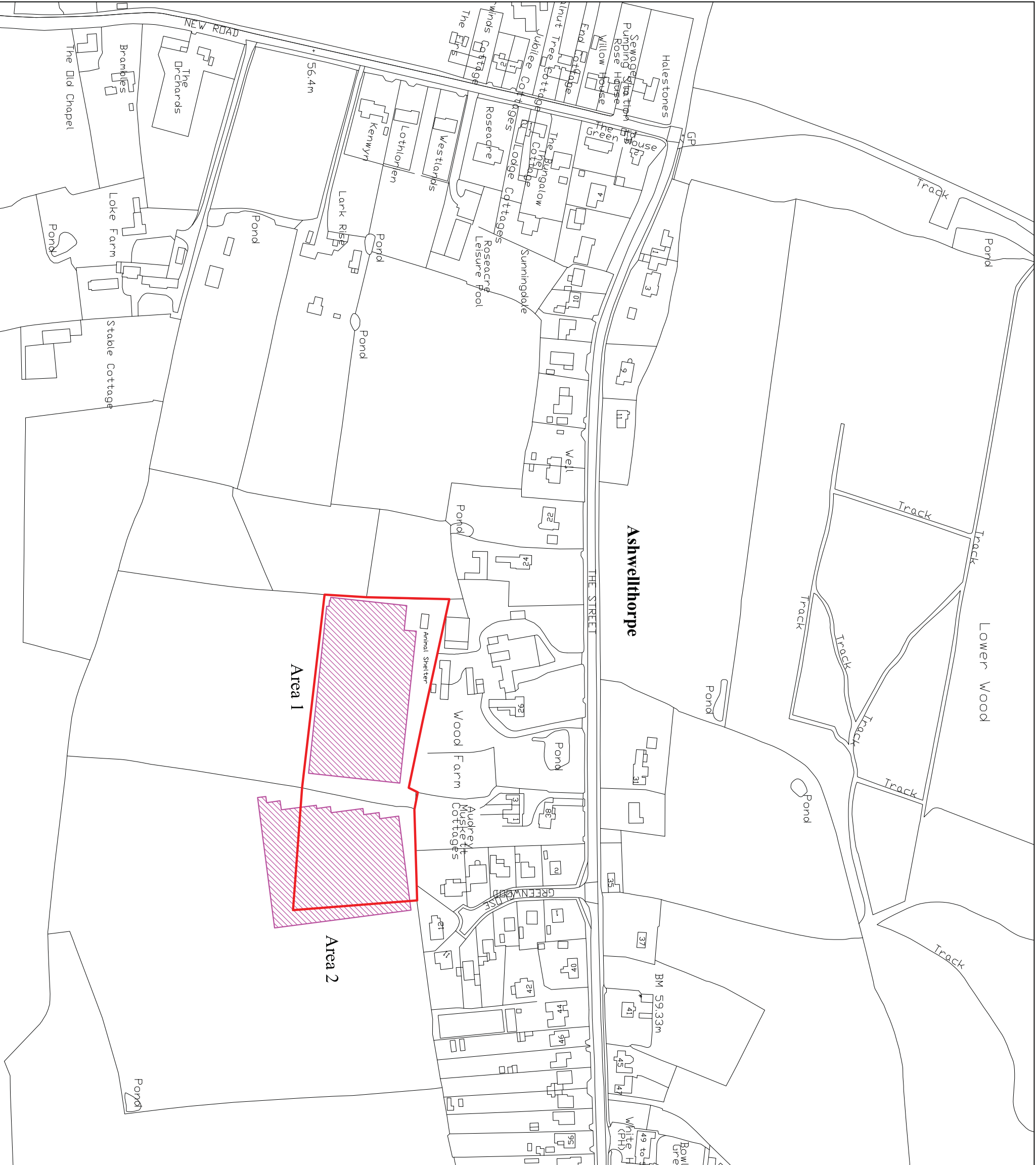
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## **APPENDIX I – ILLUSTRATIONS**





**NPA Geophysical Survey**  
**2009**  
**Land behind Wood Farm,**  
**Ashwellthorpe, Norfolk**

COMMISSIONED BY:  
**NAU Archaeology**

Scale  
**1:2500 at A3**

DRAWN BY: **MDR**  
DATE: **January 2009**

-  outline of proposed development area
-  geophysical survey area



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Report No: **CP 822/08**  
Figure No: **1**

