

**LAND AT STREETHAY, LICHFIELD,
STAFFORDSHIRE**

**Report on Archaeological Geophysical Survey
2011**

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Surveyed by:

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for:

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Land at Streethay, Lichfield, Staffordshire

Report on Archaeological Geophysical Survey

Introduction

This report describes findings from a geophysical survey undertaken to test for evidence of archaeological sites or features at a site near Streethay, Staffordshire. The survey was commissioned by Cotswold Archaeology on behalf of Pegasus Planning Group and Miller Homes. Fieldwork for the survey was done between 31 March and 5 April 2011.

The Site

The following notes on site conditions are reproduced in part from the Written Scheme of Investigation for the project, which was prepared in advance of the survey by Cotswold Archaeology. [CA Project 3409; WSI dated March 2011.]

The site is approximately 53ha in size, and is situated on the NW side of Streethay, to the north of the A45127 (centred at NGR: 414800, 309700). The majority of the site area comprises a single large arable field, plus three smaller agricultural fields.

Archaeological Background

A desk-based archaeological appraisal of the site has been carried out previously by Cotswold Archaeology. This appraisal identified areas of archaeological potential within the site, comprising an area of possible medieval settlement along the route of a former lane and an area of possible prehistoric activity indicated by a scatter of flints. A potentially prehistoric site indicated by cropmarks to the north may also encroach into the site.

Geology

The site is on a bedrock of Triassic Mudstone, and appears to be free of drift deposits. Previous investigations at other sites within the broad classification of New Red Sandstone have not always responded strongly to magnetometer surveying (particularly on clay soils), but there is much local variation. In this case the magnetic susceptibility readings taken during the course of the survey are relatively high (in a range c. $15\text{--}30 \times 10^{-5}$ SI), which suggests that any reasonably substantial archaeological features or remains should be detectable.

Survey Procedure

It was decided in advance of the survey, given the size and limited archaeological potential of the site, that the investigation should be based on sampled rather than full coverage of the evaluation area. The survey was therefore arranged as alternating 30m wide strips with 30m gaps, providing 50% coverage of all surveyable ground.

The total area covered by the sample strips (as shaded on the location plan, figure 1) is 26ha. Provision was made in the WSI for an additional 10% contingency survey if required for additional coverage of potentially significant areas. This allowance has not yet been called upon, given the limited findings (as described below) from the initial survey.

The survey used the standard geophysical methods of recorded magnetometer surveying, supplemented by background magnetic susceptibility testing. The procedures followed for the survey were as follows:

Magnetometer survey

The magnetometer readings were collected along transects 1m apart using Bartington 1m fluxgate gradiometers, and are plotted at 25cm intervals along each transect. The results of the survey are presented in sections at 1:2000 scale as grey scale plots (figures 2-4), and as graphical (x-y trace) plots at 1:1250 scale in figures 5-10. An interpretation of the findings is shown superimposed on figures 5-10, and is reproduced separately at 1:2500 scale to provide a summary of the findings in figures 11-12. Figures 2-11 are rotated to align with the survey strips.

The survey plots show the magnetometer readings after standard treatments which include adjustment for irregularities in line spacing caused by variations in the instrument zero setting, and slight linear smoothing. Additional 2D low pass filtering has been applied to the grey scale plot to reduce background noise levels.

Colour coding has been used in the interpretation to distinguish different effects. Features are indicated by coloured outlines, or occasionally by broken lines. Broken lines are used to represent features which are too weak or fragmented to form a satisfactory outline.

A number of magnetic anomalies which are not of clearly recent or natural origin are outlined in red. These may show some of the characteristics to be expected from archaeological features, although their archaeological significance may in some cases be marginal.

Other magnetic anomalies which appear to be of natural or geological origin are outlined in a light brown. Groups of strong magnetic anomalies which are likely to be of recent origin are shown in a darker brown. Linear markings representing possible cultivation effects are indicated by broken green lines. A small number of linear disturbances may represent land drains, rather than cultivation effects, and are indicated by broken red lines. A limited selection of strong magnetic anomalies which may represent iron objects are indicated in blue. Pipes are also shown in blue.

Magnetic susceptibility tests

The magnetometer survey was supplemented by a background magnetic susceptibility survey based on readings taken with a Bartington MS2 meter. Readings were recorded along the centre line of each 30m survey strip, and are displayed as graphs superimposed on the 1:2500 scale interpretative plans (figures 11-12). Susceptibility readings can

(sometimes) be used to provide a broad indication of previously occupied or disturbed areas in which burning associated with past human occupation has enhanced the magnetic susceptibility of the topsoil, although the readings are usually affected also by non-archaeological factors, including geology and land use. A background survey of the kind done here is unlikely to provide any direct evidence for the presence or otherwise of archaeological features, but is undertaken to test the (largely) geologically determined magnetic properties of the soil. This information provides an indication of the strength of magnetic response to be expected from the site, and so can be of help when interpreting the magnetometer survey.

Survey location

The survey grid was set out and tied to the OS grid using a differential GPS system. The plans are therefore geo-referenced, and OS co-ordinates of map locations can be read from the AutoCAD version of the plans which can be supplied with this report.

Results

The survey has detected a number of subsurface features and disturbances, although only a few of them display any of the characteristics to be expected from archaeological features. Some of the main findings are noted here by categories which correspond to the colour coding used in the interpretative plans (figures 11-12).

