

**Detailed Magnetometer Survey  
Land at Darvel Down, Netherfield, East Sussex**

**NGR: 570863 118828**

**Site Code: DAR 17  
OASIS ID: archaeol6-276381**

**ASE Project No: 170083  
ASE Report No: 2017068**

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<b>Date of Issue:</b>	February 2017		
<b>Revision:</b>			

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## **Abstract**

*Archaeology South-East was commissioned by Asprey Homes to conduct a magnetometer survey on a site totalling approximately 1 hectare of land at Darvel Down, Netherfield, East Sussex. The work was undertaken on the 2<sup>nd</sup> of February 2017.*

*Evidence for possible archaeological features was represented by strong and moderate positive anomalies (coloured green on Figure 5). Though they could have an archaeological origin, they may equally be the result of the natural geology.*

## **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.*

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## 1.0 INTRODUCTION

- 1.1 Archaeology South-East (ASE) have been commissioned by Asprey Homes to undertake a magnetometry survey of land at Darvel Down, Netherfield, East Sussex, hereafter 'the site' (centred on NGR 570863 118828; Figure 1).
- 1.2 The site comprises an irregular plot of c.1 ha lying immediately west of the village of Netherfield, approximately 4.5km to the north-west of the town of Battle. It is on a slight slope on top of an east-west trending ridge and lies between 142 and 147m AOD.
- 1.3 According to the British Geological Survey 1:50,000 scale geological mapping available online (BGS 2017), the natural geology of the site comprises Ashdown Formation (Sandstone, Siltstone and Mudstone). No superficial deposits were recorded.
- 1.4 The site is subject to proposals for residential development. East Sussex County Council's archaeological advisor requested geophysical survey of the site to support the application.
- 1.5 All work was carried out with regard to a Written Scheme of Investigation (WSI) (ASE 2017b) for geophysical survey approved by the Archaeological Advisor to Rother District Council as well as the relevant Chartered Institute for Archaeologists (CIfA) procedural documents (CIfA 2014a; 2014b) and the Sussex Archaeological Standards (ESCC 2015).
- 1.6 *Aims and Objectives*
  - 1.6.1 The general aim of the programme of geophysical survey was to obtain a better understanding of the archaeological potential of the site. This work will inform decisions to be made as to the need, nature and scope of any further intrusive investigations and/or mitigation measures that may be required.
  - 1.6.2 The geophysical survey comprised a detailed magnetometer survey within all accessible areas shown on Figure 2. The survey aimed to detect any anomalies of archaeological origin that are within the boundaries of the survey area. The features detected were naturally limited to those features that produce a measurable response to the instrumentation used
- 1.7 *Scope of report*
  - 1.7.1 The scope of this report is to detail the findings of the survey. The project was conducted by John Cook with the assistance of Chris Russel and Gemma Ward. The project was managed by Paul Mason (fieldwork) and Jim Stevenson (post-fieldwork).

## **2.0 ARCHAEOLOGICAL BACKGROUND**

- 2.1 The following site background is paraphrased from the desk-based assessment (ASE 2017a). This document should be consulted for more detailed information.
- 2.2 Very little evidence for prehistoric occupation has been found in the vicinity of the site. Two nearby trackways have been identified as possibly belonging to the prehistoric period.
- 2.3 There is no evidence for Romano-British activity in the vicinity of the site.
- 2.4 The early history of Netherfield is unclear. The place-name, which is first recorded as 'Nedrefelle', is possibly of Saxon origin and would mean 'open land full of adders'. The HER records a general reference to early medieval settlement along the ridge.
- 2.5 Netherfield is mentioned in the Domesday Survey and appears under the name 'Nedrefelle'. It was a manor belonging to the Count of Eu, and occupied a ridgeway route on the road to Battle, a prominent town organised around the abbey founded by William the Conqueror in about 1071.
- 2.6 The landscape evident in the vicinity of the site in the present day is largely a fossilised late medieval landscape, comprising small irregular fields, carved (assarted) from the surrounding woodland, much of which has been left as shaws. These were often managed for woodland products, through coppicing and the exploitation of timber, ultimately supplying the huge resource demands of the local iron working, and ship building industries. Scattered across this landscape are a number of large farms, often comprising buildings of early post-medieval date, but occupying sites several centuries older. Smaller building plots along the roadsides may represent illegal encroachments (squatter settlements) onto former wasteland, later recognised and formalised by the manorial authorities usually for financial and/or political gain. Some modification of the field pattern, including the grubbing out of shaws, took place during 19th century when advances in technology allowed arable farming to be carried out on a much greater scale than before.
- 2.7 A number of major post-medieval industries were present within the Weald. Timber was a principle resource and thus management of the Wealden forests continued from the medieval into the post-medieval period supplying both local demands, and the prodigious requirements of the coastal ship building industry. The iron industry was ever present, albeit subject to a number of fluctuations in fortunes during the post-medieval period. Advances in technology, including the blast furnace, and the use of water power have resulted in a large number of sites, both furnaces and forges, dotted across the High Weald (see Cleere & Crossley, 1985), with a furnace recorded at Beach in 1724. Another industry which began to flourish during the post-medieval period was that of brick making, which utilised local supplies of Wealden clay.
- 2.8 Other industries around the site include the Mountfield gypsum mines that lay roughly 1km north-east and the quarries of Brickhouse Shaw approximately 1km to the south-east.

