

Substrata

Archaeological Geophysical Surveyors

An archaeological magnetometer survey

**Land south of Blandford Hill
Milborne St Andrew, Dorset**

Centred on NGR: 380510,097480

Report 1808BLA-R-1

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24 September 2018

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1 Introduction

This report presents the results of an archaeological geophysical survey at the site listed in Section 4 and shown in Figure 1, hereafter referred to as the 'Survey Area'. The survey was commissioned by Cotswold Archeology Ltd (the Client) on behalf of Alder King representing Wessex Strategic Ltd and will be used to inform a future planning application regarding a proposed residential development. The commissioning of this report was in keeping with the National Planning Policy Framework, Chapter 16, Paragraph 189 (Ministry of Housing, Communities & Local Government, 2018). The survey and report were completed in compliance with a Written Scheme of Investigation (Substrata Ltd, 2018).

2 Client

Cotswold Archaeology Ltd, Unit 53, Basepoint Business Centre, Yeoford Way, March Barton Trading Estate, Exeter EX2 8LB

3 Copyright

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4 Survey type and location

4.1 Survey

Method:	shallow depth magnetometer survey
Instrument:	twin-sensor fluxgate gradiometer
Date:	10 to 13 September 2018
Area:	8ha
Survey resolution:	1m by 0.25m

4.2 Location

Village:	Milborne St Andrew
Civil Parish:	Milborne St Andrew
District:	North Dorset
County:	Dorset
Nearest Postcode:	DT11 0JA
Survey centre NGR:	SY 80510 97480 (point)
Survey centre NGR (E/N):	380510,097480 (point)
Historic environment designation:	None
Historic environment designation:	None
OASIS ID:	substrat1-329145

5 Summary

A magnetometer survey was selected to provide a relatively fast and cost-effective evaluation of any buried archaeology across the Survey Area (see Section 14). The magnetic anomaly groups pertaining to potential buried archaeology were georeferenced to the Ordnance Survey National Grid, mapped, characterised and assigned with an appropriate degree of certainty in conformance with the survey aims and objectives set out in Section 7.

The differences in magnetic responses across the Survey Area were sufficient to be able to differentiate between anomalies representing possible buried archaeology and background magnetic responses.

Thirty-four magnetic anomaly groups were characterised as representing potential buried archaeology. Of these two groups represent a single and a double ring ditch previously recorded in the Dorset Historic Environment Record (entries MDO4387 and MCO4388). One group may represent a pit or large posthole near the centre of the single ring ditch and one group a set of postholes or pits within the double ring ditch. One group may represent a large pit situated between the double rings. Two groups may also represent single ring ditches with one of these possibly containing a central pit. One group may represent a further, smaller ring ditch but may reflect recent ground disturbance around a circular cattle feeder. One group may represent an in-situ highly heated deposit such as that left by a kiln, furnace or funerary rites but may reflect more recent ground disturbance. Five groups may represent pits. A further five groups may represent either field boundaries removed before 1888 or remnants of a field drainage system. Four groups are likely to represent disturbed ground associated with a former track recorded on historic maps between 1888 and 1902 and a coinciding field boundary mapped between 1957 and 1974. The remaining groups are most likely to represent fragments of former field boundaries and enclosures.

6 Standards

The standards that were used to complete this survey are defined by the Chartered Institute for Archaeologists (2014b) and the Europae Archaeologiae Consilium (undated). The codes of approved practice to be followed are those of the Chartered Institute for Archaeologists (2014) and Archaeology Data Service (undated).

7 Survey aims and objectives

7.1 Aims

1. Within the framework set out in Chartered Institute for Archaeologists (2014b) and Europae Archaeologiae Consilium (undated), complete an archaeological geophysical survey and report which will, as far as possible, establish the presence or absence, extent and character of any buried archaeology within the survey area.
2. Provide sufficient information on the nature of any archaeological remains to facilitate the assessment of their interest prior to the determination of the planning application.

7.2 Objectives

1. Complete a magnetometer survey across the Survey Area.
2. Identify any magnetic anomalies that may be related to buried archaeology.
3. Within the limits of the technique and dataset, archaeologically characterise any such anomalies or patterns of anomalies.
4. Accurately record the location of the identified anomalies.
5. Produce a report based on the survey that is sufficiently detailed to inform any subsequent development on the survey area about the location and possible archaeological character of the recorded anomalies.

8 Methodology

The magnetometer survey was undertaken in accordance a Written Scheme of Investigation (Substrata Ltd, 2018) using the standards specified in Section 6 to achieve the aims and objectives set out in Section 7. The survey method was selected to provide a relatively fast and cost-effective evaluation of any buried archaeology across the Survey Area (see Section 14).

Data processing was undertaken using appropriate software (Table 2), with all anomalies being digitised and geo-referenced. The final report (this document) includes a graphical and textual account of the techniques undertaken, the data obtained and an archaeological interpretation of that data and conclusions about any likely archaeology. The survey and report conform to the Chartered Institute for Archaeologists standard for geophysical survey (Chartered Institute for Archaeologists, 2014b).

9 Survey Area

9.1 Location and description

The land designated for survey, hereafter referred to as the 'Survey Area', comprises one field

situated on the western side of Milborne St Andrew (Figure 1). The Survey Area is bound to the north by a hedging and Blandford Hill road with agricultural fields beyond, to the east by hedging and fencing with Lane End and agricultural fields beyond, to the south by fencing and housing and to the west by fencing with paddocks, residential infrastructure and housing beyond. The north-eastern corner of the field contains two properties. The land descends from approximately 90m aOD in the northeast of the Survey Area to approximately 80m aOD in the southwest.

At the time of survey, the field was under grass with longer grass and nettles in the north and northeast.

9.2 Geology and sub-surface deposits

The solid geology is primarily soft white chalk with relatively widely spaced but large flint seams of the Cretaceous Tarrant Chalk Member. Rocks of the Cretaceous Newhaven Chalk Formation lie along the western boundary of the Survey Area. These rocks are soft to medium hard, smooth white chalks with numerous marl seams and flint bands. The superficial geology is not recorded in the source consulted (British Geological Survey, undated).

No relevant geotechnical reports or borehole logs of near-surface deposits within 500m of the Survey Area were available at the time of writing (ibid).

9.3 Soils

The topsoil is 'shallow lime-rich soils over chalk or limestone' (Cranfield Soil and Agrifood Institute, undated).

10 Archaeological background

10.1 Sources

The relevant entries from the Dorset Historic Environment Record (HER) were issued as ESRI shape files to Cotswold Archaeology Ltd on 3rd September 2013 and permission for Substrata Ltd to have access under the same licence was subsequently confirmed on 20th September 2018 (Dorset County council, HER enquiry number HERE86786653, 01-09-2018 to 31-03-2019).

A Heritage Appraisal of the Survey Area and its environment was produced in August 2018 (Cotswold Archaeology, 2018). The Appraisal includes the identification of susceptible heritage assets which may physically affect the proposed development. A detailed Heritage Assessment will be produced in due course and will include the results of this survey (Cotswold Archaeology Ltd, forthcoming). The following points are from the HER, the Appraisal and a draft of the Assessment.

10.2 Historic landscape characterisation

'Enclosed, planned enclosure'

Settlement type: historic core

Farm type: mixed

Farm period: post-medieval (AD 1500 to 1799)

Confidence: possible

Aspect: slope

Geology: chalk

General field shape: regular, predominately angular

Primary boundaries: straight (90%)

Secondary boundaries: curvilinear (10%)

Boundary type: hedge

Other characteristics: often on a line of communication and/or settlement edge

10.3 Summary of the archaeological background

This section summarises heritage assets that are thought relevant to the survey data analysis and is not designed to be a comprehensive description of the archaeological background.

10.3.1 Designated Heritage Assets

There are no recorded designated heritage assets within the Survey Area.

10.3.2 Non-designated heritage assets within the Survey Area

Two round barrows, one of which is present as a double ring ditch, are listed in the Dorset Historic Environment Record (HER) as entries MDO4387 and MDO4388 respectively. They are thought to be bronze age in date. Both of these are confirmed by this survey.

