Archaeological Services
University of Durham

Potland Burn Surface Mining Scheme, Ashington, Northumberland

geophysical surveys

on behalf of

Tyne and Wear Museums, Archaeology Department

for

UK Coal

Report 1503
October 2006

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East Lodge, Jesmond Old Cemetery Gates, Jesmond, Newcastle upon Tyne NE2 1NL

for

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Contents

1. Summary

The project

1.1 This report presents the results of geophysical surveys conducted in advance of a proposed planning application for opencast mining on land at Potland Burn, Ashington, Northumberland.

1.2 The works were commissioned by Tyne and Wear Museums Archaeology Department and conducted by Archaeological Services Durham University.

Results

1.3 Evidence of ridge and furrow cultivation, which can date from the medieval period to the late 19th century, has been detected throughout much of the study area. The present plough regime was often noted on the same alignment.

1.4 Possible ditch features have been detected in Areas 2, 2b(1), 2b(2), 3, 9, 9b, 13, 14, 15(1), 15(2), 17, 18 and 20. The soil-filled features detected in Areas 17 and 18 probably reflect former courses for Potland and Portland Burns. The irregular, diffuse anomalies recorded in Area 2b(2) probably reflect geomorphological features.

2. Project background

Location (Figure 1)

2.1 The study area is located approximately 4km northwest of Ashington and 5km northeast of Morpeth, Northumberland (NGR centre: NZ 482 581). The site is bounded by open fields and New Moor to the north, to the east by the A1068 road from Ashington to Alnwick, to the south by the A197 from Ashington to Morpeth and to the west by the East Coast mainline railway. The study area covers approximately 218ha, of which a total of 94.5ha have been surveyed.

Development proposal

2.2 The geophysical surveys were conducted in advance of a proposed planning application for an opencast mine and associated spoil heaps and buildings.

Objective

2.3 The principal aim of the surveys was to assess the nature and extent of any sub-surface features of potential archaeological significance within the proposed development area, so that an informed decision may be made regarding the nature and scope of any further scheme of archaeological works that may be required in advance of development.

Methods statement

2.4 The surveys were undertaken in accordance with instructions provided by Tyne and Wear Museums (TWM) and a methods statement prepared by Archaeological Services, approved by the Assistant Archaeologist at Northumberland County Council.

Dates

2.5 Fieldwork was undertaken between 14th July and 20th September 2006. This report was prepared between 21st September and 9th October 2006.

Personnel

2.6 Fieldwork was conducted by Bryan Atkinson, Graeme Attwood (Supervisor), Matt Claydon, Edward Davies, Lorne Elliott, Jill Inglis, Sam Roberts and Richard Villis. This report was prepared by Lorne Elliott and Duncan Hale with illustrations by David Graham. The Project Manager was Duncan Hale.

Archive/OASIS

2.7 The site code is **APB06**, for **A**shington, **P**otland **B**urn 20**06**. The survey archive is currently held by Archaeological Services Durham University. Archaeological Services is registered with the **O**nline **A**cces**S** to the **I**ndex of archaeological investigation**S** project (OASIS). The OASIS ID number for this project is **archaeol3-18919**.

3. Archaeological and historical background

3.1 A desk-based assessment undertaken in October 2005 (TWM 2005) indicates two known prehistoric sites close to the study area, towards the south and east

boundaries. Both of these are ring-ditches, with one having linear features associated with it. Also in the surrounding area are 11 known prehistoric sites and a further 18 sites thought to date to this period, including the settlements at Pegswood Moor, 4km to the west, and Whinney Hill, 2.5km to the south. Both of these sites dated to the Iron Age, but continued into the Roman period.

3.2 A Romano-British rectangular enclosure is located 2.5km southwest of the site, close to the River Wansbeck. A rotary quern dating to the Roman period was also found on the site.

3.3 At New Moor, adjacent to the eastern limit of the site, cropmarks and ridge and furrow earthworks suggest the presence of a medieval village and associated field system. There is also evidence to suggest that villages in the surrounding area such as Old Moor and Bothal Barns date to the medieval period. Aerial photographs of the study area indicate probable ridge and furrow throughout the northern part of the site.

3.4 Previous coal extraction on the site is evidenced by the presence of probable bell pits within woodland southeast of the site. An air shaft is also located within the eastern part of the site. Recent aerial photographs show that an earlier opencast site known as Abyssinia Wood, was located across the central part of the site.

4. Landuse, topography and geology

4.1 At the time of survey the proposed development area mostly comprised a combination of arable and pasture fields, rough grassland and woodland. The study area is divided by Longhirst Lane, which crosses the site on an approximate northwest-southeast alignment. The Potland and Portland Burns also traverse the survey area.

4.2 The proposed development area is located on ground which rises slightly from east to west, approximately 30m to 48m OD.

4.3 The underlying solid geology of the area comprises Carboniferous Coal Measures, overlain by glacial clays and sands.

5. Geophysical survey

Standards

5.1 The surveys and reporting were conducted in accordance with English Heritage Research and Professional Services Guideline No.1, *Geophysical survey in archaeological field evaluation* (David 1995); the Institute of Field Archaeologists Technical Paper No.6, *The use of geophysical techniques in archaeological evaluations* (Gaffney, Gater & Ovenden 2002); and the Archaeology Data Service *Geophysical Data in Archaeology: A Guide to Good Practice* (Schmidt 2001).

Technique selection

5.2 Geophysical surveying enables the relatively rapid and non-invasive identification of potential archaeological features within landscapes and can involve a variety of complementary techniques such as magnetometry, electrical resistivity, ground-penetrating radar and electromagnetic survey. Some techniques are more suitable than others in particular situations, depending on a variety of site-specific factors including the nature of likely targets; depth of likely targets; ground conditions; proximity of buildings, fences or services and the local geology and drift.

5.3 In this instance, based on cropmark evidence and previous work, it was considered likely that cut features, such as ditches and pits, would be present on the site, and that other types of feature such as trackways, wall foundations and fired structures (for example kilns and hearths) might also be present.

5.4 Given the anticipated shallowness of targets and the non-igneous geological environment of the study area a geomagnetic technique, fluxgate gradiometry, was considered appropriate for detecting each of the types of feature mentioned above. Five small sample areas were initially surveyed, which confirmed the efficacy of this technique across the study area. This technique involves the use of hand-held magnetometers to detect and record minute anomalies in the vertical component of the Earth's magnetic field caused by variations in soil magnetic susceptibility or permanent magnetisation; such anomalies can reflect archaeological features.

Field methods

5.5 The study area comprised 17 land parcels, within which 21 surveys were undertaken (Figure 2). The surveys covered 50% of each of the 17 fields, except for Area 10 which proved too waterlogged to collect meaningful data. This resulted in a total survey of 94.5ha, 43% of the study area.

5.6 A 30m grid was established across each survey area and tied-in to the Ordnance Survey National Grid using a Leica GS50 global positioning system.

5.7 Measurements of vertical geomagnetic field gradient were determined using Bartington Grad601-2 and Geoscan FM36/256 fluxgate gradiometers with automatic datalogging facilities. A zig-zag traverse scheme was employed and data were logged in 30m grid units. The instrument sensitivity was set to 0.1nT, the sample interval to 0.25m and the traverse interval to 1.0m, thus providing 3600 sample measurements per 30m grid unit.

5.8 Data were downloaded on-site into laptop computers for initial processing and storage and subsequently transferred to a desktop computer for processing, interpretation and archiving.

Data processing

5.9 Geoplot v.3 software was used to process the geophysical data and to produce both continuous tone greyscale images and trace plots of the raw (unfiltered)

data. The greyscale images and interpretations are presented in Figures 2-36; the trace plots are provided in Appendix I. In the greyscale images, positive magnetic anomalies are displayed as dark grey and negative magnetic anomalies as light grey. A palette bar relates the greyscale intensities to anomaly values in nanoTesla.

5.10 The following basic processing functions have typically been applied to each dataset:

Zero mean traverse sets the background mean of each traverse within a grid to zero; for removing striping effects in the traverse direction and removing grid edge discontinuities.

Destagger corrects for displacement of anomalies caused by alternate zig-zag traverses.

Despike locates and suppresses random iron spikes in gradiometer data.

Interpolate increases the number of data points in a survey to match sample and traverse intervals. In this instance the data have been interpolated to 0.25m x 0.25m intervals.

Interpretation: anomaly types

5.11 Colour-coded geophysical interpretation plans are provided. Two types of geomagnetic anomaly have been distinguished in the data:

positive magnetic regions of anomalously high or positive magnetic field gradient, which may be associated with high magnetic susceptibility soil-filled structures such as pits and ditches.

dipolar magnetic paired positive-negative magnetic anomalies, which typically reflect ferrous or fired materials (including fences and service pipes) and/or fired structures such as kilns or hearths.

Interpretation: features

General comments

5.12 For illustrative purposes the study area is divided into eleven parts, as shown on Figure 3. Colour-coded archaeological interpretation plans are provided for all survey areas.

5.13 Except where stated otherwise in the text below, positive magnetic anomalies are taken to reflect relatively high magnetic susceptibility materials, typically sediments in cut archaeological features (such as furrows, ditches or pits) whose magnetic susceptibility has been enhanced by decomposed organic matter or by burning.

5.14 Many of the anomalies reflecting former ridge and furrow cultivation here are very weak and are more readily identifiable on the trace plots in Appendix I.

5.15 Small, discrete dipolar magnetic anomalies have been detected in all of the survey areas. These almost certainly reflect items of near-surface ferrous and/or fired debris, such as horseshoes and brick fragments, and in most cases have little or no archaeological significance. A sample of these is shown on the geophysical interpretation plans, however they have been omitted from the archaeological interpretation plans and the following discussion.

Areas 1 & 2b(2) (Figures 4-6)

5.16 A series of weak curvilinear and linear positive magnetic anomalies on an approximate northeast-southwest alignment and spaced at varying intervals was detected in Areas 1 and 2b(2). These almost certainly reflect ridge and furrow remains, as highlighted by aerial photographs.

5.17 Irregular, diffuse, positive magnetic anomalies were detected in Area 2b(2) with a broadly north-south orientation. These could reflect soil-filled features such as ditches although their irregular nature suggests a geomorphological origin is more likely.

5.18 Discrete positive magnetic anomalies in the northern part of Area 2b(2) could reflect soil-filled pits.

Area 2 (Figures 7-9)

5.19 A series of weak linear positive magnetic anomalies were detected on an approximate northeast-southwest alignment throughout this area. These almost certainly reflect a continuation of the ridge and furrow detected in Areas 1 and 2b(2).

5.20 A discontinuous linear positive magnetic anomaly aligned broadly north-south almost certainly reflects a former field boundary. Perpendicular to this and aligned east-west is a weak linear positive magnetic anomaly. This is also likely to reflect a former field boundary.

5.21 A complex of strong linear and curvilinear positive magnetic anomalies with a northwest-southeast orientation was detected through the central part of the survey. These anomalies may reflect soil-filled features such as ditches although their origin is uncertain.

5.22 A chain of intense dipolar anomalies aligned northwest-southeast almost certainly reflects a service pipe that appears to traverse the southern part of the study area through Areas 15 and 16 (see Figure 2).

5.23 A concentration of intense dipolar magnetic anomalies in the northwest corner of the survey area may reflect large items of near-surface ferrous and/or fired debris.

