

**A DETAILED MAGNETOMETER SURVEY
ON LAND AT MOUNTFIELD FIRST-TIME SEWERAGE SCHEME, EAST SUSSEX**

NGR: 574276 120054

ASE Project No: 6598

OASIS ID: archaeol6-181368

ASE Report No. 2014203

By Chris Russel

June 2014

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Abstract

Archaeology South East was commissioned by The Clancy Group to undertake a detailed fluxgate gradiometer survey of land at Mountfield First Time Sewerage Scheme, East Sussex. The survey took place on the 5th and 6th of June 2014. The survey areas covered approximately 0.8 hectares of arable land and meadow bounded by wire fences and hedgerows. Evidence of potential archaeological remains was identified in both survey areas. Area 1 in the north contained positive anomalies with two possible thermo-remnant features also evident. These are potentially archaeological cut features and areas of burning. Area 2 contained mainly dipolar responses with a limited number of positive anomalies also noted. It is possible that these are areas of iron waste dumping and archaeological cut features.

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1.0 INTRODUCTION

1.1 Site background

1.1.1 Archaeology South-East was commissioned by The Clancy Group to undertake a magnetometry survey on land at the location of the first time sewerage scheme at Mountfield, East Sussex (centred on NGR: 574276 120054; Fig 1) and hereafter referred to as 'the site'

1.2 Geology and topography

1.2.1 The British Geological survey records the site geology as Wadhurst Clay formation Mudstone in the North and Ashdown Formation Sandstone, Siltstone and Mudstone in the South. Superficial deposits of alluvial clay silt and gravel are recorded in the Line River valley also in the South of the site (BGS 2013)

1.2.2 The survey took place on two distinct areas. The northern area (Area 1, the location of the contractor's compound) was under cereal cultivation whilst the southern area (Area 2, the location of the proposed waste water treatment works) consisted of mixed meadow vegetation which appeared not to have been mown for some months (Fig. 2). The location of the associated pipeline route is shown on Figures 1 and 2.

1.3 Aims of the geophysical investigation

1.3.1 The aims of the archaeological investigation were set out in the Written Scheme of Investigation (WSI) (ASE 2014b) as follows:

- To detect any anomalies of an archaeological origin that are within the boundaries of the survey area. The features detected will naturally be limited to those features that will produce a measurable response to the instrumentation used;

1.3.2 The site specific aim of the magnetometry survey is to inform on the location of subsequent evaluation trenching and test pits at the site.

1.4 Scope of report

1.4.1 The scope of this document is to report on the findings of the survey. The geophysics survey was carried out by Chris Russel and Jake Wilson. The project was managed by Neil Griffin (fieldwork) and Jim Stevenson (post fieldwork).

2.0 ARCHAEOLOGICAL BACKGROUND

2.1 The Desk Based Assessment

2.1.1 The full archaeological background for the site is set out in a desk-based assessment for the site (ASE 2014a) and in the Written Scheme of Investigation (WSI) (ASE 2014b) and is briefly summarised below with due acknowledgement.

2.2 Prehistoric

2.2.1 Three Prehistoric sites are recorded within or close to the study area.

- The Rye to Uckfield Ridgeway may be prehistoric in origin;
- A Neolithic stone axe originating from the Lake District was discovered on the banks of the River Line 450m to the southeast of the site;
- Prehistoric flint tools and flakes have been excavated on the banks of the River Line 450m southeast of the site;

2.3 Roman

2.3.1 Two Roman sites are recorded within or close to the site.

- A possible bloomery at St John's Cross;
- The Rye to Uckfield Ridgeway which is likely to have continued in use into the Roman period;

2.4 Saxon

2.4.1 Three Saxon sites are recorded in or near the site.

- All Saints Church which is mentioned in the Domesday Book;
- The Rye to Uckfield Ridgeway;
- Mountfield village itself is mentioned in the Domesday book;

2.5 Medieval

2.5.1 Five medieval sites are recorded on or close to the site.

- All Saint's Church which is predominantly Norman in date;
- The Rye to Uckfield Ridgeway which is likely to have continued in use into this period;
- The pond bay 450m to the southeast of the site which has suggested medieval;
- Riverhall farmstead which is first documented in 1190;
- The village of Mountfield itself was occupied throughout the medieval period;

2.6 Post-medieval

2.6.1 The early post- medieval period in Mountfield saw the rise of the Iron working

industry which may have had its roots in earlier periods. Evidence of this industry is a forge and furnace located around the pond bay on the River Line south-east of the site which appears to have flourished during the 16th century and been in use for around 100 years. The Rye- Uckfield Ridgeway seems to have been an important route for the transportation of Wealden iron especially in the Tudor period.

