

**Detailed Magnetometer Survey Standen Heath Landfill Site Extension
Standen Heath, Isle of Wight**

**NGR: 453160 088980
(SZ 53160 88980)**

ASE Project No: 5227

OASIS ID: archaeol6-116192

ASE Report No. 2011307

By John Cook BSc (Hons) AIFA

December 2011

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Abstract

Archaeology South East was commissioned by AMEC Environment & Infrastructure UK LTD to carry out a detailed fluxgate gradiometer survey on land designated for the Standen Heath Landfill Site extension at Standen Heath, Isle of Wight. The survey covered approximately 1 hectare and took place on the 12th December 2011. The survey area consisted of scrub and wild grass bounded by woodland to the north, west and south and sloping down to a well established hedge to the east. The survey successfully detected limited evidence for possible archaeological activity. This evidence was largely restricted to a number of thermoremanent anomalies and a single moderate positive anomaly. Faint evidence for later agricultural activity in the form of plough marks was also identified.

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1.0 INTRODUCTION

1.1 Site background

1.1.1 Archaeology South-East was commissioned by AMEC Environment & Infrastructure UK LTD to conduct a Magnetometer survey over land at Standen Heath, Isle of Wight, hitherto referred to as 'the survey area' (NGR 453160 88980 ; Figure 1).

1.2 Geology and topography

1.2.1 According to the British Geological Survey (2011) the site lies over bedrock geology of Hamstead Beds: Clay, Silt and Sand. No overlying superficial deposits are recorded.

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 report on the findings of the survey. The project was conducted by John Cook and Chris Russel; project managed by Neil Griffin (fieldwork) and by Jim Stevenson (post fieldwork).

2.0 ARCHAEOLOGICAL BACKGROUND

2.1 Introduction

2.1.1 Archaeological background information is given in the WSI (Townend 2011) and is repeated below with due acknowledgement.

2.2 Scheduled monuments

2.2.1 There are three scheduled monuments within 2km of the site boundary, 29 listed buildings and one conservation area. The majority of the listed buildings are listed at Grade II, with one listed at Grade I and two at Grade II*. The conservation area is at Arreton, located approximately 1.3km to the south of the site boundary. The nearest designated heritage assets to the site are the scheduled monument of Downend Romano-British Villa (List Entry 1010002) and the two grade II listed buildings at Little East Standen Farm (List Entries 12098180 and 1292777) each at approximately 890m from the closest point of the site boundary.

2.3 The HER search

2.3.1 The Isle of White Historic Environment Record (HER) records a number of flint scatters and earthwork features within 500m of the site (including within the current landfill site). A number of crop mark sites are also noted (including within the restored landfill area), particularly in the Blacklands Bridge area, and find spots of relatively early material occur at approximately 0.5km to the south and southwest of the site. There are also a number of historic farmsteads in the area and a number of WWII features associated with an anti-aircraft battery are recorded at Lynn Farm, Havenstreet.

2.3.2 A key feature of the historic environment adjacent to the site is the Kings Quay to St Lawrence Boundary (HER Ref. 901). This is a hedge boundary commonly referred to as the *Motkin Boundary*. The feature runs along the north to south axis of the Isle of White and a section of approximately 430m is located on or adjacent to the site's eastern boundary. The age of the boundary is not known but it is reputed to date to as early as the Bronze Age, although there is no evidence to support this. The *Motkin Boundary* appears to have been recognised in the medieval period, as some parts of parish and estate boundaries adopt its line so it is not unreasonable to suggest that it may, at least in parts, predate this time. Other than a 120m section of the *Motkin Boundary* in the northeast of the site, there are no recorded historic environment features within the area of the proposed landfill extension.

2.4 Previous archaeological fieldwork

2.4.1 An archaeological watching brief (ASE 2011) was undertaken on test pits over an area which included the survey area. This identified two archaeological features. An undated ditch possibly associated with what appeared to be terracing and/or lynchets and a second undated ditch, together with a parallel existing straight ditch, perhaps represented the

flanking ditches of a c.8m wide trackway. The only finds recovered during the work comprised two pieces of worked flint and a small quantity of fire-cracked flint. No finds or features were identified in test pits within the survey area.

