BRICKFIELD STUD, EXNING ROAD, NEWMARKET, SUFFOLK

DETAILED MAGNETOMETER SURVEY

Report Number: 1021

30th April 2013

BRICKFIELD STUD, EXNING ROAD, NEWMARKET, SUFFOLK

Detailed Magnetometer Survey

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Site Code	NKT 050	**NGR**	TL 6245 6513
Planning Ref.	-	**OASIS**	britanni1-149116
Approved By	Matthew Adams	**DATE**	30th April 2013

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ABSTRACT

A fluxgate gradiometer survey was undertaken on 11 hectares of short cropped grass paddocks at Brickfield Stud, Exning Road, Newmarket, Suffolk. Good survey conditions and receptive soils allowed a wide range of anomalies to be identified, the majority of which have been interpreted as having an archaeological origin. Parallel straight double ditch type anomalies interpreted as a potential Roman road, and perpendicular linear ditched enclosures that were similarly aligned, suggest that a "ladder" settlement has been recorded. One intriguing positive rectangular or possibly oval anomaly was also recorded that could be building structure or a barrow. Discrete anomalies indicative of pit type features, linear trends of possible agriculture origin and broad positive anomalies that may be of geological form were also recorded.

1.0 INTRODUCTION

On the 16th to the 22nd April 2013 Britannia Archaeology Ltd (BA) undertook detailed magnetometer survey over 11 hectares of land at Brickfield Stud, Exning Road, Newmarket, Suffolk (NGR TL 6245 6513) in advance of the proposed construction of football pitches. The survey was undertaken on behalf of Mr John Craven of the Archaeology Service at Suffolk County Council, in response to a request by Dr Jess Tipper of Suffolk County Council Archaeology Service/Conservation Team (SCCAS/CT) and forms part of a programme of archaeological works. The weather was mostly overcast with sunny spells and showers following a period of precipitation.

2.0 SITE DESCRIPTION

The site is located to the north-west of Newmarket, adjacent to the A14 and Exning Road. Agricultural fields and pastures are located to the south and a wooded area associated with Seven Springs lies to the west. The survey area comprises eight fields used for horse pasture/paddocks divided by wooden fencing and hedgerows.

The bedrock is described as Zig Zag Chalk Formation Chalk, a sedimentary rock formed approximately 94 to 99 million years ago in the Cretaceous Period when the local environment was previously dominated by warm chalk seas (BGS, 2013).

The superficial deposits are described as River Terrace Deposits comprising sand and gravel. These deposits formed up to 2 million years ago in the Quaternary Period when the local environment was previously dominated by rivers (BGS, 2013).

A site visit was undertaken by the on the 10th April 2013 to determine the suitability of the site for geophysical prospection. No issues were noted that would cause problems with the survey and the fields were found to be laid to short grass and well drained.

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3.0 PLANNING POLICIES

The archaeological investigation was carried out in consultation with SCCAS/CT, following guidance laid down by the *National Planning and Policy Framework* (NPPF, DCLD 2012) which replaces *Planning Policy Statement 5: Planning for the Historic Environment* (PPS5, DCLG 2010). The relevant local planning policy is the *Forest Heath Local Plan (Policy 8.20, 1995).*

3.1 National Planning Policy Framework (NPPF, DCLG March 2012)

The NPPF recognises that 'heritage assets' are an irreplaceable resource and planning authorities should conserve them in a manner appropriate to their significance when considering development. It requires developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible. The key areas for consideration are:

- The significance of the heritage asset and its setting in relation to the proposed development;
- The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance;
- Significance (of the heritage asset) can be harmed or lost through alteration or destruction, or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification;
- Local planning authorities should not permit loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred;
- Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets.

3.2 Forest Heath Local Plan, (Policy 8.20, 1995)

Forest Heath's local plan development plan was adopted in 1995 and has undergone some revision since. A Core Strategy was released in 2010 and an updated assessment of their Heritage Policy is pending. The Council's position on heritage assets is summarised as follows:

- *The District Council will seek provision to be made for the evaluation of archaeological sites of unknown importance and areas of high potential prior to the determination of development proposals. Where nationally or locally important sites, whether scheduled or not, and their settings, are effected by proposed development, there will be a presumption in favour of their preservation. On sites where there is no overriding case for preservation, development will not normally be permitted unless agreement has been reached to provide either for their preservation or for their recording and, where desirable, their excavation prior to development.*

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4.0 ARCHAEOLOGICAL BACKGROUND

Detailed magnetometer survey was undertaken over *c*.11 hectares of pasture land located in an area of archaeological potential which has not been subject to any previous archaeological investigation.

The following archaeological background is based on records held by the Suffolk Historic Environment Record (SHER) and Record Office, English Heritage PastScape (www.pastscape.org.uk), and the Archaeological Data Service (www.ads.ahds.ac.uk) (ADS).

Exning and the north-western area of Newmarket have significant archaeological remains and the site lies close to several locations of archaeological importance (Figure 1).

Palaeolithic (750,000 – 12000BC) implements were recovered from a pit to the south-east along Exning Road and represent the oldest finds in the area, Neolithic (4000-2200BC) flint implements were recovered from Studlands Industrial Park to the east.

Romano-British (43 – 410AD) sites and finds spots form the majority of records in the local archive. Several Roman wells were identified at New Yard to the south-east and one at Hamilton Stud to the south containing 2nd to 4th century AD pottery, human bone and flint tools. A Roman bath house is believed to be located immediately adjacent to the south-west at Seven Springs, additional wells and a 2nd century AD cremation vessel were also recovered just to the north-west of the A14.

The site of St Wendred's Well is possibly located to the south-west in Seven Springs and is the only record relating to the early medieval period (410-1066AD) in the immediate vicinity of the assessment area. An Anglo-Saxon cemetery was also recorded at Windmill Hill suggesting more significant activity in the wider region.

The records illustrate that the site has a significant potential for archaeological remains being present. This highest potential is for activity dating to the Romano-British period with a moderate potential for Anglo-Saxon and earlier prehistoric activity.

5.0 PROJECT AIMS

A systematic geophysical survey has been requested as part of a programme of archaeological investigation of the development area to enable the archaeological resource, both in quality and extent, to be accurately quantified.

