

**LAND AT HALWELL AIRFIELD,
DEVON**

**Archaeological Geophysical Survey
2013**

Report by:

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Land at Halwell Airfield, Devon

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1. Introduction

This report summarises for the record the results of a geophysical survey undertaken as part of an archaeological field evaluation of a solar power development site at Halwell, Devon. The purpose of the survey was to test for evidence of archaeological features or remains at the site, and supply information relevant to the planning process.

The survey was commissioned from Bartlett Clark Consultancy (BCC), Specialists in Archaeogeophysics of Oxford, on behalf of Lightsource Renewable Energy Ltd by CgMs Consulting Ltd of Cheltenham. Fieldwork for the survey was done on 9-12 July 2013. The survey findings and data were notified to CgMs to meet an initial deadline on completion of the survey. The present report contains a further presentation and description of the results for the purpose of submission to the County HER and the Oasis and ADS archiving systems.

2. The Site

Information on the location and condition of the site and the archaeological background to the project of the site was included in an Archaeological Desk Based Assessment (DBA) prepared in advance of the field evaluation by CgMs [1]. An additional method statement relating to the geophysical component of the evaluation and the survey methodology was also submitted to CgMs by BCC in advance of the survey [2]. The following comments are reproduced in part from these documents.

Topography and geology

The study site extends across two arable fields, which are centred approximately at grid reference SX 786529. The line of an access route from the A3122 to the north was also surveyed, together with the proposed site of a works compound near the road, giving total coverage of 10.5 ha. A grass airstrip is located to the north of the study site between the survey area and the A3122. It intersects the access route in the north-east of the study site, but is not visible in the survey data. The site is located about 1 km to the east of Halwell village, which is c. 7km south of Totnes. The site occupies a south facing slope, situated at a height of approximately 195m Above Ordnance Datum (AOD) at its northern boundary, and 160m AOD at its southern boundary. A small watercourse is situated near the western boundary of the study site.

The study site is on a bedrock of Devonian sandstone, siltstone and mudstone of the Staddon Formation (Lower Old Red Sandstone), and it appears to be free of drift deposits (British Geological Survey website). Soils on sandstone bedrock vary in their response to magnetic surveys, but the ancient (Devonian) bedrock here gives rise to soils having high magnetic susceptibility values, and which should therefore be highly responsive to magnetic investigation. (Readings taken across the site with a Bartington MS2 meter gave an

unusually high mean value of 390 SI, indicating that conditions should be suitable for a survey of this kind.)

Archaeological background

The DBA [1] reviews findings and evidence as recorded in the Devon Historic Environment Record (HER), the National Monuments Record (NMR) and the National Heritage List for England (NHL) for the study site and a surrounding 1km study area, as well as historic maps relating to the site. (Extracts from maps showing nearby NMR and HER entries are shown inset here in figure 4.) The main conclusions are as follows:

There are no designated heritage assets within the study site. A number of designated and undesignated heritage assets are recorded in the wider study area, including Halwell Camp hillfort (NHL 1019237), a Scheduled Ancient Monument (SAM) situated 60m north of the study site, as well as six barrows, also scheduled, which are situated between 200m and 500m to the north of the study site (NHL 1332723 and 1019238).

An archaeological watching brief was undertaken 50m to the north of the northern boundary of the study site (HER EDV5115). This investigation monitored the excavation of six access pits, situated in the two fields to the south of the hillfort, which would be used to horizontally drill a new gas pipe east-west along the south of the A3122, to the north of the study site. The pits monitored were situated between the study site and the scheduled monument. This investigation found no evidence of archaeological features or finds. No other intrusive investigations are recorded within the wider study area, and the hillfort to the north has not been the subject of any archaeological investigations. One other potentially relevant nearby finding is a cropmark enclosure possibly of prehistoric date located 50m to the south of the site's southern boundary (MDV60774 on HER map).

It is concluded in the DBA that the surrounding study area has considerable evidence for archaeological activity from prehistoric periods, and that the study site therefore has a moderate potential for remains from this period, but only a low potential for remains from Roman and later periods. Historic maps show that field boundaries within the site have been removed since the 19thC, but the site has remained in agricultural use.

