THAMES VALLEY

ARCHAEOLOGICAL

SERVICES

Land at Overwood House, Old Compton Lane, Farnham, Surrey

Geophysical Survey (Magnetic)

by Kyle Beaverstock and Tim Dawson

Site Code: OHF15/171

(SU 8559 4638)

Land at Overwood House, Old Compton Lane Farnham, Surrey

Geophysical Survey (Magnetic) Report

For Mr & Mrs M Lamb

by Kyle Beaverstock and Tim Dawson

Thames Valley Archaeological Services Ltd

Site Code OHF 15/171

June 2016

Summary

Site name: Land at Overwood House, Old Compton Lane, Farnham, Surrey

Grid reference: SU 8559 4638

Site activity: Magnetometer survey

Date and duration of project: 1st June 2016

Project manager: Steve Ford

Site supervisor: Kyle Beaverstock

Site code: OHF 15/171

Area of site: 0.95ha (0.15ha surveyed)

Summary of results: Survey was carried out on those parts of the proposal site free from trees and other obstructions. Three positive magnetic anomalies may indicate the presence of archaeological pits while another area of strong positive and negative readings (dipole anomaly) may represent an area which has been subject to burning at high temperatures, possibly indicating a kiln site.

Location of archive: The archive is presently held at Thames Valley Archaeological Services, Reading in accordance with TVAS digital archiving policies.

Report edited/checked by:	Steve Ford✓ 10.06.16
	Andrew Mundin✓ 10.06.16

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Land at Overwood House, Old Compton Lane, Farnham, Surrey
A Geophysical Survey (Magnetic)

by Kyle Beaverstock and Tim Dawson

Report 15/171b

Introduction

This report documents the results of a geophysical survey (magnetic) carried out at land at Overwood House, Old Compton Lane, Farnham, Surrey (SU 8559 4638) (Fig. 1). The work was commissioned by Ms Carole Stellman of JKL Planning, 12 Rushmore Close, Fleet, Hampshire GU52 7LD, on behalf of Mr and Mrs Max Lamb of 63 Broomleaf Close, Farnham, Surrey GU9 8DQ.

Planning consent (WA/2016/0267) has been sought from Waverley Borough Council for the construction of two new houses on a parcel of land at Overwood House. As a consequence of the possibility of archaeological deposits on the site which may be damaged or destroyed by development, field evaluation has been requested in the form of a geophysical survey in order to inform the planning process. This is in accordance with the Department for Communities and Local Government's National Planning Policy Framework (NPPF 2012), and the Borough's policies on archaeology. The field investigation was carried out to a specification drawn up by Thames Valley Archaeological Services. The fieldwork was undertaken by Kyle Beaverstock and Michael Johnson on 1st June 2016 and the site code is OHF 15/171.

The archive is presently held at Thames Valley Archaeological Services, Reading in accordance with TVAS digital archiving policies.

Location, topography and geology

The site lies approximately 1.5km to the east of the centre of Farnham and directly south-west of the hamlet of Compton. The area spans two meadows of which the proposed access extending north-westwards to Old Compton Lane, giving a total area of c.1.2ha (Fig. 1). The main (western) site area is thickly wooded around its fringes with mixed deciduous and coniferous trees, with a more open space towards the centre of the site (Pls. 1-2). A gravel drive leads from the proposed entrance into the north-eastern corner of the site. Topographically, the immediate area is flat although the ground surface is locally undulating due to the presence of numerous roots and tree management activities. The development area is centred on NGR SU 8559 4638 and the underlying geology is recorded as Folkstone Formation sandstone (BGS 1976). The site slopes up from *c*.90m above

Ordnance Datum (aOD) in the eastern corner to *c*.97m aOD at the western edge. The ground conditions during the survey were damp but the weather was sunny.

Site history and archaeological background

A desk-based assessment was undertaken for the proposal site which details the historical and archaeological background to the area (Dawson 2015). In summary, there are no known heritage assets on the site itself although a Roman pottery kiln was excavated immediately adjacent to the western corner. In addition, the entire field falls within an Area of High Archaeological Potential in the Surrey Historic Environment Record (HER). Another Roman kiln was discovered to the south-west, near the current location of Uplands Road ('Langham's Kiln' discovered in 1926) and Stoneyfields gravel pit, also to the south-west, uncovered flint finds of Palaeolithic and Mesolithic date, along with extensive urnfields (cremations) of Middle Bronze Age and Roman date. These findings were made in the first half of the 20th century. This kiln is part of the early Alice Holt tradition of pottery making and considered to be of some significance.

