

**HAGBOURNE HILL RESERVOIR
CHILTON, OXFORDSHIRE**

Report on Archaeological Geophysical Survey 2013

A.D.H. Bartlett

Surveyed by:

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for:

**Network Archaeology
Southern Office
24 High Street
Buckingham MK18 1NU**

on behalf of:

**Black & Veatch Ltd
and
Thames Water Utilities**

Hagbourne Hill Reservoir Chilton, Oxfordshire

Report on Archaeological Geophysical Survey 2013

Introduction

The geophysical survey described in this report was carried out as part of an archaeological field evaluation of the site of a proposed new reservoir at Chilton near Didcot.

The survey was commissioned from Bartlett Clark Consultancy, Specialists in Archaeogeophysics of Oxford, by Network Archaeology Ltd on behalf of Black & Veatch Ltd and Thames Water Utilities. Fieldwork for the survey was done on 26 March 2013. A data plot showing the (limited) findings was subsequently supplied to Network Archaeology, and is now included in this report.

The Site

Location and geology

The new reservoir is to be constructed on arable land to the north of the existing reservoir at a site on Hagbourne Hill immediately to the east of the A34, and about 1km north of Chilton (at NGR 449550E, 187350N). The survey covers the proposed site of the reservoir itself and a surrounding access and storage area, as indicated by green cross hatching in figure 1. The site was surveyed in full, with the exception of a small area obstructed by farm machinery in the SE corner. The total survey coverage amounts to 3.4ha.

The site is on a bedrock of Cretaceous Gault and Upper Greensand, and appears to be free of drift deposits. These conditions should not present any particular difficulty for a magnetometer survey, although the strength of magnetic anomalies on the Greensand is likely to be weaker than the (usually strong) response on the nearby chalk. Magnetic susceptibility readings taken at the site during the survey were in a range 11-15 ($\times 10^{-5}$ SI), which should be sufficient to permit the detection of a typical variety of archaeological features.

Archaeological background

We were told by Network Archaeology that no previously recorded archaeological features have been identified within the evaluation area, but there have been various findings including pits, graves and possible settlement activity in the surrounding area.

Survey Procedure

The site was investigated by means of a recorded magnetometer survey. 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 at 1:2000 scale as a grey scale plot (figure 2), and as graphical (x-y trace) plots at 1:1250 (figures 3-4). Comparison of these alternative presentations allows the detected magnetic anomalies to be examined in plan and profile respectively. An interpretation of the findings is shown superimposed on figures 3-4 (which permits the interpreted outlines to be compared with the underlying data), and is reproduced separately to provide a summary of the findings (figure 5).

The graphical plots show the magnetometer readings after minimal pre-processing which includes adjustment for irregularities in line spacing caused by variations in the instrument zero setting, and slight linear smoothing. Additional 2D low pass filtering has been applied to the grey scale plot to reduce background noise levels.

The magnetometer responds to cut features such as ditches and pits when they are silted with topsoil, which usually has a higher magnetic susceptibility than the underlying natural subsoil. It also detects the thermoremanent magnetism of fired materials, notably baked clay structures such as kilns or hearths, and so responds preferentially to the presence of ancient settlement or industrial remains. It is also strongly affected by ferrous and other debris of recent origin.

Colour coding has been used in the interpretation to distinguish different effects. A limited number of magnetic anomalies which show some of the 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 lightly outlined in brown, and stronger (perhaps recent) disturbances in a darker brown. Some of the more conspicuous ferrous objects (identifiable as narrow spikes in the graphical plots) are marked in light blue. Pipes are shown in a darker blue.

Survey location

The survey grid was set out and tied to the OS grid using a Trimble ProXRT GPS system (with Omnistar satellite correction to give accuracy of 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.

Results

The survey has detected a number of subsurface features and disturbances, but has not provided evidence for any significant or substantial concentrations of archaeological findings.

