THAMES VALLEY

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# Land at Fidler's Lane, East Ilsley, West Berkshire

**Geophysical Survey (Magnetic)**

**by Daniel Bray and Rebecca Constable**

**Site Code: FLEI15/106**

**(SU 4914 8113)**

# Land at Fidler's Lane, East Ilsley, West Berkshire

**Geophysical Survey (Magnetic) Report**

**For Manor Oak Homes**

by Daniel Bray and Rebecca Constable

Thames Valley Archaeological Services Ltd

Site Code FLEI 15/106

**October 2015**

## Summary

**Site name:** Land at Fidler's Lane, East Ilsley, West Berkshire

**Grid reference:** SU 4914 8113

**Site activity:** Magnetometer survey

**Date and duration of project:** 28th - 30th September 2015

**Project manager:** Steve Ford

**Site supervisor:** Rebecca Constable

**Site code:** FLEI 15/106

**Area of site:** 1.91ha

**Summary of results:** Several strong magnetic anomalies were recorded within the open areas of the site. These were concentrated in the eastern end of the northern field, where a modern service run was detected, and in the south-western corner of the southern field. In all cases, these anomalies were most likely caused by magnetic ferrous debris and items such as wire fencing along the site boundaries.

**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✓ 10.10.15 |
| | Andrew Mundin✓ 10.10.15 |




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# Land at Fidler's Lane, West Ilsley, West Berkshire
# A Geophysical Survey (Magnetic)

by Daniel Bray and Rebecca Constable

**Report 15/106**

## Introduction

This report documents the results of a geophysical survey (magnetic) carried out at on land at Fidler's Lane, West Ilsley, West Berkshire (SU 4910 8114) (Fig. 1). The work was commissioned by Mr. Oscar Briggs of Manor Oak Homes, White Lodge Farm, Walgrave, Northampton, NN6 9PY.

Planning permission is to be sought from West Berkshire Council for the development of the 1.91ha parcel of land for housing. Due to the consequence of the possibility of archaeological deposits on the site which may be damaged or destroyed by development a phased evaluation was requested comprising geophysical survey followed by trial trenching. This report deals with the geophysical survey phase of works. This is in accordance with the Department for Communities and Local Government's *National Planning Policy Framework* (NPPF 2012), and the Council's policies on archaeology. The fieldwork was undertaken by Rebecca Constable and David Sanchez between 28th and 30th September 2015 with the site code FLEI 15/106.

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

## Location, topography and geology

The survey area consists of three fields totalling 1.91ha on the eastern side of the village of East Ilsley, West Berkshire, 15.5km to the north of Newbury (Fig. 1). The irregular parcel of land is bordered by residential buildings to the south and east, Fidlers Lane to the north and the A34 to the west (Fig. 2). The site boundary consists of wooden fences and the fields are subdivided by wooden post and rail fencing. At the time of survey the field was used for pasture with large areas of nettles and trees. The sloped gently uphill from north to south with slight undulations and was at a height of *c.*122m above Ordnance Datum. The underlying geology is recorded as Upper Chalk across the majority of the fields with bands of Lower Chalk and Coombe deposits present in the north eastern corner of the site (BGS 1971). Conditions during the survey were warm and dry with clear skies and the ground was firm.

## Site history and archaeological background

The archaeological potential of the site stems from its location on the archaeologically rich Berkshire Downs (Richards 1978; Dils and Yates 2013). The site lies on the margins of East Ilsley which has late Saxon origins and is mentioned in Domesday Book (Williams and Martin 2002). A wide range of sites and finds are recorded in the West Berkshire Historic Environment Record for the general vicinity of the village, many of which were recorded by aerial photography. Evaluation and subsequent watching brief on land to the north of Fidler's Lane revealed a small number of deposits of medieval date (Smith and Ford 1997; Pollinger 1997). Information recorded in the West Berkshire Historic Environment Record note that the site of a 19th century farm and possible associated earthworks lie on and/or close to the proposal site. In more recent times, documentary sources indicate that the field was used for Ilsley sheep fairs up to the 1930s with the possibility that traces of animal pens may be encountered.

