

**Detailed Magnetometer Survey  
Land at Old Loom Mill,  
Hailsham, East Sussex**

**NGR: 558832 107151  
(TQ 58832 07151)**

**Site Code: OLM16  
OASIS ID: archaeol6-270832**

**ASE Project No: 160934  
ASE Report No: 2016483**

**By John Cook**

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<b>Prepared by:</b>	John Cook	Senior Geophysicist	<i>J. Cook</i>
<b>Reviewed and approved by:</b>	Jim Stevenson	Project Manager	
<b>Date of Issue:</b>	December 2016		
<b>Revision:</b>			

**Archaeology South-East  
Units 1 & 2  
2 Chapel Place  
Portslade  
East Sussex  
BN41 1DR**

**Tel: 01273 426830  
Fax: 01273 420866  
Email: [fau@ucl.ac.uk](mailto:fau@ucl.ac.uk)  
[www.archaeologyse.co.uk](http://www.archaeologyse.co.uk)**

## **Abstract**

*Archaeology South-East was commissioned by Tubwell Design to conduct a magnetometer survey on a site totalling approximately 4.3 hectares of Land at Old Loom Mill, Hailsham, East Sussex. The work was undertaken on the 30th November and 1st December 2016.*

*Evidence for possible archaeological features was represented by 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. As with previous geophysical surveys undertaken nearby (ASE 2009) archaeological features may only appear as very subtle variations within the data where the fills are geologically similar to the surrounding subsoil. In addition, the site is noted to be on alluvium. Where significant overburden exists any possible archaeology is likely to be masked.*

## **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 Site background**

- 1.1.1 Archaeology South-East (ASE) was commissioned by Tubwell Design on behalf of their client Mr P Hausman to undertake a magnetometry survey on the site adjacent to Old Loom Mill, Hailsham, East Sussex, hereafter 'the site' (centred on NGR TQ 58832 07151; Fig. 1).
- 1.1.2 Proposals for residential development of the site are being considered. East Sussex County Council's archaeological advisor has requested geophysical survey of the site, followed by an appropriate level of trial trenching, to support the application.

### **1.2 Geology and topography**

- 1.2.1 According to the British Geological Survey (BGS 2016a) 1:50,000 scale geological mapping the bedrock geology of the site comprises Weald Clay Formation - mudstone. Superficial deposits are recorded as alluvium.
- 1.2.2 The survey area was approximately 4.3 hectares of agricultural land and paddocks extending south from the site of the Old Loom Mill. It is bounded by the B2104 to the east and Worth Way (former railway line) to the west. The centre of Hailsham lies some 2.25km to the north (Figure 2).

### **1.3 Aims of geophysical investigation**

- 1.3.1 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 allow informed decisions to be made as to the need, nature and scope of any further intrusive investigations and/or mitigation measures that may be required.
- 1.3.2 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

### **1.4 Scope of report**

- 1.4.1 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 Naomi Humphreys. The project was managed by Paul Mason (fieldwork) and Jim Stevenson (post-fieldwork).

## 2.0 ARCHAEOLOGICAL BACKGROUND

### 2.1 Desk-Based Assessment

2.1.1 The following information is paraphrased from the Written Scheme of Investigation (WSI) (ASE 2016).

### 2.2 Prehistoric

2.2.1 A search of the East Sussex Historic Environment Record returned the following sites within a 500m radius of the site (Figure 1):

HER No.	Description	Period
MES32637	Farmstead: Coppards	18 <sup>th</sup> century
MES32638	Mulbrooks Farm	19 <sup>th</sup> century
MES32639	Cuckoo Barn Outfarm	19 <sup>th</sup> century
MES32640	Farmstead: Peel House	19 <sup>th</sup> century
MES33244	Cast Iron Milepost	18 <sup>th</sup> century
MES33523	Former Polegate to Eridge Railway (Cuckoo Line)	19 <sup>th</sup> -20 <sup>th</sup> century