Figure 1 : Location of the geophysical survey areas (Area 1 and Area 2)

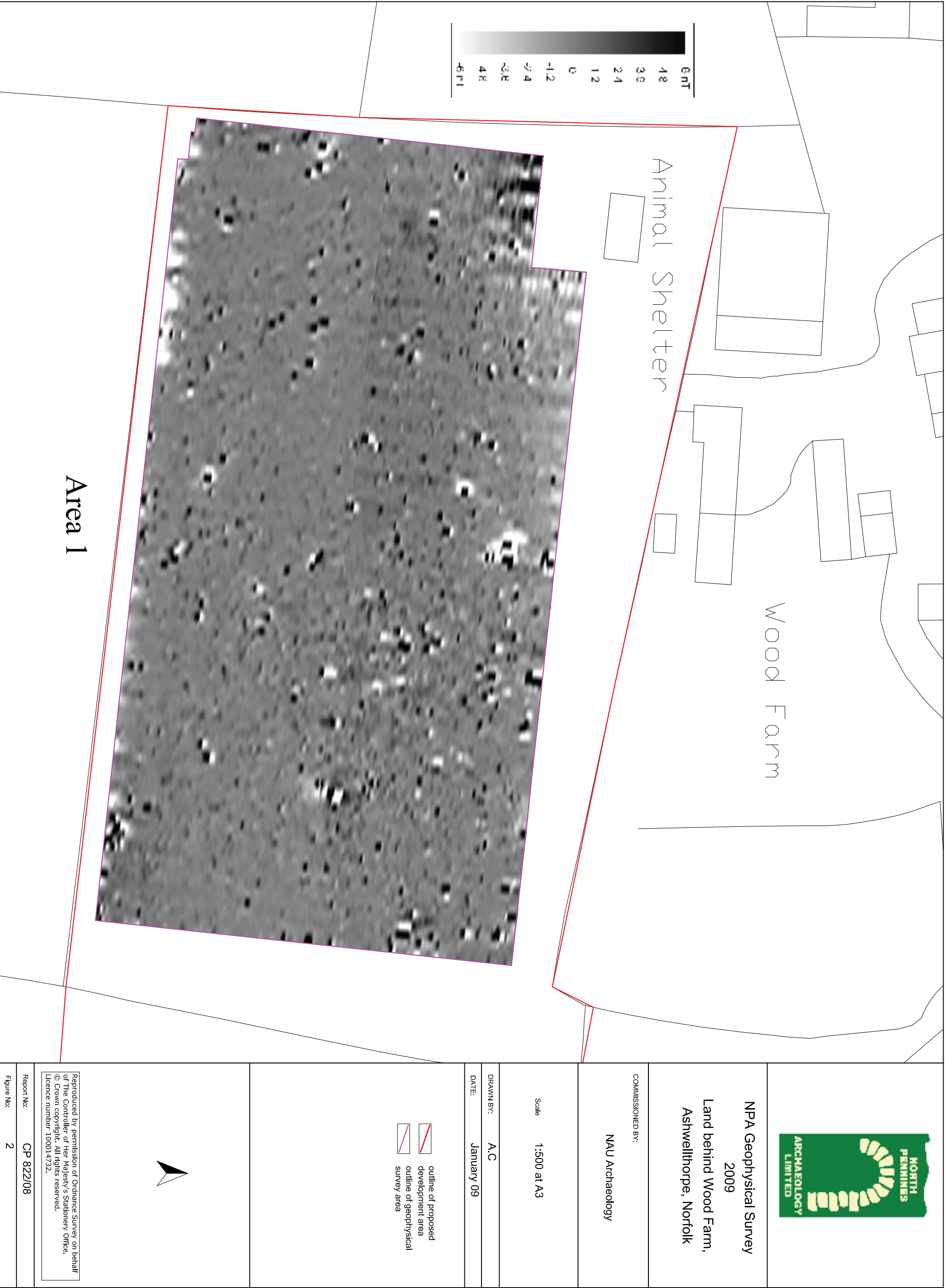
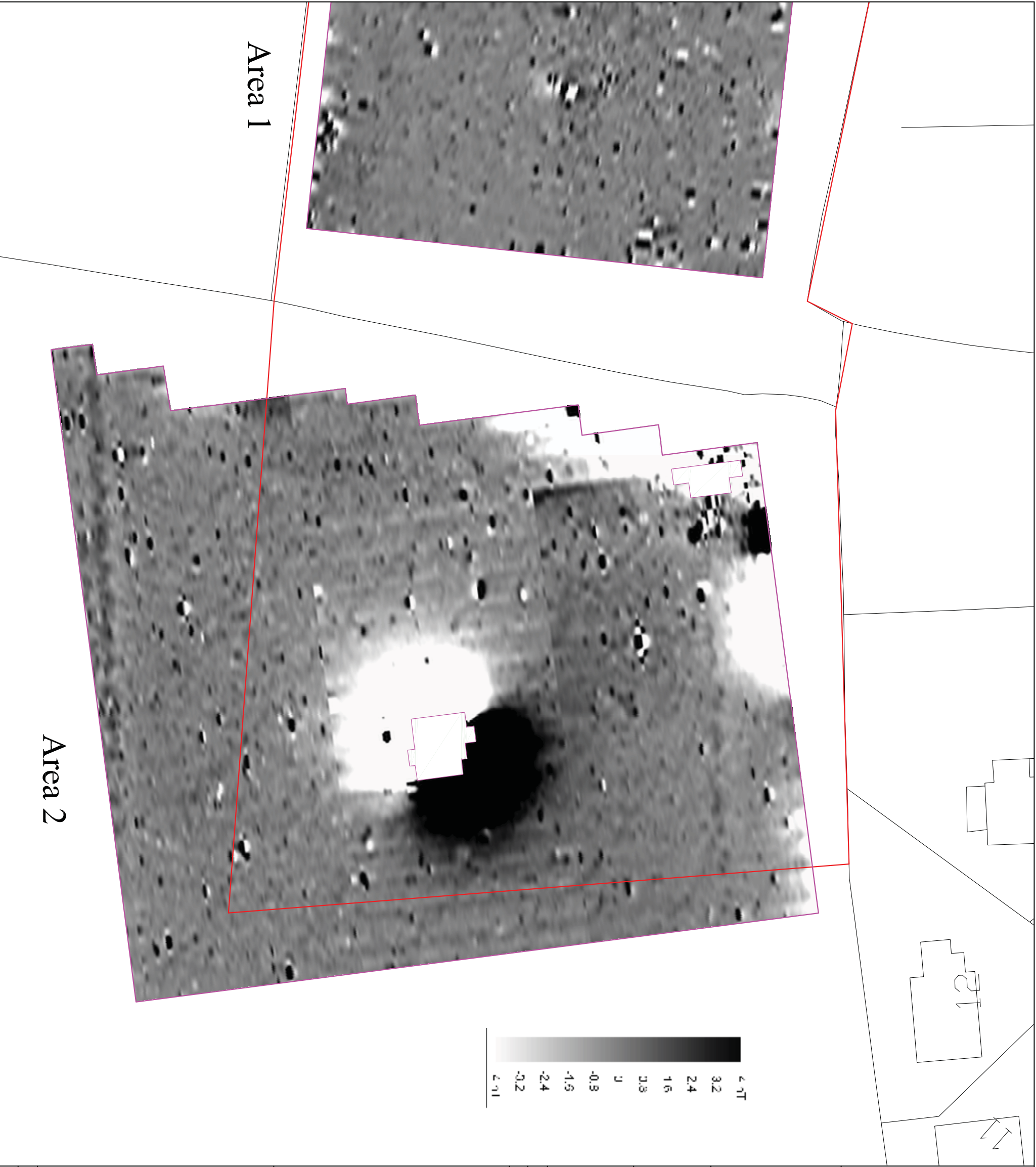