## Methodology

Sample interval

Data collection required a temporary grid to be established across the survey area using wooden pegs at 20m intervals with further subdivision where necessary. Readings were taken at 0.25m intervals along traverses 1m apart. This provides 1600 sampling points across a full 20m × 20m grid (English Heritage 2008), providing an appropriate methodology balancing cost and time with resolution. The same grid was used across all three fields which contained large areas of trees and nettles which prevented the survey taking place in the middle of the site and at the far eastern side.

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 English Heritage (2008) and the Chartered Institute *for* Archaeologists (2002, 2011, 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 a dual sensor Bartington Instruments Grad 601-2 fluxgate gradiometer. The instrument consists of two fluxgates mounted 1m vertically apart with a second set positioned at 1m horizontal distance. 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.

A Trimble Geo7x handheld GPS system with sub-decimetre real-time accuracy was used to tie the site grid 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 -4.80 to 5.20 nT | Enhance the contrast of the image to improve the appearance of possible archaeological anomalies. |
| Interpolate: *y* doubled | Increases the resolution of the readings in the *y* axis, enhancing the shape of 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. |
| De-stagger: all grids, both by -1 intervals | Cancels out effects of site's topography on irregularities in the traverse speed. |

Once processed, the results are presented as a greyscale plot shown in relation to the site (Fig. 3), followed by a second plan to present the abstraction and interpretation of the magnetic anomalies (Fig. 4). Anomalies are shown as colour-coded lines, points and polygons. The grid layout and georeferencing information (Fig. 2) is prepared in EasyCAD v.7.58.00, producing a .FC7 file format, and printed as a .PDF for inclusion in the final report.

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 2.6.1 Brighton 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

A large amount of magnetic variation was recorded across all three survey areas (Fig. 3). This was particularly noted in the eastern end of the northern field and in the north-eastern and south-western corners of the southern field (Fig. 4). These can be caused by buried ferrous objects or areas of heavy ground disturbance. In the case of the readings in the northern field the strong bipolar values at the eastern end are usually indicative of a buried modern service such as a cable or ferrous pipe. While none of the magnetic anomalies recorded are likely to represent buried archaeological features it is possible that the stronger anomalies associated with the ferrous debris and services would mask weaker anomalies of archaeological origin.

## Conclusion

The geophysical survey was undertaken across a limited portion of the site with the primary obstruction being trees and other vegetation which were particularly thick towards the eastern end of the area. Several strong magnetic anomalies were recorded within the open areas of the site. These were concentrated in the eastern end of the northern field, where a modern service run was detected, and in the south-western corner of the southern field. In all cases, these anomalies were most likely caused by magnetic ferrous debris and items such as wire fencing along the site boundaries.

## References


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Williams, A and Martin, G H, 2002, *Domesday Book, a complete translation,* London

## **Appendix 1.** Survey and data information

**Programme:**
Name: TerraSurveyor
Version: 3.0.25.0

**North-west field**
**Raw data**
Survey corner coordinates (X/Y):
Northwest corner: 449032.34, 181191.22 m
Southeast corner: 449092.34, 181071.22 m
Direction of 1st Traverse: 18.15 deg
Collection Method: ZigZag
Sensors: 2 @ 1.00 m spacing.
Dummy Value: 2047.5

Dimensions
Composite Size (readings): 240 x 120
Survey Size (meters): 60 m x 120 m
Grid Size: 20 m x 20 m
X Interval: 0.25 m
Y Interval: 1 m

Stats
Max: 97.29
Min: -100.00
Std Dev: 26.47
Mean: -0.90
Median: 0.84
Composite Area: 0.72 ha
Surveyed Area: 0.46195 ha

