

**LAND AT SHARLAND FARM
CREDITON, DEVON**

**Archaeological Geophysical Survey
2015**

Report by:

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Land at Sharland Farm, Crediton, Devon

Geophysical Survey 2015

Abstract

This geophysical survey was undertaken as part of an archaeological field evaluation of an area of land being considered for development as a solar farm at Sharland Farm near Crediton, Devon.

The survey has detected strong magnetic disturbances across parts of the site, but the distribution of this activity reflects the topography, indicating it must be of mainly natural origin. Identifiable findings are otherwise limited to former field boundaries and cultivation effects, together with some possible land drains or former drainage channels.

1. Introduction

The survey was commissioned from Bartlett Clark Consultancy, Specialists in Archaeogeophysics of Oxford, by CgMs Consulting of Cheltenham on behalf of Lightsource Renewable Energy Ltd. Fieldwork for the survey was done on 27 January 2015. A data plot showing the survey findings has previously been supplied to CgMs, and is now included in this report.

2. Objectives of the Survey

The purpose of the survey was to test for evidence of archaeological sites or remains, and to provide information which may inform further stages of the archaeological evaluation.

A geophysical survey is usually able to identify the extent and character of any archaeological remains capable of producing a magnetic response. The magnetometer will detect 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.

3. The Site

Topography and geology

The location and condition of the site are described in the Archaeological Desk Based Assessment (DBA), as prepared by CgMs [1]. Further notes based on this information were included in the Written Scheme of Investigation for the project, which was submitted

to CgMs in advance of the survey [2]. The following comments are reproduced in part from this document.

The proposed development is to occupy three fields (labelled 1-3) as indicated on the enclosed plans. The fields are in agricultural use and bounded by hedges, and are centred approximately at NGR SS 748055 between the A377 and Sharland Farm, and about 10km NW from Crediton.

The underlying geology of the site is described in the DBA as comprising Carboniferous sedimentary bedrock deposits of the Bude Formation. Sandstone underlies the majority of the study site, with a band of mudstone and siltstone underlying the central part of the study site on an east-west orientation. Superficial Quaternary alluvial deposits of clay, silt, sand and gravel are recorded along the western and southern boundary of the proposed development area near the stream which bounds the study site (information from British Geological Survey website). These conditions should not present any unusual difficulties for a magnetometer survey, although it was noted in the WSI that magnetic anomalies of geological origin may be detected, and will need to be allowed for when interpreting the survey.

Archaeological background

It is mentioned in the DBA that no designated archaeological assets of national significance are recorded within the study site itself, but the southwest facing landscape context of the study site and its location adjacent to a watercourse is conducive to Prehistoric and Roman rural activity. There is not, however, any specific evidence for such remains within the study site. Several possible prehistoric cropmarks are recorded within the study area (1.5km radius around the site), of which the nearest is a small sub-rectangular enclosure c. 340m to the east (HER MDV29065).

No previous archaeological investigations are recorded by the HER and NMR for the study site itself, and only one is known from the wider study area. This is located c. 250m west of the study site and consists of a geophysical survey (HER EDV6133). The survey was carried out in advance of a proposed solar development. It identified a number of linear and discrete anomalies likely to be agricultural in origin.

4. Survey Procedure

The procedure used for the investigation was a fluxgate gradiometer survey across the evaluation area. Results are presented as described below.

A survey grid was set out at the required locations, and tied to the OS grid using a GPS system with Omnistar 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. The results of the survey are presented as grey a scale plot (at 1:2000 scale) in figure 1, and as a graphical (x-y trace) plot in figures 2-3 (at 1:1250 at A3). 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, as recommended for initial presentation of survey data in the 2008 English Heritage geophysical guidelines document [3]. 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 findings in figure 4. Colour coding has been used in the interpretation to distinguish different effects. The interpretation is intended to categorize most of the identifiable magnetic anomalies, but cannot reproduce the detail of the grey scale plots.

