

**Detailed Magnetometer Survey
Land at Broyle Gate Farm, Lewes Road,
Ringmer, East Sussex**

**NGR: 545675 112687
(TQ 45675 12687)**

ASE Project No: 7314

OASIS ID: archaeol6-203351

ASE Report No. 2015004

By Catherine Douglas

February 2015

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Abstract

Archaeology South East was commissioned by Croudace Homes Ltd to carry out a detailed fluxgate gradiometer survey on land at Broyle Gate Farm, Lewes Road, Ringmer, East Sussex. The survey covered approximately 8 hectares and took place on the 2nd- 5th February 2015. The survey area consisted of scrub and grassland bounded by Lewes Road to the north, Chamberlain Road to the east, Ringmer Community College to the west and open fields to the south.

Evidence of potential archaeological features was detected throughout the magnetic survey. The most obvious possible archaeological features were represented by a series of positive anomalies representative of discrete features such as pits and ditches, and a rectilinear positive anomaly, possibly representative of a small building or structure. A possible northwest – southeast aligned linear feature does not appear on available historic mapping of the site and may represent an earlier boundary ditch. However, some of these anomalies may also relate to in filled natural features. Faint evidence for later agricultural activity in the form of plough marks was also identified.

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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HER Summary sheet

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1.0 INTRODUCTION

1.1 Site background

1.1.1 Archaeology South-East was commissioned by Croudace Homes Ltd to conduct a Magnetometer survey over land at Broyle Gate Farm, Ringmer, East Sussex, hitherto referred to as 'the survey area' (NGR 545675 112687; Figure 1).

1.2 Geology and topography

1.2.1 According to the British Geological Survey 1:50,000 scale geological mapping available online, the natural geology of the rectangular field immediately adjacent to Broyle Gate Farm House consists of superficial 'Head' deposits, formed of Clay, Silt, Sand and Gravel, overlaying bedrock Gault Formation - Mudstone. The natural geology of the sub-rectangular field adjacent to Chamberlaines Lane consists of bedrock Gault Formation – Mudstone. The northern portion of the field is overlain with superficial 'Head' deposits, formed of Clay, Silt, Sand and Gravel (BGS 2015).

1.3 Aims of geophysical investigation

1.3.1 The purpose of the geophysical survey was to detect any buried archaeological anomalies that might provide a measurable magnetic response.

1.4 Scope of report

1.4.1 The scope of this report is to present the findings of the survey. The project was conducted by Catherine Douglas and Lauren Gibson and managed by Paul Mason (fieldwork) and by Jim Stevenson (post fieldwork).

2.0 ARCHAEOLOGICAL BACKGROUND

2.1 Introduction

2.1.1 The following information is paraphrased from the Desk-Based Assessment (ASE 2014). For a more detailed historical background please refer to this document.

2.2 Prehistoric

2.2.1 Little is currently known of prehistoric occupation in and around Ringmer. There are no records in the HER that relate to sites or finds of prehistoric date in the vicinity of the site.

2.3 Roman

2.3.1 No significant evidence for Romano-British occupation has been found in Ringmer but a Roman road connecting Arlington to Barcombe lies within 50-100m north of the site. A large concentration of Roman material has been recovered by metal detectorists, c.500m south west of the site at Gote Farm. In addition, in 1894 Roman tile was recovered from one of two medieval pottery kilns excavated in Potters' Field, Bishops Lane, c. 400m from the site.

2.4 Anglo-Saxon

2.4.1 No Anglo-Saxon sites are known in the vicinity of the site.

2.5 Medieval

2.5.1 Ringmer is notable in the medieval period for its pottery industry; a number of kilns and pottery find spots have been identified in close vicinity of the site. In addition, the former site of a late medieval inn, The Green Man Public House, is located 20m from the site.

2.6 Post-medieval

2.6.1 Kiln sites in the vicinity continued in use until the post-medieval period, the closest lying at Lewes Road, c. 150m from the site.

2.6.2 The 18th-century Ringmer Barracks were located c. 250m to the north of the site.

2.6.3 The site lies partially within the former Broyle Enclosure - the largest of four post-medieval deer-parks in the parish.

3.0 SURVEY METHODOLOGY

3.1 Geophysical survey

3.1.1 A fluxgate gradiometer (magnetometry) survey was undertaken in the area depicted on Figures 1 and 2 (NGR 545675 112687).