Features identified in the interpretation include a ditch-like linear feature at the north of the survey (labelled A in figure 5). The magnetic anomaly is not particularly strong (as seen in the xy plot, figure 3), but is clearly identifiable against a quiet background in the grey scale plot (figure 2). This linear feature appears to be isolated, and does not form a visible part of an extended system of ditches or enclosures of the kind which might be expected if it is associated with an ancient field system or settlement.

Other linear features are marked at B and C. B is weaker than A, and could therefore be a (possibly recent) cultivation effect. The ditch-like feature at C is more distinct, but only a short section is visible within the survey area.

The main findings other than linear features A – C are various pipes. Recent disturbances in the SE corner of the survey appear to include a possible pipe intersecting the survey at D. A broad band of out-of-range readings suggests a large pipe extending to the north from the existing reservoir at E, and there is perhaps another pipe along the western boundary of the survey at F (although the disturbances seen here could also be caused by a wire fence).

Other findings include recent disturbances near boundaries (brown outlines), and an unremarkable scatter of ferrous objects (blue). There do not appear to be any potentially significant variations in the distribution or concentration of small (mainly natural) background magnetic anomalies (light brown).

Conclusions

The survey has detected linear markings of a kind which could represent insubstantial or isolated ditch-like features at A, B and C. These could be examined further if necessary to determine whether or not they are of archaeological relevance. The absence of any other clearly identifiable groups or clusters of magnetic anomalies suggests there are unlikely to be any distinct or well-preserved concentrations of settlement remains within the survey area. Findings (other than A–C) appear to be limited to pipes and minor recent disturbances against a generally quiet background.

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10 April 2013
(survey plans revised 18 April 2013)

The fieldwork for this survey was done by C. Oatley and N. Paveley. Data processing was done by P. Cottrell.

Based on site plan supplied by
Thames Water Utilities

188000N

449000E

450000E

451000E

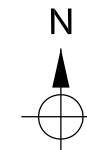
187000N

Figures 2, 5

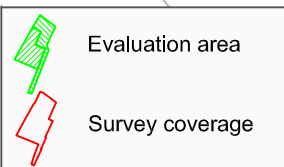
Figure 3

Figure 4

HAGBOURNE HILL RESERVOIR



WEST
HAGBOURNE



A4185

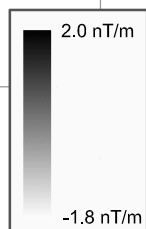
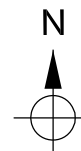
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HAGBOURNE HILL RESERVOIR
CHILTON, OXFORDSHIRE
Geophysical Survey 2013
Figure 1: Location of survey