Source Grids: 18
1 Col:0 Row:0 Field A\a (13).xgd
2 Col:0 Row:1 Field A\a (14).xgd
3 Col:0 Row:2 Field A\a (15).xgd
4 Col:0 Row:3 Field A\a (16).xgd
5 Col:0 Row:4 Field A\a (17).xgd
6 Col:0 Row:5 Field A\a (18).xgd
7 Col:1 Row:0 Field A\a (7).xgd
8 Col:1 Row:1 Field A\a (8).xgd
9 Col:1 Row:2 Field A\a (9).xgd
10 Col:1 Row:3 Field A\a (10).xgd
11 Col:1 Row:4 Field A\a (11).xgd
12 Col:1 Row:5 Field A\a (12).xgd
13 Col:2 Row:0 Field A\a (1).xgd
14 Col:2 Row:1 Field A\a (2).xgd
15 Col:2 Row:2 Field A\a (3).xgd
16 Col:2 Row:3 Field A\a (4).xgd
17 Col:2 Row:4 Field A\a (5).xgd
18 Col:2 Row:5 Field A\a (6).xgd

**Processed data**
Stats
Max: 5.20
Min: -4.80
Std Dev: 3.25
Mean: -0.07
Median: 0.07

Processes: 6
1 Base Layer
2 DeStripe Median Sensors: All
3 De Stagger: Grids: All Mode: Both By: -1 intervals
4 Despike Threshold: 1 Window size: 3x3
5 Interpolate: Y Doubled.
6 Clip from -4.80 to 5.20 nT

**South-west field**
**Raw data**
Survey corner coordinates (X/Y):
Northwest corner: 449147.02, 181027.36 m
Southeast corner: 449287.02, 180887.36 m
Direction of 1st Traverse: 288.15 deg
Collection Method: ZigZag
Sensors: 2 @ 1.00 m spacing.
Dummy Value: 2047.5

Dimensions
Composite Size (readings): 560 x 140
Survey Size (meters): 140 m x 140 m
Grid Size: 20 m x 20 m
X Interval: 0.25 m
Y Interval: 1 m

Stats
Max: 96.43
Min: -100.00
Std Dev: 31.63
Mean: 0.95
Median: 4.31
Composite Area: 1.96 ha
Surveyed Area: 0.6283 ha

Source Grids: 28
1 Col:0 Row:3 Field B\25.xgd
2 Col:0 Row:4 Field B\26.xgd
3 Col:0 Row:5 Field B\27.xgd
4 Col:0 Row:6 Field B\28.xgd
5 Col:1 Row:3 Field B\21.xgd
6 Col:1 Row:4 Field B\22.xgd
7 Col:1 Row:5 Field B\23.xgd
8 Col:1 Row:6 Field B\24.xgd
9 Col:2 Row:3 Field B\19.xgd
10 Col:2 Row:5 Field B\20.xgd
11 Col:3 Row:2 Field B\15.xgd
12 Col:3 Row:3 Field B\16.xgd
13 Col:3 Row:4 Field B\17.xgd
14 Col:3 Row:5 Field B\18.xgd
15 Col:4 Row:0 Field B\09.xgd
16 Col:4 Row:1 Field B\10.xgd
17 Col:4 Row:2 Field B\11.xgd
18 Col:4 Row:3 Field B\12.xgd
19 Col:4 Row:4 Field B\13.xgd
20 Col:4 Row:5 Field B\14.xgd
21 Col:5 Row:0 Field B\01.xgd
22 Col:5 Row:1 Field B\02.xgd
23 Col:5 Row:2 Field B\03.xgd
24 Col:5 Row:3 Field B\04.xgd
25 Col:5 Row:4 Field B\05.xgd
26 Col:5 Row:5 Field B\06.xgd
27 Col:6 Row:4 Field B\07.xgd
28 Col:6 Row:5 Field B\08.xgd

