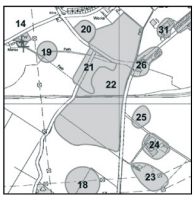
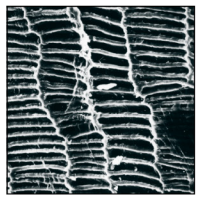
LAAD/01










LAND WEST OF HATFIELD LANE, ARMTHORPE, DONCASTER

GEOPHYSICAL SURVEY

commissioned by O & H Properties Ltd

Pre-application

September 2016

HEADLAND ARCHAEOLOGY

REGISTERED ORGANISATION CIfA

LAND WEST OF HATFIELD LANE, ARMTHORPE, DONCASTER

GEOPHYSICAL SURVEY

commissioned by O & H Properties Ltd

Pre-application

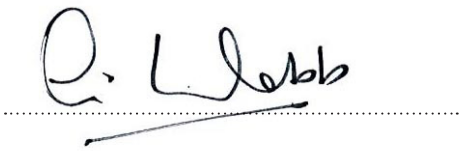
September 2016

project info

HA JOB NO.	LAAD/01
NGR	SE 62699 05884
PARISH	Armthorpe
LOCAL AUTHORITY	South Yorkshire
OASIS REF.	headland5-262533

project team

PROJECT MANAGER	Alistair Webb
AUTHOR	Alex Schmidt, Alistair Webb
FIELDWORK	Alex Schmidt, Joe Turner
GRAPHICS	Alex Schmidt, Beata Wieczorek-Oleksy, David Harrison
APPROVED BY	Alistair Webb – Project Manager



HEADLAND ARCHAEOLOGY

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

0113 387 6430
north@headlandarchaeology.com

www.headlandarchaeology.com

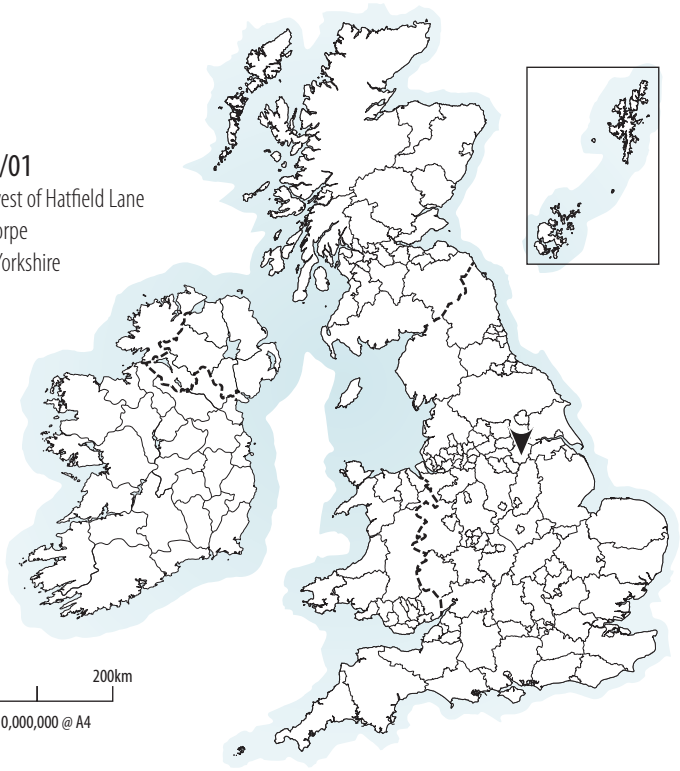
PROJECT SUMMARY

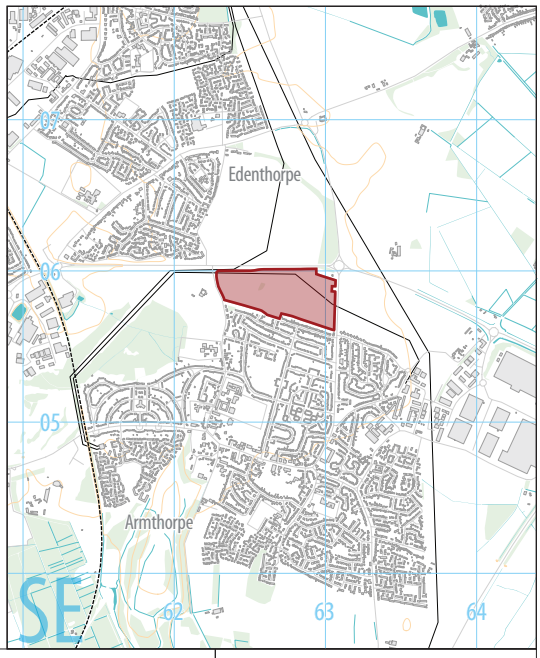
Headland Archaeology (UK) Ltd undertook a geophysical (magnetometer) survey covering approximately 24 hectares on land to the north of Armthorpe near Doncaster, South Yorkshire in advance of the possible development of the site. The survey has identified numerous linear anomalies across the whole of the site which are caused by soil filled ditches together forming a series of conjoining enclosures. These enclosures comprise part of a 'brickwork pattern' system of land division which dates to the later prehistoric and/or Romano-British period/s and which extends across much of this part of South Yorkshire and is particularly extensive immediately north of this site. The overall level of background magnetic noise across the site, caused by the presence of superficial sand and gravel deposits, means that it is very difficult to interpret any discrete features which could be indicative of occupation although there is no obvious pattern to indicate widespread settlement activity. Nonetheless, the survey has identified anomalies of clear archaeological potential across the site and therefore, the archaeological potential of the proposed development area is considered to be moderate to high.