3.0 SURVEY METHODOLOGY

3.1 Geophysical survey

3.1.1 A fluxgate gradiometer (magnetometry) survey was undertaken in the area depicted in Figures 1 and 2 (NGR 453160 088980).

3.1.2 The field work was undertaken on Monday 12th December 2011 when the weather was cold and sunny with occasional heavy showers.

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 GR3 receiver and FC-250 controller using Virtual Reference Stations (VRS). 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 Geoplot V3 published by Geoscan Research. 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 5 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 3-5) as raw data and processed data greyscale plots and minimally processed trace plots (Figure 4).

4.0 GEOPHYSICAL SURVEY RESULTS (Figures 5 and 6)

4.1 Description of site

4.1.1 The survey area consisted of approximately one hectare of scrub and rough grass. The site is bounded by woodland to the north, west and south and sloping down to a well established hedge to the east representing a section of the *Motkin Boundary*.

4.2 Survey limitations

4.2.1 Survey was limited over a significant area of the site due to standing vegetation including stands of scrub and immature oak which were over head 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). The preceding watching brief (ASE 2011) on a series of test pits across the site identified clayey silts overlying a clay natural within the survey area. 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 6)

Magnetometry results

4.4.1 Evidence of possible archaeological activity is limited to the following described anomalies. A single discrete moderate positive anomaly (A1), which may represent a possible cut feature such as a pit. However, this anomaly may also relate to an in filled natural feature. Several thermoremanent anomalies (A2). These anomalies represent areas of possible burning or industrial activity such as kilns, furnaces or deposits of thermoremanent material such as bricks or other fired clay.

4.4.2 A Dipolar anomaly (A3) is observed towards the north of the survey (Figures 4 and 6). This anomaly is likely to be due to a relatively large discrete ferrous object (such as modern material in the near surface).

4.4.3 Several areas of magnetic debris (A4) were identified within the survey data, and are likely to relate to ground disturbance.

4.4.4 A series of ephemeral linear anomalies (A5) were identified across the survey area. These responses are likely to be the result of agricultural activity.

5.0 CONCLUSION

5.1 Discussion

5.1.1 Evidence for archaeological features within the magnetic survey was, in general, relatively sparse. However, the survey did successfully detect several discrete anomalies of possible archaeological origin across the site. These are mostly represented by five discrete thermoremanent anomalies that may represent areas of possible burning or industrial activity such as kilns, furnaces or deposits of thermoremanent material such as bricks or other fired clay (Figure 6, A2). However these anomalies may also be caused by more modern activity such as bonfire sites. A single positive anomaly that may indicate a discrete cut feature such as a pit was also identified, although this anomaly may relate to an area of possible ground disturbance also identified (Figure 6, A1). Several ephemeral linear positive anomalies observed may be the result of more recent agricultural activity.

5.2 Statement of Indemnity

5.2.1 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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Acknowledgements

Archaeology South-East would like to thank AMEC Environment & Infrastructure UK LTD for commissioning the survey.

SMR Summary Form

Site Code	-					
Identification Name and Address	Standen Heath Landfill Site Extension					
County, District &/or Borough	Isle of Wight					
OS Grid Refs.	453160 088980					
Geology	Hamstead Beds – Clay, Silt and Sand					
Arch. South-East Project Number	5227					
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.	12th December 2011		
Sponsor/Client	AMEC Environment & Infrastructure UK LTD					
Project Manager	Neil Griffin					
Project Supervisor	John Cook					
Period Summary	Palaeo.	Meso.	Neo.	BA	IA	RB
	AS	MED	PM	Other Modern		
<p>100 Word Summary. <i>Archaeology South East was commissioned by AMEC Environment & Infrastructure UK LTD to carry out a detailed fluxgate gradiometer survey on land designated for the Standen Heath Landfill Site extension at Standen Heath, Isle of Wight. The survey covered approximately 1 hectare and took place on the 12th December 2011. The survey area consisted of scrub and wild grass bounded by woodland to the north, west and south and sloping down to a well established hedge to the east. The survey successfully detected limited evidence for possible archaeological activity. This evidence was largely restricted to a number of thermoremanent anomalies and a single moderate positive anomaly. Faint evidence for later agricultural activity in the form of plough marks was also identified.</i></p>						