Potential archaeological features

A small number of magnetic anomalies of moderate amplitude and with rounded profiles (as seen in the graphical plots 5-10) are outlined in red. Such features, in a suitable context, may represent silted pits or ditches, as are commonly found at ancient settlement sites. In this case the magnetic anomalies are widely dispersed with no distinct concentrations which would suggest the presence of an archaeological site. The most clearly defined feature of this kind is a short ditch-like anomaly at A towards the SW of the survey (as labelled on figure 12). There is perhaps another such feature some 50m to the east, but both are otherwise isolated. Other pit-like features are few and isolated, with the possible exception of a (still very sparse) group in the NW of the survey at B, and perhaps others in the SE corner near K.

Recent disturbances

Various groups of relatively strong magnetic anomalies of a kind often seen near modern structures or boundaries are marked in brown. A group at C (figure 11) corresponds to a visible hollow, and could perhaps represent a former pond or quarry pit containing modern debris in the fill. Other such disturbances align across three survey strips at D, suggesting this was the line of a former boundary or track which continued the line of the surviving track to the north.

Gravel and brick are visible on the ground surface in the SW corner of the survey around E, and it is likely that other such debris, perhaps indicating the remains of modern

buildings, is present elsewhere in the southern part of the survey. The dense magnetic activity around F could well indicate remains of modern buildings.

Background magnetic activity

Small background magnetic anomalies are indicated in light brown. Variations in the distribution of such activity may sometimes be significant, but here the effect is generally uniform. There are a few possible areas of slightly increased activity (including some recent disturbances), as at G, H, J, K, L, but none of these include distinct groups of clearly interpretable features. It is possible that medieval remains (if any are present, as mentioned above) could be associated with only minimal magnetic activity (because shallow wall footings or small post holes are less clearly detectable than the large silted pits found at late-prehistoric sites), but the disturbances at these locations could also be of non-archaeological or recent origin.

Cultivation

A few weak linear markings are visible in the grey scale plots, and are marked in green. They do not appear to align with present ploughing, but are too weak and fragmented for it to be clear whether they could represent traces of ridge and furrow.

Land drains

A few broken linear features of a kind which could represent land drains were detected in the SW corner of the survey around M.

Pipes

One of the pipes detected by the survey (N) follows the boundary of the northern field. An irregular sequence of anomalies at P in the NE of the survey could perhaps be a pipe, but could be caused by other disturbances near the farm buildings.

Magnetic susceptibility readings

The susceptibility readings (as plotted on figures 11 and 12) show raised values at locations corresponding to some of the recent magnetic disturbances, but are otherwise highly uniform across much of the site. There are no areas of enhanced values as might be expected in association with ancient settlement or industrial remains. This is consistent with the evidence from the magnetometer survey that any archaeological features which are present are likely to be small and localised.

Conclusions

The survey has not produced any evidence for the presence of substantial or clearly identifiable archaeological sites or remains. Some individual magnetic anomalies which could represent isolated pit-like features have been identified (together with a possible short ditch at A), but the findings otherwise could be of largely recent or non-

archaeological origin.

A few areas which show slightly increased background magnetic activity have been identified (G – L on figures 11-12), but it cannot be claimed on the basis of the survey evidence alone that these are archaeologically significant.

Report by:

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10 May 2011

The fieldwork for this project was done by F. Prince, C. Oatley and N. Paveley.

Land at Streethay, Staffordshire

Appendix : Inventory of Selected Findings

This list notes the more significant findings from the magnetometer survey of this site. The grading (1-4) given alongside each entry refers to the reliability of the geophysical evidence rather than the archaeological significance of the findings.

- Grade 1: Distinct magnetic anomalies of probable archaeological origin.
- Grade 2: Magnetic anomalies possibly including natural or recent disturbances, but which could in part be archaeologically significant.
- Grade 3: Weak or isolated features; not necessarily archaeologically significant.
- Grade 4: Magnetic anomalies of probably non-archaeological origin.

This summary list includes only selected magnetic findings, particularly those which may be of potential archaeological interest. Magnetic disturbances which may be mentioned in the text or indicated on plans are not necessarily included if they appear to be of natural or non-archaeological origin.

<u>Feature</u>		<u>Grade</u>
A	Short ditch-like feature.	1-2
B	A few possible small pit-like features.	2-3
C	Strong magnetic anomalies in hollow: infilled pond or quarry ?	4
D	Disturbances align along former boundary or trackway.	4
E, F	Strong magnetic activity perhaps caused by modern demolition debris.	4
G, H, J, K, L	Areas of slightly increased background magnetic activity. [medieval settlement remains could be associated only with weak magnetic activity, but the survey provides no direct evidence for their presence.]	3
M	Possible land drains.	4

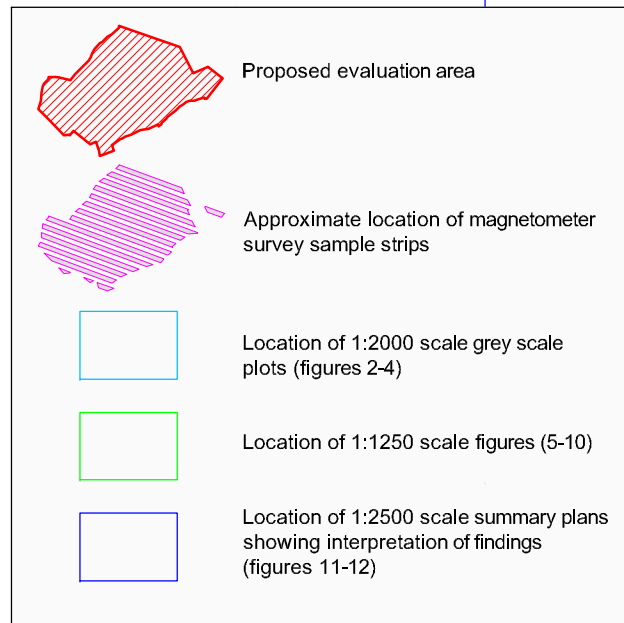
N	Pipe (beneath line of trees along field boundary).	4
P	Irregular sequence of magnetic anomalies: could be pipe or other recent disturbance.	4

