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**HAILSHAM 3, LAND AT AMBERSTONE,
EAST SUSSEX**

GEOPHYSICAL SURVEY

Authors: Matthew Baker, Dr David Bescoby	
NGR: TQ 5980 1110	Report No: 5059
District: Wealden	Site Code: -
Approved: Claire Halpin MCIfA	Project No: 6528
Signed:	Date: 29 th February 2016

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OASIS SUMMARY SHEET

Project details			
Project name	<i>Hailsham 3, Land at Amberstone, East Sussex</i>		
<p><i>In February 2016, Archaeological Solutions Ltd carried out a magnetic gradiometer survey on land at Amberstone, East Sussex (NGR TQ 5980 1110).</i></p> <p><i>The survey identified three positive linear anomalies of possible archaeological origin, along with two further anomalies of probable geological origin.</i></p>			
Project dates (fieldwork)	<i>15th-17th February 2016</i>		
Previous work (Y/N/?)	<i>N</i>	Future work	<i>TBC</i>
P. number	<i>6528</i>	Site code	<i>-</i>
Type of project	<i>Geophysical Survey</i>		
Site status	<i>-</i>		
Current land use	<i>Agricultural</i>		
Planned development	<i>Residential development</i>		
Main features (+dates)	<i>Three undated linear anomalies Two anomalies of probable geological origin</i>		
Significant finds (+dates)	<i>-</i>		
Project location			
County/ District/ Parish	<i>East Sussex</i>	<i>Wealden</i>	<i>Hailsham</i>
HER/ SMR for area	<i>East Sussex Historic Environment Record</i>		
Post code (if known)	<i>-</i>		
Area of site	<i>c.5.3ha</i>		
NGR	<i>TQ 5980 1110</i>		
Height AOD (max/ min)	<i>8-10m AOD</i>		
Project creators			
Brief issued by	<i>East Sussex County Council</i>		
Project supervisor/s	<i>Matthew Baker</i>		
Funded by	<i>Heyford Developments Limited</i>		
Full title	<i>Hailsham 3, Land at Amberstone, East Sussex: Geophysical Survey</i>		
Authors	<i>Baker, M., Bescoby, D.</i>		
Report no.	<i>5059</i>		
Date (of report)	<i>February 2016</i>		

HAILSHAM 3, LAND AT AMBERSTONE, EAST SUSSEX

GEOPHYSICAL SURVEY

SUMMARY

In February 2016, Archaeological Solutions Ltd carried out a magnetic gradiometer survey on land at Amberstone, East Sussex (NGR TQ 5980 1110).

The survey identified three linear positive anomalies of possible archaeological origin, along with two further anomalies of probable geological origin.

1 INTRODUCTION

1.1 In February 2016, Archaeological Solutions Ltd carried out a magnetic gradiometer survey on land at Amberstone, East Sussex (NGR TQ 5980 1110; **Figs. 1 - 2**). The survey was undertaken to inform and support a planning application for a proposed residential development.

1.2 The project was carried out in accordance with a specification compiled by AS (dated 26th January 2016) and approved by the East Sussex Assistant County Archaeologist. The geophysical survey was carried out in accordance with the Historic England document *Geophysical Survey in Archaeological Field Evaluation*, 2008, and CIFA, *The use of Geophysical Techniques in Archaeological Evaluations and IfA Standard and Guidance for Archaeological Geophysical Survey* (published 2014).

Objectives

1.3 The investigation of the site by geophysical survey was designed to determine the extent and significance of sub-surface features in order to identify whether further mitigation would be required in association with development proposals (such as trial trench evaluation).

Planning policy context

1.4 The National Planning Policy Framework (NPPF 2012) states that those parts of the historic environment that have significance because of their historic, archaeological, architectural or artistic interest are heritage assets. The NPPF aims to deliver sustainable development by ensuring that policies and decisions that concern the historic environment recognise that heritage assets are a non-renewable resource, take account of the wider social, cultural, economic and environmental benefits of heritage conservation, and

recognise that intelligently managed change may sometimes be necessary if heritage assets are to be maintained for the long term. The NPPF requires applications to describe the significance of any heritage asset, including its setting that may be affected in proportion to the asset's importance and the potential impact of the proposal.

