THAMES VALLEY

ARCHAEOLOGICAL

SERVICES

Manor Farm, Bloswood Lane, Whitchurch, Hampshire

Geophysical Survey (Magnetic)

by Kyle Beaverstock

Site Code: MFW 16/241

(SU 4568 4812)

Manor Farm, Bloswood Lane, Whitchurch, Hampshire

Geophysical Survey (Magnetic) Report

For Bewley Homes

by Kyle Beaverstock

Thames Valley Archaeological Services Ltd

Site Code MFW
16/241

February 2019

Summary

Site name: Manor Farm, Bloswood Lane, Whitchurch, Hampshire

Grid reference: SU 45679 48117

Site activity: Magnetometer survey

Date and duration of project: 11th February 2019

Project coordinator: Tim Dawson

Site supervisor: Kyle Beaverstock

Site code: MFW16/241

Area of site: 3.1ha

Summary of results: No features of archaeological interest were identified within the undisturbed area surveyed.

Location of archive: The archive is presently held at Thames Valley Archaeological Services, Reading in accordance with TVAS digital archiving policies.

Report edited/checked by: Steve Ford✓ 28.2.19
                            Tim Dawson✓ 28.2.19

by Kyle Beaverstock

Report 16/241b

Introduction

This report documents the results of a geophysical survey (magnetic) carried out at Manor Farm, Bloswood Lane, Whitchurch, Hampshire (SU 45679 48117) (Fig. 1). The work was commissioned by Laura Ashton on behalf of Bewley Homes, Inhurst House, Brimpton Road, Tadley RG26 5JJ.

A planning consent (17/00148/OUT) has been gained from Basingstoke and Deane Borough Council to develop land to the rear of Bloswood Lane, Whitchurch, Hampshire (SU 4572 4799) (Fig. 1). The consent is subject to two archaeological conditions (9,10). This is in accordance with the Department for Communities and Local Government's National Planning Policy Framework (NPPF 2018) and the Borough's policies on archaeology. The field investigation was carried out to a specification approved by Neil Adam, Senior Archaeologist for Hampshire County Council. The fieldwork was undertaken by Kyle Beaverstock and Jamie Williams on 11th February 2019 and the site code is MFW 16/241.

The archive is presently held at Thames Valley Archaeological Services, Reading in accordance with TVAS digital archiving policies.

Location, topography and geology

The site consists of an irregular parcel of open uncultivated land on the south-western fringes of Whitchurch. The site is bordered by a housing development to the north just off Bloswood Lane and by a small housing development and graveyard to the east. The south and west is bordered by the A34 dual-carriageway, beyond which is open fields. The development area is centred on SU 45679 48117 and is located on river and valley gravel (BGS 1975). It is at a height of approximately 74m above Ordnance Datum.

Site history and archaeological background

The archaeological potential of the site has been highlighted in a desk-based assessment (Elliot 2016). In summary the site is located in an area of moderate archaeological potential with the parcel of land immediately to the east of the proposal site having been subject to geophysical survey and trial trenching. Subsequent investigations (Crabb 2012; Sabin and Donaldson 2011; Esteves 2016) revealed very little archaeology, however

a Late Neolithic pit and a Bronze Age burnt mound were revealed during follow-up excavation (Sanchez 2016). A small earlier evaluation (Crabb 2012) examined a near-circular mound and confirmed that it was a round barrow with surrounding Roman deposits. The round barrow is now preserved in-situ. A modest amount of prehistoric activity is also recorded for the town of Whitchurch with a trackway, The Harroway, thought to be of prehistoric date running east-west to the north of the town, and a bowl barrow to the south. Little is known about the Saxon or medieval Whitchurch, although during the construction of the railway station several inhumation burials were discovered.

Methodology

Sample interval

Data collection involved the traversing of the survey area along straight and parallel lines using two cart-mounted Bartington Grad601-2 fluxgate gradiometers. Even coverage was achieved with the use of regularly spaced markers at the ends of traverses and the real-time positional trace plot. Readings were taken at 0.25m intervals along traverses 1m apart, providing an appropriate methodology balancing cost and time with resolution. Traverses were walked at an alternating north to south zig-zag orientation across the northern survey area and north-west to south-east in the southern field. Although the field was relatively clear there were some areas that were not possible to survey such as overgrowth, trees and standing structures in the north of the site. In the north-east of the southern field was an area being utilised for the development to the north.