## 2.9 *The Archive*

- 2.9.1 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 additional archive generated in the event of further fieldwork being required. The receiving museum for this site is Lewes Museum and the complete archive will be offered to them in due course once the project is complete.

### **3.0 SURVEY METHODOLOGY**

#### *3.1 Geophysical survey*

3.1.1 A fluxgate gradiometer (magnetometry) survey was undertaken across a single parcel of land, as depicted on Figure 2 (NGR 570863 118828). The work was undertaken on Tuesday 2<sup>nd</sup> February 2017 during cold clear 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; 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.



## 4.0 GEOPHYSICAL SURVEY RESULTS

### 4.1 *Description of site*

4.1.1 The survey area was comprised of approximately 1 hectare of rough pasture between Darvel Down and the B 2096. The site was bounded to the west by farmland and on all other sides by residential properties and gardens.

### 4.2 *Survey limitations*

4.2.1 Physical obstructions encountered on site included tall vegetation along southern site boundary, deep, water filled vehicle ruts and areas of standing water close to the site entrance in the north. The areas where these features were encountered were omitted on health and safety grounds (Figures 2 and 7). 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. The site lies over sandstone, siltstone and mudstone geology. An average response to magnetometer is possible, although results may be 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.

#### 4.3.2 *Positive Magnetic Anomalies*

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

#### 4.3.3 *Negative Magnetic anomalies*

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

#### 4.3.4 *Magnetic Disturbance*

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

#### 4.3.5 *Magnetic Debris*

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

#### 4.3.6 *Dipolar Anomalies*

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.

#### 4.3.7 *Bipolar Anomalies*

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.

#### 4.3.8 Thermoremanence

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* (Figures 3-6)

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 (Figure 5). The most obvious possible archaeological anomalies are the linear moderate positive anomalies. These are possibly due to the presence of cut features such as ditches (coloured light green).

4.4.3 The strong positive anomalies (dark green; Figure 5) may also relate to buried archaeology although a more modern origin for these results is equally plausible.

4.4.4 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; Figure 5).

4.4.5 Magnetic disturbance relating to the nearby services, boundaries, field gates and feeding troughs may mask underlying features (coloured brown; Figure 5).

4.4.6 A single weak dipolar anomaly is visible in the results which is probably the response given by a near surface ferrous object (pink; Figure 5).

## **5.0 CONCLUSIONS**

### 5.1 *Discussion*

- 5.1.1 Evidence for possible archaeological features was represented by strong and moderate positive anomalies (coloured green on Figure 5). Though they could have an archaeological origin, they may equally be the result of the natural geology. The features are not represented on either modern or historic cartography.
- 5.1.2 In conclusion a number of possible archaeological features were encountered across the site. However, these features may also relate to variations in the natural geology.