3. Survey Procedure

The site was investigated by means of a recorded magnetometer survey. A magnetometer survey is often able to identify the extent and character of cut features such as ditches and pits when they are silted with an increased depth of topsoil, which usually responds more strongly than the underlying natural subsoil. Fired materials, including baked clay structures such as kilns or hearths are also likely to produce a localised enhancement of the magnetic field strength, and the survey therefore responds preferentially to the presence of ancient settlement or industrial remains. The survey is also strongly affected by ferrous and other debris of recent origin.

Fieldwork

The method used for the investigation was a fluxgate gradiometer survey across the evaluation area. This followed procedures consistent with the 2008 English Heritage geophysical guidelines document [3].

A survey grid was set out at the required locations, and tied to the OS grid using a GPS system with VRS correction to provide 0.1m or greater accuracy. The plans are therefore geo-referenced, and OS co-ordinates of map locations can be read from the AutoCAD version of the plans.

The magnetometer readings were collected along transects 1m apart using Bartington 1m fluxgate gradiometers, and are plotted at 25cm intervals along each transect.

Presentation and report

The results of the survey are presented as a grey scale plot (at 1:2000 scale at A3) in figure 1, and as a graphical (x-y trace) plot at 1:1250 in figures 2-3. Inclusion of both types of presentation allows the detected magnetic anomalies to be examined in plan and profile respectively.

The graphical (x-y) plot represents minimally pre-processed magnetometer readings, in which adjustments are made for irregularities in line spacing caused by variations in the instrument zero setting (as is required for legibility in gradiometer data), but no further filtering or other process which could affect the anomaly profiles or influence the interpretation of the data has been applied. A weak additional 2D low pass filter has been applied to the grey scale plot to adjust background noise levels.

An interpretation of the findings is shown in figures 2-3, and is reproduced separately to provide a summary of the results in figure 4. Colour coding has been used in the interpretation to distinguish different effects. Features as marked include magnetic anomalies which may show characteristics to be expected from findings of potential archaeological significance, as outlined in red. Some weaker or less distinct examples are shown in a lighter pink colour, and former field boundaries in brown. Recent disturbances are outlined in grey, and some of the more conspicuous ferrous objects (identifiable as narrow spikes in the graphical plots) are marked in light blue. Cultivation effects are shown in green. Negative magnetic anomalies which may represent extant furrows or channels are also indicated.

3. Results

The survey plots show a number of clearly defined magnetic anomalies, and so confirm that conditions at the site are favourable for magnetic surveying.

Findings identifiable in the survey data include a series of ditch-like linear markings, which are outlined in red on the interpreted plan (e.g. as labelled at A in figure 4). These form a broadly rectilinear pattern of enclosures extending across both fields. The enclosures do not align with modern field boundaries, and so must relate to an underlying earlier field system.

Other findings include a distinct circular feature at B, and a larger enclosure (c. 25m x 30m) at C. The circle at B is of a suitable size (c. 8m in diameter) to represent a hut circle, and C contains a number of internal magnetic anomalies which could indicate remains of settlement activity. These features are clearly defined, but there is sometimes difficulty on highly responsive soil in distinguishing archaeological features from minor or superficial ground disturbances. The overall extent of settlement remains is therefore difficult to determine, but a number of additional features are indicated as of possible archaeological relevance in figure 4. These include additional potential circular features at D, and perhaps some features near the corner of an enclosure at E. A secondary enclosure perhaps intersects the corner of one of the larger enclosures at F, and there may be similar findings in the south-west corner of the survey at G.

The strong double linear features at H and I clearly correspond to former field boundaries as shown on the tithe map of 1840 (reproduced from the DBA, and inset in figure 4). Other maps (not reproduced here) indicate that both boundaries were present in 1906, but the southern one (I) had disappeared by 1963. The northern one (H) remained in 1991. An additional former boundary at the north of the site (J) is not shown on the 1840 map, but aligns with an extant field boundary to the south. The presence of strong double anomalies suggests these features may represent traces of demolished earthwork banks, or perhaps stone-faced and earth-filled former field boundaries.

The narrower negative linear magnetic anomalies (represented by white grey linear markings in the grey scale plot, and by broken lines at K in figure 4) run downhill through the centre of the survey. They could indicate natural erosion channels, or extant furrows or hollows. (Negative magnetic anomalies are usually caused by a relative absence of topsoil, and may indicate partially extant features.)