The Grad 601-2 has a typical depth of penetration of 0.5m to 1.0m. This would be increased if strongly magnetic objects have been buried in the site. Under normal operating conditions it can be expected to identify buried features >0.5m in diameter. Features which can be detected include disturbed soil, such as the fill of a ditch, structures that have been heated to high temperatures (magnetic thermoremnance) and objects made from ferro-magnetic materials. The strength of the magnetic field is measured in nano Tesla (nT), equivalent to 10^{-9} Tesla, the SI unit of magnetic flux density.

Equipment

The purpose of the survey was to identify geophysical anomalies that may be archaeological in origin in order to inform a targeted archaeological investigation of the site prior to development. The survey and report generally follow the recommendations and standards set out by both European Archaeological Council (EAC 2015) and the Chartered Institute *for* Archaeologists (2002, 2014).

Magnetometry was chosen as a survey method as it offers the most rapid ground coverage and responds to a wide range of anomalies caused by past human activity. These properties make it ideal for the fast yet detailed surveying of an area.

The detailed magnetometry survey was carried out using two dual sensor Bartington Instruments Grad 601-2 fluxgate gradiometers mounted upon a Bartington non-magnetic cart. A two-wheeled lightweight structure pushed by hand, the cart consisted a bank of four vertically-mounted Bartington Grad601-2 magnetic sensor tubes at 1m apart and a Trimble Geo 7x centimetre edition GPS. Readings were collected by two Bartington Grad601-2 loggers and collated using MLgrad601 software on a Linx 12x64 tablet running Windows 10 mounted at the rear of the cart. This enables readings to be taken of both the general background magnetic field and any localised anomalies with the difference being plotted as either positive or negative buried features. All sensors are calibrated to cancel out the local magnetic field and react only to anomalies above or below this base line. On this basis, strong magnetic anomalies such as burnt features (kilns and hearths) will give a high response as will buried ferrous objects. More subtle anomalies such as pits and ditches can be seen from their infilling soils containing higher proportions of humic material, rich in ferrous oxides, compared to the undisturbed subsoil. This will stand out in relation to the background magnetic readings and appear in plan following the course of a linear feature or within a discrete area.

The Trimble Geo7x centimetre edition GPS system with centimetre real-time accuracy was used to tie the cart traverses into the Ordnance Survey national grid. This unit offers both real-time correction and post-survey processing; enabling a high level of accuracy to be obtained both in the field and in the final post-processed data.

Data gathered in the field was processed using the TerraSurveyor software package. This allows the survey data to be collated and manipulated to enhance the visibility of anomalies, particularly those likely to be of archaeological origin. The table below lists the processes applied to this survey, full survey and data information is recorded in Appendix 1.

Process	Effect
Clip from -5.50 to 5.53 nT	Enhance the contrast of the image to improve the appearance of possible archaeological anomalies.
De-stripe: median, all sensors	Removes the striping effect caused by differences in sensor calibration, enhancing the visibility of potential archaeological anomalies.
De-spike: threshold 1, window size 3×3	Compresses outlying magnetic points caused by interference of metal objects within the survey area.

The raw data plot is presented as a greyscale plot shown in relation to the site (Fig. 2) with the processed data then presented as a second figure (Fig. 3), followed by a third plan to present the abstraction and

interpretation of the magnetic anomalies (Fig. 4). Anomalies are shown as colour-coded lines, points and polygons.

The greyscale plot of the processed data is exported from TerraSurveyor in a georeferenced portable network graphics (.PNG) format, a raster image format chosen for its lossless data compression and support for transparent pixels, enabling it to easily be overlaid onto an existing site plan. The data plot is combined with grid and site plans in QGIS 3.4.4 and exported again in .PNG format in order to present them in figure templates in Adobe InDesign CS5.5, creating .INDD file formats. Once the figures are finalised, they are exported in .PDF format for inclusion within the finished report.

Results

The data shows a relatively undisturbed and unvaried underlying geology with no anomalies indicating features of archaeological interest detected, although there are several areas where disturbance from ferrous materials and buried services may be masking potential features. These include, a high dipolar signal **[Fig. 5: 1]** in the north-west corner of the site, to the east of which is an area of magnetic debris **[2]**. Magnetic debris usually consists of numerous dipolar responses whose strength suggests a spread of ferrous debris. To the south of these is a positive linear **[3]** anomaly with associated negative response running east to west which most likely represents a buried service. Along the eastern and south-eastern boundaries are bipolar responses **[4 and 6]** caused by the surrounding fencing as well as a patch on the eastern edge **[5]** in the southern field caused by two large ferrous objects.

Conclusion

No definite anomalies indicating buried features of archaeological significance were detected over the course of the survey although magnetic disturbance may be interfering or masking subtle features in these areas.