5.24 The small rectilinear feature transcribed from aerial photographs has not been identified.

Areas 4 & 2b(1) (Figures 10-12)

5.25 A series of weak parallel linear positive magnetic anomalies detected in Area 2b(1) with a northeast-southwest orientation appear to be a continuation of the ridge and furrow detected in Areas 1 and 2. A few linear positive anomalies aligned northwest-southeast may reflect archaeological ditches.

5.26 A number of intense dipolar anomalies were recorded in Area 4. These are unlikely to be of archaeological origin. Dipolar anomalies on the western limit of Area 4 may correspond to a service pipe that cuts across Area 3 just to the north of Area 4.

Area 3 (Figures 13-15)

5.27 The current plough regime was detected across the survey area as a series of weak parallel linear positive magnetic anomalies with an east-west alignment.

5.28 A few weak linear positive anomalies in the northern part of the survey could possibly reflect archaeological ditches.

5.29 A weak linear positive magnetic anomaly aligned broadly east-west in the southern part of the survey area may reflect a soil-filled ditch or possibly a former field boundary.

5.30 A chain of intense dipolar magnetic anomalies in the southern part of the survey area aligned northwest-southeast almost certainly represents a ferrous service pipe.

5.31 The linear feature transcribed from aerial photographs has not been detected.

Areas 6 & 7 (Figures 16-18)

5.32 A series of weak linear and curvilinear positive magnetic anomalies aligned broadly north-south in the eastern part of Area 6 and northeast-southwest in Area 7 correspond to parallel lineations highlighted by aerial photographs. These almost certainly represent traces of former ridge and furrow.

5.33 A strong dipolar magnetic anomaly roughly 20m in diameter was detected in the centre of Area 6. A patch of disturbed soil was noted on the surface suggesting that this may be a recently deposited large ferrous object.

5.34 A number of intense dipolar magnetic anomalies aligned east-west at 12m intervals traverse the southern part of Area 7 and continue into Area 19 to the east. These are of uncertain origin although they may reflect ferrous parts of an otherwise non-magnetic service pipe.

Areas 8, 10 & 19 (Figures 19-21)

5.35 Traces of ridge and furrow were detected in Area 19 and probably Area 10, as indicated by aerial photographs.

5.36 A line of intense dipolar anomalies detected in Area 7 to the west, continues across the southeast corner of Area 19.

5.37 The possible banjo-type enclosure transcribed from aerial photographs has not been detected.

Area 9 (Figures 22-24)

5.38 A weak linear positive magnetic anomaly with a northeast-southwest orientation almost certainly reflects a former ditch feature. This corresponds to a field boundary shown on the Ordnance Survey 1st edition map. A strong dipolar magnetic anomaly in the northeastern part of this feature may represent a large item of ferrous debris.

5.39 A few weak linear positive magnetic anomalies in the northern part of this survey area could possibly reflect archaeological ditches.

5.40 A series of parallel linear anomalies in the northeastern part of the area aligned broadly northeast-southwest almost certainly reflect the ridge and furrow indicated on aerial photographs.

Area 9b (Figures 25-27)

5.41 A series of parallel linear anomalies aligned north-south are evident across much of the survey. These represent further remains of ridge and furrow, as indicated on aerial photographs.

5.42 Discrete positive magnetic anomalies recorded in the southwest corner of the survey possibly reflect soil-filled features. These do not appear to be truncated by the ridge and furrow and therefore may be of a later date.

Areas 13, 14 & 20 (Figures 28-30)

5.43 Parallel linear anomalies aligned northwest-southeast are evident in all three of these areas, particularly Area 13 with regular curving features at 6m intervals recorded throughout the survey. Again these almost certainly reflect former ridge and furrow cultivation.

5.44 A group of strong positive magnetic anomalies detected in the southeast corner of Area 13 may reflect soil-filled ditch features of archaeological origin.

5.45 A concentration of intense dipolar magnetic anomalies detected at the southern extent of Area 13 corresponds to marsh ground. The anomalies may reflect ferrous or fired debris used to infill a waterlogged area.

5.46 Weak linear positive magnetic anomalies aligned northeast-southwest were detected in the western and eastern parts of Area 14. These possibly represent soil-filled features of uncertain origin.

5.47 A strong dipolar anomaly recorded at the southern limit of Area 14 corresponds to a cattle feeder.

5.48 A weak linear positive magnetic anomaly aligned broadly northwest-southeast traverses Area 20. This may reflect a soil-filled ditch or a former field boundary.

5.49 A weak curvilinear positive magnetic anomaly detected in the southeastern corner of Area 20 may also reflect a soil-filled ditch feature.

Area 15(1) (Figures 31-33)

5.50 Parallel lineations aligned broadly northeast-southwest are evident throughout this survey area. Again these almost certainly reflect ridge and furrow.

5.51 A group of weak positive magnetic anomalies in the southern part of this area could reflect ditch features of archaeological origin.

5.52 Three chains of intense dipolar magnetic anomalies aligned broadly north-south, northwest-southeast and northnorthwest-southsoutheast almost certainly reflect ferrous service pipes. One pipe continues northwest through Areas 15(2), 16 and possibly into Area 2 (see Figure 2).

5.53 A number of strong dipolar magnetic anomalies reflect pylons that traverse the study area.

Areas 15(2), 16, 17 & 18 (Figures 34-36)

5.54 A series of weak parallel linear anomalies aligned broadly northeast-southwest in Area 15(2) probably reflect further traces of ridge and furrow cultivation.

5.55 A weak linear positive magnetic anomaly aligned north-south in Area 15(2) may represent a soil-filled ditch of archaeological significance.

5.56 A chain of intense dipolar magnetic anomalies aligned northwest-southeast traverses the southern parts of Areas 15(2) and 16. This appears to be a continuation of a buried service detected in Area 15(1) to the east.

5.57 A discontinuous linear positive magnetic anomaly with a northeast-southwest orientation was recorded in the western part of Area 17. This appears to reflect a former course of Portland Burn as shown on the Ordnance Survey 1st edition map for the area.

5.58 A concentration of positive and dipolar magnetic anomalies was detected in the centre of Area 17. These anomalies almost certainly represent a scatter of fired and ferrous debris.

5.59 A group of positive and dipolar magnetic anomalies detected in the northwest corner of Area 18 possibly reflect a former course of Potland Burn, infilled with fired and/or ferrous debris.

6. Conclusions

6.1 Fluxgate gradiometer surveys have been undertaken on land at Potland Burn, Ashington, Northumberland, in order to determine the nature and extent of features of potential archaeological significance prior to proposed development.

6.2 Evidence of ridge and furrow cultivation, which can date from the medieval period to the late 19th century, has been detected throughout most of the study area. The present plough regime was often noted on the same alignment.

6.3 Soil-filled features, possibly ditches, have been detected in Areas 2, 2b(1), 2b(2), 3, 9, 9b, 13, 14, 15(1), 15(2), 17, 18 and 20.

6.4 The soil-filled features detected in Areas 17 and 18 probably reflect former courses for Potland and Portland Burns.

6.5 The irregular, diffuse anomalies recorded in Area 2b(2) probably reflect geomorphological features.

6.6 With the exception of the ridge and furrow remains, little of archaeological significance has been identified by the surveys.

7. Sources

David, A, 1995 *Geophysical survey in archaeological field evaluation,* Research and Professional Services Guideline **1**, English Heritage

Gaffney, C, Gater, J & Ovenden, S, 2002 *The use of geophysical techniques in archaeological evaluations*, Technical Paper **6**, Institute of Field Archaeologists

Schmidt, A, 2001 *Geophysical Data in Archaeology: A Guide to Good Practice,* Archaeology Data Service, Arts and Humanities Data Service

Tyne and Wear Museums 2005 *Potland Burn Surface Mining Scheme, Ashington, Northumberland; Archaeological and Cultural Heritage Assessment Final Report*, unpublished report **449** for UK Coal, Archaeology Department, Tyne and Wear Museums

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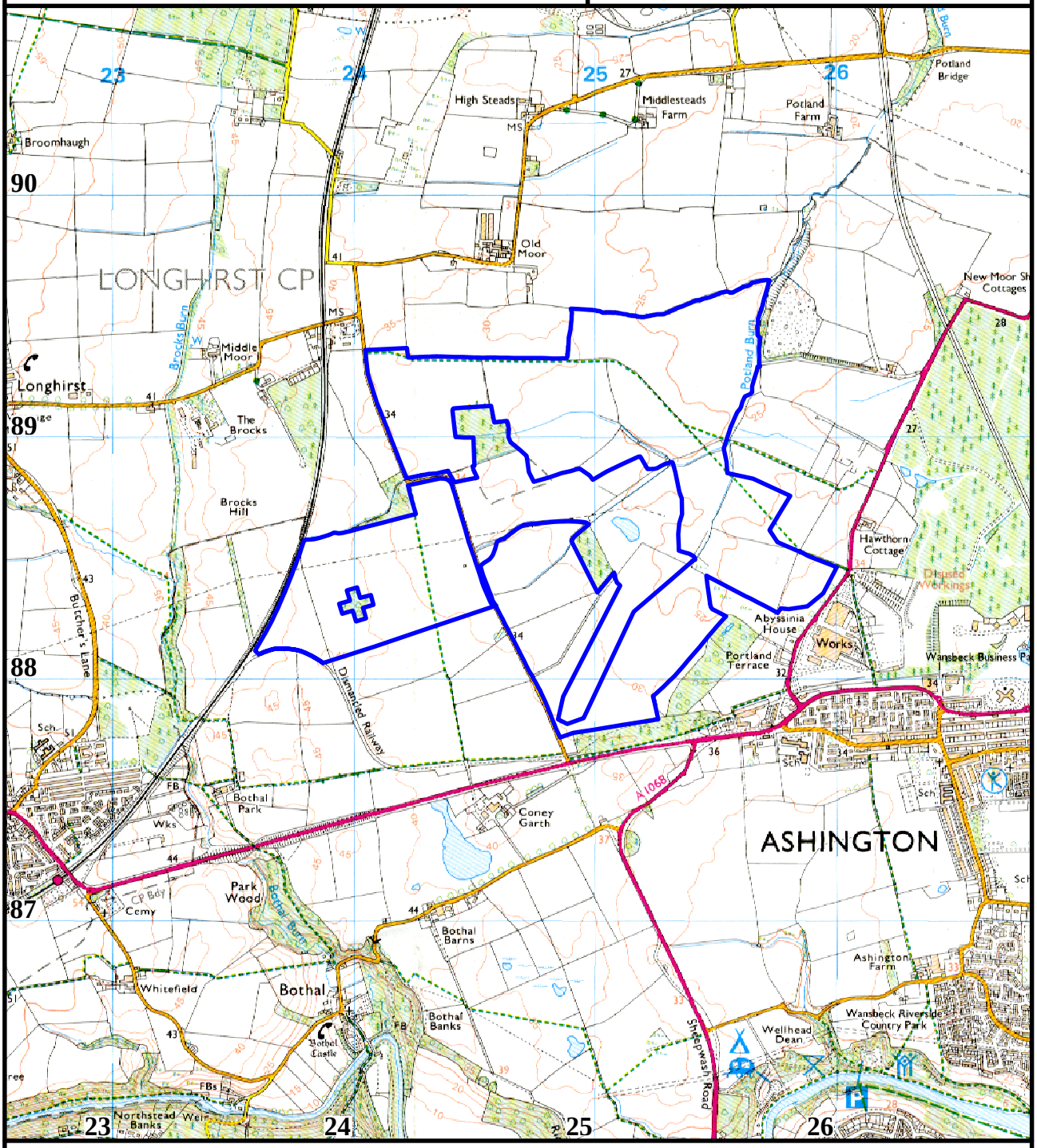
Figure 1
Location of the survey

on behalf of
Tyne and Wear Museums Archaeology Department



Area 1
Area 2b(2)
Area 2
Area 2b(1)
Area 3
Area 4
Area 6
Area 7
Area 8
Area 9b
Area 9
Area 10
Area 13
Area 14
Area 15(1)
Area 15(2)
Area 16
Area 17
Area 18
Area 19
Area 20