- 2.6.2 Later post-medieval development at Mountfield is influenced by road and rail development which drew the village focus away from the medieval heart south-eastwards towards its present location at Riverhall.

3.0 SURVEY METHODOLOGY

3.1 Geophysical survey

3.1.1 A fluxgate gradiometer (magnetometry) survey was undertaken in the areas depicted in Figure 2. Area 1 was 0.28 Hectares in size and Area 2 was 0.52 Hectares.

3.1.2 The fieldwork was undertaken on the 5th and 6th of June 2014. The weather during the survey was hot 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 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.

3.3 Instrumentation used for setting out the survey grid

3.3.1 The survey grid for the site was geo-referenced using a Topcon GRS 1. 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. Figures 4 and 7 show the processed survey data and Figures 3 and 6 show the raw data.

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 in Figures 3,4,6,7 and 9.

4.0 SURVEY RESULTS

4.1 Geophysical Survey Limitations

4.1.1 Physical obstructions encountered on site were few although both areas contained dense, tall, vegetation which significantly slowed the data collection and may have caused some interference visible 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.

4.2 Introduction to results

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

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

Negative Magnetic anomalies

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

Magnetic Disturbance

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

Magnetic Debris

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

Dipolar Anomalies

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

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.

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 Interpretation of fluxgate gradiometer (magnetometry) results (Figures 5 and 8)

4.3.1 The survey has been divided into two areas based on the individual fields within the survey area. Portions of the survey grid omitted are noted below.

4.4 Area 1 (Figure 5)

4.4.1 Area 1 was situated in the north of the site and contained a cereal crop that was waist high and in varying degrees of density. The survey area covered a small portion of a much larger arable field around an access gate. The east of the site bounded a number of properties all of which had small gardens or storage areas within the field and close to the edge of the crop.

4.4.2 Limited evidence for archaeological activity is indicated throughout field by a number of anomalies. The results from the north of Area 1 are dominated by two large areas of magnetic interference noted at 1.1.

4.4.3 Dipolar anomalies are noted at 1.2 and 1.5 and these are almost certainly caused by near surface metallic objects.

4.4.4 Discrete positive anomalies can be seen at 1.4, 1.5, 1.8 and 1.10. Those at 1.4 and 1.5 are closely related to modern disturbance and their potential to show archaeological features should be considered low. The two discrete anomalies at 1.8 are seen in relation to two linear positive responses running to the south-east and may have the potential to represent buried archaeological remains. The anomaly at 1.10 has a relatively strong response and is large in size. This anomaly also has the potential to be archaeological in origin.

4.4.5 Linear positive anomalies are shown at 1.6, 1.7 and 1.9. The features 1.6 and 1.7 are sub-circular in form and may show small ditched enclosures although a geological explanation for these responses should not be ruled out. The responses at 1.9 are rectilinear in nature and may also show ditched enclosures although may also be geological.

4.4.6 Two possible thermo-remnant anomalies are shown at 1.3 and 1.11. These have the potential to represent areas of in-situ burning. The anomaly 1.3 is very close to the modern field boundary and may be modern in origin. The anomaly at 1.11 is close to a number of positive anomalies and may be worthy of further investigation.

4.5 Area 2 (Figure 8)

4.5.1 Area 2 is situated in the south of the site and the on-site vegetation consisted of mature meadow plants which had not been mown for some time. The northwest of the survey area contained a large bonfire built of wooden pallets and other similar material. Recent geo-technical pits and monitoring wells were noted by the survey team in the east of the survey area. The area bounded a football pitch and is a popular dog walking spot.

4.5.2 The results are dominated by dipolar responses in clusters of varying sizes. The largest clusters are shown at 2.1, 2.3 and 2.11. Given the proximity of

these clusters to the River Line with its known iron working connection these may represent areas of slag dumping. However, 2.1 and 2.3 are very close to the bonfire noted above and therefore this hypothesis should be treated with caution. The anomalies at 2.9 and 2.11 may show features related to iron working although they are situated in the east of the site and may be related to the above mentioned geo-technical investigations. The dipolar smaller groups noted in the survey results (2.4, 2.7, 2.6 and 2.10) probably represent near surface metal objects associated with modern activity at the site although the cluster at 2.6 may be considered worthy of further investigation again due to its proximity to the river.

- 4.5.3 Discrete positive anomalies are noted at 2.2, 2.5, 2.8, 2.12, 2.13 and 2.14. These have the potential to represent buried archaeological features such as pits. Those in the east (2.13 and 2.14) are probably modern in origin given the site has been recently excavated in this area. The anomaly 2.12 is irregular in nature and may well be geological but may be considered worthy of further investigation. The anomalies at 2.2, 2.5 and 2.8 have stronger potential although a modern origin for these responses should not be ruled out.