3.1.2 The fieldwork was undertaken between Monday 2nd February and Thursday 5th February 2015; the weather was cold and sunny.

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 stores 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 0.125m.

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

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 MEAN TRAVERSE was then applied to survey data. This removes stripe effects within grids and ensures that the survey grid edges match. Figure 4 displays the processed survey data.

3.5 Data presentation

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

4.0 GEOPHYSICAL SURVEY RESULTS (Figures 3 and 4)

4.1 Description of site

4.1.1 The survey area consisted of approximately 8 hectares of scrub and grassland. The site consists of two open fields immediately south of Lewes Road, bounded by Chamberlain Lane to the east and Ringmer Community College to the West, with a hedgerow separating the fields from further fields to the South.

4.1.2 A post and wire fence ran along the west and south side of Field 1. The rest of the field was bounded by trees and undergrowth. A post and wire fence also ran along the north and east perimeter of field 2.

4.1.3 The site is positioned on a relatively flat parcel of land.

4.2 Survey limitations

4.2.1 Survey was limited by dense undergrowth surrounding the pond in the northwest corner of Field 2. The bushes covered a large area between Fields 1 and 2. A bank and ditch ran on an east-west alignment through the southern part of Field 1, with a number of trees and bushes along it. Survey was also limited in a small area of Field 2 due to standing vegetation including stands of scrub which were over waist height. Where ground cover formed a physical barrier or where combined with ground conditions were considered to pose a health and safety risk these areas were omitted from the survey (Figure 2).

4.2.2 In addition to the physical limitations of the survey, 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.

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 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.
- 4.4 Interpretation of fluxgate gradiometer results (Figure 5)**
- 4.4.1 Possible archaeological features were identified across the area in the form of discrete moderate positive anomalies and moderate positive linear anomalies which may represent cut features such as pits and ditches. However these anomalies may also relate to in filled natural features or more modern agricultural activity.
- 4.4.2 A roughly circular shaped moderate positive anomaly in Field 1 may relate to a cut feature such as a gully, and a roughly rectangular shaped positive anomaly may represent the remains of small building or structure. A dipolar anomaly within the centre of the eastern rectilinear anomaly is likely to reflect a discreet ferrous object, such as part of a shed, although the possibility that it reflects a buried kiln or oven cannot be discounted.
- 4.4.3 A number of very straight linear positive anomalies are positioned on a northeast-southwest alignment in Field 1. These are very characteristic of plough marks, therefore are likely to be agricultural in origin.
- 4.4.4 A linear moderate positive anomaly on a northwest-southeast alignment in the centre of Field 2 may represent a cut feature such as a ditch, although it is slightly amorphous in nature, therefore may reflect a geological feature.
- 4.4.5 An amorphous positive anomaly was located on the same northwest-southeast alignment in the northern part of Field 2. It is possible this reflects geological changes, for example the difference between the clay head deposits and the underlying Gault Formation mudstone. An amorphous anomaly in Field 1 is also likely to reflect a change in geology.

4.4.6 A number of bipolar anomalies across the area are likely to indicate discrete ferrous objects, such as modern material in the near surface.

4.4.7 Areas of magnetic disturbance were identified at the edges of each field resulting from the surrounding metal fences, or from ferrous metals within the undergrowth.

5.0 CONCLUSION

5.1 Discussion

5.1.1 Possible archaeological features were represented by discrete and linear positive anomalies and an oval shaped anomaly, representative of cut features. Historic mapping shows the field boundaries have remained much the same from the late 1800's; no other boundaries are shown within the site boundary on available historic mapping. It is possible therefore that the linear anomaly in Field 2 reflects an earlier field boundary. However, it is possible that these anomalies may also relate to in filled natural features or more modern agricultural activity. A number of linear positive anomalies in Field 1 are characteristic of plough scars.

5.1.2 A rectilinear moderate positive anomaly may relate to a small building such as a shed. No evidence of a building is shown on the available historic mapping, so it is possible the anomaly relates to an earlier building. A dipolar anomaly in the centre may relate to a discrete ferrous object, such as part of a shed's fittings, however the possibility of a buried kiln or oven cannot be discounted.

5.1.3 An amorphous moderate positive anomaly in Field 2 may indicate a change in geology, or perhaps a geological feature such as a palaeochannel.