890
880
240
250
260

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Figure 2

Geophysical surveys

on behalf of
Tyne and Wear Museums Archaeology Department

0 500m
scale 1:10 000 - for A3 plot

geophysics study area

Figure 24

Figure 21

Figure 12

Figure 15

Figure 18

Figure 9

Figure 6

Figure 3

Figure 33

Figure 27

Figure 30

890

880

240

250

260

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Figure 3

Guide to figures

on behalf of
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0 500m

scale 1:10 000 - for A3 plot

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Figure 4

Areas 1 & 2b(2), geophysical surveys

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m
scale 1:2000 - for A3 plot

outline of survey area

5.00
4.17
3.33
2.50
1.67
0.83
0.00
-0.83
-1.67
-2.50
-3.33
-4.17
-5.00 nT

885
884
883
882
881

MP.5

Area 1

SP

9831

0331

Area 2b(2)

6705

Dismantled Railway

6705

8304

236 237 238 239 240 241

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Figure 5

Areas 1 & 2b(2), geophysical interpretation

on behalf of
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0 100m

scale 1:2000 - for A3 plot

outline of survey area

positive magnetic anomalies

dipolar magnetic anomalies

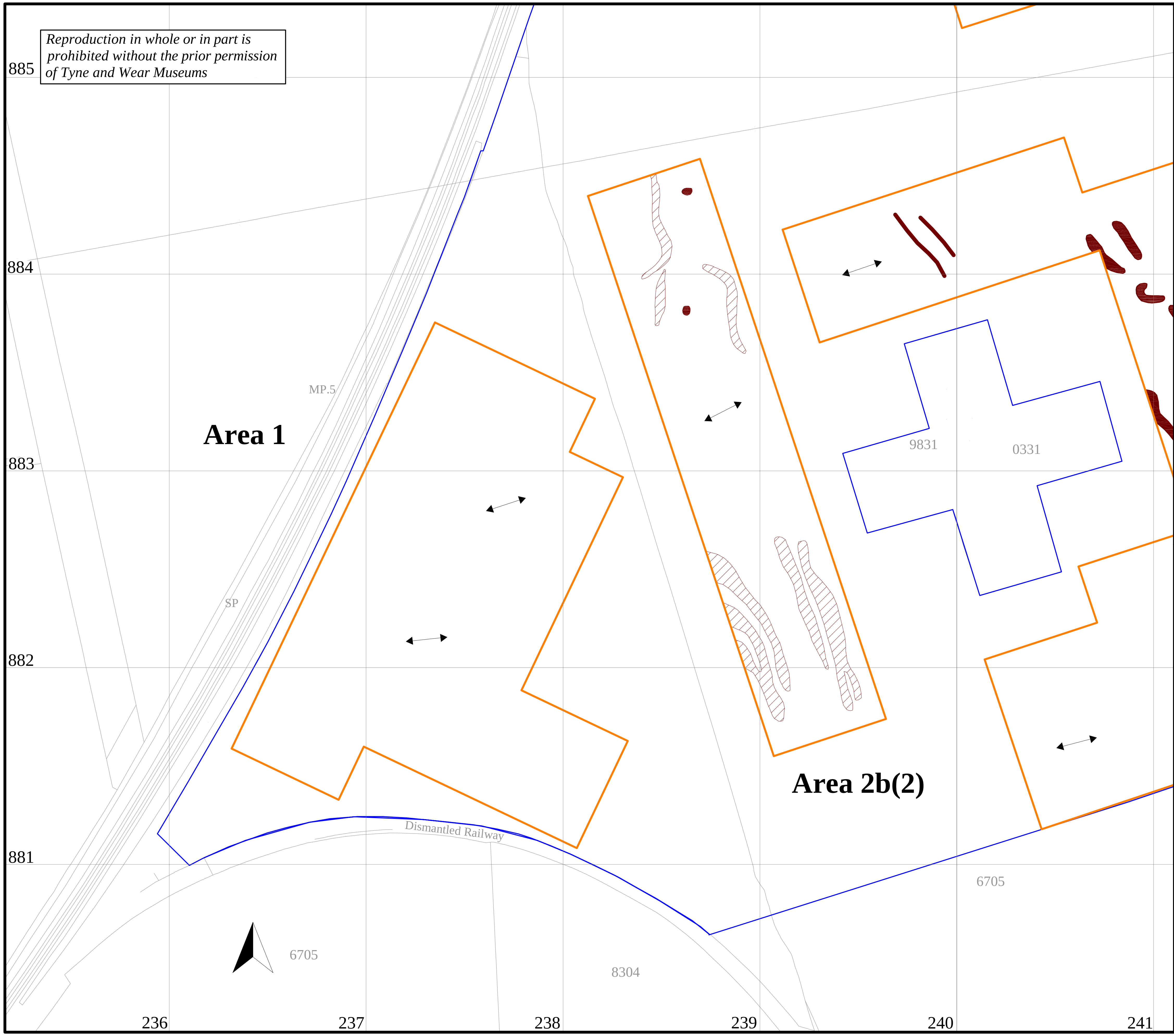

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Figure 6

Areas 1 & 2b(2), archaeological interpretation

on behalf of

Tyne and Wear Museums Archaeology Department

0 100m

scale 1:2000 - for A3 plot

outline of survey area

soil-filled features

orientation of ridge and furrow

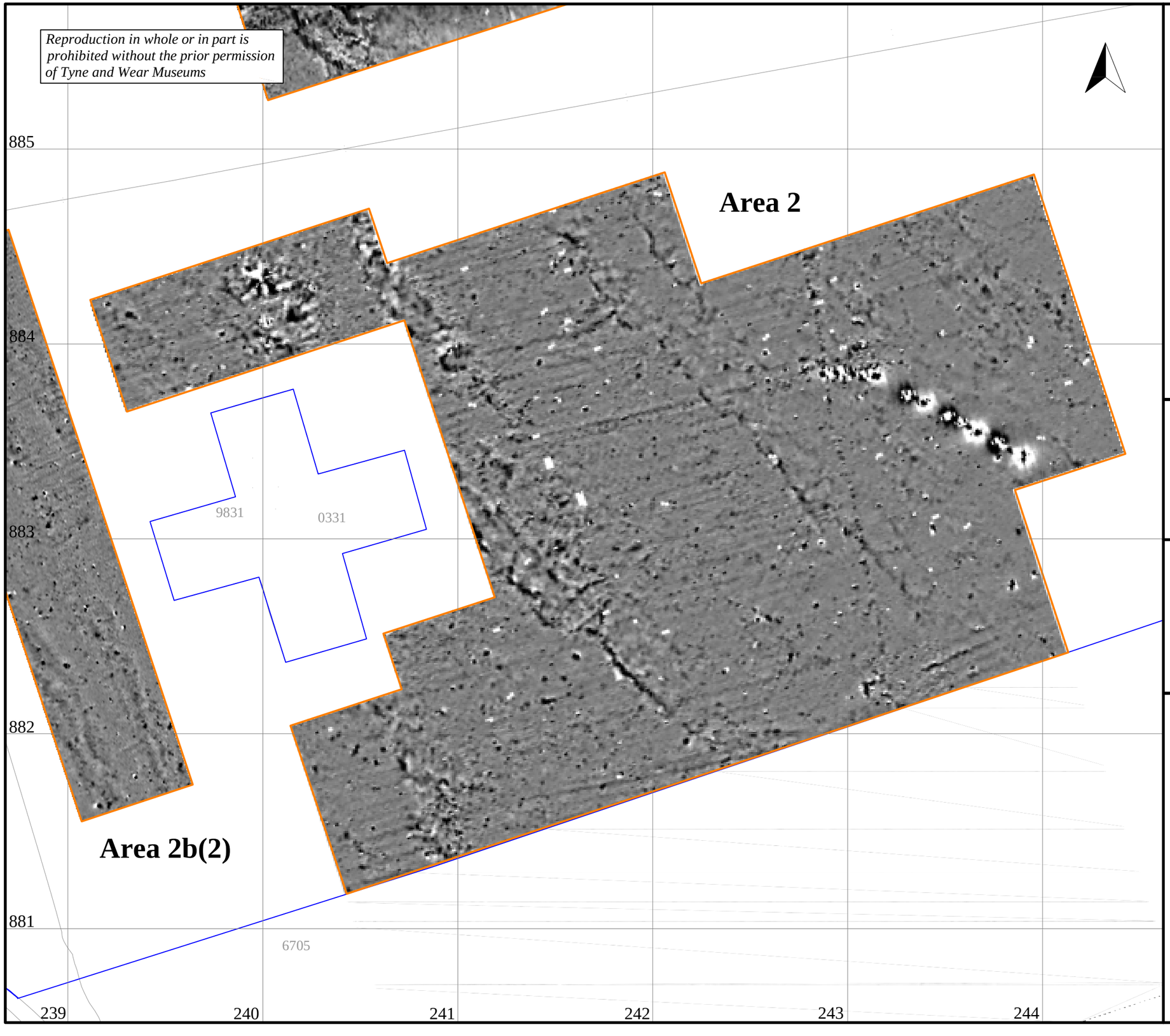

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Figure 7

Area 2, geophysical survey

on behalf of
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0 100m

scale 1:2000 - for A3 plot

outline of survey area

5.00
4.17
3.33
2.50
1.67
0.83
0.00
-0.83
-1.67
-2.50
-3.33
-4.17
-5.00 nT

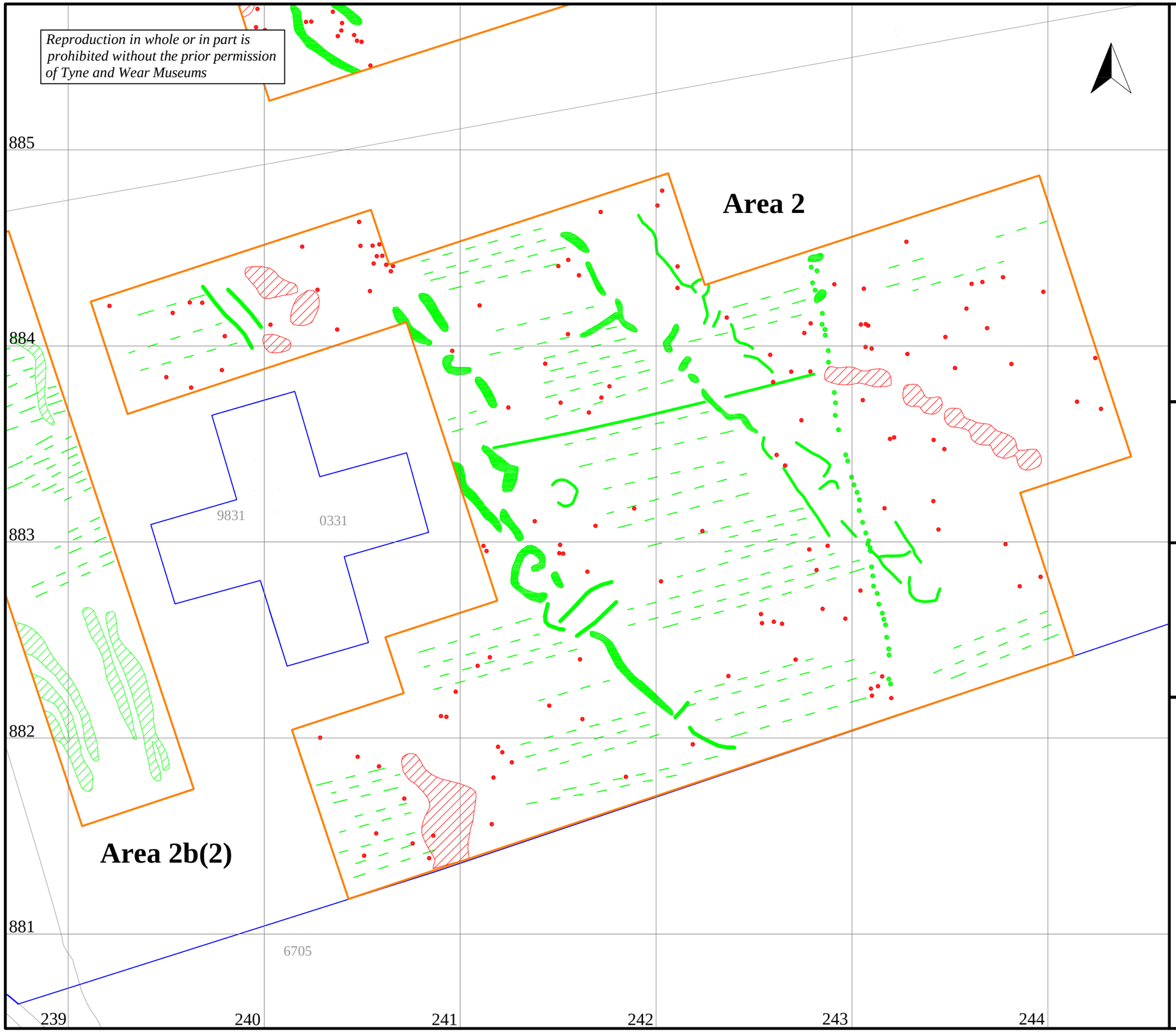

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Figure 8