2.2.2 The site itself occupies fields surrounding the 19<sup>th</sup> century buildings of Mulbrook Farm (MES32638).

2.2.3 Downash medieval farmstead, a Scheduled Monument, lies some 700m north-east of the site.

### 2.3 The Archive

2.3.1 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. 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 558832 107151). The work was undertaken on Wednesday 30<sup>th</sup> November and Thursday 1<sup>st</sup> December 2016 during dry, clear and cold 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 approximately 4.3 hectares and extended south-west from Michelham Priory Road. It presently consists of an open field, bounded to the south and east by playing fields, to the west by the grounds of the timber-framed house at Osbornes, and to the north by a domestic garden.

### **4.2 Survey limitations**

4.2.1 Physical obstructions encountered on site included nettles, hidden dips, wire fences and electric fences (Figure 2). 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. Two small areas in the north of the site (Figure 2) were omitted from survey due to physical obstructions and nearby magnetic objects (Figure 7 a-d). The site lies over 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 and discrete moderate positive anomalies and likely to be due to cut features such as pits and ditches (coloured light green).

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 A number of linear anomalies run across the site and are probably the result of field drains (light brown lines).

4.4.5 A number of services are noted in the easternmost enclosure of the site. At least one of these corresponds to an inspection cover noted on the ground.

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

## **5.0 CONCLUSIONS**

### **5.1 Discussion**

- 5.1.1 Evidence for possible archaeological features was represented by 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. As with previous geophysical surveys undertaken nearby (ASE 2009) archaeological features may only appear as very subtle variations within the data where the fills are geologically similar to the surrounding subsoil. In addition, the site is noted to be on alluvium. Where significant overburden exists any possible archaeology is likely to be masked.
- 5.1.2 Linear anomalies or trends in the data indicate a pattern of field drains and services.
- 5.1.3 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 8<sup>th</sup> December 2016

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## **Acknowledgements**

Archaeology South-East would like to thank Tubwell Design for commissioning the survey and Mr P Hausman for allowing access.