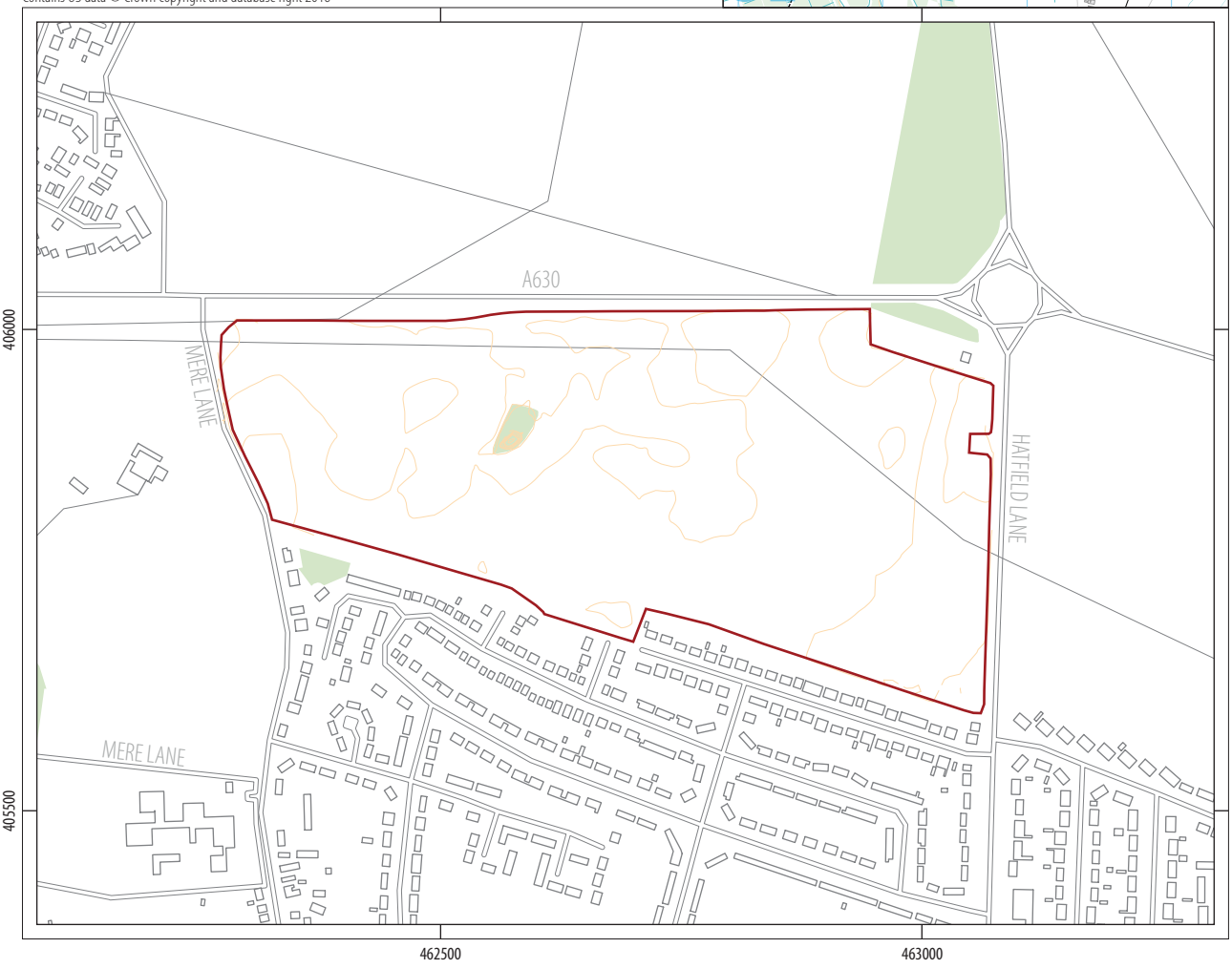
CONTENTS

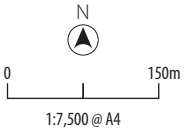
LIST OF ILLUSTRATIONS

LAAD/01
Land west of Hatfield Lane
Armthorpe
South Yorkshire









KEY
proposed development area

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

ILLUS 1 Site location

LAND WEST OF HATFIELD LANE, ARMTHORPE, DONCASTER

GEOPHYSICAL SURVEY

1 INTRODUCTION

Headland Archaeology (UK) Ltd was commissioned by O & H Properties Ltd to undertake a geophysical (magnetometer) survey north of Armthorpe, near Doncaster, South Yorkshire (see Illus 1). 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 Client and approved by Andrew Lines of the South Yorkshire Archaeology Service, 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 June 27th and June 29th 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 a single field totalling approximately 24 hectares to the north of Armthorpe, Doncaster and is bound to the north by the A630, to the east by Hatfield Lane, to the south by residential properties and to the west by Mere Lane. The site is flat and lies at approximately 13m above Ordnance Datum. At the time of the survey the field was under a mature potato crop (see Illus 2).

1.2 GEOLOGY AND SOILS

The underlying bedrock geology comprises Nottingham Castle Sandstone Formation which is overlain to the north and east by River Terrace Deposits (sand and gravel) and to the south and west by Glaciofluvial sands and gravels (see Illus 3 - NERC 2016).

The soils are classified in the Soilscape 10 association which are characterised as freely draining slightly acid sandy soils (Cranfield University 2016).