Methodology

Sample interval

Data collection required a temporary grid to be established across the survey area using wooden pegs at 20m intervals with further subdivision where necessary. Readings were taken at 0.25m intervals along traverses 1m apart. This provides 1600 sampling points across a full 20m × 20m grid (English Heritage 2008), providing an appropriate methodology balancing cost and time with resolution. Due to the constricted nature of the site, caused by the dense woodland that covered the majority of the area, it was only possible to lay out a small number of grid squares. These areas, however, were free from obstruction.

The Grad 601-2 has a typical depth of penetration of 0.5m to 1.0m. This would be increased if strongly magnetic objects have been buried in the site. Under normal operating conditions it can be expected to identify buried features >0.5m in diameter. Features which can be detected include disturbed soil, such as the fill of a ditch, structures that have been heated to high temperatures (magnetic thermoremnance) and objects made from ferro-magnetic materials. The strength of the magnetic field is measured in nano Tesla (nT), equivalent to 10^{-9} Tesla, the SI unit of magnetic flux density.

Equipment

The purpose of the survey was to identify geophysical anomalies that may be archaeological in origin in order to inform a targeted archaeological investigation of the site prior to development. The survey and report generally follow the recommendations and standards set out by both English Heritage (2008) and the Chartered Institute *for* Archaeologists (2002, 2011, 2014).

Magnetometry was chosen as a survey method as it offers the most rapid ground coverage and responds to a wide range of anomalies caused by past human activity. These properties make it ideal for the fast yet detailed surveying of an area.

The detailed magnetometry survey was carried out using a dual sensor Bartington Instruments Grad 601-2 fluxgate gradiometer. The instrument consists of two fluxgates mounted 1m vertically apart with a second set positioned at 1m horizontal distance. This enables readings to be taken of both the general background magnetic field and any localised anomalies with the difference being plotted as either positive or negative buried features. All sensors are calibrated to cancel out the local magnetic field and react only to anomalies above or below this base line. On this basis, strong magnetic anomalies such as burnt features (kilns and hearths) will give a high response as will buried ferrous objects. More subtle anomalies such as pits and ditches, can be seen from their infilling soils containing higher proportions of humic material, rich in ferrous oxides, compared to the undisturbed subsoil. This will stand out in relation to the background magnetic readings and appear in plan following the course of a linear feature or within a discrete area.

A Trimble Geo7x handheld GPS system with sub-decimetre real-time accuracy was used to tie the site grid into the Ordnance Survey national grid. This unit offers both real-time correction and post-survey processing; enabling a high level of accuracy to be obtained both in the field and in the final post-processed data.

Data gathered in the field was processed using the TerraSurveyor software package. This allows the survey data to be collated and manipulated to enhance the visibility of anomalies, particularly those likely to be of archaeological origin. The table below lists the processes applied to this survey, full survey and data information is recorded in Appendix 1.

Process	**Effect**
Clip from -5.80 to 6.20 nT	Enhance the contrast of the image to improve the appearance of possible archaeological anomalies.
Interpolate: *y* doubled	Increases the resolution of the readings in the *y* axis, enhancing the shape of anomalies.
De-stripe: median, all sensors	Removes the striping effect caused by differences in sensor calibration, enhancing the visibility of potential

	archaeological anomalies.
De-spike: threshold 1, window size 3×3	Compresses outlying magnetic points caused by interference of metal objects within the survey area.
De-stagger: all grids, both by -1 intervals	Cancels out effects of site's topography on irregularities in the traverse speed.

Once processed, the results are presented as a greyscale plot shown in relation to the site (Fig. 4), followed by a second plan to present the abstraction and interpretation of the magnetic anomalies (Fig. 5). Anomalies are shown as colour-coded lines, points and polygons. The grid layout and georeferencing information (Fig. 2) is prepared in EasyCAD v.7.58.00, producing a .FC7 file format, and printed as a .PDF for inclusion in the final report.

The greyscale plot of the processed data is exported from TerraSurveyor in a georeferenced portable network graphics (.PNG) format, a raster image format chosen for its lossless data compression and support for transparent pixels, enabling it to easily be overlaid onto an existing site plan. The data plot is combined with grid and site plans in QGIS 2.14.0 Essen and exported again in .PNG format in order to present them in figure templates in Adobe InDesign CS5.5, creating .INDD file formats. Once the figures are finalised they are exported in .PDF format for inclusion within the finished report.