6.0 METHODOLOGY

6.1 Instrument Type Justification

Britannia Archaeology Ltd employed a Bartington Dual Grad 601-2 fluxgate gradiometer to undertake the survey, because of its high sensitivity and rapid ground coverage, this

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instrument is known to work particularly well on the soils surrounding Newmarket. The surveyors noted that that the site had a moderately high magnetic background susceptibility on the fields located on the side of the slope, where the topsoil appears to be thinner. Paddocks located at the base of the rise had a lower magnetic susceptibility, probably due to the presence of deeper colluvial deposits.

6.2 Instrument Calibration

A minimum of 20 minutes was allowed in the morning for the magnetometers sensors to settle before the start of the first grid. The instrument was zeroed after every three grids to minimise the effect of sensor drift. Due to the size of the area and the fields being split into 8 paddocks, multiple set-up stations were employed during the survey. Those stations located on thinner soils on the side of the hill, had a fairly high background magnetic susceptibility causing difficulty when locating a suitable zero point. The fields present at the base of the hill had a low magnetic susceptibility making a suitable set-up station easier to locate. Sensor drift was noted during outbreaks of sunshine.

6.3 Sampling Interval and Grid Size

The sampling interval was set at 0.25m along 1m traverse intervals, providing 4 readings a metre, the magnetometer survey was undertaken on 20 x 20m grids.

6.4 Survey Grid Location

The survey grid was set out to the Ordnance Survey OSGB36 datum to an accuracy of ±0.1m employing a Leica Viva Glonnass Smart Rover GS08 differential global positioning system (DGPS). Data were then converted to the National Grid Transformation OSTN02 and the instrument was regularly tested using stations with known ETRS89 coordinates. The grids were positioned parallel to the road that bisects the site, for ease of survey progression (Figure 2).

6.5 Data Capture

Instrument readings were recorded on an internal data logger that were downloaded to a laptop at lunchtime and then also at the end of the day. The grid order was recorded on a BA pro-forma to aid in the creation of the data composites. Data were filed in job specific folders. These data composites were checked for quality on site by BA, allowing grids to be re-surveyed if necessary. The data were backed up onto an external storage device in the office and finally a remote server at the end of the day. A five metre exclusion zone was left between the boundaries and the survey area to reduce the amount of magnetic disturbance.

6.6 Data Presentation and Processing

Data are presented in both raw and processed data plots in greyscale format (Figures 3 and 5). An XY trace plot of the processed data has also been included (Figure 4). The

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raw data is presented with no processing, and was clipped to produce a uniform greyscale plot. The processed data schedule is also displayed below.

Raw Data:

Data Clipping: -3/+3 standard deviation.

Processed Data:

De-spike: X diameter = 3, Y diameter = 3, Threshold = 1, centre value=mean, replace with = mean;
Data Clipping: 1 standard deviation;
De-stripe: Traverse, Median, X (Horizontal).
Data Display: Clip to -1/+1.
De-stagger: -1 (Grids 277, 278, 281, 282, 283)

An interpretation plan characterising the anomalies recorded can be found at Figure 7, it draws together the evidence collated from both greyscale and XY trace plots (Figures 3, 4, 5 and 6). All figures are tied into the National Grid and printed at an appropriate scale.

6.7 Software

Raw data was downloaded using Bartington software Grad601 and will be stored in this format as raw data. The software used to process the data and produce the composites was DW Consulting's Archeosurveyor v2.0. Datasets were exported into AutoCAD and placed onto the local survey grid. An interpretation plot was then produced using AutoCAD.

6.8 Grid Restoration

Britannia Archaeology Ltd did not position any reference stations in the field due to the presence of horses. The grid can be relocated using the geo-referenced AutoCAD plot (Figure 2) to accurately target the location of the geophysical anomalies.

7.0 RESULTS & DISCUSSION

Numerous isolated dipolar 'iron-spike' responses have been recorded within every field surveyed (Figure 7). Archaeological artefacts may have caused these responses within the dataset, however it is more likely that they are indicative of modern cultural debris being introduced into the topsoil. These responses seem to be fairly evenly spaced throughout the fields with no apparent concentration, it is likely that the ferrous debris has been randomly lost or deposited during manuring.

Seventeen areas of magnetic disturbance have been identified, all of which are located on the perimeter of the field boundaries and are thought to have a modern origin. Despite a 5m exclusion zone between the survey area and the field boundary periphery, metal gates, water troughs and boundary fences have been recorded by the instrument.

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A strong dipolar linear trend present in the north-east corner of the dataset and aligned north-east to south-west, indicates the location of a modern ferrous service run.

Two weak negative linear responses in the south-western and south-eastern paddocks demarcate the previous location of two wooden-post fence boundaries that have been recently removed. Earthworks delineating their route were clearly extant at the time of the geophysical survey.

Geological anomalies are abundant within the two larger paddocks located at the base of the slope, in the northern half of the site. Twenty-seven weak positive anomalies were recorded that have a broad irregular shape. They are considered to have a geological origin and are possibly caused by pockets of magnetic gravel lying within the superficial deposits.

Weak positive linear trends are abundant in the southern half of the site, and are orientated north-south or north-west to south-east. An agricultural cause is considered to be most likely, however these trends are broad and discontinuous in nature which is also indicative of a geological formation.

Two areas of magnetic enhancement have been recorded within the centre of a set of perpendicular positive linear anomalies, centre-west of the site. Their cause is unclear, however they have been ascribed a possible archaeological origin due to their location within the enclosure.

Seven positive discrete anomalies have been recorded in the dataset and are all present within the south-eastern paddock, and located within a series of perpendicular linear anomalies. Their presence within these enclosure type anomalies increases the probability that they could be pits of archaeological origin.

An arrangement of perpendicular positive linear anomalies indicative of in-filled archaeological ditches and orientated *c.* north-south and east-west are present over the majority of the site. A set of very straight parallel positive linear anomalies on a north-south alignment in the south-eastern most paddock may define the drainage ditches of a road, possibly Roman in origin. This anomaly appears to run through three earlier perpendicular positive anomalies interpreted as enclosures, two of which have rounded corners which also indicates a Roman origin. The southern-most enclosure ditch type anomaly is more complex with internal perpendicular subdivisions.

