Detailed Magnetometer Survey
Land at 45 Allington Road, Newick, East Sussex

NGR: 541666 120815
(TQ 41666 20815)

Lewes District Council
Planning Reference: LW/17/0905

Site Code: NAR17
OASIS ID: archaeol6-303237
ASE Project No: 171111
ASE Report No: 2017511

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Abstract

Archaeology South-East (ASE), the contracting division of The Centre for Applied Archaeology at the Institute of Archaeology, University College London (UCL), was commissioned by Fairfax Acquisitions Limited to undertake a geophysical survey on Land at 45 Allington Road, Newick, East Sussex, NGR 541666 120815. The work was undertaken on Tuesday 5th December 2017.

Evidence for possible archaeological features was represented by moderate positive anomalies. Linear anomalies running across the site may indicate cut features such as boundary ditches. Areas of magnetic debris are likely to be caused by ground disturbance or made ground. Two dipolar anomalies representing possible thermoremanence may be the result of a buried kiln or furnace. Although, they may also be caused by larger metal objects. Dipolar anomalies may indicate thermoremanent features such as kilns or furnaces. However, these anomalies are more likely to represent near surface ferrous (iron) objects.

Statement of Indemnity

Geophysical survey is the collection of data that relate to subtle variations in the form and nature of soil and which relies on there being a measurable difference between buried archaeological features and the natural geology. Geophysical techniques do not specifically target archaeological features and anomalies noted in the interpretation do not necessarily relate to buried archaeological features. As a result, magnetic and earth resistance detail survey may not always detect sub-surface archaeological features. This is particularly true when considering earlier periods of human activity, for example those periods that are not characterised by sedentary social activity.

CONTENTS

1.0 INTRODUCTION

1.1 Site background

1.1.1 Archaeology South-East (ASE) were commissioned by Fairfax Acquisitions Limited (hereafter 'the client') to undertake a geophysical survey on Land at 45 Allington Road, Newick, East Sussex, (hereafter 'the site') centred on NGR 541666 120815; Figure 1.

1.1.2 An application for residential development of the site has been submitted to Lewes District Council (LDC) supported by an archaeological desk-based assessment (ASE 2016; see below). The East Sussex County Council's (ESCC) Archaeologist (Greg Chuter) in his capacity as advisor to LDC recommended that a programme of archaeological fieldwork be undertaken on the site to support the application, initially comprising a geophysical survey.

1.1.3 A Written Scheme of Investigation (WSI) was prepared by ASE for a geophysical survey (ASE 2017).

1.2 Geology and topography

1.2.1 According to the online British Geological Survey 1:50,000 mapping, the bedrock geology of the site consists of Upper Tunbridge Wells Sand of interbedded sandstone and siltstone. No superficial geology is recorded (BGS 2017).

1.2.2 The survey was undertaken over a rectangular field with some light buildings and former allotments or gardens lying to the rear of the residential properties fronting onto Allington Road (Figure 2).

1.3 Aims of geophysical investigation

1.3.1 The geophysical survey comprised a detailed magnetometer survey within all accessible areas (as shown on Figure 2). The general aims of the geophysical survey were to identify, insofar as possible, anomalies that may be of archaeological origin.

1.4 Scope of report

1.4.1 This report details the findings of the survey. The project was conducted by John Cook with the assistance of Sophie Morrish and set out by Vasilis Tsamis. The project was managed by Neil Griffin (fieldwork) and Jim Stevenson (post-excavation).

2.0 ARCHAEOLOGICAL BACKGROUND

2.1 Introduction

2.1.1 A desk-based assessment (DBA) has already been prepared by ASE (ASE 2016) and is summarised below and in the appendix. The reader is directed to the DBA for more detailed information.

2.2 Prehistoric

2.2.1 Evidence for Prehistoric activity within 1km of the site is sparse and confined to burnt and worked flint artefacts from one location north of the village and two Bronze Age axe-heads approximately 600m to the east of the site.

2.3 Roman

2.3.1 No Roman activity is recorded within 1km of the site although its location within the High Weald suggests a generic potential for ironworking evidence to survive, notably in stream valleys.

