Substrata
Archaeological Geophysical Surveyors

An archaeological magnetometer survey

Land at Colharbour Farm Ilminster, Somerset

Centred on NGR (E/N): 335100,114525 (point)

Report: 1603ILL-R-1

Ross Dean BSc MSc MA MCIfA

25 November 2016

Substrata Ltd
Office 1, 5 Mill Street
Bideford
Devon EX39 2JT
Tel: 01273 273599
Email: geophysics@substrata.co.uk
Web: substrata.co.uk

Client
AC Archaeology Ltd
4 Halthaies Workshops
Bradninch
Nr Exeter
Devon EX5 4QL
Tel: 01392 882410

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Figures

Tables

Project archive

Report	Adobe PDF format
Copies of report figures	Adobe PDF format
Raw and processed grid & composite files	DW Consulting TerraSurveyor 3 formats
Minimal processing data plots and metadata	DW Consulting TerraSurveyor 3 formats
Final data processing data plots and metadata	DW Consulting TerraSurveyor 3 formats
GIS project, shape files and classification schema	
GIS project	Manifold 8 '.map' file
GIS shape files	ESRI standard
GIS classification schema	Adobe PDF format
AutoCAD version of the survey interpretation	AutoCAD DXF

Website: substrata.co.uk

For an overview of Substrata, our archaeological geophysical surveying techniques and the results we obtain.

1 Survey description and summary

1.1 Survey

Type:	twin-sensor fluxgate gradiometer
Date:	between 4 October and 6 November 2016
Area:	15ha
Lead surveyor:	Mark Edwards BA
Author:	Ross Dean BSc MSc MA MIfA

1.2 Clients

AC Archaeology Ltd, 4 Halthaies Workshops, Bradninch Nr Exeter, Devon EX5 4QL

1.3 Location

Site:	Land at Coldharbour Farm
Civil Parish & Town:	Ilminster
District:	South Somerset
County:	Somerset
Nearest Postcode:	TA19 9DA
NGR:	ST 35100 14525 (point)
NGR (E/N):	335100,114525 (point)

1.4 Archive

OASIS number:	substrat1-269801
Archive:	At the time of writing, the archive of this survey will be held by Substrata. Depending on local authority policy, an archive of the unprocessed data may be deposited with the Archaeological Data Service

1.5 Introduction

This report presents the results of an archaeological magnetometer survey at the above site, hereafter referred to as the survey area. It has been prepared for AC Archaeology Ltd on behalf of clients. The survey area location is shown in Figure 1 (after Sulikowska, 2015).

1.6 Summary

The magnetic responses across the survey area were sufficient to be able to differentiate between anomalies representing possible archaeological features and background magnetic responses.

Twenty-nine magnetic anomaly groups were mapped as representing possible archaeological deposits or features. Two of these groups represent former field boundaries recorded on historic maps. One group may represent a deposit of craft or industrial material. It lies approximately 40m to the west of an anomaly group which may represent an in-situ heated deposit such as that produced by pottery or metal production. Modern origins cannot be ruled out for either of these anomaly groups but their relative positions adds to the feasibility that they represent archaeological deposits. To the south in the same field two anomaly groups may represent an alignment of pits and a group of pits. The remaining mapped anomaly groups are most likely to represent linear and disrupted linear deposits, such as former ditches or banks, of unknown period and probably from more than one phase of past land management.

2 Survey aims and objectives

2.1 Aims

To establish the presence or absence, extent and character of any archaeological features and deposits within the survey area.

2.2 Survey objectives

1. Complete a magnetometer survey across agreed parts of the survey area.

2. Identify any magnetic anomalies that may be related to archaeological deposits, structures or artefacts.
3. Within the limits of the techniques 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.

3 Standards

The standards used to complete this survey are defined by the Chartered Institute for Archaeologists (2014a) and Historic England (2010). The codes of approved practice that were followed are those of the Chartered Institute for Archaeologists (2014b) and Archaeology Data Service (undated).

4 Site description

4.1 Landscape and land use

The survey area is located within five agricultural fields bounded by hedgerows. To the west, the site is bounded by a public footpath alongside the former railway line, with further public footpaths located to the north, south and crossing the survey area. A small pond is lies in the central part of the survey area. The land comprises north-facing slopes descending from approximately 45m AOD in the southwest to approximately 35m AOD on the northern boundary. The survey area is surrounded by farmland to the south and west and developments along canal way to the north and east.

At the time of the survey fields 1 and 2 were under stubble, field 3 under seed and fields 4 and 5 under grass pasture. Field 5 contained sheep and a electric fence was present offset from the field boundaries (see Figure 2 for the field numbering).

4.2 Geology

Most the survey area has a solid geology of pale grey and dark grey interbedded calcareous mudstones of the Jurassic Belemnite Marl Member. To the north of fields 2 and 3 the solid geology comprises dark grey laminated shales, and dark, pale and bluish grey mudstones of the Jurassic Charmouth Mudstone Formation. The latter contain locally concretionary and tabular limestone beds with abundant argillaceous limestone, phosphatic or ironstone (sideritic mudstone) nodules in some areas, organic-rich paper shales at some levels and finely sandy beds in lower part in some areas. Bordering the southern boundary of the survey area the solid geology comprises medium grey mudstones of the Jurassic Green Ammonite Member. Irregular limestones are found at three principal horizons within this formation (British Geological Survey, undated).

The superficial deposits within the survey area are clay, sand and gravel of Head Deposits with bands of colluvium comprising detrital sand and gravel material (diamicton) crossing the on north to south alignments (ibid).

5 Archaeological background

5.1 Sources

Cotswold Archaeology completed a heritage desk-based assessment of the site (Sulikowska, 2015) which provides a comprehensive assessment of the historical and archaeological background of the survey area. This document is the source used below.

5.2 Historic landscape characterisation

Recently enclosed land.

Large fields enclosed between the 18th century and the modern period (Sulikowska, 2015 after Devon County Council, undated). The Cotswold Archaeology assessment established that the

survey area was enclosed in the 18th century with some field boundaries removed in the 19th century. Recent field boundary alterations have taken place as a result of development activities (Sulikowska, 2015: 22).

5.3 Historical and archaeological background

No heritage assets are recorded within the survey area.

The survey area is thought to be within the bounds of a Medieval deer park. There are no recorded remains of the park within the survey area but the possibility exists that associated buried remains may be present. The locality was occupied and farmed in the Prehistoric and Romano-British periods as well as later periods. Again, whilst no remains from such periods are recorded within the survey area, it is feasible that buried remains are present (ibid: 3).

7.