Background mapping reproduced from
Land use Plan BIR.2007_11-3
(supplied by Cotswold Archaeology)

413000E

414000E

311000N



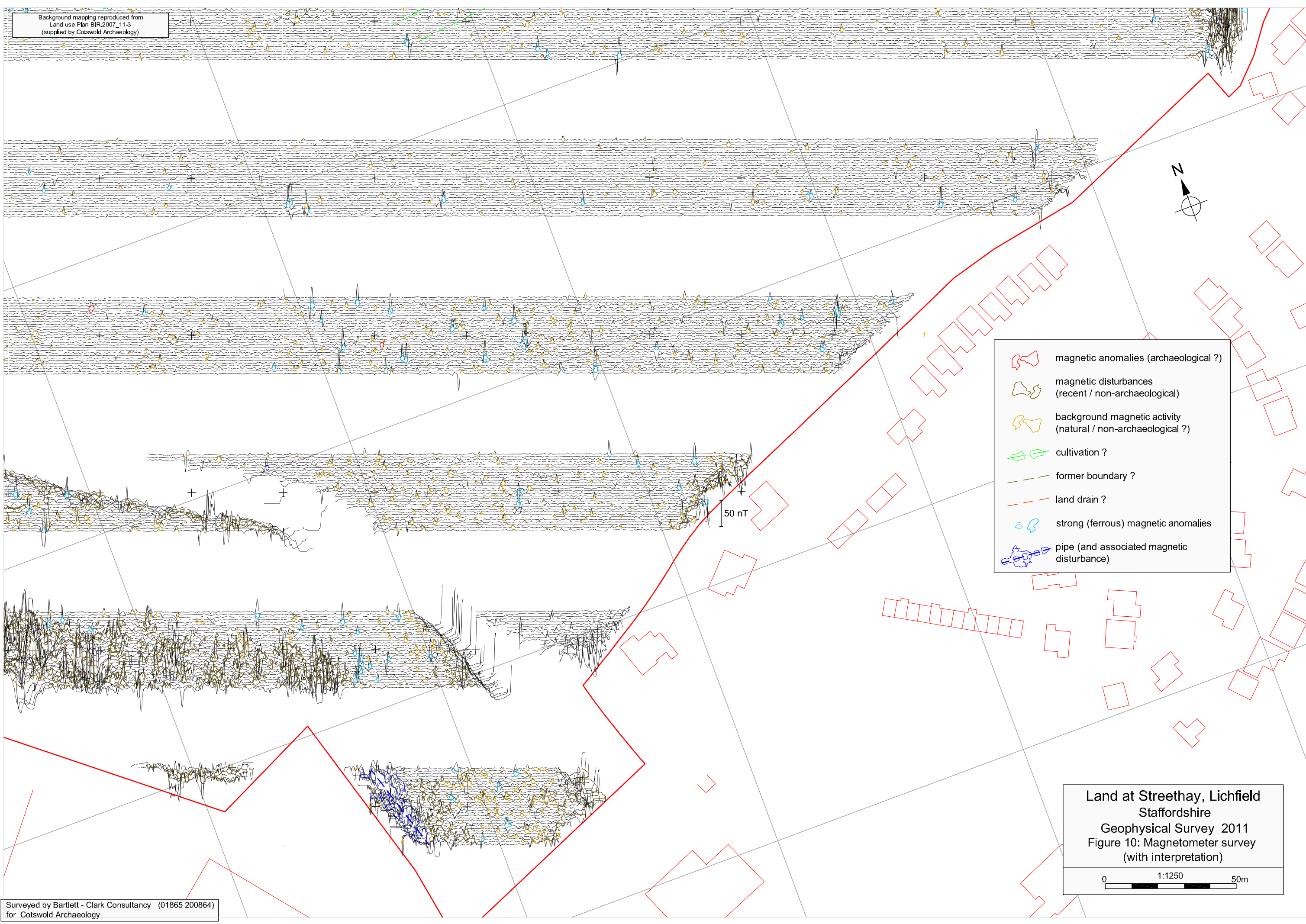
310000N



Land at Streethay, Lichfield
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Geophysical Survey 2011
Figure 1: Location of survey

0 1:5000 200m

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Background mapping reproduced from
Land use Plan BIR.2007_11-3
(supplied by Cotswold Archaeology)

- magnetic anomalies (archaeological ?)
- magnetic disturbances (recent / non-archaeological)
- background magnetic activity (natural / non-archaeological ?)
- cultivation ?
- former boundary ?
- land drain ?
- strong (ferrous) magnetic anomalies
- pipe (and associated magnetic disturbance)