5.0 CONCLUSION

5.1 Area 1

5.1.1 The results from Area 1 showed anomalies with the potential to represent buried archaeological remains such as pits and ditches. Two thermo-remnant features with the potential to show areas of burning were also present. It should be noted that the survey area covered the edge of a larger field close to a gateway and that areas such as this usually contain the highest amount of modern disturbance.

5.2 Area 2

5.2.1 The results from Area 2 were dominated by dipolar responses in a variety of sizes and intensities. Given the proximity to a known iron working site these (especially the larger ones) may be considered worthy of further work. A number of discrete positive anomalies were also noted with the potential to represent buried archaeological remains. However, the area is intensively used by the public and has been the subject of a geotechnical investigation and some, or indeed all, of these anomalies may be modern in origin.

5.3 Summary

5.3.1 Evidence of potential archaeological features was detected in both survey areas with possible cut features and areas of burning in the north and possible areas of iron working debris or waste in the south. Both areas showed signs of modern activity and possible disturbance and these results should be judged with that in mind. For this reason the results archaeological geophysical survey would need to be tested by invasive techniques (e.g. targeted trial trenching carried out post determination as a planning condition) to assess the nature of the anomalies.

ACKNOWLEDGEMENTS

Archaeology South–East would like to thank The Clancy Group for commissioning the survey.

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HER Summary Form

Site Code	MSS 14					
Identification Name and Address	Mountfield First Time Sewerage Scheme					
County, District &/or Borough	East Sussex					
OS Grid Refs.	574276 120054					
Geology	Clay With Flints					
Arch. South-East Project Number	6470					
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.	5 th and 6 th June 2014		
Sponsor/Client	Clancy					
Project Manager	Neil Griffin					
Project Supervisor	Chris Russel					
Period Summary	Palaeo.	Meso.	Neo.	BA	IA	RB
	AS	MED	PM	Other Modern		
<p>100 Word Summary.</p> <p><i>Archaeology South East was commissioned by The Clancy Group to undertake a detailed fluxgate gradiometer survey of land at Mountfield First Time Sewerage Scheme, East Sussex. The survey took place on the 5th and 6th of June 2014. The survey areas covered approximately 0.8 hectares of arable land and meadow bounded by wire fences and hedgerows. Evidence of potential archaeological remains was identified in both survey areas. Area 1 in the north contained positive anomalies with two possible thermo-remnant features also evident. These are potentially archaeological cut features and areas of burning. Area 2 contained mainly dipolar responses with a limited number of positive anomalies also noted. It is possible that these are areas of iron waste dumping and archaeological cut features.</i></p>						

OASIS FORM

OASIS ID: archaeol6-181368

Project details

Project name	First Time Sewerage Scheme, Mountfield
Short description of the project	Archaeology South East was commissioned by The Clancy Group to undertake a detailed fluxgate gradiometer survey of land at Mountfield First Time Sewerage Scheme, East Sussex. The survey took place on the 5th and 6th of June 2014. The survey areas covered approximately 0.8 hectares of arable land and meadow bounded by wire fences and hedgerows. Evidence of potential archaeological remains was identified in both survey areas. Area 1 in the north contained positive anomalies with two possible thermo-remnant features also evident. These are potentially archaeological cut features and areas of burning. Area 2 contained mainly dipolar responses with a limited number of positive anomalies also noted. It is possible that these are areas of iron waste dumping and archaeological cut features
Project dates	Start: 05-06-2014 End: 06-06-2014
Type of project	Field evaluation
Methods & techniques	"Geophysical Survey"