OASIS form

OASIS ID: archaeol6-116192

Project details

Project name	Detailed Magnetometer Survey Standen Heath Landfill Site Extension Standen Heath, Isle of Wight
Short description of the project	Archaeology South East was commissioned by AMEC Environment and Infrastructure UK LTD to carry out a detailed fluxgate gradiometer survey on land designated for the Standen Heath Landfill Site extension at Standen Heath, Isle of Wight. The survey covered approximately 1 hectare and took place on the 12th December 2011. The survey area consisted of scrub and wild grass bounded by woodland to the north, west and south and sloping down to a well established hedge to the east. The survey successfully detected limited evidence for possible archaeology. This evidence was largely restricted to a number of thermoremanent anomalies and a single moderate positive anomaly. Faint evidence for later agricultural activity the form of plough marks was also identified.
Project dates	Start: 12-12-2011
Previous/future work	Yes / Not known
Any associated project reference codes	5227 - Contracting Unit No.
Type of project	Field evaluation
Site status	None
Current Land use	Woodland 7 - Scrub
Current Land use	Grassland Heathland 3 - Disturbed

Project location

Country	England
Site location	ISLE OF WIGHT ISLE OF WIGHT ARRETON Standen Heath Landfill Site
Postcode	PO30 2NP
Study area	1.00 Hectares
Site coordinates	SZ 53160 88980 50.6974553809 -1.247215062920 50 41 50 N 001 14 49 W Point

Project creators

Name of Organisation	Archaeology South East
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Project brief originator AMEC

Project design originator AMEC

Project director/manager Neil Griffin

Project supervisor John Cook

Type of sponsor/funding body AMEC

Entered by John Cook (john.cook@ucl.ac.uk)