Area 2, geophysical interpretation

on behalf of
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0 100m

scale 1:2000 - for A3 plot

outline of survey area

positive magnetic anomalies

dipolar magnetic anomalies

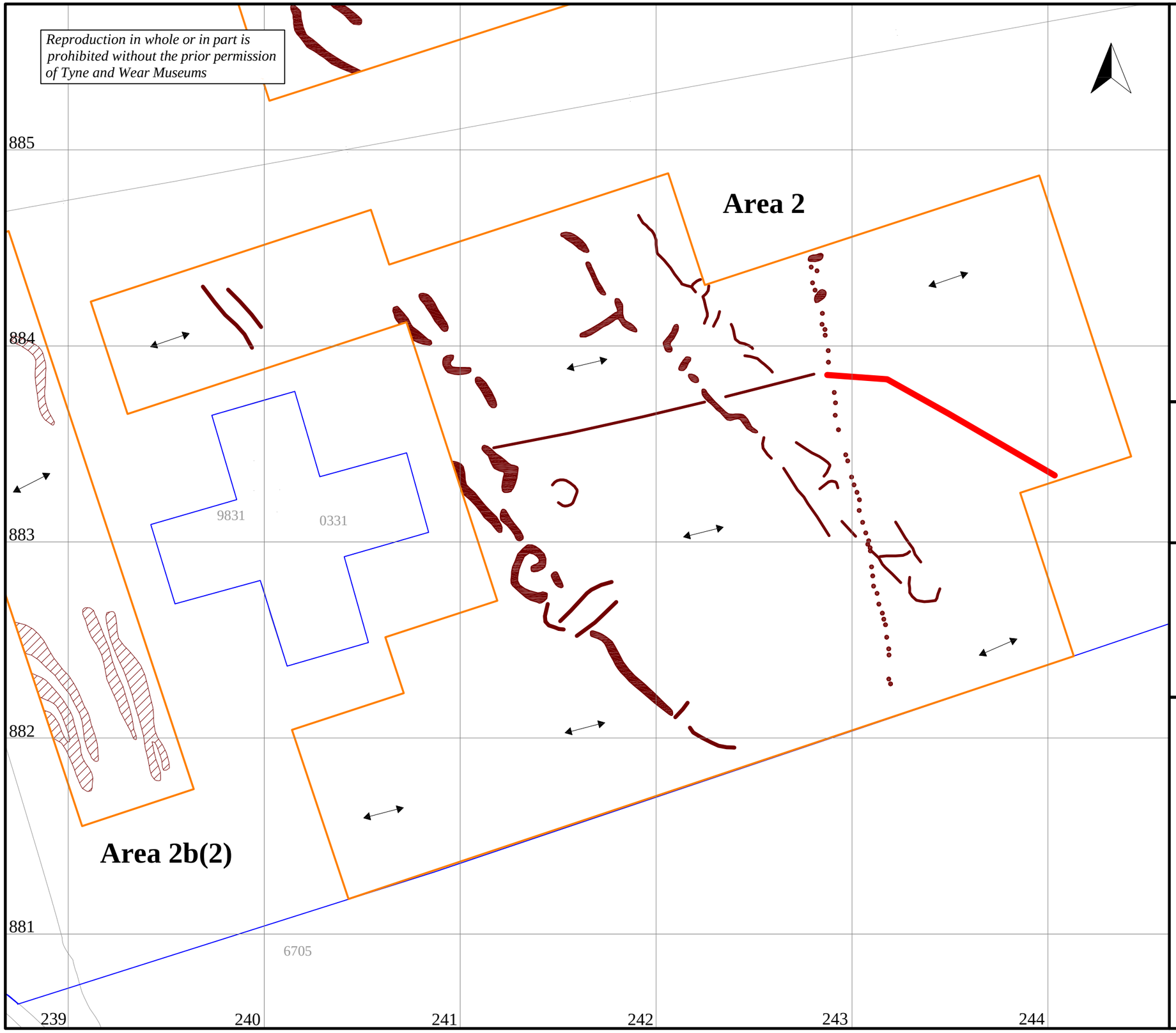

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Figure 9

Area 2, archaeological interpretation

on behalf of
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0 100m

scale 1:2000 - for A3 plot

- outline of survey area
- soil-filled features
- service pipes
- orientation of ridge and furrow

Area 4

Area 2b(1)

Area 2

889
888
887
886
885
240
241
242
243
244
245
6705
1580
1970
37.3m
33.9m
31.5m
BM 31.27m
Tk H
RH
Sinks
Def
Issues
ETL

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Figure 10

Areas 2b(1) & 4, geophysical surveys

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0 100m
scale 1:2000 - for A3 plot

outline of survey area

5.00
4.17
3.33
2.50
1.67
0.83
0.00
-0.83
-1.67
-2.50
-3.33
-4.17
-5.00 nT

889
888
887
886
885

37.3m
6705
1580
Sinks
Def
1970
RH
Tk H
Issues
33.9m
ETL
Issues
31.5m
BM 31.27m

Area 4

Area 2b(1)

Area 2

240 241 242 243 244 245

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Figure 11

Areas 2b(1) & 4, geophysical interpretation

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0 100m
scale 1:2000 - for A3 plot

outline of survey area

positive magnetic anomalies

dipolar magnetic anomalies

889
888
887
886
885

240 241 242 243 244 245

37.3m
6705
1580
Sinks
Def
1970
RH
Tk H
Issues
33.9m
ETL
Issues
31.5m
BM 31.27m

Area 4

Area 2b(1)

Area 2

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Figure 12

Areas 2b(1) & 4, archaeological interpretation

on behalf of
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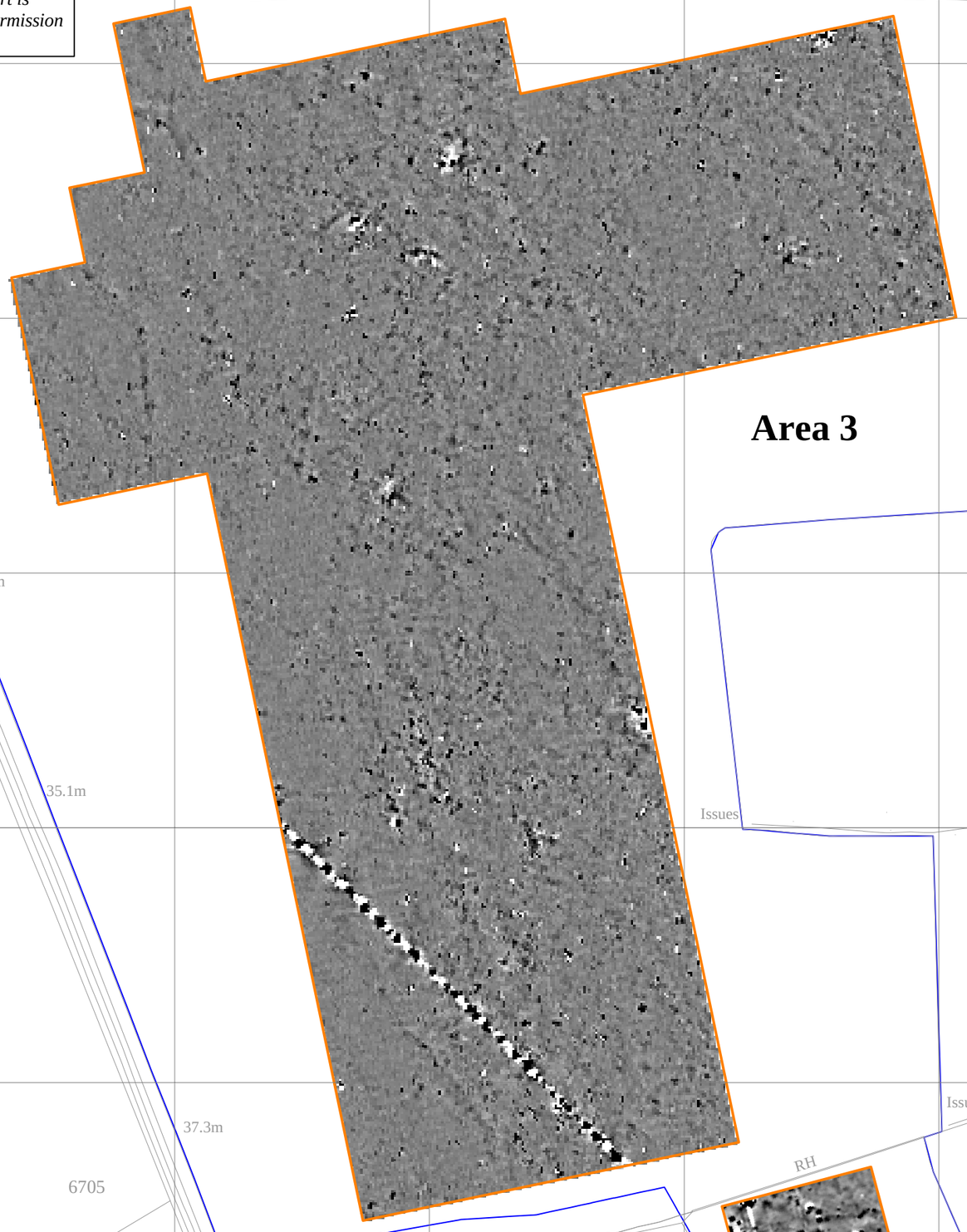
0 100m
scale 1:2000 - for A3 plot

outline of survey area

soil-filled features

service pipes

orientation of ridge and furrow



893
892
891
890
889
241
242
243
244
245
246
36.0m
33.7m
35.1m
37.3m
0414
1292
6705
Def
Issues
Issues
RH
Tk H