2.4 Early Medieval and Medieval

2.4.1 Little is known about the history of Newick prior to the Norman Conquest. The name itself is of Anglo-Saxon origin (meaning new farm), although the first record of it does not occur until 1218 (Mawer & Stenton 1930). It is not recorded in Domesday (1086) and appears to have been an outlying Wealden estate of the manor of Allington (Salzman 1940). It is likely, therefore, that it originated as an area of pasture within which a small settlement developed.

2.4.2 Much of the manorial land around Newick appears to have been held by Lewes Priory. The historic core of Newick is centred on the parish church 500m east of the site, the nave of which is dated to the 11th century. A trackway forming the southern boundary of the site aligns with a possible medieval road running westwards to the medieval village core.

2.5 Post-medieval

2.5.1 The vast majority of sites identified with 1km of the site comprise Listed Buildings (36 in total) and a number of non-listed buildings, structures and landscape features of historic interest.

2.6 The Archive

2.6.1 The digital and paper archive derived from this project will be housed at Archaeology South-East's Sussex offices and will be combined with any further archive generated in the event of further fieldwork being required.

3.0 SURVEY METHODOLOGY

3.1 Geophysical survey

3.1.1 A fluxgate gradiometer (magnetometry) survey was undertaken across approximately 1.3ha of land as depicted on Figure 2. The work was undertaken on Tuesday 5th December 2017 during cold and breezy weather.

3.2 Applied geophysical instrumentation

3.2.1 The Fluxgate Gradiometer employed was the Bartington Instrumentation Grad 601-2. The Grad 601-2 has an internal memory and a data logger that store the survey data. This data is downloaded into a PC and is then processed in a suitable software package.

3.2.2 30m x 30m grids were set out using a GPS (see below). Each grid was surveyed with 1m traverses and samples were taken every 0.25m.

3.2.3 Data was collected along north-south traverses in a zigzag pattern beginning in the south west corner of each grid, following the contours of the site.

3.3 Instrumentation used for setting out the survey grid

3.3.1 The survey grid for the site was geo-referenced using a Leica Viva SmartRover. The GPS receiver collects satellite data to determine its position and uses the mobile phone networks to receive corrections, transmitting them to the RTK Rover via Bluetooth to provide a sub centimetre Ordnance Survey position and height. Each surveyed grid point has an Ordnance Survey position; therefore the geophysical survey can be directly referenced to the Ordnance Survey National Grid.

3.4 Data processing

3.4.1 All of the geophysical data processing was carried out using TerraSurveyor published by DW Consulting. Minimally processed data was produced using the following schedule of processing. Due to the very high positive readings of some of the magnetic disturbance, the values were replaced with a dummy value so as to avoid detrimentally affecting the dataset when further processed. The first process carried out upon the data was to apply a DESPIKE to the data set which removes the random ‘iron spikes’ that occur within fluxgate gradiometer survey data. A ZERO MEDIAN TRAVERSE was then applied to survey data. This removes stripe effects within grids and ensures that the survey grid edges match.

3.5 Data presentation

3.5.1 Data is presented using images exported from TerraSurveyor into AutoCAD software and inserted into the geo-referenced site grid. Data is presented as raw and processed data greyscale plots (Figures 3 and 4).

4.0 GEOPHYSICAL SURVEY RESULTS

4.1 Description of site

4.1.1 The survey was undertaken over a rectangular field with some light buildings and former allotments or gardens lying to the rear of the residential properties fronting onto Allington Road (Figures 2, 6 & 7).

4.2 Survey limitations

4.2.1 Physical obstructions encountered on site included areas of overgrown vegetation with hidden dips, wire fences, large dumps of metal, ground disturbance and standing buildings. Obstructions for each area are noted in the results. In addition, the effectiveness of magnetometer surveys depends on a contrast between the absolute magnetic susceptibility of the topsoil to the underlying subsoil (Clark 1996). Features may also be difficult to detect where there has been significant primary silting and development of significant overburden. Areas where physical obstructions form a barrier to survey, or a health and safety issue, have been omitted. The site lies over Upper Tunbridge Wells Sand of interbedded sandstone and siltstone. The response to magnetometer survey is variable (English Heritage 2008).