Features as marked include magnetic anomalies which may show characteristics to be expected from features of potential archaeological significance (in red), and strong natural disturbances in light green. Small (and mainly natural) background magnetic anomalies are outlined in light brown. Some of the more conspicuous ferrous objects (identifiable as narrow spikes in the graphical plots) are outlined in light blue, and probable land drains, cultivation effects and pipes are also marked.

5. Results

The survey plots show strong magnetic disturbances across much of the northern field (field 1), and the northern half of fields 2-3. The irregular pattern of high readings (as outlined in light green in figure 4) suggests that much of the magnetic activity is likely to represent minor variations in the depth of a highly responsive topsoil above the uneven shallow surface of the bedrock. The magnetic response from the alluvial soil on the lower ground in the southern part of each field is very much quieter.

The disturbed readings in field 1 are cut through by a parallel north-south pattern (indicated by green broken lines), which is likely to indicate the orientation of past or present cultivation. Similar but less conspicuous effects may be present in the other fields.

A number of faint linear markings in the magnetically quiet areas of fields 2 and 3 are defined by sequences of small magnetic anomalies of a kind which could represent sections of clay pipe. These together could indicate a complex pattern of intersecting or variously oriented land drains, although the magnetic anomalies are weak and cannot always be clearly distinguished from cultivation effects.

A few remaining features are marked in red because they may display archaeological characteristics. The most clearly defined of these is a distinct north-south linear feature (labelled A in figure 4) in field 2. This corresponds to a field boundary which was shown on historic maps (as reproduced in the DBA) until 1972, but had disappeared by 2006. Other much weaker linear markings at B could relate to a further field boundary shown on a tithe map of 1838 (inset in figure 4), but not on later 19th C maps. The contrasting response from these features could mean that the boundary at A was a stone wall or bank, but B could have been a hedge.

There are features which could perhaps be interpreted as short ditches or silted channels at C and D in fields 2 and 3. These are more irregular in plan and more clearly defined

than the possible land drains. Their position at the southern site boundary suggests they could perhaps be silted hollows or channels which previously drained into the adjacent stream.

6. Conclusions

Soil conditions at the site appear to be highly responsive to magnetic investigation, as is indicated by the strong magnetic response probably caused by minor variations in the depth of soil cover above shallow bedrock on higher ground. Findings, other than possible drains and cultivation effects, include a former field boundary at A, and possible weak traces of a second boundary at B.

There are short ditch-like features near to the stream which forms the southern boundary to the site at C and D, but these do not appear to form part of a system of enclosures, and are not associated with any other findings to suggest they are of archaeological interest.

