

HEFT13-001



**Proposed installation of a
Single wind turbine at New Hartswell Farm,
Herodsfoot,
Cornwall**

*Geophysical Survey
2014*

Prepared by S.Mayes

Abstract

A Magnetometer survey was undertaken over the proposed site for a wind turbine at New Hartswell Farm, Herodsfoot, to establish whether there are likely to be any issues regarding heritage assets which might have to be dealt with during the planning process.

Features visible in the survey plots, in addition to background magnetic activity caused by the strongly magnetic topsoil, include parallel linear markings which are result of past cultivation, and a linear feature at the western edge of the main survey block which is a former ditch or boundary.

Signed off by



Joe Abrams

Date...31/01/2014.....

CONTENTS

1	INTRODUCTION	1
2	OBJECTIVES OF THE SURVEY	1
3	GEOLOGICAL BACKGROUND	1
4	ARCHAEOLOGICAL BACKGROUND	1
5	SURVEY PROCEDURE	2
	5.1 <i>Magnetometer survey</i>	2
6	RESULTS	2
7	REFERENCES	2

1. Introduction

This report describes a geophysical survey undertaken on a site selected for a proposed wind turbine at New Harstwell Farm, Herodsfoot, Cornwall.

The survey was carried out by Headland Archaeology (UK) Ltd, in conjunction with Bartlett Clark Consultancy of Oxford in January 2014. The proposed turbine site is located in a pasture field at NGR 219416, 60775. The village of Herodsfoot lies c.1.5km to the east, with the villages of Trevelmond and Lanreath located 3.5km to the north and south, respectively.

The survey covered a 100m square sample block centred at the turbine location and aligned with the northern field boundary, and a 20m wide strip along the route of an access track from the south-west. The total area surveyed amounts to 1.36ha.

2. Objectives of the Survey

The general aim of the geophysical survey was to identify the extent and character of any archaeological remains capable of producing a magnetic response; these can include ditches, large pits, kilns and ovens for example.

3. Geological Background

The survey site is located within a transitional area of geology of the Saltash Formation, a basaltic tuff and basaltic lava. This is an Igneous bedrock formed approximately 345-407 million years ago in the Carboniferous and Devonian Period, indicating a local environment previously dominated by explosive eruptions of silica-poor magma. (British Geological Survey website; <http://www.bgs.ac.uk>). Extrusive igneous deposits of this kind are often strongly magnetic, and give rise to soils which are highly responsive to magnetometer surveying. This was confirmed here by magnetic susceptibility measurements taken during the survey. These gave particularly high readings (in a range 430 to 700 x 10⁻⁵ SI), indicating that minor variations in the depth or distribution of topsoil could give rise to detectable magnetic anomalies.

4. Archaeological Background

The proposed wind turbine site itself is not within land characterised as 'Anciently Enclosed Land', but it is surrounded by this type of landscape and woodland, which may suggest that this was former common or rough ground later enclosed. The site lies within a landscape fairly densely populated by archaeological monuments.

A small multi-vallate hillfort is located at Bury Down approximately 1km to the south of the site. The objective of the survey was to test for evidence which could indicate the presence of an unrecorded barrow, given that such monuments are common in the surrounding area.

5. Survey Procedure

The procedure used for the investigation was a recorded magnetometer survey carried out within the shaded areas on Illustration 2.

5.1 Magnetometer survey

The survey grid was set out 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 a grey scale plot at 1:2000 scale (at A4) on the survey location plan (Illustration 1), and as a graphical (x-y trace) plot at 1:1250 in Illustration 2. Inclusion of both types of presentation allows the detected magnetic anomalies to be examined in plan and profile respectively.

The graphical (x-y) plots represent minimally pre-processed magnetometer readings, as recommended for initial presentation of survey data in the 2008 English Heritage geophysical guidelines document (English Heritage 2008). 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 reduce background noise levels.

An interpretation of the findings is shown in illustration 3. Colour coding has been used in the interpretation to distinguish different interpretations and anomaly types.