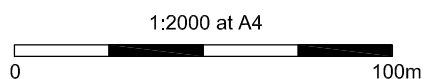
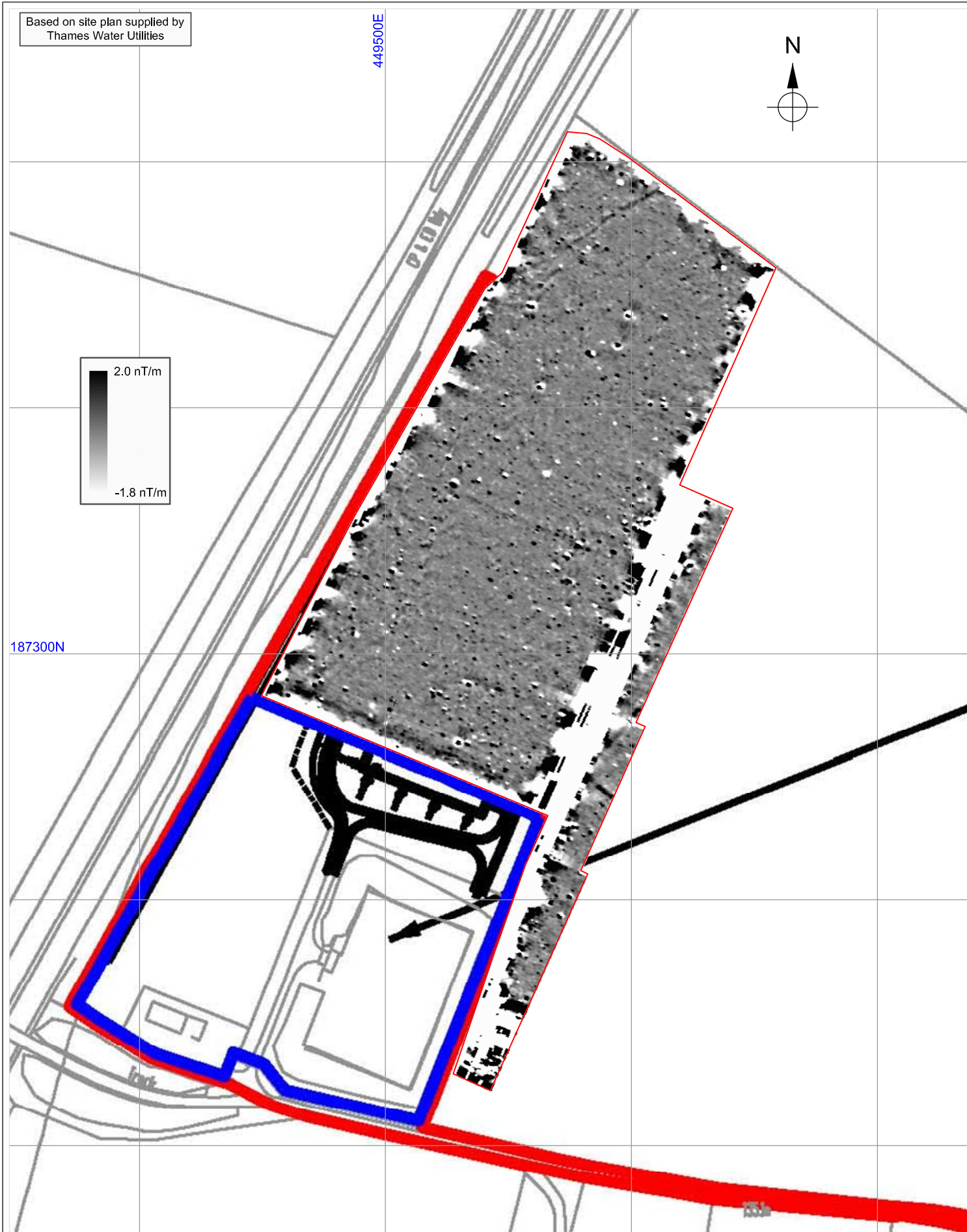
0 1:10000 at A4 400m

Based on site plan supplied by
Thames Water Utilities

449500E








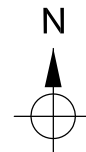
187300N



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Figure 2: Magnetometer survey
(grey scale plot)