Results

A range of anomalies were recorded across the survey area (Fig. 4) but only four are of potential archaeological interest. All of these are located in the western and central parts of the survey area, towards the centre of the site as a whole. The smaller of these **[Fig 5: 1, 2, 3]** are three discrete positive anomalies, which probably represent a buried cut features (i.e. pits) of unknown date. Immediately to the north and west of these is an area of highly enhanced magnetic readings **[4]** which form a dipolar anomaly. This may represent an area of thermoremnance, that is ground or buried material that has been heated *in situ* causing a realignment of the material's magnetic alignment, which may indicate the presence of a hearth or, potentially a kiln.

The remaining two anomalies are both areas of scattered enhanced readings **[5, 6]** on the eastern side of the survey area. These corresponded to gravel-surfaced tracks which joined together to link the site to Old Compton Lane in the north-east. Further areas of magnetic disturbance, most likely caused by the close proximity of metal objects were recorded in the eastern and northern parts of the survey area.

Conclusion

The geophysical survey of the proposed housing locations was completed successfully on those parts of the site free of obstructions. Of the magnetic anomalies that were identified three positive magnetic anomalies may indicate the presence of archaeological pits while another area of strong positive and negative readings may represent an area which has been subject to burning at high temperatures, possibly indicating a kiln site. Additional areas of magnetic disturbance were recorded in relation to gravel-surfaced tracks and near-by metal objects. While these are not of any significance their strong magnetic readings may mask any weaker ones caused by the buried archaeological features.

References

BGS, 1976, *British Geological Survey*, 1:50,000, Sheet 285, Drift Edition, Keyworth

CI*f*A, 2002, *The Use of Geophysical Techniques in Archaeological Evaluation*, IFA Paper No. 6, Reading

CI*f*A, 2011, *Standard and Guidance: for archaeological geophysical survey*, Reading

CI*f*A, 2014, *Standard and Guidance: for archaeological geophysical survey*, Reading

Dawson, T, 2015, 'Land at Overwood House, Old Compton Lane, Farnham, Surrey: An archaeological desk-based assessment', Thames Valley Archaeological Services report 15/171, Reading

English Heritage, 2008, *Geophysical Survey in Archaeological Field Evaluation*, English Heritage, Portsmouth (2nd edn)

NPPF, 2012, *National Planning Policy Framework*, Dept Communities and Local Government, London

Appendix 1. Survey and data information

Programme:
Name: TerraSurveyor
Version: 3.0.25.0

Raw data
Survey corner coordinates (X/Y):
Northwest corner: 485614.32, 146351.32 m
Southeast corner: 485674.32, 146271.32 m
Direction of 1st Traverse: 309.88 deg
Collection Method: ZigZag
Sensors: 2 @ 1.00 m spacing.
Dummy Value: 2047.5

