

**Substrata**

Archaeological Geophysical Surveyors

An archaeological magnetometer survey

**Land at Straitgate Farm  
Ottery St Mary, Devon**

Centred on NGR (E/N): 307110,095650(point)

Report: 161003STR-T-1

Ross Dean BSc MSc MA MCifA

15 December 2016

Substrata Ltd  
Office 1, 5 Mill Street  
Bideford  
Devon EX39 2JT  
Tel: 01273 273599  
Email: [geophysics@substrata.co.uk](mailto:geophysics@substrata.co.uk)  
Web: [substrata.co.uk](http://substrata.co.uk)

Client  
SLR Consulting Ltd  
Langford Lodge  
109 Pembroke Road  
Clifton  
Bristol BS8 3EU

## Contents

1. Survey description and summary.....	1
2. Survey aims and objectives.....	1
3. Standards.....	2
4. Site description .....	2
5. Archaeological background .....	2
6. Results, discussion and conclusions .....	4
7. Disclaimer and copyright .....	7
8. Acknowledgements.....	7
9. Bibliography .....	7
Appendix 1 Figures.....	8
Appendix 2 Tables.....	17

## Figures

Figure 1: location map .....	9
Figure 2: survey interpretation, areas 8, 9, 11, 12, 13, 14 and 15 .....	10
Figure 3: survey interpretation, areas 8, 9 and 11 (north).....	11
Figure 4: survey interpretation, areas 11 (south), 12, 13, 14 and 15.....	12
Figure 5: shade plot of processed data, areas 8, 9, 11, 12, 13, 14 and 15 .....	13
Figure 6: shade plot of processed data, areas 8, 9 and 11 (north).....	14
Figure 7: shade plot of processed data, areas 11 (south), 12, 13, 14 and 15.....	15
Figure 8: shade plot of minimally processed data, areas 8, 9, 11, 12, 13, 14 and 15.....	16

## Tables

Table 1: data analysis .....	18
Table 2: methodology summary.....	19
Table 3: processed data metadata, fields 1, 2, 4 and 5.....	20
Table 4: minimally processed data metadata (Figure 8).....	21

## 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](http://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 29 November and 2 December 2016  
Area: Surveyed area: 13.8ha  
Incorporated from 2013-14 survey: 8.7ha  
Total area analysed: 22.5ha  
Lead surveyor: Mark Edwards BA  
Author: Ross Dean BSc MSc MA MifA

### 1.2 Clients

SLR Consulting Ltd, Langford Lodge, 109 Pembroke Road, Clifton, Bristol BS8 3EU

### 1.3 Location

Site: Land at Straitgate Farm  
Civil Parish: Ottery St Mary  
District: East Devon  
County: Devon  
Nearest Postcode: EX11 1LL  
NGR: SY 07110 95650 (point)  
NGR (E/N): 307110,095650 (point)

### 1.4 Archive

OASIS number: substrat1-271318  
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. It has been prepared for SLR Consulting Ltd on behalf of clients. The survey area location is shown in Figure 1.

Part of the current site was surveyed by Substrata on behalf of SLR in December 2013 which was reported in Dean (2014). The data and interpretation of this part of the site has been incorporated in this report. The previously completed and new survey areas are distinguished in Figure 5.

The area designations used in this report are follow on from those in the 2014 report, as do the magnetic anomaly group numbers used in the analysis.

### 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.*

*Thirty-nine magnetic anomaly groups were mapped as representing possible archaeological deposits or features. Six of these anomaly groups represent former field boundaries recorded on historic maps. One group represents a track and footpath recorded on historical maps. One group may represent double curvilinear deposits typical of a former track. One group may represent a curvilinear deposit which may have archaeological significance although this is not certain. The western end of one group appears to show a collection of postholes, pits or tree bowls aligned with the footings of a former Devon bank field boundary. Alternatively, the aligned anomalies may represent the remnants of a once continuous pair of ditches flanking the Devon bank that have been subjected to later ground disturbance. The remaining groups*

*are most likely to represent linear and disrupted linear deposits, such as former ditches or banks, of unknown period and from one or more phases 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 site comprises seven fields in agricultural use surrounding Straitgate Farm as shown in Figure 1. They are bound to the north and west by agricultural land, to the east by Birdcage Lane and to the south by the B3174. The topography of the site slopes from west to east from approximately 140m to 115m AOD.

### 4.2 Geology

A solid geology boundary trends north-north-east to south-south-west and passes through areas 8, 9 and 11 (area numbers are provided in Figure 2). The majority of the bedrock across the site lies on the eastern side of this boundary and are sandstones of the Triassic Otter Sandstone Formation. These are locally micaceous and cross-bedded fine- to medium-grained sandstones, weathering to sand near the surface. To the west of the boundary the bedrocks are predominantly brown horizontally-bedded gravel with subordinate lenticular beds of trough cross-bedded pebbly sand and sand of the Triassic Salterton Pebble Beds Formation (British Geological Survey, undated).

Superficial deposits for the site are unknown (ibid).

## 5 Archaeological background

### 5.1 Historic landscape characterisation

#### ‘Barton Fields’

These relatively large, regular enclosures seem likely to have been laid out between C15th-C18th. Some curving boundaries may be following earlier divisions in the pre-existing medieval fields (Devon County Council, undated).

## 5.2 Summary of archaeological background

The survey area lies within an area of archaeological potential. Previous archaeological work undertaken in advance of the construction of the A30 demonstrated the presence of Middle to Late Iron Age settlement in the vicinity as well as earlier, Neolithic, activity. In addition, small amounts of flint have been recovered during field-walking in this area suggestive of prehistoric activity in the wider landscape. The Roman road from Dorchester to Exeter passes to the west of the site as shown in Figure 1 (Devon County Council Historical Environment entry (HER) MDV1875). The field boundary that runs north-south along the western edge of the current site is a significant landscape feature and can be traced for some 6km in the present landscape; the age of this feature is not known but is likely to be of some antiquity (Read, 2013).

## 5.3 Recent work at Straitgate

The recent archaeological programme of work at Straitgate is summarised in HER entry MDV109745 (Historic England, undated) and is the main source for the summary provided below.

Following the survey completed by Substrata of 39 hectares at Straitgate to the west and north and incorporating some of the current survey area (Dean, 2014), a trial trench excavation was undertaken by AC Archaeology Ltd (Farnell, Rainbird, &Valentin, 2015). Archaeology of most periods was represented in varying amounts, dating from the Early Neolithic period through to modern times.