## HER Summary

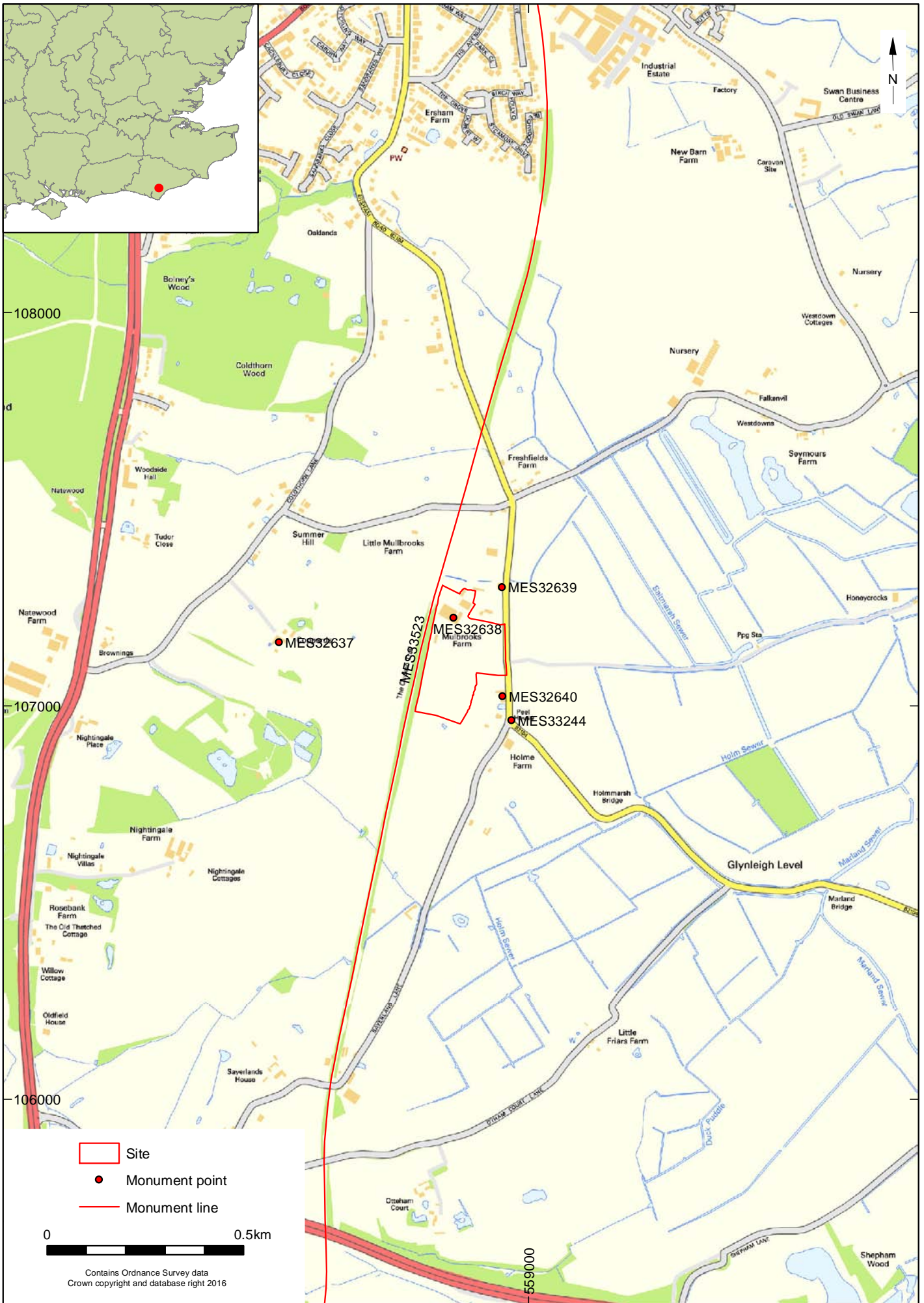
<b>HER enquiry number</b>	N/A				
<b>Site code</b>	OLM16				
<b>Project code</b>	160934				
<b>Planning reference</b>					
<b>Site address</b>	Land at Old Loom Mill, Hailsham				
<b>District/Borough</b>	East Sussex				
<b>NGR (12 figures)</b>	558832 107151				
<b>Geology</b>	Weald Clay Formation of mudstone and alluvium				
<b>Fieldwork type</b>				<b>Survey</b>	
<b>Date of fieldwork</b>	30 <sup>th</sup> November and 1 <sup>st</sup> December 2016				
<b>Sponsor/client</b>	Tubwell Design				
<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 Tubwell Design to conduct a magnetometer survey on a site totalling approximately 4.3 hectares of Land at Old Loom Mill, Hailsham, East Sussex. The work was undertaken on the 30th November and 1st December 2016. Evidence for possible archaeological features was represented by 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. As with previous geophysical surveys undertaken nearby (ASE 2009) archaeological features may only appear as very subtle variations within the data where the fills are geologically similar to the surrounding subsoil. In addition, the site is noted to be on alluvium. Where significant overburden exists any possible archaeology is likely to be masked.</i></p>				
<b>Museum/Accession No.</b>	N/A				

