

KIBA/01



LAND NORTH OF ABINGDON ROAD, KINGSTON BAGPUIZE, OXFORDSHIRE

GEOPHYSICAL SURVEY

commissioned by Lioncourt Strategic Planning

Planning Ref: pre-application

August 2016

LAND NORTH OF ABINGDON ROAD, KINGSTON BAGPUIZE, OXFORDSHIRE

GEOPHYSICAL SURVEY

commissioned by Lioncourt Strategic Planning

Planning Ref: pre-application

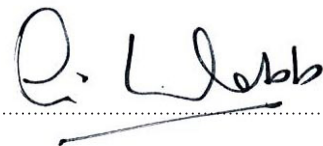
August 2016

project info

HA JOB NO. KIBA/01
NGR SU 4139 9818
PARISH Fyfield and Tubney
LOCAL AUTHORITY Oxfordshire
OASIS REF. headland5-260352

project team

PROJECT MANAGER Alistair Webb
AUTHOR Alex Schmidt, David Harrison
FIELDWORK Jake Freeman, Ross Bishop
GRAPHICS Alex Schmidt, Beata Wiczorek-Oleksy, David Harrison,
Rafael Maya-Torcelly
APPROVED BY Alistair Webb – Project Manager



 **HEADLAND
ARCHAEOLOGY**
© 2016 by Headland Archaeology (UK) Ltd



PROJECT SUMMARY

Headland Archaeology (UK) Ltd undertook a geophysical (magnetometer) survey covering 33 hectares at land north of Abingdon Road, Kingston Bagpuize, Oxfordshire, in advance of the proposed development of the site. The survey has identified an isolated ring-ditch, a probable barrow, within the centre of the site. No further anomalies of definite archaeological potential have been identified although a possible ditch has been identified close to Aelfrith's Dyke, an early medieval boundary which forms the western site limit. Rectilinear anomalies towards the south of the site have been ascribed some archaeological potential, perhaps being due to a ditched enclosure, although a geological origin is plausible. Five areas of possible extraction have been suggested whilst, within the south of the site, anomalies have been identified which correspond to the former RAF Kingston Bagpuize airfield. Overall, based on the results and interpretation of the survey, the archaeological potential across the majority of the site is considered to be low, confirming the results of the Archaeological and Heritage Assessment. The only exception is the ring-ditch which is ascribed a high archaeological potential.

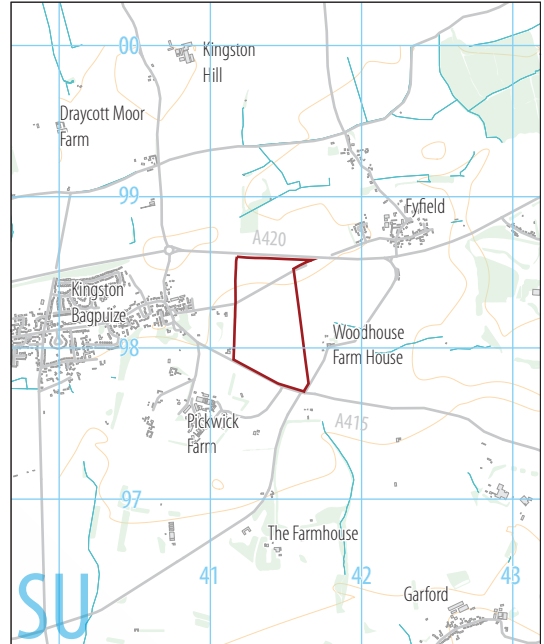
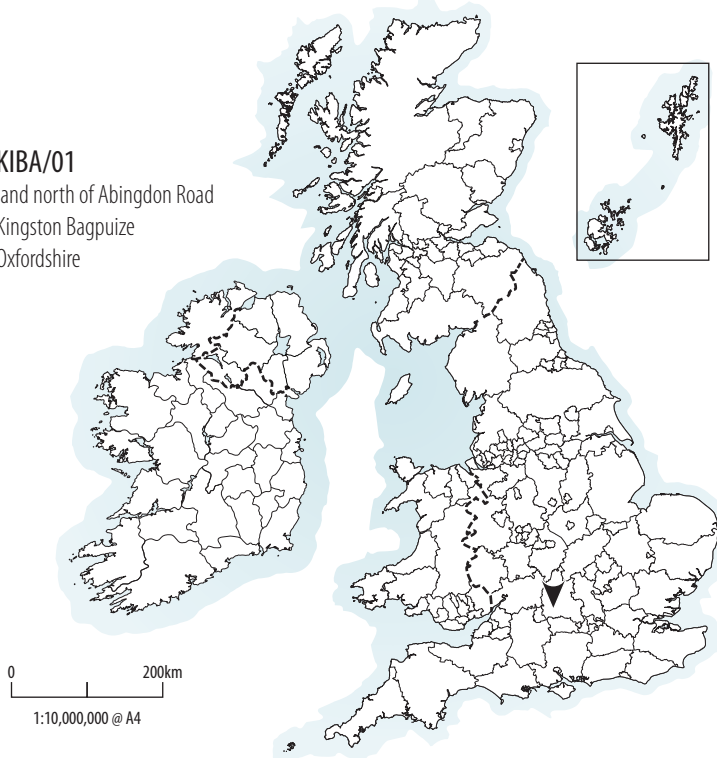
CONTENTS

1	INTRODUCTION	1
	1.1 SITE LOCATION, TOPOGRAPHY AND LAND-USE	1
	1.2 GEOLOGY AND SOILS	1
2	ARCHAEOLOGICAL BACKGROUND	1
3	AIMS, METHODOLOGY AND PRESENTATION	1
	3.1 MAGNETOMETER SURVEY	2
	3.2 REPORTING	2
4	RESULTS AND DISCUSSION	2
	Magnetic background	2
	4.1 FERROUS ANOMALIES	2
	4.2 FORMER AIRFIELD ANOMALIES	2
	4.3 AGRICULTURAL ANOMALIES	3
	4.4 GEOLOGICAL ANOMALIES	3
	4.5 QUARRYING ANOMALIES	3
	4.6 POSSIBLE ARCHAEOLOGICAL ANOMALIES	3
	4.7 ARCHAEOLOGICAL ANOMALIES	4
5	CONCLUSION	4
6	REFERENCES	4
7	APPENDICES	17
	APPENDIX 1 MAGNETOMETER SURVEY	17
	APPENDIX 2 SURVEY LOCATION INFORMATION	18
	APPENDIX 3 GEOPHYSICAL SURVEY ARCHIVE	18
	APPENDIX 4 OASIS DATA COLLECTION FORM: ENGLAND	19

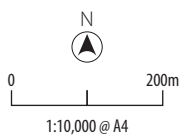
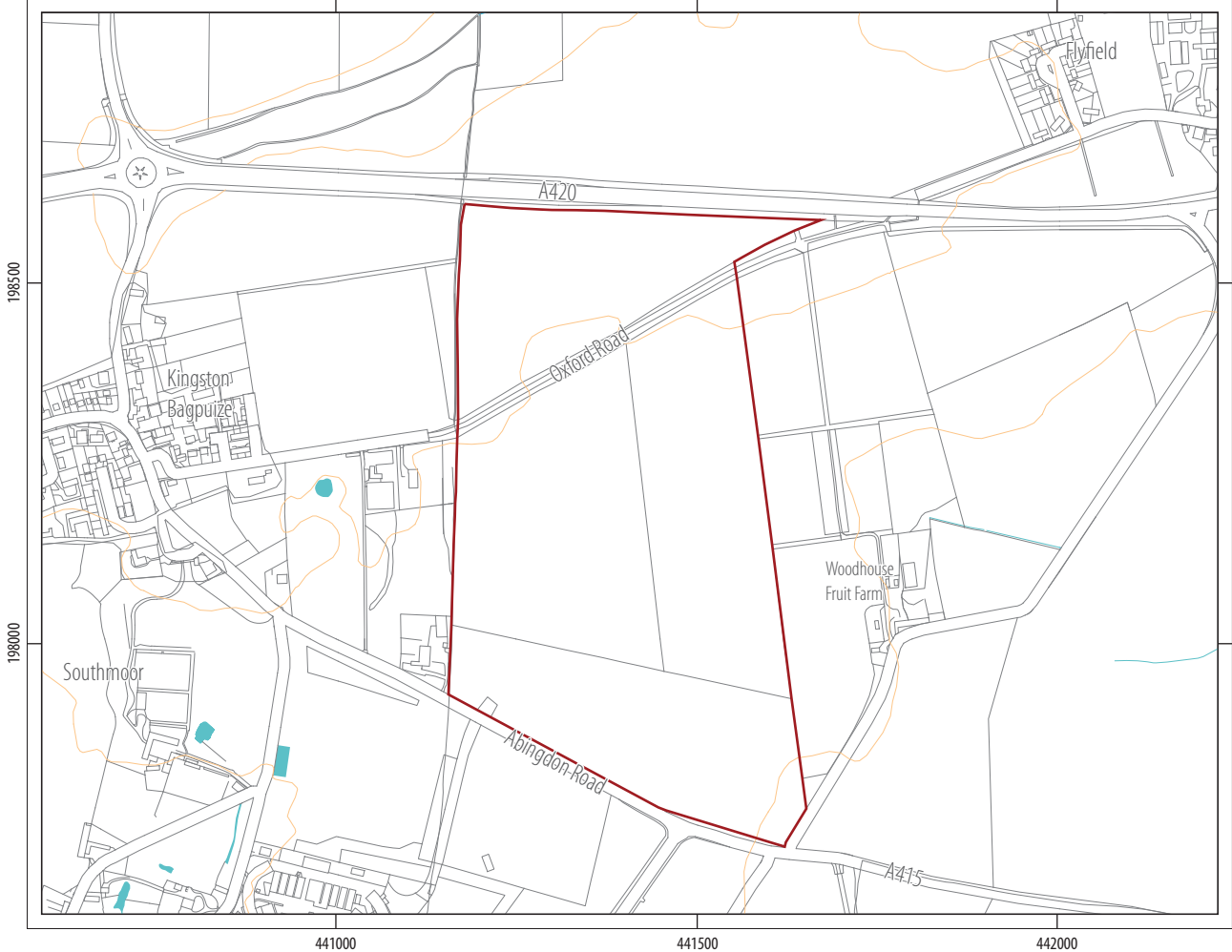
LIST OF ILLUSTRATIONS