A parallel east-west cultivation pattern is visible across much of the survey. The alignment of the cultivation effects is indicated schematically by broken green lines in figure 4. The presence of this pattern may reduce the visibility of some of the smaller archaeological features, as noted above.

5. Conclusions

Ditches which appear to represent an ancient field system have been detected across much of the survey area. These findings are consistent with the presence of a prehistoric cropmark enclosure (MDV60774) immediately to the south of the site.

The survey findings also include smaller enclosures and hut circles, indicating the presence of settlement activity (which is likely to be of late prehistoric date) within the evaluation area. The overall extent of the settlement remains is slightly uncertain. Some of the findings (B, C) are clearly defined, but others (D, E, F) may be partly eroded by cultivation, and are more difficult to interpret with confidence. Strong linear features ((H, I, J) align with current field boundaries, and correspond to former field boundaries visible on historic maps.

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References

- [1] *Land at Halwell, Devon: Archaeological Desk Based Assessment.* CgMs Reference WB/15086; March 2013.

- [2] *Halwell, Devon; Method Statement for Archaeological Geophysical Survey.* Document prepared for CgMs by Bartlett-Clark Consultancy; 5 July 2013.

- [3] *Geophysical Survey in Archaeological Field Evaluation.* English Heritage: Swindon, 2008.