1.5 The NPPF aims to conserve England's heritage assets in a manner appropriate to their significance, with substantial harm to designated heritage assets (i.e. listed buildings, scheduled monuments) only permitted in exceptional circumstances when the public benefit of a proposal outweighs the conservation of the asset. The effect of proposals on non-designated heritage assets must be balanced against the scale of loss and significance of the asset, but non-designated heritage assets of demonstrably equivalent significance may be considered subject to the same policies as those that are designated. The NPPF states that opportunities to capture evidence from the historic environment, to record and advance the understanding of heritage assets and to make this publicly available is a requirement of development management. This opportunity should be taken in a manner proportionate to the significance of a heritage asset and to impact of the proposal, particularly where a heritage asset is to be lost.

2 DESCRIPTION OF THE SITE

2.1 The survey area is formed of two adjoining agricultural fields backing onto houses southeast of Amberstone.

2.2 The site is located to the northeast of the modern town of Hailsham in an area of agricultural land on the margin of the Pevensey Levels. The site lies between c.8-10m AOD.

2.3 The geology of the area is based on the Tunbridge Wells Sand Formation dating to the Cretaceous Period (British Geological Survey 2016). Soils at the site are characterised as slowly permeable, seasonally wet, slightly acid but base-rich loamy and clayey soils (Soilscapes 2016).

3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1 Limited archaeological evidence is available for the area surrounding the site. Most of the known sites recorded on the East Sussex HER for this area relate to post-medieval and early modern structures. The general suitability of this area for prehistoric occupation is, however, demonstrated by the presence of Mesolithic flint artefact scatters in the area to the North of Hailsham (recorded as MES15528, MES15529 and MES15530) and a possible early Bronze Age to medieval enclosure at Longley's Farm (MES7299).

3.2 The possible Bronze Age enclosure at Longley's Farm (MES7299) may indicate that further evidence of this period is present in the vicinity of the

current site. The presence of Harebeating Farm (MES21457) and Amberstone Grange (MES21459), both of which originated as farmsteads in the medieval period, in the vicinity of the site, suggests a potential for evidence relating to medieval farming activity to be present in the area.

4 METHOD OF WORK

Introduction

4.1 The magnetic survey was performed using a dual sensor Grad601-2 Magnetic gradiometer manufactured by Bartington instruments Ltd. The gradiometer measures small distortions in the earth's magnetic field caused by the presence of magnetically susceptible buried objects. The instrument is extremely sensitive and capable of detecting changes in magnetic field strength of the order of 0.1 nanoTesla (nT).

Survey Methodology

4.2 All fieldwork methods complied with the guidelines issued by Historic England and by the Chartered Institute for Archaeologists (Historic England 2008; CIfA 2014) and with the method statement for the project (Archaeological Solutions, dated 09/11/ 2015). Grid squares measuring 30m x 30m were set out across the entirety of the survey area, forming a grid network – see **Fig. 3**. The exact spatial location of the survey grid was recorded using a Leica GS09 GPS smart rover. Geophysical data were collected systematically in a zig-zag pattern within each grid square along traverses spaced at 1 m apart. The gradiometers were configured to record measurements at 0.25 m intervals along each traverse, giving a total of 3600 measurements per grid square.

4.3 A large portion of the eastern field and a small area at the southern tip of the western field could not be surveyed due to tall vegetation. This is displayed on **Fig. 3**.

Data Processing

4.4 The remedial processing of the data can enhance anomalous responses caused by potential archaeological features and eliminate magnetic noise from natural/modern sources. Data processing also allows for the correction of spatial errors introduced during the survey and inherent instrument heading errors. The survey data were processed using Terrasurveyor LITE software, where the following data processing routines were applied:

Data removal: Removal of very large amplitude responses from the data caused by buried modern services to allow correct processing of remaining data.

Destripe: Removal of striping effects from the raw data caused by discrepancies between different sensors and walking directions.

Destagger: Correction of the displacement of anomalies caused by alternate zig-zag traverses. These displacements are often observable in gradiometer data collected with zig-zag traverses if the sample interval is less than 1m.