The evidence suggests that an Iron Age open settlement extended over an area of potentially 10 hectares to the northwest of the current site, largely confined to the highest ground. However, a possible roundhouse was identified, off the slope and, based on the geophysics and trial trenching at Straitgate, a number of further Middle or Later Iron Age roundhouses are present, albeit in localised clusters. Potential evidence for Late Bronze Age or Early Iron Age settlement was identified during the trial trenching some distance away from the main focus of Middle to Late Iron Age settlement. Evidence for Romano-British settlement was identified, dating from the 2nd century AD onwards including a possible roundhouse gully with a hearth. An isolated section of ditch contained pottery and flint of probable Early Neolithic date. A pit of similar date was excavated nearby. The location of these features is close to the spot of an Early Neolithic pit containing pottery and flint excavated ahead of the new A30. Across the central portion of the excavation area remains were more diffuse comprising occasional, apparently isolated earlier prehistoric features, including a 'structured' Middle Neolithic deposit and possible field system ditches potentially associated with the Iron Age and Romano-British settlement evidence upslope. A series of Post-medieval to Modern former field boundaries was identified with these generally conforming to the existing field pattern. In addition, a number of artefacts of most periods was recovered from overlying layers across the site, indicating a general continuity of settlement and agricultural practices.

The southern and eastern part of the site, bordering the current survey area, demonstrated a generally low potential for the presence of early archaeological features and deposits.

## 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

The survey area was sub-divided into areas 8, 9, 11, 12, 13, 14 and 15 (Figure 2) following the convention adopted for an earlier survey at Straitgate (Dean, 2014) which incorporated some of the current site. The previously completed and new survey areas are distinguished in Figure 5.

Figures 2 to 4 show the interpretation of the survey data. They include the anomaly groups identified as possibly relating to archaeological deposits 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 along with Table 1 comprise the analysis of the survey data.

Figures 5 to 7 are plots of processed data as specified in Table 3. Figure 8 is a plot of minimally processed data as specified in Table 4.

### 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 and internal field boundaries was restricted as shown in the figures due to the presence of magnetic materials within and adjacent to boundaries. Strong magnetic responses mapped close to the boundaries are likely to relate to these materials except where otherwise indicated in Figures 2 to 4 and Table 1.

Surveying was restricted around Straitgate Farm in areas 11, 13 and 14 by the presence of significant amounts of farm vehicles and material.

##### 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 parallel, linear trends visible in the data (Figures 5 to 7) are likely to represent relatively recent ploughing disturbance. Others may be related to possible ridge-and-furrow cultivation as shown in Figures 2 to 4 and listed in Table 1.

#### 6.3.2 Data relating to historic maps and other records

Magnetic anomaly groups **76** (area 18), **80** and **95** (area 9), **108**, **109** and **112** (area 15) coincide with and are likely to represent former field boundaries recorded on historic maps as shown in Table 1.

Group **75** coincides and is likely to represent a footpath and track recorded on historical maps.

#### 6.3.3 Data with no previous archaeological provenance

Anomaly groups **87** and **105** (area 11) lie close to a field boundary mapped on historical maps from the tithe map of 1843 and all Ordnance Survey maps to at least 1972. It is not clear if either of these anomaly groups represent the former boundary.

Group **88** (area 12) may represent a parallel double curvilinear deposits such as those from former by tracks with flanking ditches or from field lanes between enclosures.

In area 9, group **79** appears to represent a curvilinear deposit such as a filled ditch which, bearing in mind the substantial prehistoric settlement remains excavated to the north west of the current survey area (Section 5.3), may have archaeological significance. The magnetic response of the group is, however, disrupted and diffuse and the nature of the group is by no means certain. Only further archaeological investigation will resolve the nature of the deposits.

The western end of group **115** (area 15) appears to show a collection of postholes, pits or tree bowls aligned with the footings of a former Devon bank field boundary. These are probably remnants of a once continuous pair of ditches from the Devon bank that have been subjected to later ground disturbance. Only further archaeological investigation can confirm this analysis.

The remaining groups have characteristics typical of anomalies represents disrupted linear and curvilinear deposits, such as former ditches and banks, of unknown period and more than one phase of past land management.

#### 6.4 Conclusions

Thirty-nine magnetic anomaly groups were mapped as representing possible archaeological deposits or features. Six of these anomaly groups (76, 80, 95, 108, 109 and 112) represent former field boundaries recorded on historic maps. One group (75) represents a track and footpath recorded on historical maps. One group (88) may represent double curvilinear deposits typical of a former track. One group (79) may represent a curvilinear deposit which may have archaeological significance although this is not certain. The western end of one group (115) appears to show a collection of postholes, pits or tree bowls aligned with the footings of a former Devon bank field boundary. Alternatively, the aligned anomalies may

represent the remnants of a once continuous pair of ditches flanking the Devon bank that have been subjected to later ground disturbance. The remaining groups are most likely to represent linear and disrupted linear deposits, such as former ditches or banks, of unknown period and from one or more phases 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.

Substrata Ltd will assign copyright to the client upon written request but retains the right to be identified as the author of all project documentation and reports as defined in the Copyright, Designs and Patents Act 1988 (Chapter IV, s.79). This report contains material that is non-Substrata Limited copyright or the intellectual property of third parties. Such material is labelled with the appropriate copyright and is non-transferrable by Substrata Ltd.

## 8 Acknowledgements

Substrata would like to thank Andrew Burn of SLR Consulting Ltd for commissioning us to complete this survey.

## 9 Bibliography

Archaeology Data Service (undated) *Archaeology Data Service/Digital Antiquity Guides to Good Practice: Geophysical Data in Archaeology* [Online], Available: [http://guides.archaeologydataservice.ac.uk/g2gp/Geophysics\\_Toc](http://guides.archaeologydataservice.ac.uk/g2gp/Geophysics_Toc) [October 2016]

British Geological Survey (undated) *Geology of Britain viewer, 1:50000 scale data*, [Online], Available: [http://www.bgs.ac.uk/discovering\\_Geology/geologyOfBritain/viewer.html](http://www.bgs.ac.uk/discovering_Geology/geologyOfBritain/viewer.html) [December 2016]

Chartered Institute for Archaeologists (2014a) *Standard and guidance archaeological geophysical survey*. Reading: Author [Online], Available: [http://www.archaeologists.net/sites/default/files/CIfAS&GGeophysics\\_1.pdf](http://www.archaeologists.net/sites/default/files/CIfAS&GGeophysics_1.pdf) [October 2016]

Chartered Institute for Archaeologists (2014b) *Code of conduct*. Reading: Author [Online], <http://www.archaeologists.net/sites/default/files/CodesofConduct.pdf> [August 2016]

Clark, A. (2000) *Seeing Beneath the Soil, Prospecting methods in archaeology*, London: Routledge

Dean, R. (2016) *A survey method statement for a detailed magnetometer survey over land at Straitgate Farm, Ottery St Mary, Devon*, Substrata Ltd unpublished document 1603STR-M-1

Dean, R. (2014) *An Archaeological Gradiometer Survey, Land to the West of Straitgate Farm, Ottery St. Mary, Devon, Ordnance Survey E/N: 306730,95920 (point)*, Substrata report 140127

Devon County Council (undated), *Devon & Dartmoor Historic Environment Record*, [Online], Available: <https://new.devon.gov.uk/historicenvironment/> [December 2016]

Farnell, A., Rainbird, P. & Valentin, J. (2015) *Land at Straitgate Farm, Whimple, Devon, Centred on NGR SY 0673 9594, Results of Archaeological Trench Evaluation*, AC Archaeology Ltd report ACD983/3/1