10.3.3 Non-designated heritage assets adjacent to the Survey Area

A late iron age to Romano-British settlement and burial site has been recorded across a large area approximately 30m northeast of the Survey Area and beyond. A further possible prehistoric settlement site has also been recorded approximately 60m to the south of the Survey Area. Other non-designated assets adjacent to the Survey Area include medieval settlement remains, a 19th century flint pit and a 19th century chalk pit.

11 Results

11.1 Scope and definitions

This survey was designed to record magnetic anomalies. A magnetic anomaly is a local variation in the Earth's magnetic field. Such variations can result from differences in the magnetic properties of the underlying solid geology, superficial geology and other near-surface deposits including those altered and created by past human activities. Near-surface artefacts can also create magnetic anomalies.

The dimensions of magnetic anomalies mapped as representing potential buried archaeology do not represent the dimensions of any associated archaeology.

The analysis presented below identifies and characterises anomalies and anomaly groups that may relate to buried archaeology.

11.2 Analysis

Figures 2 to 4 provide a graphical interpretation of the survey data and include the anomaly groups identified as possibly relating to buried archaeology along with their identifying numbers. Table 1 is an extract of the detailed analysis of the survey data sourced from the attribute tables of the GIS project provided in the project archive.

Figures 2 to 4 and Table 1 comprise the analysis of the survey data.

Figures 5 to 10 are plots of the processed data as specified in Table 3. Figure 11 is a plot of minimally processed data as specified in Table 4. Figure 12 shows the location of the survey grid and grid data files.

12 Discussion

12.1 General points

Scope

Not all anomalies or anomaly groups identified in Table 1 are necessarily discussed below. All identified anomaly groups are recorded in the GIS project held in the survey archive.

Data collection

Data collection along the survey area edges was restricted as shown in the figures due to the presence magnetic materials within and adjacent to the plot boundaries. Strong magnetic responses mapped close to the boundaries are likely to relate to the magnetic materials except where otherwise indicated in Figures 2 to 4 and Table 1.

Anomaly characterisation

There are a number of anomaly groups that could be interpreted as relating to large postholes or pits although most will have natural origins. Anomalies of this sort are mapped as

potential archaeology when they are well defined in the data, associated with other significant anomaly groups or otherwise formed recognisable patterns as listed in Table 1.

Anomalies thought to relate to natural features and recent man-made objects such as manholes, water management equipment, drains, cables and other services are only mapped where they comprise significant magnetic responses across the dataset that need clarification.

Numerous dipole magnetic anomalies are present within the dataset. These are likely to represent recent ferrous objects. They are only mapped if they could influence the analysis of anomaly groups thought to have an archaeological origin.

Data trends

An approximately north to south set of parallel, linear trends across the Survey Area are likely to represent relatively recent ploughing disturbance.

A set of west-south-west to east-north-east trends across the Survey Area but especially visible in the south are likely to reflect ploughing disturbance. In this case, the trend is the similar to that of three former field boundaries mapped by the Ordnance Survey between 1957 and at 1968 with the southernmost remaining extant to at least 1974. The trend is also similar to five linear anomaly groups discussed below in Section 12.3 and characterised in the analysis as either former field boundaries removed before 1888 or partial remnants of former, probably post-medieval, field drains.

12.2 Data relating to historic maps and other records

Magnetic anomaly group **1** represents an in-filled ring ditch thought to be bronze age in date (Dorset Historic Environment Record MDO3487). Group 2 may be associated with group 1 (Section 12.3).

Group **17** represents a double ring ditch, again thought to be bronze age and previously recorded from aerial photographs (HER MDO4388). Groups 18 and 19 may be associated with group 17 (Section 12.3).

Groups **28, 30, 32** and **33** are most likely to represent disturbed ground associated with a former track recorded on historic maps between 1888 and 1902. They are situated on what was later the location of the southernmost of two field boundaries mapped between 1957 and 1974 which may have enclosed a later version of the track. The northernmost boundary was removed after 1968 while the southern boundary was removed after 1974

12.3 Data with no previous archaeological provenance

Magnetic anomaly group **2** may represent a large posthole or pit lying near the centre of the ring ditch represented by group 1.

Group **13** may represent a ring ditch. Group **14** may represent a large pit near the centre of group 13 or may be part of group 16 (discussed below).

Group **18** may represent a group of postholes lying within the double ring ditch represented by group 17. Group 18 is included in the analysis because it's apparent relationship with group 17. Other similar anomalies elsewhere in the data have not been identified as representing possible posthole because of their lack of archaeological context and most of these will represent natural deposits. Group **19** may represent an-infilled depression, such as a pit, situated on the eastern side of group 17.

Group **20** may represent a sub-circular archaeological deposit such as a partially preserved ring ditch but it may represent recent ground disturbance around a circular cattle feeder.

Group **21** has some characteristics that may be interpreted as relating to in-situ, highly heated deposits such as those left from a kiln, a furnace or funerary rites. The anomaly pattern is not perfect, however, and it may reflect recent ground disturbance or an element of group **16** (discussed below).

Groups **12, 22, 23, 26** and **29** stand out in the data set as distinct, relatively strong anomalies and may represent either in-filled pits or natural features.

Group **34** is partially masked by a very strong magnetic response from a close-by iron or steel service. It may represent a further ring ditch.

Groups **3, 11, 16, 25** and **27** have a similar, but not identical, trend to three field boundaries, the northern two of which were mapped between 1957 and 1968 and the southernmost mapped between 1957 and at least 1974. The anomaly groups represent either earlier field boundaries removed before 1888 or remnants of a partially preserved field drainage system of unknown but likely post-medieval or modern date.

The remaining anomaly groups (**4 to 10, 15, 24** and **31**) mapped as representing potential buried archaeology have characteristics typical of those representing former field and enclosure boundaries.

13 Conclusions

The differences in magnetic responses across the Survey Area were sufficient to be able to differentiate between anomalies representing possible buried archaeology and background magnetic responses.

Thirty-four magnetic anomaly groups were characterised as representing potential buried archaeology. Of these two groups (1 and 17) represent a single and a double ring ditch previously recorded in the Dorset Historic Environment Record (entries MDO4387 and MCO4388). One group (2) may represent a pit or large posthole near the centre of the single ring ditch and one group (18) a set of postholes or pits within the double ring ditch. One group (19) may represent a large pit situated between the double rings. Two groups (13 and 34) may also represent single ring ditches with one of these possibly containing a central pit (14). One group (20) may represent a further, smaller ring ditch but may reflect recent ground disturbance around a circular cattle feeder. One group (21) may represent an in-situ highly heated deposit such as that left by a kiln, furnace or funerary rites but may reflect more recent ground disturbance. Five groups (12, 22, 23, 26 and 29) may represent pits. A further five groups (3, 11, 16, 25 and 27) may represent either field boundaries removed before 1888 or remnants of a field drainage system. Four groups (28, 30, 32 and 33) are likely to represent disturbed ground associated with a former track recorded on historic maps between 1888 and 1902 and a coinciding field boundary mapped between 1957 and 1974. The remaining groups (4 to 10, 15, 24 and 31) are most likely to represent fragments of former field boundaries and enclosures.

14 Disclaimer

The description and discussion of the results presented in this report are the authors', based on their interpretation of the survey data. Every effort has been made to provide accurate descriptions and interpretations of the geophysical data set. The nature of archaeological geophysical surveying is such that interpretations based on geophysical data, while informative, can only be provisional. Geophysical surveys are a cost-effective early step in the multi-phase process that is archaeology.

15 Archive

- 15.1 Online Access to the Index of archaeological investigationS (OASIS)
OASIS ID: substrat1-329145

The OASIS entry has been completed and the boundary file and report uploaded with six months delay in publication.

15.2 Substrata Limited archive

A full archive of this survey will be held by Substrata Limited on cloud and local hard drive storage as specified in Appendix 3.