4.3 Introduction to results

4.3.1 The results should be read in conjunction with the figures at the end of this report. The types of features likely to be identified are discussed below.

Positive Magnetic Anomalies

4.3.2 Positive anomalies generally represent cut features that have been in-filled with magnetically enhanced material.

Negative Magnetic Anomalies

4.3.3 Negative anomalies generally represent buried features such as banks or compacted ground that have a lower magnetic signature in comparison to the background geology.

Magnetic Disturbance

4.3.4 Magnetic disturbance is generally associated with interference caused by modern ferrous features such as fences and service pipes or cables.

Magnetic Debris

4.3.5 Low amplitude magnetic debris consists of a number of dipolar responses spread over an area and is indicative of ground disturbance.

Dipolar Anomalies

4.3.6 Dipolar anomalies are positive anomalies with an associated negative response. These anomalies are usually associated with discreet ferrous objects or may represent buried kilns or ovens.

Bipolar Anomalies

4.3.7 Bipolar anomalies consist of alternating responses of positive and negative magnetic signatures. Interpretation will depend on the strength of these responses; modern pipelines and cables typically produce strong bipolar responses.

Thermoremanence

4.3.8 Thermoremanence is most commonly encountered through the magnetizing of clay through the firing process although stones and soils can also acquire thermoremanence.

4.3.9 Magnetism from ferromagnetic materials (iron) and from thermoremanence are forms of permanent magnetism and in most cases a magnetometer will not enable the separation of anomalies into the two categories. The interpretation of these anomalies into either category relies on field strength within an area. Magnetic anomalies due to iron normally rise and fall rapidly, forming a 'spike' in the data.

4.4 Interpretation of fluxgate gradiometer results (Figure 5)

4.4.1 The interpretation of fluxgate gradiometer results should be read in conjunction with the figures at the end of the report. Specific examples of anomaly types may be numbered in the figures and text but not all anomalies are numbered.

4.4.2 Evidence of possible archaeological activity included the following described anomalies. The most obvious possible archaeological anomalies are the linear and discrete positive anomalies and likely to be due to cut features such as pits and ditches (moderate coloured light green, strong dark green). However Plough marks create linear anomalies that may be mistaken for ditches.

4.4.3 Areas of magnetic debris may relate to a scattering of near surface ferrous material, demolished buildings, former field boundaries, ground disturbance or made ground (dotted brown).

4.4.4 Dipolar anomalies (pink dots) may relate to possible thermoremanent magnetic enhancement, such as kilns or furnaces, but are more likely due to near surface ferrous (iron) objects.

4.4.5 Services were noted near the western boundary of the site (pink lines) along with associated magnetic disturbance. Areas of magnetic disturbance caused by large nearby metallic objects (shaded brown) may obscure any underlying archaeological features.

5.0 CONCLUSIONS

5.1 Discussion

5.1.1 The magnetometer survey did reveal a number of anomalies across the investigation site, discussed below. However, it should be noted that this technique does not allow for specific dating of features and may not detect certain features such as small post holes or magnetically inert features. In addition, magnetometry is a near surface technique and therefore areas of overburden may mask subtle features.

5.1.2 Evidence for possible archaeological features included moderate positive anomalies (coloured light green on Figure 5). Though they could have an archaeological origin, they may equally be the result of the natural geology or land drains. Linear anomalies running across the site (A1) may indicate cut features such as boundary ditches. According to historical mapping the site has been utilised as fields or allotments/gardens from at least the late 18th century but with the exception of one east to west linear, which aligns approximately with the northern site boundary, these anomalies do not correspond closely to any boundaries observed (ASE 2016).

5.1.3 Areas of magnetic debris (A2) are likely to be caused by ground disturbance or made ground such as that caused by a former building or areas of consolidation in field entrances and boundaries or trackways.

5.1.4 Two dipolar anomalies representing possible thermoremanence (A3, coloured red) may be the result of a buried kiln or furnace. Although, they may also be caused by larger metal objects. Dipolar anomalies (coloured pink) may also indicate thermoremanent features such as kilns or furnaces. However, these anomalies are more likely to represent near surface ferrous (iron) objects.

