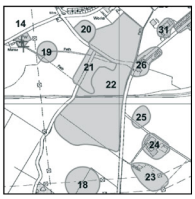
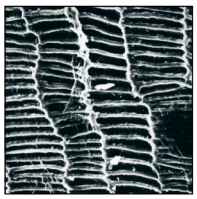
THCH/01










THE HAFOD – FORMER TASTE FOR ADVENTURE SITE, CREDENHILL

GEOPHYSICAL SURVEY

commissioned by WYG

Pre-application

June 2016

HEADLAND ARCHAEOLOGY

REGISTERED ORGANISATION CIfA

THE HAFOD – FORMER TASTE FOR ADVENTURE SITE, CREDENHILL

GEOPHYSICAL SURVEY

commissioned by WYG

Pre-application

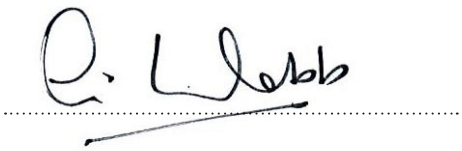
June 2016

project info

HA JOB NO.	THCH/01
NGR	SO 46056 43277
PARISH	Credenhill
LOCAL AUTHORITY	Herefordshire
OASIS REF.	headland5-254705

project team

PROJECT MANAGER	Sam Harrison
AUTHOR	David Harrison
FIELDWORK	David Harrison, Joe Turner
GRAPHICS	Caroline Norrman, David Harrison, Rafael Maya-Torcelly
APPROVED BY	Alistair Webb – Project Manager



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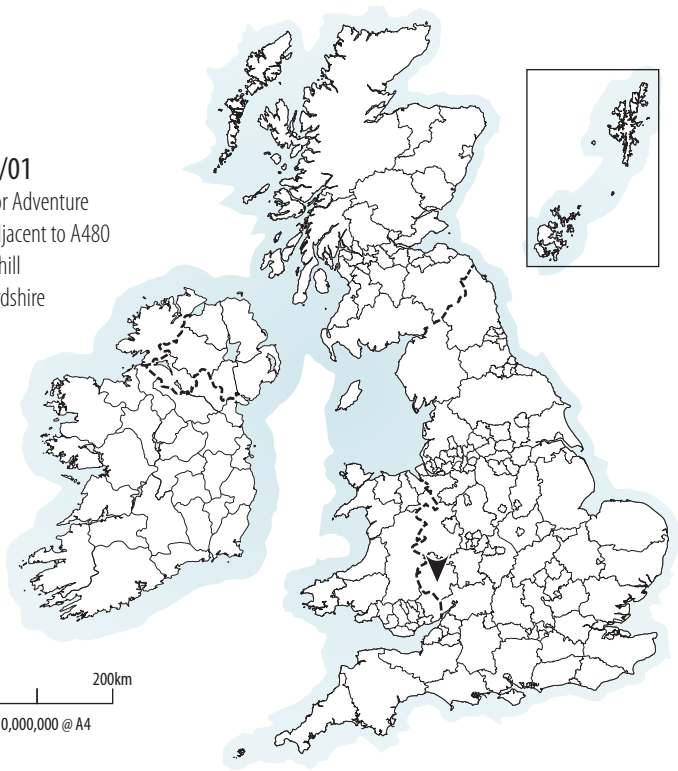
PROJECT SUMMARY