2 ARCHAEOLOGICAL BACKGROUND

The PDA is located within a landscape of high archaeological potential. An Archaeological and Heritage Assessment (Environmental Dimension Partnership 2016) concluded that there is cropmark evidence for a prehistoric to Romano-British 'brickwork pattern' field system to survive within the PDA (see Illus 3). More extensive cropmarks are recorded in the surrounding landscape, particularly to the immediate north of the PDA. There is also the implicit potential for associated activity, such as settlement or industrial activity, to be found on the site. The potential for significant archaeology from all other periods was considered to be low.

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

ILLUS 2 General view of Field 1, looking east

these slight variations, detailed plans of sites can be obtained as buried features often produce reasonably characteristic anomaly shapes and strengths (Gaffney and 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 V3.0.28.4 (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 1:20,000. Illus 2 consists of a general site condition photograph. Illus 3 shows the greyscale magnetometer data overlain by geological detail and cropmarks. A large scale (1:2,500) survey location plan showing the processed greyscale magnetometer data is presented in Illus 4. Illus 5 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 1:1,250 in Illus 6 to Illus 14 inclusive.

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.

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

Geological detail and Overview – Illus 4 and 5

A plethora of discrete anomalies caused by the presence of clusters of magnetic gravels within the superficial deposits can be clearly seen with two distinct clusters of anomalies recorded to the east of the site and along the western and southern boundary. Against this variable background numerous linear anomalies can be identified which confirm the presence of a 'brickwork pattern' field system.

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.

Several high magnitude dipolar anomalies (A–see Illus 5 and 8) are caused by the proximity of electricity pylons. In addition, there is notable disturbance directly between these anomalies, (B–see Illus 5 and 8) west to east across the north of the site. This is caused by interference from the overhead power lines.

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

4.2 AGRICULTURAL ANOMALIES

Several linear anomalies are identified across the survey area that are interpreted as being caused by agricultural activity. Several weak linear trend anomalies are identified all of which are considered likely to relate to recent agricultural activity, including the curvilinear anomalies around the pond which are caused by the planting of the current potato crop.

Linear anomalies, C, D, E and F and curvilinear anomaly, G, (see Illus 5, 8 and 11) all locate boundaries/footpaths recorded on tithe plans and on Ordnance Survey mapping from the mid-18th century onwards.

Parallel linear anomalies (H–see Illus 5 and 11) do not correspond with any mapped features and are oblique to the current and historic field layout. They do however lead directly towards the pond and on this basis are interpreted as probably being indicative of drains leading to/from the pond or a boundary or track feature accessing the pond.

To the south-east of the site, curvilinear anomaly, I, (see Illus 5 and 14) aligned north-west to south-east, correlates with a boundary recorded on the 1773 tithe map but which is not recorded on any maps or plans after this date. This enigmatic anomaly does, however, appear to terminate and intersect with the 'brickwork' boundaries. It is unclear whether this anomaly is of prehistoric date, relating to the 'brickwork' field system or, possibly more likely, of post-medieval origin associated with a much later pattern of land division. If the latter it strongly suggests that some of these boundaries were extant for many hundreds of years.

4.3 GEOLOGICAL ANOMALIES

Across the PDA the magnetic background varies significantly with two distinct clusters of dense, high magnitude, discrete anomalies; one concentration in the eastern third of the site and the other running along the western and southern boundaries. These anomalies are caused by the magnetic properties of the superficial deposits with the dense clusters probably caused by concentrations of magnetic gravels. The approximate boundaries of these dense clusters of gravels are highlighted as geological boundaries J and K respectively.

Against this highly variable background the linear ditch type anomalies (see below) stand out particularly well where the magnetic gravels are most dense and it is considered likely that most of the below ground linear archaeological features have been identified by the survey in these particular areas.

Where the magnetic gravels are least concentrated, particularly to the western side of the site, the magnetic background is uniform resulting in a flat grey tone to the data plot, indicated as geological boundary, L. Here the magnetic contrast between the fill of the below ground features and the surrounding soils and superficial deposits is very low (see Illus 3) and linear ditch type anomalies clearly identifiable to the north and south, become extremely weak.

4.4 ARCHAEOLOGICAL AND POSSIBLE ARCHAEOLOGICAL ANOMALIES

The survey has identified numerous linear anomalies, caused by soil filled ditches, that together form a series of conjoining enclosures/fields of varying size and dimension characteristic of 'brickwork pattern' land division of the later prehistoric and Romano-British periods. The survey has clearly demonstrated that the level of activity within the PDA is much more extensive than indicated by the cropmarks. As discussed above the below ground features are more clearly identifiable against a high magnetic background becoming less readily detectable where the magnetic background is more uniform.

To the west of the PDA six relatively small enclosures/fields (E1–E6–see Illus 5 and Illus 8) are identified (two or more sides clearly defined), aligned along a north-north-east/south-south-west axis. Eighty metres to the south-east a single, much smaller, square enclose, E7, is aligned north-east/south-west.

To the east of the PDA a further nine enclosures (E8–E17–see Illus 11 and Illus 14) are identified. The overall size of the enclosures in this part of the site are larger than those to the west. It is not clear whether this suggests a difference in use or a different phase of activity.