Figure 2: Geophysical survey of Area 1



Figure 3 : Geophysical interpretation of Area 1





**NPA Geophysical Survey**  
**2009**  
**Land behind Wood Farm,**  
**Ashwellthorpe, Norfolk**



COMMISSIONED BY:

NAU Archaeology

Scale 1:500 at A3

DRAWN BY: A.C

DATE: January 09

-  outline of proposed development area
-  outline of geophysical survey area



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Figure No: 4

Figure 4: Geophysical survey of Area 2



Figure 5: Geophysical interpretation of Area 2

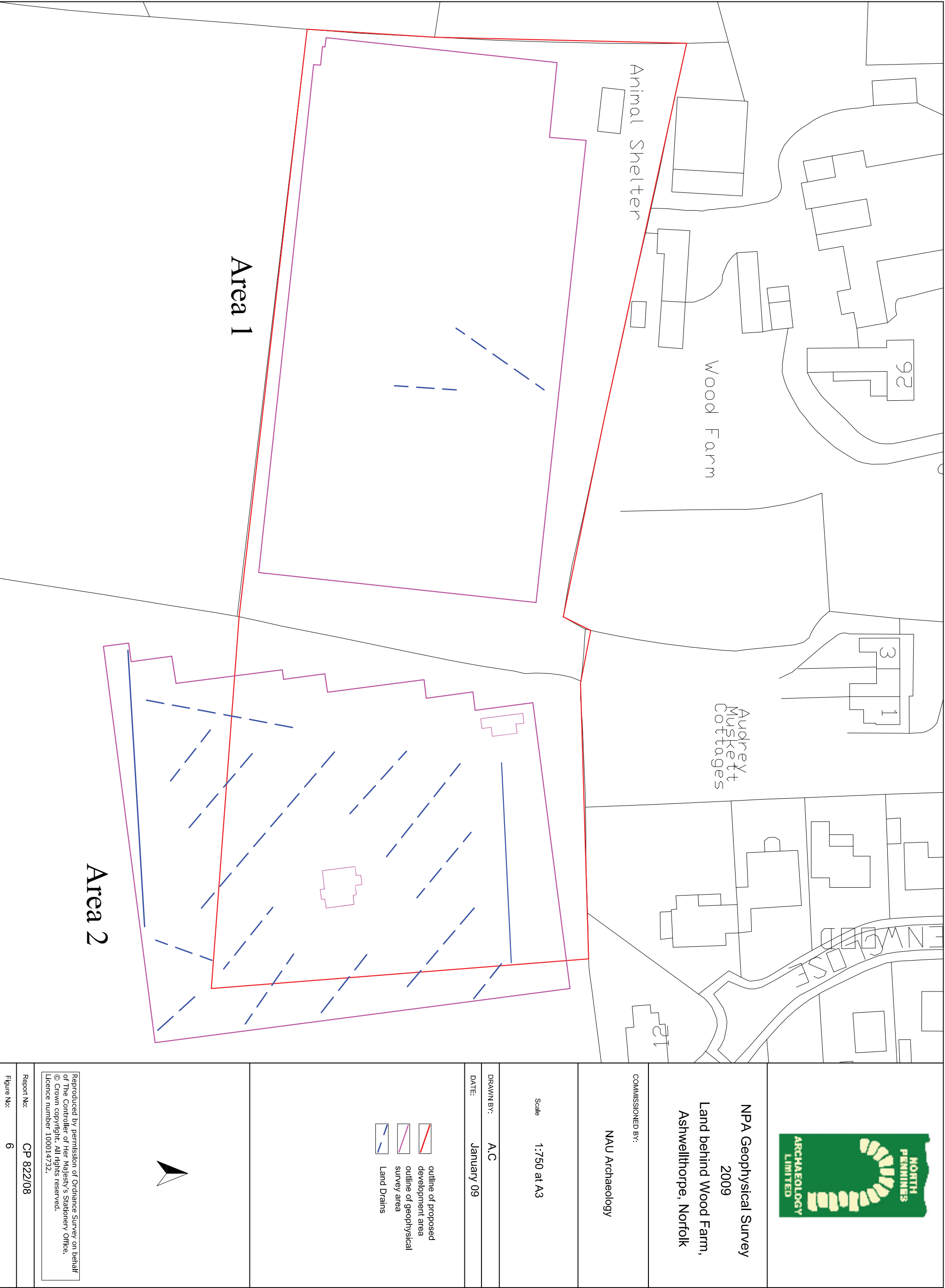


Figure 6: Archaeological interpretation of Areas 1 and 2