5.1.5 Anomalies interpreted as being caused by services (A4) are observed on the western boundary of the site.

5.1.6 Areas of magnetic disturbance (coloured light brown) may obscure the magnetic response from underlying archaeological features.

5.1.7 Although a number of possible archaeological features were encountered across the site, these may also result from variations in the natural geology or relate to modern features associated with nearby boundaries and services.

Bibliography

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Acknowledgements

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HER Summary

HER enquiry number	N/A					
Site code						
Project code	171111					
Planning reference	LW/17/0905					
Site address	Land at 45 Allington Road, Newick, East Sussex					
District/Borough	East Sussex					
NGR (12 figures)	541666 120815					
Geology	Upper Tunbridge Wells Sand of interbedded sandstone and siltstone					
Fieldwork type					**Survey**	
Date of fieldwork	5th December 2017					
Sponsor/client	FAIRFAX ACQUISITIONS LIMITED					
Project manager	Neil Griffin					
Project supervisor	John Cook					
Period summary						
Project summary	*Archaeology South-East (ASE), the contracting division of The Centre for Applied Archaeology at the Institute of Archaeology, University College London (UCL), was commissioned by Fairfax Acquisitions Limited to undertake a geophysical survey on Land at 45 Allington Road, Newick, East Sussex, NGR 541666 120815. The work was undertaken on 5th December 2017.* *Evidence for possible archaeological features was represented by moderate positive anomalies. Linear anomalies running across the site may indicate cut features such as boundary ditches. Areas of magnetic debris are likely to be caused by ground disturbance or made ground. Two dipolar anomalies representing possible thermoremanence may be the result of a buried kiln or furnace. Although, they may also be caused by larger metal objects. Dipolar anomalies may indicate thermoremanent features such as kilns or furnaces. However, these anomalies are more likely to represent near surface ferrous (iron) objects*					
Museum/Accession No.	N/A					

OASIS FORM

OASIS ID: archaeol6-303237

Project details	
Project name	Land at 45 Allington Road, Newick, East Sussex
Short description of the project	Archaeology South-East (ASE), the contracting division of The Centre for Applied Archaeology at the Institute of Archaeology, University College London (UCL), was commissioned by Fairfax Acquisitions Limited to undertake a geophysical survey on Land at 45 Allington Road, Newick, East Sussex, NGR 541666 120815. The work was undertaken on Tuesday 5th December 2017. Evidence for possible archaeological features was represented by moderate positive anomalies. Linear anomalies running across the site may indicate cut features such as boundary ditches. Areas of magnetic debris are likely to be caused by ground disturbance or made ground. Two dipolar anomalies representing possible thermoremanence may be the result of a buried kiln or furnace. Although, they may also be caused by larger metal objects. Dipolar anomalies may indicate thermoremanent features such as kilns or furnaces. However, these anomalies are more likely to represent near surface ferrous (iron) objects
Project dates	Start: 05-12-2017 End: 05-12-2017
Previous/future work	Not known / Yes
Any associated project reference codes	171111 - Contracting Unit No.
Type of project	Field evaluation
Site status	None
Current Land use	Grassland Heathland 3 - Disturbed
Monument type	NONE None
Significant Finds	NONE None
Methods & techniques	"Geophysical Survey"
Development type	Housing estate
Prompt	Planning condition
Position in the planning process	Between deposition of an application and determination

Solid geology (other)	Tunbridge Wells sand
Drift geology	Unknown
Techniques	Magnetometry
Project location	
Country	England
Site location	EAST SUSSEX LEWES NEWICK Land at 45 Allington Road, Newick, East Sussex
Postcode	BN8 4NB
Study area	1.2 Hectares
Site coordinates	TQ 41666 20815 50.968744857332 0.017834226141 50 58 07 N 000 01 04 E Point
Project creators	
Name of Organisation	Archaeology South East
Project brief originator	Lewes District Council
Project design originator	Archaeology South-East
Project director/manager	Neil Griffin/Vasilis Tsamis
Project supervisor	John Cook
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Fairfax Acquisitions Limited
Project archives	
Physical Archive recipient	n/a
Digital Archive recipient	ASE
Digital Media available	"Geophysics","Images raster / digital photography"
Paper Archive recipient	ASE
Paper Media available	"Report"

Project bibliography 1

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