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Figure 13

Area 3, geophysical survey

on behalf of
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0 100m
scale 1:2000 - for A3 plot

outline of survey area

5.00
4.17
3.33
2.50
1.67
0.83
0.00
-0.83
-1.67
-2.50
-3.33
-4.17
-5.00 nT

Area 3

893
892
891
890
889
241
242
243
244
245
246

36.0m
33.7m
35.1m
37.3m
0414
1292
6705
Def
Issues
Issues
RH
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Figure 14

Area 3, geophysical interpretation

on behalf of
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0 100m

scale 1:2000 - for A3 plot

outline of survey area

positive magnetic anomalies

dipolar magnetic anomalies

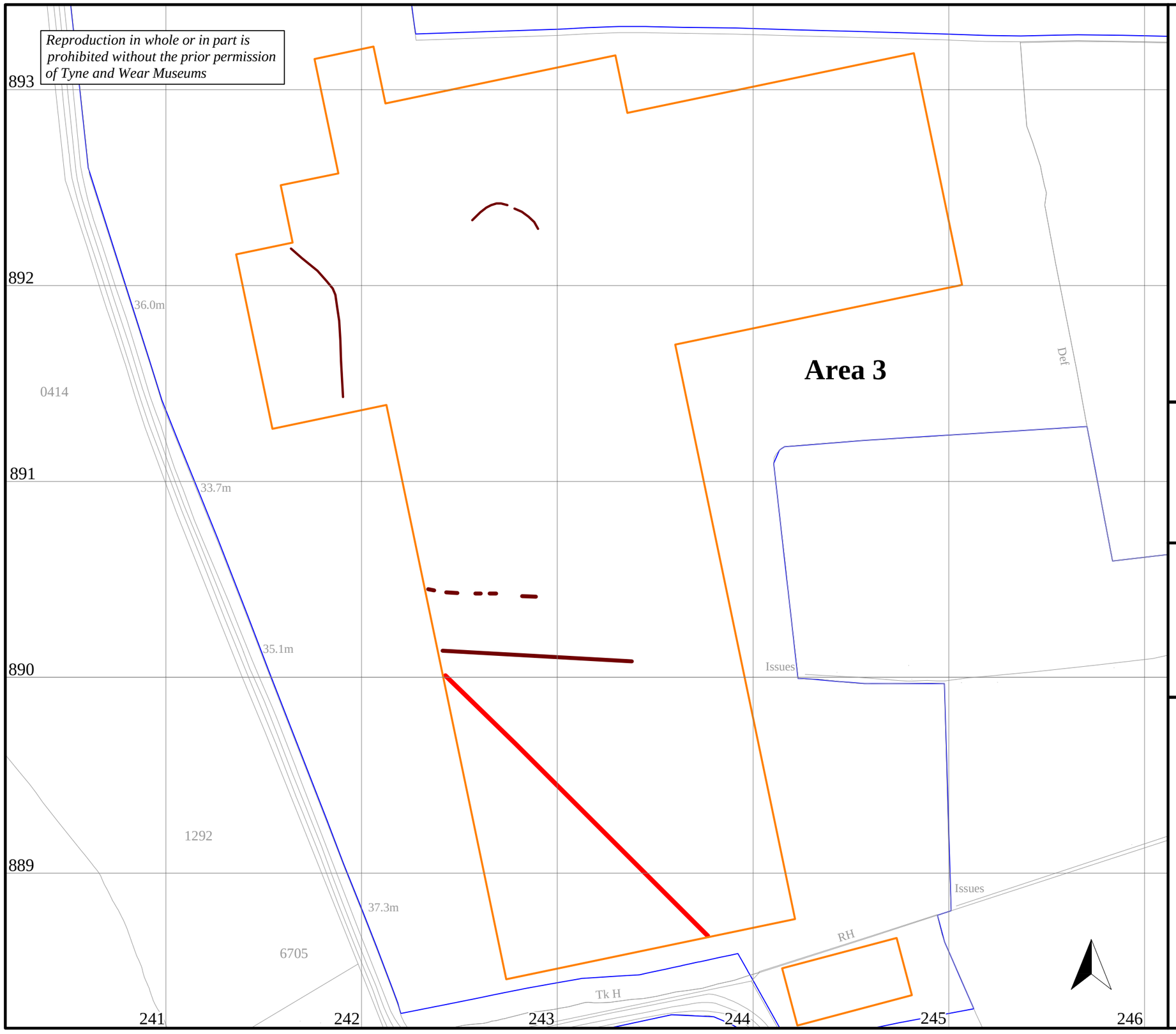

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Figure 15

Area 3, archaeological interpretation

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m

scale 1:2000 - for A3 plot

outline of survey area

soil-filled features

service pipes

CP and ED Bdy

RH

893

892

891

890

889

Def

Issues

Def

RH

Sinks

1201

0006

0086

246

247

248

249

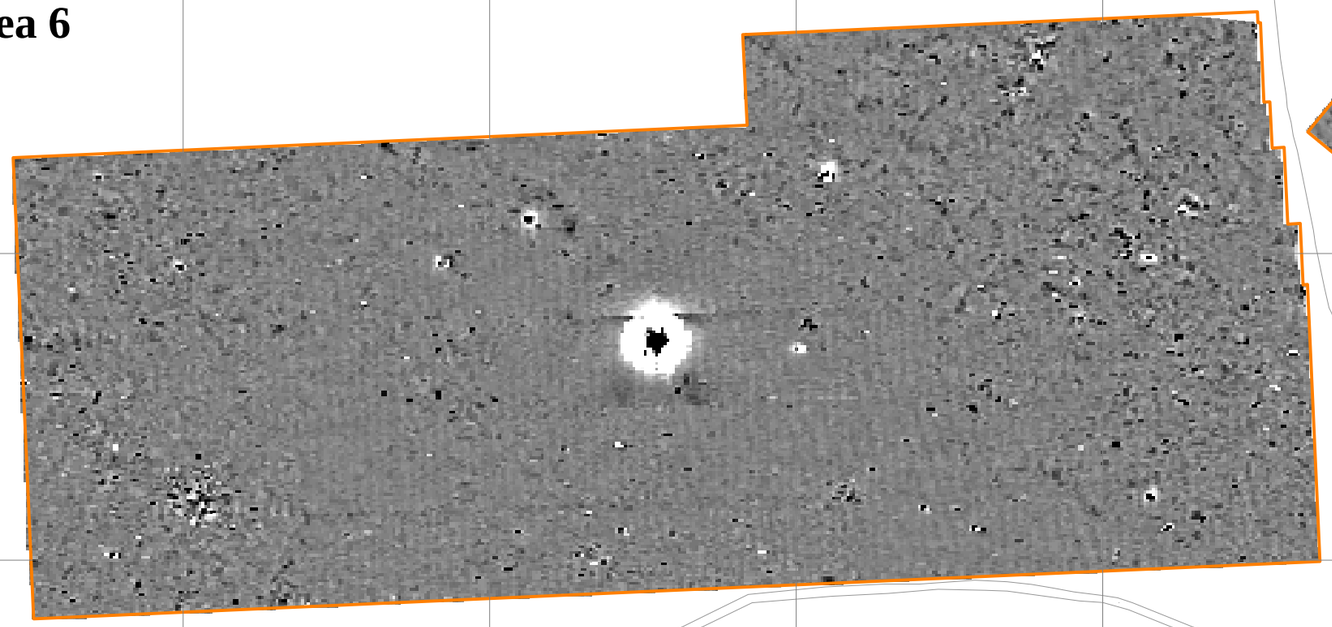
250

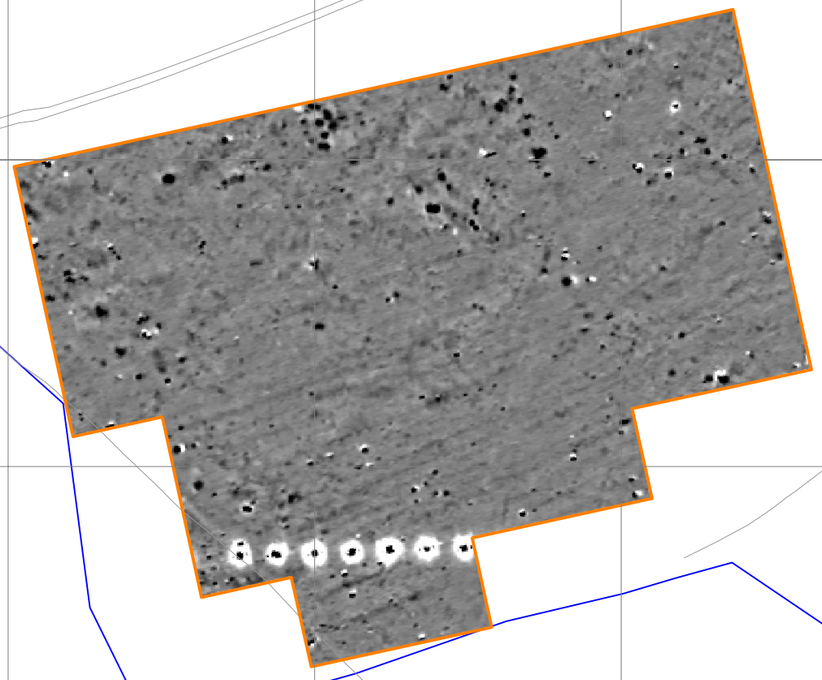
251

Area 6

Area 7

Area 19





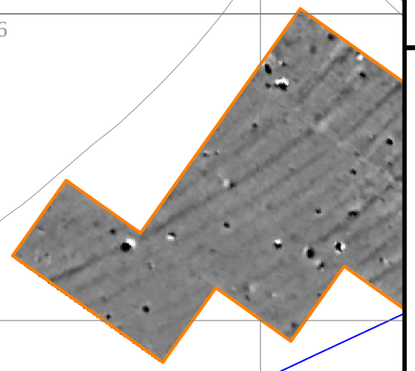


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Figure 16

Areas 6 & 7, geophysical surveys

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m

scale 1:2000 - for A3 plot

outline of survey area

5.00
4.17
3.33
2.50
1.67
0.83
0.00
-0.83
-1.67
-2.50
-3.33
-4.17
-5.00 nT

CP and ED Bdy

RH

893

892

891

890

889

246

247

248

249

250

251

Def

Def

RH

Issues

Sinks

1201

0006

0086

Area 6

Area 7

Area 19

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Figure 17

Areas 6 & 7, geophysical interpretation

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m

scale 1:2000 - for A3 plot

outline of survey area

positive magnetic anomalies

dipolar magnetic anomalies

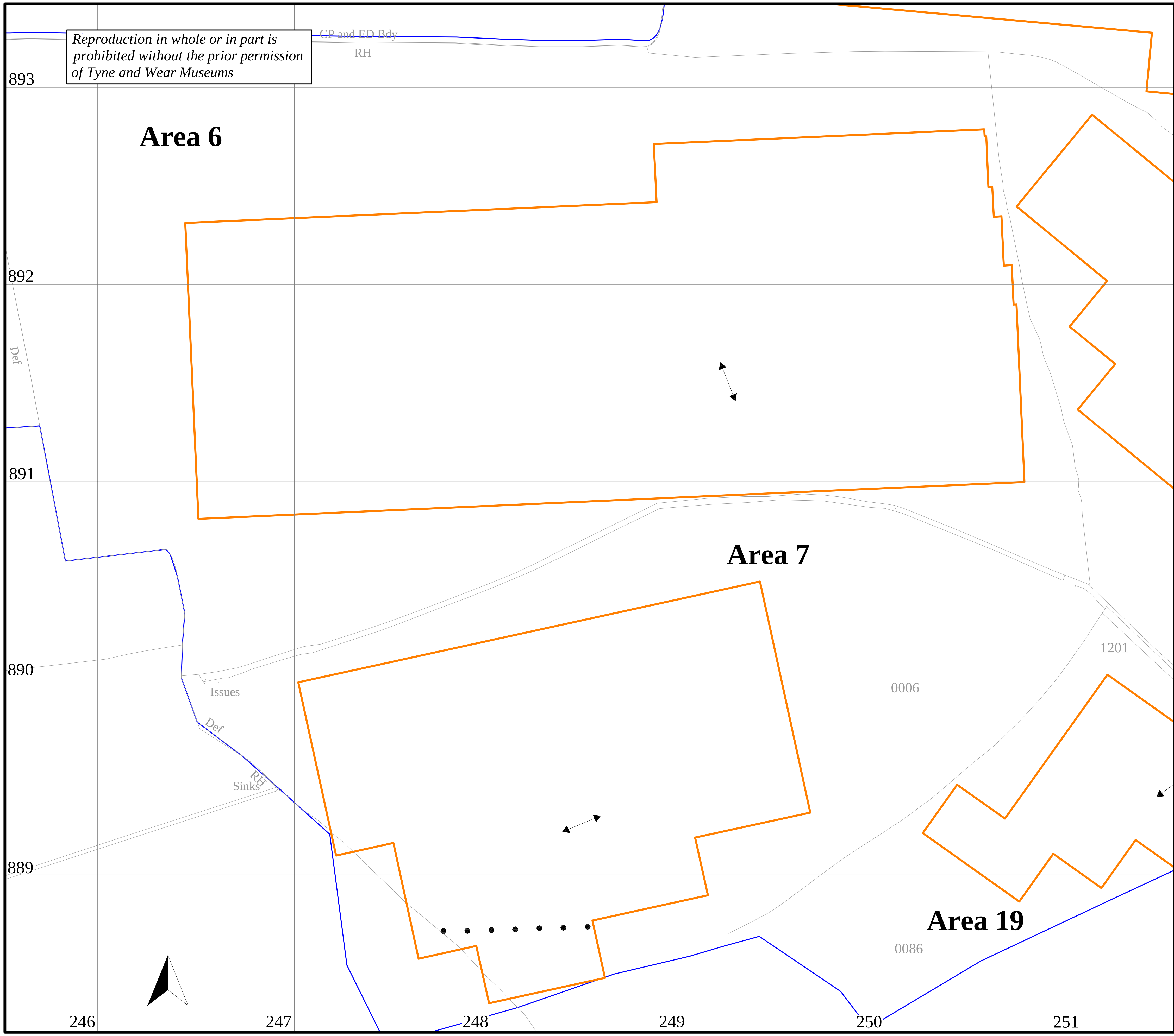

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Figure 18

Areas 6 & 7, archaeological interpretation

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m
scale 1:2000 - for A3 plot

outline of survey area

?linear feature with regularly spaced metallic components

orientation of ridge and furrow

892

891

890

889

888

1201

4900

251

252

253

254

255

256

Area 8

Area 19

Area 10

Potland Burn

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geophysical surveys

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Figure 19

Areas 8, 10 & 19, geophysical surveys

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m

scale 1:2000 - for A3 plot

outline of survey area

5.00
4.17
3.33
2.50
1.67
0.83
0.00
-0.83
-1.67
-2.50
-3.33
-4.17
-5.00 nT

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Figure 20

Areas 8, 10 & 19, geophysical interpretation

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m
scale 1:2000 - for A3 plot

- outline of survey area
- positive magnetic anomalies
- dipolar magnetic anomalies

892
891
890
889
888
251
252
253
254
255
256
1201
2800
4900
Area 8
Area 19
Area 10
Potland Burn