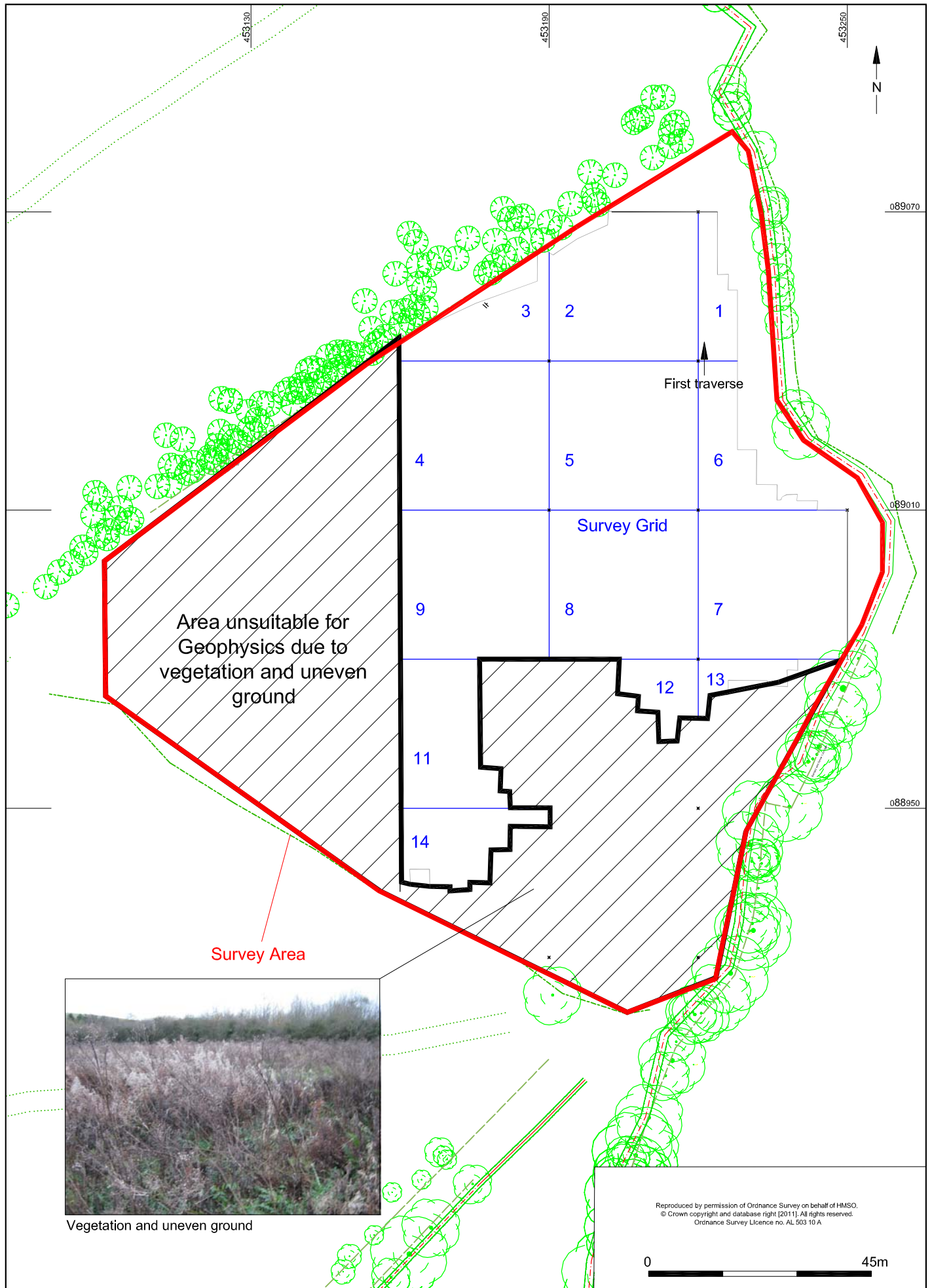
Entered on 21 December 2011

Appendix 1