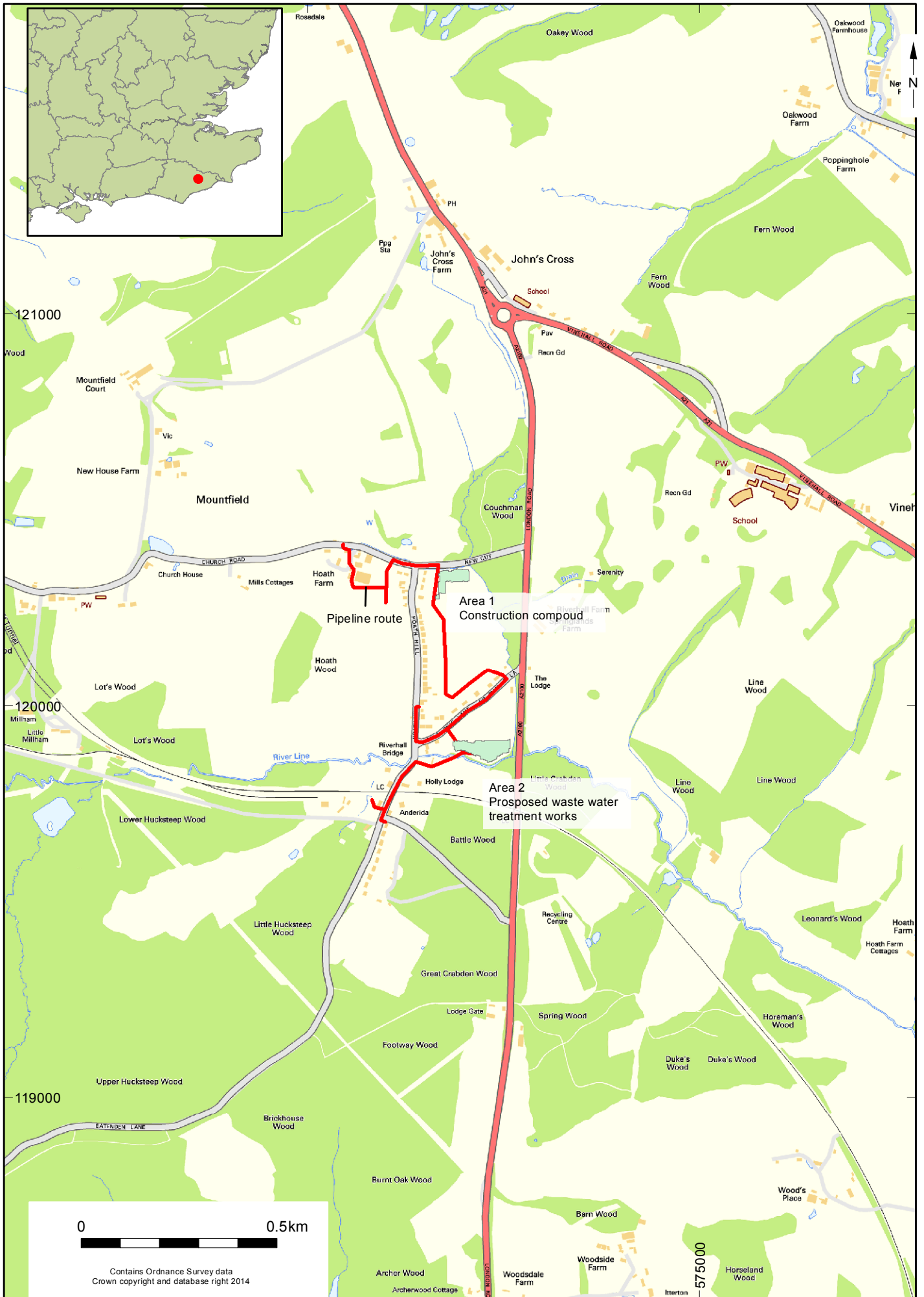
Project location

Country	England
Site location	EAST SUSSEX ROTHER MOUNTFIELD Land at Mountfield
Study area	0.80 Hectares
Site coordinates	TQ 574276 120054 50.8854748854 0.238357555537 50 53 07 N 000 14 18 E Point