Historic England (undated) *Heritage Gateway*. [Online], Available: <http://www.heritagegateway.org.uk/Gateway/> [December 2016]

Historic England (2010) *Geophysical Survey in Archaeological Field Evaluation*, [Online], Available: <https://content.historicengland.org.uk/images-books/publications/geophysical-survey-in-archaeological-field-evaluation/geophysics-guidelines.pdf> [August 2016]

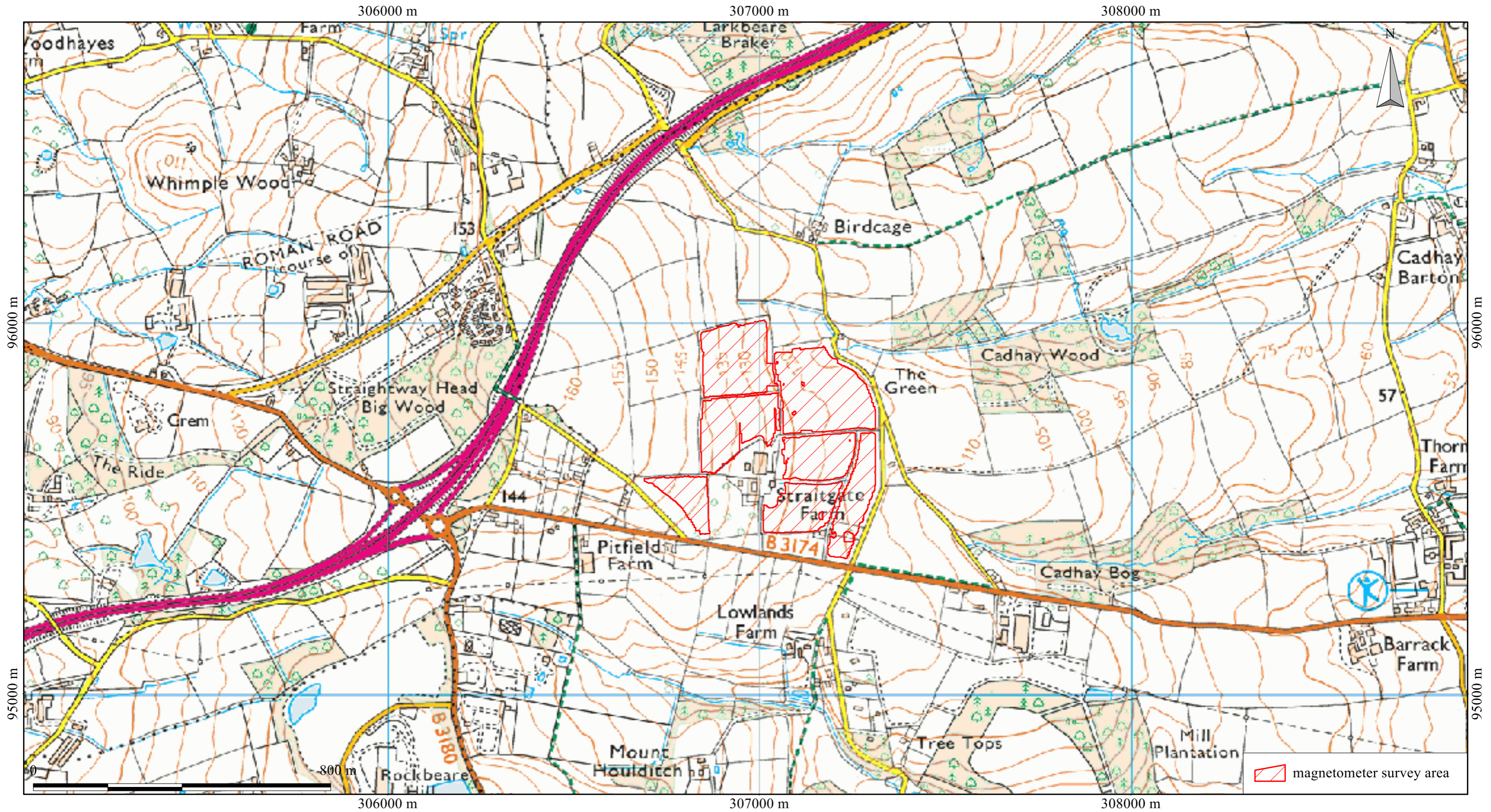
Reed, S. (2013) *Brief for archaeological evaluation undertaken in support of a planning application, land to the west of Straitgate Farm, Ottery St Mary, East Devon*. Devon County Council Historic Environment Team unpublished document ARCH/DM/ED/21077

## 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.



British Grid  
 centre X: 306963.17 m, centre Y: 95769.15 m

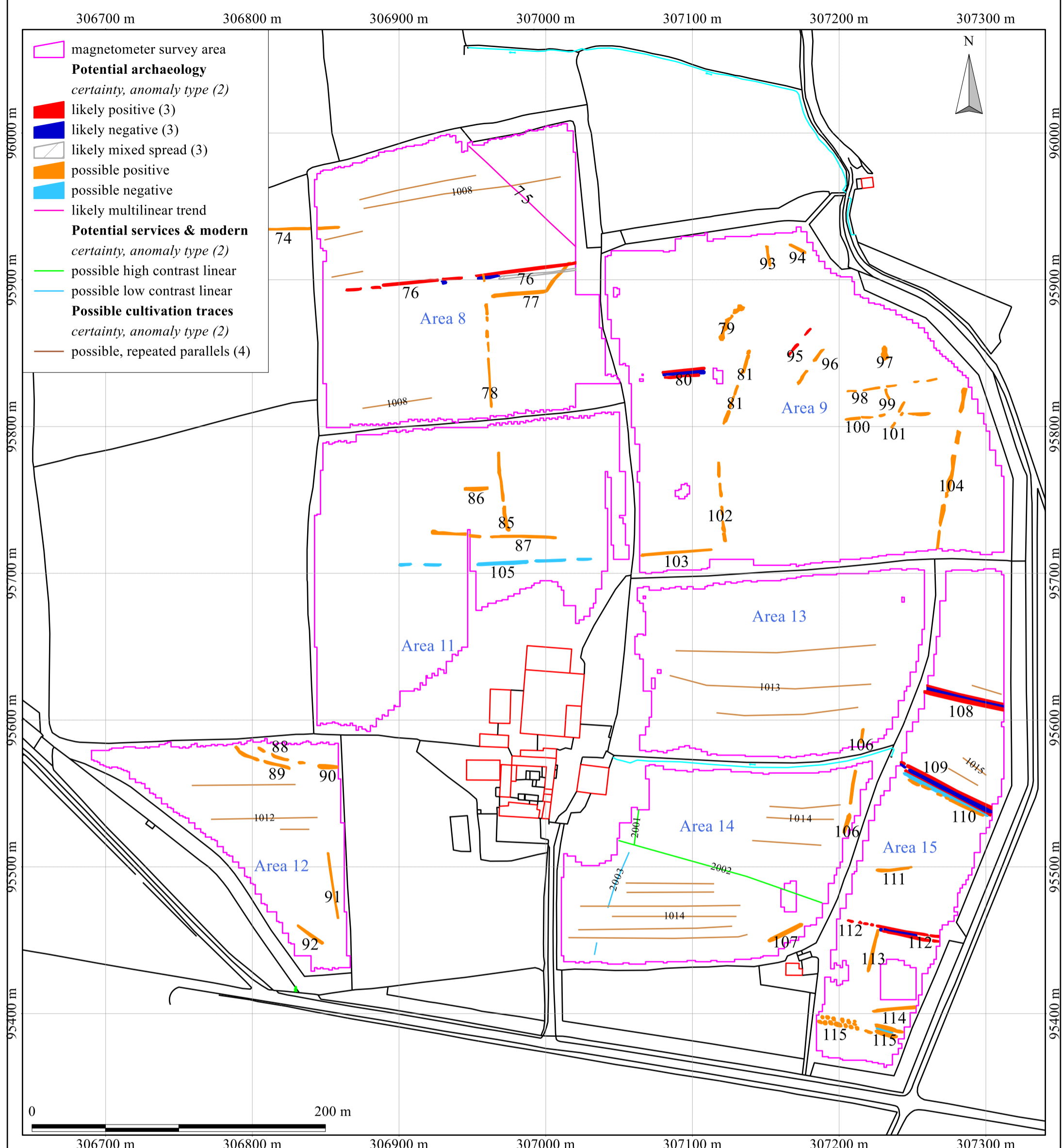
Scale: 1:10000 @ A3. Spatial Units: Meter. Do not scale off this drawing