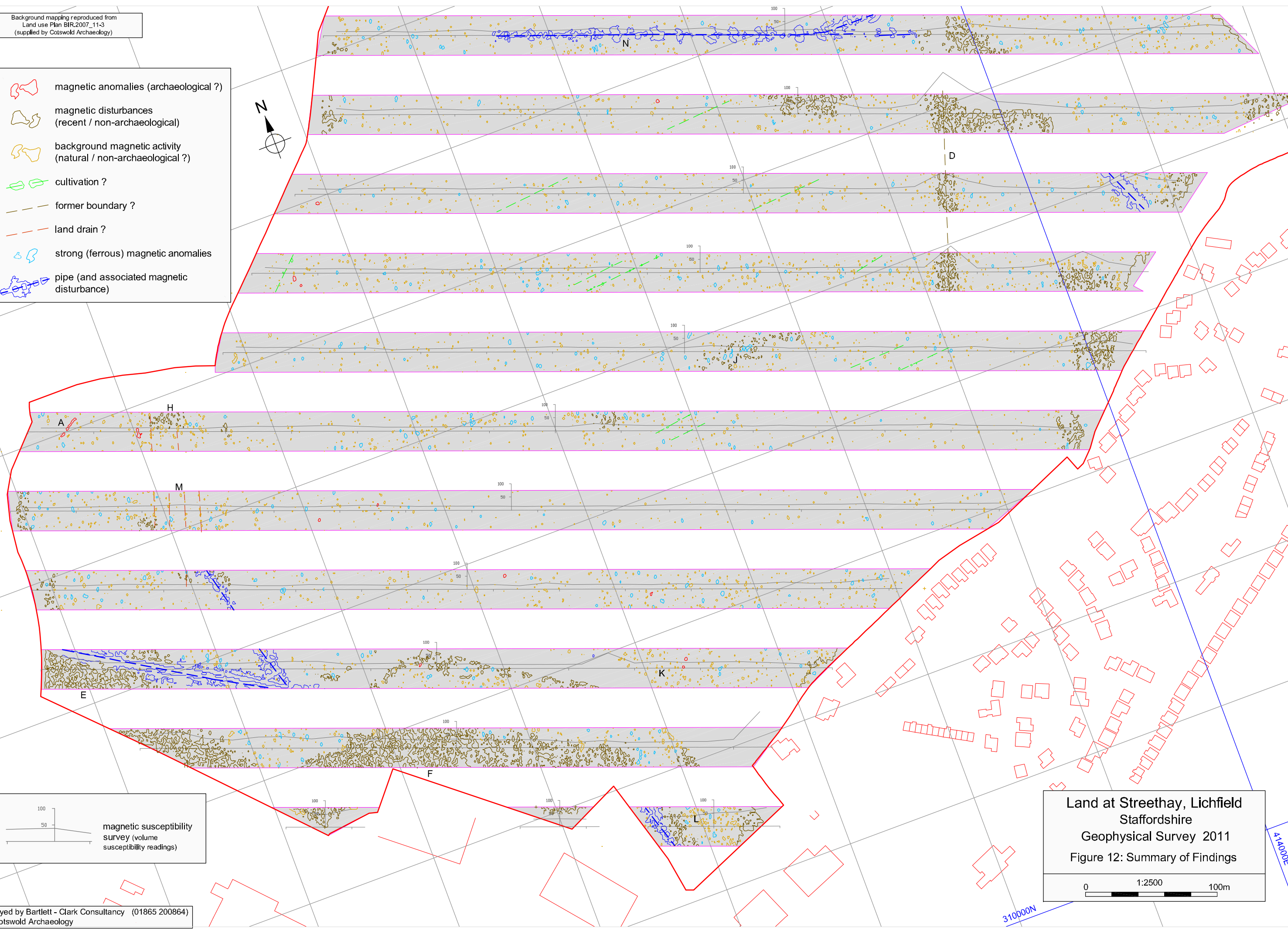
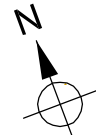
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Figure 10: Magnetometer survey
(with interpretation)

0 1:1250 50m

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(supplied by Cotswold Archaeology)

- magnetic anomalies (archaeological ?)
- magnetic disturbances
(recent / non-archaeological)
- background magnetic activity
(natural / non-archaeological ?)
- cultivation ?
- former boundary ?
- land drain ?
- strong (ferrous) magnetic anomalies
- pipe (and associated magnetic disturbance)