15.3 Archaeological Data Service (ADS)

Depending on local authority policy, an archive may be deposited with the ADS as specified in Appendix 3.

15.4 Historic Environment Record (HER)

Subject to any contractual requirements on confidentiality, a PDF or printed copy of the report will be submitted to the appropriate HER within six months of completion.

16 Acknowledgements

Substrata would like to thank Zoe Arkley of Cotswold Archaeology Ltd for commissioning us to complete this survey.

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[Accessed 14 Sep. 2018]

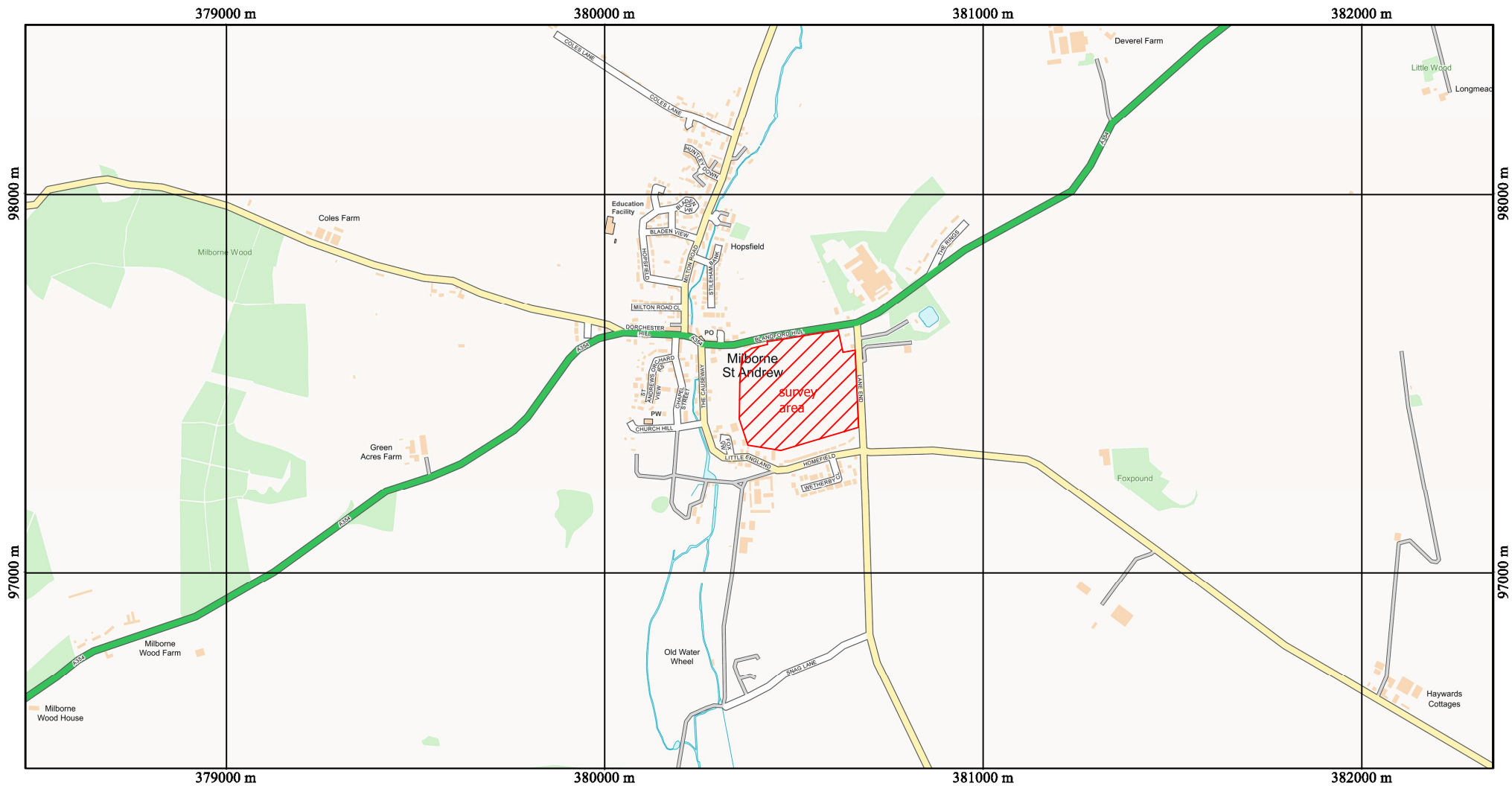
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Appendix 1 Figures

General Guidance

The anomalies represented in the survey plots provided in this appendix are magnetic anomalies. The apparent size of such anomalies and anomaly patterns are unlikely to correspond exactly with the dimensions of any associated archaeological features .

A rough rule for interpreting magnetic anomalies is that the width of an anomaly at half its maximum reading is equal to the width of the buried feature, or its depth if this is greater (Clark, 2000: 83). Caution must be applied when using this rule as it depends on the anomalies being clearly identifiable and distinct from adjacent anomalies. In northern latitudes the position of the maximum of a magnetic anomaly will be displaced slightly to the south of any associated physical feature.



British Grid
 centre X: 380408.82 m, centre Y: 97464.45 m

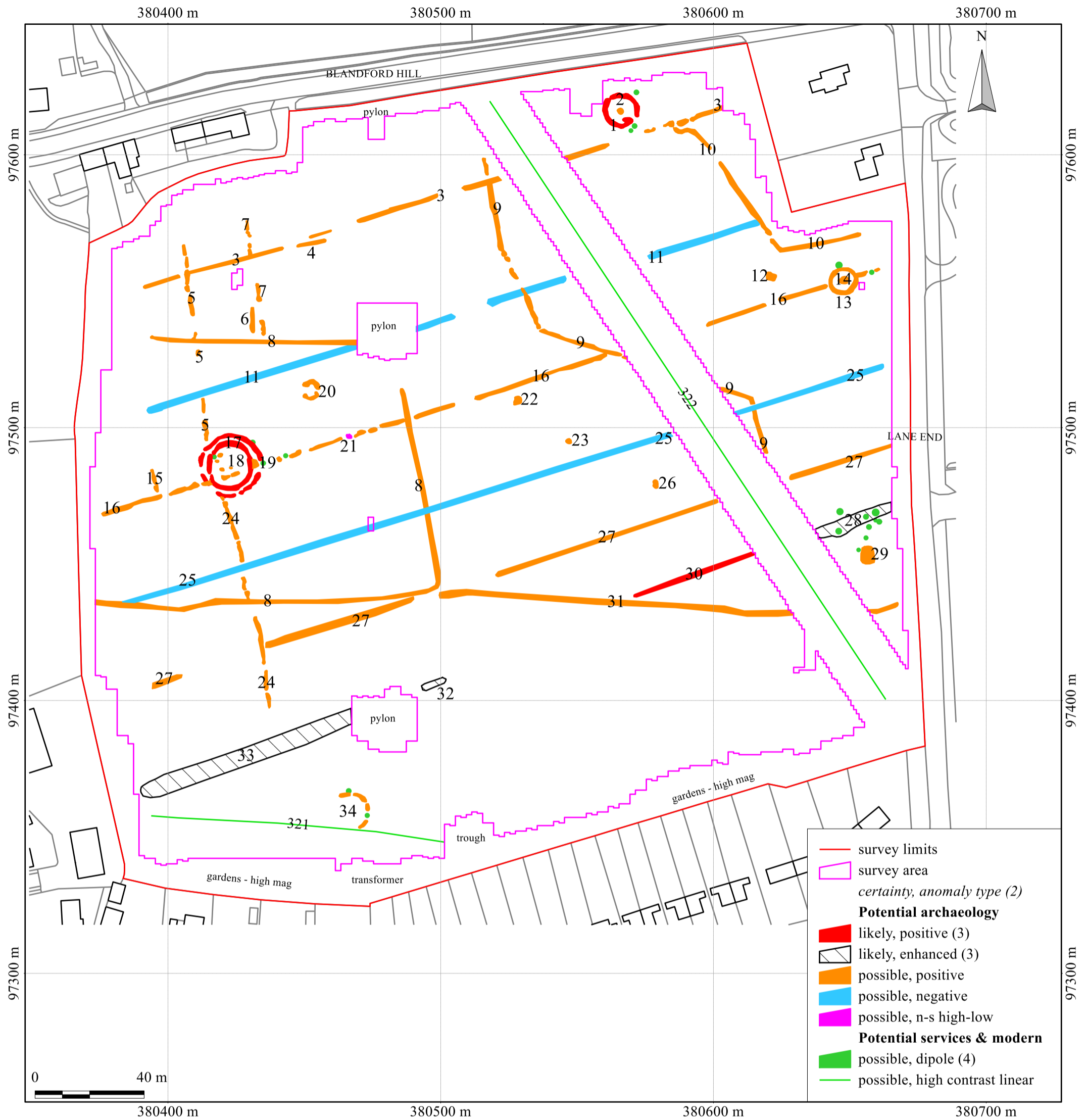
Scale: 1:10000 @ A3. Spatial Units: Meter. Do not scale off this drawing