Project creators

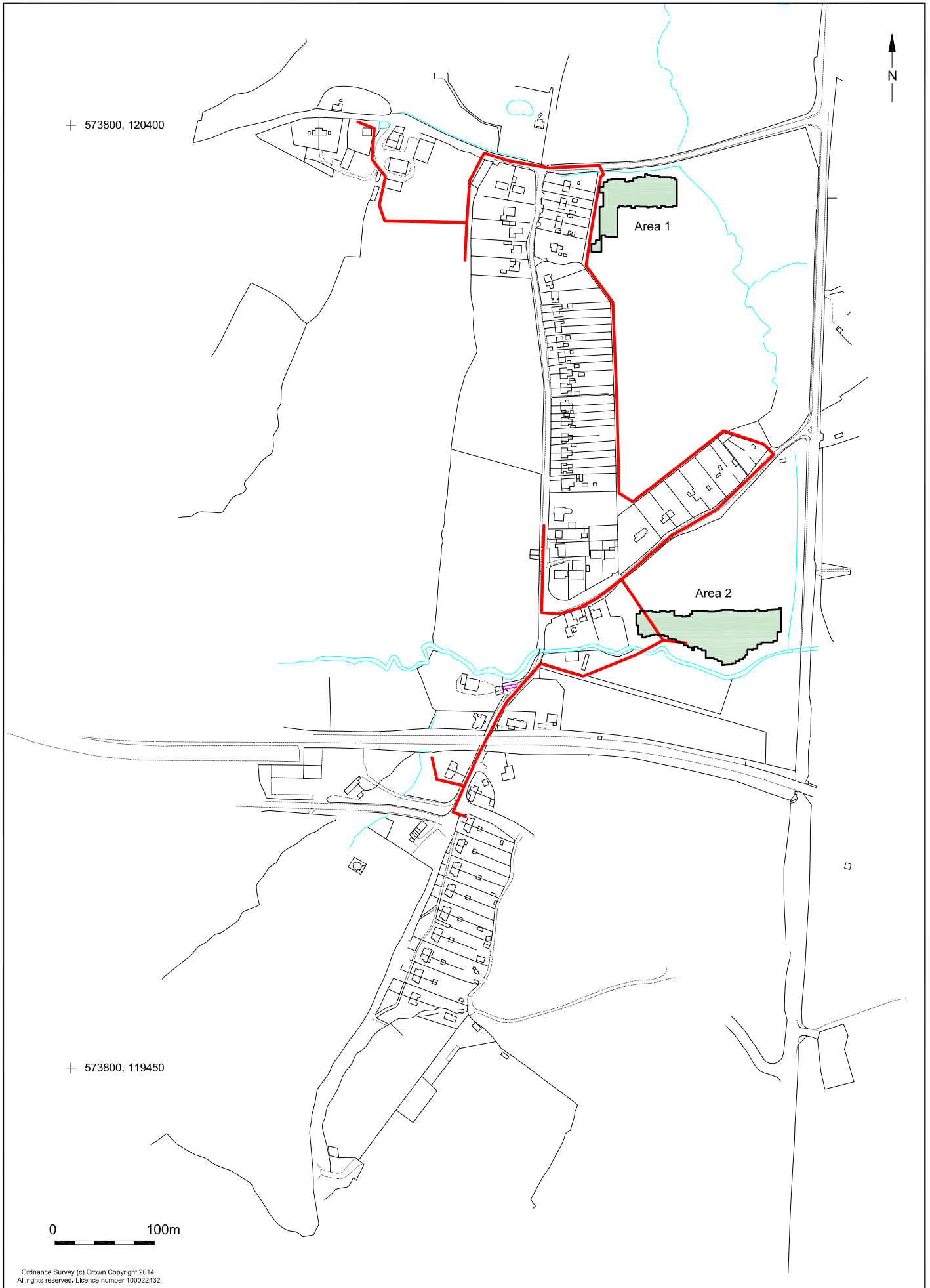
Name of Organisation	Archaeology South-East
Project brief originator	East Sussex County Council
Project design originator	Archaeology South-East
Project director/manager	Neil Griffin/Jim Stevenson
Project supervisor	Chris Russel

Entered by	Jim Stevenson (jim.stevenson@ucl.ac.uk)
Entered on	13 June 2014



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Project Ref: 6598	June 2014	Site location	
Report Ref:	Drawn by: JLR		



© Archaeology South-East		First Time Sewerage Scheme, Mountfield	Fig. 2
Project Ref: 6598	May 2014	Location of survey areas	
Report Ref:	Drawn by: JLR		