**Processed data**
Stats
Max: 5.20
Min: -4.80
Std Dev: 3.07
Mean: -0.06
Median: 0.05

Processes: 6
1 Base Layer
2 DeStripe Median Sensors: All
3 De Stagger: Grids: All Mode: Both By: -1 intervals
4 Despike Threshold: 1 Window size: 3x3
5 Interpolate: Y Doubled.
6 Clip from -4.80 to 5.20 nT

**East field**
**Raw data**
Survey corner coordinates (X/Y):
Northwest corner: 449165.7, 181084.39 m
Southeast corner: 449185.7, 181004.39 m
Direction of 1st Traverse: 288.15 deg
Collection Method: ZigZag

Sensors: 2 @ 1.00 m spacing.
Dummy Value: 2047.5

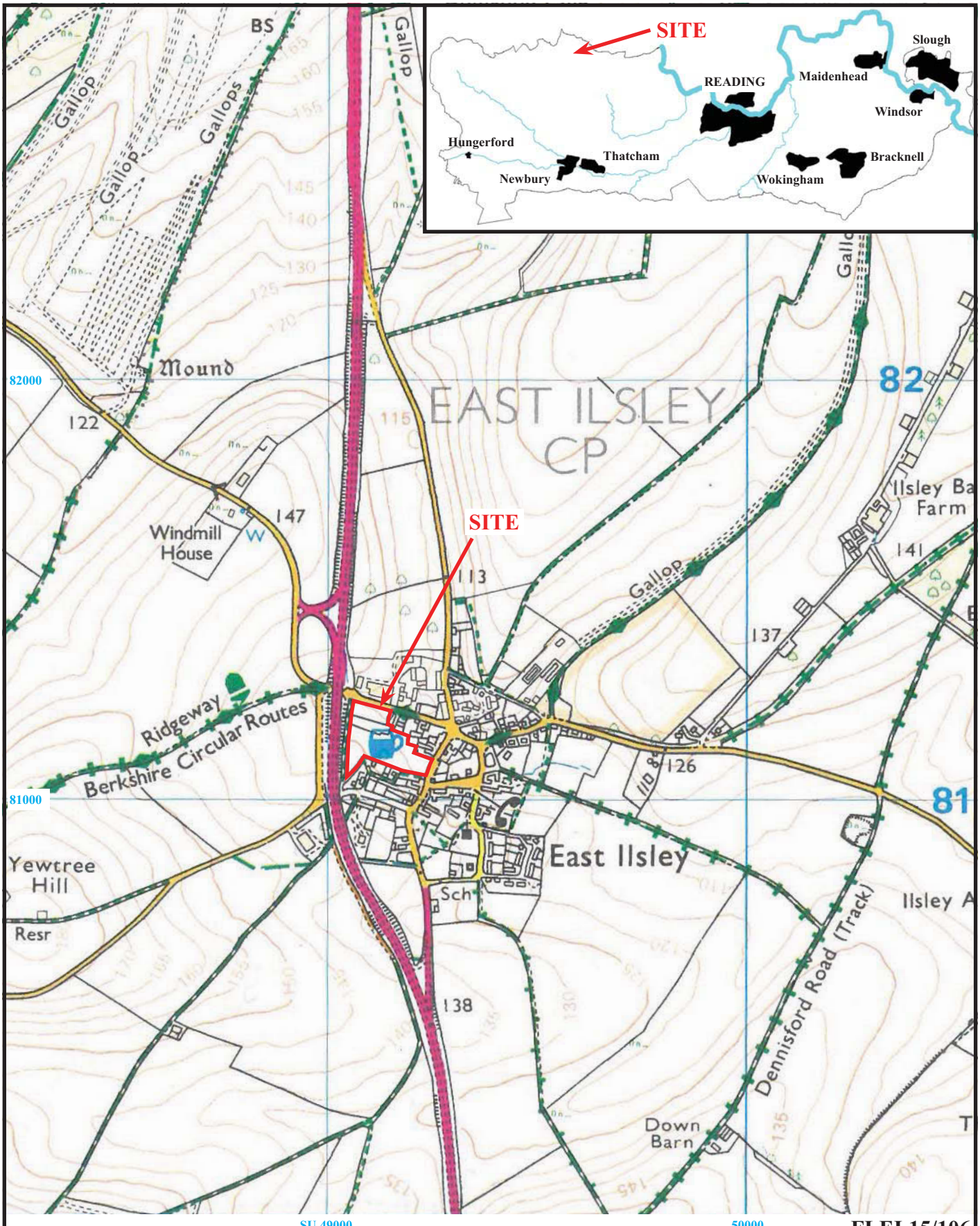
Dimensions
Composite Size (readings): 80 x 80
Survey Size (meters): 20 m x 80 m
Grid Size: 20 m x 20 m
X Interval: 0.25 m
Y Interval: 1 m