## **Bibliography**

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Accessed 15<sup>th</sup> February 2017

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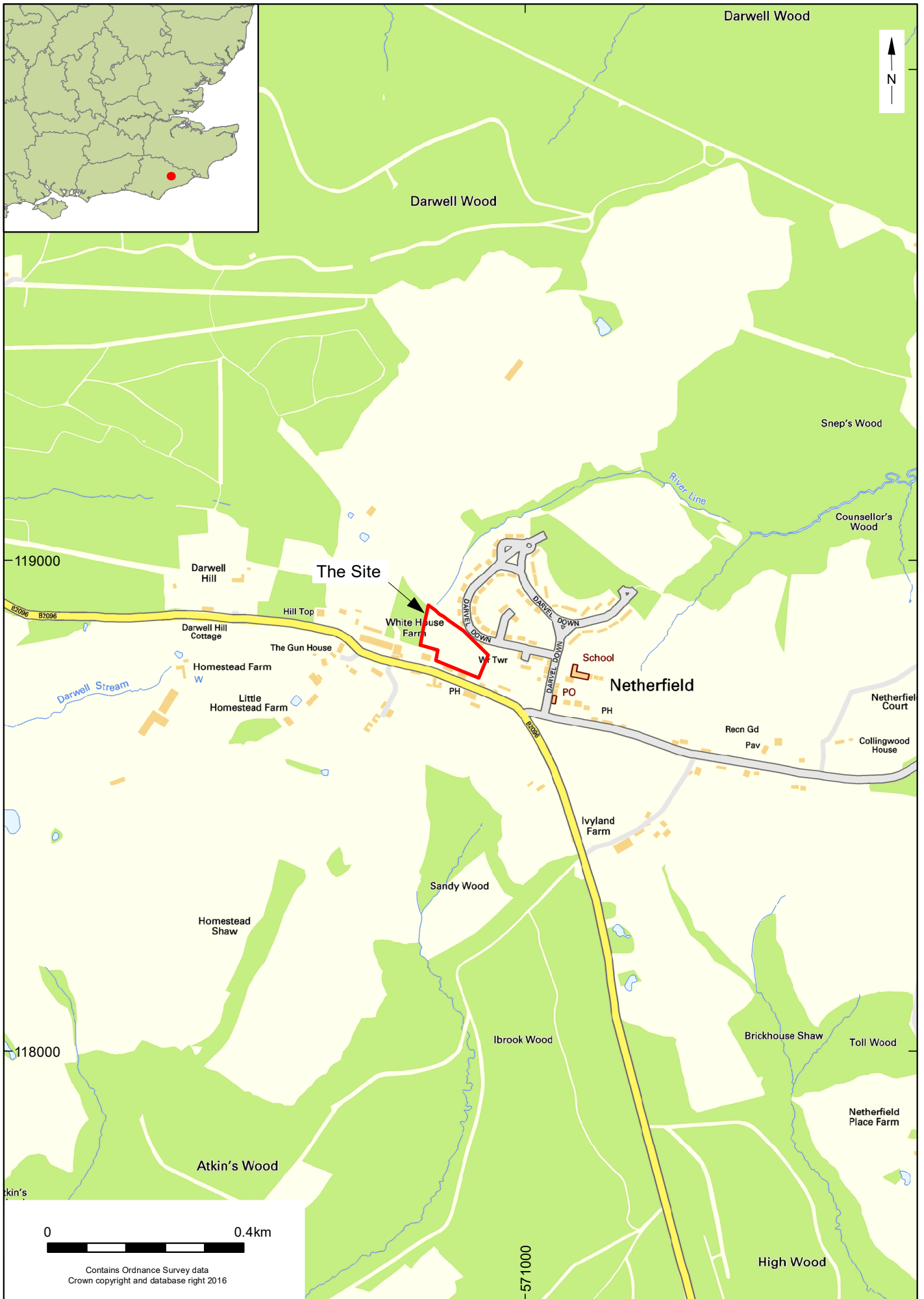
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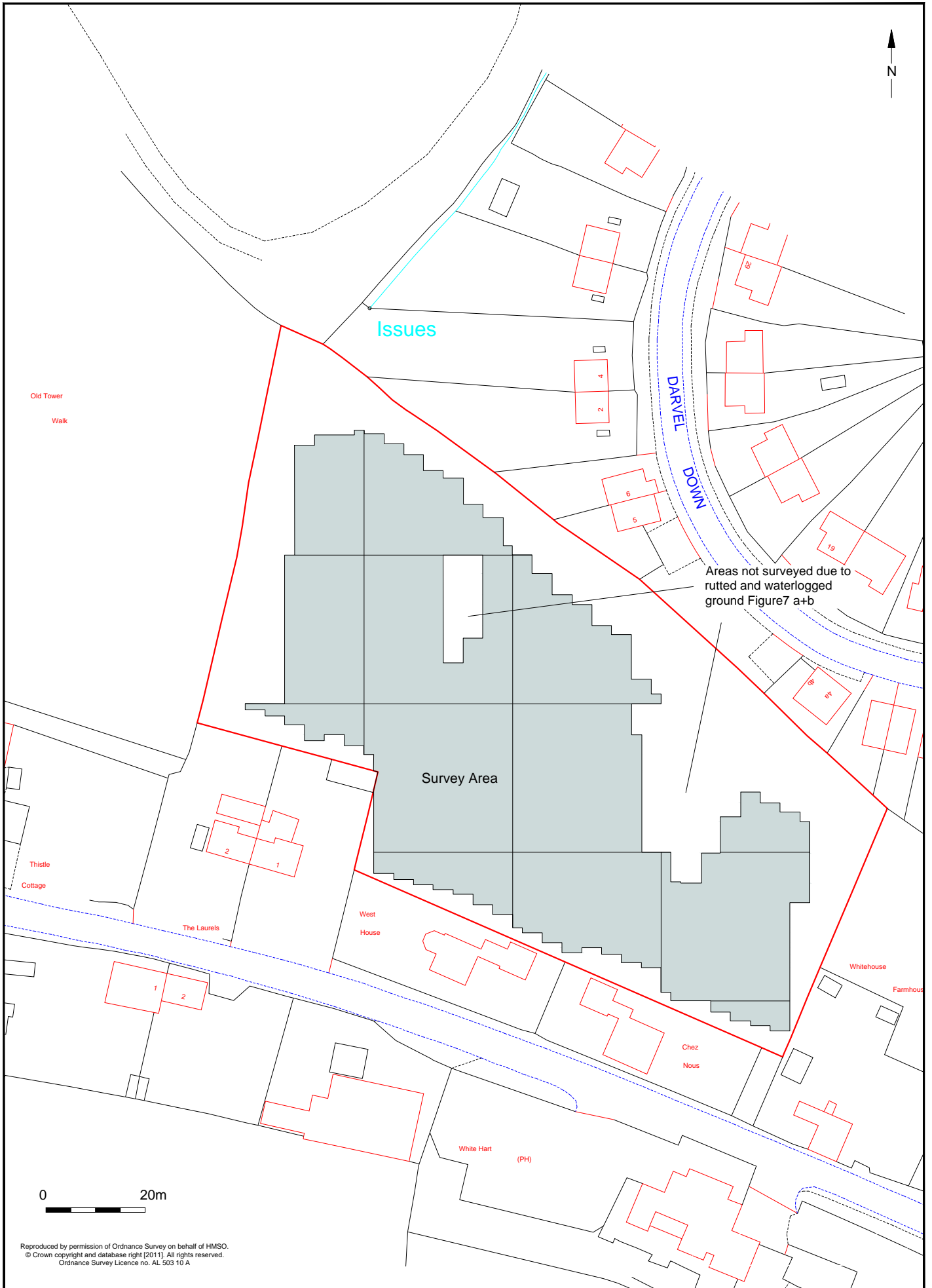
ESCC 2015, *Sussex Archaeological Standards*