ILLUS 1 SITE LOCATION	VIII
ILLUS 2 GENERAL VIEW OF FIELD 1, LOOKING NORTH-EAST	3
ILLUS 3 GENERAL VIEW OF FIELD 2, LOOKING SOUTH	3
ILLUS 4 GENERAL VIEW OF FIELD 3, LOOKING SOUTH-WEST	3
ILLUS 5 GENERAL VIEW OF FIELD 4, LOOKING NORTH-WEST	3
ILLUS 6 SURVEY LOCATION SHOWING GEOLOGY DETAIL, LOCATION AND DIRECTION OF ILLUS 2–5 AND LOCATION OF THE FORMER RAF KINGSTON BAGPIIZE AIRFIELD (1:5,000)	5
ILLUS 7 OVERALL GREYSCALE MAGNETOMETER DATA (1:3,000)	6
ILLUS 8 OVERALL INTERPRETATION OF MAGNETOMETER DATA (1:3,000)	7
ILLUS 9 PROCESSED GREYSCALE MAGNETOMETER DATA; SECTOR 1 (1:2,000)	8
ILLUS 10 XY TRACE PLOT OF MAGNETOMETER DATA; SECTOR 1 (1:2,000)	9
ILLUS 11 INTERPRETATION OF MAGNETOMETER DATA; SECTOR 1 (1:2,000)	10
ILLUS 12 PROCESSED GREYSCALE MAGNETOMETER DATA; SECTOR 2 (1:2,000)	11
ILLUS 13 XY TRACE PLOT OF MAGNETOMETER DATA; SECTOR 2 (1:2,000)	12
ILLUS 14 INTERPRETATION OF MAGNETOMETER DATA; SECTOR 2 (1:2,000)	13
ILLUS 15 PROCESSED GREYSCALE MAGNETOMETER DATA; INSET 1 (1:500)	14
ILLUS 16 XY TRACE PLOT OF MAGNETOMETER DATA; INSET 1 (1:500)	15
ILLUS 17 INTERPRETATION OF MAGNETOMETER DATA; INSET 1 (1:500)	16

KIBA/01
 land north of Abingdon Road
 Kingston Bagpuize
 Oxfordshire



Contains OS data © Crown copyright and database right 2016



KEY
 proposed development area

HEADLAND
ARCHAEOLOGY

NORTH

Unit 16, Hillside, Beeston Road
 Leeds LS11 8ND
 0113 387 6430
www.headlandarchaeology.com

LAND NORTH OF ABINGDON ROAD, KINGSTON BAGPUIZE, OXFORDSHIRE

GEOPHYSICAL SURVEY

1 INTRODUCTION

Headland Archaeology (UK) Ltd was commissioned by The Environmental Dimension Partnership (the Consultant) on behalf of Lioncourt Strategic Planning (the Client) to undertake a geophysical (magnetometer) survey on land north of Abingdon Road, Kingston Bagpuize, Oxfordshire. The survey will inform forthcoming archaeological strategy in advance of any proposed development of the site.

The work was undertaken in accordance with a Written Scheme of Investigation (Headland Archaeology 2016), provided to the Consultant, with guidance contained within the National Planning Policy Framework (DCLG 2012) and in line with current best practice (English Heritage 2008).

The survey was carried out between August 1st and August 5th 2016 in order to provide information on the archaeological potential of the proposed development area (PDA).

1.1 SITE LOCATION, TOPOGRAPHY AND LAND-USE

The PDA comprises four fields (F1–F4), within a single parcel of land between Abingdon Road and the A420, Kingston Bagpuize, centred at SU 4139 9818 (see Illus 1). It is bound to the north by the A420, to the south by Abingdon Road, to the east by arable farmland and to the west by Kingston Bowls Club and Sunrise Day Nursery. Oxford Road runs north-east/south-west through the north of the PDA. The site is located on a gentle south-facing slope being at 82m above Ordnance Datum (aOD) in the north and 75m aOD in the south. At the time of the survey F1–F3 contained a recently harvested cereal crop. F4 had been recently ploughed (see Illus 2–5).

1.2 GEOLOGY AND SOILS

The underlying bedrock geology comprises Kingston Formation (sandstone) in the north and ooidal limestone in the south with an isolated pocket of limestone in the north-west of the PDA (See Illus 6; NERC 2016). No superficial deposits are recorded.

The soils in the north are classified in the Soilscape 6 association which are characterised as freely draining loams, whilst shallow lime-rich soils (Soilscape 3 association) over limestone are recorded in the south (Cranfield University 2016).

2 ARCHAEOLOGICAL BACKGROUND

An Archaeological and Heritage Assessment (EDP 2016) ascertained that there are no designated or non-designated heritage assets within the PDA, although the extent of the former Kingston Bagpuize airfield is known to have extended into the southern part of the site. A small section of concrete hardstanding in the south-west corner of the site comprises the remains of a loop road associated with the former airfield.

The course of Aelfrith's Dyke (MOX1176 see Illus 6), an early medieval boundary bank, is recorded along the site's western boundary although there is thought to be low potential for features of this date to be encountered within the PDA.

The assessment concluded the PDA has a low to moderate potential to contain archaeological remains from the prehistoric or Roman periods and a high potential for medieval to modern remains, albeit of 'low value'.

Analysis of historical Ordnance Survey mapping (Old-Maps 2016) shows several small quarries in the landscape surrounding the PDA. A small quarry is shown to the immediate south-east of the PDA and another at the western site boundary.

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 provide information about the nature and possible interpretation of any magnetic anomalies identified;
- › to therefore model the presence/absence and extent of any buried archaeological features; and
- › to prepare a report summarising the results of the survey.

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 archaeological remains. A feature 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 & Gater 2003). Further information on soil magnetism and the interpretation of magnetic anomalies is provided in Appendix 1.

The survey was undertaken using four Bartington Grad601 sensors mounted at 1m intervals (1m traverse interval) onto a rigid carrying frame. The system is programmed to take readings at a frequency of 10Hz (allowing for a 10-15cm sample interval) on roaming traverses 4m apart. These readings are stored on an external weatherproof laptop and later downloaded for processing and interpretation. The system is linked to a Trimble R8s Real Time Kinetic (RTK) differential Global Positioning System (dGPS) outputting in NMEA mode to ensure a high positional accuracy for each data point.

MLGrad601 and MultiGrad601 (Geomar Software Inc.) software has been used to collect and export the data. Terrasurveyor V3.0.29.3 (DWConsulting) software has been used to process and present the data.

Marker canes were 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 1:10,000. Illus 2-5 are general site condition photographs taken at the time of the survey. Illus 6 shows the geological detail, and the location and direction of Illus 2-5. A large scale (1:3,000) overall greyscale magnetometer data plot is presented in Illus 7. Illus 8 is an overall interpretation of the data at the same scale.

Detailed data plots (greyscale and XY trace) and interpretative illustrations are presented at a scale of 1:2,000 in Illus 9 to Illus 14 inclusive with 1:500 plots of the ring-ditch displayed in Illus 15 to Illus 17.

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 (Headland Archaeology 2016) and guidelines outlined by English Heritage (English Heritage 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 (© 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

Magnetic background

A variable magnetic background has been identified throughout the PDA. Across F4 the variation is due to the ferrous contamination of the upper soil horizons caused by the remediation of the former Kingston Bagpuize airfield into agricultural land. The band of increased variation across the central portion of the site is due to variations in the limestone bedrock, whereas the magnetic background in the north is relatively homogenous, a characteristic of the underlying sandstone in this part of the site. Against this background a variety of anomalies have been identified which are discussed below and cross-referenced to the interpretive drawings, where appropriate.

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 notable increase in the frequency of ferrous anomalies throughout F4. Concentrations of ferrous anomalies (M1 and M2 see Illus 12-14), coalescing into broader areas of magnetic disturbance are identified within the south-west corner of the field. These may be due to former airfield infrastructure, although more recent dumping of ferrous material is equally plausible.

The isolated large 'spike' anomaly (TP1 – see Illus 9-11) within the north of F3 is caused by a telegraph pole.

Other areas of magnetic disturbance around the perimeter of the survey area and field edges can be attributed to the proximity of post and wire fencing and/or other ferrous material within the boundaries.

4.2 FORMER AIRFIELD ANOMALIES

Two parallel alignments of ferrous spikes (AF1 and AF2 see Illus 12-14) are identified within the centre of F4. These correspond to the former runway at Kingston Bagpuize airfield as shown on the 1960 OS map (see Illus 6). The anomalies are thought to be caused by ferrous material, perhaps within drains, flanking either side of the runway.

Within the west of F4 a faint curvilinear trend (AF3 see Illus 12-14) corresponds to part of the former loop road around the airfield. These anomalies may be of local historical interest but are not thought to be of any archaeological significance.



ILLUS 2 General view of Field 1, looking north-east **ILLUS 3** General view of Field 2, looking south **ILLUS 4** General view of Field 3, looking south-west
ILLUS 5 General view of Field 4, looking north-west

4.3 AGRICULTURAL ANOMALIES

Analysis of historical OS mapping shows that the pattern and division of land within the PDA has remained largely the same since the publication of the first edition OS map in 1881, albeit with the construction and removal of the former airfield. A single former field boundary, which is first shown on the 1975 OS map, manifests in the data as a weak north/south linear trend (B1 see Illus 9–11) within the east of F1. Occasional linear trends are identified across the PDA. These are parallel with former or existing field boundaries and are caused by ploughing.

4.4 GEOLOGICAL ANOMALIES

Throughout F1–F3, numerous discrete anomalies, characterised as small areas of magnetic enhancement, are identified. The anomalies largely appear on the same north-west/south-east alignment and are thought to be due to variations in the limestone bedrock. The approximate interface between the limestone and sandstone bedrocks (G1 see Illus 9–14) appears on this alignment across F2 and F3.