Despike: Removal of random, high amplitude 'iron spikes' present in the data caused by ferrous debris in the near surface.

Compress: Weak anomalies of archaeological interest were further enhanced by applying an arctangent weighing to the data, accentuating small magnetic responses.

Low-pass filter: A Gaussian low-pass filter was applied to the data to enhance the visibility of weak linear anomalies within the dataset.

Interpolation: Finally the overall appearance of the data were improved (smoothed) by adding interpolated data points between each traverse using a binomial function.

Display and interpretation

4.5 The processed data are displayed as a greyscale magnetic map (**Fig. 5**) and the interpretation of anomalous magnetic responses undertaken manually with recourse to documented responses from subsequently excavated features. A graphical interpretative plan of the site identifying potential archaeological features (**Fig. 6**) was then produced in AutoCAD.

5 RESULTS

6.1 The survey revealed three linear anomalies within the study area, with activity concentrated in the western field. The following numbered anomalies refer to numerical labels on the interpretation plot (**Fig. 6**).

Possible Archaeological Features

6.2 The survey revealed a weakly positive trending linear anomaly (**1**), of varying signal strength. The anomaly has a NE/SW orientation and can be seen in the data running for c.33m.

6.3 To the south of anomaly (**1**) is another weakly positive trending linear anomaly (**2**). This is also orientated NE-SW and runs for c.35m. Approximately c.28m to the south of (**2**), is another weakly positive trending linear anomaly (**3**) with a WNW-ESE orientation, which runs for c.22m. Both (**1**), (**2**) and (**3**)

could be archaeological in origin.

Geological Features

6.4 The survey identified two weakly positive anomalies **(4)** and **(5)**, which are both irregular in appearance and of varying signal strength. Both anomalies consist of spreads of weakly magnetic material forming linear anomalies. Anomaly **(4)** has a NW-SE orientation, and can be seen in the data for some c.53m. Anomaly **(5)** runs parallel to **(4)** and can be seen in the data for some c.137m. Due to the weak magnetic signal and irregular form it has been hypothesised that these anomalies are geomorphological in origin, reflecting disconformities in the underlying sub-surface.

Modern Disturbance

6.5 The data displayed a number of strong magnetic responses **(Figs. 5 & 6)**, which are described below. A number of localised spreads of high amplitude magnetic noise have been identified in the northern half of the survey area **(6)**, which most likely represent buried ferrous material.

6.6 Numerous high amplitude magnetic spikes can be seen in the data **(7)**. Each of these discrete magnetic spikes consists of a well defined dipolar response, their high amplitudes suggests the presence of ferrous debris in the ploughsoil.

6.7 Bipolar magnetic responses can be seen in the survey data along the northern, eastern and western boundaries of the western field **(8)**. This is due to magnetic disturbance from fencing along the boundaries of the field. In the south west corner of the survey area, a large metal gate and a concrete compound in an adjacent field has created a large distortion to the local magnetic field **(9)**.

Conclusion

6.8 The geophysical survey identified three anomalies which appear to be of archaeological origin. The anomalies appear as weakly positive trending linear magnetic responses, synonymous with infilled gulley or ditch type features **(1, 2 & 3)**. The parallel alignment of features **(1)** and **(2)** with each other and the NW edge of the field and road beyond may suggest an agricultural origin reflecting former land use.

6.9 The magnetic contrast seen in the data indicates that the underlying geology and site formation process were conducive to magnetic geophysical survey. However, positive anomalies appear weak in amplitude and it is possible that prolonged ploughing has resulted in the truncation of features, reducing their overall magnetic responses.

ACKNOWLEDGEMENTS

Archaeological Solutions Limited would like to thank Mr Jonathan Tomlinson of Heyford Developments Limited for funding the geophysical survey.