Two perpendicular enclosure ditch type anomalies are also located on the western half of the survey, and are present on a similar alignment to those in the east. Eleven other positive linear anomalies follow this north-south/east-west arrangement, suggesting the preservation of a substantial field system or satellite settlement activity including a possible Roman ladder settlement.

A second set of parallel curving ditch type anomalies may indicate the presence of a second road or track way, present to the south-west of the survey area. Eight other positive linears aligned north-east to south-west have also been recorded, one of which runs through the enclosure type anomaly in the south-western corner of the plot. They

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have also been interpreted as having a probable archaeological origin, however their alignment suggests that they may belong to a different phase.

To the east of the second enclosure and centre-west of the data plot is a rectangular or oval positive anomaly. Its shape is not clear but it is possible that it could be a building structure or potentially a Bronze Age barrow. This anomaly was present on a slight rise before the slope levels out.

8.0 CONCLUSION

The good survey conditions and the receptive soils have identified a wide range of anomalies, the majority of which have been interpreted as having an archaeological origin. A substantial field system or possible Roman "ladder" settlement on a similar alignment to a probable road with at least four enclosure type anomalies were recorded. The readings do not reveal whether the potential road has a surface, further archaeological investigation should help to establish this. One intriguing positive rectangular or possibly oval anomaly was also recorded that could be building structure or a Bronze Age barrow.

It would be prudent to further investigate the anomalies that have been interpreted as being of geological and agricultural origin to test the interpretations given in this report.

9.0 PROJECT ARCHIVE AND DEPOSITION

A full archive will be prepared for all work undertaken in accordance with guidance from the *Selection, Retention and Dispersion of Archaeological Collections,* Archaeological Society for Museum Archaeologists, 1993. Arrangements will be made for the archive to be deposited with the relevant museum/HER Office.

10.0 ACKNOWLEDGEMENTS

Britannia Archaeology Ltd would like to thank John Craven of SCCAS for arranging access and the client Mr George Lambton. Our thanks also to Dr Jess Tipper of SCCAS/CT for his advice throughout the project.

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English Heritage PastScape www.pastscape.org.uk

Heritage Gateway www.heritagegateway.org.uk

Archaeological Data Service (ADS) www.ads.ahds.ac.uk

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English Heritage National List for England
www.english-heritage.org.uk/professional/protection/process/national-heritage-list-for-england

DEFRA Magic http://magic.defra.gov.uk/website/magic

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Appendix 1 – Technical Details

Magnetometer Survey

The magnetometer differs from the 'active' magnetic susceptibility meter by being a 'passive' instrument. Rather than injecting a signal into the ground it detects slight variations in the Earth's magnetic field caused by cultural and natural disturbance (Clark).

Thermoremanent magnetism is produced when a material containing iron oxides is strongly heated. Clay for example has a high iron oxide content that in a natural state is weakly magnetic, when heated these weakly magnetic compounds become highly magnetic oxides that a magnetometer can detect.

The demagnetisation of iron oxides occurs above a temperature known as the Curie point; for example haematite has a Curie point of 675 Celsius and magnetite 565C. At the time of cooling the iron oxides become permanently re-magnetised with their magnetic properties re-aligned in the direction of the Earth's magnetic field (Gaffney and Gater). The direction of the Earth's magnetic field shifts over time and these subtle alignment differences can be recorded. Kilns, hearths, baked clay and ovens can reach Curie point temperatures, and are the strongest responses apart from large iron objects that can be detected. Other cultural anomalies that can be prospected include occupation areas, pits, ditches, furnaces, sunken feature buildings, ridge and furrow field systems and ritual activity (David, 2011). Commonly recorded anomalies include modern ferrous service pipes, field drainage pipes, removed field boundaries, perimeter fences and field boundaries.

Fluxgate Gradiometers

Fluxgate gradiometers are sensitive instruments that utilise two sensors placed in a vertical plane, spaced 1 metre apart. The sensor above reads the Earth's magnetic (background) response while the sensor below records the local magnetic field. Both sensors are carefully adjusted to read zero before survey commences at a 'zeroing' point, selected for its relatively 'quiet' magnetic background reading. When differences in the magnetic field strength occur between the two sensors a positive or negative reading is logged. Positive anomalies have a positive magnetic value and conversely negative anomalies have a negative magnetic value relative to the site's magnetic background. Examples of positive magnetic anomalies include hearths, kilns, baked clay, areas of burning, ferrous material, ditches, sunken feature buildings, furrows, ferrous service pipes, perimeter fences and field boundaries. Negative magnetic anomalies include earthwork embankments, plastic water pipes and geological features.

The instruments are usually held approximately 0.30m to 0.50m above the ground surface and can detect to a depth of between 1-2metres. Best practice dictates that the optimal direction of traverse in Britain is east to west.

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Magnetic Anomalies

Linear trends
Linear trends can be both positive and negative magnetic responses. If they are broad, relatively weak or negative in nature they may be of agricultural or geological origin, for example periglacial channels, land drains or ploughing furrows. If the responses are strong positive trends they are more likely to be of archaeological origin. Archaeological settlement ditches tend to be rich in highly magnetic iron oxides that accumulate in them via anthropogenic activity and humic backfills. Conversely surviving banks will be negative in nature, the material is derived from subsoil deposits that is less likely to be positively magnetic. Curvilinear trends can also be recorded and are indicative of archaeological structures such as drip-gullies.

Discrete anomalies
Discrete anomalies appear as increased positive responses present within a localised area. They are caused by a general increase in the amount of magnetic iron oxides present within the humic back-fill of for example a rubbish pit.

'Iron spike' anomalies
These strong isolated dipolar responses are usually caused by ferrous material present in the topsoil horizon. They can have an archaeological origin but are usually introduced into the topsoil during manuring.

Areas of magnetic disturbance
An area of magnetic disturbance is usually associated with material that has been fired. For example areas of burning, demolition (brick) rubble or slag waste spreads. They can also be caused by ferrous material, e.g. close proximity to barbwire or metal fences and field boundaries, buried services, pylons and modern rubbish deposits.