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Figure 1: location map

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British Grid
 centre X: 380537.59 m, centre Y: 97450.37 m

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Scale: 1:1400 @ A3. Spatial Units: Meter. Do not scale off this drawing

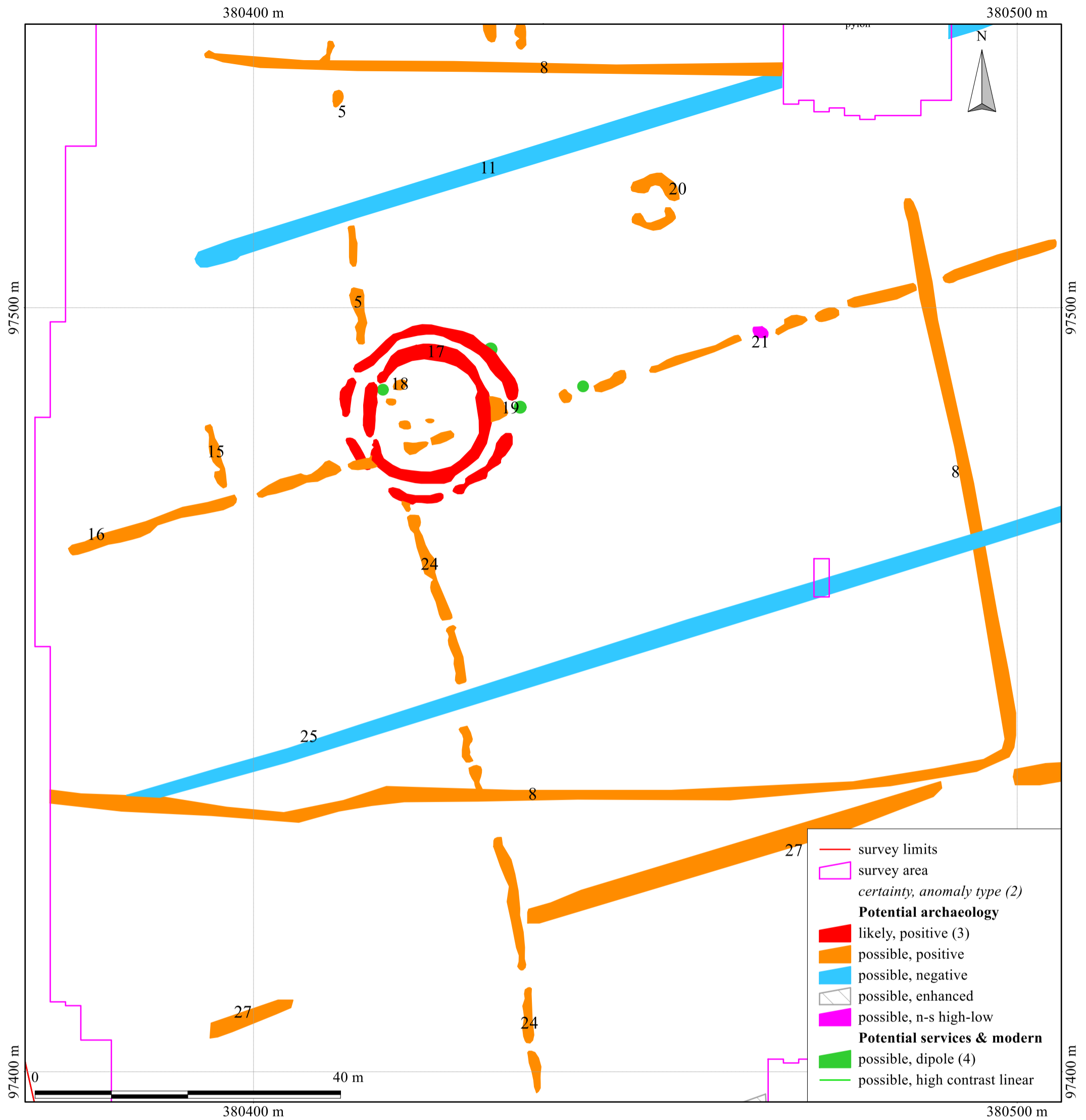
Notes:

1. All interpretations are provisional and represent potential archaeological deposits.
2. 'Anomaly type' is a description of the magnetic anomaly. See the report text or GIS for an archaeological characterisation.
3. Anomalies designated "likely archaeology" have supporting evidence e.g. historical maps and or visible earthworks.
4. Not all instances are mapped.
5. Anomalies likely to represent recent deposits or ground disturbance, or geological and other natural deposits are not mapped unless relevant to potential buried archaeology.

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Figure 2: survey interpretation



British Grid
centre X: 380437.94 m, centre Y: 97466.58 m

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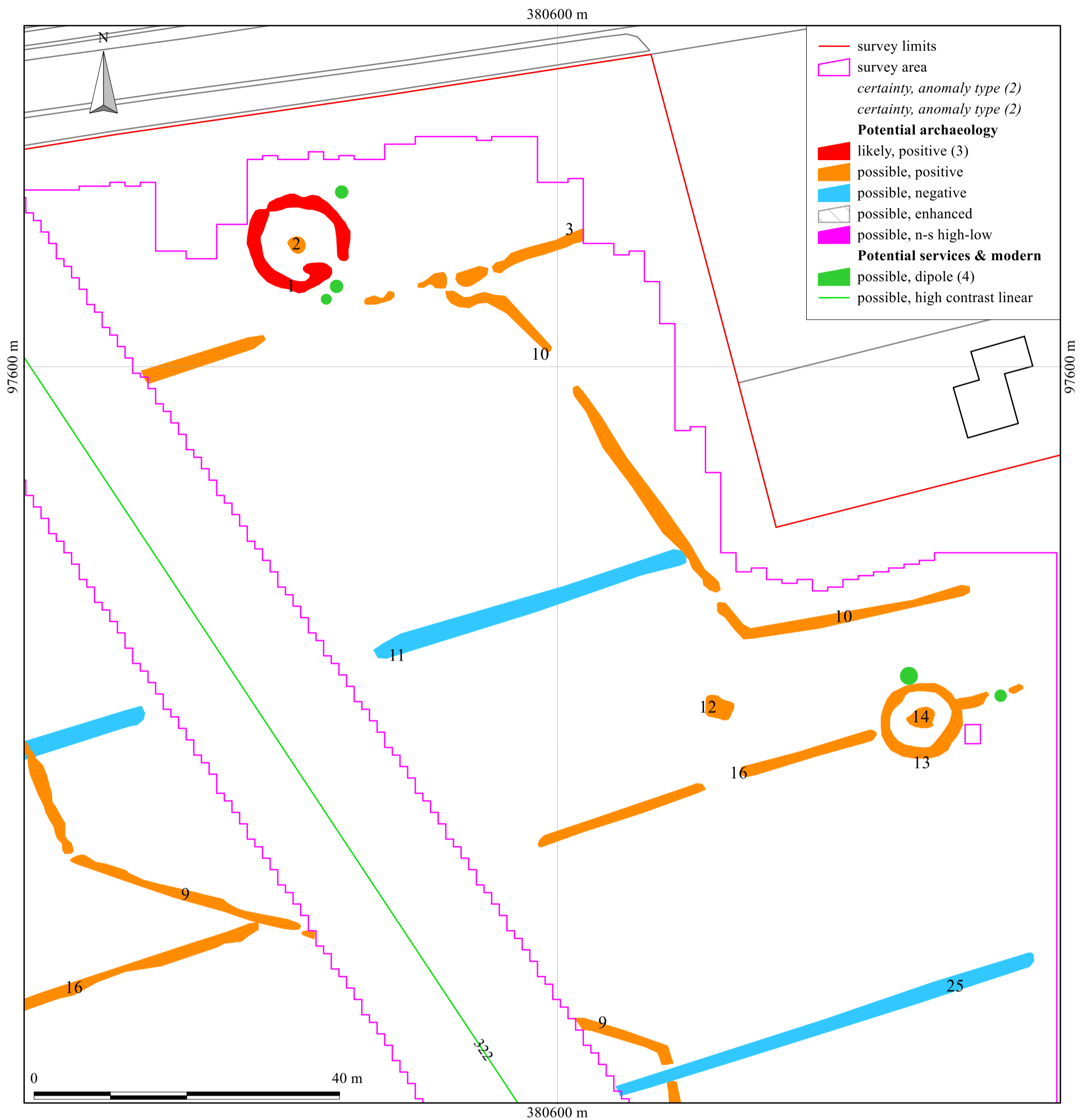
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Figure 3: survey interpretation, magnetic anomaly groups 17, 18, 19, 20, 21 and others