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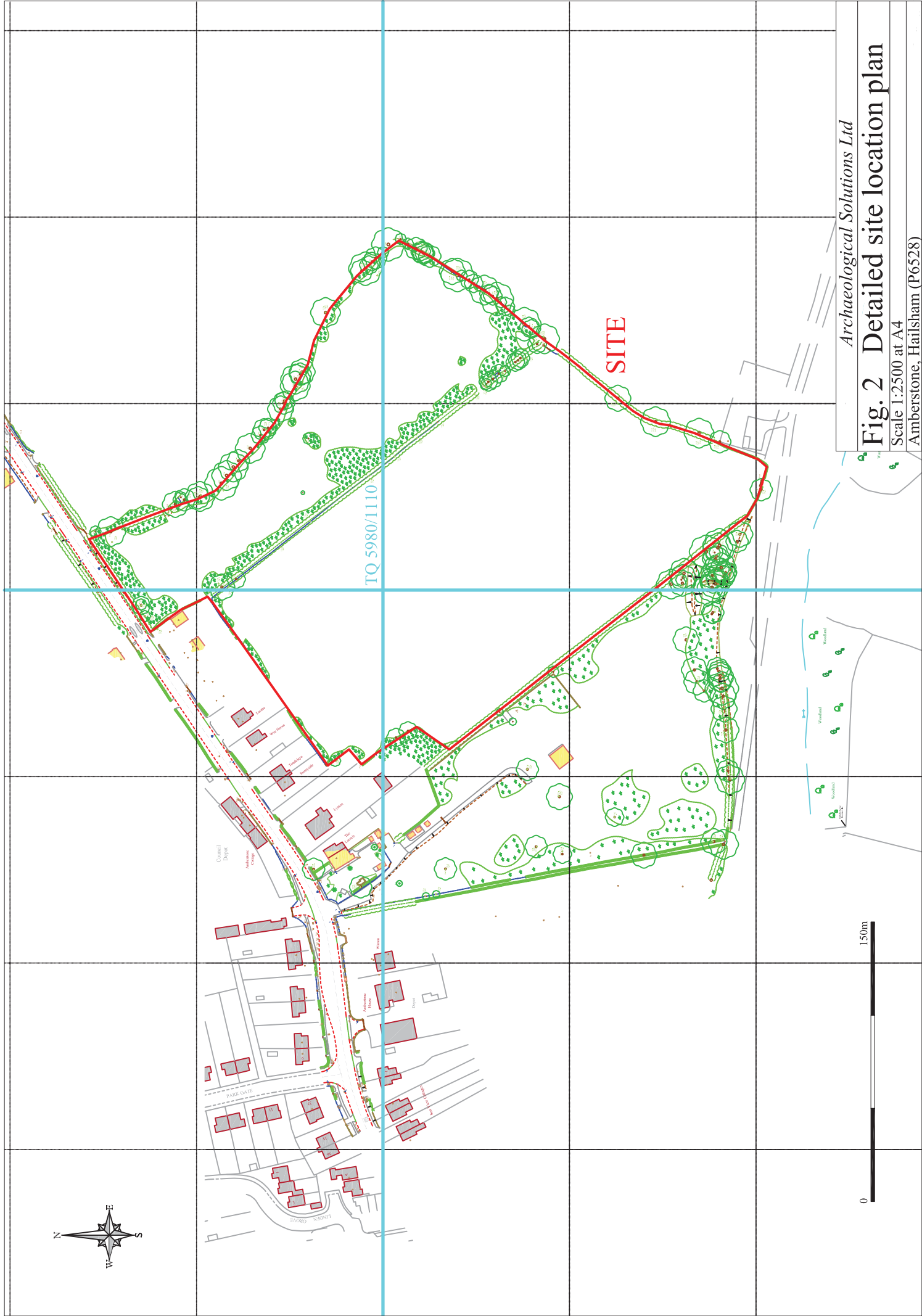
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Fig. 1 Site location plan
 Scale 1:25,000 at A4
 Amberstone, Hailsham, East Sussex (P6528)

