

**LAND AT VILLAGE FARM, WILSTEAD ROAD  
ELSTOW, BEDFORDSHIRE**

**Archaeological Geophysical Survey  
2014**

**Report by:**

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# **LAND AT VILLAGE FARM, WILSTEAD ROAD, ELSTOW, BEDFORDSHIRE**

## **Geophysical Survey 2014**

### **1. Introduction**

This report describes a geophysical survey carried out as part of an archaeological evaluation of a potential development site in Wilstead Road, Elstow, near Bedford.

The survey was commissioned from Bartlett-Clark Consultancy, Specialists in Archaeogeophysics of Oxford by Archaeologica Ltd, and fieldwork was done on 16 December 2014. The survey has produced limited findings which do not suggest the site contains dense concentrations of archaeological features, although their possible presence cannot be entirely excluded.

### **2. Objectives of the Survey**

The aim of the geophysical survey was to identify the extent and character of any archaeological remains capable of producing a magnetic response. The magnetometer is able to 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. It is also strongly affected by ferrous and other debris of recent origin.

### **3. Topography and Geology**

The evaluation area includes a number of small paddocks adjacent to the buildings at Village farm in Wilstead Road, and is centred at NGR TL 052470. The total site area (as indicated by a red outline on the location plan; figure 1) is c. 2.27ha, but much of the northern part of the site (which also includes the farm buildings) is densely overgrown. This part of the site also contains much concrete and timber debris, and only a small sample block could be surveyed. The main southern part of the site is an open grassed paddock, which was surveyed with the exception of a wooded area at the western boundary, and a fenced garden towards the southwest. The surveyed areas amount to 1.3ha.

The site is on a bedrock of mudstone and siltstone of the Kellaways and Oxford Clay Formations, overlain by sand and gravel river terrace deposits. Ground conditions at comparable sites which have previously been investigated by magnetometer surveying, both on Oxford Clay and on gravel sites near Bedford, have usually been favourable for the detection of archaeological features.

#### 4. Archaeological Background

Previously identified archaeological features within the evaluation area itself are limited to partially extant traces of ridge and furrow cultivation and adjacent slight earthworks, as shown on the site plan within the main paddock. Gravestones are shown on an OS map of 1926 (as supplied to us by Archaeologica Ltd, and inset in figure 4).

The site is additionally in an area of high archaeological potential, as is indicated by the findings from two nearby excavations. An excavation (by Northamptonshire Archaeology) to the east of the present evaluation area at the site now occupied by Elstow Lower School located a Bronze Age ring ditch, together with Iron Age pits and Saxon and later enclosures and occupation features. The excavation has been positioned approximately in relation to the survey area (by matching the locations of field boundaries on the site mapping), and features traced from an excavation plan are shown on the survey figures.

A further excavation to the south of the present site on the line of the A428 Bedford southern bypass also exposed concentrations of superimposed findings from a similar range of periods. Features shown on the excavation plan (also reproduced in the survey figures) include further ring ditches, enclosures and settlement remains.

Findings from the southern part of the school excavation, which is adjacent to the present survey area, are relatively sparse.

#### 5. Survey Procedure

The site was investigated by means of a recorded magnetometer survey, with readings collected along transects 1m apart using Bartington 1m fluxgate gradiometers. The readings are plotted at 25cm intervals along each transect. The survey data is shown at 1:1250 scale as a grey scale plot (in figure 2), and as a graphical (x-y trace) plot at 1:1000 in figure 3. Comparison of these alternative presentations allows the detected magnetic anomalies to be examined in plan and profile respectively. An interpretation of the findings is also shown superimposed on figure 3 (which permits the interpreted outlines to be compared with the underlying data). A further interpreted summary of the findings is presented in figure 4.

The graphical plot in figure 3 shows the magnetometer readings after minimal pre-processing [of the kind permitted by English Heritage (2008) *Geophysical Survey in Archaeological Field Evaluation* Section 4.8]. This includes adjustment for irregularities in line spacing caused by variations in the instrument zero setting, and truncation of extreme values. Additional weak 2D low pass filtering has been applied to the grey scale plot to adjust background noise levels.