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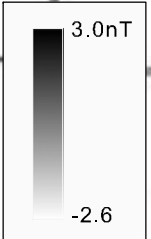
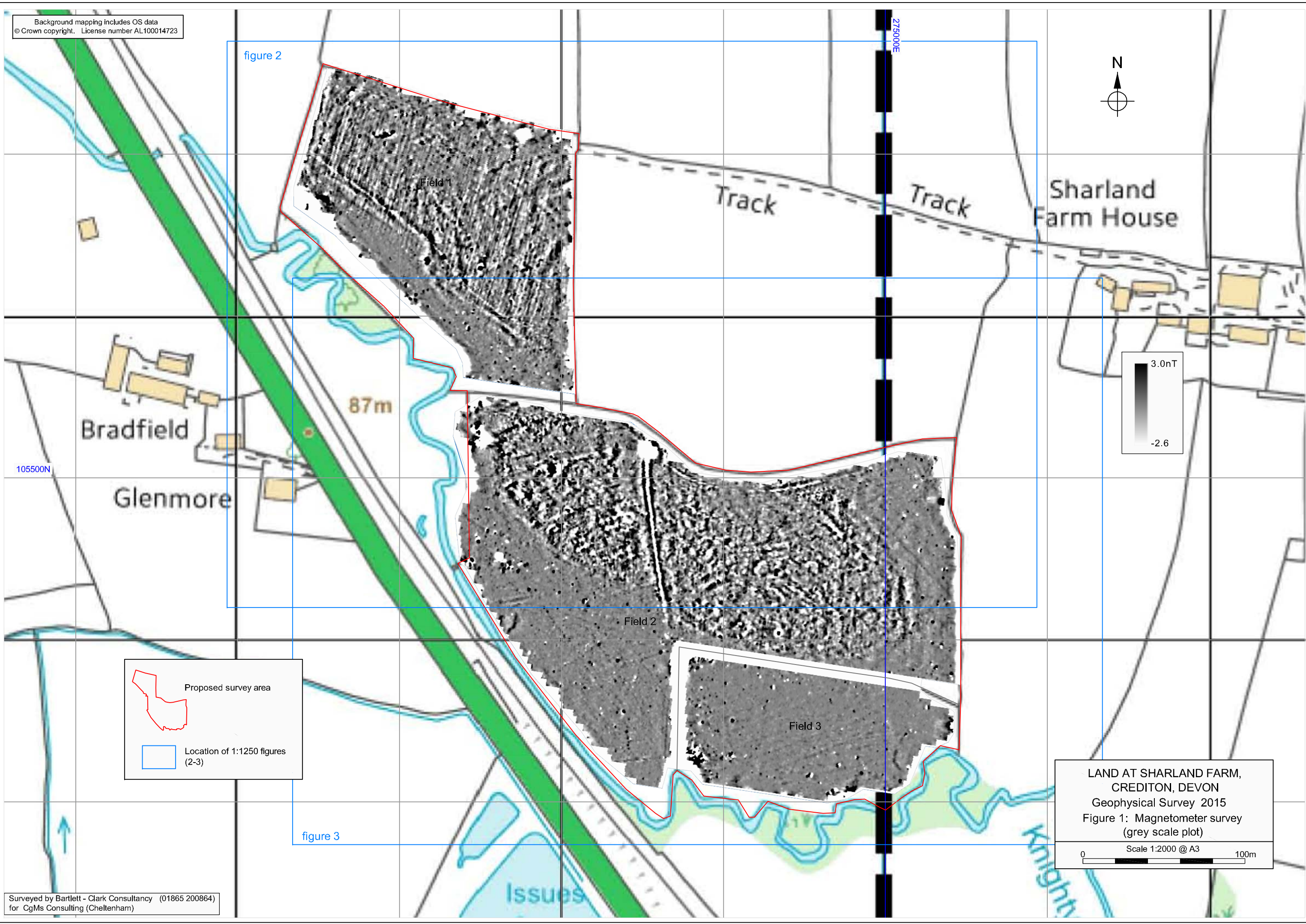
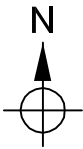
The fieldwork for this project was done by N. Paveley, R. Organ, P. Heykoop and M. Berry.

References

- [1] *Land at Sharland Farm, Crediton, Devon: Archaeological Desk-Based Assessment*. Report supplied to Devon County Council by CgMs Consulting. CgMs ref. WB/SJ/18680; January 2015.
- [2] *Land at Sharland Farm, Crediton, Devon: Written Scheme of Investigation for Archaeological Geophysical Survey 2015*. Document submitted to CgMs by Bartlett Clark Consultancy; 26 January 2015.
- [3] English Heritage 2008 *Geophysical Survey in Archaeological Field Evaluation* [online facsimile] (English Heritage: Swindon, 2008), English Heritage Research.

Background mapping includes OS data
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figure 2



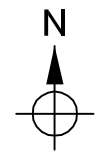
Proposed survey area

Location of 1:1250 figures (2-3)









figure 3

LAND AT SHARLAND FARM,
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Figure 1: Magnetometer survey
(grey scale plot)

Scale 1:2000 @ A3

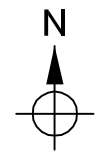


80 nT









-  magnetic anomalies: archaeological ?
(including former field boundaries)
-  magnetic anomalies
(natural / geological ?)
-  magnetic disturbances
(recent ?)
-  small background magnetic
anomalies (natural ?)
-  drain ?
-  cultivation
-  pipe
-  strong (ferrous) magnetic anomalies