Geophysical survey: Copyright Substrata Limited.  
 Base map: Ordnance Survey (c) Crown Copyright 2016.  
 All rights reserved. Licence number 100020432

An archaeological magnetometer survey  
 Land at Straitgate Farm, Ottery St Mary, Devon  
 Centred on NGR (E/N): 307110,095650 (point)  
 Report: 161003STR-R-1

Figure 1: location map

Substrata Limited  
 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: 306991.94 m, centre Y: 95693.86 m

Geophysical survey: Copyright Substrata Limited.  
 Base map: Ordnance Survey (c) Crown Copyright 2013.  
 All rights reserved. Licence number 100020449

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

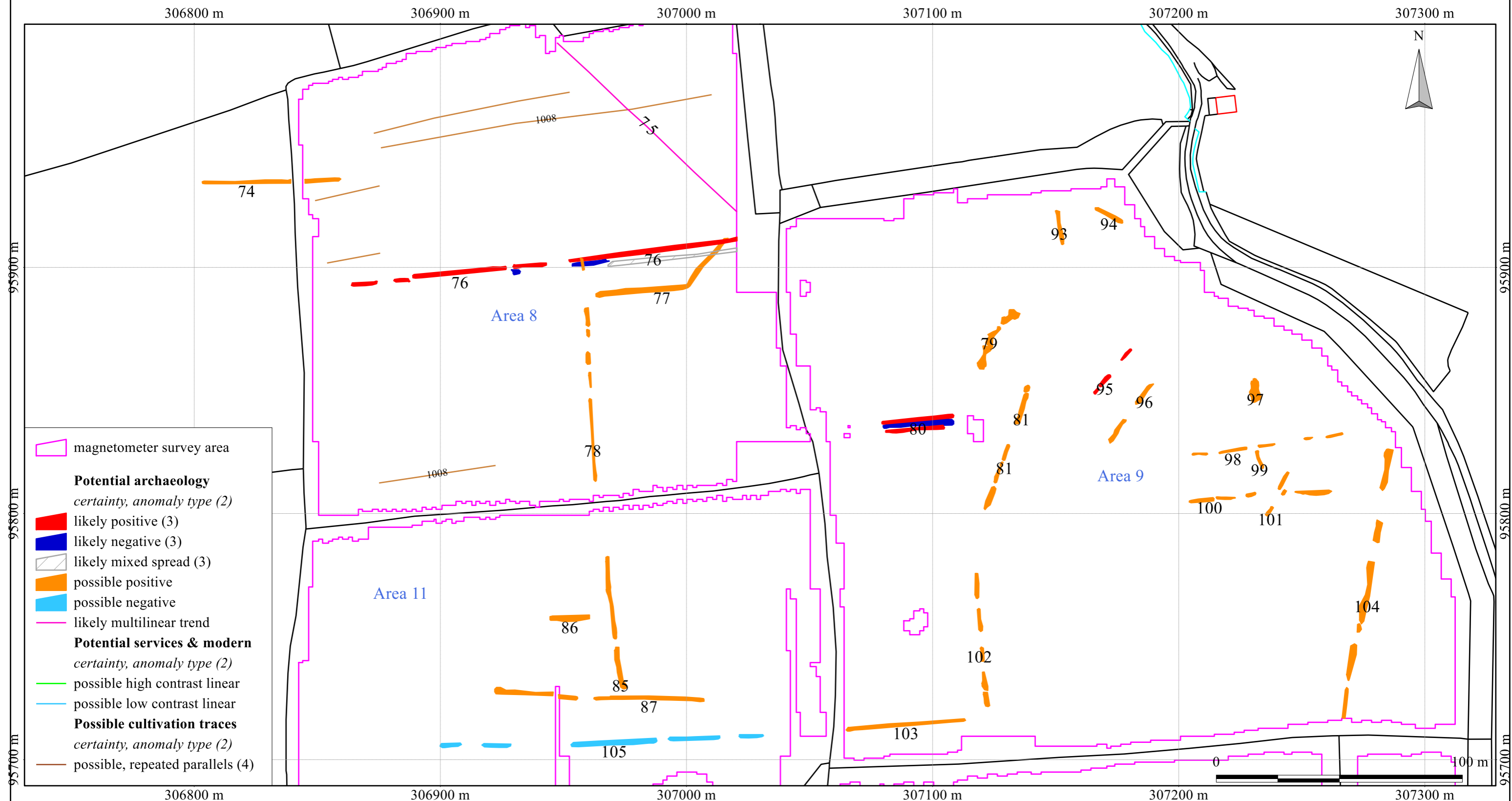
Notes:

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 Straitgate Farm, Ottery St Mary, Devon  
 Centred on NGR (E/N): 307110,095650 (point)  
 Report: 161003STR-R-1