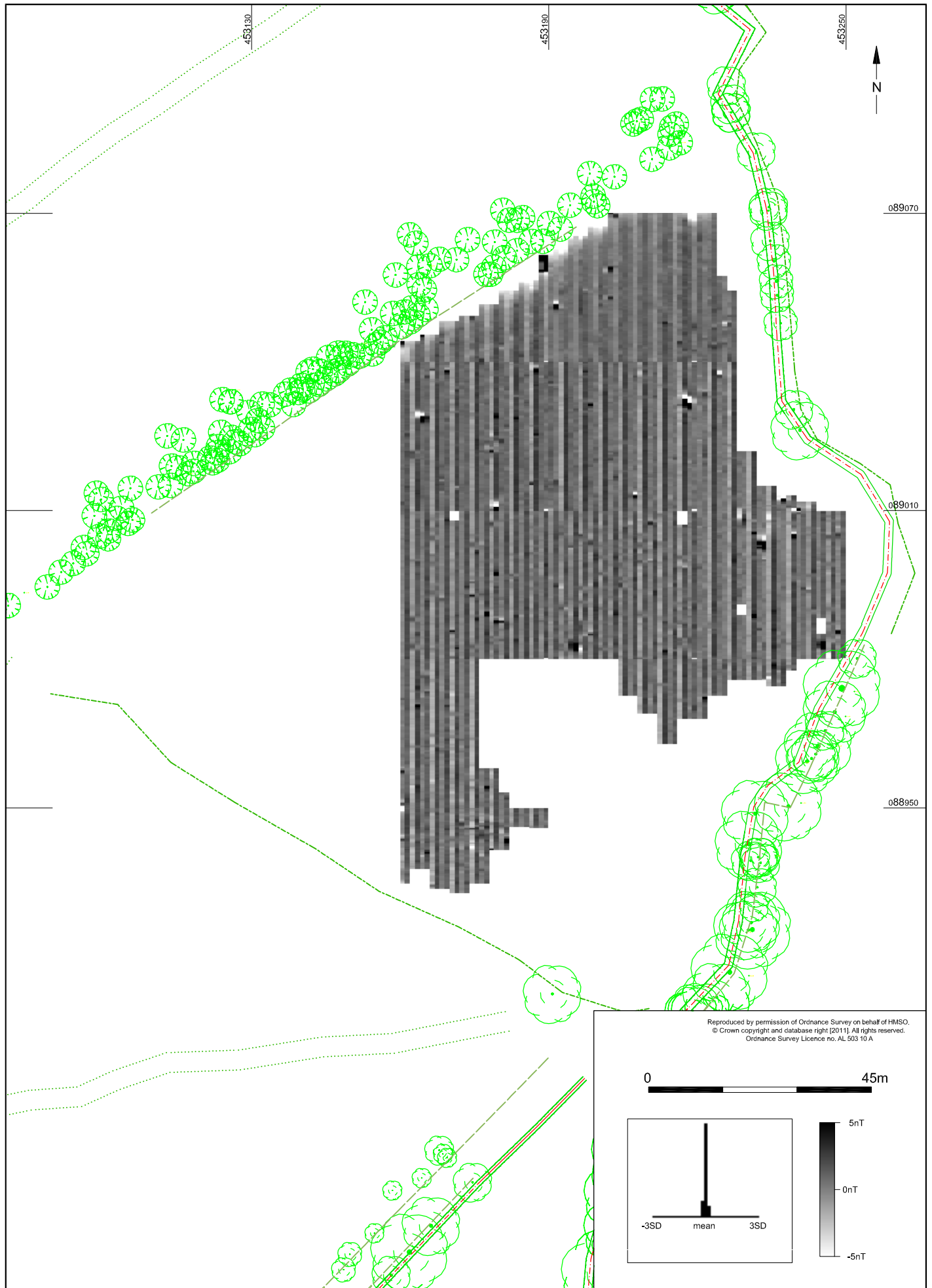
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1. Raw Magnetometry Data