Also identified across the PDA are a series of discontinuous and fragmentary linear anomalies, M, N, O and P, aligned north-north-east/south-south-west, and Q and R, aligned north-west/south-east (see Illus 5, 8, 11 and 14) and all on the same basic alignment

as the brickwork system. These linear anomalies almost certainly form the sides of other enclosures and have for the most part been interpreted as of probable archaeological origin. It is not clear whether the discontinuous nature of these anomalies (and the other anomalies which clearly do form well-defined enclosures) is due to the differential truncation of the below ground features or due to the variable magnetic contrast which is clearly demonstrated across the site. If the latter explanation is correct, the archaeological potential of the site may be greater than currently understood.

5 CONCLUSION

The geophysical survey has clearly confirmed the continuation of the 'brickwork pattern' of land division, more extensively revealed to the immediate north of the PDA, and that it is significantly more extensive than indicated by the cropmarks.

The magnetic background across the site is highly variable (influenced by changes in the composition of the superficial deposits) and this has resulted in the (probable) differential identification of linear anomalies. For this reason it is uncertain whether the survey has identified the full extent of the archaeology on this site. However, on balance it is thought that the majority of the surviving underlying brickwork pattern field system probably has been identified and that there is no discernible pattern to suggest any wide-scale settlement activity although this possibility cannot be dismissed.

Several boundaries recorded on tithe maps and historic mapping from the mid-18th century onwards have also been identified. Some of these boundaries clearly align with the brickwork system and in at least one instance appear to terminate at, or intersect with, the brickwork system. This suggests that the basic pattern and alignment of land division, possibly established in pre-Roman times, was still at least partially extant in the mid-18th century and through to the present day.

Therefore, based solely on the results and interpretation of the geophysical data, the archaeological potential of the site is assessed as moderate to high throughout.

6 REFERENCES

Chartered Institute for Archaeologists (ClfA) 2014 ***Standard and guidance for archaeological geophysical survey*** [online document] Published December 2014 @ http://www.archaeologists.net/sites/default/files/ClfAS&GFieldevaluation_1.pdf

Cranfield University 2016 ***Cranfield Soil and Agrifood Institute Soilscapes*** [online] Accessed 30 June 2016 from www.landis.org.uk/soilscapes/

Department of Communities and Local Government (DCLG) 2012 ***National Planning Policy Framework*** [online document] Accessed June 2016 from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

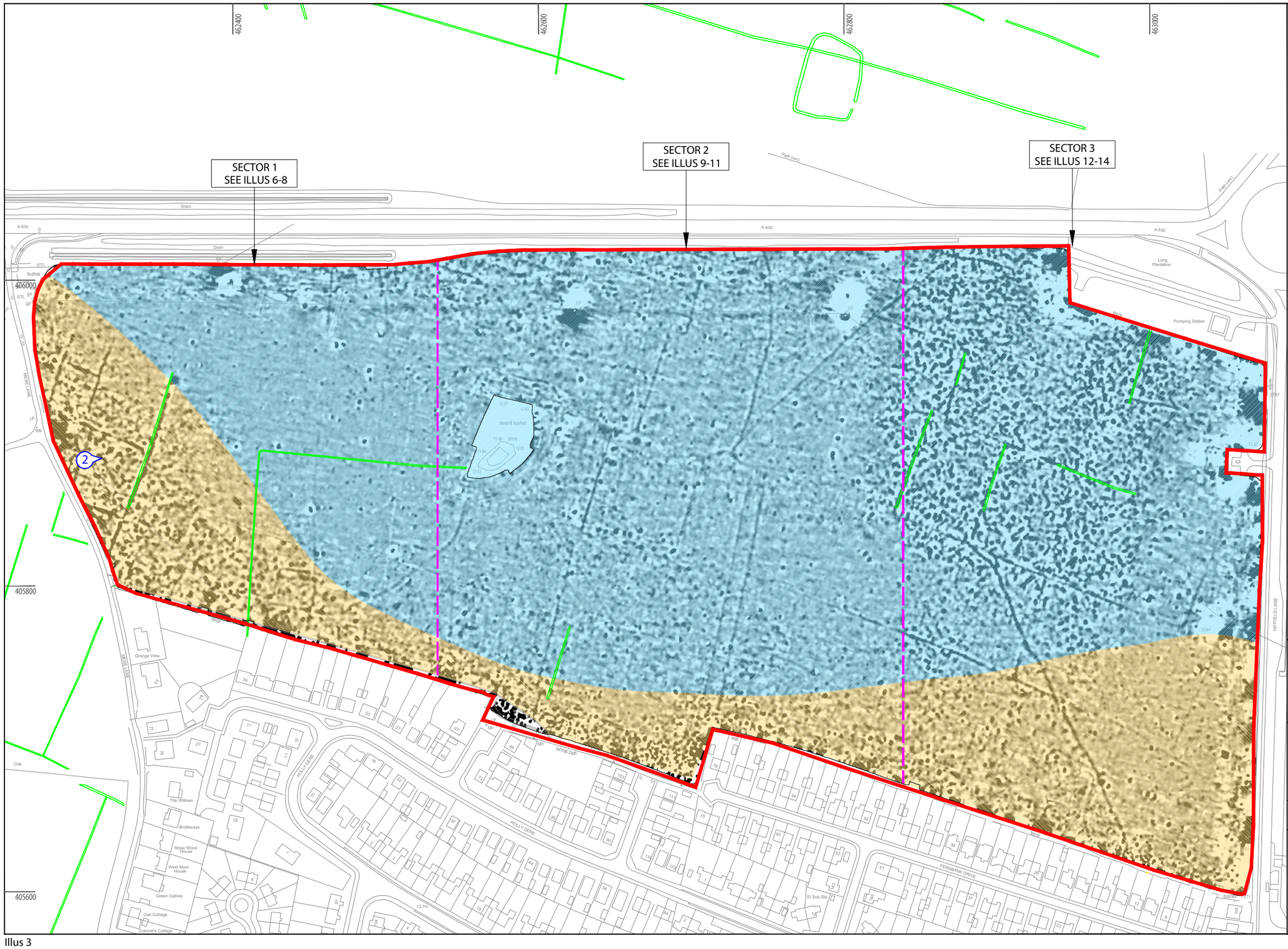
English Heritage 2008 ***Geophysical Survey in Archaeological Field Evaluation: Research and Professional Services Guidelines*** (2nd edition) [online document] Accessed June 2016 from http://content.historicengland.org.uk/images-books/publications/geophysical-survey-in-archaeological-field-evaluation/geophysics-guidelines.pdf