5.1.4 Some of the features identified may be the result of more recent agricultural activity, infilling of natural features or combination of these. For this reason the geophysical anomalies would need to be tested by invasive techniques (e.g. targeted trial trenching) to assess their precise nature.

Bibliography

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<http://digimap.edina.ac.uk/ancientroam/historic>

Acknowledgements

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

SMR Summary Form

Site Code	BRO 15					
Identification Name and Address	Land at Broyle Gate Farm, Lewes Road, Ringmer, East Sussex					
County, District &/or Borough	East Sussex					
OS Grid Refs.	545675 112687					
Geology	Superficial 'Head' deposits, formed of Clay, Silt, Sand and Gravel, overlaying bedrock Gault Formation - Mudstone					
Arch. South-East Project Number	7314					
Type of Fieldwork	Eval.	Excav.	Watching Brief	Standing Structure	Survey	Other
Type of Site	Green Field	Shallow Urban	Deep Urban	Other		
Dates of Fieldwork	Eval.	Excav.	WB.	Survey 2 nd – 5 th February 2015		
Sponsor/Client	Croudace Homes Ltd					
Project Manager	Paul Mason					
Project Supervisor	Catherine Douglas					
Period Summary	Palaeo.	Meso.	Neo.	BA	IA	RB
	AS	MED	PM	Other Unknown at present		
Summary						
<p>Archaeology South East was commissioned by Croudace Homes Ltd to carry out a detailed fluxgate gradiometer survey on land at Broyle Gate Farm, Lewes Road, Ringmer, East Sussex. The survey covered approximately 8 hectares and took place on the 2nd- 5th February 2015. The survey area consisted of scrub and grassland bounded by Lewes Road to the north, Chamberlain Road to the east, Ringmer Community College to the west and open fields to the south.</p> <p>Evidence of potential archaeological features was successfully detected throughout the magnetic survey. The most obvious possible archaeological features were represented by a series of positive anomalies representative of discrete features such as pits and ditches, and a rectilinear positive anomaly, possibly representative of a small building or structure. A possible northwest – southeast aligned linear feature does not appear on available historic mapping of the site and may represent an earlier boundary ditch. However, some of these anomalies may also relate to in filled natural features. Faint evidence for later agricultural activity in the form of plough marks was also identified.</p>						

OASIS form

OASIS ID: archaeol6-203351

Project details

Project name	Detailed Magnetometer Survey at Land at Broyle Gate Farm, Lewes Road, Ringmer, East Sussex
Short description of the project	Archaeology South East was commissioned by Croudace Homes Ltd to carry out a detailed fluxgate gradiometer survey on land at Broyle Gate Farm, Lewes Road, Ringmer, East Sussex. The survey covered approximately 8 hectares and took place on the 2nd- 5th February 2015. The survey area consisted of scrub and grassland bounded by Lewes Road to the north, Chamberlain Road to the east, Ringmer Community College to the west and open fields to the south. Evidence of potential archaeological features was successfully detected throughout the magnetic survey. The most obvious possible archaeological features were represented by a series of positive anomalies representative of discrete features such as pits and ditches, and a rectilinear positive anomaly, possibly representative of a small building or structure. A possible northwest - southeast aligned linear feature does not appear on available historic mapping of the site and may represent an earlier boundary ditch. However, some of these anomalies may also relate to in filled natural features. Faint evidence for later agricultural activity in the form of plough marks was also identified.
Project dates	Start: 02-02-2014 End: 05-02-2014
Previous/future work	No / Not known
Type of project	Research project
Site status	None
Current Land use	Grassland Heathland 2 - Undisturbed Grassland
Monument type	ROMAN ROAD Roman
Significant Finds	KILN SITES Medieval
Significant Finds	KILN SITES Post Medieval
Investigation type	"Geophysical Survey"
Prompt	Research
Solid geology (other)	Gault Formation mudstone
Drift geology	Clay, silt, sand and gravel head deposits

(other)

Techniques Magnetometry

Project location

Country England
Site location EAST SUSSEX LEWES RINGMER Broyle Gate Farm, Ringmer
Postcode BN8 5NA
Study area 8.00 Hectares
Site coordinates TQ 545675 112687 50.8796288029 0.197412347563 50 52 46
 N 000 11 50 E Point