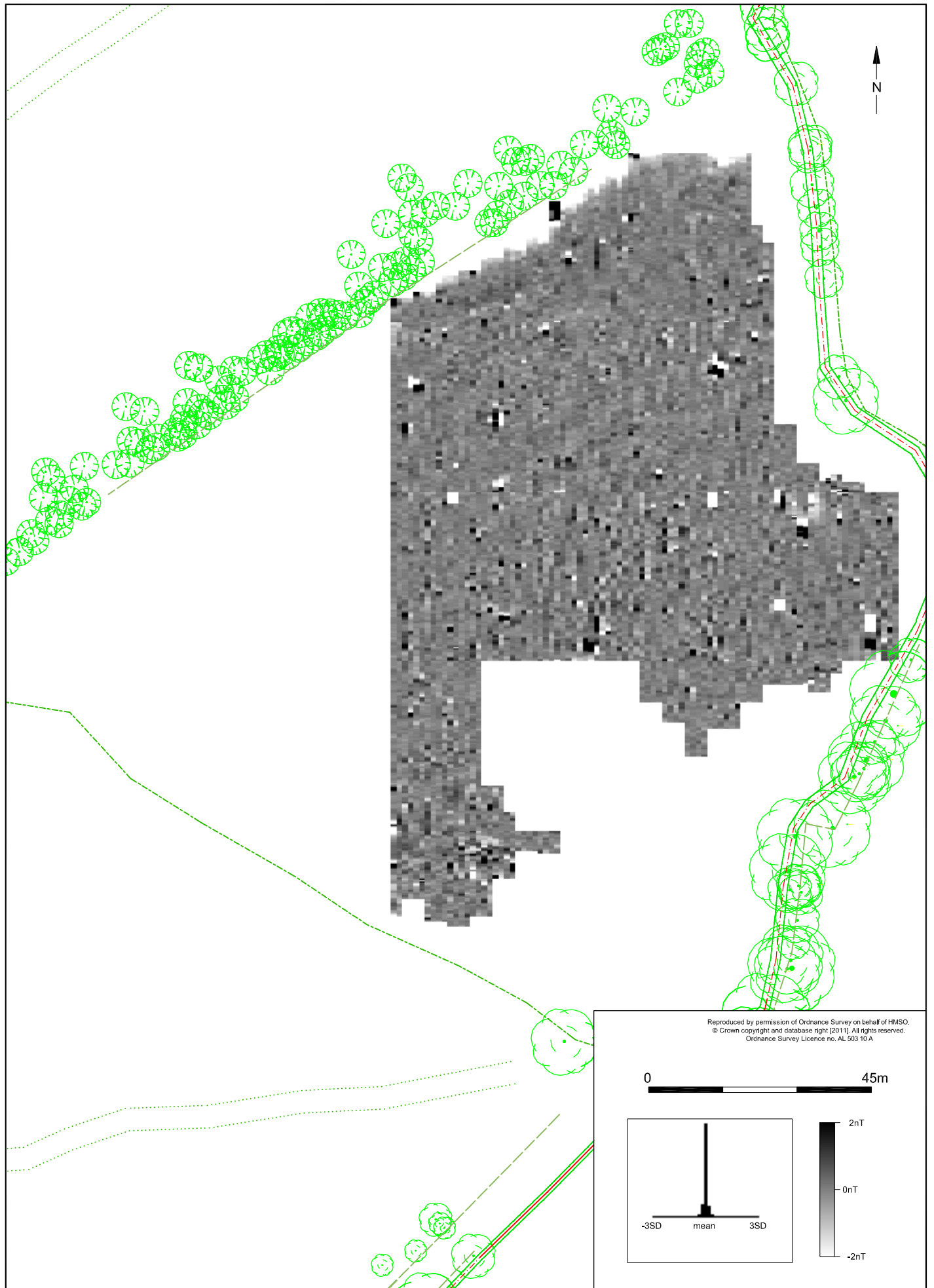




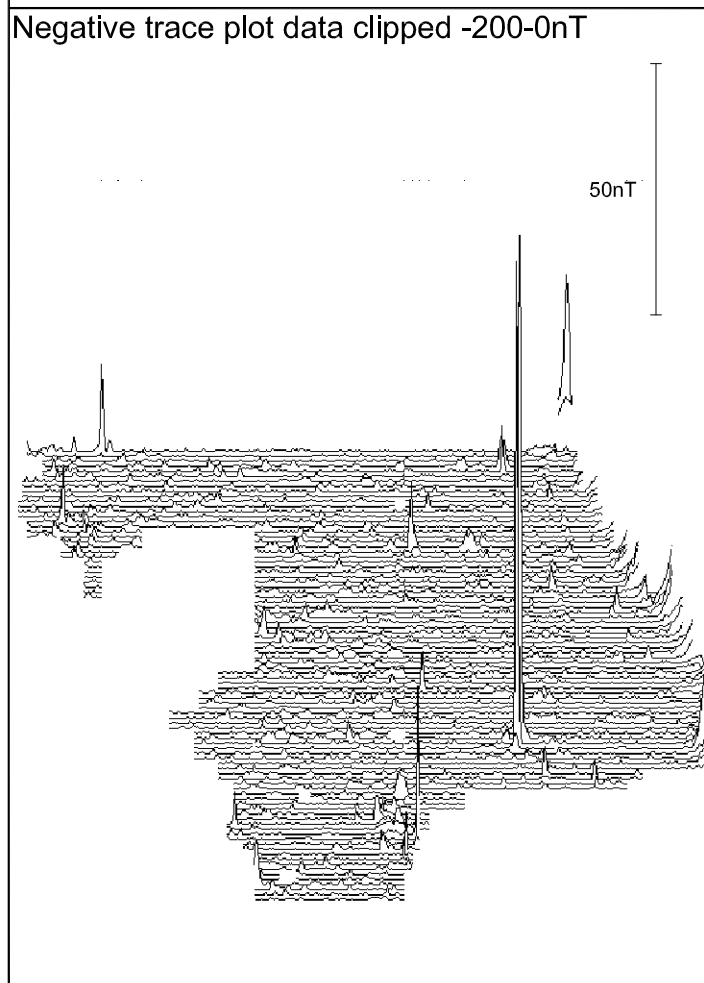
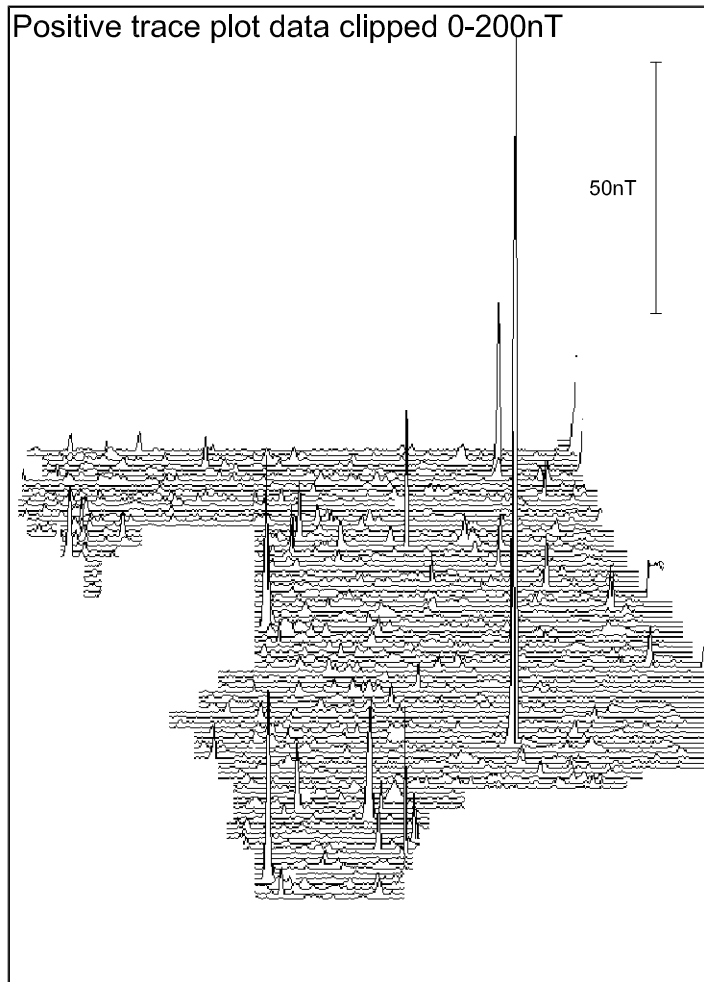
© Archaeology South-East		Standen Heath, Isle of Wight	Fig.2
Project Ref: 5227	Dec 2011	Site Plan	
Report Ref: 2011307	Drawn by: JC		