4.5 QUARRYING ANOMALIES

Broad and amorphous high magnitude anomalies (Q1 see Illus 9–11) at the north-western boundary of F2 correspond to a former quarry which is depicted on the first edition OS map (1881). The anomalies are caused by magnetic material (e.g. bricks, concrete) used to backfill the quarry. Areas of localised variation in the vicinity of Q1 may also be caused by extraction including high magnitude

anomalies, Q2. At the southern limit of F4, amorphous anomalies (Q3 see Illus 12–14) are identified a short distance to the north-west of a quarry which is shown on the first edition map. It is likely that these anomalies, and Q4, are also due to extraction. A fifth possible backfilled quarry is identified at the northern boundary to F1 as an irregular area of magnetic variation (Q5 see Illus 9–11).

4.6 POSSIBLE ARCHAEOLOGICAL ANOMALIES

Within the north of F2 an isolated east-west aligned linear anomaly (D1 see Illus 9–11) is interpreted as a possible soil-filled ditch. The anomaly is considered to be of possible archaeological potential based on its close proximity, and position at right angles to the adjacent early medieval boundary (MOX1176). However, no clear archaeological pattern is visible in the data and the anomaly may be agricultural in origin.

Within the south-east corner of F2 rectilinear anomalies are clearly visible on a north-west/south-east orientation. The anomalies correspond to a rectilinear pattern of cropmarks which are visible within the PDA and across the wider landscape on Google Earth imagery (Infoterra Ltd & Bluesky 2016) and it is thought likely that the anomalies are caused by soil-filled fissures in the limestone bedrock. However, given their rectilinear appearance, an archaeological origin cannot be fully dismissed and it is possible that the anomalies are due to soil-filled ditches forming part of an enclosure (E1 see Illus 12–14).

4.7 ARCHAEOLOGICAL ANOMALIES

A clear ring-ditch (RD1 see Illus 12–14 and Illus 15–17), probably a barrow, is identified close to the eastern boundary of F2, centred at SU 4141 9813 and measuring 14m in diameter. The ring-ditch is isolated with no further anomalies of archaeological potential identified within either the interior or exterior of the anomaly.

5 CONCLUSION

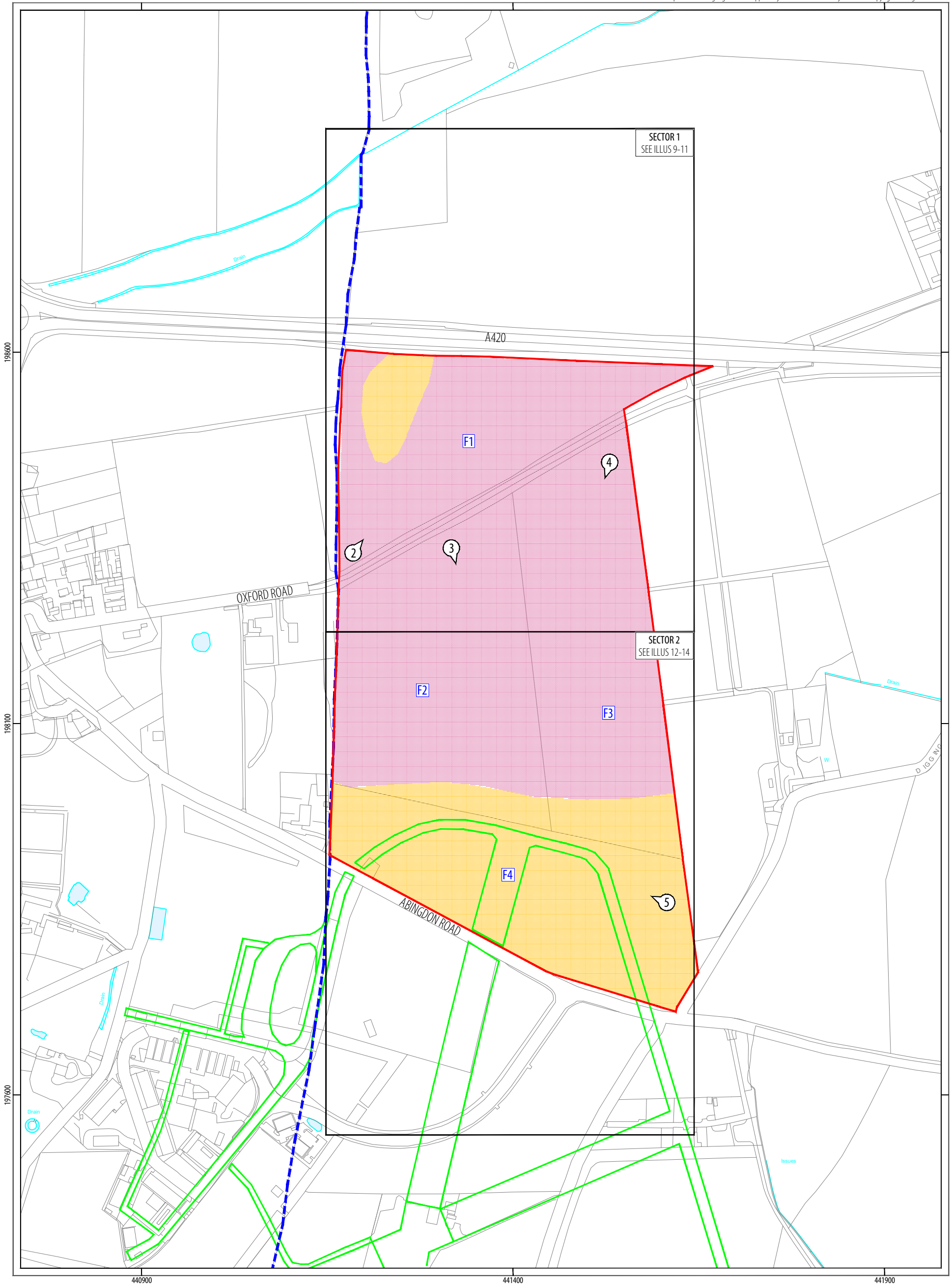
The geophysical survey has identified a clear ring-ditch, probably a barrow, within the centre of the PDA. No further anomalies of definite archaeological potential have been identified although a possible ditch has been identified close to Aelfrith's Dyke, whilst a possible enclosure towards the south of the site is tentatively interpreted as being of possible archaeological potential.

Elsewhere, anomalies have been identified within the south of the PDA which correspond to former airfield infrastructure relating to RAF Kingston Bagpuize, and five areas of small-scale extraction have been detected across the site.

Therefore, based solely on the results and interpretation of the geophysical data, the archaeological potential of across the vast majority of the PDA is assessed as low, confirming the results of the Archaeological and Heritage Assessment. The only exception is the ring-ditch which is ascribed a high archaeological potential.

6 REFERENCES

- Chartered Institute for Archaeologists (CIfA) 2014 *Standard and guidance for archaeological geophysical survey* [online document] Accessed 10 August 2016 from http://www.archaeologists.net/sites/default/files/CIfA&GGeophysics_1.pdf
- Cranfield University 2016 Cranfield Soil and Agrifood Institute Soilscales [online] Accessed 10 August 2016 from www.landis.org.uk/soilscales/
- Department of Communities and Local Government (DCLG) 2012 *National Planning Policy Framework* [online document] Accessed 10 August 2016 from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf
- EDP 2016 Land north of Abingdon Road Kingston Bagpuize: Archaeological and Heritage Assessment Unpublished EDP Report no. H_EDP3006_05_DRAFT
- English Heritage 2008 *Geophysical Survey in Archaeological Field Evaluation: Research and Professional Services Guidelines* (2nd edition) [online document] Accessed 10 August 2016 from <http://content.historicengland.org.uk/images-books/publications/geophysical-survey-in-archaeological-field-evaluation/geophysics-guidelines.pdf>
- Gaffney, C & Gater, J 2003 *Revealing the Buried Past: Geophysics for Archaeologists* The History Press: Stroud
- Infoterra Ltd & Bluesky 2016 Google Earth V 7.1.2.2041 (image date February 6 2009) [online] Kingston Bagpuize (51° 40.770'N, 1° 24.154'W, Eye alt 785m. Accessed 16 August 2016 from <http://www.earth.google.com>
- Natural Environment Research Council (NERC) 2016 British Geological Survey [online] Accessed 10 August 2016 from <http://www.bgs.ac.uk/>
- Old-Maps 2015 Old-Maps [online] Accessed 25 June 2016 from <https://www.old-maps.co.uk>



- proposed development area
- location and direction of ILLUS 2-5
- - - MOX1176 Aelfrith's Dyke
- RAF Kingston Bagpuize—from 1960 OS map

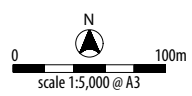
- BEDROCK**
- Kingston Formation - limestone - ooidal
 - Kingston Formation - sandstone