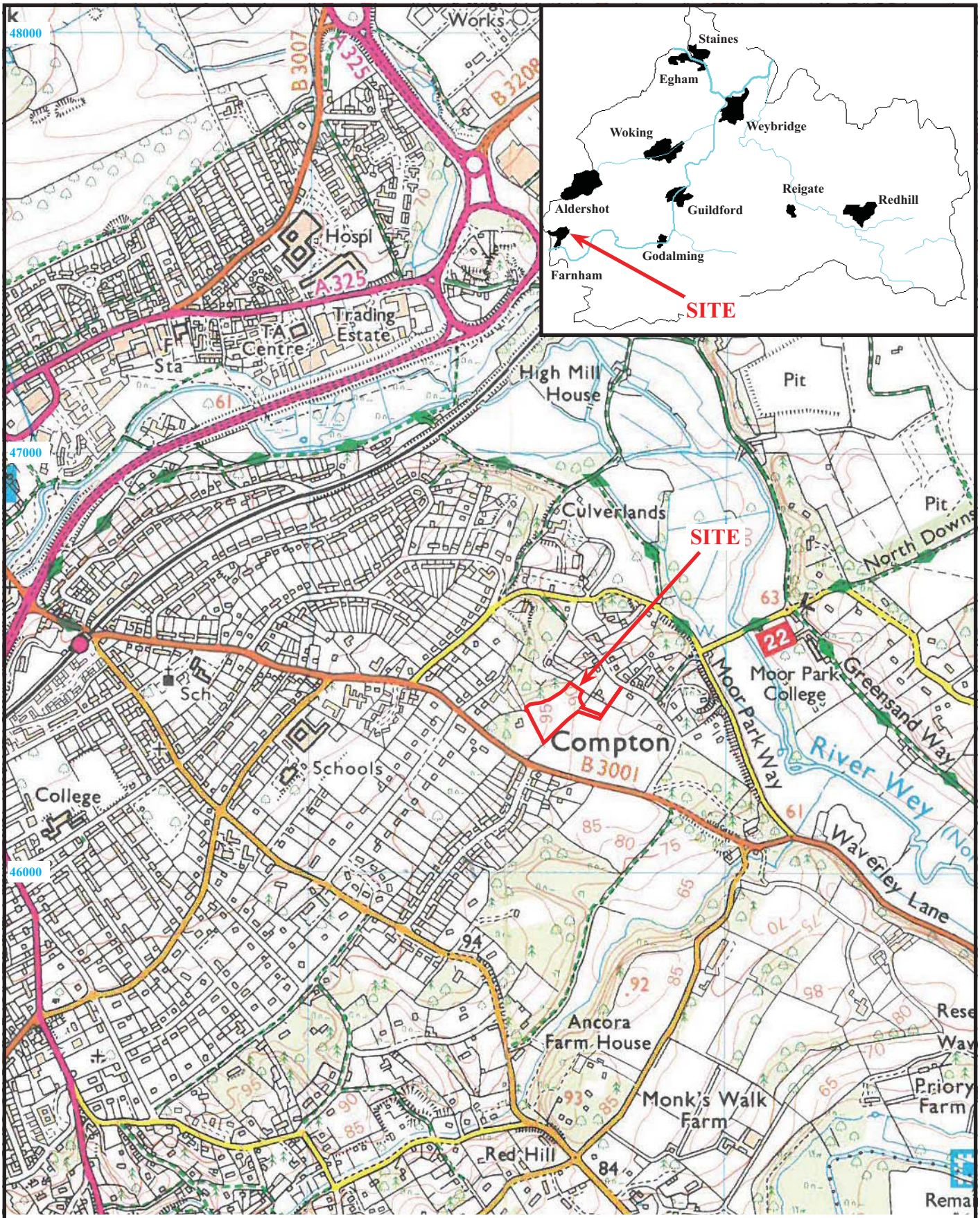
Dimensions
Composite Size (readings): 240 x 80
Survey Size (meters): 60 m x 80 m
Grid Size: 20 m x 20 m
X Interval: 0.25 m
Y Interval: 1 m

Stats
Max: 96.54
Min: -100.00
Std Dev: 12.52
Mean: -1.03
Median: -0.83
Composite Area: 0.48 ha
Surveyed Area: 0.1504 ha

Source Grids: 10
1 Col:0 Row:0 grids\09.xgd
2 Col:0 Row:1 grids\10.xgd
3 Col:1 Row:0 grids\05.xgd
4 Col:1 Row:1 grids\06.xgd
5 Col:1 Row:2 grids\07.xgd
6 Col:1 Row:3 grids\08.xgd
7 Col:2 Row:0 grids\01.xgd
8 Col:2 Row:1 grids\02.xgd
9 Col:2 Row:2 grids\03.xgd
10 Col:2 Row:3 grids\04.xgd

Processed data
Stats
Max: 6.20
Min: -5.80
Std Dev: 2.86
Mean: -0.09
Median: 0.01

Processes: 6
1 Base Layer
2 DeStripe Median Sensors: All
3 De Stagger: Grids: All Mode: Both By: -1 intervals
4 Despike Threshold: 1 Window size: 3x3
5 Interpolate: Y Doubled.
6 Clip from -5.80 to 6.20 nT



OHF 15/171b

Land at Overwood House, Old Compton Lane, Farnham, Surrey, 2016
Geophysical Survey (Magnetic)

Figure 1. Location of site within Farnham and Surrey.