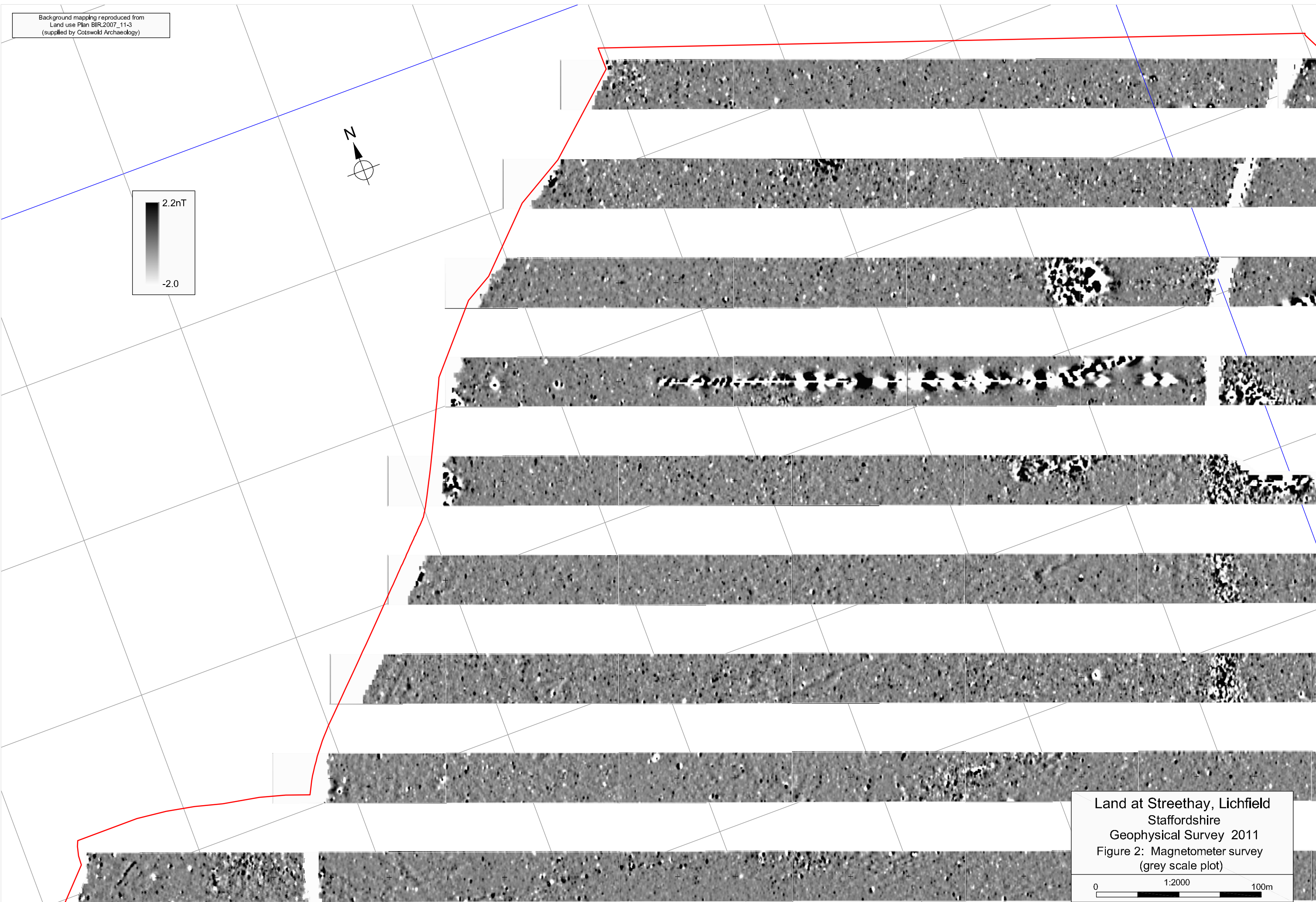
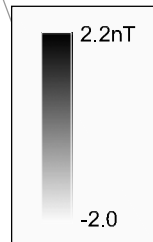


100
50
magnetic susceptibility
survey (volume
susceptibility readings)

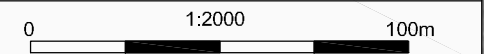
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Figure 12: Summary of Findings
0 1:2500 100m

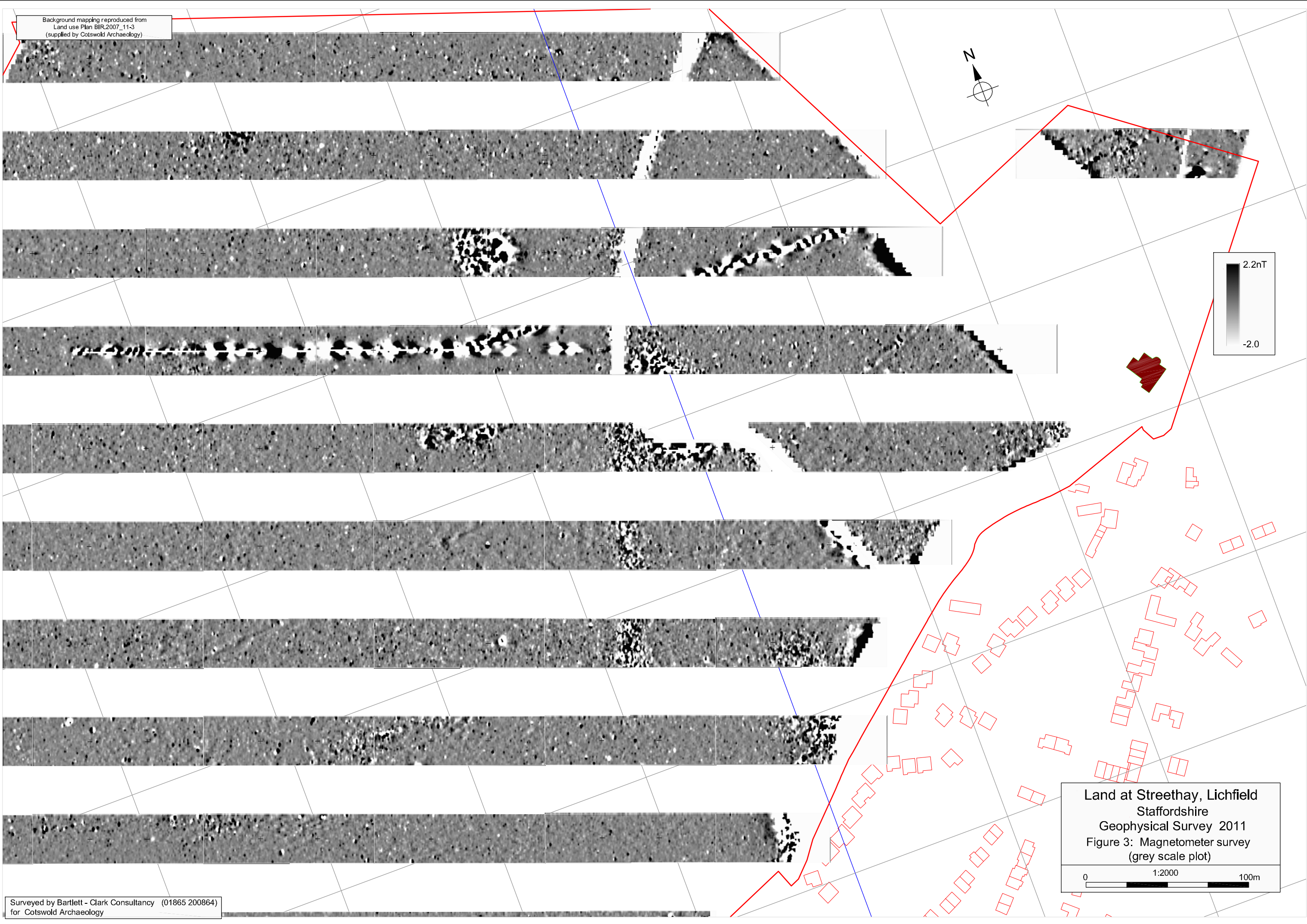
Background mapping reproduced from
Land use Plan BIR.2007_11-3
(supplied by Cotswold Archaeology)