PROJECT KIBA/01
Land north of Abingdon Road
Kingston Bagpuize
Oxfordshire

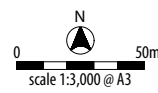
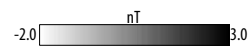
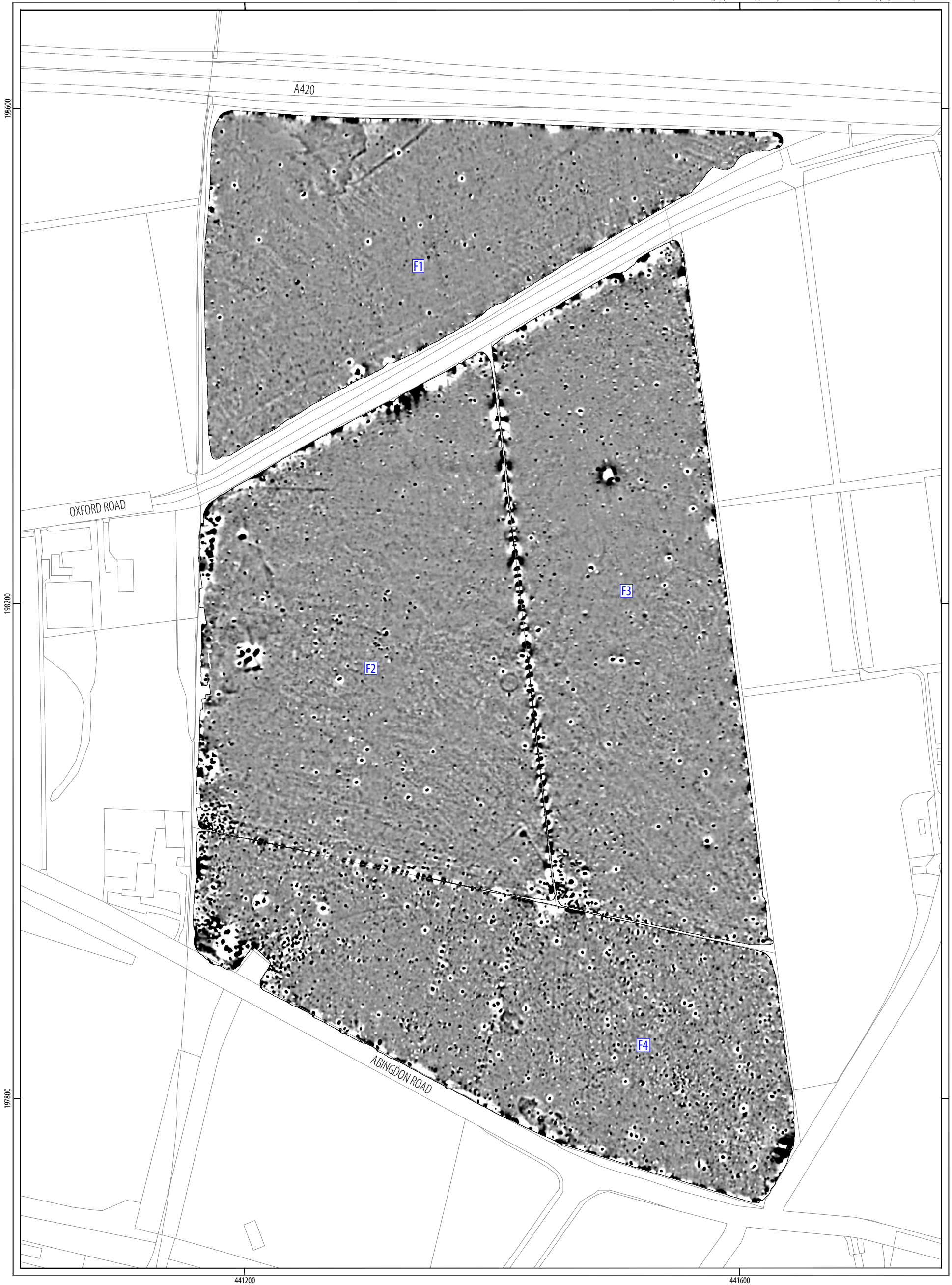
CLIENT Lioncourt Strategic Planning

HEADLAND
ARCHAEOLOGY

NORTH Unit 16, Hillside, Beeston Road
Leeds LS11 8ND
0113 387 6430
www.headlandarchaeology.com



ILLUS 6 Survey location showing geology detail, location and direction of Illus 2-5, and location of the former RAF Kingston Bagpuize Airfield



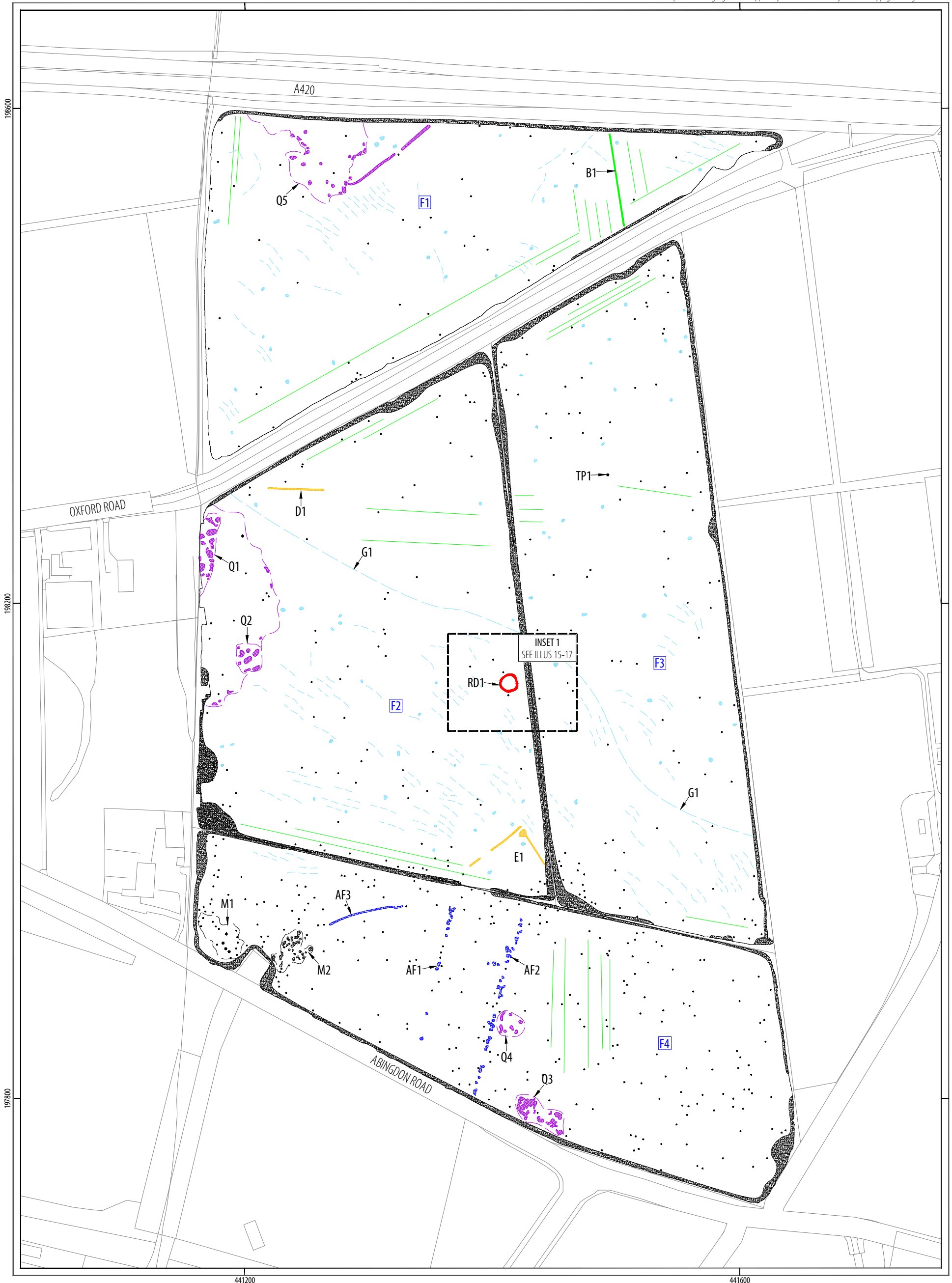
PROJECT KIBA/01
Land north of Abingdon Road
Kingston Bagpuize
Oxfordshire

CLIENT Lioncourt Strategic Planning

**HEADLAND
ARCHAEOLOGY**

NORTH Unit 16, Hillside, Beeston Road
Leeds LS11 8ND
0113 387 6430
www.headlandarchaeology.com

ILLUS 7 Overall greyscale magnetometer data

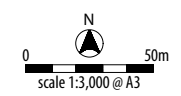


441200

441600

TYPE OF ANOMALY	INTERPRETATION	TYPE OF ANOMALY	INTERPRETATION
● dipolar isolated	ferrous material	--- linear trend	geology
● magnetic disturbance	ferrous material	--- linear trend	geological boundary
● magnetic enhancement	former airfield infrastructure	⊗ magnetic enhancement	quarry?
--- linear trend	agricultural	⊗ magnetic enhancement	archaeology?
--- linear trend	former field boundary	● magnetic enhancement	archaeology

ABBREVIATIONS	
AF	airfield
B	boundary
D	ditch
E	enclosure
G	geology
M	magnetic disturbance
Q	quarry
RD	ring-ditch
TP	telegraph pole