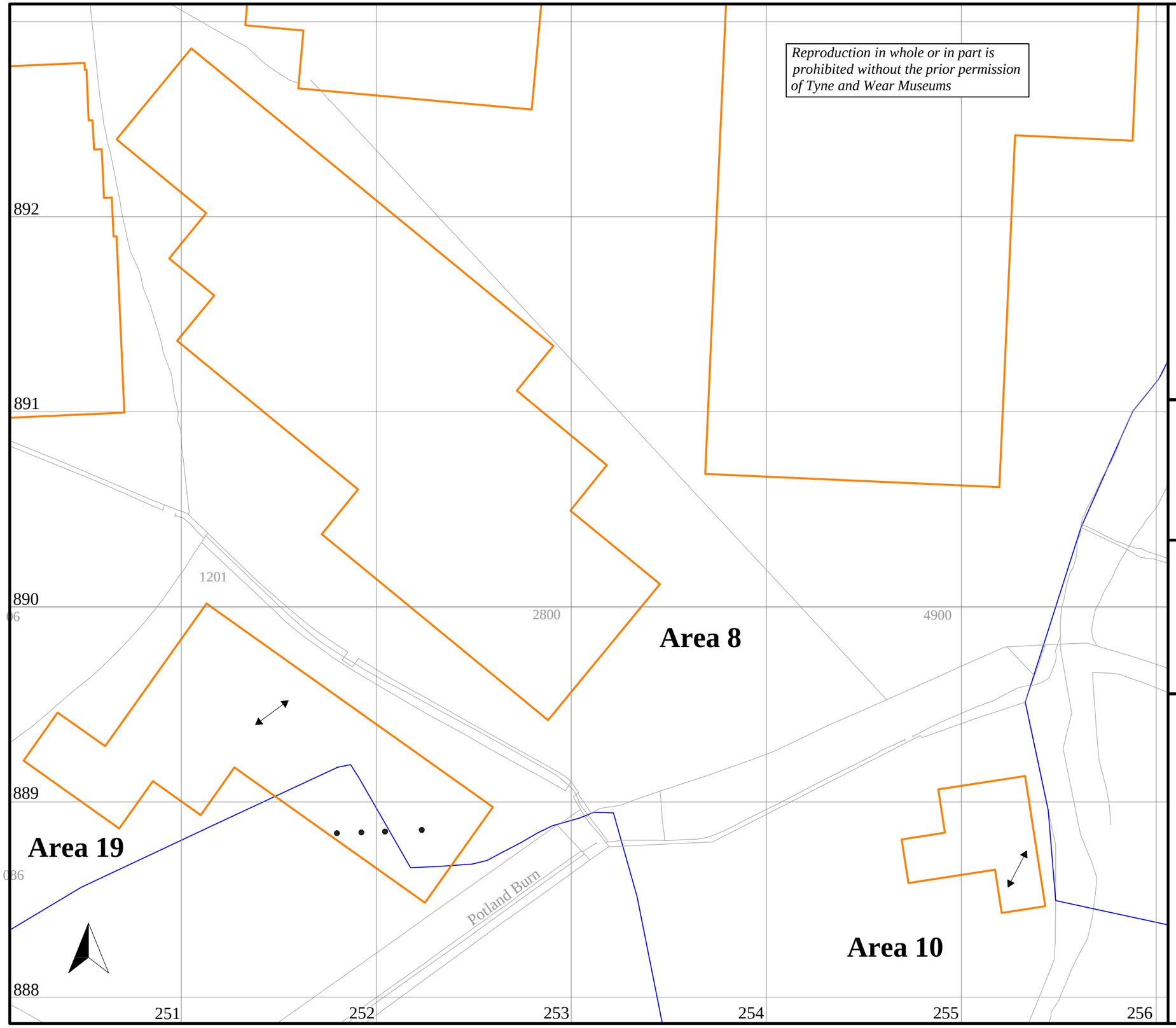

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Figure 21

Areas 8, 10 & 19, archaeological interpretation

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m

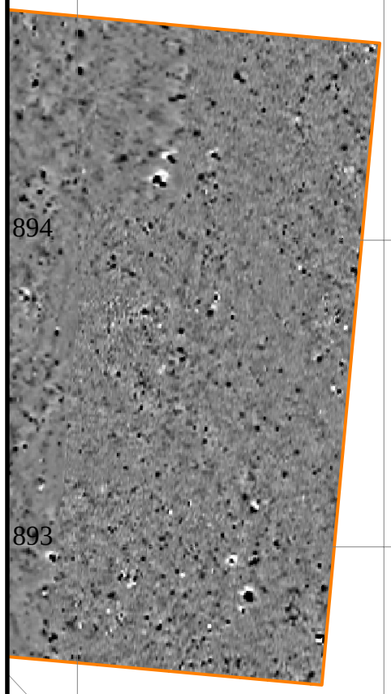
scale 1:2000 - for A3 plot

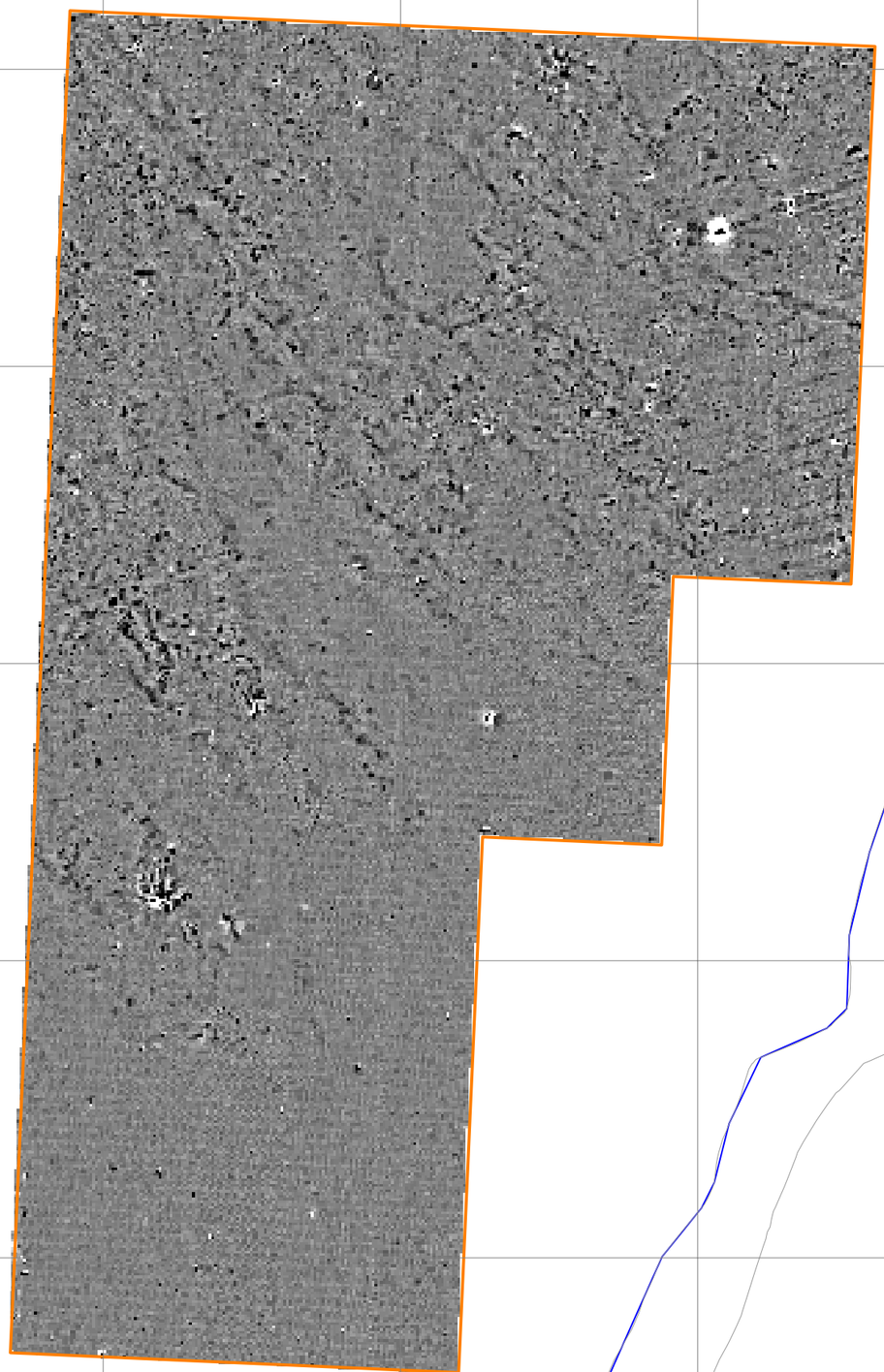
outline of survey area

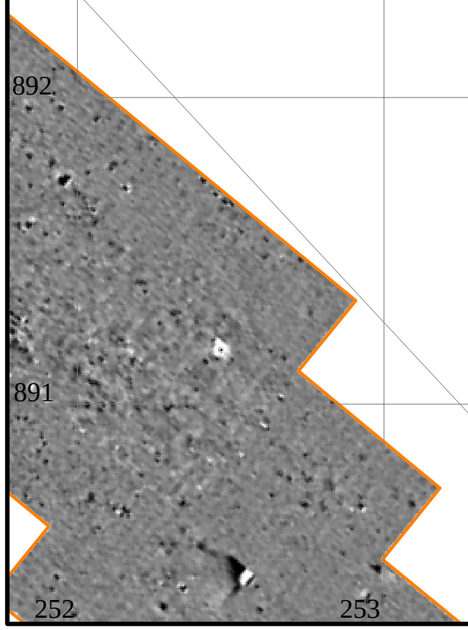
?linear feature with regularly spaced metallic components

orientation of ridge and furrow

Area 9







Potland Br

895
894
893
892
891
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253
254
255
256
257

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geophysical surveys

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Figure 22

Area 9, geophysical survey

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m

scale 1:2000 - for A3 plot

outline of survey area

5.00
4.17
3.33
2.50
1.67
0.83
0.00
-0.83
-1.67
-2.50
-3.33
-4.17
-5.00 nT

Area 9

Potland St

895
894
893
892
891
252
253
254
255
256
257

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Figure 23

Area 9, geophysical interpretation

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m
scale 1:2000 - for A3 plot