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Appendix 2 – OASIS Form

OASIS ID: britanni1-149116

Project details

Project name	Brickfield Stud, Exning Road, Newmarket, Suffolk
Project dates	**Start:** 16-04-2013 **End:** 22-04-2013
Previous/future work	No / Yes
Any associated project reference codes	P1027 - Contracting Unit No.
	NMK 050 - HER event no.
Type of project	Field evaluation
Site status	None
Current Land use	Grassland Heathland 4 - Regularly improved
Monument type	NONE None
Significant Finds	NONE None
Methods & techniques	"Geophysical Survey"
Development type	Football Pitches
Prompt	Direction from Local Planning Authority - Direction 4
Position in the planning process	Pre-application
Solid geology	(other) Zig-Zag Chalk Formation
Drift geology	RIVER TERRACE DEPOSITS
Techniques	Magnetometry

Project location

Country	England
Site location	SUFFOLK FOREST HEATH NEWMARKET Brickfield
	Stud, Exning Road, Newmarket, Suffolk
Study area	11.00 Hectares
Site coordinates	TL 6245 6513 52 0 52 15 35 N 000 22 49 E Point

Project creators

Name of Organisation	Britannia Archaeology Ltd
Project brief originator	Local Authority Archaeologist and/or Planning
	Authority/advisory body
Project design originator	Timothy Schofield
Project director/manager	Timothy Schofield
Project supervisor	Matthew Adams
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Mr George Lambton

Project archives

Physical Archive Exists?	No
Digital Archive recipient	Suffolk HER

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Digital Contents	"Survey"
Digital Media available	"Geophysics", "Images raster / digital photography", "Images vector", "Survey", "Text"
Paper Archive recipient	Suffolk HER
Paper Contents	"Survey"
Paper Media available	"Map", "Photograph", "Plan", "Report", "Survey ", "Unpublished Text"

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Brickfield Stud, Exning Road, Newmarket, Suffolk; Detailed Magnetometer Survey
Author(s)/Editor(s)	Schofield, T.P.
Other bibliographic details	R1021
Date	2013
Issuer or publisher	Britannia Archaeology Ltd
Place of issue or publication	Stowmarket, Suffolk
Description	A4 Bound Report with fold-out A3 Figures.
URL	www.britannia-archaeology.com
Entered by	Tim Schofield (tim@britannia-archaeology.com)
Entered on	25 June 2013

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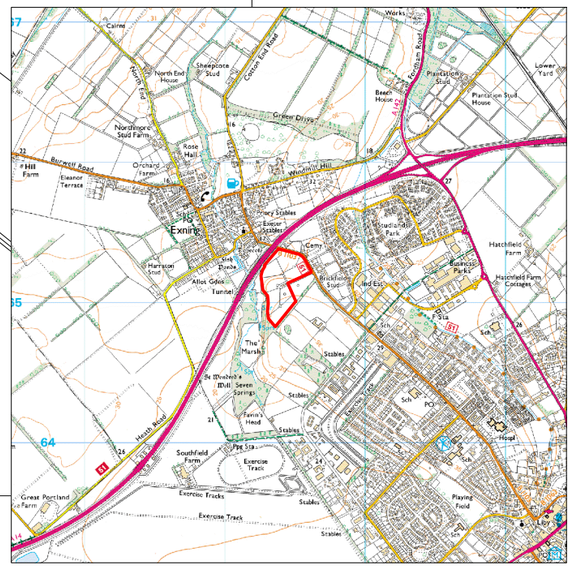

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N

Geophysical Survey Boundary

NGR: 562450, 265130

REPORT NUMBER: 1021

PROJECT:
BRICKFIELD STUD, EXNING ROAD, NEWMARKET, SUFFOLK

CLIENT:
Suffolk County Council

DESCRIPTION:
SITE LOCATION PLAN

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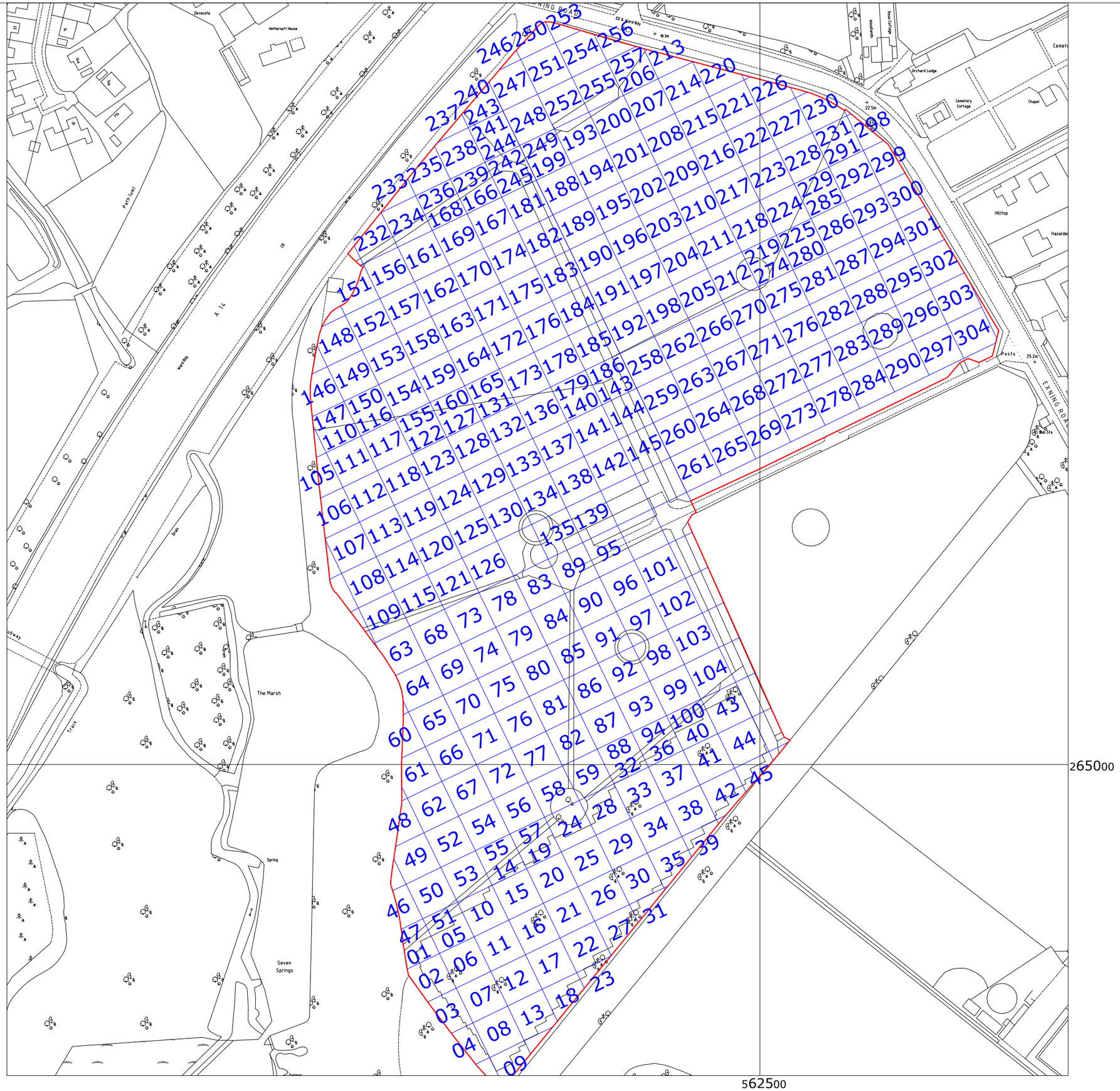
T: 01449 763034
E: info@britannia-archaeology.com
W: www.britannia-archaeology.com