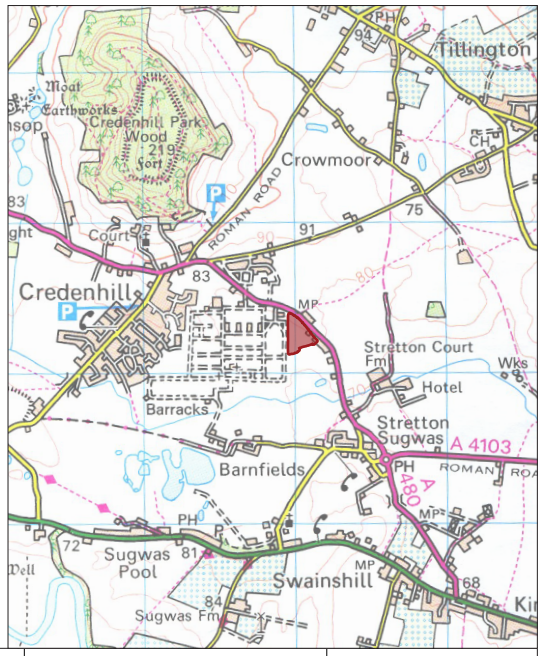
Headland Archaeology (UK) Ltd undertook a geophysical (magnetometer) survey, covering approximately 1.5 hectares on land at the former Taste for Adventure Centre, Credenhill, Herefordshire, to provide information on the archaeological potential of the site prior to its proposed development. No anomalies of archaeological potential have been identified by the survey. Most of the identified anomalies are caused by interference from ferrous recreational apparatus and perimeter fencing, and by ferrous contamination of the upper soil horizons. Faint parallel linear trends are caused by ploughing and may be due to medieval, or later, ridge and furrow cultivation. There is no indication from any other source to suggest that the survey results reflect anything other than an accurate indication of the sub surface conditions within the site and, therefore, based solely on the results of the geophysical survey, the archaeological potential of the site is assessed as low.

CONTENTS

LIST OF ILLUSTRATIONS

THCH/01
Taste for Adventure
land adjacent to A480
Credenhill
Herefordshire





N

0 50m
1:2,500 @ A4

KEY
proposed development area

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ILLUS 1 Site location

THE HAFOD – FORMER TASTE FOR ADVENTURE SITE, CREDENHILL

GEOPHYSICAL SURVEY

1 INTRODUCTION

Headland Archaeology (UK) Ltd was commissioned by WYG to undertake a geophysical (magnetometer) survey within a single parcel of land at the former Taste for Adventure site, Credenhill. The survey will support a planning application for the construction of new facilities for the adjoining Credenhill Base.

The work was undertaken in accordance with a Written Scheme of Investigation (WYG 2016), provided by the Client, with guidance contained within the National Planning Policy Framework (DCLG 2012) and in line with current best practice (David et al. 2008).

The survey was carried out on May 27th 2016 in order to provide information on the archaeological potential of the Site.

1.1 SITE LOCATION, TOPOGRAPHY AND LAND-USE

The proposed development area (PDA) is located to the immediate east of Credenhill Base, which is located off the A480, approximately 6km north-west of the city of Hereford, and is centred at SO 46056 43277 (see Illus 1). It comprises of a single parcel of land which includes an area of hardstanding and buildings at the east of the site as well as climbing and recreational apparatus associated with the former Taste for Adventure centre in the south-east and sheds in the south-west (see Illus 2 and Illus 3). These areas were not suitable for survey. The western part of the site was under long grass at the time of the survey.

The site is situated on a gentle south-facing slope being at 80m above Ordnance Datum (aOD) in the north and 75m aOD in the south.

1.2 GEOLOGY AND SOILS

The underlying bedrock geology comprises Raglan Mudstone Formation overlain by glaciofluvial sheet deposits – sand and gravel and till (diamicton) (British Geological Survey 2016).

The soils are classified in the Soilscape 6 association which are characterised as freely draining loams (LandIS 2016).

2 ARCHAEOLOGICAL BACKGROUND

There are no known heritage assets within the PDA. However, the site is located within a rich archaeological landscape with significant evidence for pre-Roman and Romano-British occupation within close proximity (WYG 2016). Pre-Roman settlement evidence includes the Credenhill Camp Hillfort, a scheduled monument located to the north-west of the PDA. The Scheduled Monument of Magna is a complex Roman urban settlement, located along the military Roman Road to the west of the PDA. The village of Credenhill was also occupied during the medieval period.

3 AIMS, METHODOLOGY AND PRESENTATION

The main aim of the geophysical survey was to provide sufficient information to enable an assessment to be made of the impact of any proposed development on any potential sub-surface archaeological remains.