Environmental Dimension Partnership 2016 ***Armthorpe, Doncaster Archaeological and Heritage Assessment EDP Client Report (Ref. EDP2573_01a)***

Gaffney, C & Gater, J 2003 ***Revealing the Buried Past: Geophysics for Archaeologists*** The History Press: Stroud

Headland Archaeology 2016 ***Land at Armthorpe, Doncaster Geophysical Survey Written Scheme of Investigation*** Unpublished document

Natural Environment Research Council (NERC) 2016 ***British Geological Survey*** [online] Accessed 30 June 2016 from http://www.bgs.ac.uk/



PROJECT Land west of Hatfield Lane
Armthorpe
Doncaster
(LAAD/01)

CLIENT O & H Properties Ltd

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

Illus 3
Survey location showing cropmark data and superficial deposits (after BGS 2016)

PROJECT Land west of Hatfield Lane
Armthorpe
Doncaster
(LAAD/01)

CLIENT O & H Properties Ltd

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

Illus 4
Survey location showing processed greyscale magnetometer data

PROJECT Land west of Hatfield Lane
Armthorpe
Doncaster
(LAAD/01)

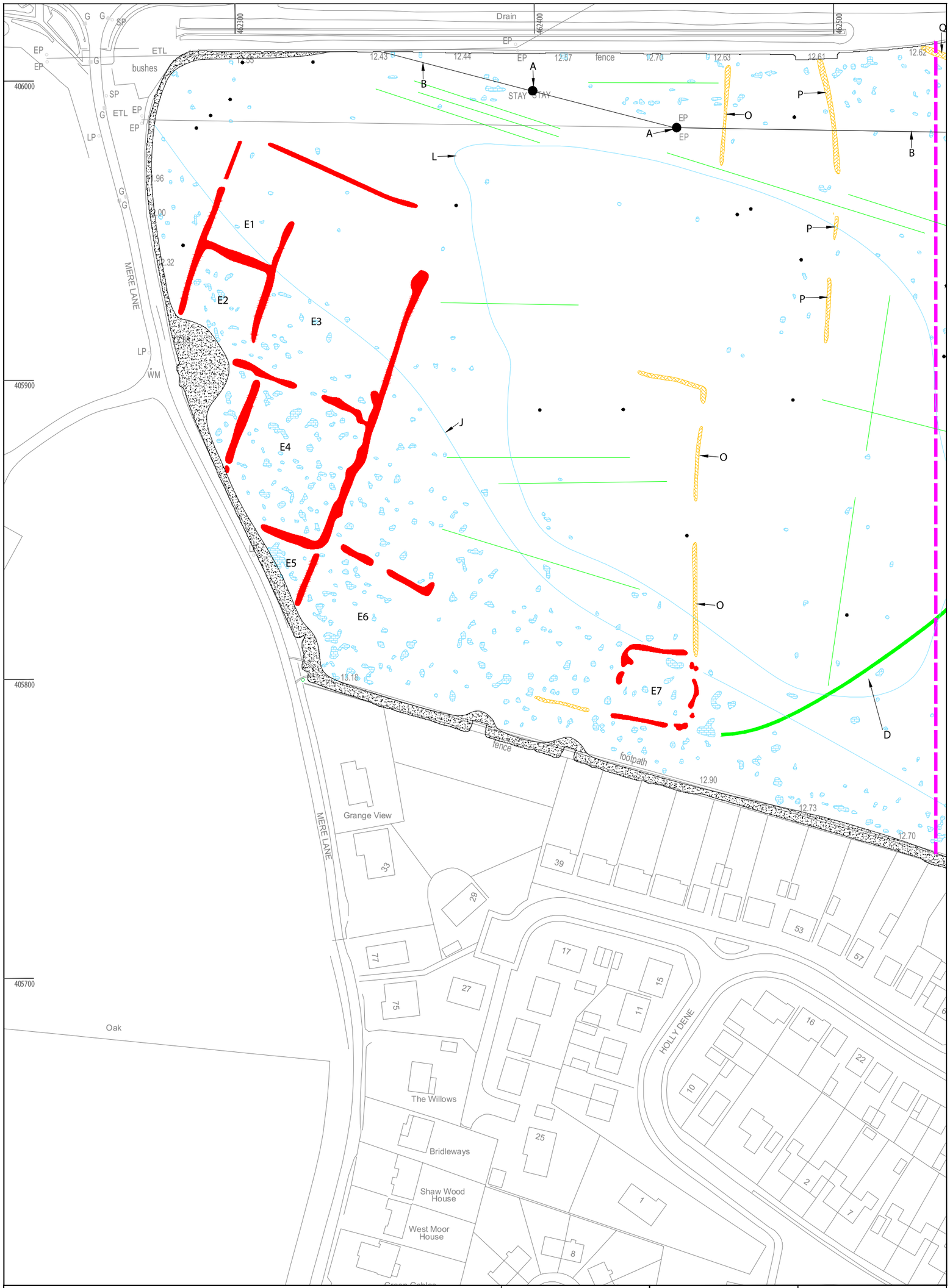
CLIENT O & H Properties Ltd