References
BGS, 1975, *British Geological Survey*, Sheet 283, Solid and Drift Edition, 1:50000
CIfA, 2014, *Standard and Guidance: for archaeological geophysical survey*, Reading
Crabb, S, 2012, 'Manor Farm, Bloswood Lane, Whitchurch, Hampshire: An Archaeological Evaluation',
    Thames Valley Archaeological Services report 11/107b, Reading
EAC, 2015, *EAC Guidelines for the use of Geophysics in Archaeology: Questions to Ask and Points to Consider*,
    EAC Guidelines 2, Namur
Esteves, L, 2016, 'Manor Farm, Bloswood Lane, Whitchurch, Hampshire: An Archaeological Evaluation, part
    2', Thames Valley Archaeological Services report 11/107c, Reading
IFA, 2002, 'The Use of Geophysical Techniques in Archaeological Evaluation', IFA Paper No. 6, Reading
NPPF, 2018, *National Planning Policy Framework*, Dept Communities and Local Government, London

Sabin, D and Donaldson, K, 2012, 'Land at Manor Farm, Bloswood Lane, Whitchurch, Hampshire: Magnetometer Survey Report, Archaeological Surveys report 391, Chippenham

Sanchez, D, in prep, 'A Bronze Age burnt mound and neolithic features at Manor Farm, Bloswood Lane, Whitchurch, Hampshire, Thames Valley Archaeological Services project 11/107, Reading

Appendix 1. Survey and data information

Programme:
Name: TerraSurveyor
Version: 3.0.25.0

Raw data
Filename: Bloswood.xcp

Instrument Type: MLgrad601 import
Units:
UTM Zone: 30U
Survey corner coordinates (X/Y):
Northwest corner: 615371.64798402, 5676919.18141213 m
Southeast corner: 615559.23798402, 5676559.47141213 m
Direction of 1st Traverse: 90 deg
Collection Method: Parallel
Sensors: 2 @ 1 m spacing.
Dummy Value: 32702

Dimensions
Survey Size (meters): 188 m x 360 m
X&Y Interval: 0.13 m
Source GPS Points: Active: 60039, Recorded: 60039

Stats
Max: 107.02
Min: -109.73
Std Dev: 15.90
Mean: -1.04
Median: 1.47
Composite Area: 6.7478 ha
Surveyed Area: 2.1076 ha

Processed data
GPS based Proce5
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 Despike Threshold: 1 Window dia: 3
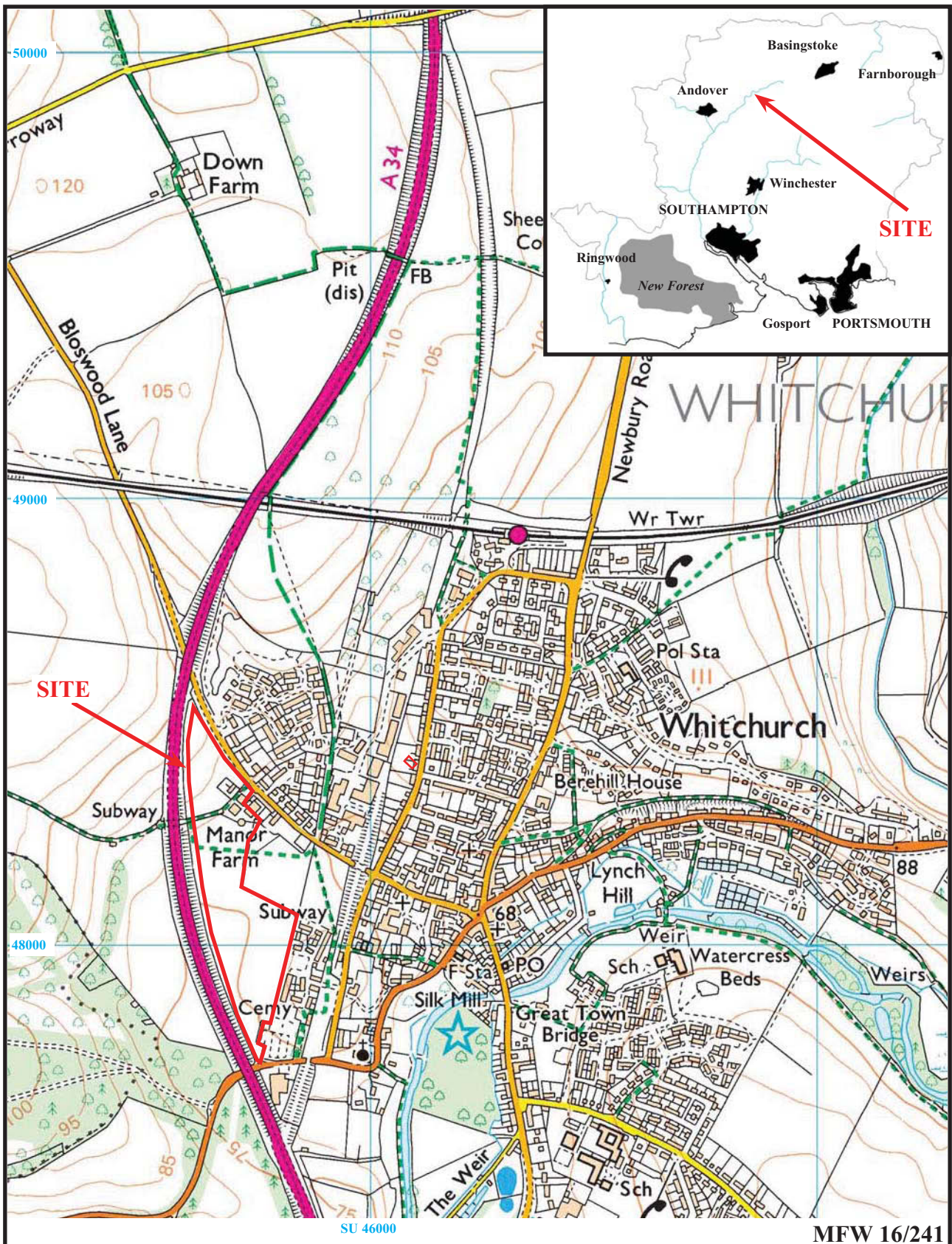*5 Clip from -5.00 to 5.00*