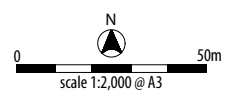
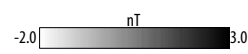
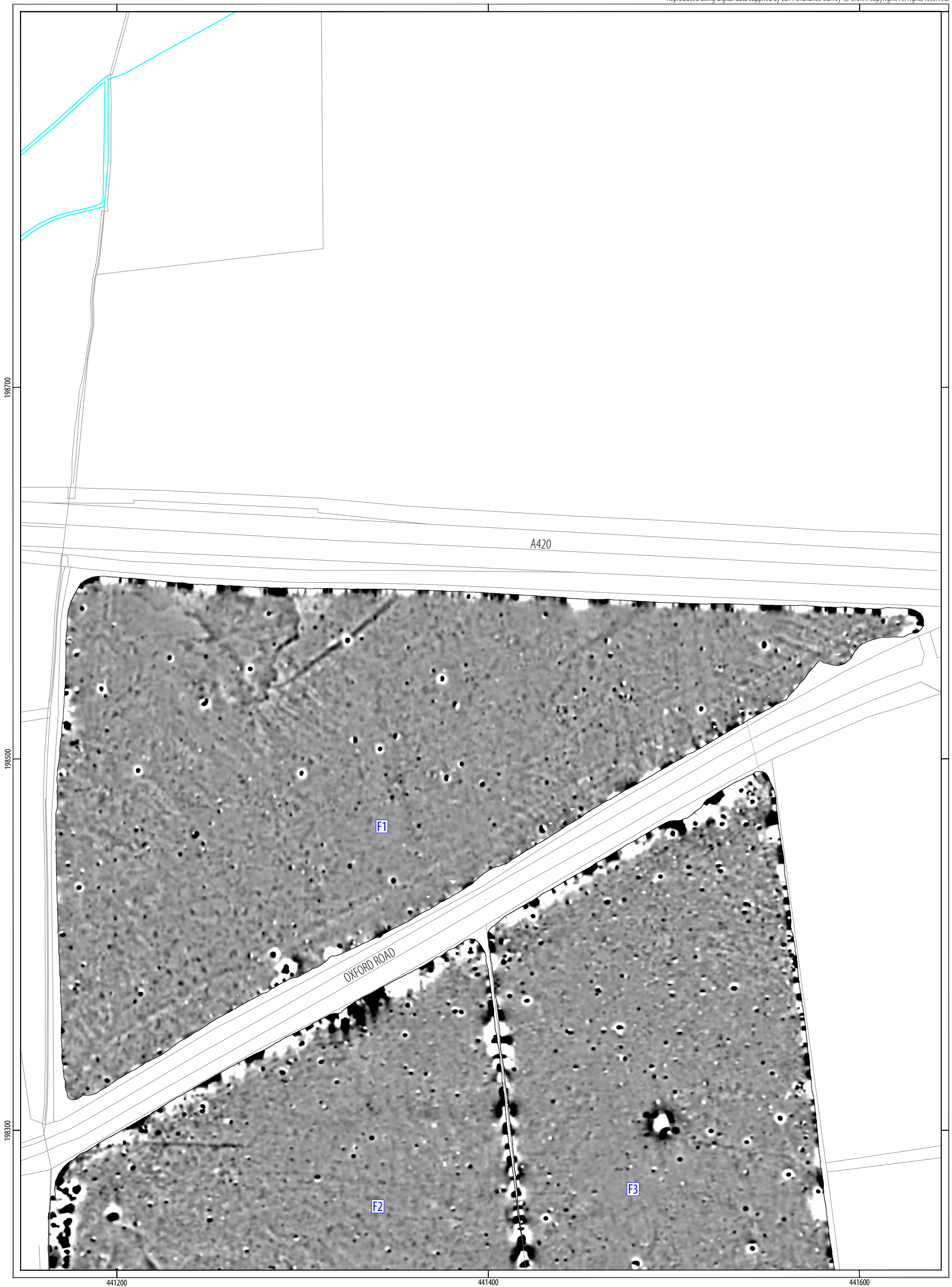
PROJECT KIBA/01
Land north of Abingdon Road
Kingston Bagpuize
Oxfordshire

CLIENT Lioncourt Strategic Planning

HEADLAND ARCHAEOLOGY

NORTH Unit 16, Hillside, Beeston Road
Leeds LS11 8ND
0113 387 6430
www.headlandarchaeology.com

ILLUS 8 Overall interpretation of magnetometer data



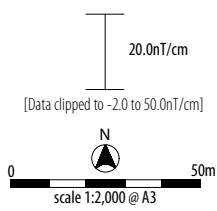
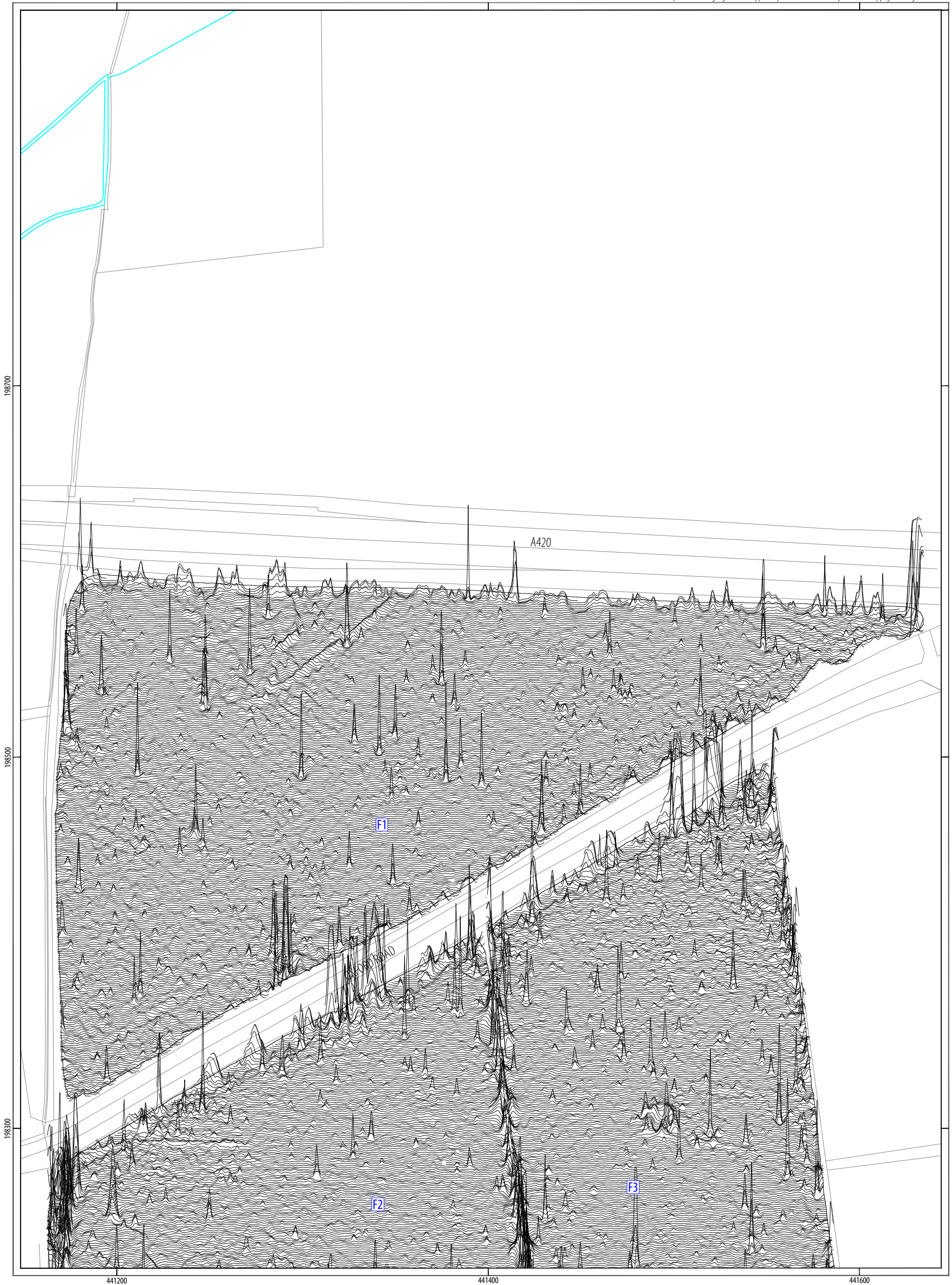
PROJECT KIBA/01
Land north of Abingdon Road
Kingston Bagpuize
Oxfordshire

CLIENT Lioncourt Strategic Planning

HEADLAND
ARCHAEOLOGY

NORTH Unit 16, Hillside, Beeston Road
Leeds LS11 8ND
0113 387 6430
www.headlandarchaeology.com

Illus 9 Processed greyscale magnetometer data; Sector 1



PROJECT KIBA/01
Land north of Abingdon Road
Kingston Bagpuize
Oxfordshire

CLIENT Lioncourt Strategic Planning

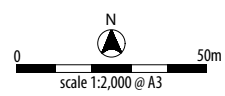
HEADLAND
ARCHAEOLOGY

NORTH Unit 16, Hillside, Beeston Road
Leeds LS11 8ND
0113 387 6430
www.headlandarchaeology.com

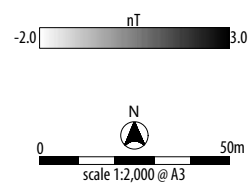
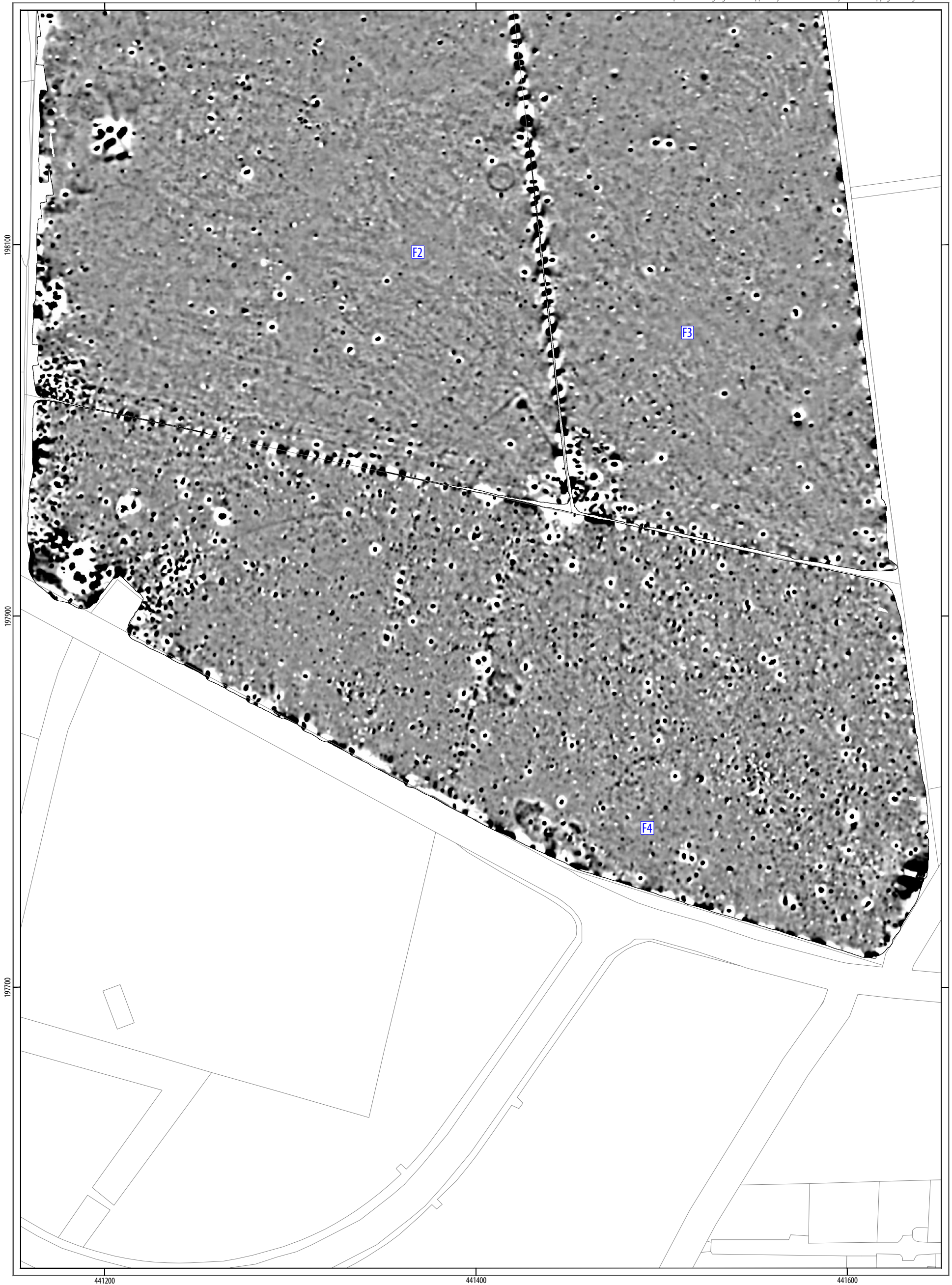
Illus 10 XY trace plot of magnetometer data; Sector 1