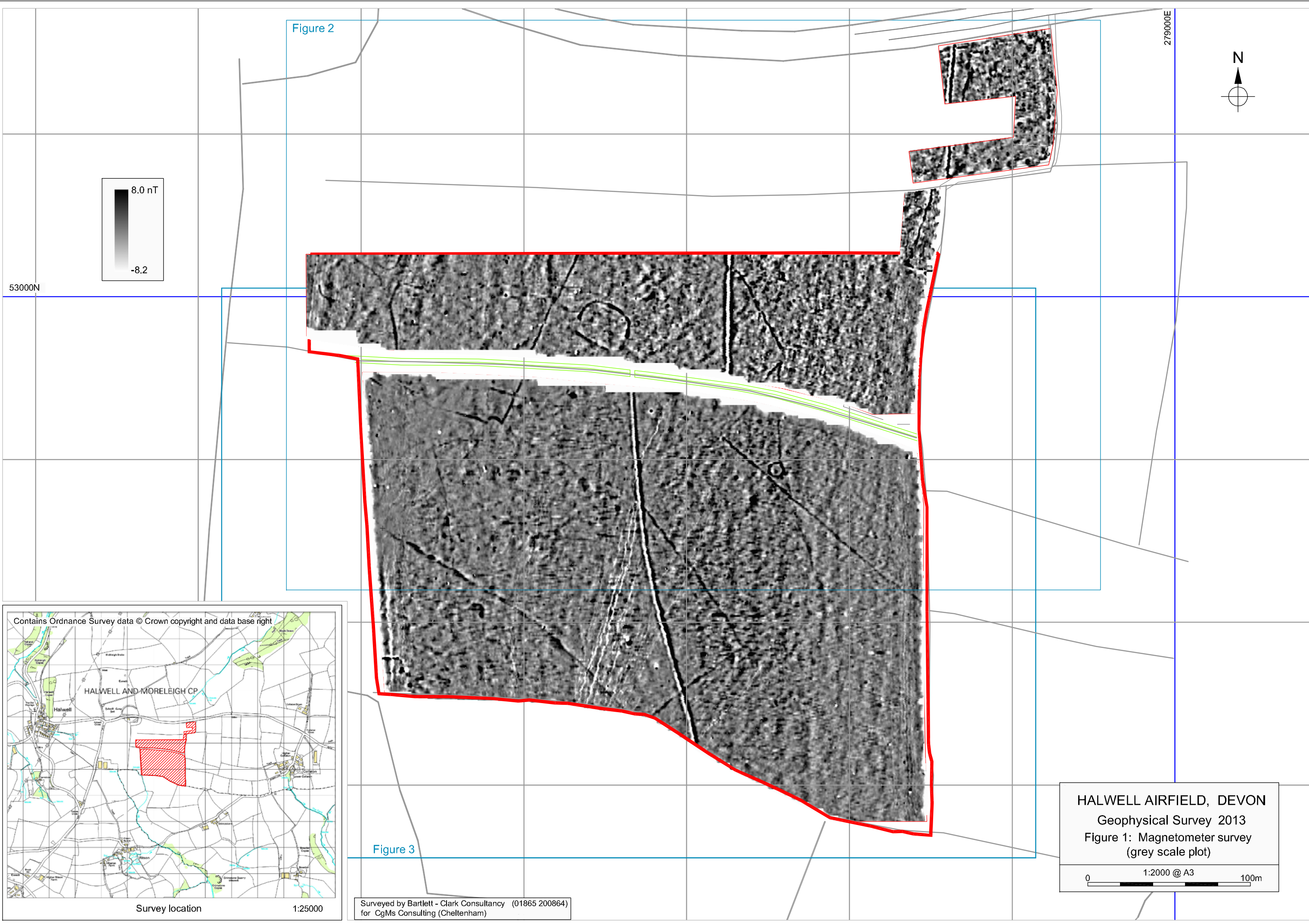
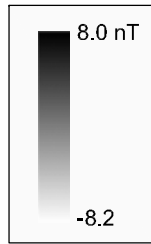
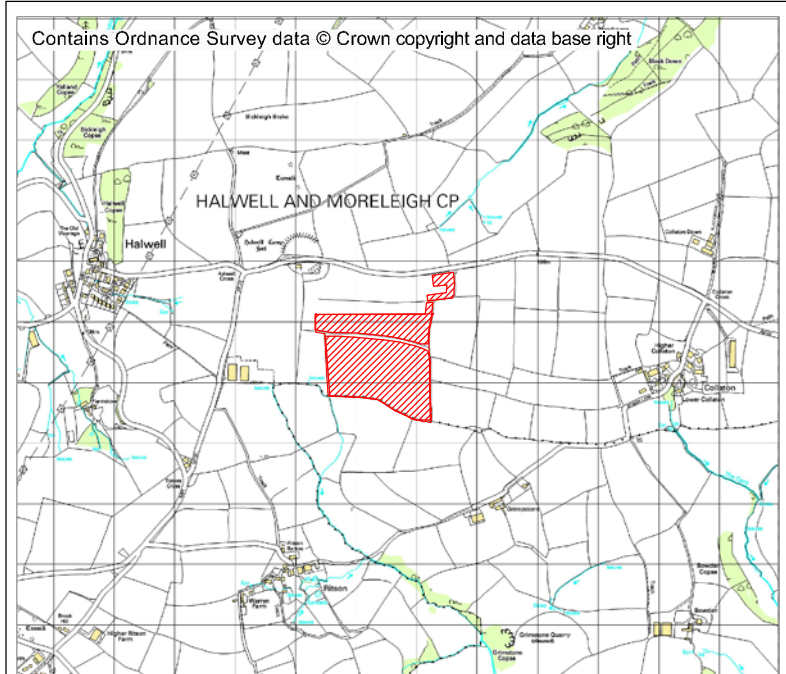


Figure 2



53000N

279000E



Survey location

1:25000







Surveyed by Bartlett - Clark Consultancy (01865 200864) for CgMs Consulting (Cheltenham)