British Grid
centre X: 380598.01 m, centre Y: 97574.13 m

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Scale: 1:500 @ A3. Spatial Units: Meter. Do not scale off this drawing

Notes:

1. All interpretations are provisional and represent potential archaeological deposits.
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Figure 4: survey interpretation, magnetic anomaly groups 1, 2, 13, 14 and others



British Grid
 centre X: 380537.59 m, centre Y: 97450.37 m

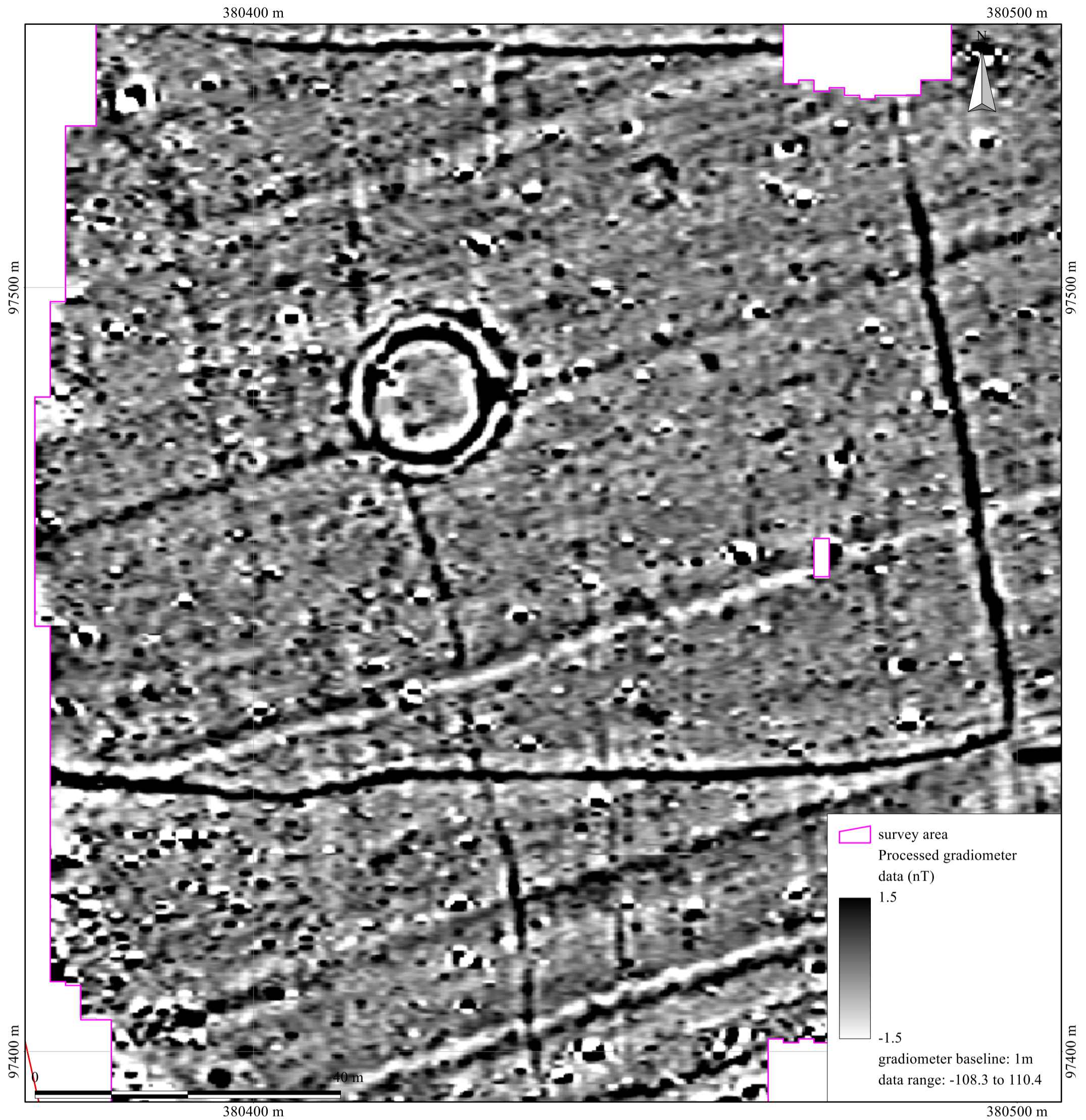
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Figure 5: shade plot of processed data