<p>TYPE OF ANOMALY</p> <ul style="list-style-type: none"> ● dipolar isolated ● magnetic disturbance — linear trend — linear trend — linear trend — linear trend 	<p>INTERPRETATION</p> <ul style="list-style-type: none"> ferrous material ferrous material agricultural former field boundary geology geological boundary 	<p>TYPE OF ANOMALY</p> <ul style="list-style-type: none"> ⊗ magnetic enhancement ⊗ magnetic enhancement 	<p>INTERPRETATION</p> <ul style="list-style-type: none"> quarry? archaeology? 	<p>ABBREVIATIONS</p> <ul style="list-style-type: none"> B boundary D ditch G geology Q quarry TP telegraph pole 	<p>PROJECT KIBA/01 Land north of Abingdon Road Kingston Bagpuize Oxfordshire</p> <p>CLIENT Lioncourt Strategic Planning</p>	<p>HEADLAND ARCHAEOLOGY</p> <p>NORTH Unit 16, Hillside, Beeston Road Leeds LS11 8ND 0113 387 6430 www.headlandarchaeology.com</p>
--	--	--	--	---	---	---



Illus 11 Interpretation of greyscale magnetometer data; Sector 1



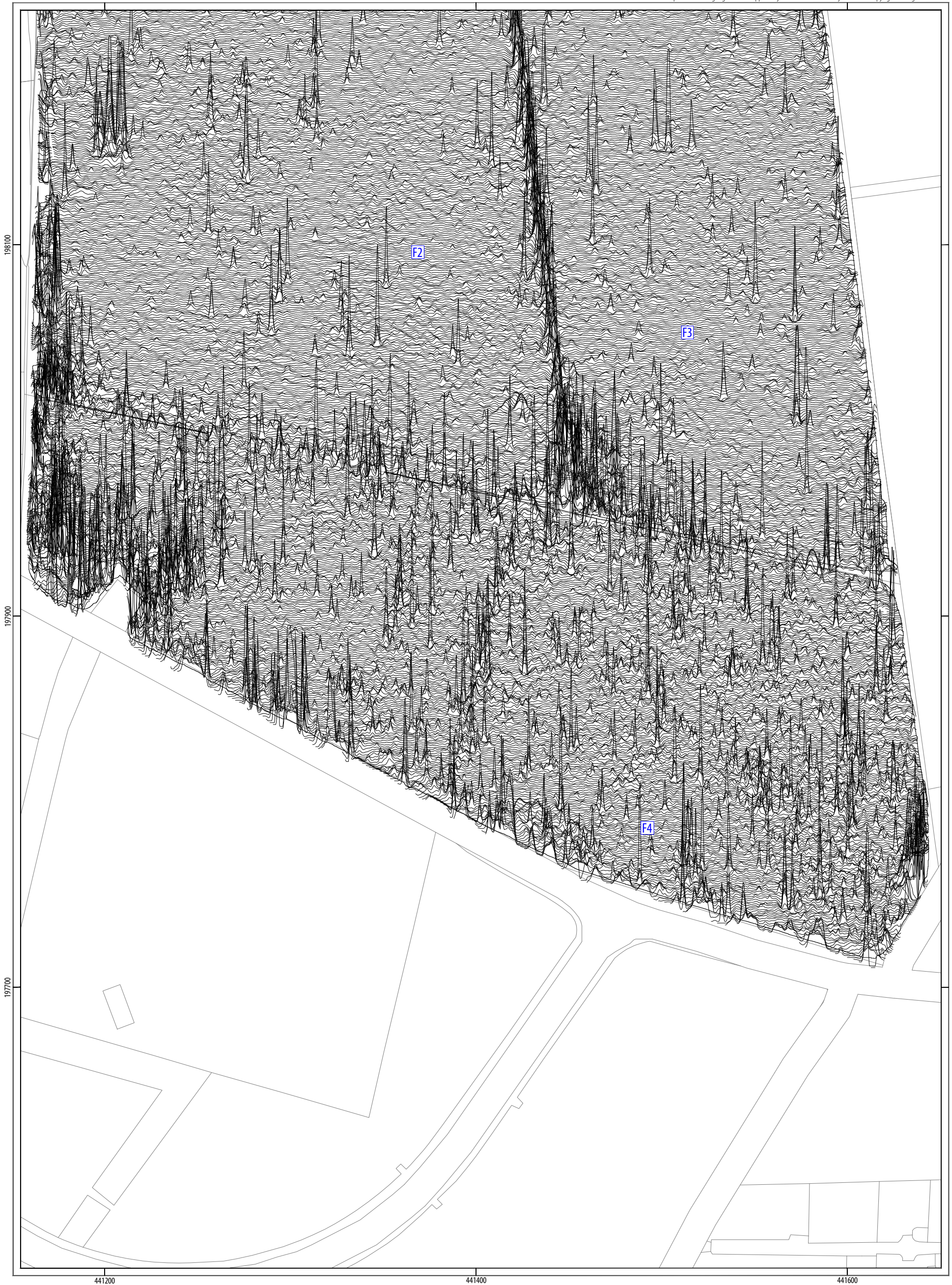
PROJECT KIBA/01
Land north of Abingdon Road
Kingston Bagpuize
Oxfordshire

CLIENT Lioncourt Strategic Planning

HEADLAND
ARCHAEOLOGY

NORTH Unit 16, Hillside, Beeston Road
Leeds LS11 8ND
0113 387 6430
www.headlandarchaeology.com

Illus 12 Processed greyscale magnetometer data; Sector 2



198100

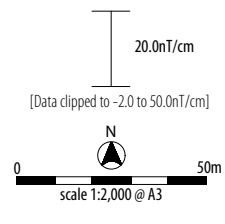
197900

197700

441200

441400

441600



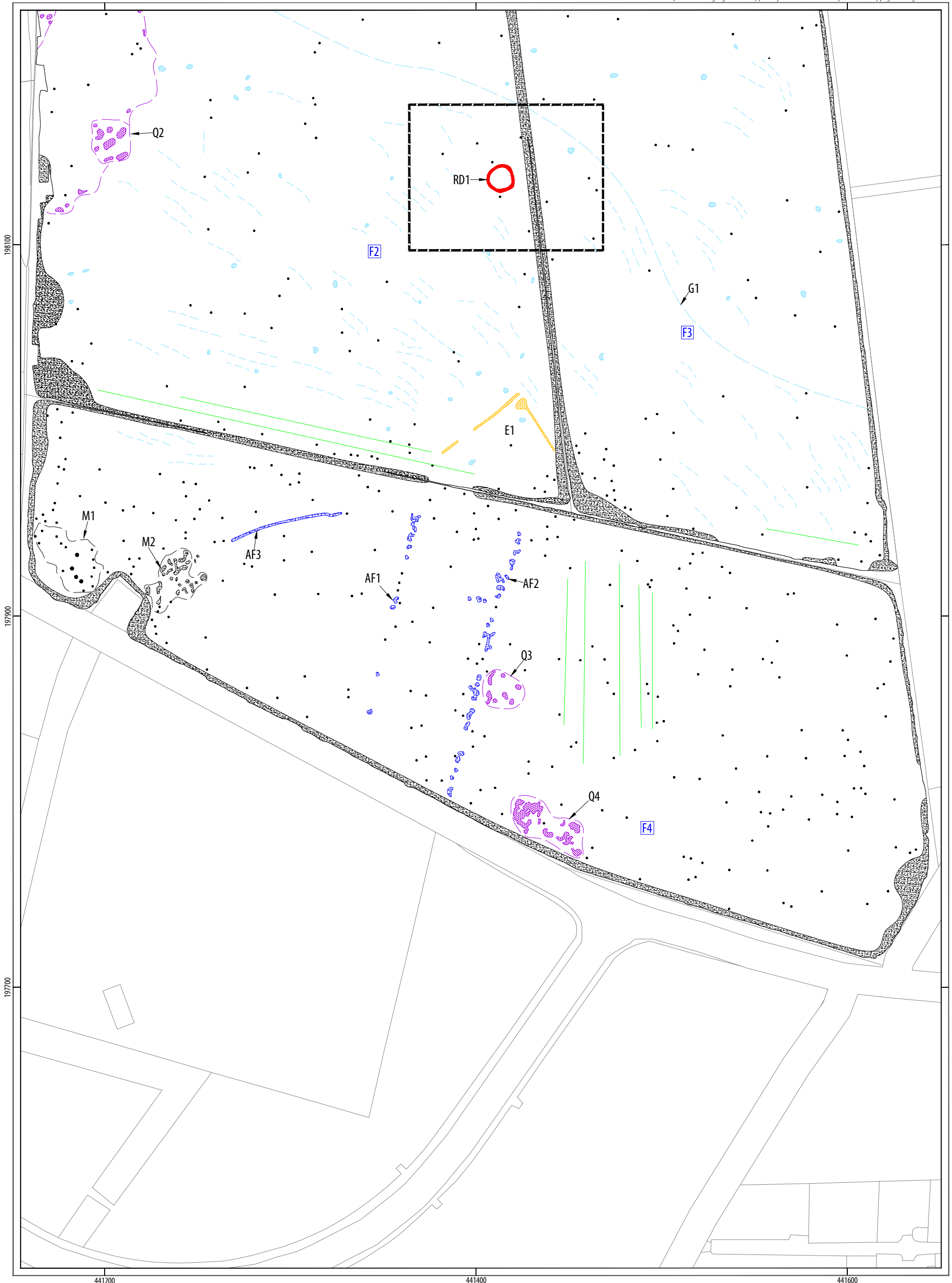
PROJECT KIBA/01
Land north of Abingdon Road
Kingston Bagpuize
Oxfordshire