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

Illus 5
Overall interpretation of magnetometer data

Illus 6
Processed greyscale magnetometer data; Sector 1

Illus 7
XY trace plot of magnetometer data; Sector 1



Illus 8
Interpretation of magnetometer data; Sector 1

Sector boundary

nT
-1.0 2.0

N
0 25m
scale 1:1,250 @ A3

PROJECT Land west of Hatfield Lane
Armthorpe
Doncaster
(LAAD/01)

CLIENT O & H Properties Ltd

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

Illus 9
Processed greyscale magnetometer data; Sector 2

Sector boundary

10.0nT/cm

N

0 25m

scale 1:1,250 @ A3

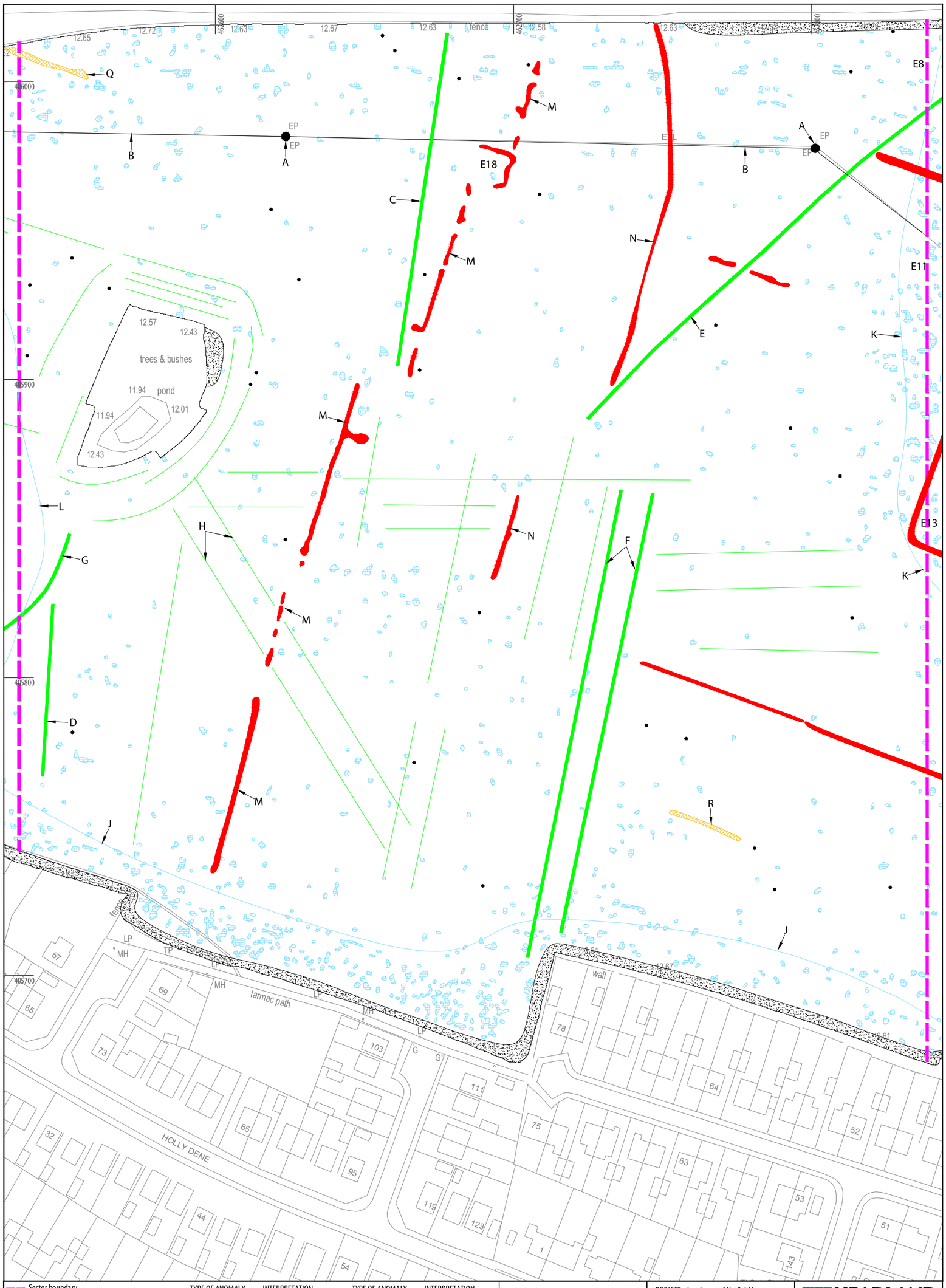
PROJECT Land west of Hatfield Lane
Armthorpe
Doncaster
(LAAD/01)

CLIENT O & H Properties Ltd

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 2



Sector boundary

TYPE OF ANOMALY	INTERPRETATION
Dipolar Isolated	Ferrous Material
Magnetic Disturbance	Ferrous Material
Linear Trend	Agricultural
Linear	Former Field Boundary
Linear	Geological variation
Magnetic Enhancement	Geology

TYPE OF ANOMALY	INTERPRETATION
Magnetic Enhancement	Archaeology?
Magnetic Enhancement	Archaeology