Stats
Max: 96.18
Min: -100.00
Std Dev: 71.87
Mean: -0.94
Median: 3.73
Composite Area: 0.16 ha
Surveyed Area: 0.10655 ha

Source Grids: 4
1 Col:0 Row:0 Field C\c (1).xgd
2 Col:0 Row:1 Field C\c (2).xgd
3 Col:0 Row:2 Field C\c (3).xgd
4 Col:0 Row:3 Field C\c (4).xgd

**Processed data**
Stats
Max: 5.20
Min: -4.80
Std Dev: 2.84
Mean: 0.04
Median: 0.00

Processes: 5
1 Base Layer
2 DeStripe Median Sensors: All
3 De Stagger: Grids: All Mode: Both By: -1 intervals
4 Interpolate: Y Doubled.
5 Clip from -4.80 to 5.20 nT

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**Land at Fidler's Lane, East Ilsley,**
**West Berkshire, 2015**
**Geophysical Survey (Magnetic)**

Figure 1. Location of site within East Ilsley and West Berkshire.



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# Land at Fidler's Lane, East Ilsley, West Berkshire, 2015 Geophysical Survey (Magnetic)

Figure 2. Survey grid layout.

0 50m

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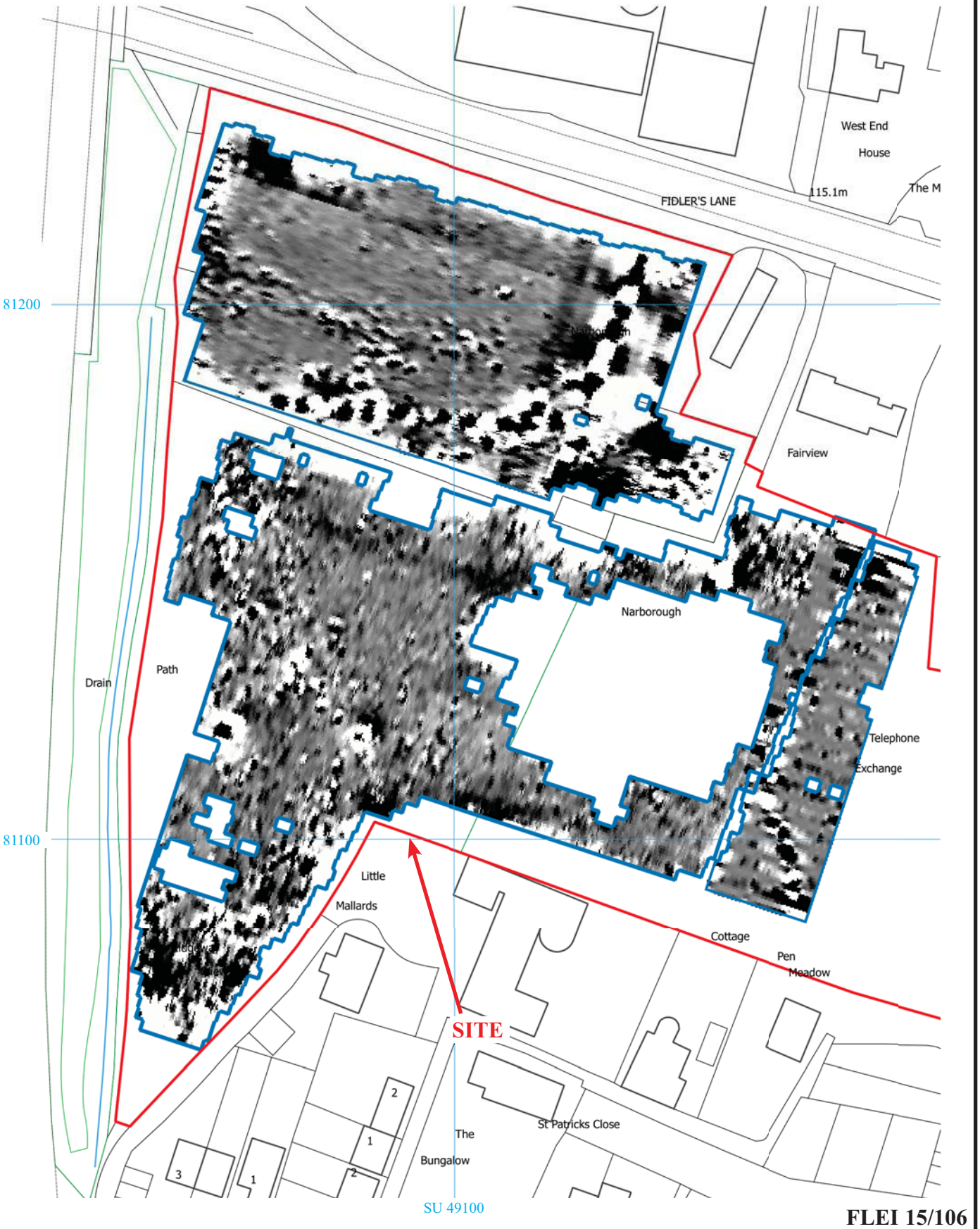


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Figure 3. Plot of minimally processed gradiometer data.