CLIENT Lioncourt Strategic Planning

**HEADLAND
ARCHAEOLOGY**

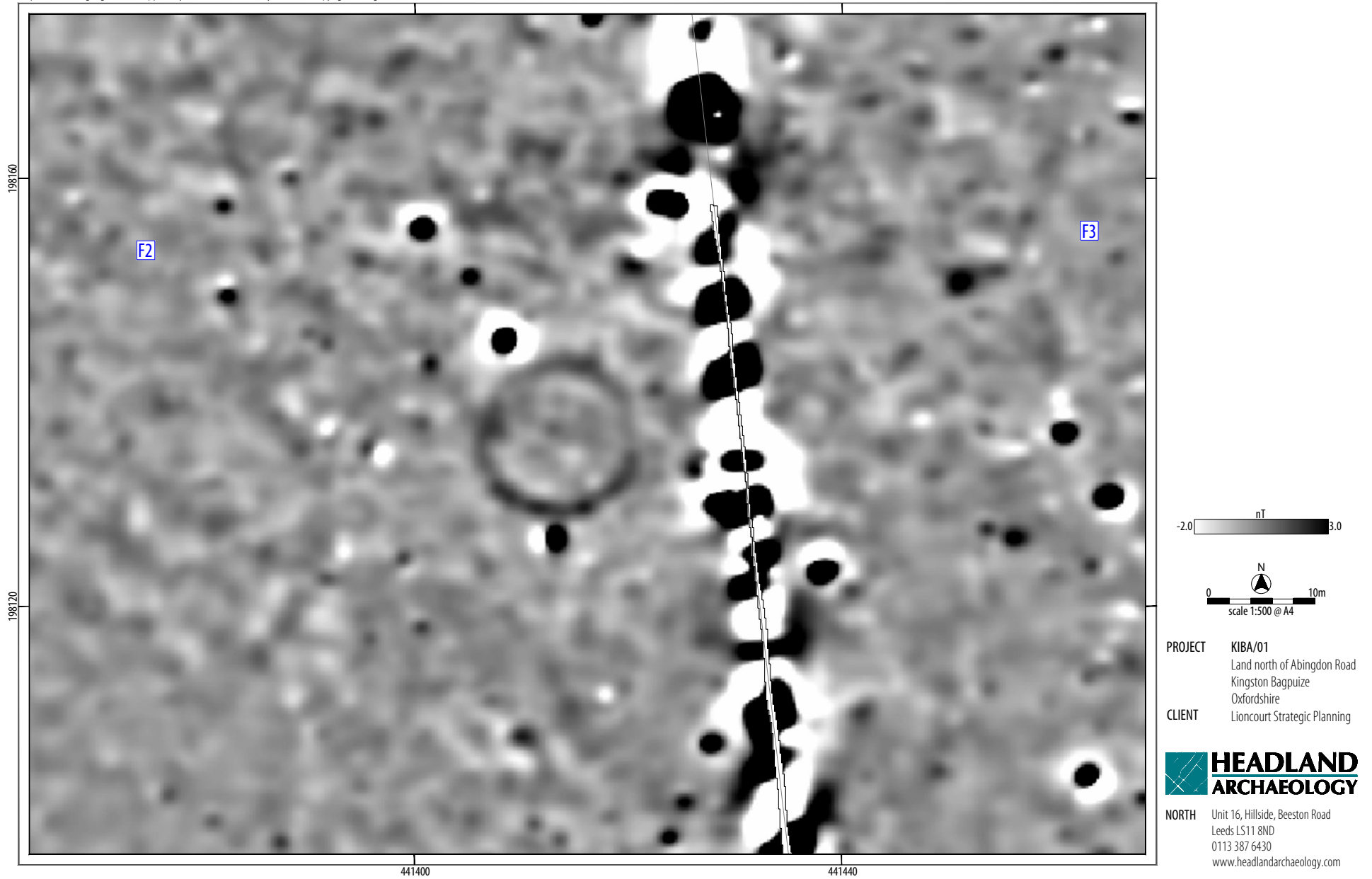
NORTH Unit 16, Hillside, Beeston Road
Leeds LS11 8ND
0113 387 6430
www.headlandarchaeology.com

Illus 13 XY trace plot of magnetometer data; Sector 2

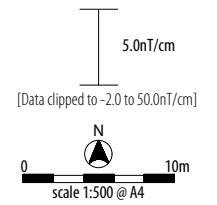
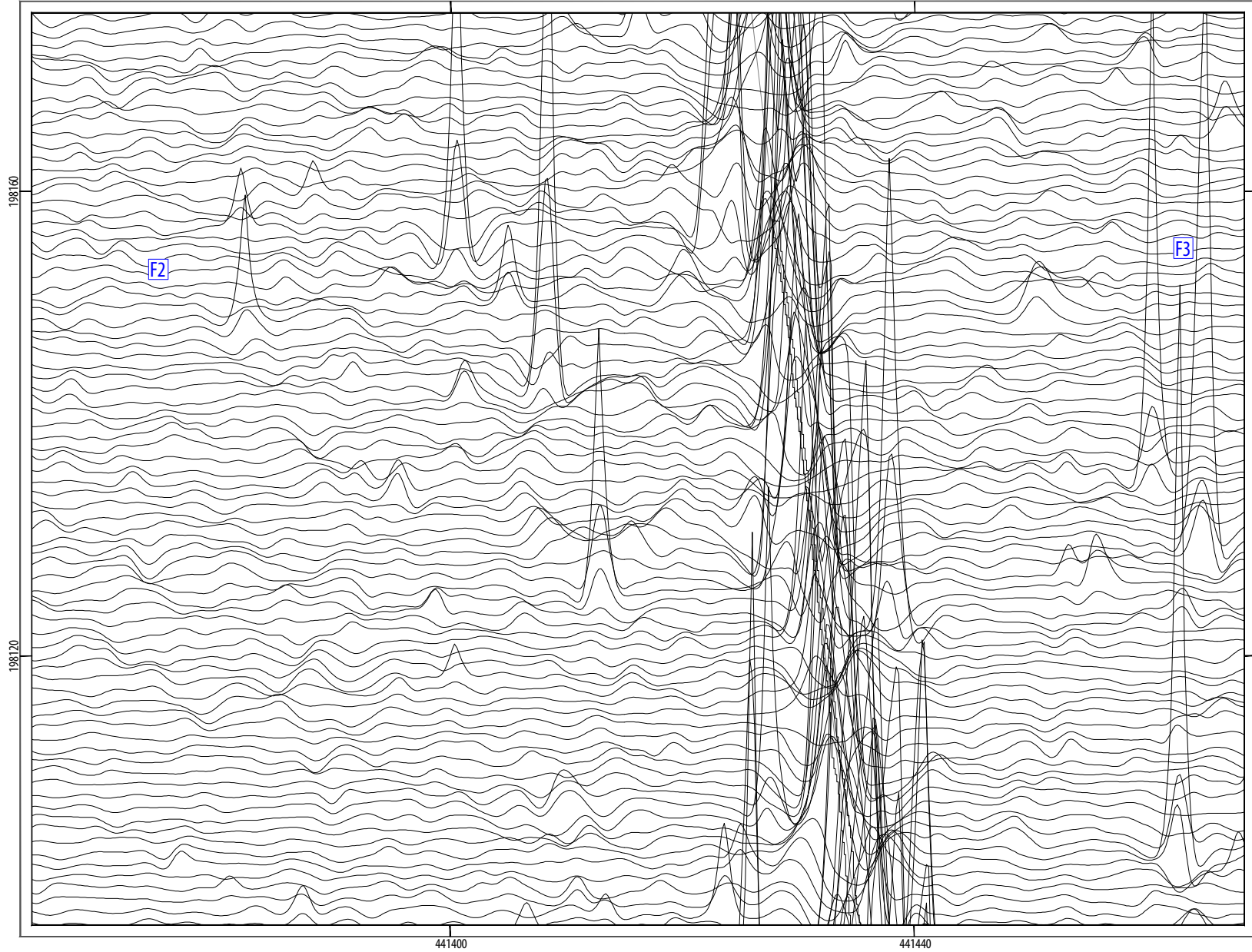