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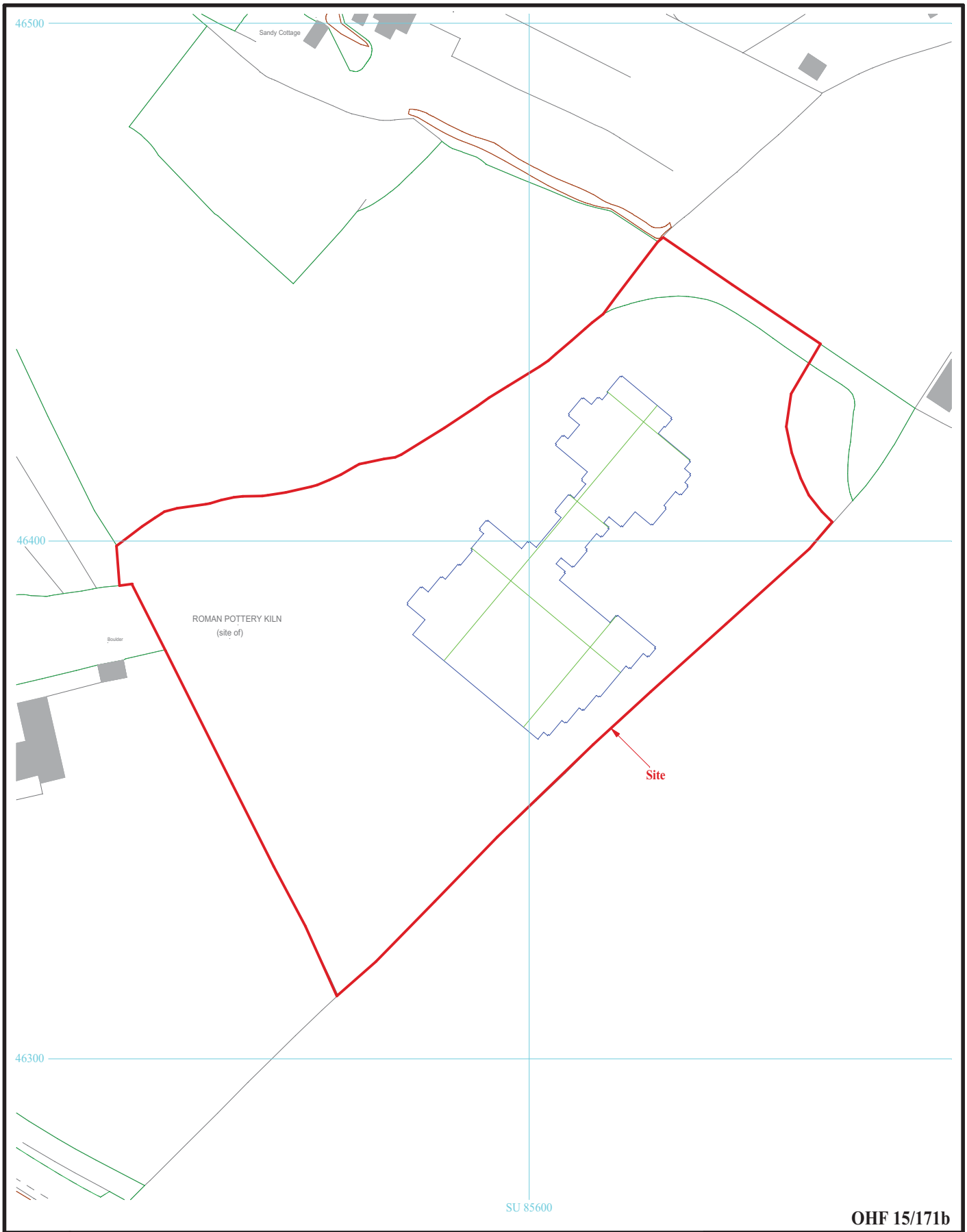

OHF 15/171b

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Geophysical Survey (Magnetic)

Figure 2. Survey grid layout.