The general archaeological objectives of the geophysical survey were:

- to gather sufficient information to establish the extent, condition, character and date (as far as circumstances permit) of any archaeological features and deposits within the survey area;
- to obtain information that will contribute to an evaluation of the significance of the impact of the scheme upon cultural heritage assets; and
- to enable further evaluation and/or mitigation measures to be scoped and designed, where appropriate.

3.1 MAGNETOMETER SURVEY

Magnetic survey methods rely on the ability of a variety of instruments to measure very small magnetic fields associated with buried

ILLUS 2 General view of survey area, looking north

archaeological remains. Features such as a ditch, pit or kiln can act like a small magnet, or series of magnets, that produce distortions (anomalies) in the earth's magnetic field. In mapping these slight variations, detailed plans of sites can be obtained as buried features often produce reasonably characteristic anomaly shapes and strengths (Gaffney and Gater 2003). Further information on soil magnetism and the interpretation of magnetic anomalies is provided in Appendix 1.

A Bartington Grad601 magnetic gradiometer was used during the survey, taking readings at 0.25m intervals on zig-zag traverses 1m apart within 30m by 30m grids, so that 3600 readings were recorded in each grid. These readings were stored in the memory of the instrument and later downloaded to computer for processing and interpretation.

Terrasurveyor V3.0.28.4 software (DWConsulting) has been used to process and present the data.

The site grid was laid out using a Trimble VRS differential Global Positioning System (Trimble GeoXR model).

3.2 REPORTING

A general site location plan is shown in Illus 1 at a scale of 1:2,500. Illus 2 and Illus 3 are general site condition photographs. Illus 4 is a survey location plan showing the processed greyscale magnetometer data at a scale of 1:1,000. An XY trace plot and interpretative drawing are displayed at the same scale in Illus 5 and Illus 6.

Technical information on the equipment used, data processing and magnetic survey methodology is given in Appendix 1. Appendix 2 details the survey location information and Appendix 3 describes the composition and location of the site archive. A copy of the OASIS entry (Online Access to the Index of Archaeological Investigations) is reproduced in Appendix 4.

The survey methodology, report and any recommendations comply with the Written Scheme of Investigation (WYG 2016) and guidelines outlined by English Heritage (David et al. 2008) and by the Chartered Institute for Archaeologists (CIfA 2014). All illustrations reproduced from Ordnance Survey mapping are with the permission of the controller of Her Majesty's Stationery Office (Ó Crown copyright).

The illustrations in this report have been produced following analysis of the data in 'raw' and processed formats and over a range of different display levels. All illustrations are presented to most suitably display and interpret the data from this site based on the experience and knowledge of management and reporting staff.

4 RESULTS AND DISCUSSION

The survey has identified magnetic anomalies throughout the PDA. The types of anomalies and their origins are discussed below and cross-referenced to specific examples on the interpretive figures, where appropriate.

ILLUS 3 View of climbing apparatus, looking north-west

4.1 FERROUS ANOMALIES

Ferrous anomalies, characterised as individual 'spikes', are typically caused by ferrous (magnetic) material, either on the ground surface or in the plough-soil. Little importance is normally given to such anomalies, unless there is any supporting evidence for an archaeological interpretation, as modern ferrous debris or material is common on most sites, often being present as a consequence of manuring or tipping/infilling.

On this site, there is a clear concentration of ferrous anomalies within the south and south-east of the survey area which is caused by landscaping, ground disturbance and interference from the recreational apparatus associated with the former Taste for Adventure centre. Magnetic disturbance of this magnitude may mask or obscure any anomalies of archaeological potential within the affected area. Elsewhere, areas of disturbance around the perimeter of the survey area is due to the proximity of wire fencing and/or other ferrous material within the boundaries.

4.2 AGRICULTURAL ANOMALIES

Several north/south aligned parallel linear trend anomalies are identified throughout the PDA which are interpreted as being caused by agricultural activity. The anomalies appear to be broadly-spaced and it is possible that they are caused by the medieval and post-medieval practice of ridge and furrow cultivation - the anomalies being caused by the magnetic contrast between the former ridges and the soil-filled furrows.