SCALE: 1:2500 (0 – 100m)

PLOT:	APPROVED:	VERSION:
A3	MCA	01
DATE: APR 2013	AUTHOR: TPS	FIGURE: 01



NGR: 562450, 265130

REPORT NUMBER: 1021

PROJECT: BRICKFIELD STUD, EXNING ROAD, NEWMARKET, SUFFOLK

CLIENT: Suffolk County Council

DESCRIPTION: SITE GRID LOCATION PLAN

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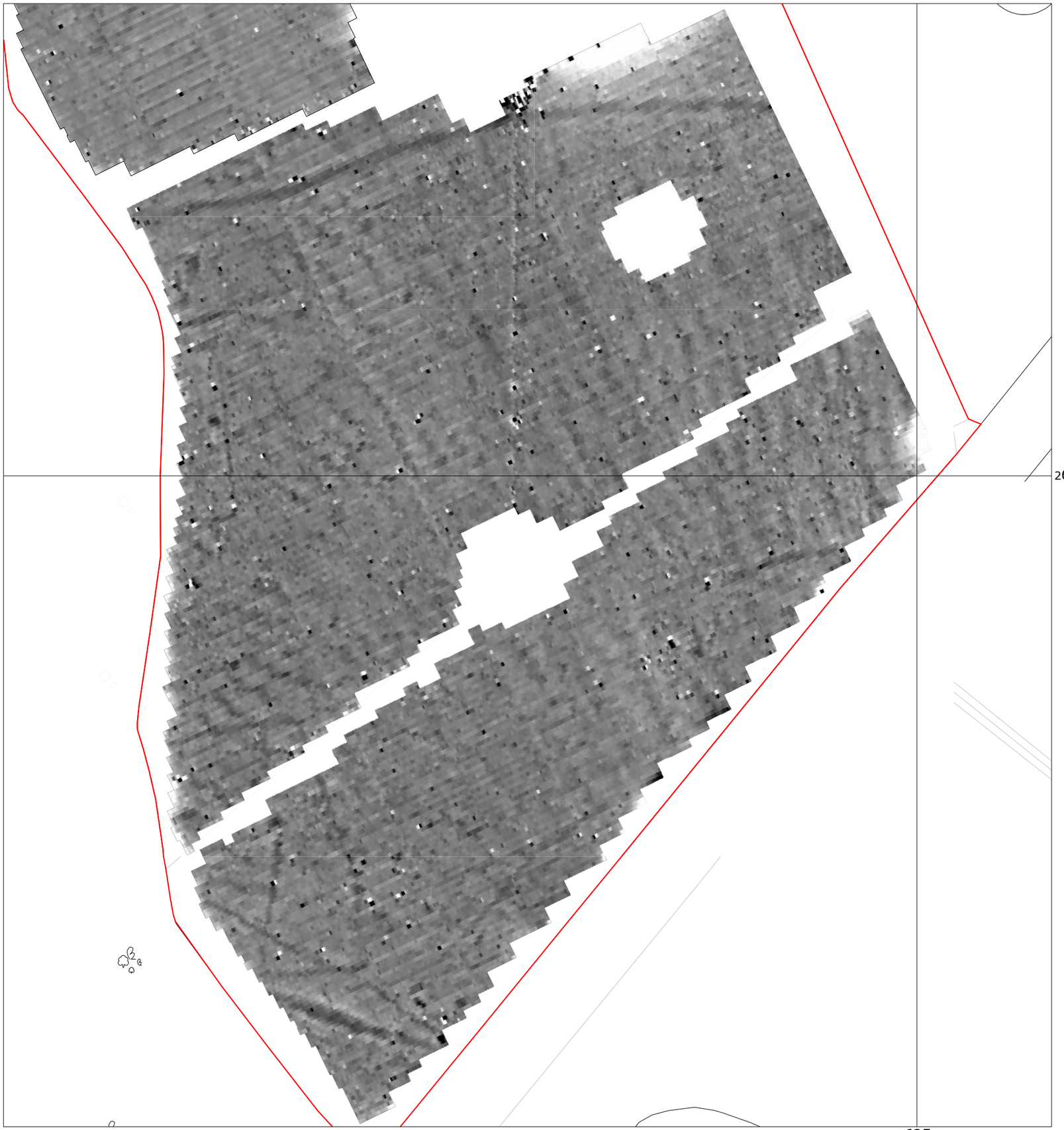
SCALE: 1:2000 (0 – 80m)

PLOT:	APPROVED:	VERSION:
A3	MCA	01
DATE: APR 2013	AUTHOR: TPS	FIGURE: 02



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-3nT

Geophysical Survey Boundary

NGR: 562450, 265130

REPORT NUMBER: 1021

PROJECT:
BRICKFIELD STUD, EXNING ROAD, NEWMARKET, SUFFOLK

CLIENT:
Suffolk County Council

DESCRIPTION:
RAW MAGNETOMETER GREYSCALE PLOT

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SCALE: 1:1000 (0 – 50m)