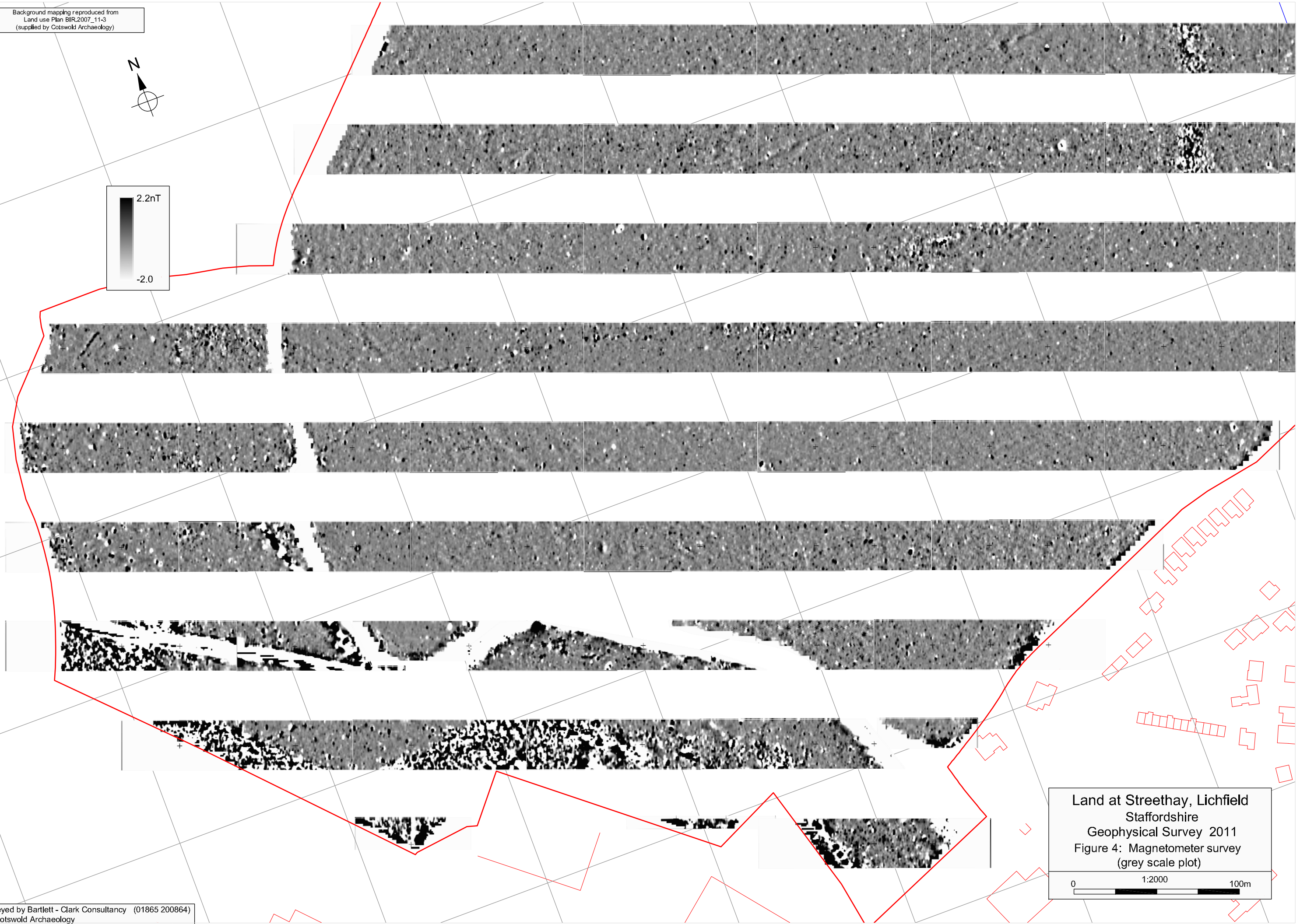
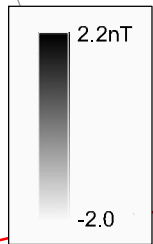
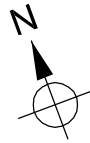
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Figure 2: Magnetometer survey
(grey scale plot)