Analysis of historical mapping indicates that an east/west aligned field boundary has been removed from the PDA between the publication of the 1964 and 1971 Ordnance Survey maps. The former boundary does not manifest in the data as a magnetic anomaly, the reason for which is unclear. It is possible that the former boundary comprised of a hedge or fence rather than a ditch. Alternatively, it may be that there is insufficient contrast within the prevailing soils for the former boundary to manifest in the data.

4.3 GEOLOGICAL ANOMALIES

Discrete low-magnitude areas of magnetic enhancement have been identified across the site. The anomalies are sparsely distributed and do not form any coherent pattern and therefore are likely to be caused by localised variations in the soils and the glacial superficial deposits from which they derive.

5 CONCLUSION

The results of the geophysical survey have mainly identified anomalies consistent with the most recent use of the site as an adventure centre although faint linear trend anomalies have been detected which reflect former cultivation of the site. The anomalies appear to be broadly spaced and respect the historical pattern of land division. It is possible therefore that the anomalies are due to the medieval and post-medieval practice of ridge and furrow cultivation. This may be of local historical interest but it is not thought to be

of any archaeological significance. No anomalies of archaeological potential have been identified by the survey and, therefore, on the basis of the geophysical survey, the archaeological potential of the site is assessed as low.

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346000
346100
346200
243400
243300
243200
VEGETATION
A480
VEGETATION
CAR
PARK
CLIMBING
APPARATUS
A480
2
3
Proposed Development area
Location and direction of ILLUS 2-3
Area unsuitable for survey
nT
-1.0
2.0
N
0
25m
scale 1:1,000 @ A3
PROJECT The Hafod
Former Taste For Adventure Site
Credenhill
(THCH/01)
CLIENT WYG for Defence Infrastructure Organisation
Reproduced using survey data provided by WYG
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ILLUS 4
Survey location showing processed greyscale magnetometer data

346000

346100

346200

243400

243300

243200

5.0nT/cm

N

0 25m

scale 1:1,000 @ A3

PROJECT The Hafod
Former Taste For Adventure Site
Credenhill

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ILLUS 5
XY trace plot of magnetometer data

346000

346100

346200

243400

243300

243200

TYPE OF ANOMALY	INTERPRETATION
Dipolar Isolated	Ferrous Material
Magnetic Disturbance	Ferrous Material
Linear Trend	Ridge & Furrow?
Magnetic Enhancement	Geology

N

0 25m

scale 1:1,000 @ A3

PROJECT The Hafod
Former Taste For Adventure Site
Credenhill

CLIENT (THCH/01)
WYG for Defence Infrastructure Organisation

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ILLUS 5
Interpretation of magnetometer data

7 APPENDICES

APPENDIX 1 MAGNETOMETER SURVEY

Magnetic susceptibility and soil magnetism

Iron makes up about 6% of the earth's crust and is mostly present in soils and rocks as minerals such as maghaemite and haematite. These minerals have a weak, measurable magnetic property termed magnetic susceptibility. Human activities can redistribute these minerals and change (enhance) others into more magnetic forms so that by measuring the magnetic susceptibility of the topsoil, areas where human occupation or settlement has occurred can be identified by virtue of the attendant increase (enhancement) in magnetic susceptibility. If the enhanced material subsequently comes to fill features, such as ditches or pits, localised isolated and linear magnetic anomalies can result whose presence can be detected by a magnetometer (fluxgate gradiometer).

In general, it is the contrast between the magnetic susceptibility of deposits filling cut features, such as ditches or pits, and the magnetic susceptibility of topsoils, subsoils and rocks into which these features have been cut, which causes the most recognisable responses. This is primarily because there is a tendency for magnetic ferrous compounds to become concentrated in the topsoil, thereby making it more magnetic than the subsoil or the bedrock. Linear features cut into the subsoil or geology, such as ditches, that have been silted up or have been backfilled with topsoil will therefore usually produce a positive magnetic response relative to the background soil levels. Discrete feature, such as pits, can also be detected.