PLOT: A3

APPROVED: MCA

VERSION: 01

DATE: APR 2013

AUTHOR: TPS

FIGURE: 3A

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-3nT

Geophysical Survey Boundary

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PROJECT:
BRICKFIELD STUD, EXNING ROAD, NEWMARKET, SUFFOLK

CLIENT:
Suffolk County Council

DESCRIPTION:
RAW MAGNETOMETER GREYSCALE PLOT

BRITANNIA ARCHAEOLOGY LTD

4 THE MILL, CLOVERS COURT, SUFFOLK
IP14 1RB

T: 01449 763034
E: info@britannia-archaeology.com
W: www.britannia-archaeology.com

SCALE: 1:1000 (0 – 50m)

PLOT:	APPROVED:	VERSION:
A3	MCA	01
DATE: APR 2013	AUTHOR: TPS	FIGURE: 3B

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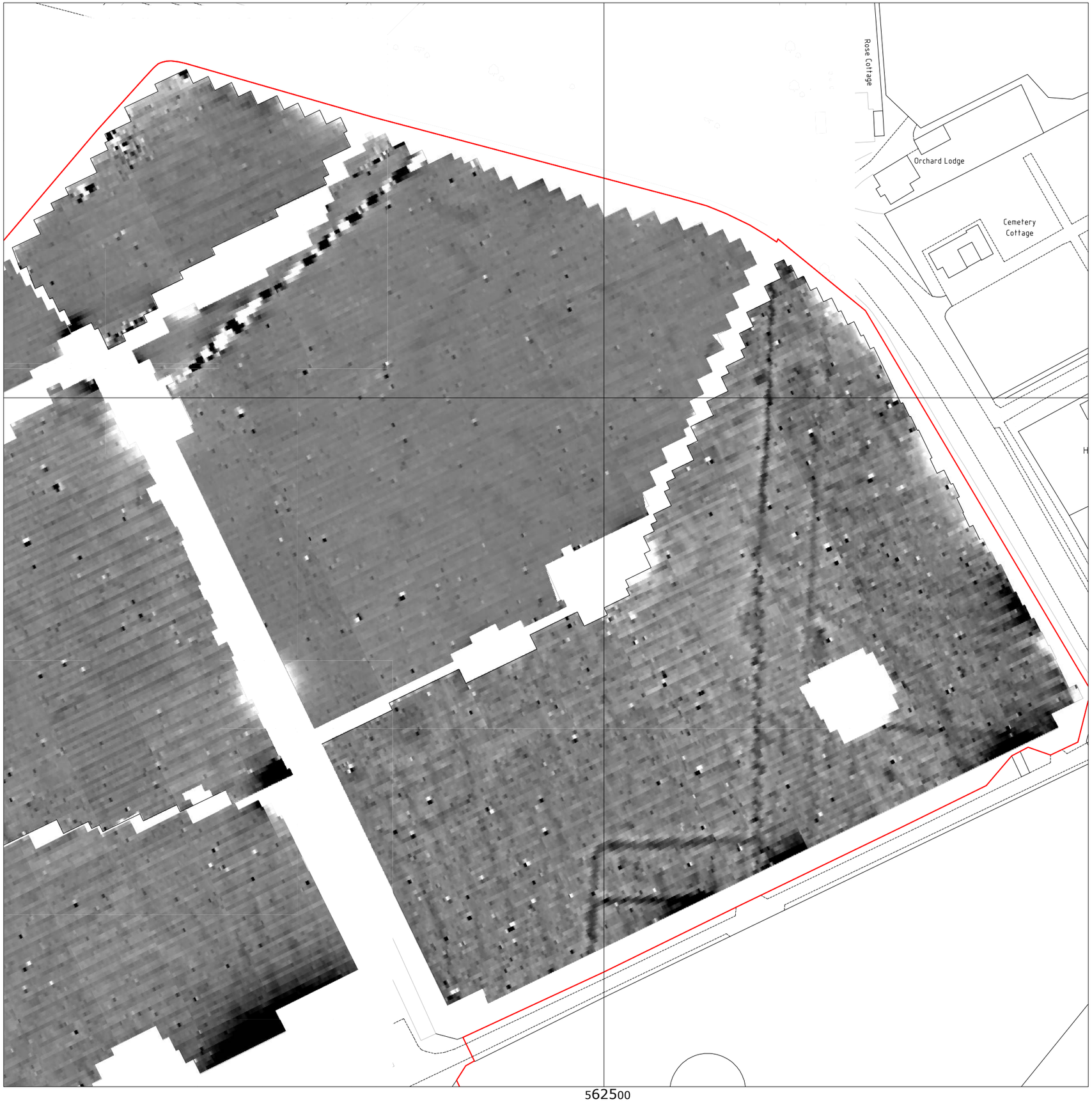

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N

+3nT

-3nT

Geophysical Survey Boundary

NGR: 562450, 265130

REPORT NUMBER: 1021

PROJECT:

BRICKFIELD STUD, EXNING ROAD, NEWMARKET, SUFFOLK

CLIENT: Suffolk County Council

DESCRIPTION:

RAW MAGNETOMETER GREYSCALE PLOT

BRITANNIA ARCHAEOLOGY LTD

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IP14 1RB

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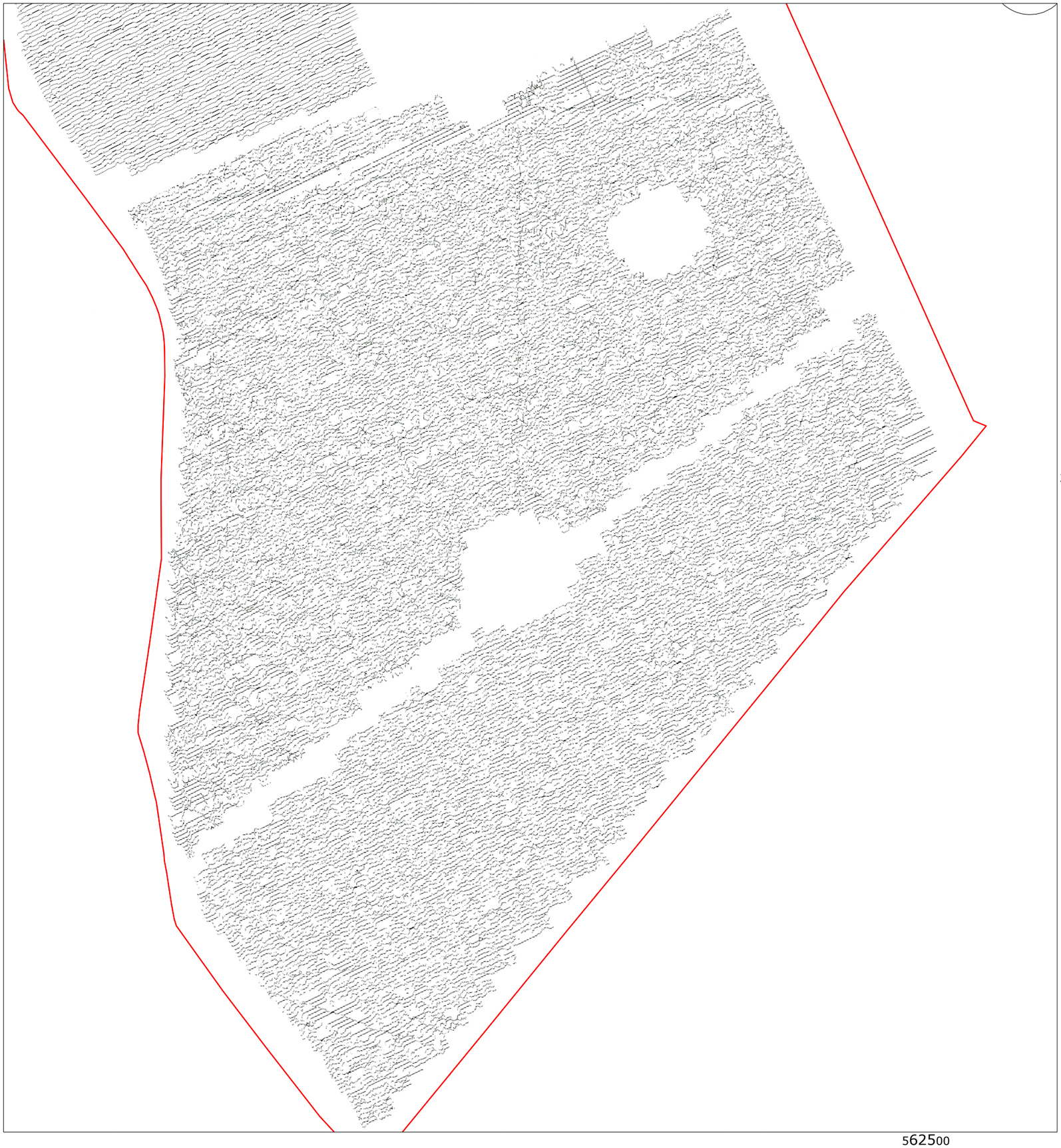
SCALE: 1:1000 (0 – 50m)

PLOT:	APPROVED:	VERSION:
A3	MCA	01
DATE: APR 2013	AUTHOR: TPS	FIGURE: 3C



N

25 nT/cm	Scale Interval
	Geophysical Survey Boundary

NGR: 562450, 265130

REPORT NUMBER: 1021

PROJECT:
BRICKFIELD STUD, EXNING ROAD, NEWMARKET, SUFFOLK

CLIENT:
Suffolk County Council

DESCRIPTION:
PROCESSED MAGNETOMETER XY TRACE PLOT

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SCALE: 1:1000 (0 – 50m)

PLOT:	APPROVED:	VERSION:
A3	MCA	01
DATE: APR 2013	AUTHOR: TPS	FIGURE: 4A

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N

25 nT/cm	Scale Interval
	Geophysical Survey Boundary

NGR: 562450, 265130

REPORT NUMBER: 1021

PROJECT:
BRICKFIELD STUD, EXNING ROAD, NEWMARKET, SUFFOLK

CLIENT: Suffolk County Council

DESCRIPTION:
PROCESSED MAGNETOMETER XY TRACE PLOT

BRITANNIA ARCHAEOLOGY LTD

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SCALE: 1:1000 (0 – 50m)

PLOT:	APPROVED:	VERSION:
A3	MCA	01
DATE: APR 2013	AUTHOR: TPS	FIGURE: 4B

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N

25 nT/cm — Scale Interval

Geophysical Survey Boundary

NGR: 562450, 265130

REPORT NUMBER: 1021

PROJECT:
BRICKFIELD STUD, EXNING ROAD, NEWMARKET, SUFFOLK

CLIENT: Suffolk County Council

DESCRIPTION:
PROCESSED MAGNETOMETER XY TRACE PLOT

BRITANNIA ARCHAEOLOGY LTD

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SCALE: 1:1000 (0 — 50m)

PLOT:	APPROVED:	VERSION:
A3	MCA	01
DATE: APR 2013	AUTHOR: TPS	FIGURE: 4C

N

+1nT

-1nT

Geophysical Survey Boundary

NGR: 562450, 265130

REPORT NUMBER: 1021

PROJECT:
BRICKFIELD STUD, EXNING ROAD, NEWMARKET, SUFFOLK

CLIENT: Suffolk County Council

DESCRIPTION:
PROCESSED MAGNETOMETER GREYSCALE PLOT

BRITANNIA ARCHAEOLOGY LTD

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SCALE: 1:1000 (0 – 50m)

PLOT: A3

APPROVED: MCA

VERSION: 01

DATE: APR 2013

AUTHOR: TPS

FIGURE: 5A

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N

+1nT

-1nT

Geophysical Survey Boundary

NGR: 562450, 265130

REPORT NUMBER: 1021

PROJECT:
BRICKFIELD STUD, EXNING ROAD, NEWMARKET, SUFFOLK

CLIENT:
Suffolk County Council

DESCRIPTION:
PROCESSED MAGNETOMETER GREYSCALE PLOT

BRITANNIA ARCHAEOLOGY LTD

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SCALE: 1:1000 (0 – 50m)