**OASIS ID: archaeol6-270832**

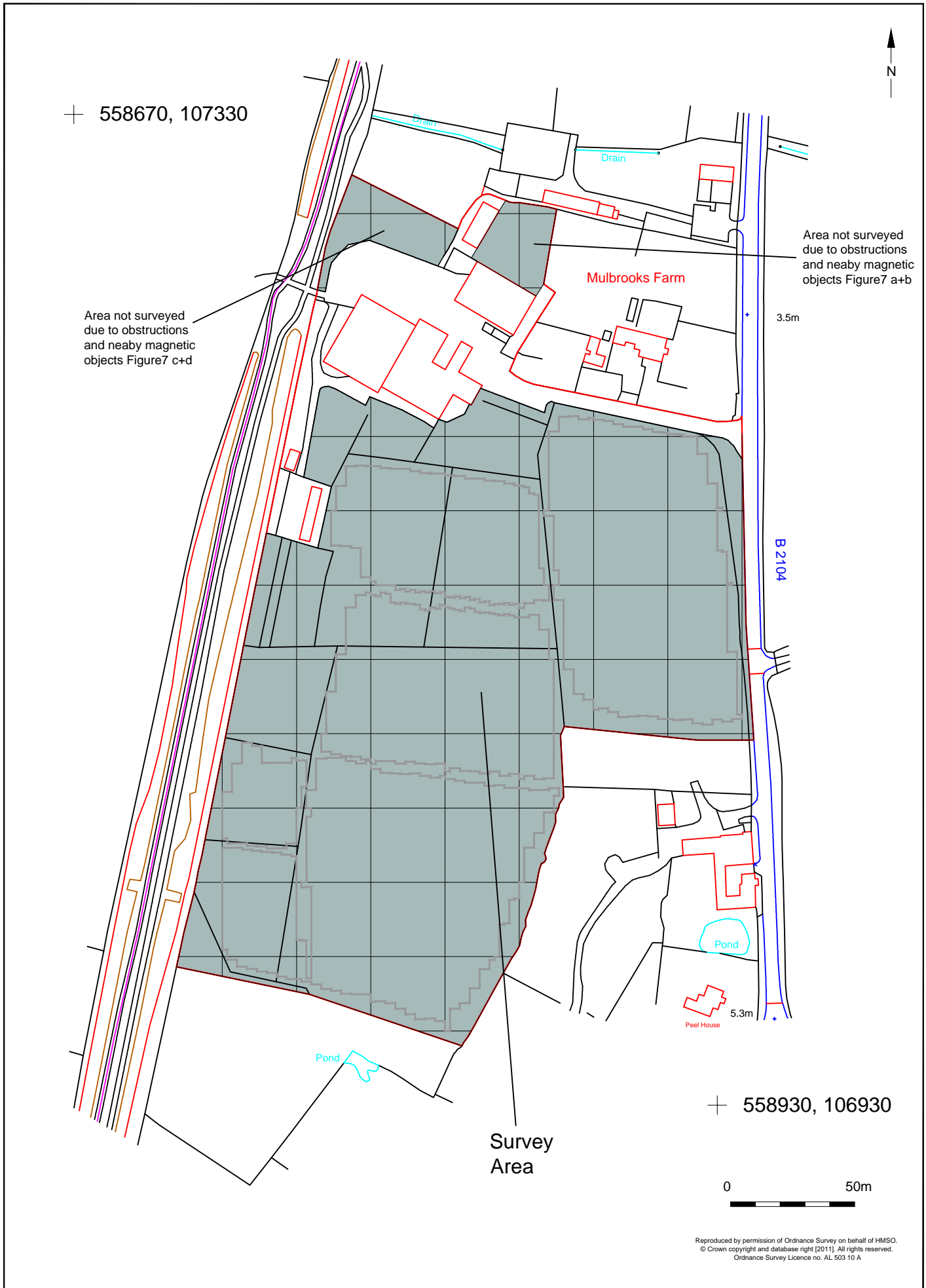
Project details

Project name	Detailed Magnetometer Survey Land at Old Loom Mill, Hailsham, East Sussex
Short description of the project	Archaeology South-East was commissioned by Tubwell Design to conduct a magnetometer survey on a site totalling approximately 4.3 hectares of Land at Old Loom Mill, Hailsham, East Sussex. The work was undertaken on the 30th November and 1st December 2016. Evidence for possible archaeological features was represented by 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. As with previous geophysical surveys undertaken nearby (ASE 2009) archaeological features may only appear as very subtle variations within the data where the fills are geologically similar to the surrounding subsoil. In addition, the site is noted to be on alluvium. Where significant overburden exists any possible archaeology is likely to be masked.
Project dates	Start: 30-11-2016 End: 01-12-2016
Previous/future work	Not known / Not known
Any associated project reference codes	160934 - Contracting Unit No.
Any associated project reference codes	OLM16 - Sitecode
Type of project	Field evaluation
Site status	None
Current Land use	Grassland Heathland 3 - Disturbed
Monument type	NONE None
Monument type	NONE None
Methods & techniques	"Geophysical Survey"
Development type	Housing estate
Solid geology	WEALD CLAY
Drift geology	ALLUVIUM
Techniques	Magnetometry
Project location	
Country	England
Site location	EAST SUSSEX WEALDEN HAILSHAM Land at Old Loom Mill, Hailsham, East Sussex
Postcode	BN27 2RH
Study area	4.3 Hectares
Site coordinates	TQ 58832 07151 50.84146543194 0.256201814604 50 50 29 N 000 15 22 E Point
Project creators	
Name of Organisation	Archaeology South-East

Project brief originator	East Sussex County Council
Project design originator	Archaeology South-East
Project director/manager	Paul Mason/Jim Stevenson
Project supervisor	John Cook
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Tubwell Design
Project archives	
Physical Archive Exists?	No
Digital Archive recipient	East Sussex County Council
Digital Contents	"Survey"