Project creators

Name of Organisation Archaeology South-East
Project brief originator Croudace Homes Ltd
Project design originator East Sussex County Council
Project director/manager Paul Mason
Project supervisor Catherine Douglas
Type of sponsor/funding body Client
Name of sponsor/funding body Croudace Homes Ltd

Project archives

Physical Archive Exists? No
Digital Archive recipient local museum
Digital Contents "Survey"
Digital Media available "Geophysics","Images raster / digital photography","Survey"
Paper Archive recipient Local Museum

Paper Media available "Map", "Plan", "Report", "Survey "

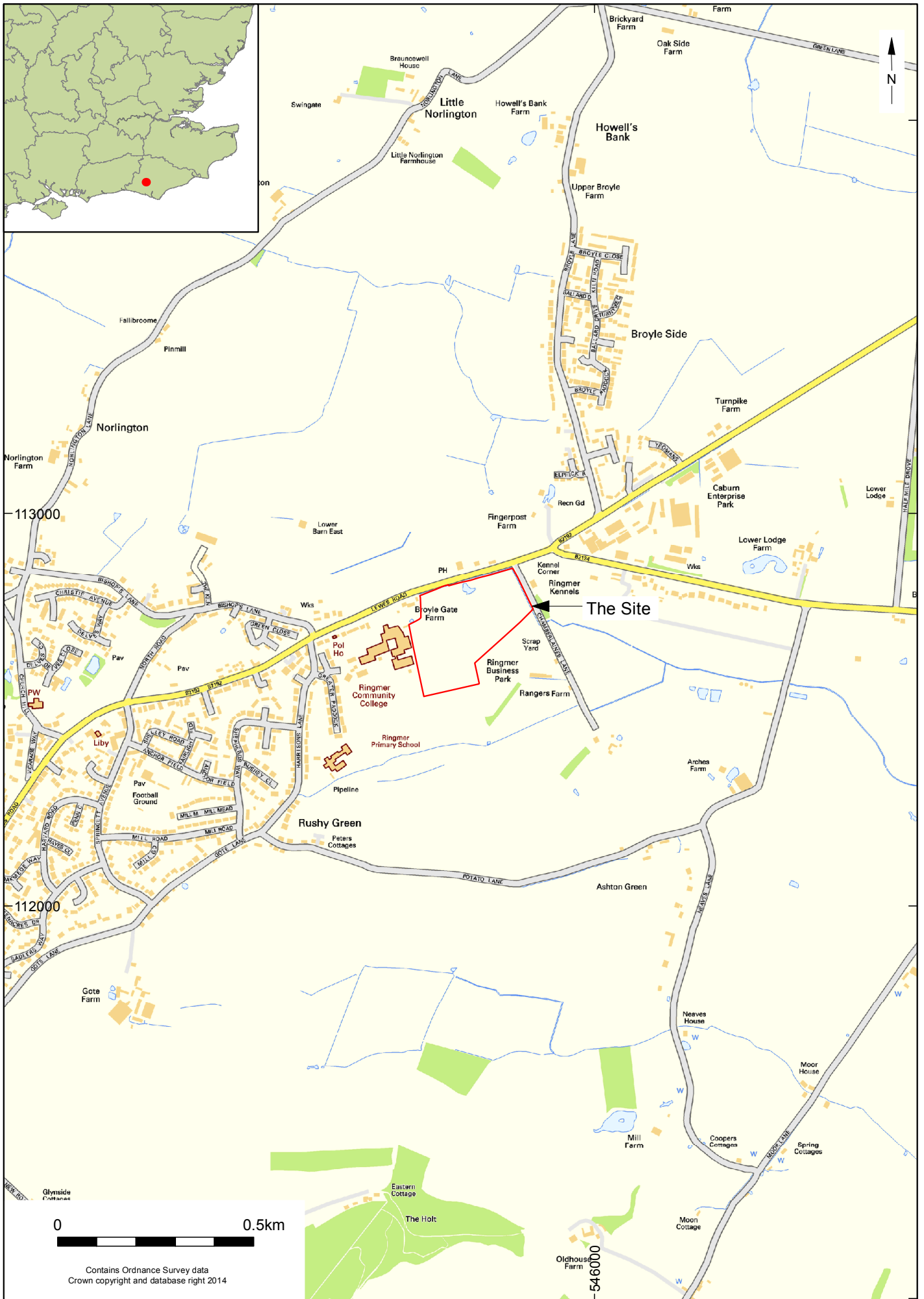
Entered by Catherine Douglas (catherine.douglas@ucl.ac.uk)