6 Results, discussion and conclusions

6.1 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 variations in the magnetism of 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 terms ‘archaeological deposit’, ‘structure’ and ‘feature’ refer to any artefacts, material deposits or disturbance of natural deposits thought to be the result of human activity, excluding recent land maintenance and farming.

Magnetic anomalies cannot be regarded as physical archaeological deposits, structures or features and the dimensions of the anomalies shown do not represent the dimensions of any associated archaeology.

The analysis presented below identifies and characterises anomalies and anomaly groups that may relate to archaeological deposits, structures and features.

The reader is referred to section 7.

6.2 Results

Figures 2 shows the interpretation of the survey data. It includes the anomaly groups identified as possibly relating to archaeological deposits along with their identifying numbers. Figures 3 to 7 provide the same interpretation at more detailed scales for each of the five fields. 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 7 and Table 1 comprise the analysis of the survey data.

Figures 8 to 13 are plots of processed data as specified in Table 3. Figures 14 and 15 are plots of the unprocessed data.

6.3 Discussion

6.3.1 General points

Discussion 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 the survey archive.

Data collection

Data collection along the survey area edges was restricted as shown in the figures due to the presence of magnetic materials adjacent to the survey area. Strong magnetic responses mapped close to survey boundaries are likely to relate to these materials except where otherwise indicated in Figures 2 to 7 and Table 1.

Anomaly characterisation and mapping

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 only mapped as potential archaeology if they are clustered in groups or otherwise form recognisable patterns.

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

Numerous dipole magnetic anomalies are scattered across the data set. 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

The faint north-north-east to south-south-west linear trends visible in the data (Figures 8 to 13) are likely to represent relatively recent ploughing disturbance.

6.3.2 Data relating to historic maps and other records

Magnetic anomaly group **3** (field 2, Figure 3) coincides with a former field boundary recorded on historic maps between AD 1765 and AD 1838. Group **27** (field 4, Figure 4) was recorded in AD 1765 but not on later maps.

6.3.3 Data with no previous archaeological provenance

Group **18** (field 3, Figure 5) may reflect craft deposits, industrial deposits or relatively recent rubble with iron and/or steel debris. Group **19** lies to the east of group 18 in field 3 and has the characteristics often associated with a in-situ deposit of highly heated material such as that produced by pottery or metal working. In this case, the fact that the anomaly group may represent a fortuitously orientated recent iron or steel artifact cannot be ruled out but given the presence of group 18, an archaeological craft or industrial origin must be considered.

Group **20** (field 3) lies to the south of groups 18 and19 and may reflect an alignment of pits. Further south in field 3, group **23** may represent a group of pits.

The remaining anomaly groups characterised as representing possible archaeological deposits or features are most likely to represent linear and disrupted linear deposits, such as former ditches or banks, of unknown period and probably from more than one phase of past land management.

6.4 Conclusions

Twenty-nine magnetic anomaly groups were mapped as representing possible archaeological deposits or features. Two of these groups (groups 3 and 27 in fields 1 and 4 respectively) represent former field boundaries recorded on historic maps. One group (18, field 3) may represent a deposit of craft or industrial material. It lies approximately 40m to the west of an anomaly group (19) which may represent an in-situ heated deposit such as that produced by pottery or metal production. Modern origins cannot be ruled out for either of these anomaly groups but their relative juxtaposition adds to the feasibility that they represent archaeological deposits. To the south in the same field two anomaly groups may represent an alignment of pits (20) and a group of pits (23). The remaining mapped anomaly groups are most likely to represent linear and disrupted linear deposits, such as former ditches or banks, of unknown period and probably from more than one phase of past land management.

7 Disclaimer and copyright

The description and discussion of the results presented in this report are the authors, based on his 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. The evaluation programme of which this survey is part may also be informed by other archaeological assessment work and analysis. It must be presumed that more archaeological features will be evaluated than those specified in this report.

8 Acknowledgements

Substrata would like to thank John Valentin of AC Archaeology Ltd for commissioning us to complete this survey.

9 Bibliography

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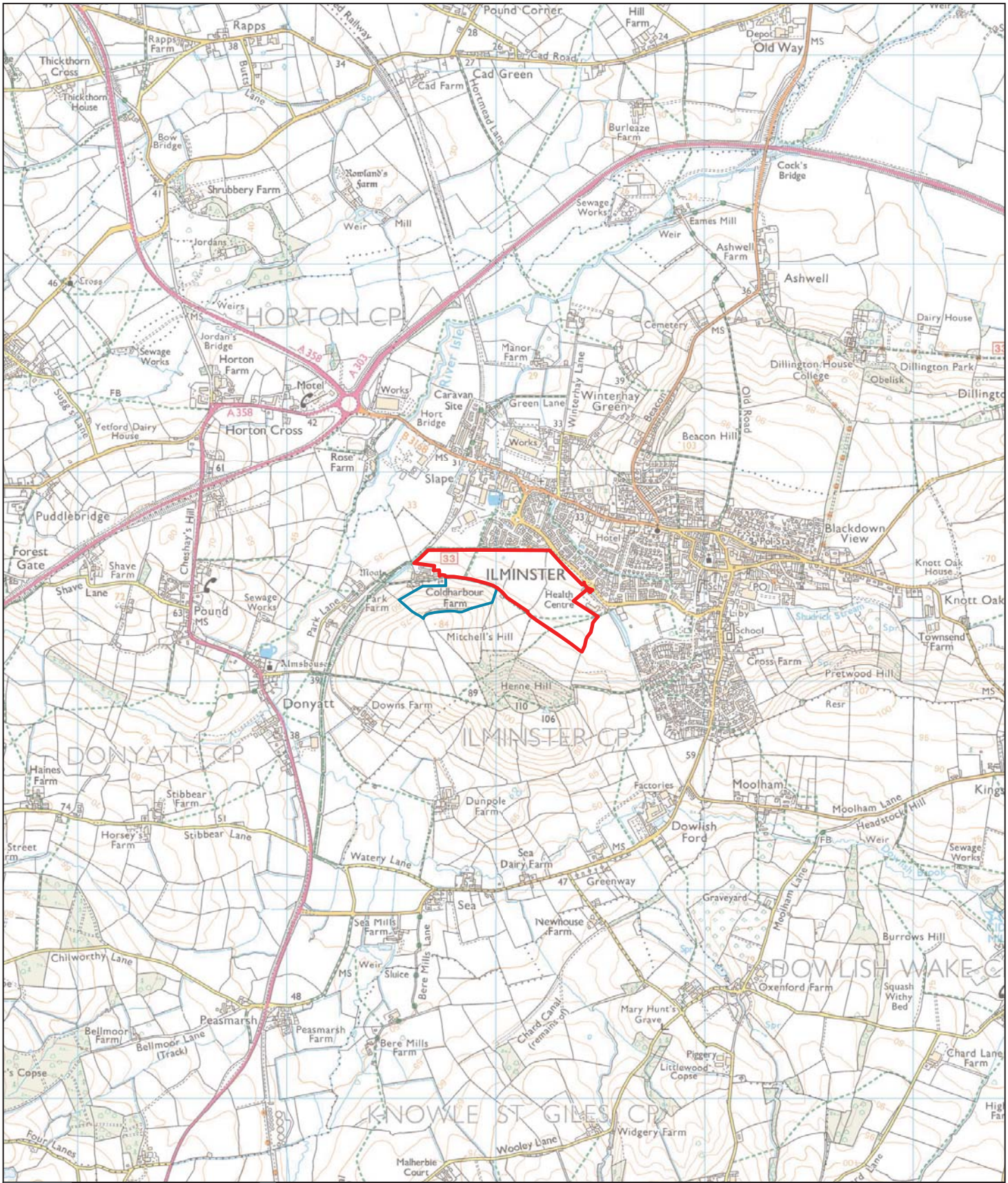
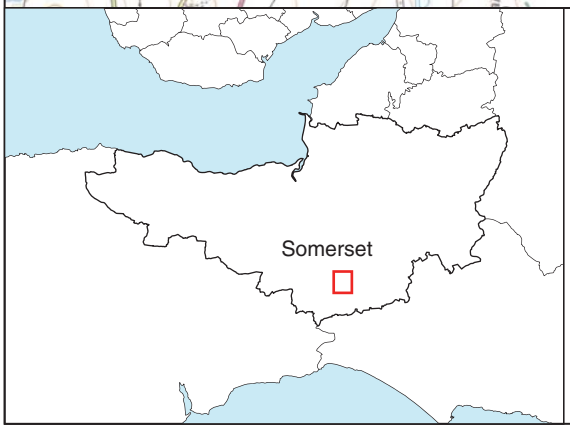
Appendix 1 Figures