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

Figure 2: survey interpretation, areas 8, 9, 11, 12, 13, 14 and 15



British Grid  
 centre X: 307029.93 m, centre Y: 95844.10 m

Scale: 1:1500 @ A3. Spatial Units: Meter. Do not scale off this drawing

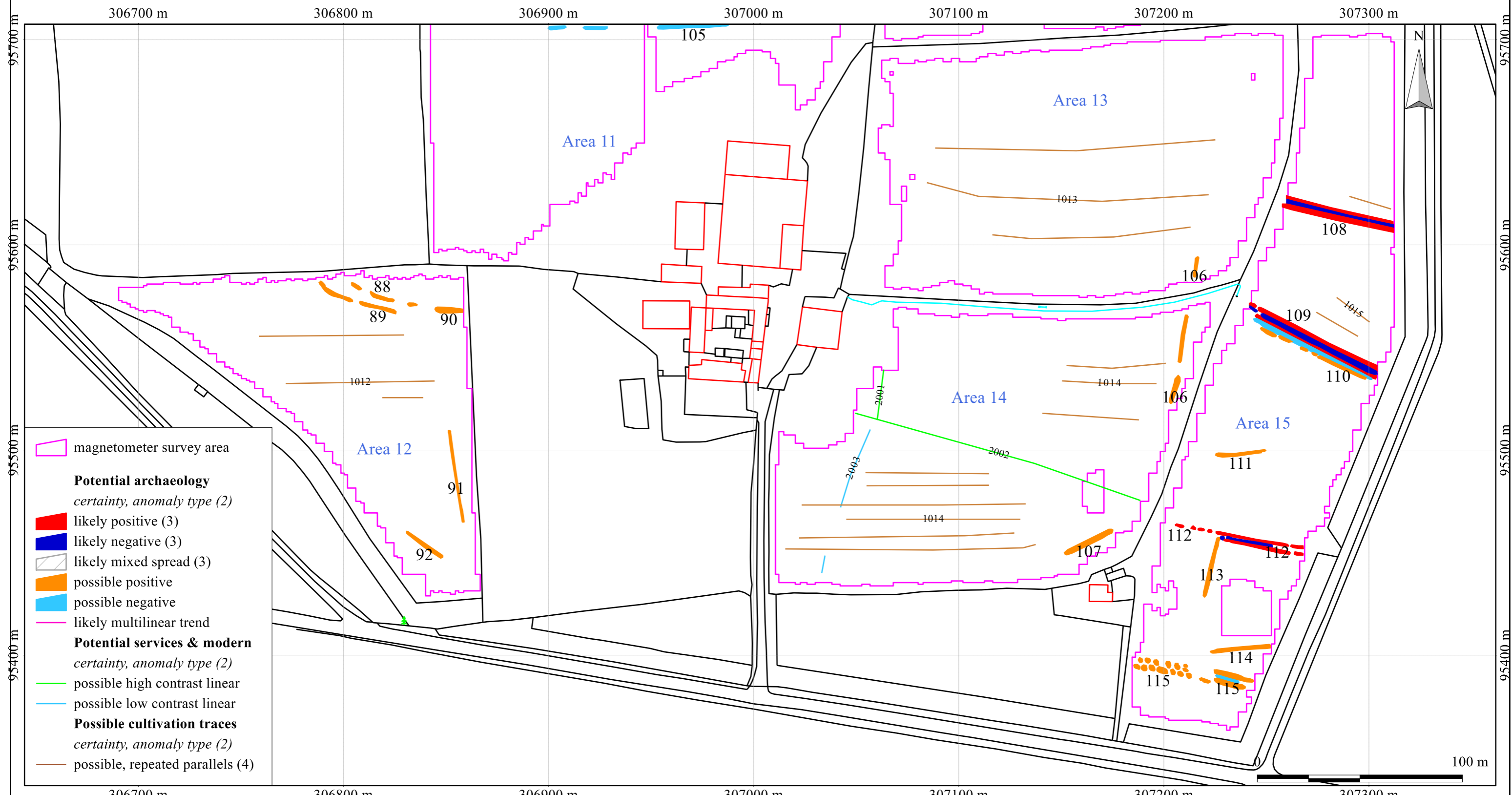
Geophysical survey: Copyright Substrata Limited.  
 Base map: Ordnance Survey (c) Crown Copyright 2016  
 All rights reserved. Licence number 100020449

- 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 Straitgate Farm, Ottery St Mary, Devon  
 Centred on NGR (E/N): 307110,095650 (point)  
 Report: 161003STR-R-1

Figure 3: survey interpretation, areas 8, 9 and 11 (north)

Substrata Limited  
 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: 307003.18 m, centre Y: 95522.00 m

Scale: 1:1800 @ A3. Spatial Units: Meter. Do not scale off this drawing

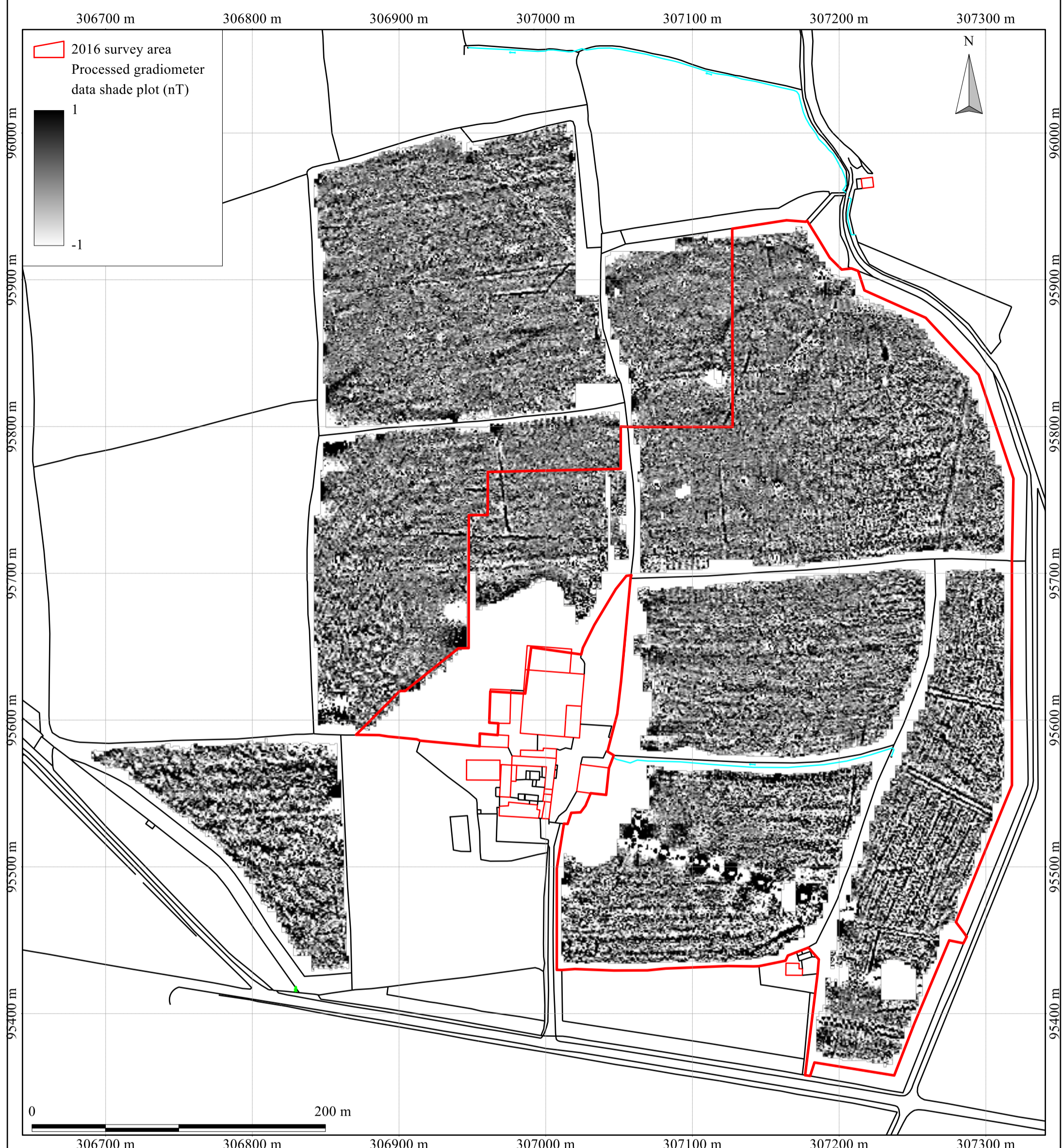
Geophysical survey: Copyright Substrata Limited.  
 Base map: Ordnance Survey (c) Crown Copyright 2016  
 All rights reserved. Licence number 100020449