N

0 25m

scale 1:1,250 @ A3

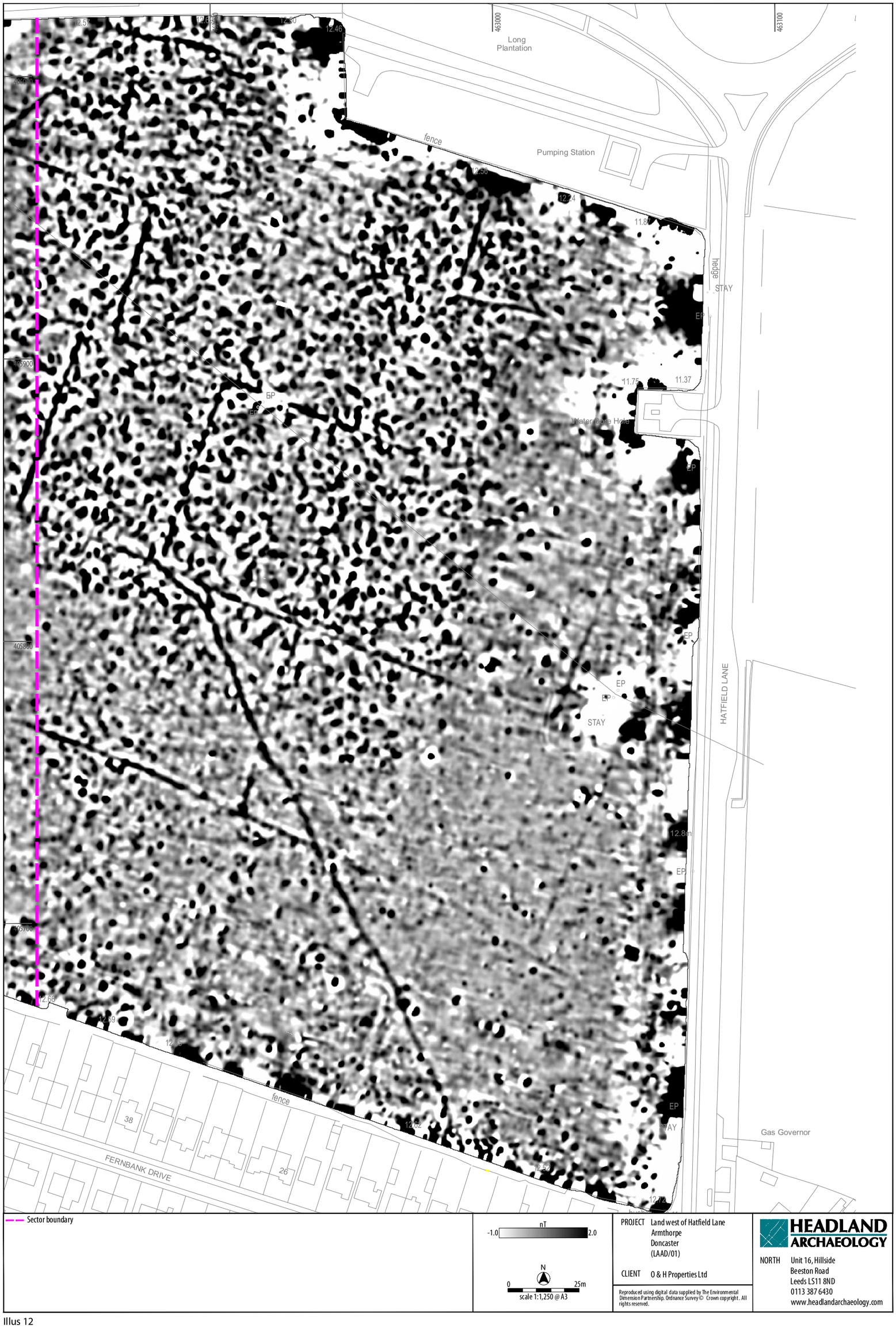
PROJECT Land west of Hatfield Lane
Armthorpe
Doncaster
(LAAD/01)