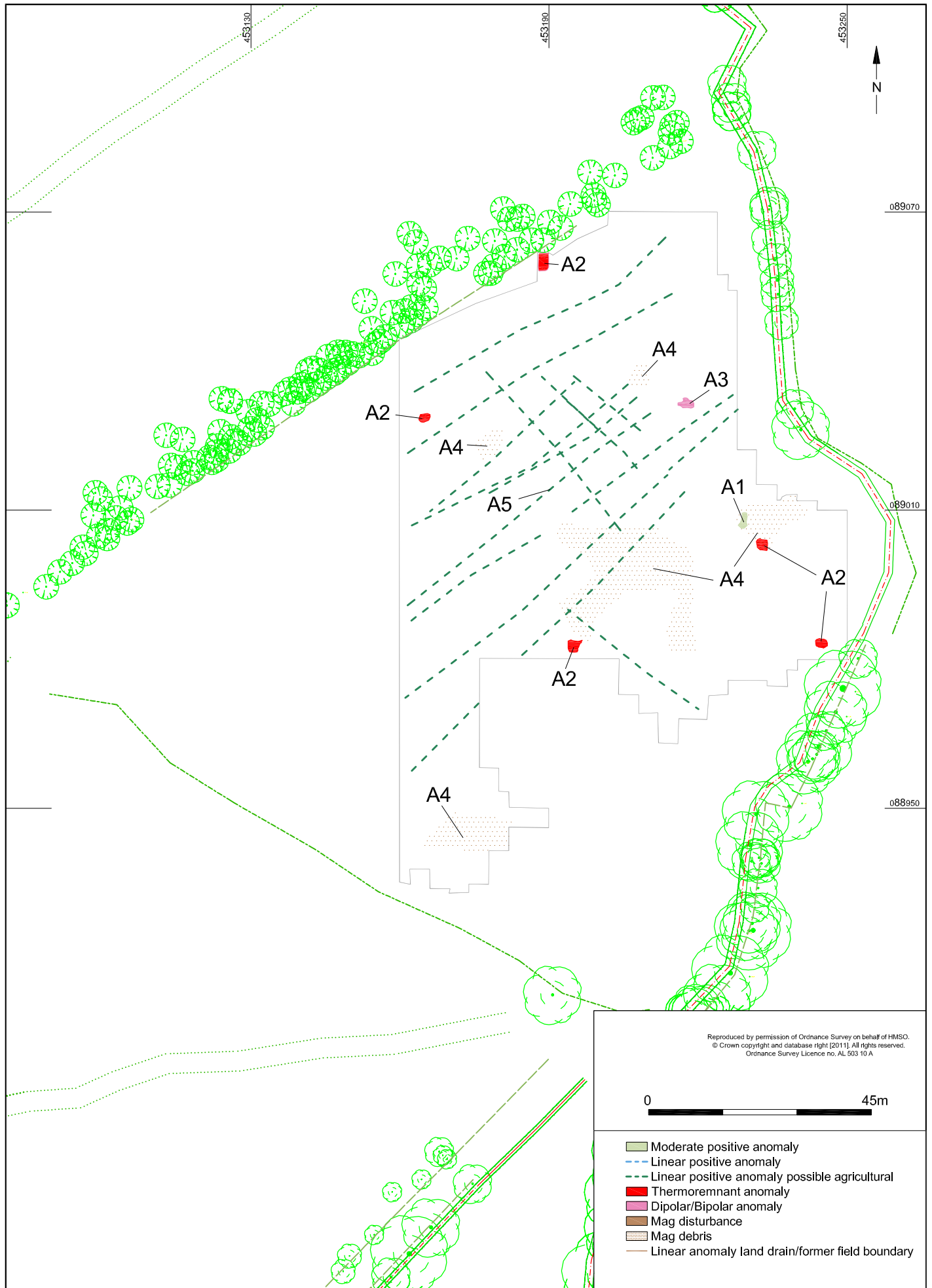


© Archaeology South-East		Standen Heath, Isle of Wight	Fig.3
Project Ref: 5227	Dec 2011	Raw Shade Plot	
Report Ref: 2011307	Drawn by: JC		



© Archaeology South-East		Standen Heath, Isle of Wight	Fig.4
Project Ref: 5227	Dec 2011	Processed Shade Plot	
Report Ref: 2011307	Drawn by: JC		





© Archaeology South-East		Standen Heath, Isle of Wight	Fig.6
Project Ref: 5227	Dec 2011	Interpretation	
Report Ref: 2011307	Drawn by: JC		

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