PLOT:	APPROVED:	VERSION:
A3	MCA	01
DATE: APR 2013	AUTHOR: TPS	FIGURE: 5B

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N

+1nT

-1nT

Geophysical Survey Boundary

NGR: 562450, 265130

REPORT NUMBER: 1021

PROJECT:
BRICKFIELD STUD, EXNING ROAD, NEWMARKET, SUFFOLK

CLIENT: Suffolk County Council

DESCRIPTION:
PROCESSED MAGNETOMETER GREYSCALE PLOT

BRITANNIA ARCHAEOLOGY LTD

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SCALE: 1:1000 (0 – 50m)

PLOT:	APPROVED:	VERSION:
A3	MCA	01
DATE: APR 2013	AUTHOR: TPS	FIGURE: 5C

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N

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-1nT

Geophysical Survey Boundary

NGR: 562450, 265130

REPORT NUMBER: 1021

PROJECT:
BRICKFIELD STUD, EXNING ROAD, NEWMARKET, SUFFOLK

CLIENT:
Suffolk County Council

DESCRIPTION:
PROCESSED MAGNETOMETER GREYSCALE PLOT

BRITANNIA ARCHAEOLOGY LTD

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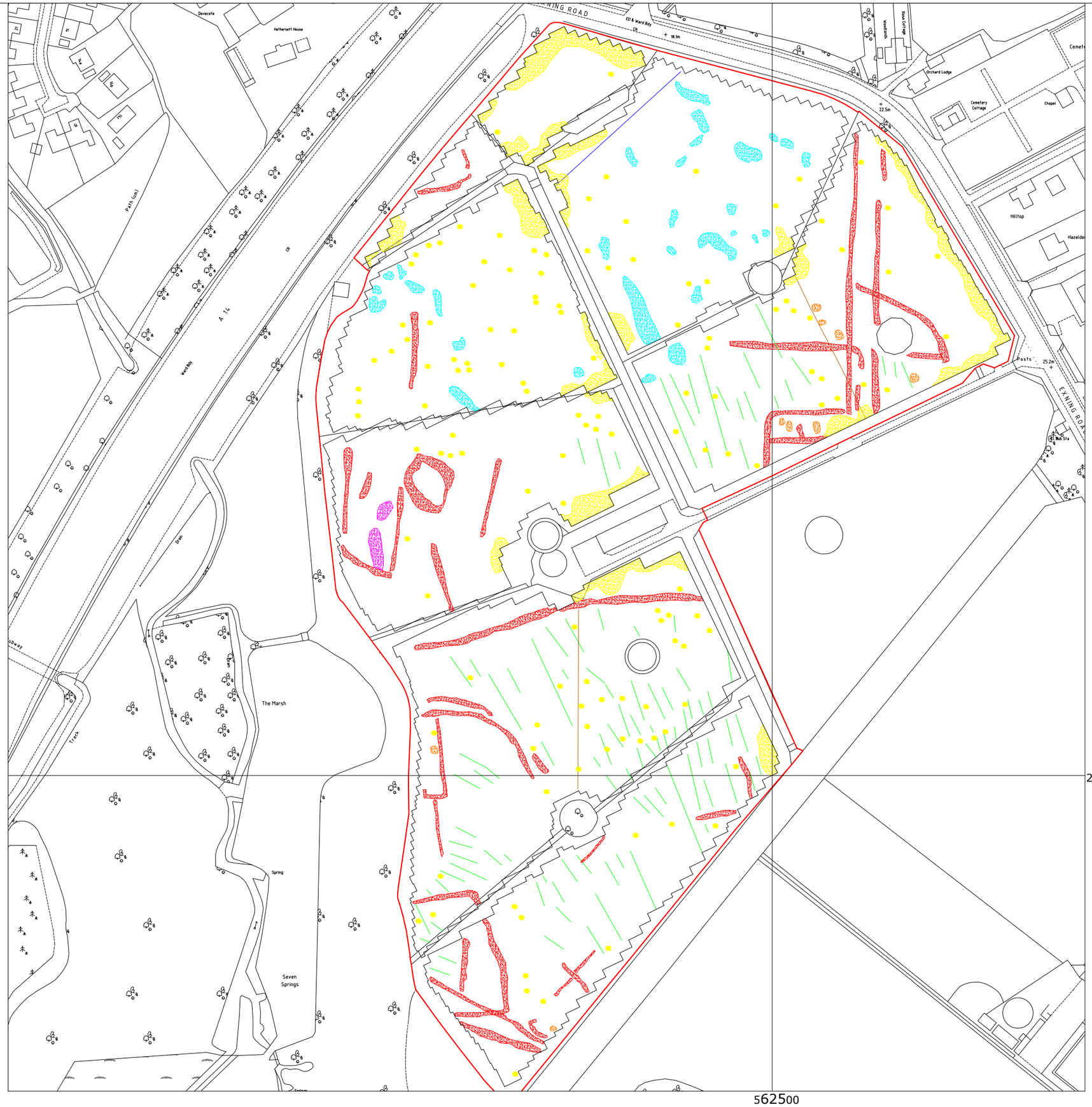
SCALE: 1:2000

0 80m

PLOT:	APPROVED:	VERSION:
A3	MCA	01
DATE: APR 2013	AUTHOR: TPS	FIGURE: 06



N

	Positive Oval/Rectangular Anomaly, Archaeology
	Positive Linear Anomaly, Archaeology
	Positive Discrete Anomaly, Archaeology?
	Area of Magnetic Enhancement, Archaeology?
	Weak Positive Linear Trend, Agricultural Anomaly?
	Weak Positive Irregular Broad Anomaly, Geology?
	Weak Negative Linear Trend, Removed Boundary Fence
	Strong Dipolar Linear Trend, Modern Service Run
	Area of Magnetic Disturbance
	Isolated Dipolar Responses
	Geophysical Survey Boundary

NGR: 562450, 265130

REPORT NUMBER: 1021

PROJECT:
BRICKFIELD STUD, EXNING ROAD, NEWMARKET, SUFFOLK

CLIENT:
Suffolk County Council

DESCRIPTION:
INTERPRETATION PLOT OF MAGNETOMETER DATA

BRITANNIA ARCHAEOLOGY LTD

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SCALE: 1:2000 (0 – 80m)

PLOT:	APPROVED:	VERSION:
A3	MCA	01
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