British Grid
 centre X: 380437.94 m, centre Y: 97463.93 m

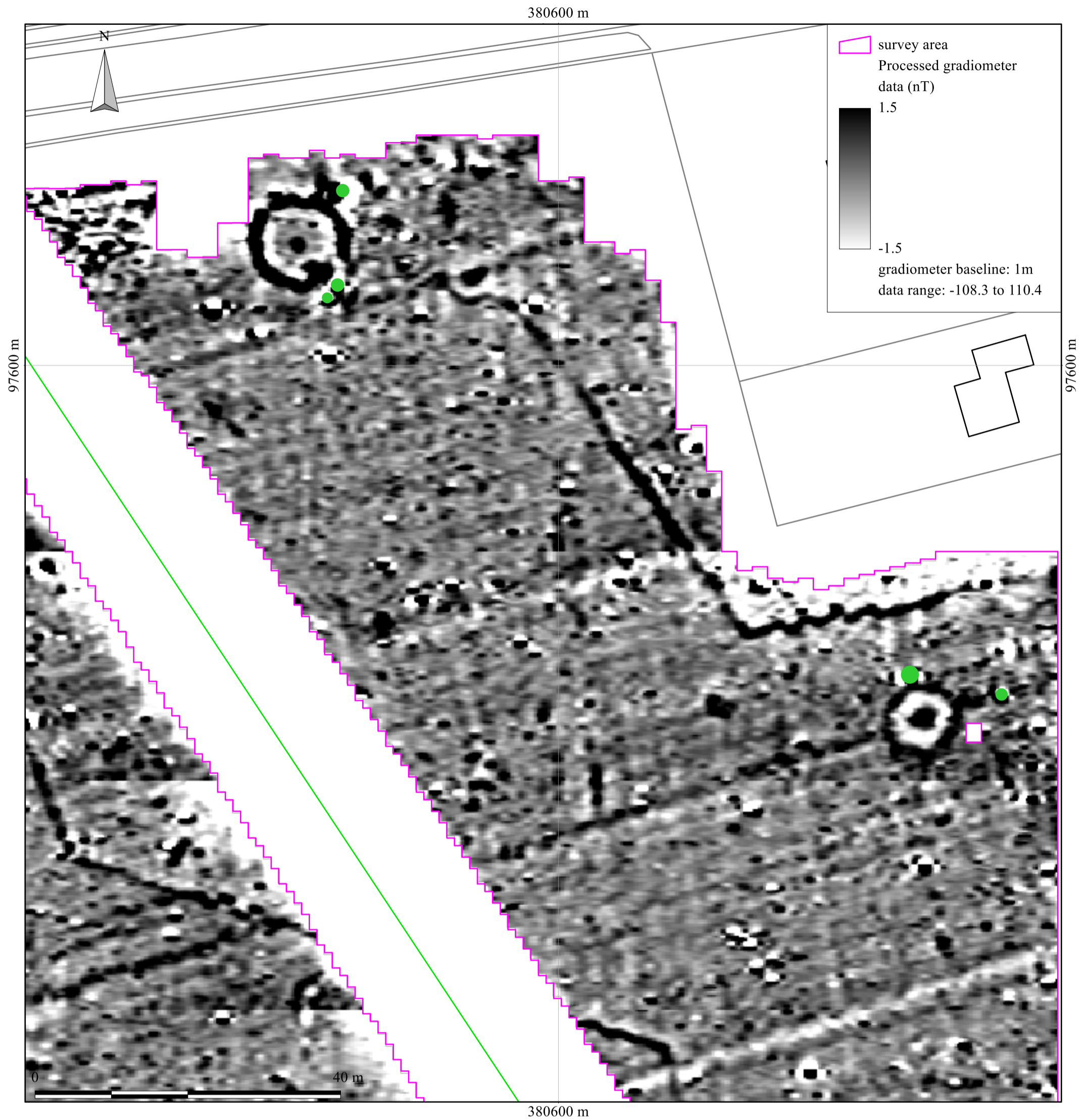
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Figure 6: shade plot of processed data, magnetic anomaly groups 17, 18, 19, 20, 21 and others



British Grid
 centre X: 380598.01 m, centre Y: 97574.13 m

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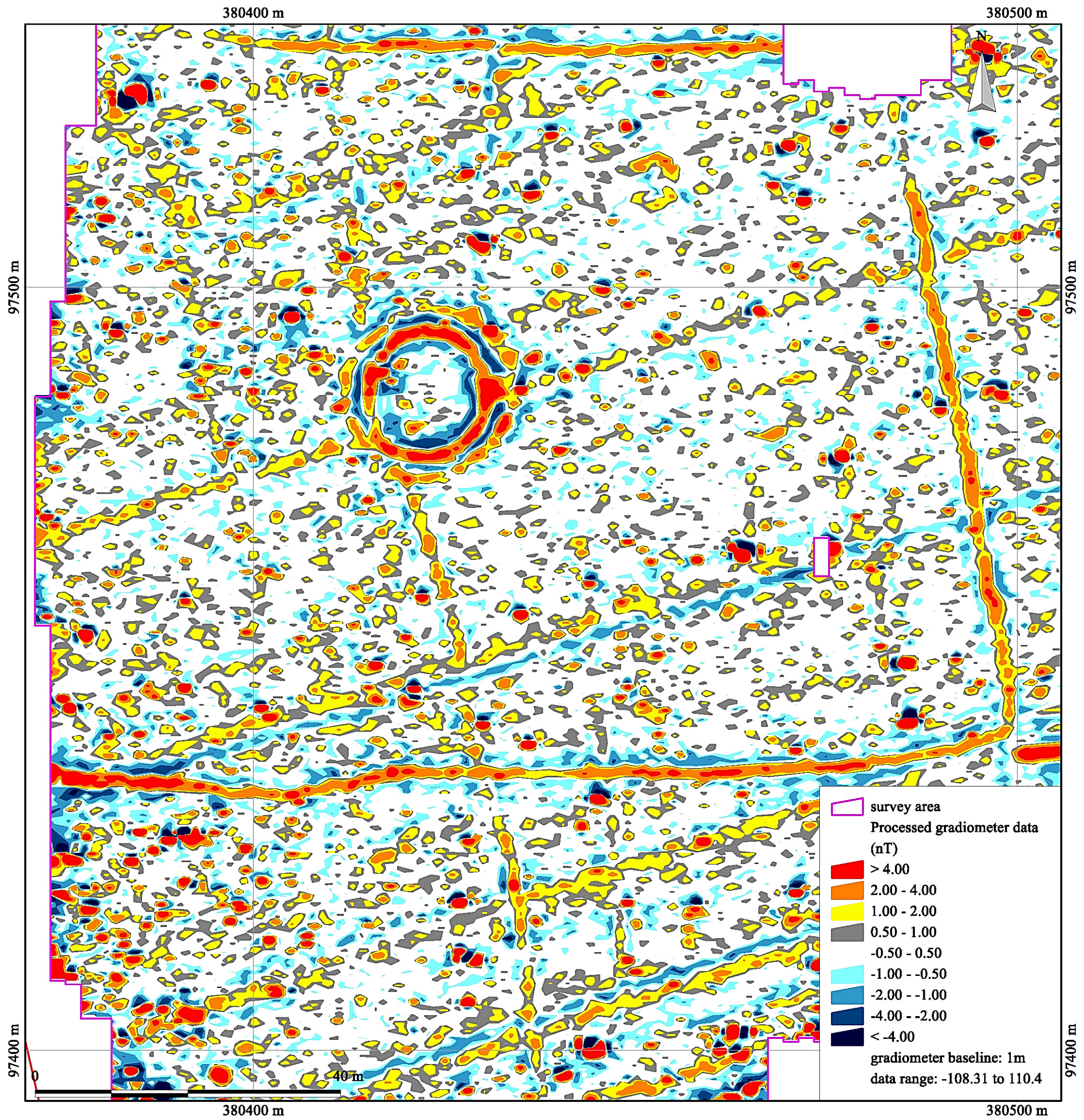
Figure 7: shade plot of processed data, magnetic anomaly groups 1, 2, 13, 14 and others



An archaeological magnetometer survey
Land south of Blandford Hill, Milborne St Andrew, Dorset
Centred on NGR: 380510,097480
Report 1808BLA-R-1

Substrata Limited
Langstrath, Goodleigh
Barnstaple, Devon EX32 7LZ
Tel: 01271 342721
Email: enquiries@substrata.co.uk
Web: substrata.co.uk