CLIENT O & H Properties Ltd

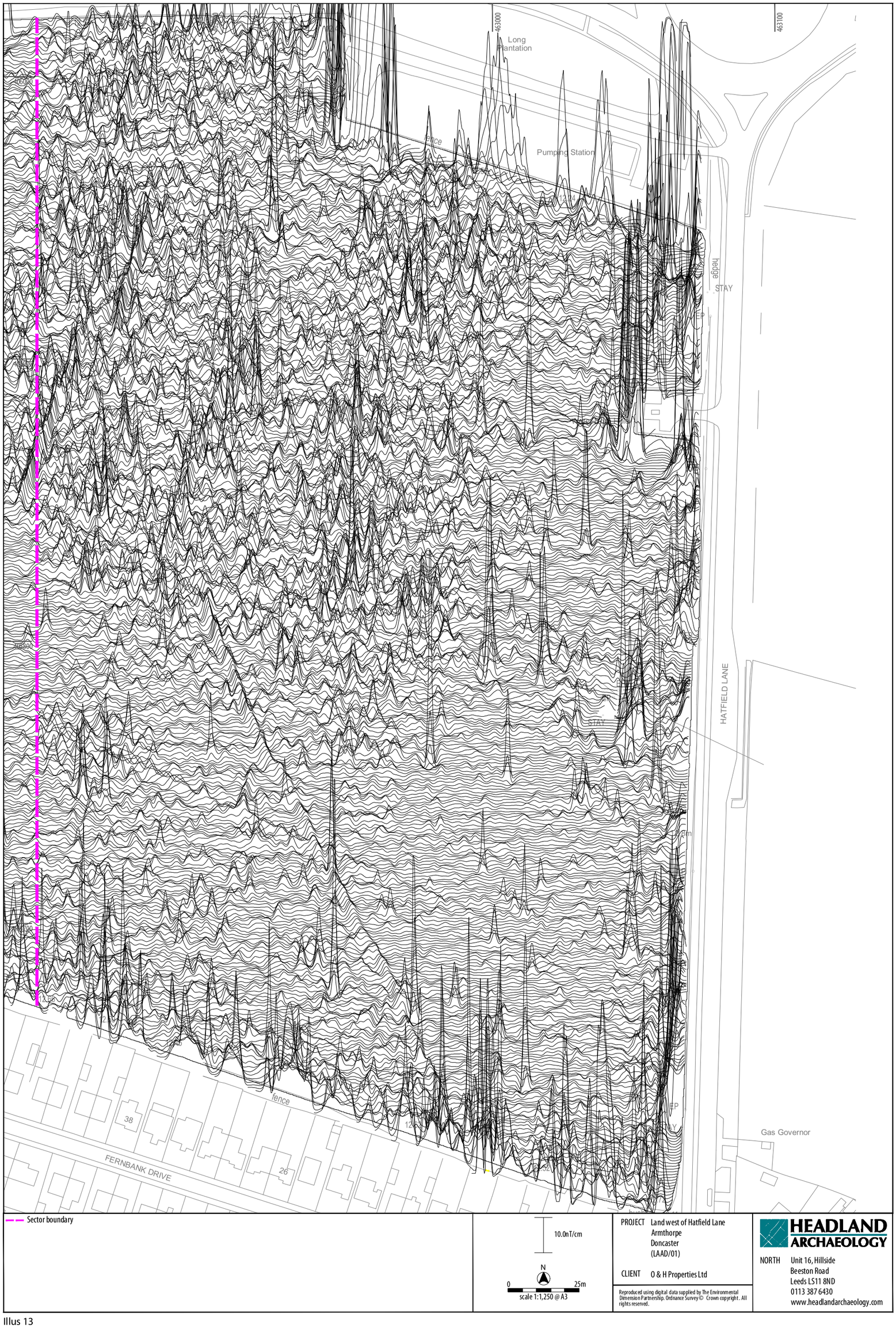
HEADLAND ARCHAEOLOGY

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

Illus 11
Interpretation of magnetometer data; Sector 2



Illus 12
Processed greyscale magnetometer data; Sector 3



Illus 13
XY trace plot of magnetometer data; Sector 3

Illus 14
Interpretation of magnetometer data; Sector 3

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: headland5-262533

PROJECT DETAILS	
Project name	Land west of Hatfield Lane, Armthorpe, Doncaster
Short description of the project	Headland Archaeology (UK) Ltd undertook a geophysical (magnetometer) survey covering approximately 24 hectares on land to the north of Armthorpe near Doncaster, South Yorkshire in advance of the possible development of the site. The survey has identified numerous linear anomalies across the whole of the site which are caused by soil filled ditches together forming a series of conjoining enclosures. These enclosures comprise part of a 'brickwork pattern' system of land division which dates to the later prehistoric and/or Romano-British period/s and which extends across much of this part of South Yorkshire and is particularly extensive immediately north of this site. The overall level of background magnetic noise across the site, caused by the presence of superficial sand and gravel deposits, means that it is very difficult to interpret any discrete features which could be indicative of occupation although there is no obvious pattern to indicate widespread settlement activity. Nonetheless, the survey has identified anomalies of clear archaeological potential across the site and therefore, the archaeological potential of the proposed development area is considered to be moderate to high.
Project dates	Start: 27-06-2016 End: 29-06-2016
Previous/future work	Not known / Not known
Any associated project reference codes	LAAD/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	Pre-application
Solid geology (other)	Nottingham Castle Sandstone Formation
Drift geology (other)	River Terrace Deposits (sand and gravel) and Glaciofluvial sands and gravels
Techniques	Magnetometry

PROJECT LOCATION	
Country	England
Site location	SOUTH YORKSHIRE DONCASTER ARMTHORPE Land west of Hatfield Lane, Armthorpe
Study area	24 Hectares
Site coordinates	SE 62699 05884 53.545600757297 -1.053657652408 53 32 44 N 001 03 13 W Polygon

PROJECT CREATORS	
Name of Organisation	Headland Archaeology
Project brief originator	The Environmental Dimension Partnership
Project design originator	Headland Archaeology
Project director/manager	Webb, A.

Project supervisor	Schmidt, A
Type of sponsor/funding body	Developer

PROJECT ARCHIVES	
Physical Archive Exists?	No
Digital Archive recipient	In house
Digital Contents	"other"
Digital Media available	"Geophysics"
Paper Archive Exists?	No

PROJECT BIBLIOGRAPHY 1	
Publication type	Grey literature (unpublished document/manuscript)
Title	Land west of Hatfield Lane, Armthrorpe, Doncaster: Geophysical Survey
Author(s)/Editor(s)	Schmidt, A. and Webb, A.
Other bibliographic details	LAAD/01
Date	2016
Issuer or publisher	Headland Archaeology
Place of issue or publication	Edinburgh
Description	A4 glue bound report

Entered by	Sam Harrison (sam.harrison@headlandarchaeology.com)
Entered on	14 September 2016

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