Entered on 9 February 2015

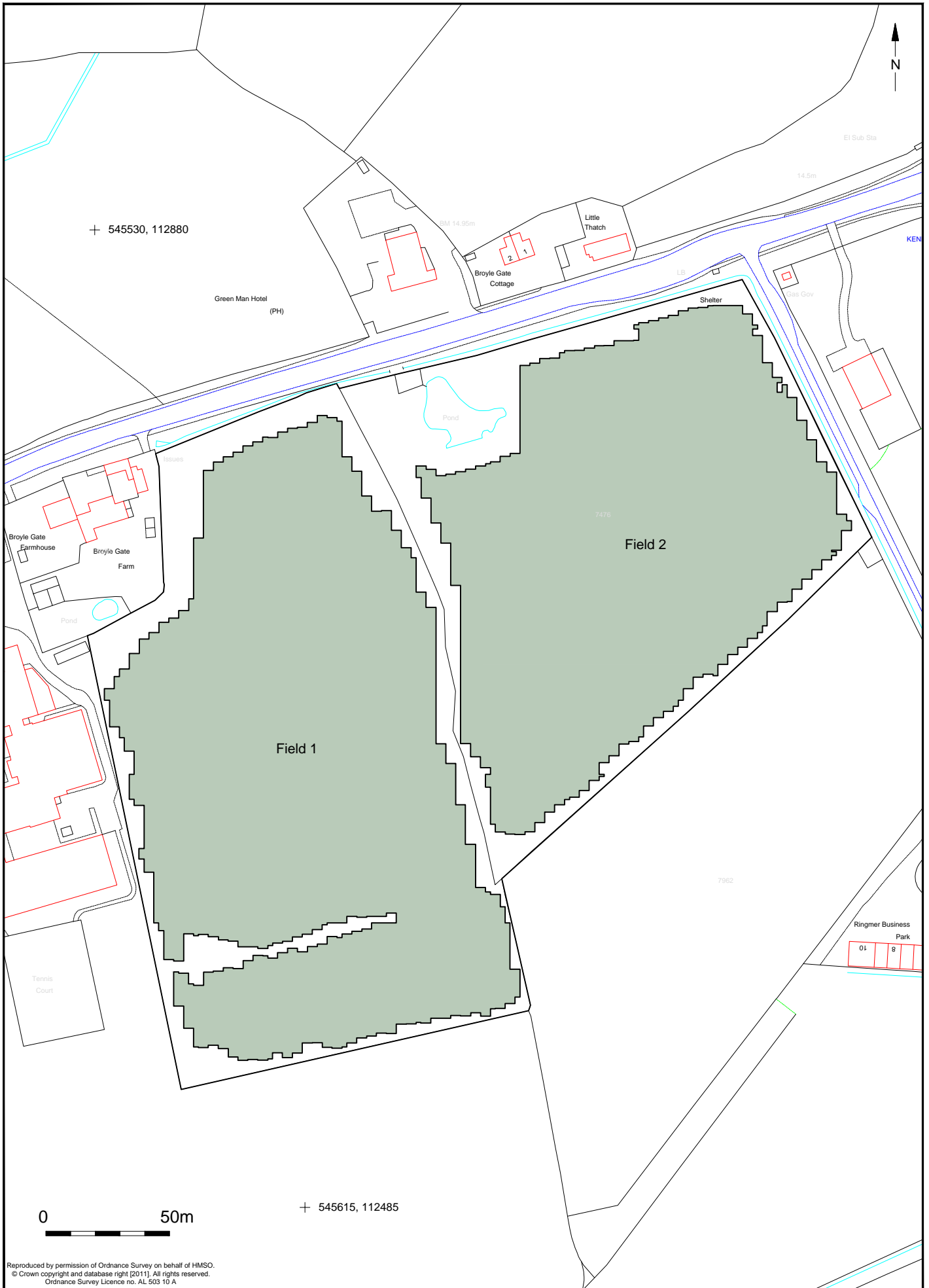
Appendix 1

Included on C.D

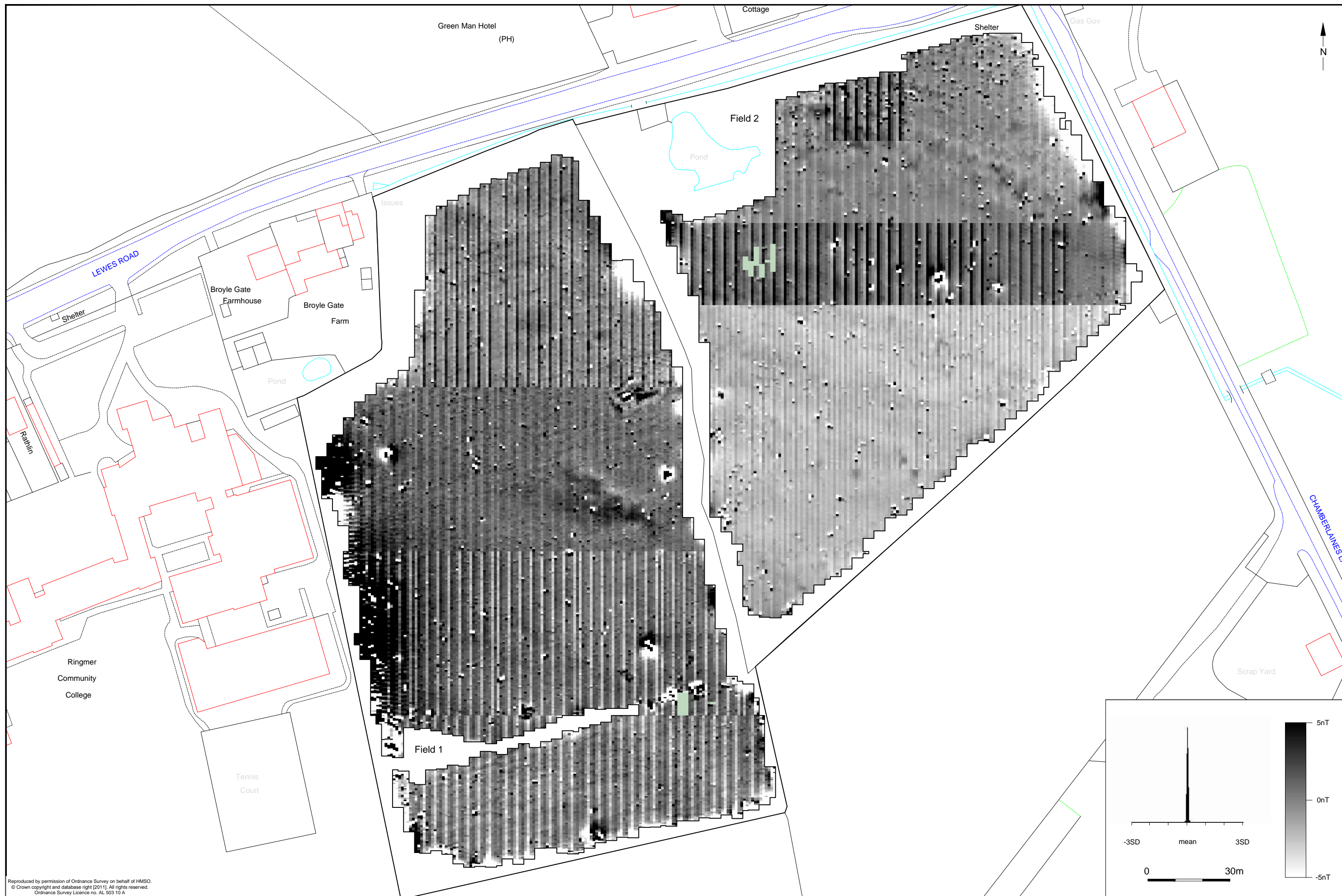
1. Raw Magnetometry Data



© Archaeology South-East		Broyle Gate Farm, Ringmer	Fig. 1
Project Ref: 7314	Feb 2015	Site location	
Report Ref: 2015004	Drawn by: NG		