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 (see Section 6.1).

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.





N

site boundary

public open space

0 1km

Cotswold Archaeology

Andover 01264 347630
Cirencester 01285 771022
Exeter 01392 826185
Milton Keynes 01908 564660
w www.cotswoldarchaeology.co.uk
e enquiries@cotswoldarchaeology.co.uk

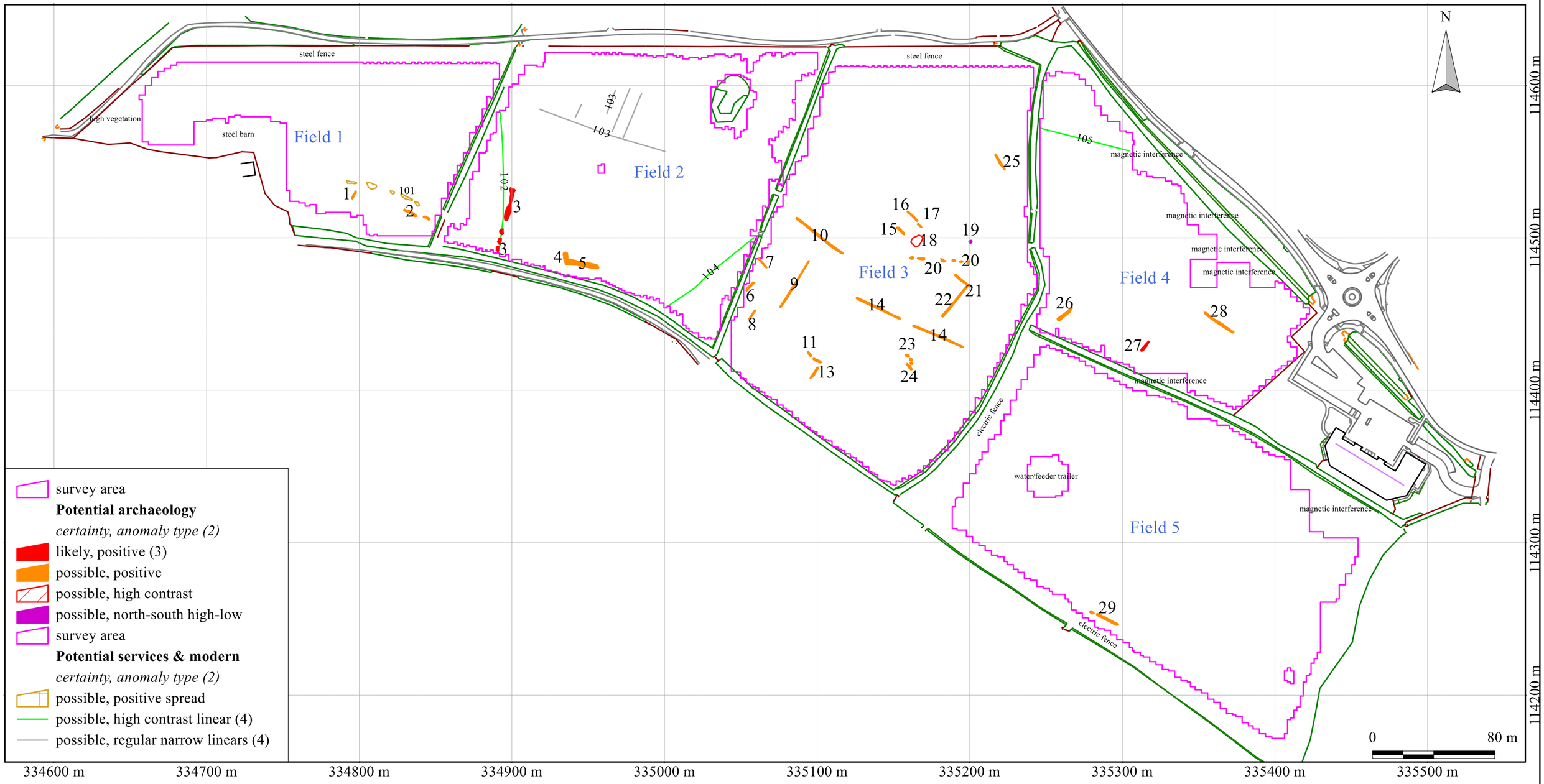
PROJECT TITLE

Land at Coldharbour Farm, Illminster
Somerset

FIGURE TITLE

Site location plan

DRAWN BY	LJH	PROJECT NO.	880025	FIGURE NO.
CHECKED BY	JB	DATE	26/06/15	1
APPROVED BY	DC	SCALE@A4	1:25,000	



British Grid
centre X: 335065.94 m, centre Y: 114404.51 m

Scale: 1:2500 @ 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. Representative; not all instances are mapped.
5. Anomalies likely to represent geological or other natural deposits are not mapped unless relevant to potential archaeological events or deposits.