+5.2 nT

-4.8 nT

0m 50m

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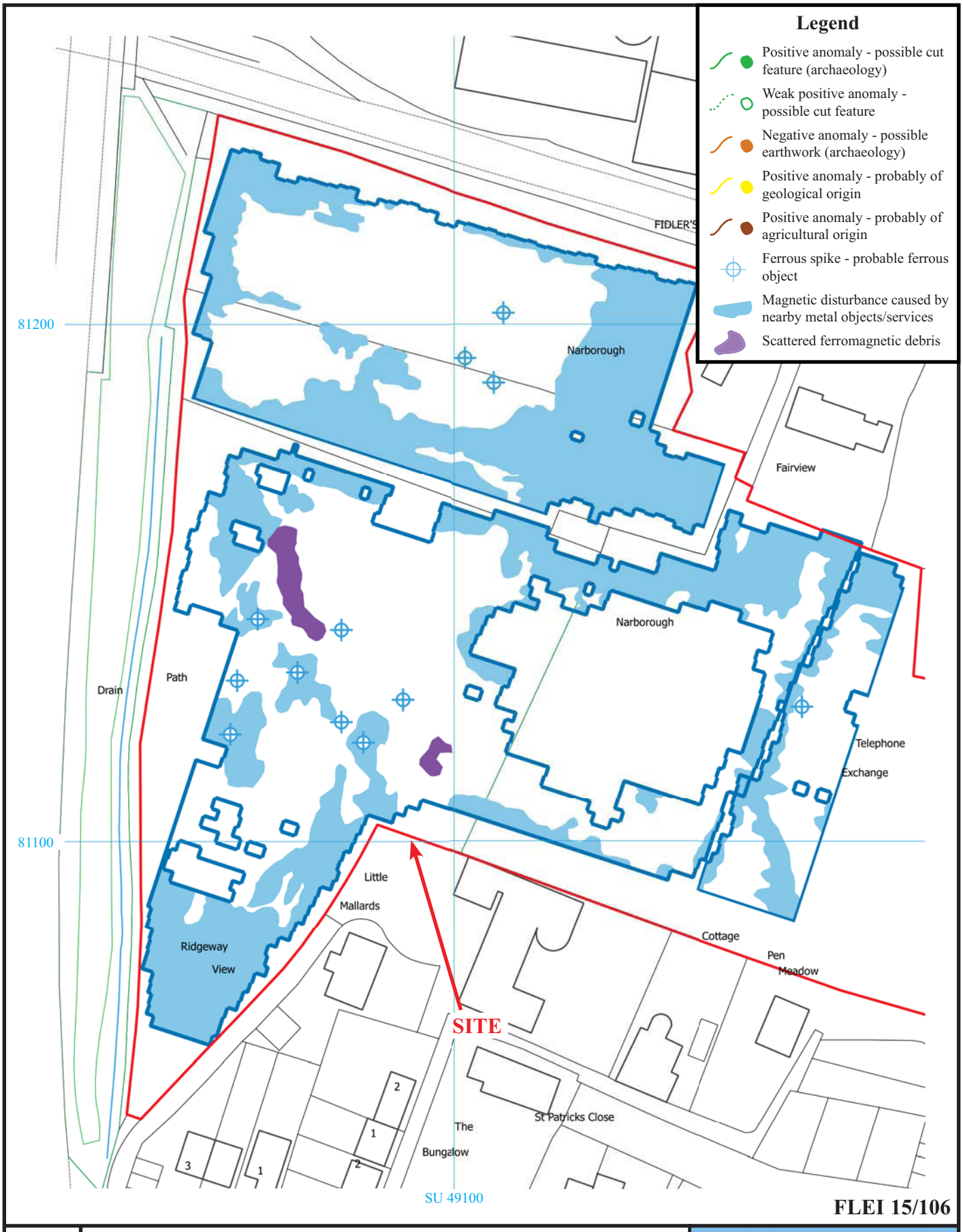


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**Land at Fidler's Lane, East Ilsley, West Berkshire, 2015**
**Geophysical Survey (Magnetic)**

Figure 4. Interpretation plot.

0m 50m

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Plate 1. View across the site from the north-western field, looking south-east.

Plate 2. View towards the eastern field, looking east.