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Figure 2: Magnetometer survey
(with interpretation)

Scale 1:1250 @ A3
0 50m

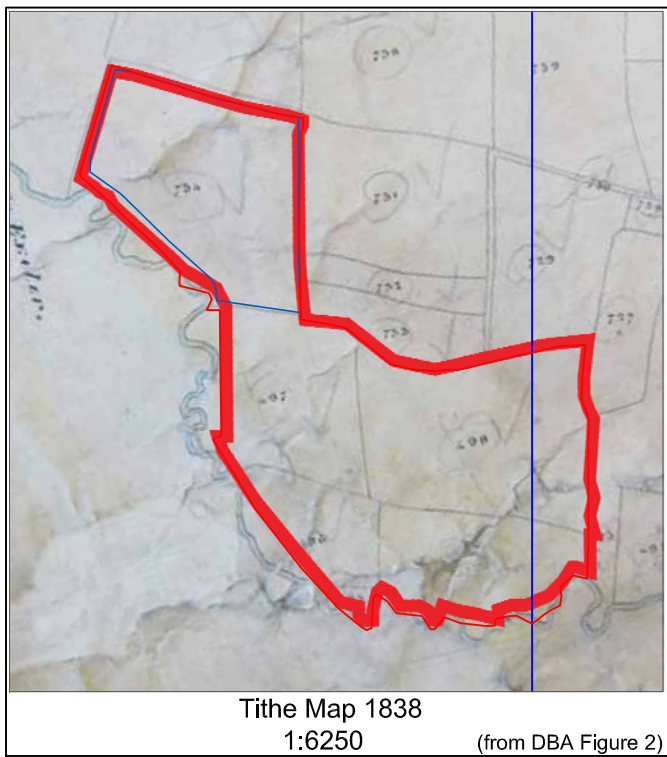
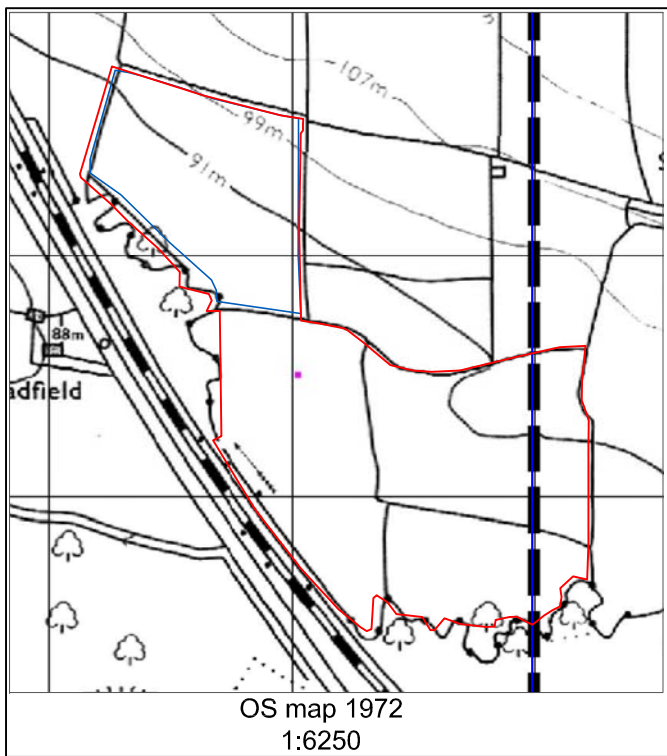


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Figure 3: Magnetometer survey
(with interpretation)

Scale 1:1250 @ A3
0 50m



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- magnetic anomalies (natural / geological ?)
- magnetic disturbances (recent ?)
- small background magnetic anomalies (natural ?)
- drain ?
- cultivation
- pipe
- strong (ferrous) magnetic anomalies



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Figure 4: Summary of findings

Scale 1:2000 @ A3

0 100m

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