An archaeological magnetometer survey
Land at Colharbour Farm, Ilminster, Somerset
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Figure 2: survey interpretation, entire area

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Office 1, 5 Mill Street
Bideford, Devon EX39 2JT
Tel: 01273 273599
Email: geophysics@substrata.co.uk
Web: substrata.co.uk

334600 m 334700 m 334800 m 334900 m

114600 m

114500 m

N

steel fence

high vegetation

steel barn

103

103

101

102

1

2

3

3

4

5

0

80 m

Potential archaeology

certainty, anomaly type (2)

likely, positive (3)

possible, positive

possible, high contrast

possible, north-south high-low

resistance survey area

Potential services & modern

certainty, anomaly type (2)

possible, positive spread

possible, high contrast linear (4)

possible, regular narrow linears (4)

334600 m 334700 m 334800 m 334900 m

British Grid
centre X: 334780.32 m, centre Y: 114558.10 m

Scale: 1:1000 @ A3. Spatial Units: Meter. Do not scale off this drawing

Notes:

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2. 'Anomaly type' is a description of the magnetic anomaly. See the report text or GIS for an archaeological characterisation.
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Figure 3: survey interpretation, field 1

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Tel: 01273 273599
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Web: substrata.co.uk

334800 m | 334900 m | 335000 m | 335100 m

114600 m

114500 m

N

steel fence

103

103

102

104

101

1

2

3

3

4

5

6

7

8

9

10

14

15

Potential archaeology

certainty, anomaly type (2)

likely, positive (3)

possible, positive

possible, high contrast

possible, north-south high-low

resistance survey area

Potential services & modern

certainty, anomaly type (2)

possible, positive spread

possible, high contrast linear (4)

possible, regular narrow linears (4)

0 80 m

334800 m | 334900 m | 335000 m | 335100 m

British Grid
centre X: 334961.30 m, centre Y: 114531.65 m

Scale: 1:1000 @ 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. Representative; not all instances are mapped.
5. Anomalies likely to represent geological or other natural deposits are not mapped unless relevant to potential archaeological events or deposits.

An archaeological magnetometer survey
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Figure 4: survey interpretation, field 2

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Tel: 01273 273599
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Web: substrata.co.uk

335100 m

335200 m

114600 m

114500 m

114400 m

steel fence

N

105

104

25

16

15

17

18

19

10

20

20

7

21

9

6

22

14

26

8

14

11

12

23

24

13

electric fence

water/feeder trailer

0

80 m

Potential archaeology

certainty, anomaly type (2)

likely, positive (3)

possible, positive

possible, high contrast

possible, north-south high-low

resistance survey area

Potential services & modern

certainty, anomaly type (2)

possible, positive spread

possible, high contrast linear (4)

possible, regular narrow linears (4)

335100 m

335200 m

British Grid

centre X: 335142.27 m, centre Y: 1144

Scale: 1:1000 @ 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 cl
3. Anomalies designated "likely archaeology" have supporting evidence e.g. historical maps and or visible ea
4. Representative; not all instances are mapped.
5. Anomalies likely to represent geological or other natural deposits are not mapped unless relevant to potenti

An archaeological magnetometer survey
Land at Colharbour Farm, Ilminster, Somerset
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Figure 5: survey interpretation, field 3

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335200 m 335300 m 335400 m

114600 m 114500 m 114400 m

N

105

magnetic interference

25 19 20 21 22 26 27 28

0 80 m

Potential archaeology

certainty, anomaly type (2)

likely, positive (3)

possible, positive

possible, high contrast

possible, north-south high-low

resistance survey area

Potential services & modern

certainty, anomaly type (2)

possible, positive spread

possible, high contrast linear (4)

possible, regular narrow linears (4)

335200 m 335300 m 335400 m

British Grid

centre X: 335324.73 m, centre Y: 1144

Scale: 1:1000 @ 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 cl
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4. Representative; not all instances are mapped.
5. Anomalies likely to represent geological or other natural deposits are not mapped unless relevant to potenti

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Figure 6: survey interpretation, field 4

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335100 m | 335200 m | 335300 m | 335400 m | 335500 m

114400 m | 114300 m | 114200 m

N

11 12 13 14 23 24 27 29

magnetic interference

electric fence

water/feeder trailer

magnetic interference

electric fence

electric fence

0 80 m

Potential archaeology
certainty, anomaly type (2)
likely, positive (3)
possible, positive
possible, high contrast
possible, north-south high-low
resistance survey area
Potential services & modern
certainty, anomaly type (2)
possible, positive spread
possible, high contrast linear (4)
possible, regular narrow linears (4)

British Grid
centre X: 335296.79 m, centre Y: 114303.31 m

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. Representative; not all instances are mapped.
5. Anomalies likely to represent geological or other natural deposits are not mapped unless relevant to potential archaeological events or deposits.

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Figure 7: survey interpretation, field 5

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Bideford, Devon EX39 2JT
Tel: 01273 273599
Email: geophysics@substrata.co.uk
Web: substrata.co.uk

334600 m 334700 m 334800 m 334900 m 335000 m 335100 m 335200 m 335300 m 335400 m 335500 m

114600 m 114500 m 114400 m 114300 m 114200 m

N

Gradiometer processed data (nT)

1

-1

0 80 m

British Grid
centre X: 335065.94 m, centre Y: 114404.51 m

Scale: 1:2500 @ A3. Spatial Units: Meter. Do not scale off this drawing

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Figure 8: shade plot of processed data, entire area

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334600 m 334700 m 334800 m 334900 m

114600 m

114500 m

N

Gradiometer processed data (nT)

1

-1

0 80 m

British Grid
centre X: 334780.32 m, centre Y: 114558.10 m

Scale: 1:1000 @ A3. Spatial Units: Meter. Do not scale off this drawing

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Figure 9: shade plot of processed data, field 1

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Bideford, Devon EX39 2JT
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Email: geophysics@substrata.co.uk
Web: substrata.co.uk

334800 m
334900 m
335000 m
335100 m
114600 m
114500 m
N
0
80 m

British Grid
centre X: 334961.30 m, centre Y: 114531.65 m

Scale: 1:1000 @ A3. Spatial Units: Meter. Do not scale off this drawing

An archaeological magnetometer survey
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Figure 10: shade plot of processed data, field 2

Substrata Limited
Office 1, 5 Mill Street
Bideford, Devon EX39 2JT
Tel: 01273 273599
Email: geophysics@substrata.co.uk
Web: substrata.co.uk

335100 m

335200 m

114600 m

114500 m

114400 m

N

Gradiometer processed data (nT)