- 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 Straitgate Farm, Ottery St Mary, Devon  
 Centred on NGR (E/N): 307110,095650 (point)  
 Report: 161003STR-R-1

Figure 4: survey interpretation, areas 11 (south), 12, 13, 14 and 15

Substrata Limited  
 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: 306991.94 m, centre Y: 95693.86 m

Geophysical survey: Copyright Substrata Limited.  
 Base map: Ordnance Survey (c) Crown Copyright 2013.  
 All rights reserved. Licence number 100020449

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

2016 survey area to eastern side, 2014 data to west and north

An archaeological magnetometer survey  
 Land at Straitgate Farm, Ottery St Mary, Devon  
 Centred on NGR (E/N): 307110,095650 (point)  
 Report: 161003STR-R-1

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

Figure 5: shade plot of processed data,  
 areas 8, 9, 11, 12, 13, 14 and 15



British Grid  
 centre X: 307029.93 m, centre Y: 95844.10 m

Scale: 1:1500 @ A3. Spatial Units: Meter. Do not scale off this drawing

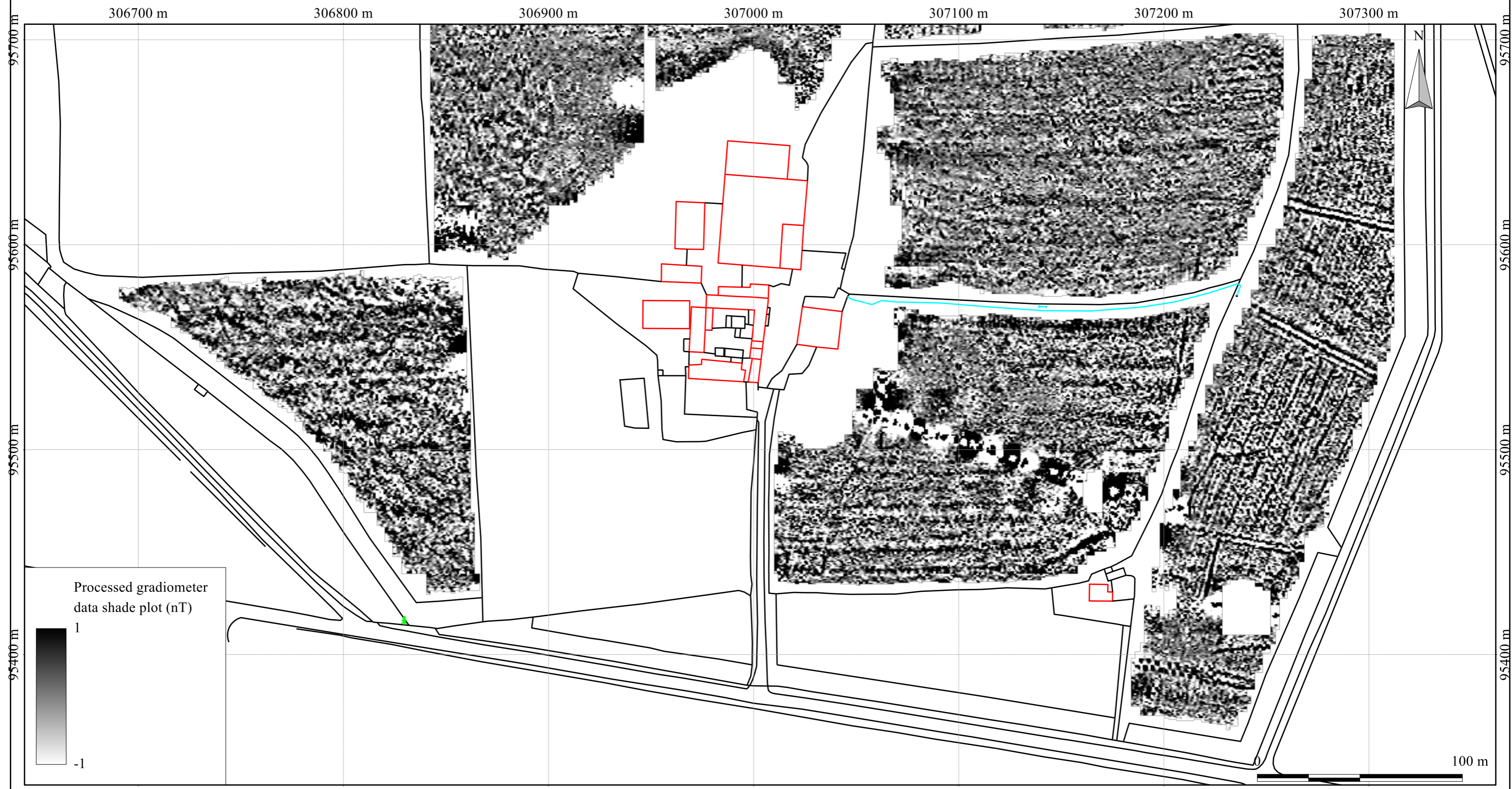
Geophysical survey: Copyright Substrata Limited.  
 Base map: Ordnance Survey (c) Crown Copyright 2016  
 All rights reserved. Licence number 100020449

An archaeological magnetometer survey  
 Land at Straitgate Farm, Ottery St Mary, Devon  
 Centred on NGR (E/N): 307110,095650 (point)  
 Report: 161003STR-R-1

Figure 6: shade plot of processed data, areas 8, 9 and 11 (north)

Substrata Limited  
 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: 307003.18 m, centre Y: 95522.00 m