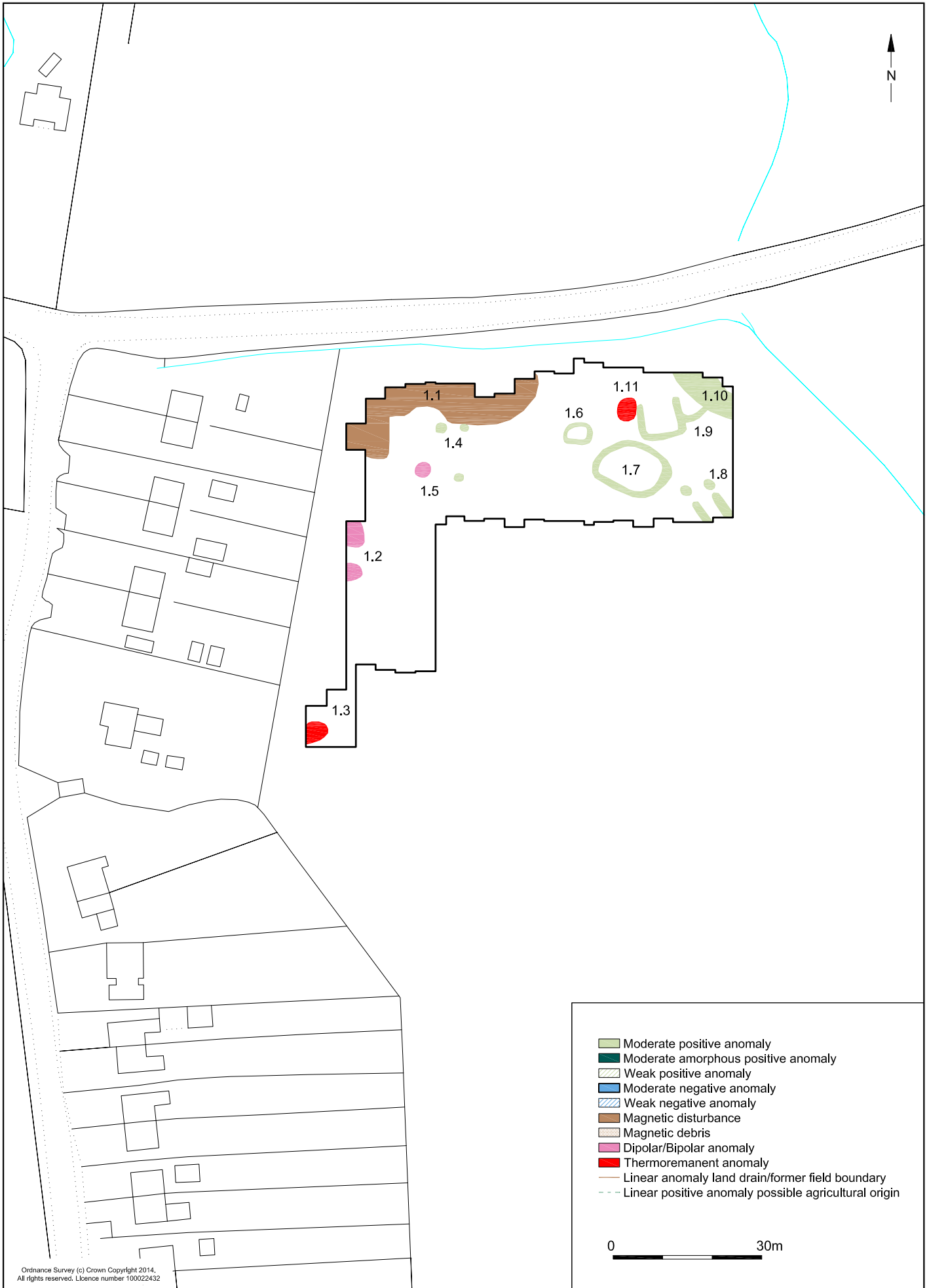
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Project Ref: 6598	June 2014	Area 1 raw data	
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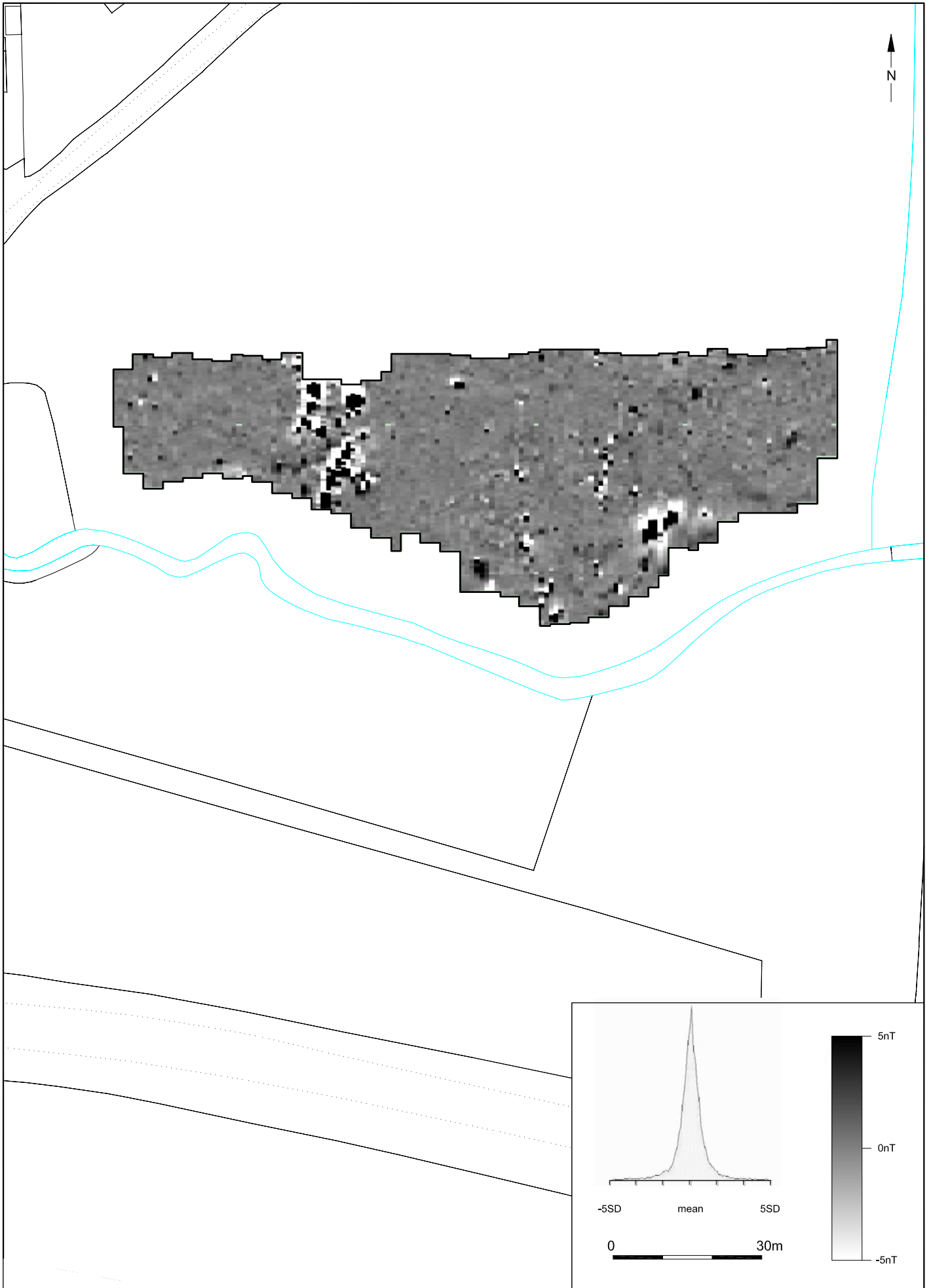
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Project