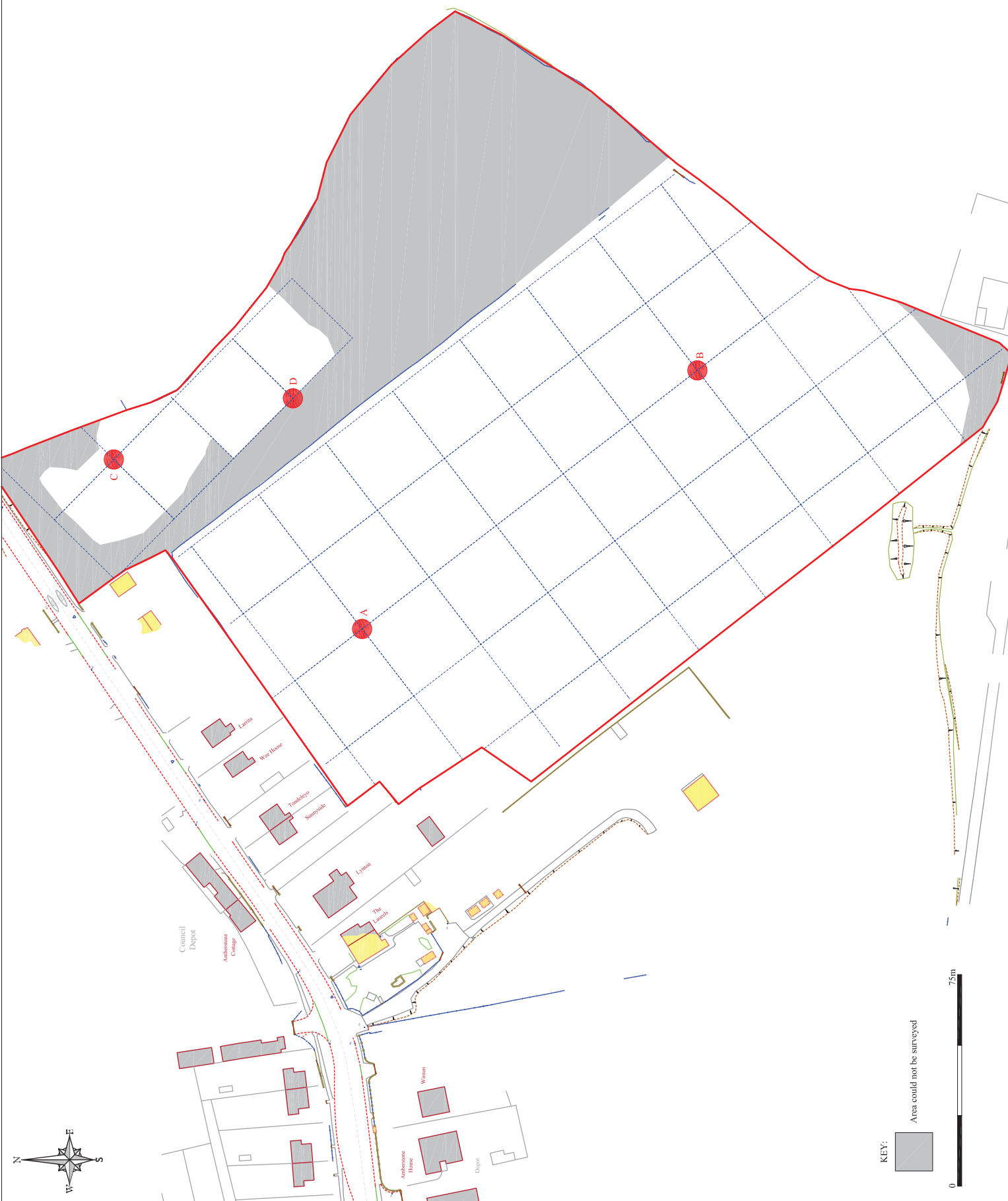
Fig. 2 Detailed site location plan

Scale 1:2500 at A4

Amberstone, Hailsham (P6528)



Point co-ordinates	
A	559768.61, 111124.40
B	559860.21, 111005.61
C	559828.65, 111212.37
D	559850.33, 111148.89