outline of survey area

positive magnetic anomalies

dipolar magnetic anomalies

Area 9

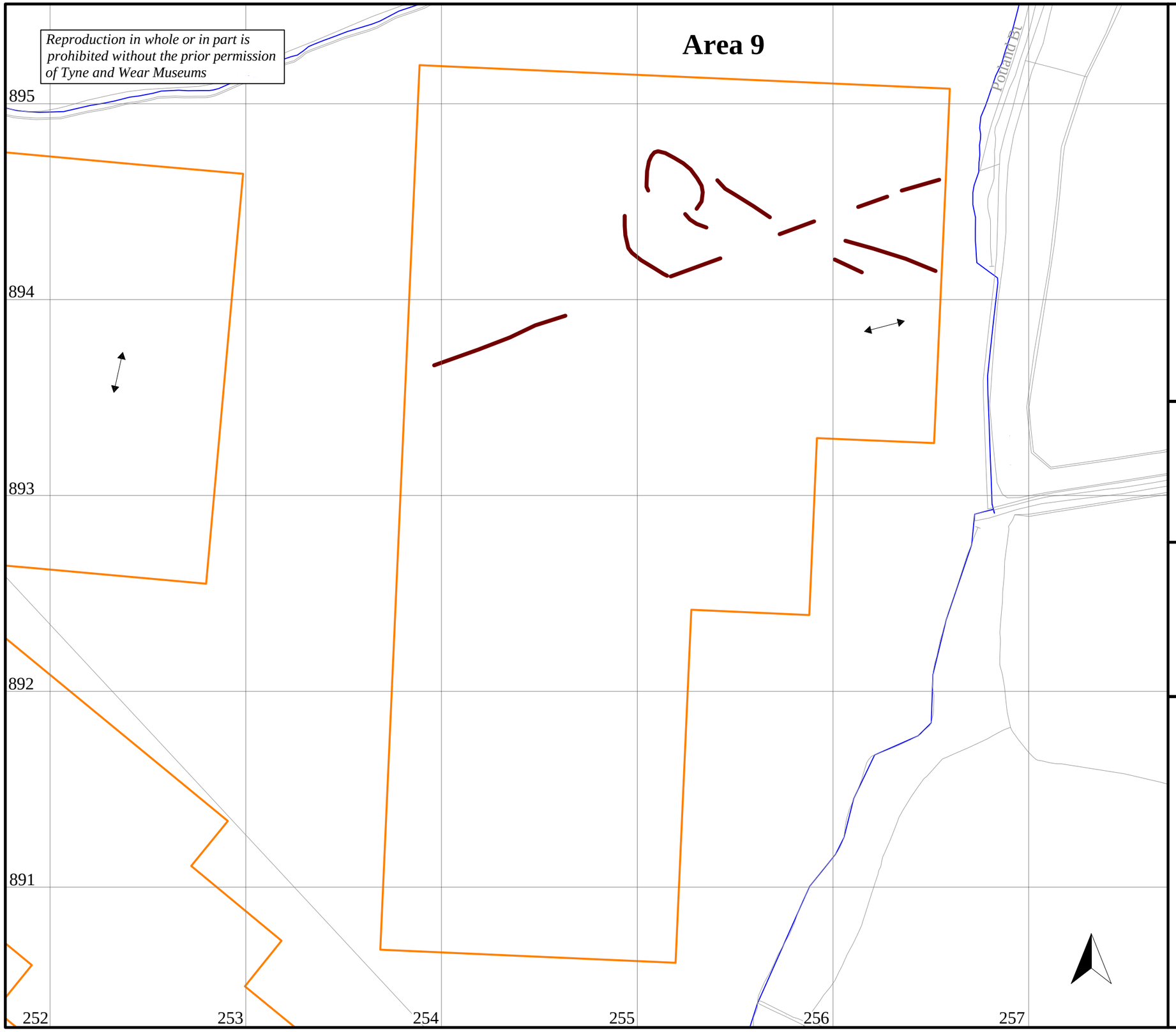

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Figure 24

Area 9, archaeological interpretation

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m

scale 1:2000 - for A3 plot

outline of survey area

soil-filled features

orientation of ridge and furrow

Area 9b

Def

RH

896

895

894

893

892

249

250

251

252

253

254

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Figure 25

Area 9b, geophysical survey

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m

scale 1:2000 - for A3 plot

outline of survey area

5.00
4.17
3.33
2.50
1.67
0.83
0.00
-0.83
-1.67
-2.50
-3.33
-4.17
-5.00 nT

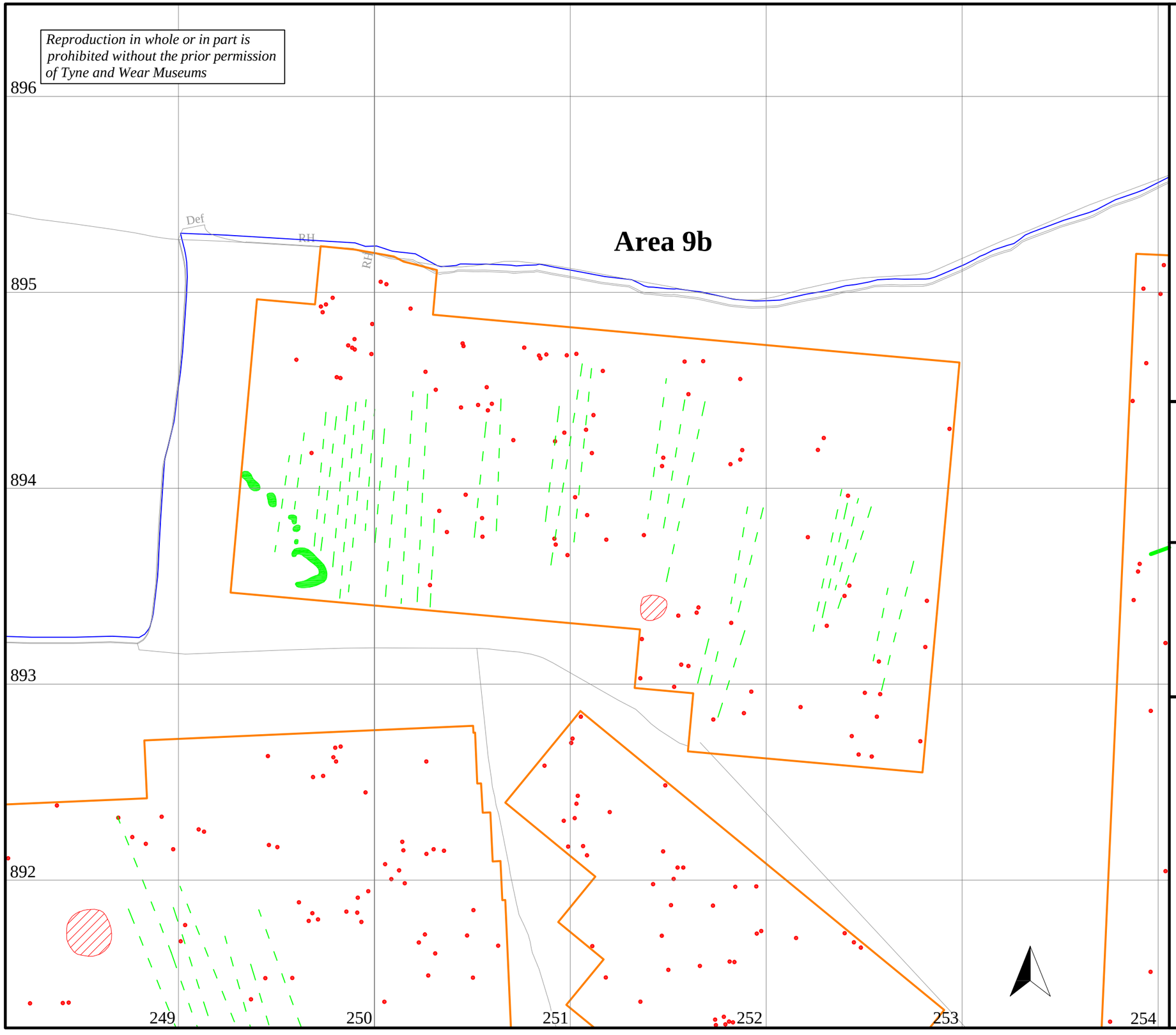

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Figure 26

Area 9b, geophysical interpretation

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m

scale 1:2000 - for A3 plot

outline of survey area

positive magnetic anomalies

dipolar magnetic anomalies

Area 9b

Def

RH

RH

896

895

894

893

892

249

250

251

252

253

254

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Figure 27

Area 9b, archaeological interpretation

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m

scale 1:2000 - for A3 plot

outline of survey area

soil-filled features

orientation of ridge and furrow

Area 13

Area 20

Area 14

887
886
885
884
883
255
256
257
258
259
260
0061
0042
Track
Drain
A-1068

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Figure 28

Areas 13, 14 & 20, geophysical surveys

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m
scale 1:2000 - for A3 plot

outline of survey area

5.00
4.17
3.33
2.50
1.67
0.83
0.00
-0.83
-1.67
-2.50
-3.33
-4.17
-5.00 nT

Area 13

Area 20

Area 14

887
886
885
884
883
255
256
257
258
259
260

0061
0042

Track
Drain
A-1068