Figure 8: contour plot of processed data



British Grid
centre X: 380437.94 m, centre Y: 97463.93 m

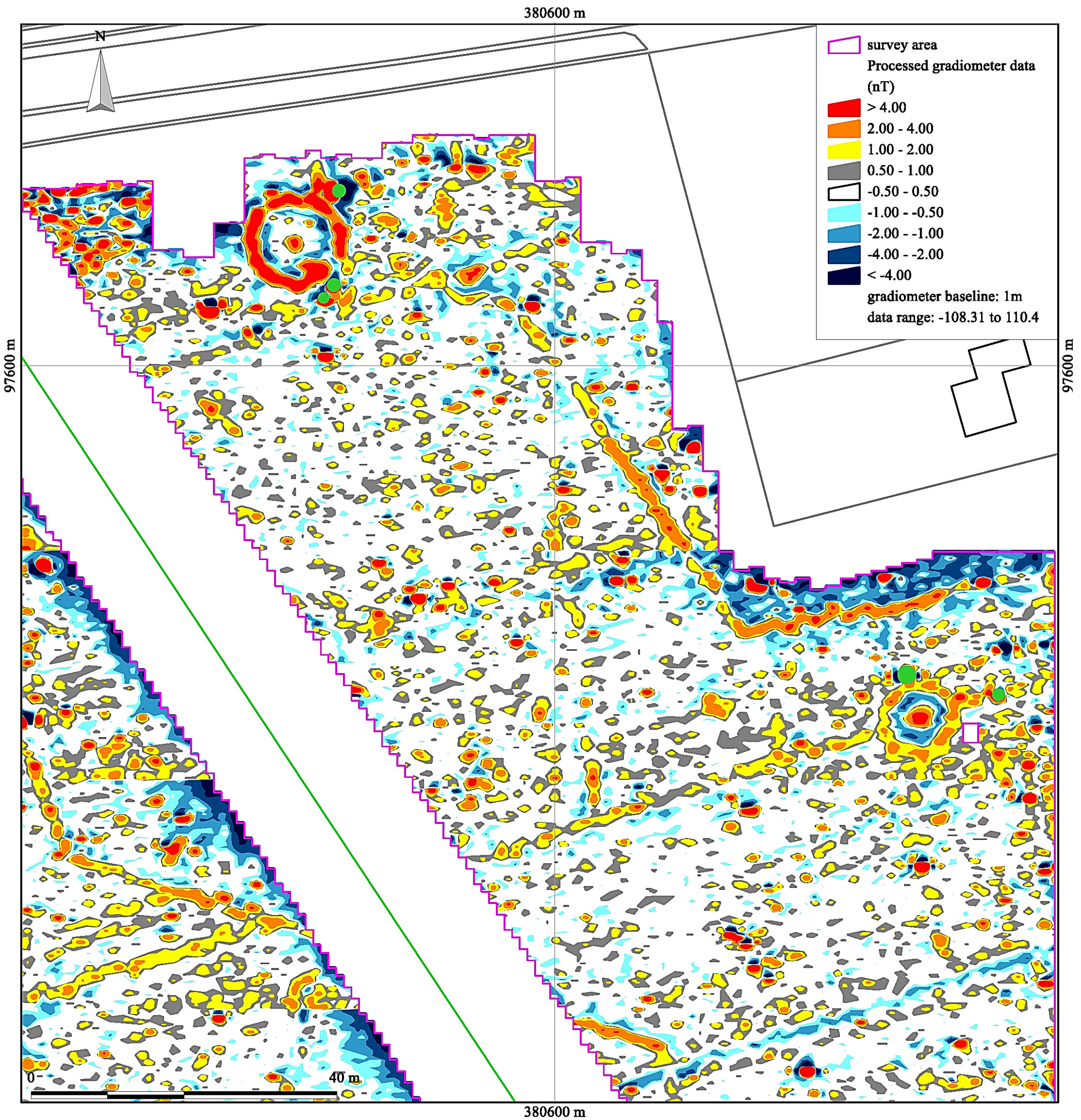
Geophysical survey: Copyright Substrata Limited.
Base map: Contains Ordnance Survey data
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Scale: 1:500 @ A3. Spatial Units: Meter. Do not scale off this drawing

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Figure 9: contour plot of processed data, magnetic anomaly groups 17, 18, 19, 20, 21 and others



British Grid
centre X: 380598.01 m, centre Y: 97574.13 m

Geophysical survey: Copyright Substrata Limited.
Base map: Contains Ordnance Survey data
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Scale: 1:500 @ A3. Spatial Units: Meter. Do not scale off this drawing

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Figure 10: contour plot of processed data, magnetic anomaly groups 1, 2, 13, 14 and others



British Grid
 centre X: 380537.59 m, centre Y: 97450.37 m

Geophysical survey: Copyright Substrata Limited.
 Base map: Contains Ordnance Survey data
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Scale: 1:1400 @ A3. Spatial Units: Meter. Do not scale off this drawing

An archaeological magnetometer survey
 Land south of Blandford Hill, Milborne St Andrew, Dorset
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 Report 1808BLA-R-1

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 Web: substrata.co.uk

Figure 5: shade plot of processed data



British Grid
centre X: 380537.59 m, centre Y: 97450.37 m

Geophysical survey: Copyright Substrata Limited.
Base map: Contains Ordnance Survey data
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Scale: 1:1400 @ A3. Spatial Units: Meter. Do not scale off this drawing

An archaeological magnetometer survey
Land south of Blandford Hill, Milborne St Andrew, Dorset
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Figure 12: survey grid plan and location

Appendix 2 Tables

Site: Land south of Blandford Hill, Milborne St Andrews, Dorset
Centred on NGR: 380510,097480

anomaly group	associated anomalies	anomaly characterisation certainty & class	anomaly form	additional archaeological characterisation	comments	supporting evidence
1	2	likely, positive	sub-circular	ring ditch	anomaly group coincides with, and likely represents, a ring ditch recorded on the Dorset HER and thought to be bronze age in date	HER MDO4387
2	1	possible, positive	oval	pit or large posthole near centre of a ring-ditch		
3	11 16 25 27	possible, positive	disrupted linear	field boundary or field drain	anomaly group has a similar, but not identical, trend to three field boundaries mapped between 1957 and 1968 with the southernmost removed after 1974; the anomaly group represents either an earlier field boundary removed before 1888 or part of a field drainage system only partially preserved and of unknown but likely post-medieval or modern date	Ordnance Survey maps 1888 1:2500, 1957 1:2500 and 1974 1:2500
4		possible, positive	linear			
5		possible, positive	disrupted linear			
6		possible, positive	linear			
7		possible, positive	disrupted linear			
8		possible, positive	rectilinear			
9		possible, positive	disrupted multi-linear			
10		possible, positive	disrupted return			
11	3 16 25 27	possible, negative	disrupted linear	field boundary or field drain	anomaly group lies adjacent to, but does not coincide with, one of three former field boundaries with a similar but not identical trend, this one being mapped between 1957 and 1968; the anomaly group represents either an earlier field boundary removed before 1888 or part of a field drainage system only partially preserved and of unknown but likely post-medieval or modern date	Ordnance Survey maps 1888 1:2500, 1957 1:2500 and 1968 1:10560
12		possible, positive	oval	pit or natural deposit		
13	14	possible, positive	sub-circular	ring ditch		
14	13 16	possible, positive	oval	pit	anomaly group has the characteristics of a large pit and lies within an anomaly group probably representing a ring ditch but just may be part of a separate linear group	
15		possible, positive	linear			
16	14 21 3 16 25 27	possible, positive	disrupted linear	field boundary or field drain	anomaly group has a similar, but not identical, trend to three field boundaries mapped between 1957 and 1968 with the southernmost removed after 1974; the anomaly group represents either an earlier field boundary removed before 1888 or part of a field drainage system only partially preserved and of unknown but likely post-medieval or modern date	Ordnance Survey maps 1888 1:2500, 1957 1:2500 and 1974 1:2500
17	18 19	likely, positive	disrupted double sub-circular	double ring ditch	anomaly group coincides with, and likely represents, a double ring ditch recorded on the Dorset HER and thought to be bronze age in date	HER MDO4388
18	17 19	possible, positive	group of ovals	pits, large postholes or natural	anomaly group is characterised as potential archaeological deposits because of their location within a double ring ditch	
19	17 18	possible, positive	oval?	pit?	anomaly appears to be associated with an adjacent ring ditch	
20		possible, positive	sub-circular	archaeological deposit or cattle feeder disturbance	anomaly group is more likely to represent cattle feeder ground disturbance or a fortuitous set of natural deposits but buried archaeology cannot be ruled out	
21	16	possible, n-s high-low		in-situ heated deposit or part of a linear deposit	anomaly group may represent in-situ heated deposits but the anomaly pattern is not classic and so may represent part of a linear deposit	
22		possible, positive	oval	pit or natural deposit		
23		possible, positive	oval	pit or natural deposit		
24		possible, positive	disrupted linear			
25	3 16 25 27	possible, negative	disrupted linear	field boundary or field drain	anomaly group has a similar, but not identical, trend to three field boundaries mapped between 1957 and 1968 with the southernmost removed after 1974; the anomaly group represents either an earlier field boundary removed before 1888 or part of a field drainage system only partially preserved and of unknown but likely post-medieval or modern date	Ordnance Survey maps 1888 1:2500, 1957 1:2500 and 1974 1:2500
26		possible, positive	oval	pit or natural deposit		
27		possible, positive	disrupted linear	field boundary or field drain	anomaly group lies adjacent to, but does not coincide with, the southernmost of three former field boundaries with a similar but not identical trend, this one being mapped between 1957 and at least 1974; the anomaly group represents either an earlier field boundary removed before 1888 or part of a field drainage system only partially preserved and of unknown but likely post-medieval or modern date	Ordnance Survey maps 1888 1:2500, 1957 1:2500 and 1974 1:2500
28	30 32 33	likely, enhanced	broad linear	disturbed ground associated with a former track and a field boundary	anomaly group is most likely to represent disturbed ground associated with a former track recorded on historic maps between 1888 and 1902; this was later the location of the southernmost of two field boundaries mapped between 1957 and 1974 which may have enclosed a later version of the track; the northernmost boundary was removed after 1968 while the southern boundary was removed after 1974	Ordnance Survey maps 1888 1:2500 to 1974 1:2500
29		possible, positive	oval	pit or natural deposit		
30	28 32 33	likely, positive	linear	field boundary	anomaly group coincides with the southernmost of two field boundaries mapped between 1957 and 1974 track; the northernmost boundary was removed after 1968 while the southern boundary was removed after 1974	
31		possible, positive	curvilinear			
32	28 30 33	likely, enhanced	broad linear	disturbed ground associated with a former track and a field boundary	anomaly group is most likely to represent disturbed ground associated with a former track recorded on historic maps between 1888 and 1902; this was later the location of the southernmost of two field boundaries mapped between 1957 and 1974 which may have enclosed a later version of the track; the northernmost boundary was removed after 1968 while the southern boundary was removed after 1974	Ordnance Survey maps 1888 1:2500 to 1974 1:2500
33	28 30 32	likely, enhanced	broad linear	disturbed ground associated with a former track and two field boundaries	anomaly group is most likely to represent disturbed ground associated with a former track recorded on historic maps between 1888 and 1902; this was later the location of the southernmost of two field boundaries mapped between 1957 and 1974 which may have enclosed a later version of the track; the northernmost boundary was removed after 1968 while the southern boundary was removed after 1974	Ordnance Survey maps 1888 1:2500 to 1974 1:2500
34		possible, positive	partial sub-circular	ring ditch?		
301 to 320		possible, dipole		recent ferrous material	anomaly group numbers omitted from the report figures; only those anomalies that may affect the analysis of potential archaeological deposits are mapped	
321		possible, high contrast	linear	ferrous pipe or cable service		
322		possible, high contrast	linear	ferrous pipe or cable service		