KEY:
 Area could not be surveyed



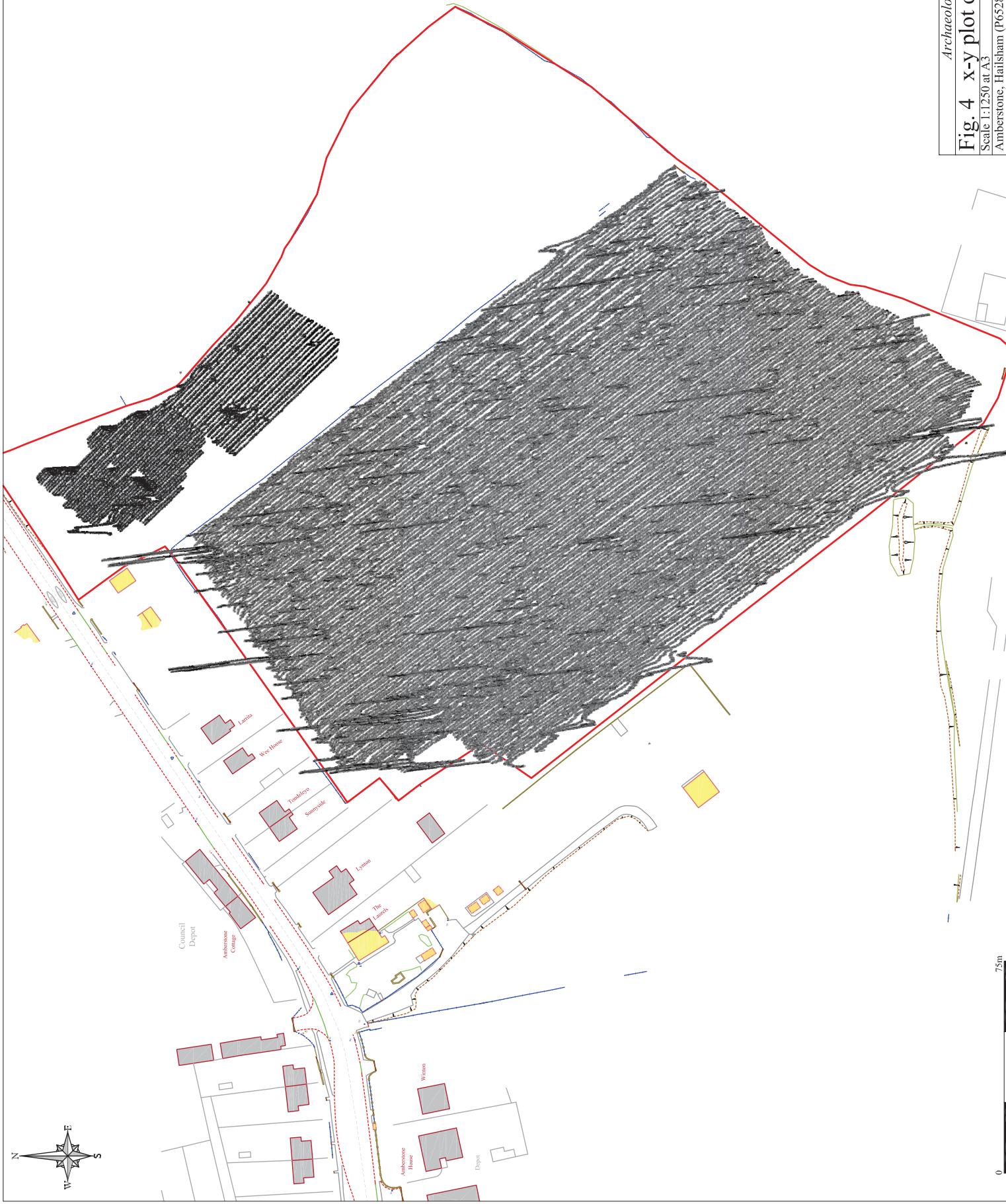