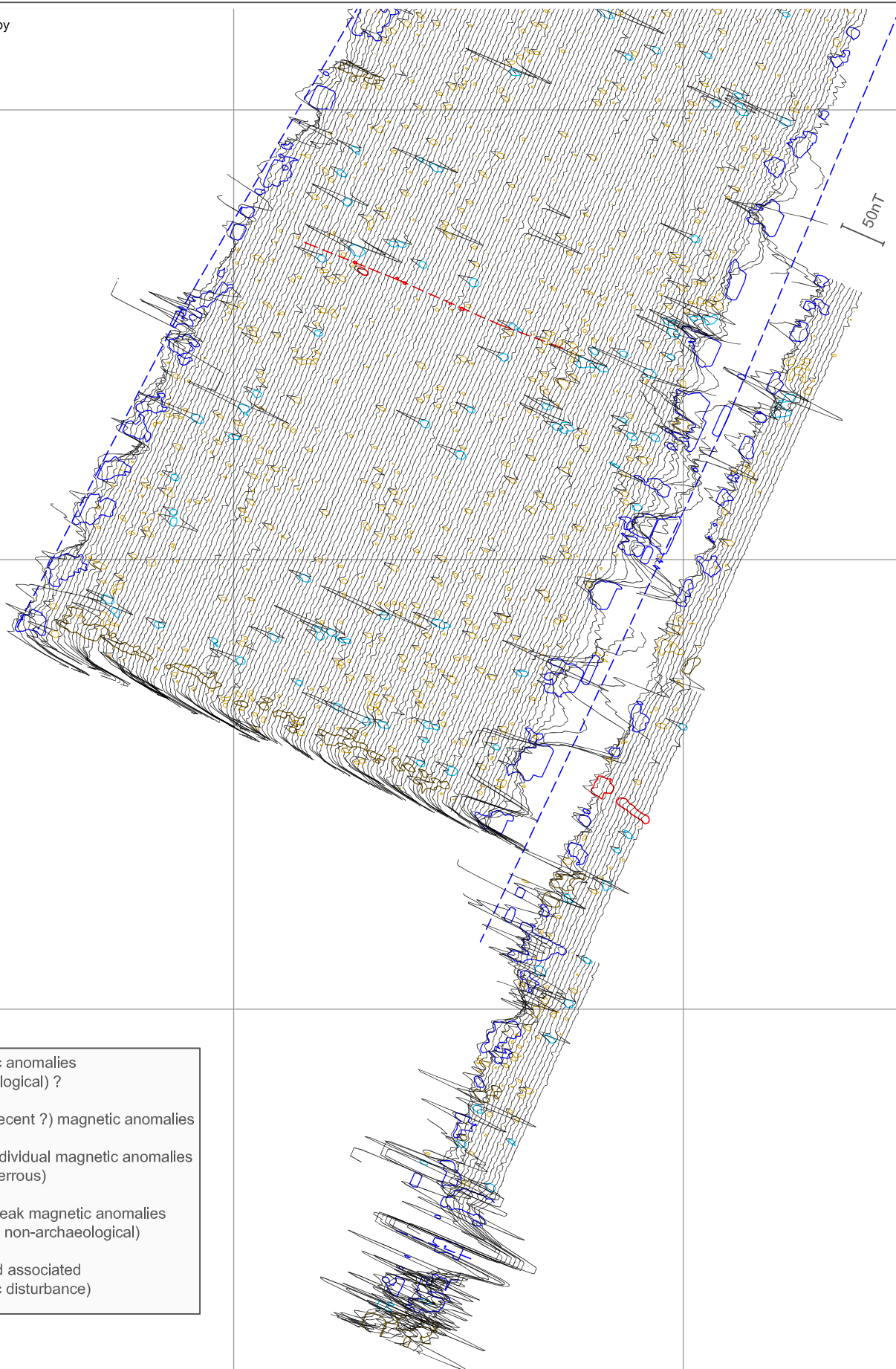
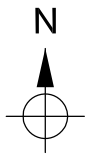
-  magnetic anomalies
(archaeological) ?
-  strong (recent ?) magnetic anomalies
-  strong individual magnetic anomalies
(mainly ferrous)
-  small / weak magnetic anomalies
(natural / non-archaeological)
-  pipe (and associated
magnetic disturbance)








50nT

1:1250 at A4

0 50m



-  magnetic anomalies (archaeological) ?
-  strong (recent ?) magnetic anomalies
-  strong individual magnetic anomalies (mainly ferrous)
-  small / weak magnetic anomalies (natural / non-archaeological)
-  pipe (and associated magnetic disturbance)

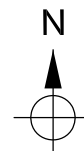
1:1250 at A4








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Figure 4: Magnetometer survey
(with interpretation)