Ref: 6598	June 2014	Area 1 processed data	
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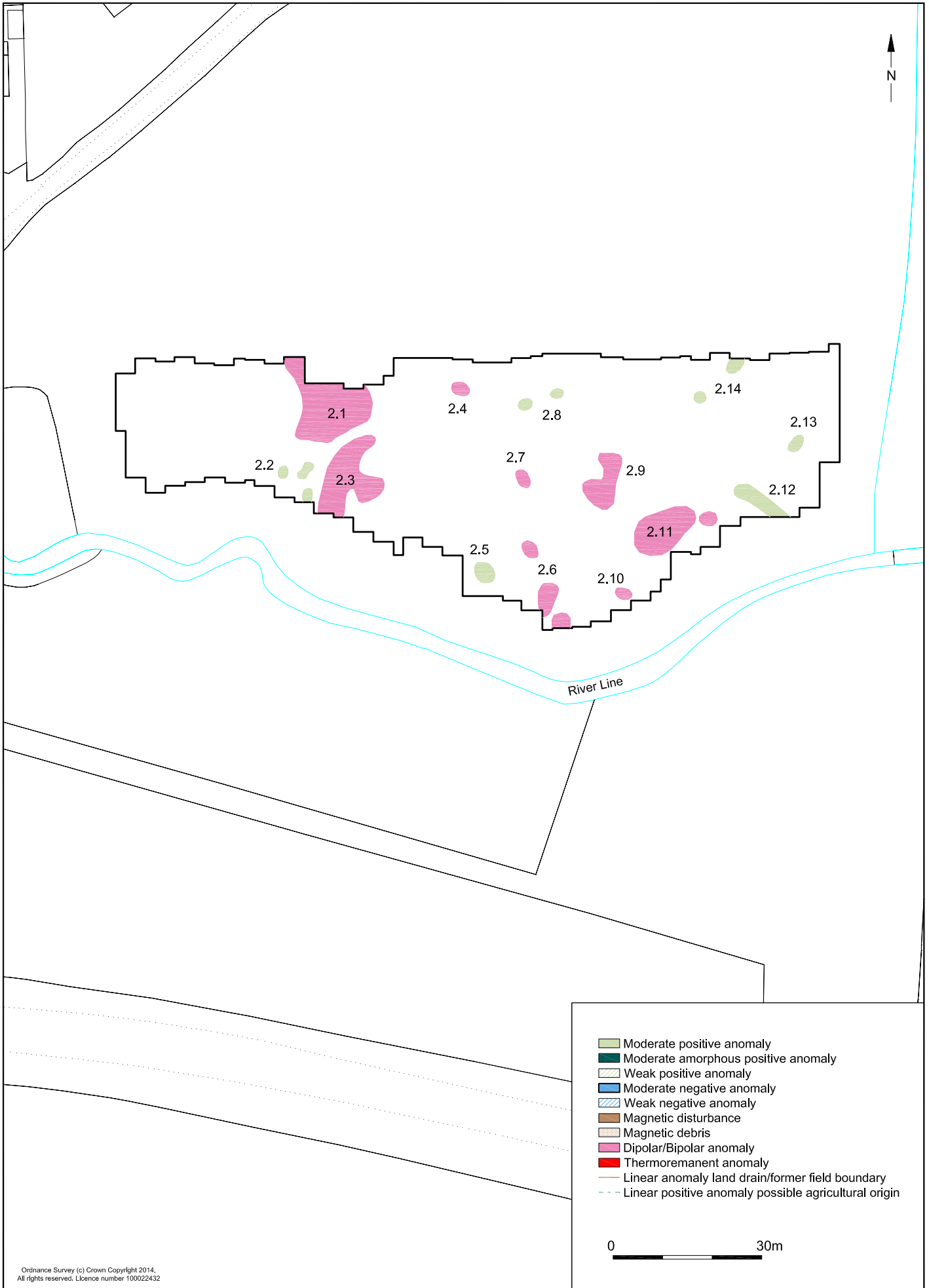
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Project Ref: 6598	June 2014	Area 1 interpretation	
Report Ref:	Drawn by: JLR		