6. Results

The main finding visible in the survey plots is a slightly irregular linear feature made up of magnetic anomalies as outlined in red at A (as labelled in Illustration 3). This represents a former field boundary ditch.

Other linear markings shown in green (as around B) form a parallel sequence aligned with the southern field boundary, and are a cultivation effect indicating the direction of former ploughing (this is the direction of ploughing used as recently as last year). This pattern is most clearly marked on the access route in the southern part of the site, and becomes less distinct in the main survey block.

A few individual magnetic anomalies (outlined in blue) may represent items of ferrous debris. The particularly strong disturbance at C could perhaps indicate a former structure or feature (trough, gate ?) associated with a former boundary at A.

Other background magnetic anomalies (as outlined in light brown) are randomly distributed across the survey, and so are likely to be of geological origin.

References

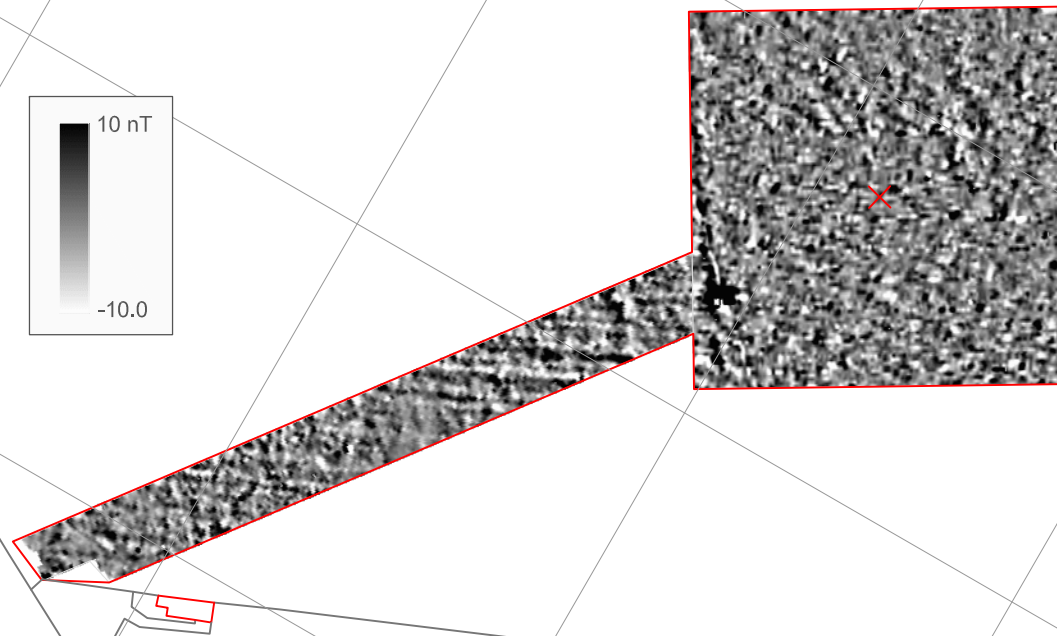
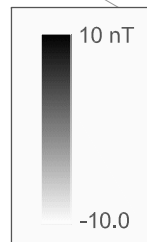
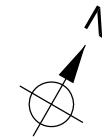
English Heritage 2008a *Geophysical Survey in Archaeological Field Evaluation* [online facsimile] (English Heritage: Swindon, 2008), English Heritage Research

English Heritage 2008b *Professional Services Guideline no. 1, 2nd edn* English Heritage Research.

Map contains Ordnance Survey digital data.
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60700N

219400E



Surveyed by: Bartlett-Clark Consultancy 01865 200864
for: Headland Archaeology (UK) Ltd

× = proposed turbine location
(219416.4 E, 60775.2 N)

Proposed Wind Turbine,
New Hartswell Farm, Herodsfoot
Cornwall
Geophysical Survey 2014
Illustration 1: Magnetometer survey
(grey scale plot)