Colour coding has been used in the interpretation to distinguish different effects. Magnetic anomalies which may show characteristics to be expected from features of potential archaeological interest are outlined in red. Background magnetic anomalies which may be of natural or non-archaeological origin are indicated in light brown. Stronger (and perhaps recent) disturbances are in grey (and brown on the line of a former trackway). Possible cultivation effects are indicated by green lines. Some of the more conspicuous ferrous objects (identifiable as narrow spikes in the graphical plots) are marked in light blue, and pipes in blue.

### *Survey location*

The survey grid was set out and tied to the OS grid using a Trimble ProXRT GPS system (with VRS correction to give accuracy of c. 0.1m). The plans are therefore geo-referenced, and OS co-ordinates of map locations can be read from the AutoCAD version of the plans, which can be supplied with this report.

## **6. Results**

One category of findings visible in the grey scale plot is a sequence of broad irregular linear markings in the southern part of the site (shown schematically in green, as at A). These lie within the area of ridge and furrow cultivation, as indicated on the site plan. The linear markings are bounded by a possible headland at B. This lies to the south of a slight earthwork bank which is shown on the site plan. It is possible that some cultivation effects continue to the north of B, but they are not as regular or distinct as to the south.

Various other magnetic disturbances visible in the survey plots are clearly of non-archaeological origin. These include strong magnetic anomalies which are likely to indicate scatters of modern debris near field boundaries or structures (as outlined in grey). A strong linear disturbance at C corresponds well to a track shown on the 1926 map (inset in figure 4), and so probably represents grassed-over metalling or hardcore.

Other linear disturbances are likely to represent iron pipes, as seen at D (in the only small area of ground clear enough to be surveyed in the northern part of the site), and at E in the south-western corner. A linear sequence of small magnetic anomalies across the site at F could be a land drain.

These disturbances (relating both to medieval cultivation and modern land use) create difficulties for further detailed interpretation of the data, but there are no clearly identifiable linear or circular features to suggest the presence of ring ditches or enclosures as seen in the excavations.

A number of individual magnetic anomalies (as seen in the graphical plot, figure 3) have rounded profiles which are a characteristic of silted pits (as are often found at archaeological sites, and are present in both nearby excavations). Some of the more distinct examples of such features are outlined in red, of which G (in the small south western survey area), and H, I, J, K are particularly well defined. The difficulty in identifying such features is that smaller examples merge with the overall background noise level of the survey, and so with the smaller and weaker magnetic anomalies outlined in light brown. This background magnetic activity is likely to include disturbances of natural or non-archaeological origin, particularly on a gravel soil where naturally magnetic stones in the gravel can give rise to detectable magnetic anomalies.

The gravestones (which are shown on the 1926 map in figure 4, and are identified as Quaker graves (HER 7092)) are located in a part of the site relatively free from magnetic disturbances, and some distance north of the magnetic anomalies around H. Graves do not usually cause sufficient ground disturbance to be clearly detectable in a magnetic survey.

## 7. Conclusions

Conditions at the site should be responsive to a magnetometer survey, and the greater part of the survey area within the main paddock is reasonably free from modern disturbances, but findings appear to be limited mainly to cultivation effects. There is no clear evidence for ditched enclosures or ring ditches which should usually be detectable on gravel soil, and which are present in the nearby excavations. A possibility remains, however, that some of the individual magnetic anomalies seen in the survey (as at H-K, and perhaps including some of the smaller background disturbances) could represent archaeological features. The possibility that these could be outlying silted pits or other occupation remains associated with the settlement site found on the line of the bypass cannot be excluded on the survey evidence alone.