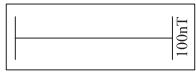
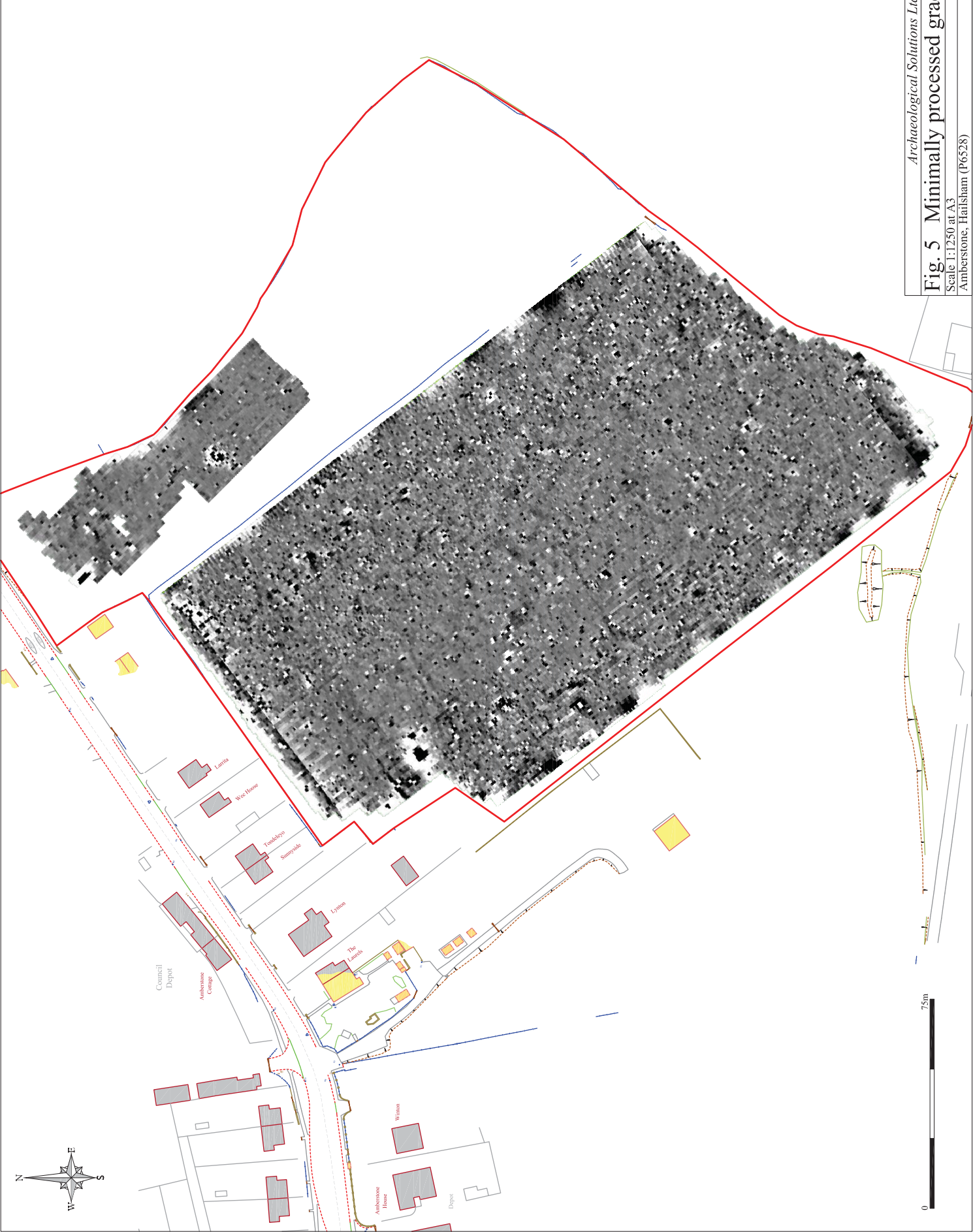