Digital Media available	"Geophysics","Images raster / digital photography","Survey"
Paper Archive Exists?	No
Project bibliography	
1	
Publication type	Grey literature (unpublished document/manuscript)
Title	Detailed Magnetometer Survey Land at Old Loom Mill, Hailsham, East Sussex
Author(s)/Editor(s)	Cook, J.
Other bibliographic details	Report number: 2016483
Date	2016
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Entered on	9 December 2016



© Archaeology South-East		The Old Loom Mill, Hailsham	Fig. 1
Project Ref: 160934	Nov 2016	Site location and HER data (500m radius)	
Report Ref:	Drawn by: JLR		



© Archaeology South-East		The Old Loom Mill, Hailsham, East Sussex	Fig. 2
Project Ref: 160934	December 2016	Site plan	
Report Ref: 2016483	Drawn by: JC		





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Project Ref: 160934	December 2016	Raw data	
Report Ref: 2016483	Drawn by: JC		



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Project Ref: 160934	December 2016	Processed data	
Report Ref: 2016483	Drawn by: JC		



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Project Ref: 160934	December 2016	Interpretation		
Report Ref: 2016483	Drawn by: JC			



Fig. 6a Oblique Google Earth imagery



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

© Archaeology South-East		The Old Loom Mill, Hailsham, East Sussex	Fig. 6
Project Ref: 160934	December 2016	Google Earth images	
Report Ref: 2016483	Drawn by: JC		



Fig. 7a



Fig. 7b



Fig. 7c



Fig. 7d

**Sussex Office**

Units 1 & 2  
2 Chapel Place  
Portslade  
East Sussex BN41 1DR  
tel: +44(0)1273 426830  
email: [fau@ucl.ac.uk](mailto:fau@ucl.ac.uk)  
[www.archaeologyse.co.uk](http://www.archaeologyse.co.uk)

**Essex Office**

27 Eastways  
Witham  
Essex  
CM8 3YQ  
tel: +44(0)1376 331470  
email: [fau@ucl.ac.uk](mailto:fau@ucl.ac.uk)  
[www.archaeologyse.co.uk](http://www.archaeologyse.co.uk)

**London Office**

Centre for Applied Archaeology  
UCL Institute of Archaeology  
31-34 Gordon Square  
London WC1H 0PY  
tel: +44(0)20 7679 4778  
email: [fau@ucl.ac.uk](mailto:fau@ucl.ac.uk)  
[www.ucl.ac.uk/caa](http://www.ucl.ac.uk/caa)