1

-1

0

80 m

335100 m

335200 m

British Grid

centre X: 335142.27 m, centre Y: 1144

Scale: 1:1000 @ A3. Spatial Units: Meter. Do not scale off this drawing

An archaeological magnetometer survey
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Figure 11: shade plot of processed data, field 3

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Office 1, 5 Mill Street
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Tel: 01273 273599
Email: geophysics@substrata.co.uk
Web: substrata.co.uk

335200 m 335300 m 335400 m

114600 m

114500 m

114400 m

N

Gradiometer processed data (nT)

1

-1

0 80 m

335200 m 335300 m 335400 m

British Grid

centre X: 335324.73 m, centre Y: 1144

Scale: 1:1000 @ A3. Spatial Units: Meter. Do not scale off this drawing

An archaeological magnetometer survey
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Figure 12: shade plot of processed data, field 4

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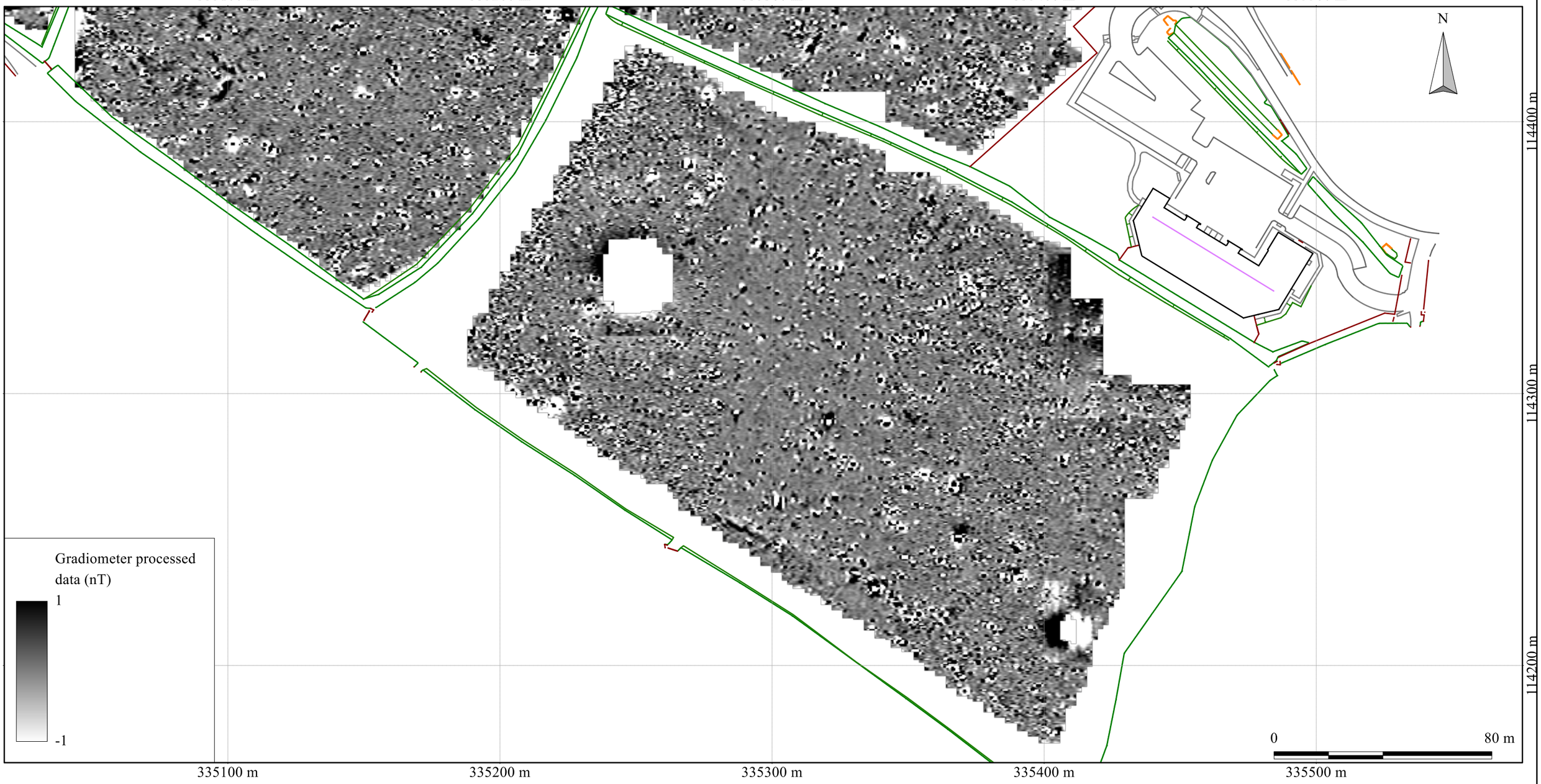
Office 1, 5 Mill Street
Bideford, Devon EX39 2JT
Tel: 01273 273599
Email: geophysics@substrata.co.uk
Web: substrata.co.uk