Fig. 4 x-y plot of gradiometer data

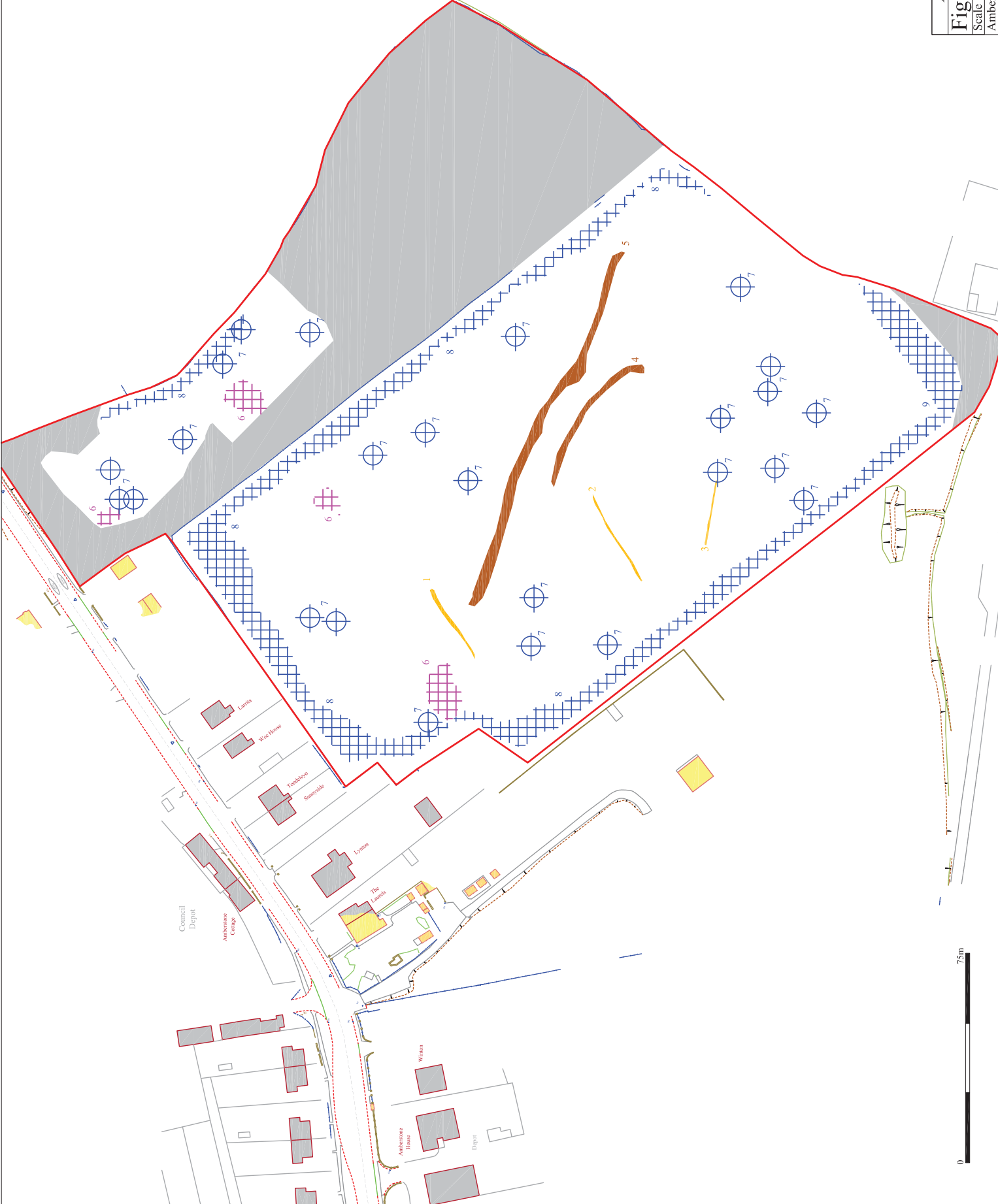
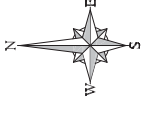
Scale 1:1250 at A3

Amberstone, Hailsham (P6528)

Plotting parameters
Maximum +1.9nT (Black)
Minimum -2nT (White)



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Fig. 5 Minimally processed gradiometer data
Scale 1:1250 at A3
Amberstone, Hailsham (P6528)



KEY	
ARCHAEOLOGY	
	Positive anomaly, probable cut feature of archaeological origin
OTHER ANOMALIES	
	Geological feature - Natural magnetic variation
	Magnetic Spike- probable ferrous object
	Strong magnetic debris
	Magnetic disturbance
OTHER	
	Area which could not be surveyed

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Fig. 6 Interpretation plot
 Scale 1:1250 at A3
 Amberstone, Hallsam (P6528)