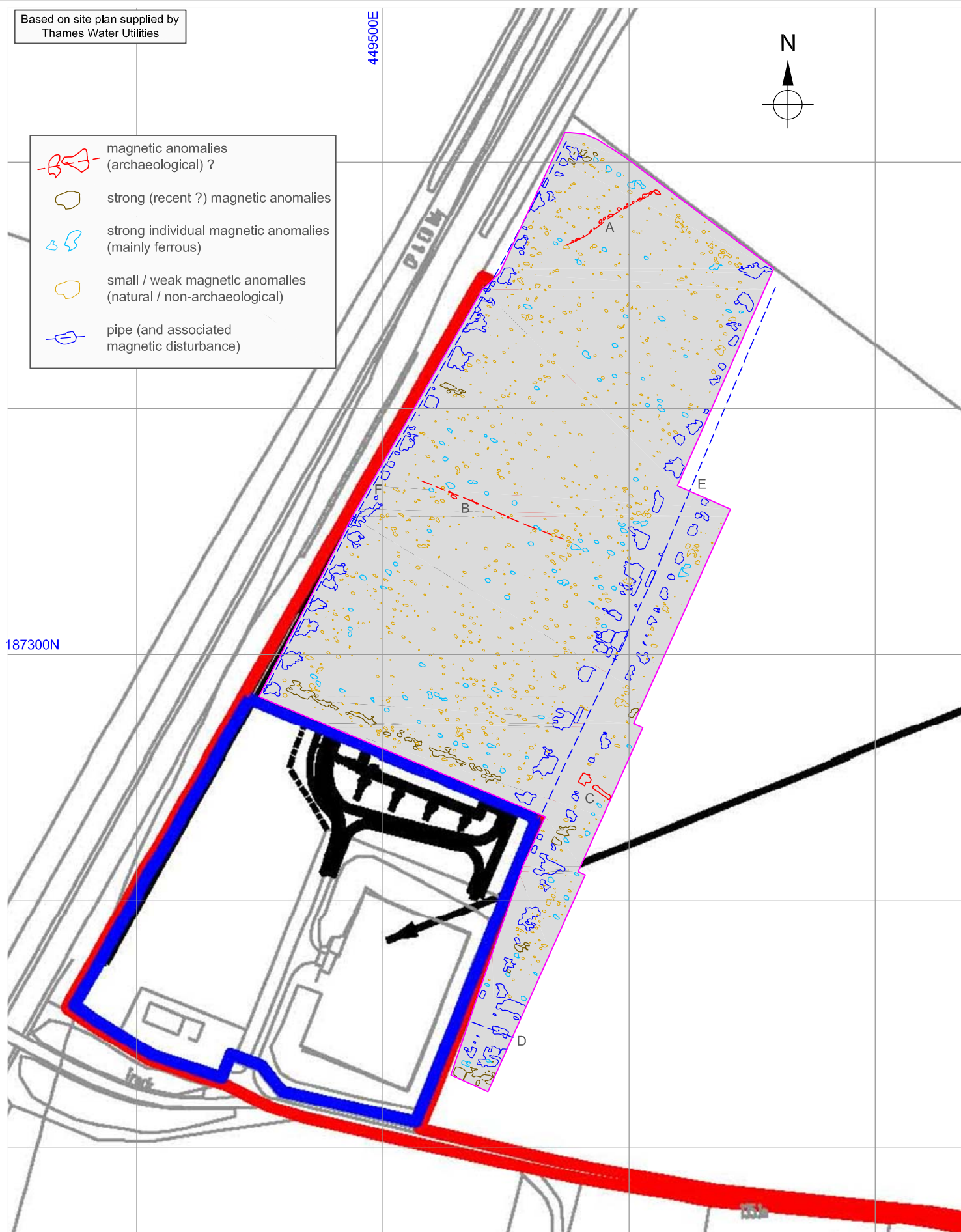
Based on site plan supplied by
Thames Water Utilities

449500E



-  magnetic anomalies
(archaeological) ?
-  strong (recent ?) magnetic anomalies
-  strong individual magnetic anomalies
(mainly ferrous)
-  small / weak magnetic anomalies
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-  pipe (and associated
magnetic disturbance)

187300N



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Geophysical Survey 2013

Figure 5: Summary of findings

1:2000 at A4

0 100m

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