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**Land at Fidler's Lane, East Ilsley,**
**West Berkshire, 2015**
**Geophysical Survey (Magnetic)**
Plates 1 - 2.

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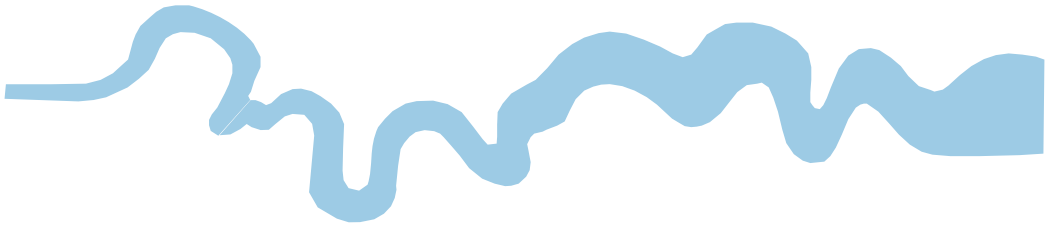
## TIME CHART

| | Calendar Years |
|---|---|
| Modern | AD 1901 |
| Victorian | AD 1837 |
| Post Medieval | AD 1500 |
| Medieval | AD 1066 |
| Saxon | AD 410 |
| Roman | AD 43 |
| Iron Age | BC/AD 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 |



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