0 50m

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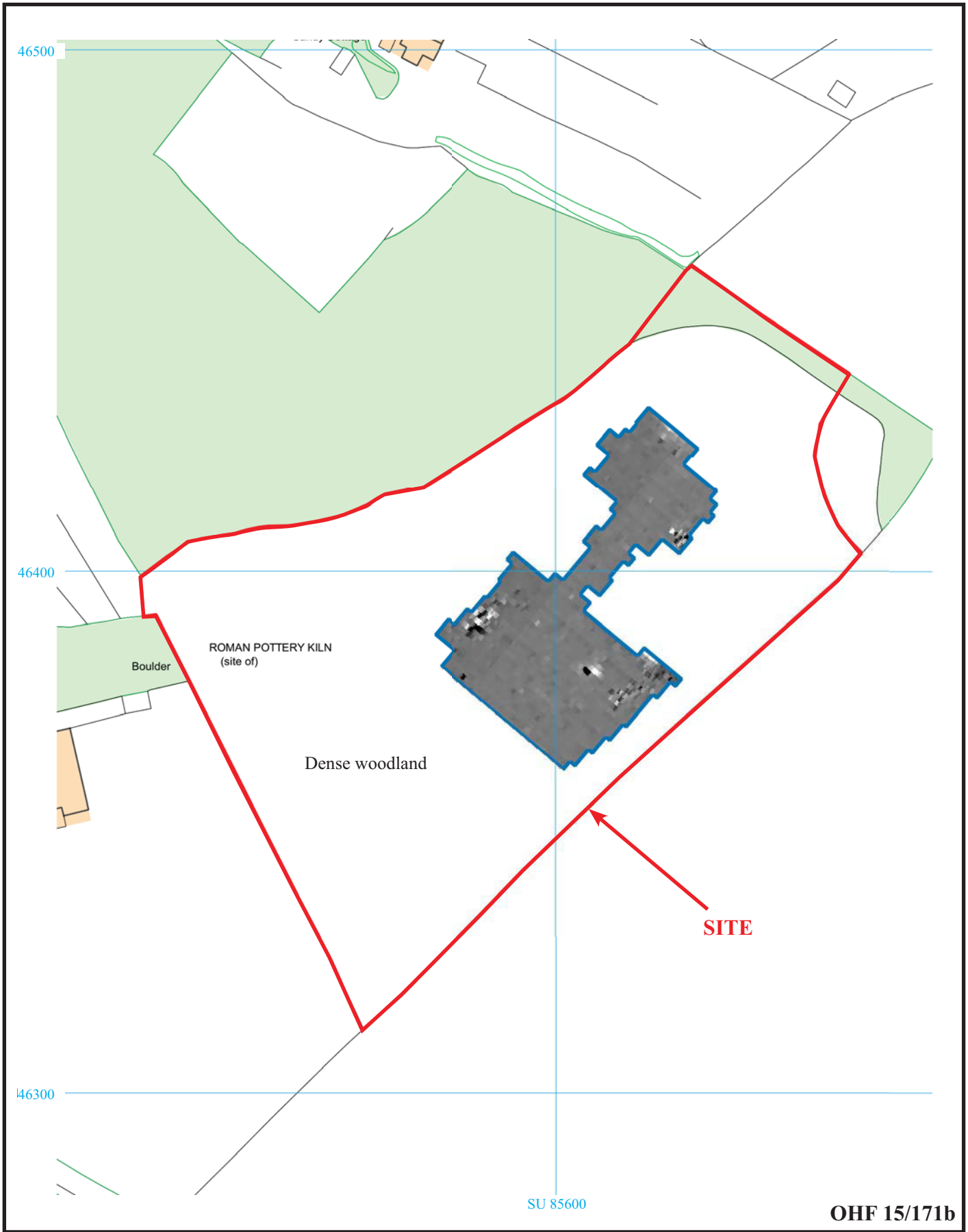

N

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Figure 3. Plot of raw gradiometer data.