The magnetic susceptibility of a soil can also be enhanced by the application of heat. This effect can lead to the detection of features such as hearths, kilns or areas of burning.

Types of magnetic anomaly

In the majority of instances anomalies are termed 'positive'. This means that they have a positive magnetic value relative to the magnetic background on any given site. However some features can manifest themselves as 'negative' anomalies that, conversely, means that the response is negative relative to the mean magnetic background.

Where it is not possible to give a probable cause of an observed anomaly a '?' is appended.

It should be noted that anomalies interpreted as modern in origin might be caused by features

that are present in the topsoil or upper layers of the subsoil. Removal of soil to an archaeological or natural layer can therefore remove the feature causing the anomaly.

The types of response mentioned above can be divided into five main categories that are used in the graphical interpretation of the magnetic data:

Isolated dipolar anomalies (iron spikes)

These responses are typically caused by ferrous material either on the surface or in the topsoil. They cause a rapid variation in the magnetic response giving a characteristic 'spiky' trace. Although ferrous archaeological artefacts could produce this type of response, unless there is supporting evidence for an archaeological interpretation, little emphasis is normally given to such anomalies, as modern ferrous objects are common on rural sites, often being present as a consequence of manuring.

Areas of magnetic disturbance

These responses can have several causes often being associated with burnt material, such as slag waste or brick rubble or other strongly magnetised/fired material. Ferrous structures such as pylons, mesh or barbed wire fencing and buried pipes can also cause the same disturbed response. A modern origin is usually assumed unless there is other supporting information.

Linear trend

This is usually a weak or broad linear anomaly of unknown cause or date. These anomalies are often caused by agricultural activity, either ploughing or land drains being a common cause.

Areas of magnetic enhancement/positive isolated anomalies

Areas of enhanced response are characterised by a general increase in the magnetic background over a localised area whilst discrete anomalies are manifest by an increased response (sometimes only visible on an XY trace plot) on two or three successive traverses. In neither instance is there the intense dipolar response characteristic exhibited by an area of magnetic disturbance or of an 'iron spike' anomaly (see above). These anomalies can be caused by infilled discrete archaeological features such as pits or post-holes or by kilns. They can also be caused by pedological variations or by natural infilled features on certain geologies. Ferrous material in the subsoil can also give a similar response. It can often therefore be very difficult to establish an anthropogenic origin without intrusive investigation or other supporting information.

Linear and curvilinear anomalies

Such anomalies have a variety of origins. They may be caused by agricultural practice (recent ploughing trends, earlier ridge and furrow regimes or land drains), natural geomorphological features such as palaeochannels or by infilled archaeological ditches.

APPENDIX 2 SURVEY LOCATION INFORMATION

The site grid was laid out using a Trimble VRS differential Global Positioning System (Trimble GeoXR model). The accuracy of this equipment is better than 0.01m. The survey grids were then superimposed onto a base map provided by the client to produce the displayed block locations. However, it should be noted that Ordnance Survey positional accuracy for digital map data has an error of 0.5m for urban and floodplain areas, 1.0m for rural areas and 2.5m for mountain and moorland areas. This potential error must be considered if coordinates are measured off hard copies of the mapping rather than using the digital coordinates.

Headland Archaeology cannot accept responsibility for errors of fact or opinion resulting from data supplied by a third party.

APPENDIX 3 GEOPHYSICAL SURVEY ARCHIVE

The geophysical archive comprises:-

› an archive disk containing the raw data in XYZ format, a raster image of each greyscale plot with associate world file, and a PDF of the report

The project will be archived in-house in accordance with recent good practice guidelines (http://guides.archaeologydataservice.ac.uk/g2gp/Geophysics_3). The data will be stored in an indexed archive and migrated to new formats when necessary.