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20 January 2015

The fieldwork for this survey was done by N. Paveley and M. Berry

Background mapping reproduced from site survey by Kempston Surveys, Bedford

**Evaluation area**

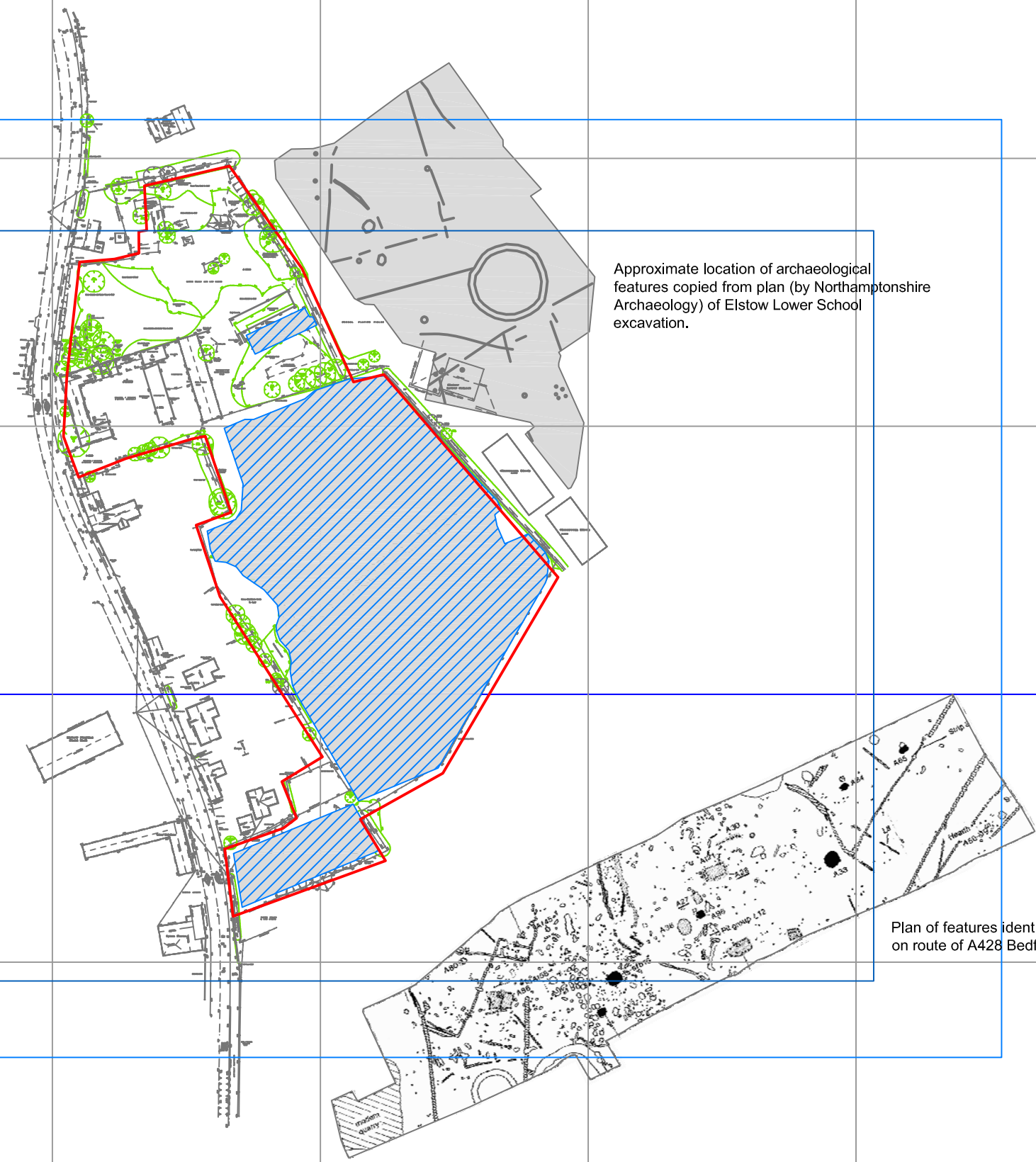
**Geophysical coverage**

Location of 1:1250 figures (2, 4)

Location of 1:1000 figure (3)

247000N

505000E



Approximate location of archaeological features copied from plan (by Northamptonshire Archaeology) of Elstow Lower School excavation.