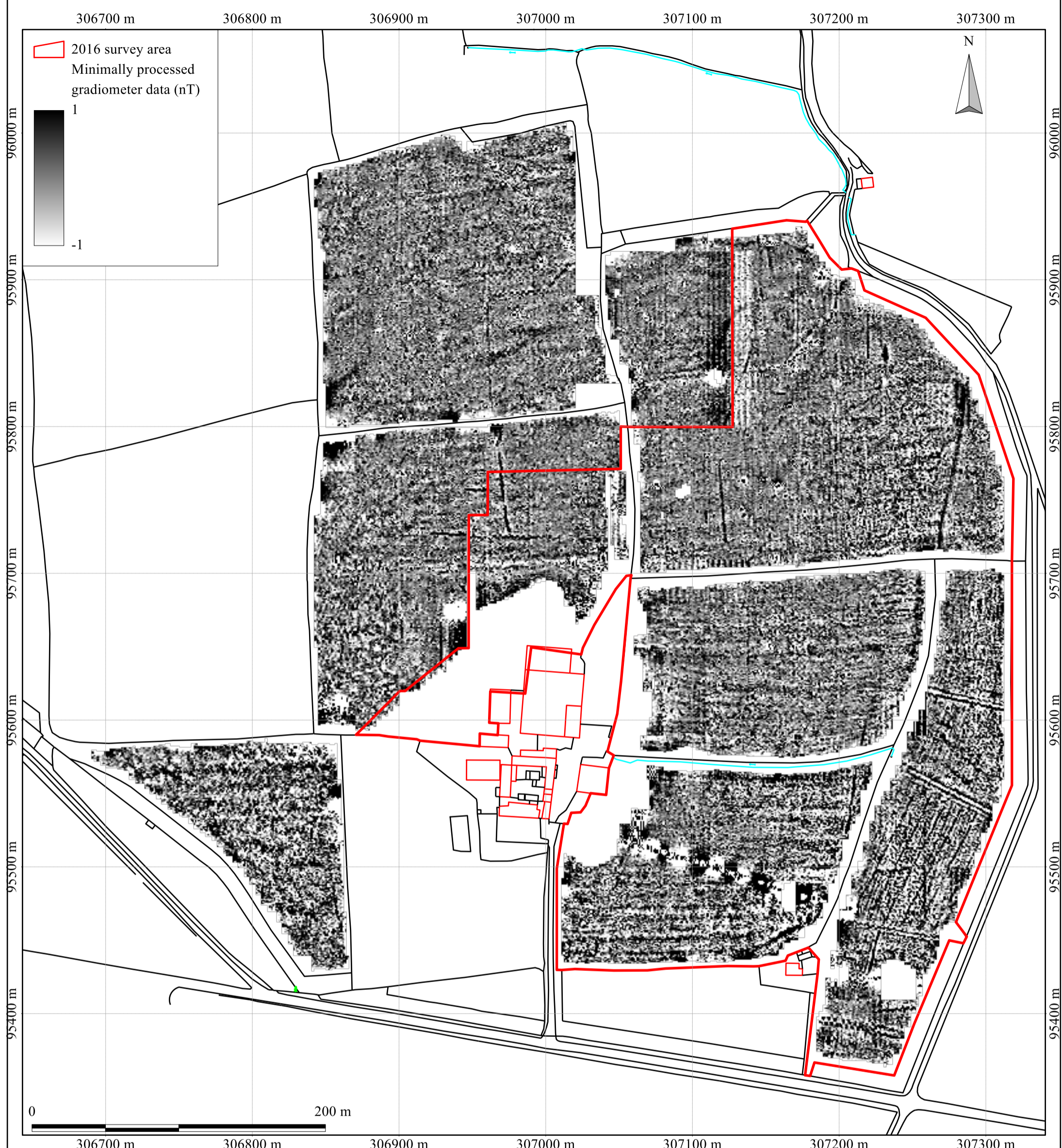
Scale: 1:1800 @ A3. Spatial Units: Meter. Do not scale off this drawing

Geophysical survey: Copyright Substrata Limited.  
 Base map: Ordnance Survey (c) Crown Copyright 2016  
 All rights reserved. Licence number 100020449

An archaeological magnetometer survey  
 Land at Straitgate Farm, Ottery St Mary, Devon  
 Centred on NGR (E/N): 307110,095650 (point)  
 Report: 161003STR-R-1

Figure 7: shade plot of processed data, areas 11 (south) 12, 13, 14 and 15

Substrata Limited  
 Office 1, 5 Mill Street. Bideford, Devon EX39 2JT  
 Tel: 01273 273599  
 Email: [geophysics@substrata.co.uk](mailto:geophysics@substrata.co.uk)  
 Web: [substrata.co.uk](http://substrata.co.uk)



British Grid  
 centre X: 306991.94 m, centre Y: 95693.86 m

Geophysical survey: Copyright Substrata Limited.  
 Base map: Ordnance Survey (c) Crown Copyright 2013.  
 All rights reserved. Licence number 100020449

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

2016 survey area to eastern side, 2014 data to west and north

An archaeological magnetometer survey  
 Land at Straitgate Farm, Ottery St Mary, Devon  
 Centred on NGR (E/N): 307110,095650 (point)  
 Report: 161003STR-R-1

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

Figure 8: shade plot of minimally processed data, areas 8, 9, 11, 12, 13, 14 and 15

## Appendix 2 Tables

Site: An archaeological magnetometer survey  
 Land at Straitgate Farm, Ottery St Mary, Devon  
 Centred on NGR (E/N): 307110,95650 (point)  
 Report: 161003STR-T-1