0m 50m

+100 nT

-100 nT

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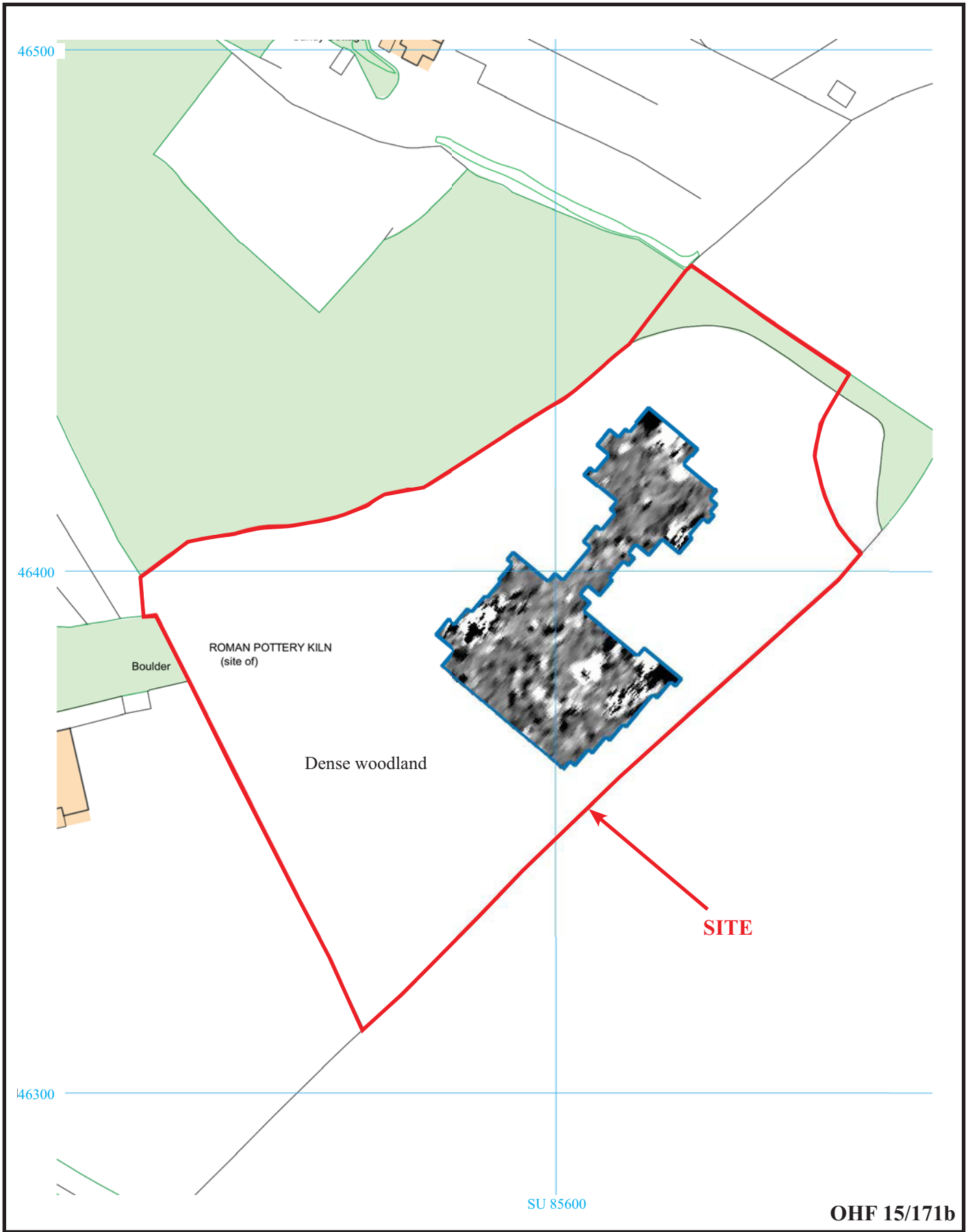

OHF 15/171b

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Land at Overwood House, Old Compton Lane, Farnham, Surrey, 2016
Geophysical Survey (Magnetic)

Figure 4. Plot of processed gradiometer data.