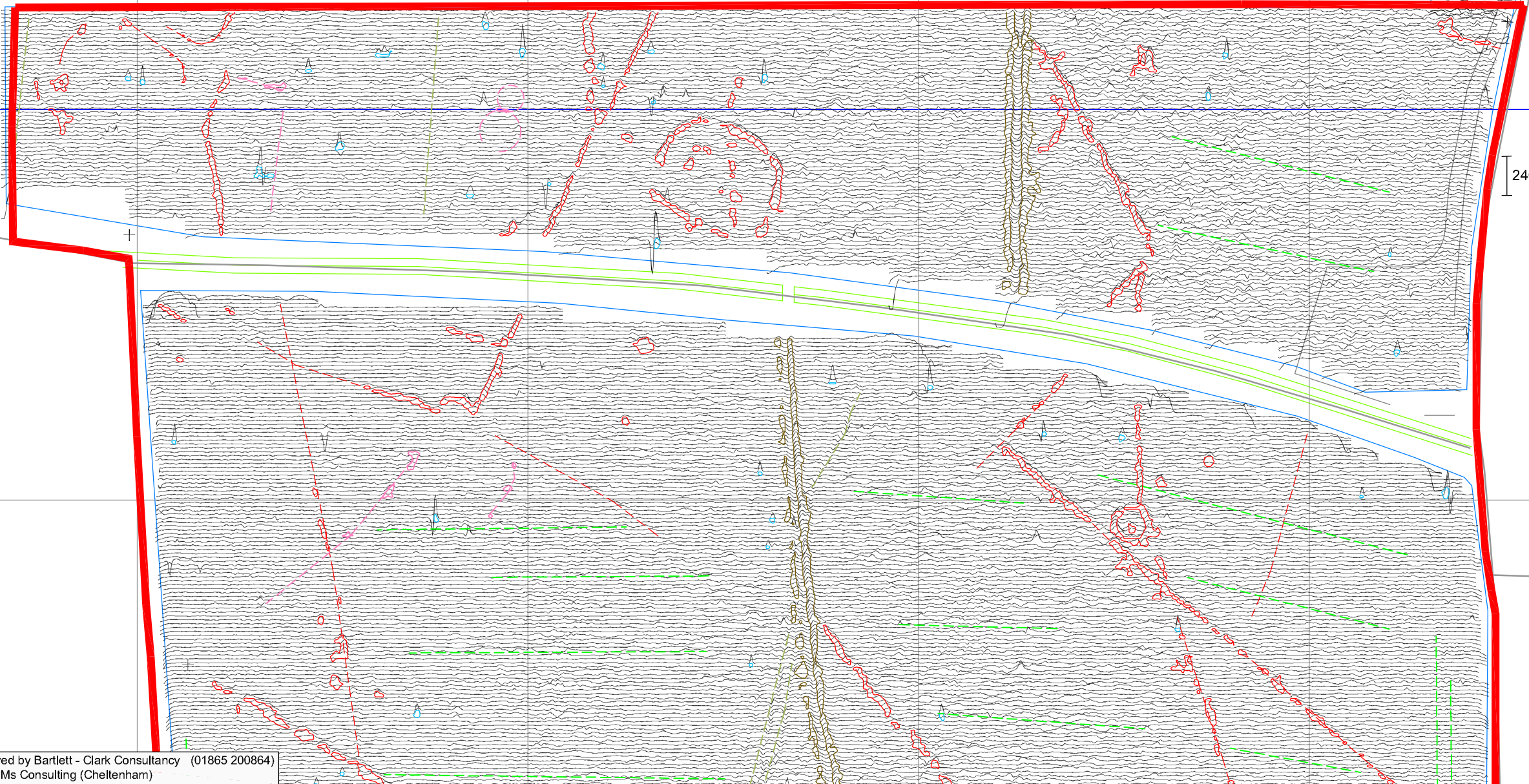
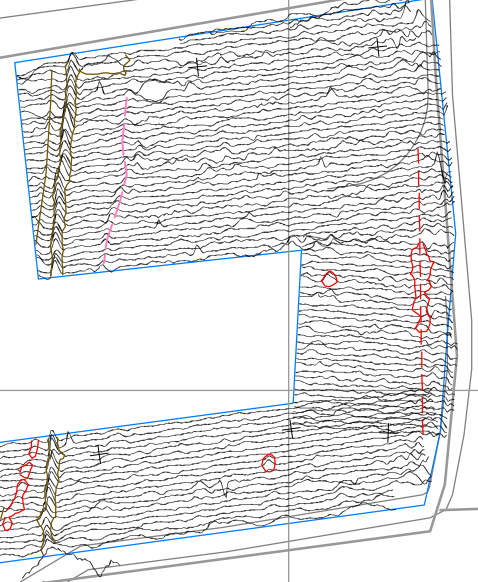
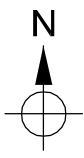
Figure 3

HALWELL AIRFIELD, DEVON
 Geophysical Survey 2013
 Figure 1: Magnetometer survey
 (grey scale plot)

0 1:2000 @ A3 100m

Background mapping based on site plan supplied by
Lightsource Renewable Energy Ltd
[Field boundaries traced from OS 1:10000 map.]

-  magnetic anomalies
(archaeological ?)
-  magnetic anomalies
(possibly archaeological ?)
-  former field boundary
-  strong magnetic anomalies
(ferrous ?)
-  cultivation
-  negative linear feature (erosion ?)