Stats
Max: 5.53
Min: -5.50
Std Dev: 2.01
Mean: -0.24
Median: -0.01
Composite Area: 6.7478 ha
Surveyed Area: 2.1076 ha

**Manor Farm, Bloswood Lane,
Whitchurch, Hampshire, 2019
Geophysical Survey (Magnetic)**

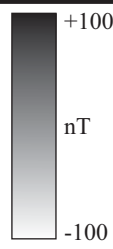Figure 1. Location of site within Whitchurch and Hampshire.

MFW 16/241

THAMES VALLEY ARCHAEOLOGICAL SERVICES

MFW 16/241

Manor Farm, Bloswood Lane
Whitchurch, Hampshire, 2019
Geophysical Survey (Magnetic)
Figure 2. Plot of raw gradiometer data.

N

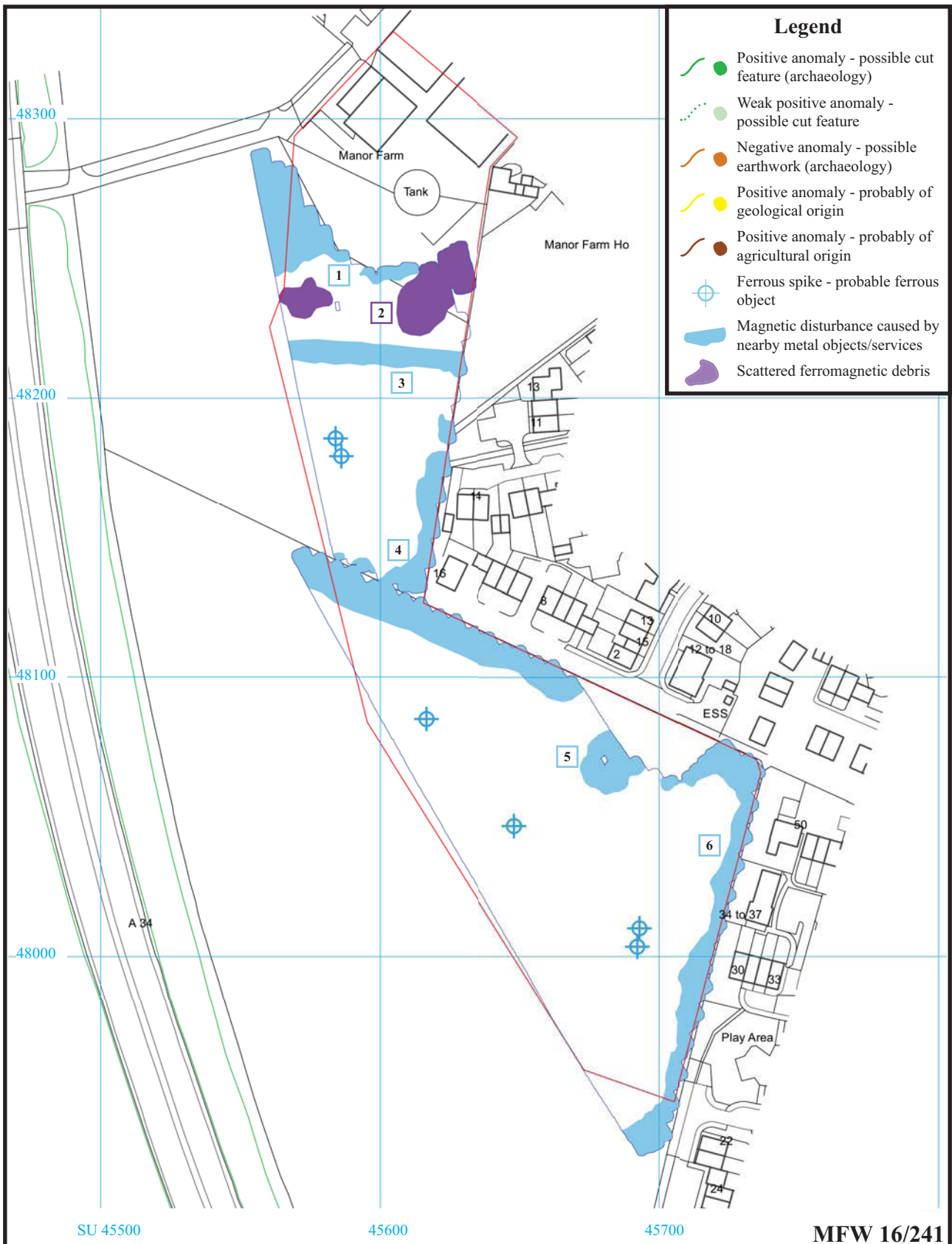0m   100m

+100

nT

-100

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Manor Farm, Bloswood Lane
Whitchurch, Hampshire, 2019
Geophysical Survey (Magnetic)
Figure 3. Plot of minimally processed gradiometer data.

MFW 16/241

Legend

- ● Positive anomaly - possible cut feature (archaeology)
- ● Weak positive anomaly - possible cut feature
- ● Negative anomaly - possible earthwork (archaeology)
- ● Positive anomaly - probably of geological origin
- ● Positive anomaly - probably of agricultural origin
- ⊕ Ferrous spike - probable ferrous object
- Magnetic disturbance caused by nearby metal objects/services
- Scattered ferromagnetic debris