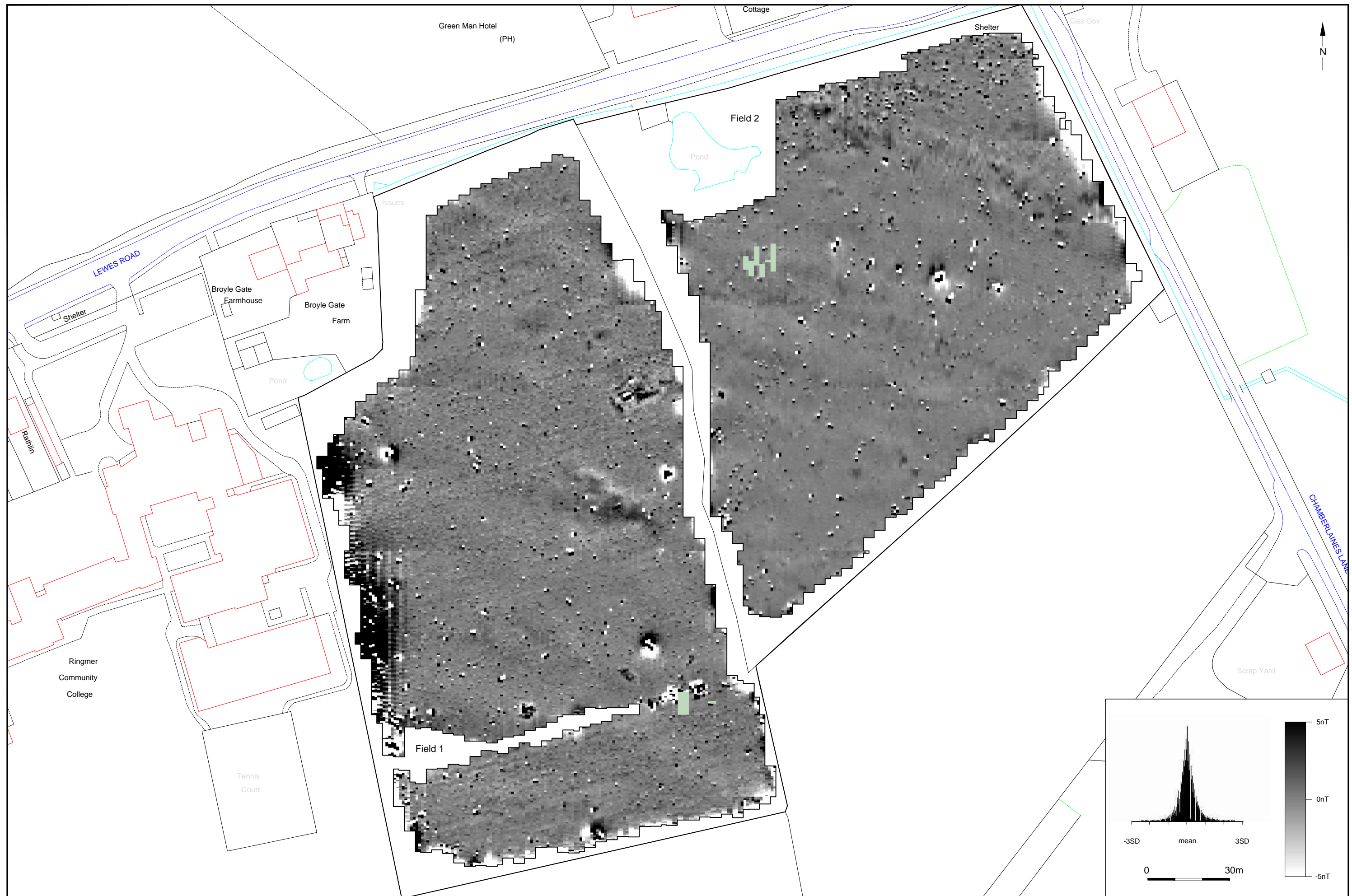


© Archaeology South-East		Broyle Gate Farm, Ringmer	Fig. 2
Project Ref: 7314	Feb 2015	Location of geophysics survey	
Report Ref: 2015004	Drawn by: JLR		



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© Archaeology South-East		Broyle Gate Farm, Ringmer	Fig. 3
Project Ref: 7314	Feb 2015	Raw data	
Report Ref: 2015004	Drawn by: JLR		



© Archaeology South-East		Broyle Gate Farm, Ringmer	Fig. 4
Project Ref: 7314	Feb 2015	Processed data	
Report Ref: 2015004	Drawn by: JLR		



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