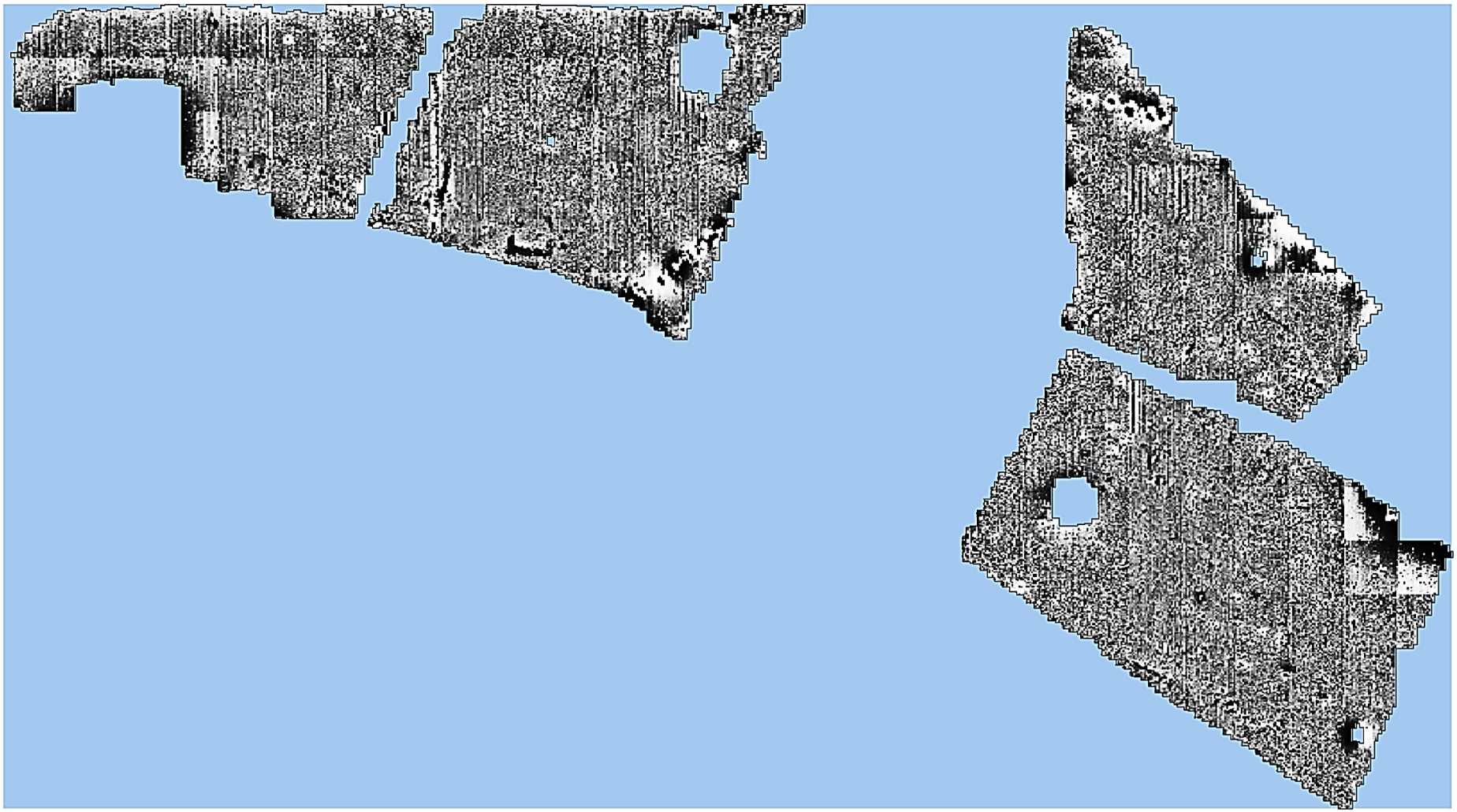
British Grid
centre X: 335296.79 m, centre Y: 114303.31 m

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

An archaeological magnetometer survey
Land at Colharbour Farm, Ilminster, Somerset
Centred on NGR (E/N): 335100,114525 (point)
Report: 1603ILL-R-1

Figure 13: shade plot of processed data, field 5

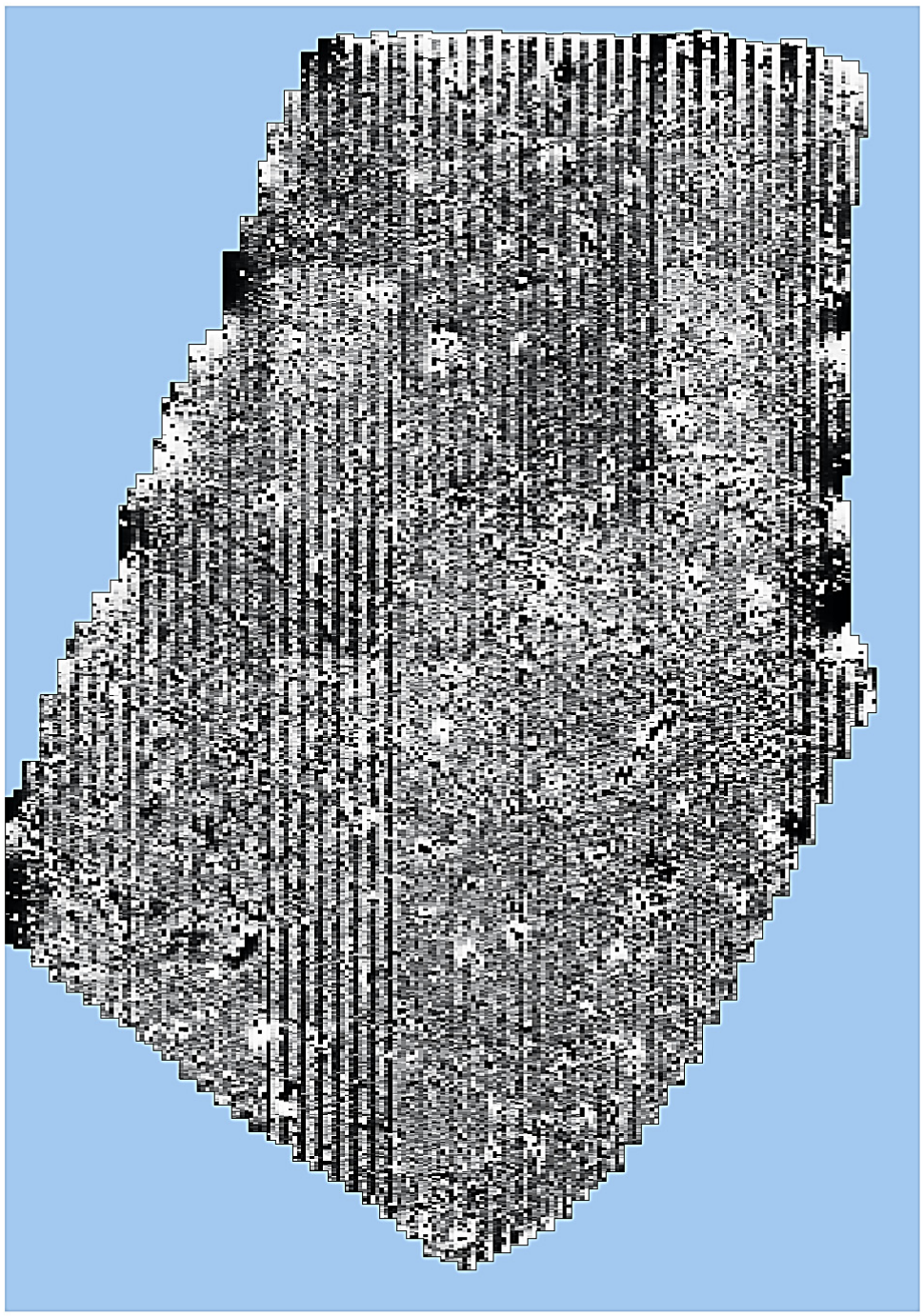
Substrata Limited
Office 1, 5 Mill Street
Bideford, Devon EX39 2JT
Tel: 01273 273599
Email: geophysics@substrata.co.uk
Web: substrata.co.uk