area number	anomaly group	associated anomalies	anomaly characterisation certainty & class	anomaly form	additional archaeological characterisation	comments	supporting evidence
7 & 8	74		possible positive	disrupted linear		anomaly group extends into area 8	
	75		likely multilinear trend	linear	footpath route	anomaly trends coincide with a footpath and track recorded on historic maps	1843 Ottery St Mary tithe map, OS maps 1889 1:2500 to at least 1972 1:10000
	76		likely positive/negative/mixed	disrupted linear	field boundary - Devon bank	anomaly group coincides with a field boundary mapped on 1843 tithe map but not on subsequent Ordnance Survey maps	1843 Ottery St Mary tithe map
	77		possible positive	multilinear			
	78	85	possible positive	disrupted linear		anomaly group may be same as group 85	
	1008		possible repeated parallels		cultivation traces; possible ridge-and-furrow		
9	79		possible positive	disrupted curvilinear			
	80		likely positive/negative/positive	linear	field boundary - Devon bank	anomalies coincide with a field boundary mapped on the 1843 tithe map and historical Ordnance Survey maps	1843 Ottery St Mary tithe map, OS maps 1889 1:2500 to at least 1972 1:10000
	81		possible positive	disrupted linear			
	93		possible positive	linear			
	94		possible positive	linear			
	95		likely positive	disrupted linear	field boundary	anomalies coincide with a field boundary mapped on the 1843 tithe map and historical Ordnance Survey maps	1843 Ottery St Mary tithe map, OS maps 1889 1:2500 to at least 1972 1:10000
	96		possible positive	disrupted linear			
	97		possible positive	irregular	possible archaeological deposit	an area of enhanced positive magnetic response which may indicate archaeological deposits such as an earthen surface or large filled hollow	
	98		possible positive	disrupted linear			
	99		possible positive	linear			
	100		possible positive	disrupted linear			
	101		possible positive	disrupted parallel linear			
	102		possible positive	disrupted linear			
	103		possible positive	linear			
104		possible positive	disrupted linear				
11	85	78	possible positive	disrupted linear		anomaly group may be same as group 78	
	86		possible positive	linear			
	87		possible positive	disrupted linear	field boundary?	anomaly group lies to the north of the mapped location of a field boundary recorded on historic maps; it is not clear whether the anomaly represents the mapped field boundary	1843 Ottery St Mary tithe map, OS maps 1889 1:2500 to at least 1972 1:10000
	105		possible negative	disrupted linear	field boundary?	anomaly group lies to the south of the mapped location of a field boundary recorded on historic maps; it is not clear whether the anomaly represents the mapped field boundary	1843 Ottery St Mary tithe map, OS maps 1889 1:2500 to at least 1972 1:10000
12	88	89 90	possible positive	curvilinear		anomaly groups could represent a double linear	
	89	88 90	possible positive	curvilinear		anomaly groups could represent a double linear	
	90	88 89	possible positive	linear		anomaly groups could represent a double linear	
	91		possible positive	linear			
	92		possible positive	linear			
1012		possible repeated parallels		cultivation traces; possible ridge-and-furrow			
13	1013		possible repeated parallels		cultivation traces; possible ridge-and-furrow		
13 & 14	106		possible positive	disrupted linear			
	107		possible positive	linear			
14	1014		possible repeated parallels		cultivation traces; possible ridge-and-furrow		
	2001		possible high contrast linear		ferrous cable, pipe or drain		
	2002		possible high contrast linear		ferrous cable, pipe or drain		
	2003		possible low contrast linear		service trench		
	108		likely positive/negative/positive	linear	field boundary - Devon bank	anomaly group coincides with a field boundary mapped on 1843 tithe map but not on subsequent Ordnance Survey maps	1843 Ottery St Mary tithe map
15	109	110	likely positive/negative/positive	disrupted linear	field boundary - Devon bank	anomaly group coincides with a field boundary mapped on 1843 tithe map but not on subsequent Ordnance Survey maps	1843 Ottery St Mary tithe map
	110	109	possible negative/positive	disrupted linear	field boundary - Devon bank	anomaly group may represent an earlier build of group 110	1843 Ottery St Mary tithe map
	111		possible positive	curvilinear			
	112		likely positive/negative/positive	disrupted linear	field boundary - Devon bank	anomalies coincide with a field boundary mapped on the 1843 tithe map and historical Ordnance Survey maps	1843 Ottery St Mary tithe map, OS maps 1889 1:2500 to at least 1972 1:10000
	113		possible positive	linear			
	114		possible positive	linear			
	115		possible positive/negative/positive	disrupted linear	field boundary - Devon bank?	the anomaly group is highly disrupted at its western end; while it could represent a line of pits here it is much more likely that it represents a highly disrupted former ditch	
	1015		possible repeated parallels		cultivation traces; possible ridge-and-furrow		

Table 1: data analysis

<p><b>Documents</b> Survey methodology statement: Dean (2016)</p>	
<p><b>Methodology</b></p> <ol style="list-style-type: none"> <li>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).</li> <li>2. The survey grid location information and grid plan was recorded as part of the project in a suitable GIS system.</li> <li>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.</li> </ol>	
<p><b>Grid</b>  <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><b>Equipment</b>  <i>Instrument:</i> Bartington Instruments grad601-2  <i>Firmware:</i> version 6.1</p>	<p><b>Data Capture</b>  <i>Sample Interval:</i> 0.25m  <i>Traverse Interval:</i> 1 metre  <i>Traverse Method:</i> zigzag  <i>Traverse Orientation:</i> GN</p>
<p><b>Data Processing, Analysis and Presentation Software</b>  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</p>	

Table 2: methodology summary

<p>SITE</p> <p>Instrument Type: Bartington Grad-601 gradiometer</p> <p>Units: nT</p> <p>Direction of 1st Traverse: see below</p> <p>Collection Method: ZigZag</p> <p>Sensors: 2 @ 1.00 m spacing.</p> <p>Dummy Value: 32702</p> <p>PROGRAM</p> <p>Name: TerraSurveyor</p> <p>Version: 3.0.31.0</p>	
<p>Stats</p> <p>Max: 13.40</p> <p>Min: -13.29</p> <p>Std Dev: 2.01</p> <p>Mean: 0.06</p> <p>Median: 0.01</p>	<p>Processes: 10</p> <p>1 Base Layer</p> <p>2 Clip at 1.00 SD</p> <p>3 DeStripe Median Traverse: Grids: All</p> <p>4 Search &amp; Replace From: -3000 To: 3000 With: Dummy (Area: Top 421, Left 1412, Bottom 450, Right 1440)</p> <p>5 De Stagger: Grids: g5.xgd Mode: Both By: -1 intervals</p> <p>6 De Stagger: Grids: h5.xgd Mode: Both By: -1 intervals</p> <p>7 De Stagger: Grids: 5s1.xgd 5s13.xgd 5s14.xgd 5b20.xgd 5a29+5b21.xgd 5b34+5a30.xgd 5a33.xgd 5s2.xgd 5s12.xgd 5s15.xgd 5b19.xgd 5b22.xgd 5b33.xgd 5b35.xgd 5s3.xgd 5s11.xgd 5s16.xgd 5b18.xgd 5b23.xgd 5b32.xgd 5b1+5b36.xgd 5s4.xgd 5s10.xgd 5s17.xgd 5b17.xgd 5b24.xgd 5b31.xgd 5b2.xgd 5s5.xgd 5s9.xgd 5s18.xgd 5b16.xgd 5b25.xgd 5b30.xgd 5s6.xgd 5s8.xgd 5s19.xgd 5b15.xgd 5b26.xgd 5b29.xgd 5s7.xgd 5s20.xgd 5s21.xgd 5b27.xgd 5b28.xgd Mode: Both By: -3 intervals</p> <p>8 De Stagger: Grids: i1.xgd h27.xgd h36.xgd h26.xgd h28.xgd h35.xgd h20.xgd h25.xgd h29.xgd h34.xgd h19.xgd h21.xgd h24.xgd h30.xgd h33.xgd h17.xgd h18.xgd h22.xgd h23.xgd h31.xgd h32.xgd Mode: Both By: -2 intervals</p> <p>9 Interpolate: Match X &amp; Y Doubled.</p> <p>10 Clip at 2.90 SD</p>

Table 3: processed data metadata

<p>SITE</p> <p>Instrument Type: Bartington Grad-601 gradiometer</p> <p>Units: nT</p> <p>Direction of 1st Traverse: see below</p> <p>Collection Method: ZigZag</p> <p>Sensors: 2 @ 1.00 m spacing.</p> <p>Dummy Value: 32702</p> <p>PROGRAM</p> <p>Name: TerraSurveyor</p> <p>Version: 3.0.31.0</p>	
<p>Stats</p> <p>Max: 3000.80</p> <p>Min: -3001.20</p> <p>Std Dev: 82.45</p> <p>Mean: 0.14</p> <p>Median: 0.00</p>	<p>Processes: 2</p> <p>1 Base Layer</p> <p>2 DeStripe Median Sensors: Grids: All</p>

Table 4: minimally processed data metadata (Figure 8)