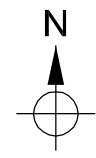


240 nT







HALWELL AIRFIELD, DEVON
Geophysical Survey 2013
Figure 2: Magnetometer survey
(with interpretation)

0 1:1250 @ A3 50m

Background mapping based on site plan supplied by
Lightsource Renewable Energy Ltd
[Field boundaries traced from OS 1:10000 map.]

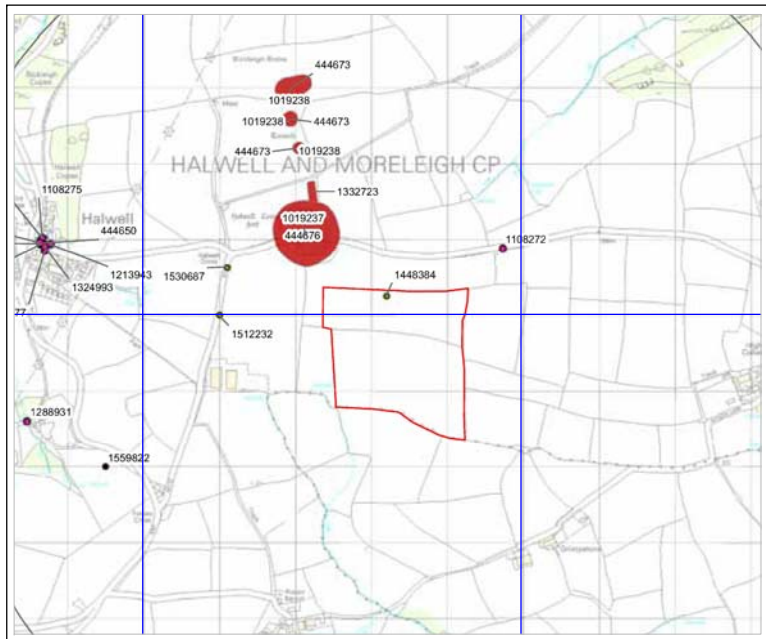
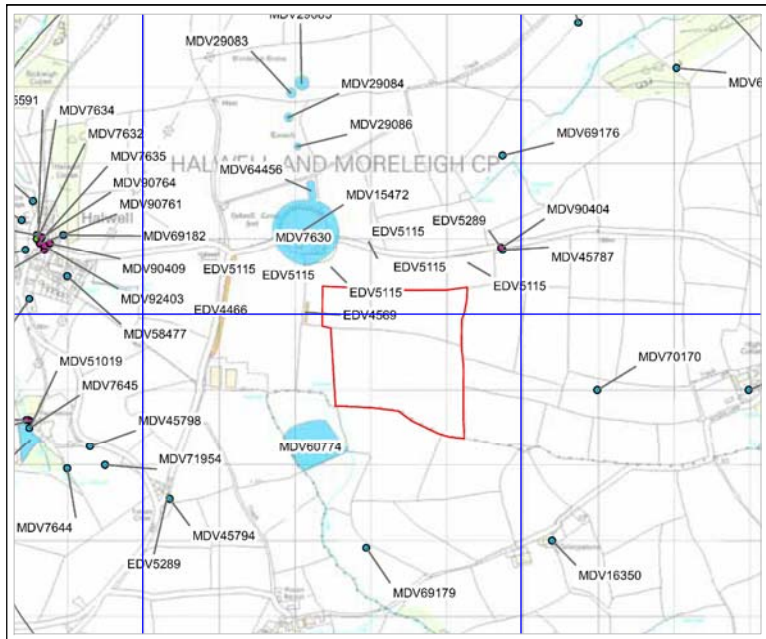


240 nT

-  magnetic anomalies (archaeological ?)
-  magnetic anomalies (possibly archaeological ?)
-  former field boundary
-  strong magnetic anomalies (ferrous ?)
-  cultivation
-  negative linear feature (erosion ?)