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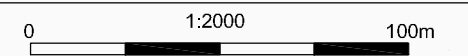


Background mapping reproduced from
Land use Plan BIR.2007_11-3
(supplied by Cotswold Archaeology)

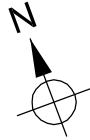


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Figure 4: Magnetometer survey
(grey scale plot)



Background mapping reproduced from
Land use Plan BIR.2007_11-3
(supplied by Cotswold Archaeology)



- magnetic anomalies (archaeological ?)
- magnetic disturbances
(recent / non-archaeological)
- background magnetic activity
(natural / non-archaeological ?)
- cultivation ?
- former boundary ?
- land drain ?
- strong (ferrous) magnetic anomalies
- pipe (and associated magnetic disturbance)

50 nT

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Figure 5: Magnetometer survey
(with interpretation)

0 1:1250 50m

Background mapping reproduced from
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(supplied by Cotswold Archaeology)

50 nT



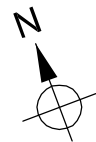
-  magnetic anomalies (archaeological ?)
-  magnetic disturbances (recent / non-archaeological)
-  background magnetic activity (natural / non-archaeological ?)
-  cultivation ?
-  former boundary ?
-  land drain ?
-  strong (ferrous) magnetic anomalies
-  pipe (and associated magnetic disturbance)

Land at Streethay, Lichfield
Staffordshire
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Figure 6: Magnetometer survey
(with interpretation)









0 1:1250 50m

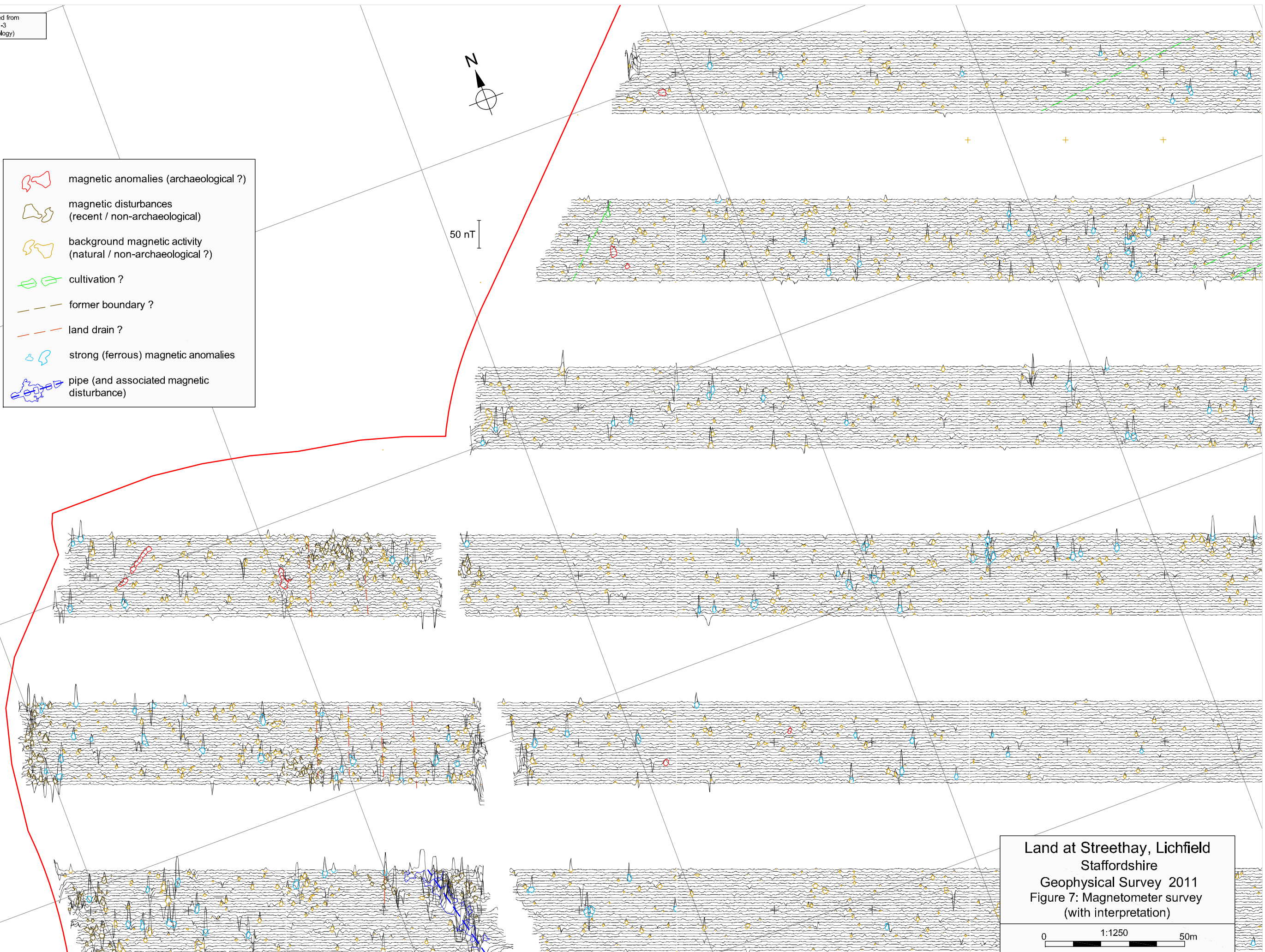
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Background mapping reproduced from
Land use Plan BIR.2007_11-3
(supplied by Cotswold Archaeology)