Table 1: data analysis

<p>Grid <i>Method of Fixing:</i> DGPS set-out using pre-planned survey grids and Ordnance Survey coordinates. <i>Composition:</i> 30m by 30m grids <i>Recording:</i> Geo-referenced and recorded using digital map tiles. <i>DGPS used:</i> Spectra Precision PM5V2 GPS with external antenna and survey pole and DigiTerra Explorer 7 as the survey control program.</p>	
<p>Equipment <i>Instrument:</i> Bartington Instruments grad601-2 <i>Firmware:</i> version 6.1</p>	<p>Data Capture <i>Sample Interval:</i> 0.25m <i>Traverse Interval:</i> 1 metre <i>Traverse Method:</i> zigzag <i>Traverse Orientation:</i> GN</p>
<p>Data Processing, Analysis and Presentation Software IntelliCAD 8.4 DW Consulting TerraSurveyor3 Manifold System 8 GIS Microsoft Corp. Office 365: Excel, Publisher, Word Adobe Systems Inc Adobe Acrobat 9 Pro Extended</p>	

Table 2: methodology information

Instrument Type:	Bartington Grad 601
Units:	nT
Direction of 1st Traverse:	0 deg
Collection Method:	ZigZag
Sensors:	2 @ 1.00 m spacing.
Dummy Value:	32702
Dimensions	
Composite Size (readings):	1200 x 330
Survey Size (meters):	300 m x 330 m
Grid Size:	30 m x 30 m
X Interval:	0.25 m
Y Interval:	1 m
Stats	
Max:	110.40
Min:	-108.31
Std Dev:	6.05
Mean:	-0.01
Median:	0.00
PROGRAM	
Name:	TerraSurveyor
Version:	3.0.33.6
Processes: 16	
1	Base Layer
2	Mask for All layers [removing dipole response of ferrous service]
3	Clip at 1.00 SD
4	De Stagger: Grids: All By: 0 intervals, 25.00cm
5	De Stagger: Grids: c12.xgd By: 0 intervals, -50.00cm
6	De Stagger: Grids: c19.xgd By: 0 intervals, -25.00cm
7	Move (Area: Top 198, Left 362, Bottom 199, Right 478) to X 3, Y 0
8	Search & Replace Dummy With: 0 (Area: Top 197, Left 359, Bottom 200, Right 367)
9	De Stagger: Grids: c1.xgd By: 0 intervals, -25.00cm
10	DeStripe Median Traverse: Grids: All
11	De Stagger: Grids: c1.xgd By: 0 intervals, -25.00cm
12	De Stagger: Grids: c10.xgd By: 0 intervals, -25.00cm
13	Add/Subtract -1 (Area: Top 90, Left 959, Bottom 94, Right 1016)
14	Edge Match (Area: Top 60, Left 960, Bottom 89, Right 1079) to Bottom edge
15	De Stagger: Grids: d3.xgd By: 0 intervals, -50.00cm
16	De Stagger: Grids: d15.xgd By: 0 intervals, 25.00cm

Table 3: processed data metadata

Instrument Type:	Bartington Grad 601
Units:	nT
Direction of 1st Traverse:	0 deg
Collection Method:	ZigZag
Sensors:	2 @ 1.00 m spacing.
Dummy Value:	32702
Dimensions	
Composite Size (readings):	1200 x 330
Survey Size (meters):	300 m x 330 m
Grid Size:	30 m x 30 m
X Interval:	0.25 m
Y Interval:	1 m
Stats	
Max:	105.17
Min:	-107.93
Std Dev:	16.05
Mean:	-1.55
Median:	-0.20
Processes: 4	
1	Base Layer
2	Clip at 1.00 SD
3	De Stagger: Grids: All By: 0 intervals, 25.00cm
4	Clip at 3.00 SD

Table 4: minimally processed data metadata

Appendix 3 Project archive contents

A3.1 Substrata Limited archive

A full archive of this survey will be held by Substrata Limited on cloud and local hard drive storage as follows:

Report:	Adobe PDF (.pdf), Microsoft Publisher (.pub)
Raw grid data files:	DW Consulting TerraSurveyor 3 (.xgd) and
Raw data composite files:	CSV (.xyz)
Minimally processed data composite files:	DW Consulting TerraSurveyor 3 (.xgd) and
	CSV (.xyz)
Final data processing composite files:	DW Consulting TerraSurveyor 3 (.xgd) and
	CSV (.xyz)
GIS project:	GIS project Manifold 8 (.map)
Survey interpretation:	ESRI shape files
AutoCAD version of the survey interpretation: (if generated)	AutoCAD (.dwg)
All project working files:	IntelliCAD 8.4 Microsoft Corp. Office 365: Excel, Publisher, Word Adobe Systems Inc Adobe Acrobat 9 Pro Extended

A3.2 Online Access to the Index of archaeological investigationS (OASIS)

Metadata:	online form
Georeferenced survey boundary file:	ESRI shape file
Report:	Adobe PDF (.pdf)

A3.3 Archaeological Data Service

Depending on local authority policy, an archive may be deposited with the ADS as follows:

Raw data composite file:	CSV (xyz)
Processed data plot:	rendered images in TIFF format
Survey grid plot:	image in TIFF format
Details of data processing:	image in TIFF format
Interpretation plot:	rendered images in TIFF format
Metadata:	Microsoft Excel format

A3.4 Historic Environment Record (HER)

Subject to any contractual requirements on confidentiality, a PDF copy of the report will be submitted to the appropriate HER within 6 months of the completion of this report via the OASIS process or by other means, depending on the relevant HER process.