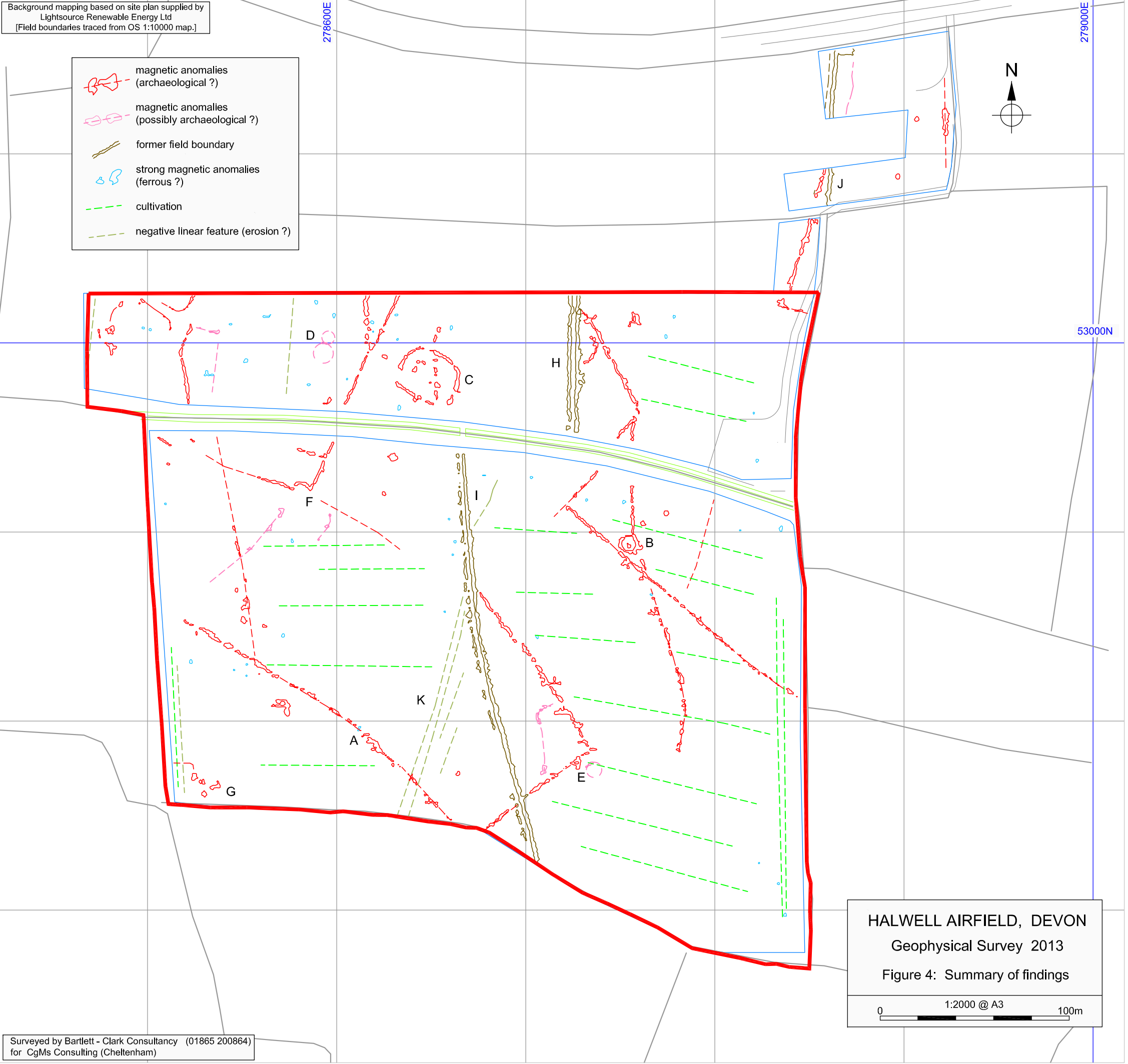
HALWELL AIRFIELD, DEVON
Geophysical Survey 2013
Figure 3: Magnetometer survey
(with interpretation)

0 1:1250 @ A3 50m



Background mapping based on site plan supplied by
Lightsource Renewable Energy Ltd
[Field boundaries traced from OS 1:10000 map.]

- magnetic anomalies (archaeological ?)
- magnetic anomalies (possibly archaeological ?)
- former field boundary
- strong magnetic anomalies (ferrous ?)
- cultivation
- negative linear feature (erosion ?)



HALWELL AIRFIELD, DEVON
Geophysical Survey 2013
Figure 4: Summary of findings