## **Acknowledgements**

Archaeology South-East would like to thank Asprey Homes for commissioning the survey.



© Archaeology South-East		Land at Darvel Down, Netherfield, East Sussex	Fig. 1
Project Ref: 170083	January 2017	Site location	
Report Ref: 2017068	Drawn by: AR		



© Archaeology South-East		Darvel Down, Netherfield, East Sussex	Fig. 2
Project Ref: 170083	February 2017	Location of geophysics survey area	
Report Ref: 2017068	Drawn by: JC		

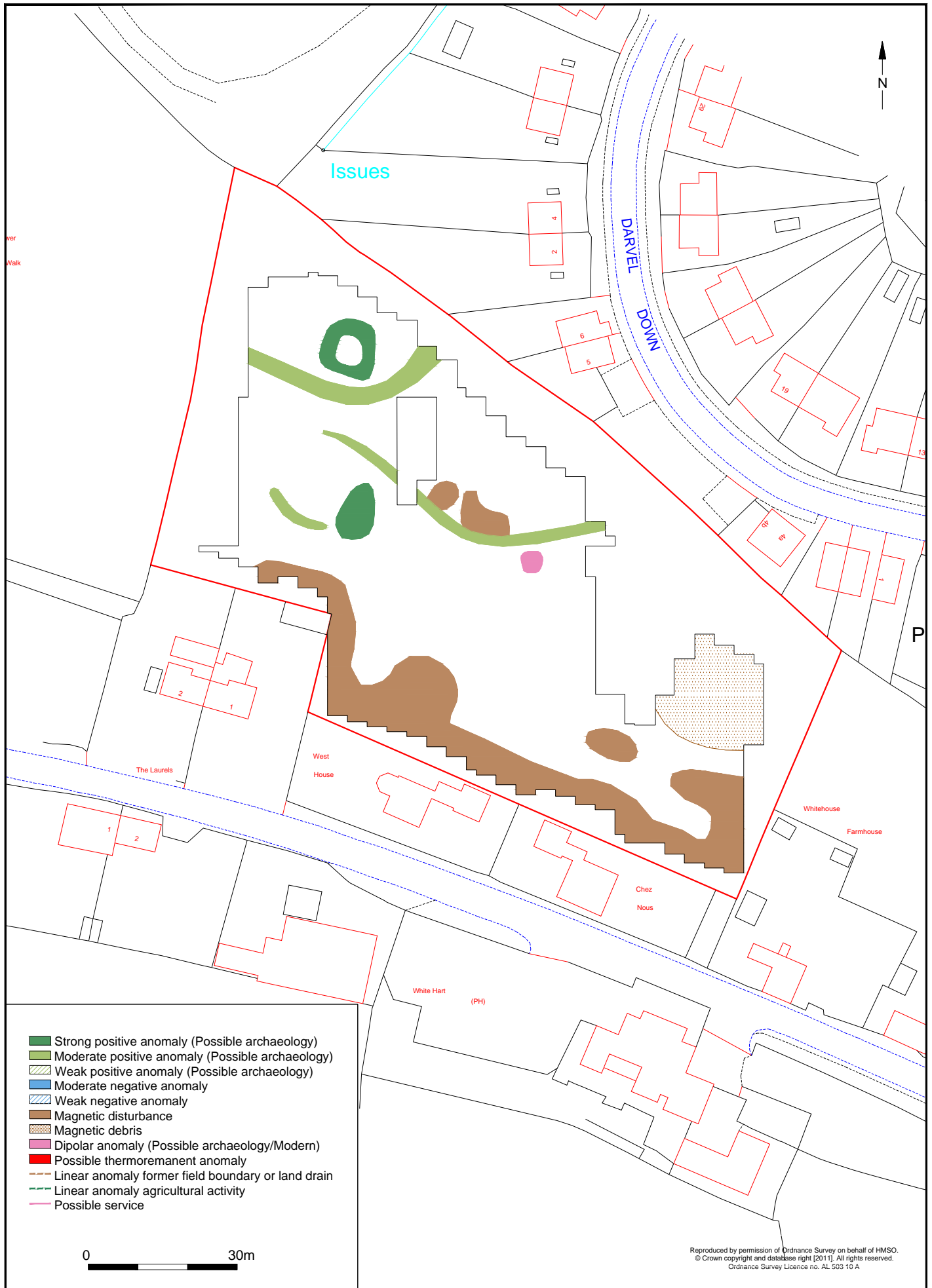


© Archaeology South-East		Darvel Down, Netherfield, East Sussex		Fig. 3
Project Ref: 170083	February 2017	Raw data		
Report Ref: 2017068	Drawn by: JC			



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Project Ref: 170083	February 2017	Processed data	
Report Ref: 2017068	Drawn by: JC		