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Play Area

MFW 16/241

**Manor Farm, Bloswood Lane,
Whitchurch, Hampshire, 2019
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Figure 4. Interpretation plot.

N

0m   100m

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Plate 1. View along northern boundary of the northern field looking east.

Plate 2. View of north field looking south-east

Plate 3. View of northen boundary of the southern filed looking east.

Plate 4. View of southern field looking north-west.
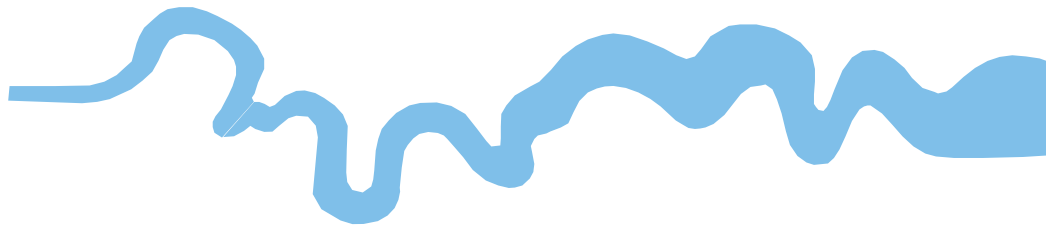
MFW 16/241

**Manor Farm, Bloswood Lane,
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Plates 1 to 4.

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TIME CHART

	Calendar Years
Modern	AD 1901
Victorian	AD 1837
Post Medieval	AD 1500
Medieval	AD 1066
Saxon	AD 410
Roman	AD 43
	AD 0 BC
Iron Age	750 BC
Bronze Age: Late	1300 BC
Bronze Age: Middle	1700 BC
Bronze Age: Early	2100 BC
Neolithic: Late	3300 BC
Neolithic: Early	4300 BC
Mesolithic: Late	6000 BC
Mesolithic: Early	10000 BC
Palaeolithic: Upper	30000 BC
Palaeolithic: Middle	70000 BC
Palaeolithic: Lower	2,000,000 BC

↓ ↓