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Project Ref: 6598	June 2014	Area 2 raw data	
Report Ref:	Drawn by: JLR		

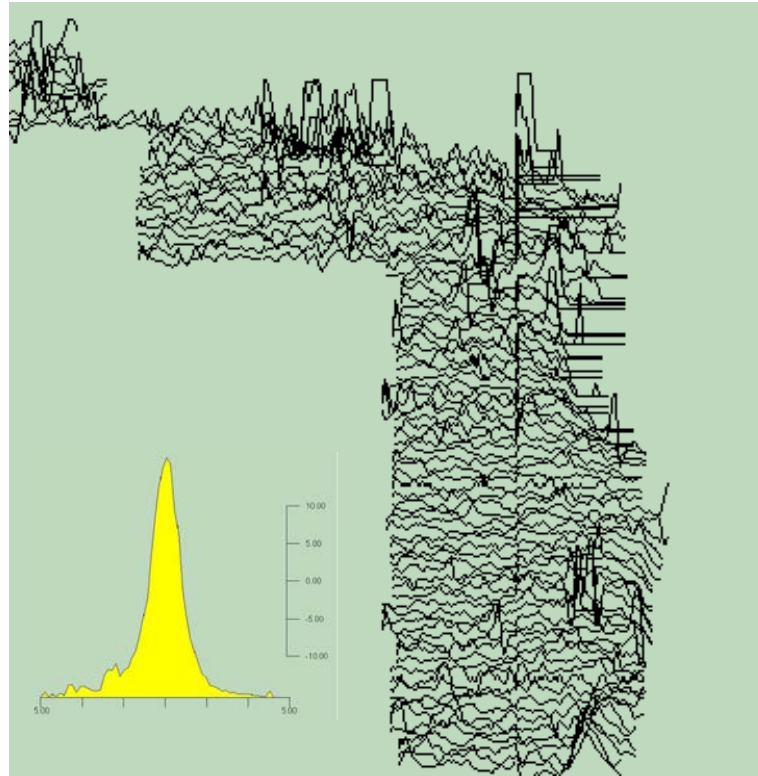


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Report Ref:	Drawn by: JLR		

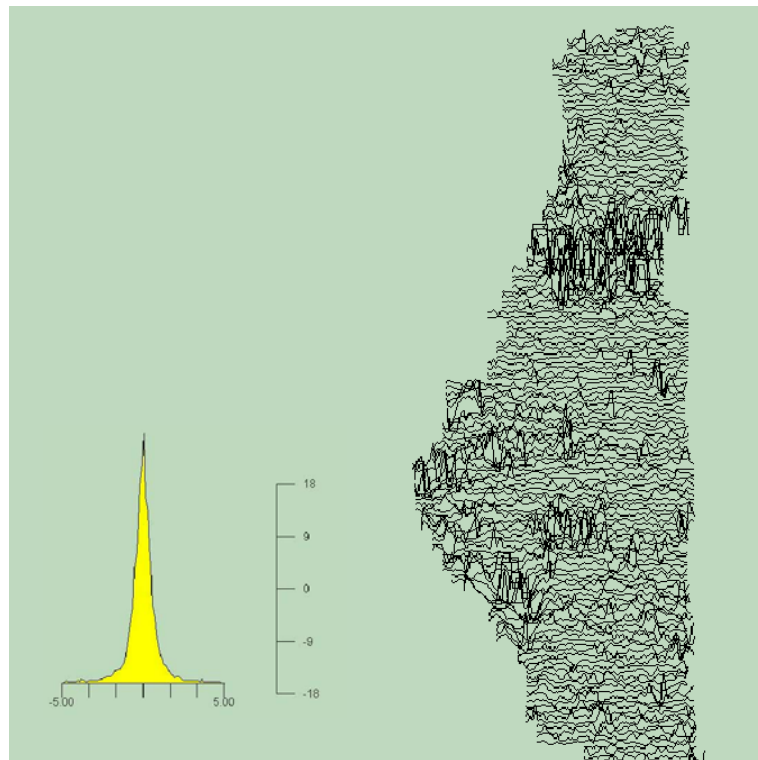


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Area 1 trace plot



Area 2 trace plot

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