50 nT

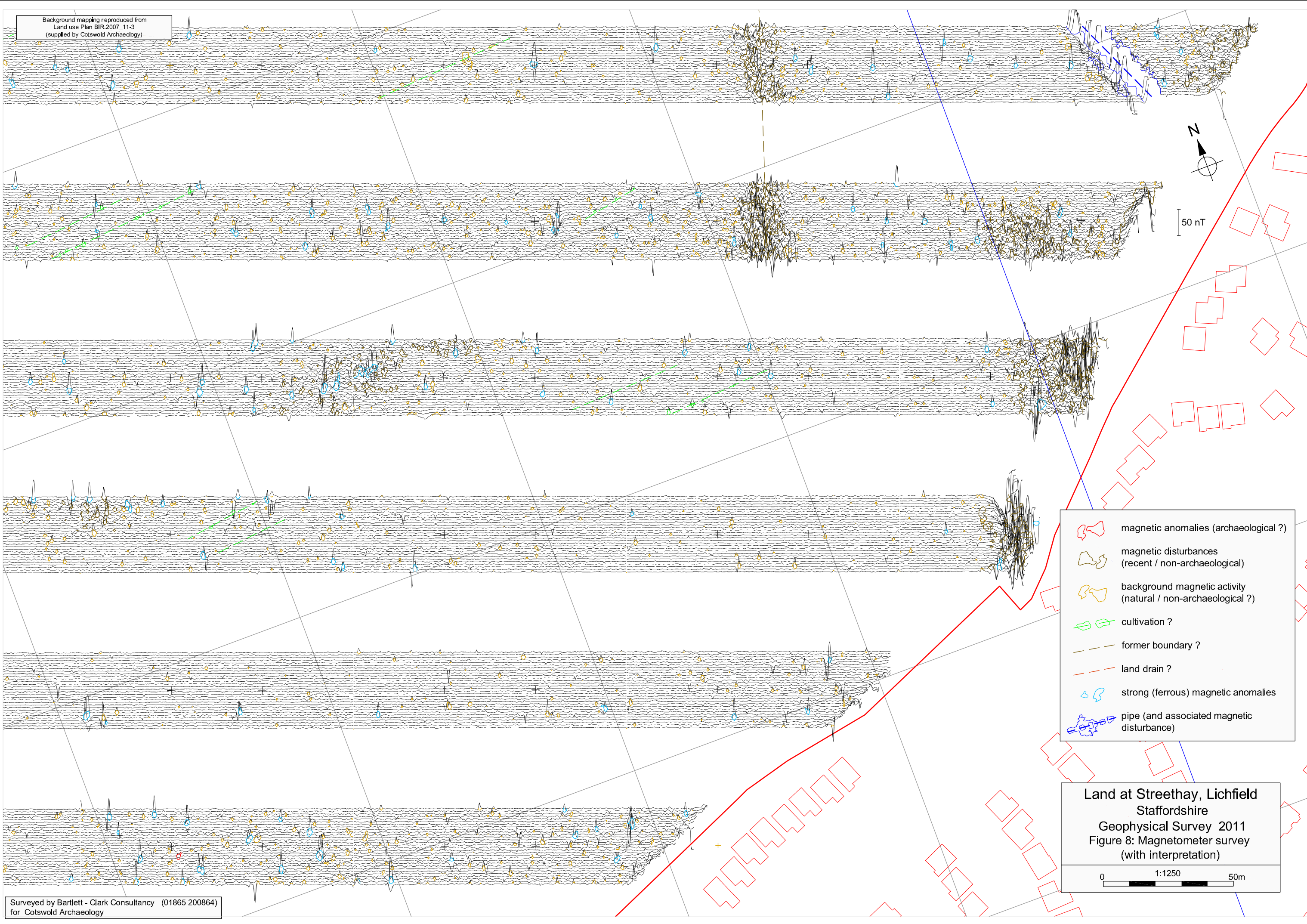
-  magnetic anomalies (archaeological ?)
-  magnetic disturbances (recent / non-archaeological)
-  background magnetic activity (natural / non-archaeological ?)
-  cultivation ?
-  former boundary ?
-  land drain ?
-  strong (ferrous) magnetic anomalies
-  pipe (and associated magnetic disturbance)



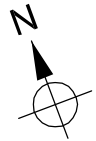
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Figure 7: Magnetometer survey
(with interpretation)

0 1:1250 50m



Background mapping reproduced from
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(supplied by Cotswold Archaeology)



50 nT

- magnetic anomalies (archaeological ?)
- magnetic disturbances (recent / non-archaeological)
- background magnetic activity (natural / non-archaeological ?)
- cultivation ?
- former boundary ?
- land drain ?
- strong (ferrous) magnetic anomalies
- pipe (and associated magnetic disturbance)

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Figure 8: Magnetometer survey
(with interpretation)









0 1:1250 50m

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Background mapping reproduced from
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(supplied by Cotswold Archaeology)



50 nT

-  magnetic anomalies (archaeological ?)
-  magnetic disturbances
(recent / non-archaeological)
-  background magnetic activity
(natural / non-archaeological ?)
-  cultivation ?
-  former boundary ?
-  land drain ?
-  strong (ferrous) magnetic anomalies
-  pipe (and associated magnetic disturbance)

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Figure 9: Magnetometer survey
(with interpretation)

0 1:1250 50m