<p>TYPE OF ANOMALY</p> <ul style="list-style-type: none"> ● dipolar isolated ● magnetic disturbance ● magnetic enhancement — linear trend - - - linear trend 	<p>INTERPRETATION</p> <ul style="list-style-type: none"> ferrous material ferrous material former airfield infrastructure agricultural geology 	<p>TYPE OF ANOMALY</p> <ul style="list-style-type: none"> — magnetic enhancement — magnetic enhancement ● magnetic enhancement 	<p>INTERPRETATION</p> <ul style="list-style-type: none"> geological boundary quarry? archaeology? archaeology 	<p>ABBREVIATIONS</p> <ul style="list-style-type: none"> AF airfield E enclosure G geology M magnetic disturbance Q quarry RD ring-ditch 	<p>PROJECT</p> <p>KIBA/01 Land north of Abingdon Road Kingston Bagpuize Oxfordshire</p> <p>CLIENT</p> <p>Lioncourt Strategic Planning</p>	<p>HEADLAND ARCHAEOLOGY</p> <p>NORTH Unit 16, Hillside, Beeston Road Leeds LS11 8ND 0113 387 6430 www.headlandarchaeology.com</p>
--	---	--	--	--	---	--

Illus 14 Interpretation of magnetometer data; Sector 2



ILLUS 15 Processed magnetometer data; Inset 1

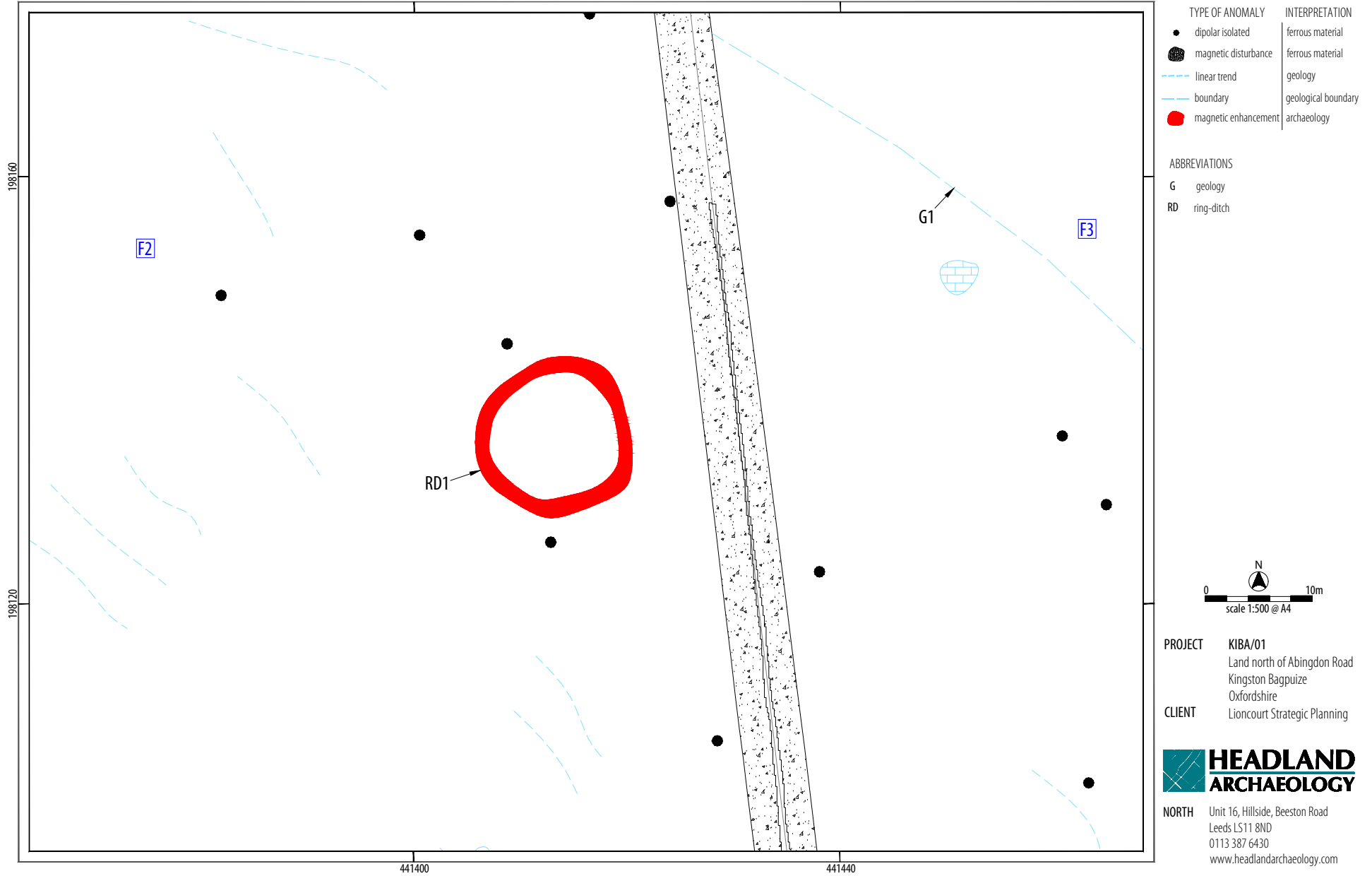


PROJECT KIBA/01
Land north of Abingdon Road
Kingston Bagpuize
Oxfordshire
CLIENT Lioncourt Strategic Planning



NORTH Unit 16, Hillside, Beeston Road
Leeds LS11 8ND
0113 387 6430
www.headlandarchaeology.com

ILLUS 16 XY trace plot of magnetometer data; Inset 1



ILLUS 17 Interpretation of magnetometer data; Inset 1

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

An initial survey base station was established using a Trimble VRS differential Global Positioning System (dGPS). The magnetometer data was georeferenced using a Trimble RTK differential Global Positioning System (Trimble R8s model).

Temporary sight markers were laid out using a Trimble VRS differential Global Positioning System (Trimble R8s model) to guide the operator and ensure full coverage. The accuracy of this dGPS equipment is better than 0.01m.

The survey data were then super-imposed 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

OASIS ID: headland5-260352

PROJECT DETAILS

PROJECT NAME	Land North Of Abingdon Road, Kingston Bagpuize
SHORT DESCRIPTION OF THE PROJECT	Headland Archaeology (UK) Ltd undertook a geophysical (magnetometer) survey covering 33 hectares at land north of Abingdon Road, Kingston Bagpuize, Oxfordshire, in advance of the proposed development of the site. The survey has identified an isolated ring-ditch, a probable barrow, within the centre of the site. No further anomalies of definite archaeological potential have been identified although a possible ditch has been identified close to Aelfrith's Dyke, an early medieval boundary which forms the western site limit. Rectilinear anomalies towards the south of the site have been ascribed some archaeological potential, perhaps being due to a ditched enclosure, although a geological origin is plausible. Five areas of possible extraction have been suggested whilst, within the south of the site, anomalies have been identified which correspond to the former RAF Kingston Bagpuize airfield. Overall, based on the results and interpretation of the survey, the archaeological potential across the majority of the site is considered to be low, confirming the results of the Archaeological and Heritage Assessment. The only exception is the ring-ditch which is ascribed a high archaeological potential.
PROJECT DATES	Start: 01-08-2016 End: 05-08-2016
PREVIOUS/FUTURE WORK	Not known / Not known
ANY ASSOCIATED PROJECT REFERENCE CODES	KIBA-01 - Sitecode
TYPE OF PROJECT	Field evaluation
SITE STATUS	None
CURRENT LAND USE	Cultivated Land 4 - Character Undetermined
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	Not recorded
PROMPT	National Planning Policy Framework - NPPF
POSITION IN THE PLANNING PROCESS	Between deposition of an application and determination
SOLID GEOLOGY (OTHER)	Kingston Formation - sandstone and Kingston Formation - ooidal limestone
DRIFT GEOLOGY (OTHER)	None
TECHNIQUES	Magnetometry

PROJECT LOCATION

COUNTRY	England
SITE LOCATION	OXFORDSHIRE VALE OF WHITE HORSE FYFIELD AND TUBNEY LAND NORTH OF ABINGDON ROAD, KINGSTON BAGPUIZE
POSTCODE	OX13 5FY
STUDY AREA	33 Hectares
SITE COORDINATES	SU 4139 9818 51.680394132431 -1.401285355438 51 40 49 N 001 24 04 W Point

PROJECT CREATORS

NAME OF ORGANISATION	Headland Archaeology
PROJECT BRIEF ORIGINATOR	The Environmental Dimension Partnership

PROJECT DESIGN ORIGINATOR Headland Archaeology
PROJECT DIRECTOR/MANAGER Harrison, D
PROJECT SUPERVISOR Bishop, R
TYPE OF SPONSOR/FUNDING BODY Developer

PROJECT ARCHIVES

PHYSICAL ARCHIVE EXISTS? No
DIGITAL ARCHIVE EXISTS? No
DIGITAL MEDIA AVAILABLE "Geophysics"
PAPER ARCHIVE EXISTS? No
PAPER MEDIA AVAILABLE "Report"

PROJECT BIBLIOGRAPHY 1

PUBLICATION TYPE Grey literature (unpublished document/manuscript)
TITLE Land north of Abingdon Road, Kingston Bagpuize, Oxfordshire: Geophysical Survey
AUTHOR(S)/EDITOR(S) Harrison, D.
AUTHOR(S)/EDITOR(S) Schmidt, A.
DATE 2016
ISSUER OR PUBLISHER Headland Archaeology
PLACE OF ISSUE OR PUBLICATION Leeds
DESCRIPTION A4 bound report

ENTERED BY David Harrison (david.harrison@headlandarchaeology.com)
ENTERED ON 17 August 2016



© 2016 by Headland Archaeology (UK) Ltd

SOUTH & EAST

Headland Archaeology
Building 68C, Wrest Park, Silsoe
Bedfordshire MK45 4HS

01525 861 578

southandeast@headlandarchaeology.com

MIDLANDS & WEST

Headland Archaeology
Unit 1, Clearview Court, Twyford Road
Hereford HR2 6JR

01432 364 901

midlandsandwest@headlandarchaeology.com

NORTH

Headland Archaeology
Unit 16, Hillside, Beeston Road
Leeds LS11 8ND

0113 387 6430

north@headlandarchaeology.com

SCOTLAND

Headland Archaeology
13 Jane Street
Edinburgh EH6 5HE

0131 467 7705

scotland@headlandarchaeology.com

www.headlandarchaeology.com