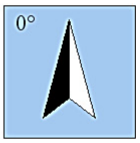


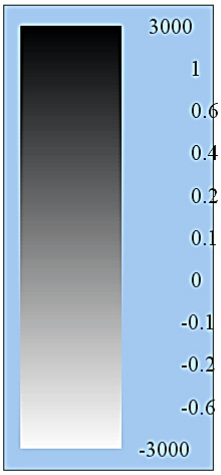
Processes: 1
1 Base Layer

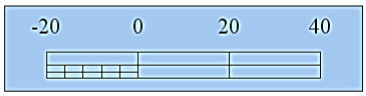
Instrument Type:	Bartington Grad 610
Units:	nT
Direction of 1st Traverse:	0 deg
Collection Method:	ZigZag
Sensors:	2 @ 1.00 m spacing.
Dummy Value:	32702
Grid Size:	30 m x 30 m
X Interval:	0.25 m
Y Interval:	1 m
Stats	
Max:	3002.90
Min:	-3000.70
Std Dev:	49.00
Mean:	-0.33
Median:	0.00
PROGRAM	
Name:	TerraSurveyor
Version:	3.0.31.0

Figure 14: shade plot of unprocessed data, fields 1, 2, 4 and 5









Processes: 1
1 Base Layer

Instrument Type:	Bartington Grad 601
Units:	nT
Direction of 1st Traverse:	0 deg
Collection Method:	ZigZag
Sensors:	2 @ 0.00 m spacing.
Dummy Value:	32702
Grid Size:	30 m x 30 m
X Interval:	0.25 m
Y Interval:	1 m

Stats	
Max:	3000.00
Min:	-3000.00
Std Dev:	41.28
Mean:	0.40
Median:	0.10
PROGRAM	
Name:	TerraSurveyor
Version:	3.0.31.0

Figure 15: shade plot of unprocessed data, field 3

Appendix 2 Tables

Site: An archaeological magnetometer survey
Land at Colharbour Farm, Ilminster, Somerset
Centred on NGR (E/N): 335100,114525 (point)
Report: 1603ILL-R-1

field number	anomaly group	anomaly characterisation certainty & class	anomaly form	additional archaeological characterisation	comments	supporting evidence
1	1	possible, positive	linear			
	2	possible, positive	disrupted linear			
	101	possible, positive spread	linear	recently disturbed ground	anomaly group is most likely to be made up ground for vehicle access and/or ground disturbance by vehicles	
2	3	likely, positive	disrupted linear	field boundary	anomaly group coincides with a field boundary recorded on historic maps between 1765 and 1838 but not on Ordnance Survey maps produced from 1886 onwards	1765 map of Donyatt & Ilminster, 1838 Donyatt tithe map
	4	possible, positive	linear		anomaly group may represent archaeological or natural deposits, more likely to be two linear deposits but a return may exist	
	5	possible, positive	linear		anomaly group has the same trend as recent ploughing ground disturbance but is more pronounced	
	102	possible, high contrast linear	linear	former iron water pipe or similar	anomaly group is most likely to be made up ground for vehicle access and/or ground disturbance by vehicles	
	103	possible, regular narrow linears		field drain		
	104	possible, high contrast linear		steel or iron cable, pipe or drain		
3	6	possible, positive	linear			
	7	possible, positive	linear	ground disturbance from possibly historical ploughing	anomaly group part of a faint trend in the data that may represent ploughing not aligned with the current field boundary pattern	
	8	possible, positive	linear	ground disturbance from possibly historical ploughing	anomaly group has the same trend as recent ploughing ground disturbance but is more pronounced	
	9	possible, positive	linear	ground disturbance from possibly historical ploughing	anomaly group has the same trend as recent ploughing ground disturbance but is more pronounced	
	10	possible, positive	linear	ground disturbance from possibly historical ploughing	anomaly group part of a faint trend in the data that may represent ploughing not aligned with the current field boundary pattern	
	11	possible, positive	linear			
	12	possible, positive	linear			
	13	possible, positive	linear	ground disturbance from possibly historical ploughing	anomaly group has the same trend as recent ploughing ground disturbance but is more pronounced	
	14	possible, positive	disrupted linear			
	15	possible, positive	linear	ground disturbance from possibly historical ploughing	anomaly group part of a faint trend in the data that may represent ploughing not aligned with the current field boundary pattern	
	16	possible, positive	linear	ground disturbance from possibly historical ploughing	anomaly group part of a faint trend in the data that may represent ploughing not aligned with the current field boundary pattern	
	17	possible, positive	linear	ground disturbance from possibly historical ploughing	anomaly group part of a faint trend in the data that may represent ploughing not aligned with the current field boundary pattern	
	18	possible, high contrast	irregular	industrial or craft deposits or recent rubble with iron/steel debris		
	19	possible, north-south high-low		in-situ heated deposits	anomaly group may represent heated archaeological deposits or a relatively recent ferrous deposit with a fortuitous alignment	
	20	possible, positive	linear group of ovals	line of pits		
	21	possible, positive	linear	ground disturbance from possibly historical ploughing	anomaly group part of a faint trend in the data that may represent ploughing not aligned with the current field boundary pattern	
	22	possible, positive	linear			
	23	possible, positive	group of ovals	group of pits		
	24	possible, positive	linear	ground disturbance from possibly historical ploughing	anomaly group part of a faint trend in the data that may represent ploughing not aligned with the current field boundary pattern	
	25	possible, positive	linear	ground disturbance from possibly historical ploughing	anomaly group part of a faint trend in the data that may represent ploughing not aligned with the current field boundary pattern	
4	26	possible, positive	linear			
	27	likely, positive	linear	field boundary	although the anomaly group is on the same trend as recent ploughing disturbance, it is relatively strong and is approximately coincides with a field boundary recorded on an 1765 historical map but not on later maps	1765 map of Donyatt & Ilminster
	28	possible, positive	linear			
	105	possible, high contrast linear		steel or iron cable, pipe or drain		
5	29	possible, positive	disrupted linear			

Table 1: data analysis

Documents
Survey methodology statement: Dean (2016)

Methodology
1. The work was undertaken in accordance with the survey methodology statement. The geophysical (magnetometer) survey was undertaken with reference to standard guidance provided by the Chartered Institute for Archaeologists (2014) and Archaeology Data Service (undated).
2. The survey grid location information and grid plan was recorded as part of the project in a suitable GIS system.
3. Data processing was undertaken using appropriate software, with all anomalies being digitised and geo-referenced. The final report included 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.

Grid
Method of Fixing: DGPS set-out using pre-planned survey grids and Ordnance Survey coordinates.
Composition: 30m by 30m grids
Recording: Geo-referenced and recorded using digital map tiles.
DGPS used: Spectra Precision PM5V2 GPS with external antenna and survey pole and DigiTerra Explorer 7 as the survey control program.