APPENDIX 4 OASIS DATA COLLECTION FORM: ENGLAND

headland5-254705

PROJECT DETAILS	
PROJECT NAME	The Haefod Former Taste for Adventure Site Credenhill
SHORT DESCRIPTION OF THE PROJECT	Headland Archaeology (UK) Ltd undertook a geophysical (magnetometer) survey, covering approximately 1.5 hectares on land at the former Taste for Adventure Centre, Credenhill, Herefordshire, to provide information on the archaeological potential of the site prior to its proposed development. No anomalies of archaeological potential have been identified by the survey. Most of the identified anomalies are caused by interference from ferrous recreational apparatus and perimeter fencing, and by ferrous contamination of the upper soil horizons. Faint parallel linear trends are caused by ploughing and may be due to medieval, or later, ridge and furrow cultivation. There is no indication from any other source to suggest that the survey results reflect anything other than an accurate indication of the sub surface conditions within the site and, therefore, based solely on the results of the geophysical survey, the archaeological potential of the site is assessed as low.
PROJECT DATES	Start: 27-05-2016 End: 27-05-2016
PREVIOUS/FUTURE WORK	Not known / Not known
ANY ASSOCIATED PROJECT REFERENCE CODES	THCH16 - Contracting Unit No.
TYPE OF PROJECT	Field evaluation
SITE STATUS	None
CURRENT LAND USE	Vacant Land 1 - Vacant land previously developed
MONUMENT TYPE	N/A None
MONUMENT TYPE	N/A None
SIGNIFICANT FINDS	N/A None
SIGNIFICANT FINDS	N/A None
METHODS & TECHNIQUES	"Geophysical Survey"
DEVELOPMENT TYPE	Large/ medium scale extensions to existing structures (e.g. church, school, hospitals, law courts, etc.)
PROMPT	National Planning Policy Framework – NPPF
POSITION IN THE PLANNING PROCESS	Pre-application
SOLID GEOLOGY (OTHER)	Raglan Mudstone
DRIFT GEOLOGY (OTHER)	Glaciofluvial sheet deposits sand, gravel and till
TECHNIQUES	Magnetometry

PROJECT LOCATION	
COUNTRY	England
SITE LOCATION	HEREFORDSHIRE HEREFORDSHIRE CREDENHILL Former Taste For Adventure Site at Credenhill
POSTCODE	HR4 7DA
STUDY AREA	1.5 Hectares
SITE COORDINATES	SO 46056 43277 52.084798697757 -2.78734689566 52 05 05 N 002 47 14 W Point
LAT/LONG DATUM	Unknown
HEIGHT OD / DEPTH	Min: 75m Max: 80m

PROJECT CREATORS

NAME OF ORGANISATION	Headland Archaeology
PROJECT BRIEF ORIGINATOR	Consultant
PROJECT DESIGN ORIGINATOR	Headland Archaeology
PROJECT DIRECTOR/MANAGER	Webb, A.
PROJECT SUPERVISOR	Harrison, D
TYPE OF SPONSOR/FUNDING BODY	Developer
NAME OF SPONSOR/FUNDING BODY	WYG

PROJECT ARCHIVES	
PHYSICAL ARCHIVE EXISTS?	No
DIGITAL ARCHIVE RECIPIENT	In house
DIGITAL ARCHIVE ID	THCH16
DIGITAL CONTENTS	"other"
DIGITAL MEDIA AVAILABLE	"Geophysics"
PAPER ARCHIVE EXISTS?	No

PROJECT BIBLIOGRAPHY 1	
PUBLICATION TYPE	Grey literature (unpublished document/manuscript)
TITLE	The Hafod Former Taste for Adventure Site, Credenhill Geophysical Survey
AUTHOR(S)/EDITOR(S)	Harrison, D
OTHER BIBLIOGRAPHIC DETAILS	THCH/01
DATE	2016
ISSUER OR PUBLISHER	Headland Archaeology
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DESCRIPTION	A4 glue bound report

ENTERED BY	Sam Harrison (sam.harrison@headlandarchaeology.com)
ENTERED ON	14 June 2016

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