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Project Ref: 170083	February 2017	Interpretation	
Report Ref: 2017068	Drawn by: JC		



Fig. 6a Oblique Google Earth imagery



Fig. 6b Oblique Google Earth 3D imagery with geophysical survey data overlain

© <b>Archaeology South-East</b>		Darvel Down, Netherfield, East Sussex	Fig. 6
Project Ref: 170083	February 2017	Google Earth images	
Report Ref: 2017068	Drawn by: JC		



Fig. 7a



Fig. 7b



Fig. 7c



Fig. 7d



Fig. 7e



Fig. 7f

## HER Summary

<b>HER enquiry number</b>	N/A				
<b>Site code</b>	DAR 17				
<b>Project code</b>	170083				
<b>Planning reference</b>					
<b>Site address</b>	Land at Darvel Down, Netherfield				
<b>District/Borough</b>	East Sussex				
<b>NGR (12 figures)</b>	570863 118828				
<b>Geology</b>	Ashdown Formation-sandstone,siltstone and mudstoen				
<b>Fieldwork type</b>				<b>Survey</b>	
<b>Date of fieldwork</b>	2 <sup>nd</sup> February 2017				
<b>Sponsor/client</b>	Asprey Homes				
<b>Project manager</b>	Paul Mason				
<b>Project supervisor</b>	John Cook				
<b>Period summary</b>					
<b>Project summary</b>	<p><i>Archaeology South-East was commissioned by Asprey Homes to conduct a magnetometer survey on a site totalling approximately 1 hectare of land at Darvel Down, Netherfield, East Sussex. The work was undertaken on the 2<sup>nd</sup> of February 2017.</i></p> <p><i>Evidence for possible archaeological features was represented by strong and moderate positive anomalies. Though they could have an archaeological origin, they may equally be the result of the natural geology.</i></p>				
<b>Museum/Accession No.</b>	N/A				

## OASIS ID: archaeol6-276381

### Project details

Project name	Detailed Magnetometer survey on land at Darvel Down, Netherfield, East Sussex
Short description of the project	Archaeology South-East was commissioned by Asprey Homes to conduct a magnetometer survey on a site totalling approximately 1 hectare of land at Darvel Down, Netherfield, East Sussex. The work was undertaken on the 2nd of February 2017. Evidence for possible archaeological features was represented by strong and moderate positive anomalies (coloured green on Figure 5). Though they could have an archaeological origin, they may equally be the result of the natural geology.
Project dates	Start: 02-02-2017 End: 02-02-2017
Previous/future work	No / Not known
Any associated project reference codes	DAR 17 - Sitecode
Any associated project reference codes	170083 - Contracting Unit No.
Type of project	Recording project
Site status	None
Current Land use	Grassland Heathland 2 - Undisturbed Grassland
Monument type	NONE None
Significant Finds	NONE None
Investigation type	"Geophysical Survey"
Solid geology (other)	shdown Formation sandstone, siltstone and mudstone
Drift geology	Unknown
Techniques	Magnetometry
Project location	
Country	England
Site location	EAST SUSSEX ROTHER BATTLE Land south of Darvel Down, Netherfield.
Postcode	TN33 9QE
Study area	1 Hectares
Site coordinates	TQ 570863 118828 50.884466300972 0.233456074163 50 53 04 N 000 14 00 E Point
Project creators	
Name of Organisation	Archaeology South East
Project brief originator	Asprey Homes
Project design originator	ASE

Project director/manager	Paul Mason
Project supervisor	John Cook
Type of sponsor/funding body	Developer
Project archives	
Physical Archive Exists?	No
Physical Archive recipient	n/a
Digital Archive recipient	local museum
Digital Media available	"Geophysics"
Paper Archive recipient	local museum
Paper Media available	"Report"
Project bibliography	
1	
Publication type	Grey literature (unpublished document/manuscript)
Title	Detailed Magnetometer Survey Land at Darvel Down, Netherfield, East Sussex
Author(s)/Editor(s)	Russel,C.
Other bibliographic details	Report Number:2017068
Date	2017
Issuer or publisher	ASE
Place of issue or publication	Portslade
Entered by	Chris Russel. (C.Russel@ucl.ac.uk)
Entered on	15 February 2017

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