Equipment
Instrument: Bartington Instruments grad601-2
Firmware: version 6.1

Data Capture
Sample Interval: 0.25m
Traverse Interval: 1 metre
Traverse Method: zigzag
Traverse Orientation: GN

Data Processing, Analysis and Presentation Software
IntelliCAD Technology Consortium IntelliCAD 8.0
DW Consulting TerraSurveyor3
Manifold System 8 GIS
Microsoft Corp. Office Excel 2013
Microsoft Corp. Office Publisher 2013
Adobe Systems Inc Adobe Acrobat 9 Pro Extended

Table 2: methodology summary

Appendix 4 Data processing

SITE
Instrument Type: Bartington Grad-601 gradiometer
Units: nT
Direction of 1st Traverse: see below
Collection Method: ZigZag
Sensors: 2 @ 1.00 m spacing.
Dummy Value: 32702

PROGRAM
Name: TerraSurveyor
Version: 3.0.31.0

Stats	
Max:	15.48
Min:	-15.44
Std Dev:	1.84
Mean:	0.02
Median:	0.00

Processes: 32
1 Base Layer
2 Search & Replace From: -3000 To: 3000 With: Dummy (Area: Top 27, Left 1773, Bottom 241, Right 1799)
3 Search & Replace From: -3000 To: 3000 With: Dummy (Area: Top 692, Left 1183, Bottom 709, Right 1261)
4 Search & Replace From: -3000 To: 3000 With: Dummy (Area: Top 731, Left 1183, Bottom 747, Right 1273)
5 Search & Replace From: -3000 To: 3000 With: Dummy (Area: Top 690, Left 1347, Bottom 720, Right 1421)
6 Search & Replace From: -3000 To: 3000 With: Dummy (Area: Top 698, Left 1321, Bottom 711, Right 1353)
7 Search & Replace From: -3000 To: 3000 With: Dummy (Area: Top 710, Left 1249, Bottom 730, Right 1345)
8 Search & Replace From: -3000 To: 3000 With: Dummy (Area: Top 758, Left 654, Bottom 779, Right 724)
9 Search & Replace From: -3000 To: 3000 With: Dummy (Area: Top 772, Left 600, Bottom 780, Right 658)
10 Search & Replace From: -3000 To: 3000 With: Dummy (Area: Top 780, Left 528, Bottom 809, Right 601)
11 Search & Replace From: -3000 To: 3000 With: Dummy (Area: Top 770, Left 542, Bottom 779, Right 656)
12 Clip at 1.00 SD
13 DeStripe Median Traverse: Grids: All
14 Edge Match (Area: Top 180, Left 1680, Bottom 209, Right 1799) to Bottom edge
15 Edge Match (Area: Top 150, Left 1680, Bottom 179, Right 1799) to Left edge
16 Edge Match (Area: Top 120, Left 1680, Bottom 149, Right 1799) to Left edge
17 Range Match (Area: Top 0, Left 1560, Bottom 89, Right 1679) to Right edge
18 Edge Match (Area: Top 0, Left 1680, Bottom 29, Right 1799) to Left edge
19 Edge Match (Area: Top 30, Left 1680, Bottom 59, Right 1799) to Top edge
20 Edge Match (Area: Top 60, Left 1680, Bottom 89, Right 1799) to Top edge
21 De Stagger: Grids: b9.xgd b1+c2.xgd b8.xgd b2.xgd a16.xgd b3.xgd a15.xgd b4.xgd Mode: Both By: -3 intervals
22 De Stagger: Grids: b6+c6.xgd b5.xgd Mode: Both By: -3 intervals
23 De Stagger: Grids: c3.xgd c11.xgd c4.xgd c10.xgd b7+c5.xgd c9.xgd Mode: Both By: 2 intervals
24 De Stagger: Grids: d11.xgd d1.xgd d10.xgd d2.xgd d9.xgd d3.xgd d8.xgd d4.xgd d7.xgd d5.xgd d6.xgd Mode: Both By: -2 intervals
25 De Stagger: Grids: c24.xgd c12.xgd c23.xgd c13.xgd c22.xgd c14.xgd c21.xgd c15.xgd c20.xgd c16.xgd c19.xgd c17.xgd c18.xgd Mode: Both By: 1 intervals
26 De Stagger: Grids: d12.xgd d13.xgd d14.xgd d15.xgd d16.xgd d17.xgd d20.xgd d18.xgd d19.xgd Mode: Both By: -2 intervals
27 Range Match (Area: Top 270, Left 1680, Bottom 359, Right 1799) to Left edge
28 Range Match (Area: Top 750, Left 600, Bottom 779, Right 719) to Left edge
29 Range Match (Area: Top 750, Left 600, Bottom 779, Right 719) to Top edge
30 Range Match (Area: Top 750, Left 600, Bottom 779, Right 719) to Left edge
31 Interpolate: Match X & Y Doubled.
32 Clip at 5.00 SD

Table 3: processed data metadata, fields 1, 2, 4 and 5

SITE
Instrument Type: Bartington Grad-601 gradiometer
Units: nT
Direction of 1st Traverse: see below
Collection Method: ZigZag
Sensors: 2 @ 1.00 m spacing.
Dummy Value: 32702

PROGRAM
Name: TerraSurveyor
Version: 3.0.31.0

Stats	
Max:	13.88
Min:	-13.68
Std Dev:	1.85
Mean:	0.06
Median:	0.01

Processes: 9
1 Base Layer
2 Clip at 1.00 SD
3 Search & Replace From: -3000 To: 3000 With: Dummy (Area: Top 60, Left 1138, Bottom 198, Right 1189)
4 DeStripe Median Traverse: Grids: All
5 Range Match (Area: Top 90, Left 1080, Bottom 209, Right 1199) to Left edge
6 De Stagger: Grids: x23.xgd x6.xgd x22.xgd x1.xgd x7.xgd x21.xgd x2.xgd x8.xgd x20.xgd x3.xgd x9.xgd x19.xgd x4.xgd x10.xgd x18.xgd x5.xgd x11.xgd x17.xgd x12.xgd x16.xgd x13.xgd x15.xgd x14.xgd Mode: Both By: -2 intervals
7 De Stagger: Grids: y1.xgd y20.xgd y2.xgd y19.xgd y21.xgd y3.xgd y18.xgd y22.xgd y4.xgd y17.xgd y23.xgd y36.xgd y5.xgd y16.xgd y24.xgd y35.xgd y6.xgd y15.xgd y25.xgd y34.xgd y7.xgd y14.xgd y26.xgd y33.xgd y8.xgd y13.xgd y27.xgd y32.xgd y9.xgd y12.xgd y28.xgd y31.xgd y10.xgd y11.xgd y29.xgd y30.xgd Mode: Both By: -3 intervals
8 Interpolate: Match X & Y Doubled.
9 Clip at 5.00 SD

Table 4: processed data metadata, field 3