0m 50m

+6.2 nT

-5.8 nT

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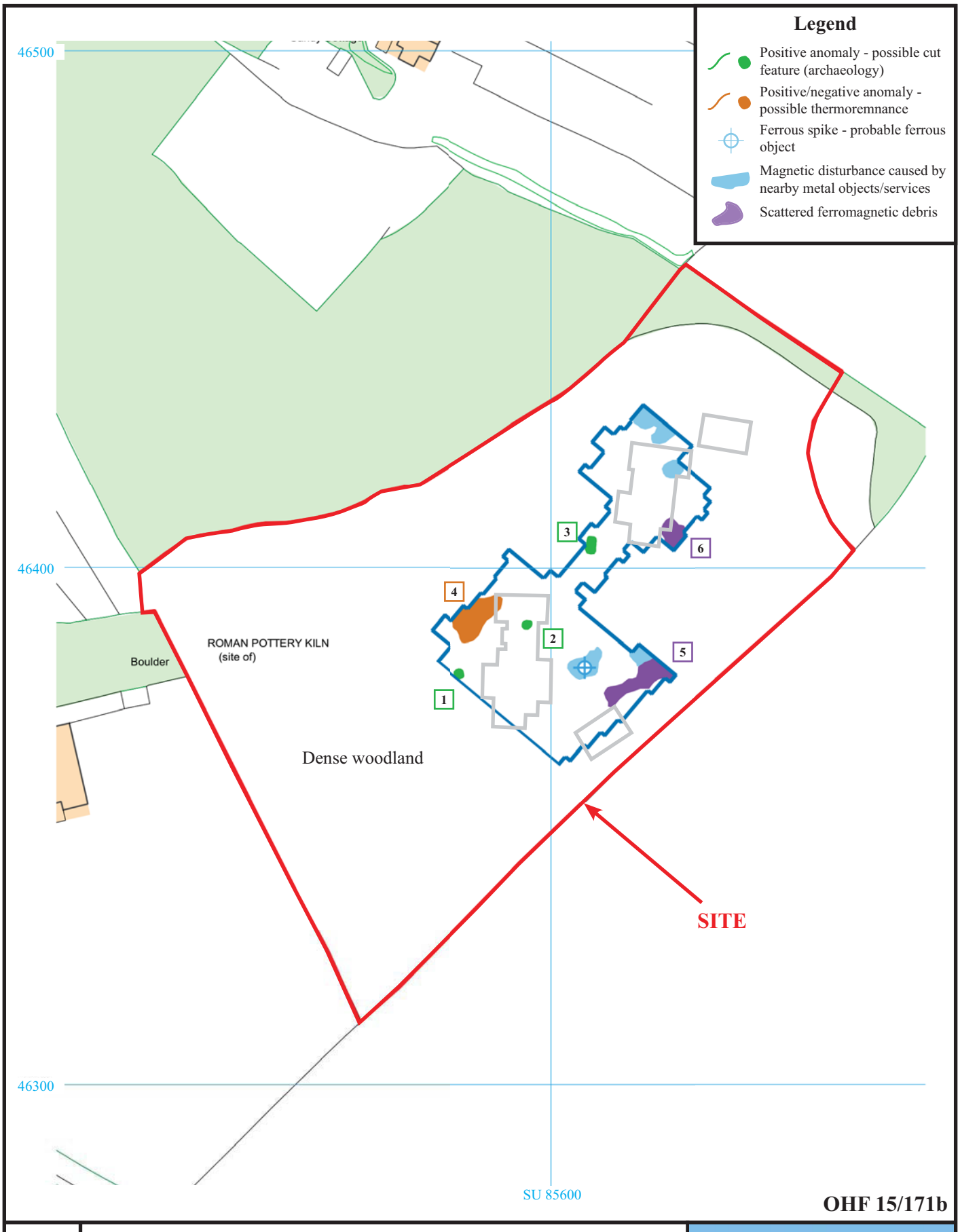

OHF 15/171b

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Geophysical Survey (Magnetic)

Figure 5. Interpretation plot showing proposed locations of houses.

0m 50m

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Plate 1. The south-western area, looking west.

Plate 2. The north-eastern area, looking west.

OHF 15/171b

Land at Overwood House, Old Compton Lane,
Farnham, Surrey, 2016
Geophysical Survey (Magnetic)

Plates 1 - 2.

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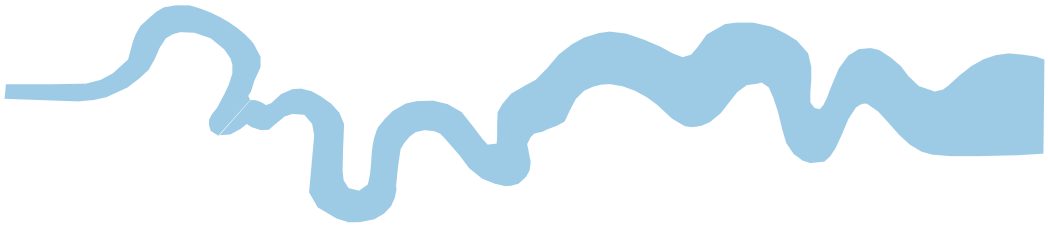
TIME CHART

	Calendar Years
Modern	AD 1901
Victorian	AD 1837
Post Medieval	AD 1500
Medieval	AD 1066
Saxon	AD 410
Roman	AD 43
Iron Age	BC/AD 750 BC
Bronze Age: Late	1300 BC
Bronze Age: Middle	1700 BC
Bronze Age: Early	2100 BC
Neolithic: Late	3300 BC
Neolithic: Early	4300 BC
Mesolithic: Late	6000 BC
Mesolithic: Early	10000 BC
Palaeolithic: Upper	30000 BC
Palaeolithic: Middle	70000 BC
Palaeolithic: Lower	2,000,000 BC



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