Plan of features identified by archaeological excavation on route of A428 Bedford Southern Bypass.

Figure 3

Figures 2, 4

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Figure 1: Location of magnetometer survey

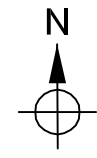
0 Scale 1:2000 @ A3 100m









Background mapping reproduced from site survey by Kempston Surveys, Bedford



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for: Archaeologica Ltd

Background mapping reproduced from site survey by Kempston Surveys, Bedford



-  magnetic anomalies (archaeological ?)
-  strong magnetic disturbances (recent / non-archaeological)
-  small background magnetic anomalies (mainly natural ?)
-  cultivation (traces of ridge and furrow ?)
-  drain ?
-  strong (ferrous) magnetic anomalies
-  pipe (and associated magnetic disturbance)
-  disturbances on line of former track

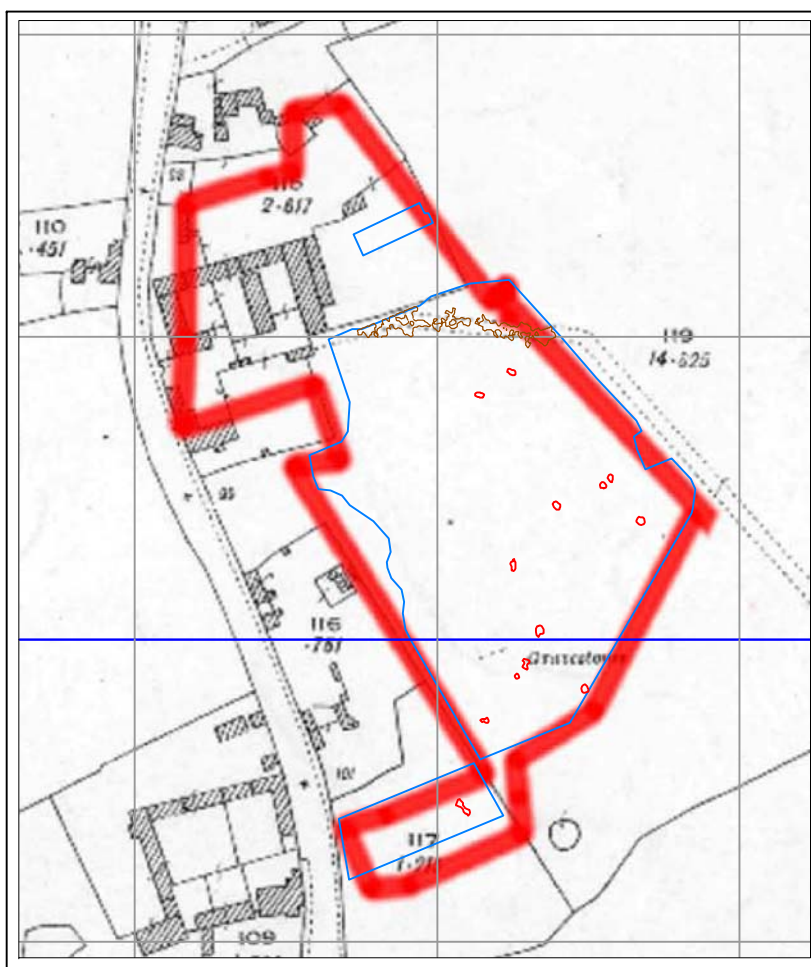


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Figure 3: Magnetometer survey  
(with interpretation)

0 Scale 1:1000 @ A3 50m









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OS map 1926 (with selected magnetic anomalies) 1:2500

247000N

-  magnetic anomalies (archaeological ?)
-  strong magnetic disturbances (recent / non-archaeological)
-  small background magnetic anomalies (mainly natural ?)
-  cultivation (traces of ridge and furrow ?)
-  drain ?
-  strong (ferrous) magnetic anomalies
-  pipe (and associated magnetic disturbance)
-  disturbances on line of former track

505000E

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Figure 4: Summary of findings

0 Scale 1:1250 @ A3 50m