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Figure 29

Areas 13, 14 & 20, geophysical interpretation

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m
scale 1:2000 - for A3 plot

outline of survey area

positive magnetic anomalies

dipolar magnetic anomalies

Area 13

Area 20

Area 14

887
886
885
884
883
255
256
257
258
259
260
0061
0042
Track
Drain
A-1068

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Figure 30

Areas 13, 14 & 20, archaeological interpretation

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m

scale 1:2000 - for A3 plot

outline of survey area

soil-filled features

orientation of ridge and furrow

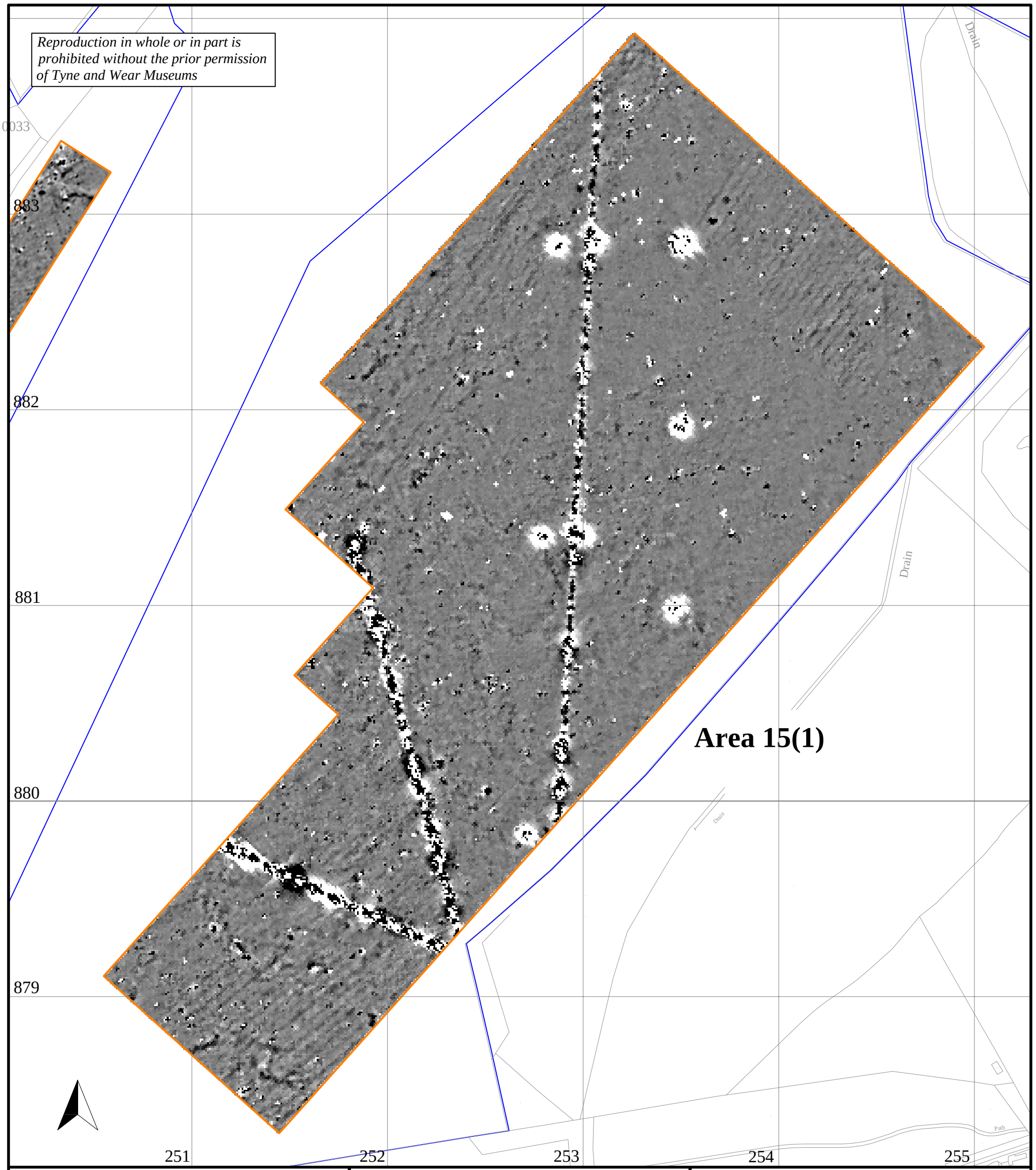

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Figure 31

Area 15(1), geophysical survey

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m

scale 1:2000 - for A3 plot

outline of survey area

5.00
4.17
3.33
2.50
1.67
0.83
0.00
-0.83
-1.67
-2.50
-3.33
-4.17
-5.00 nT

0033

883

882

881

880

879

251

252

253

254

255

Drain

Drain

Drain

Path

Area 15(1)

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Figure 32

Area 15(1), geophysical interpretation

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m

scale 1:2000 - for A3 plot

outline of survey area

positive magnetic anomalies

dipolar magnetic anomalies

0033

883

882

881

880

879

251 252 253 254 255

Drain

Drain

Drain

Path

Area 15(1)

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Figure 33

Area 15(1), archaeological interpretation

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m

scale 1:2000 - for A3 plot

outline of survey area

soil-filled features

service pipes

orientation of ridge and furrow

pylon

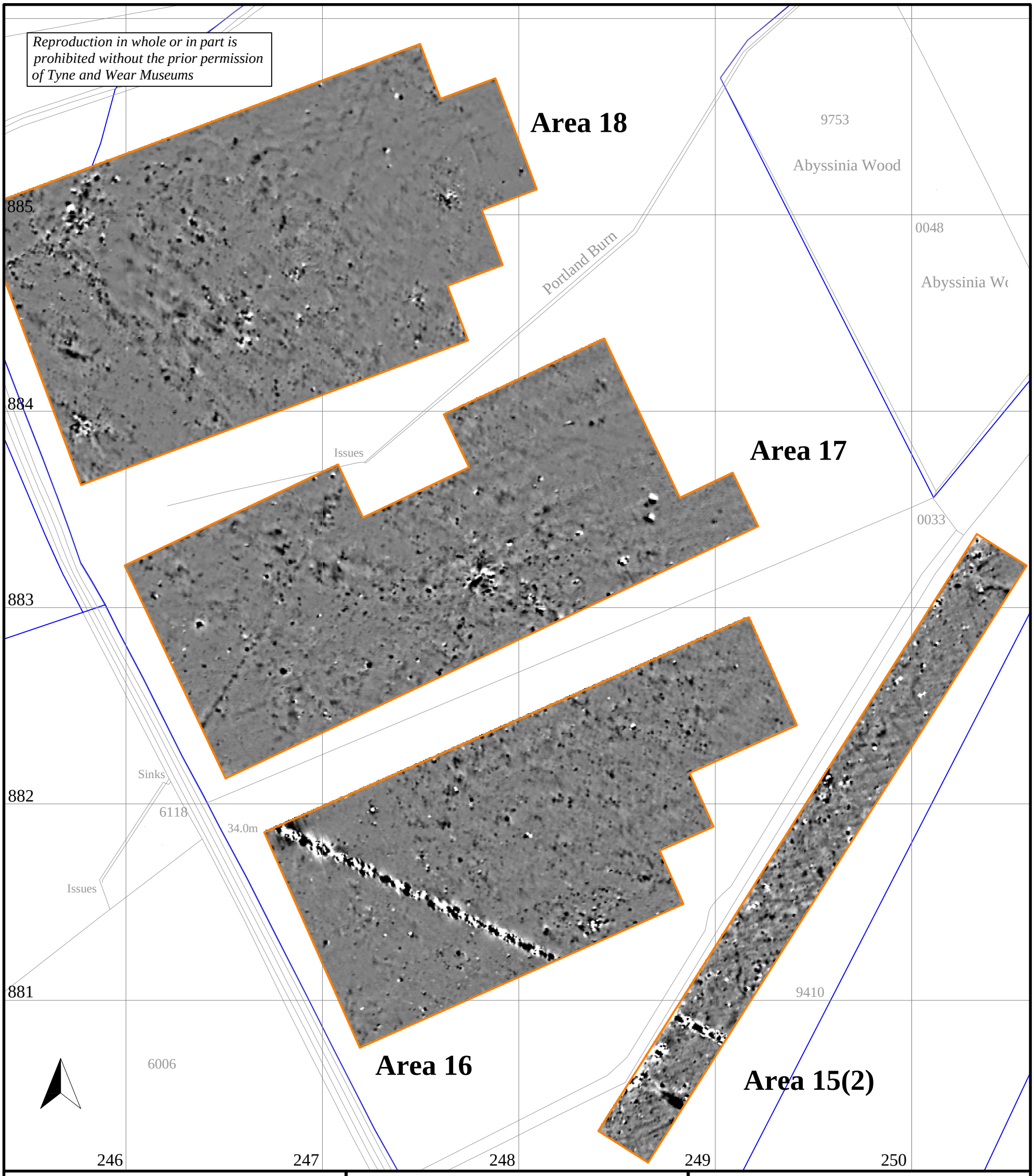

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Figure 34

Areas 15(2), 16, 17 & 18, geophysical surveys

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m

scale 1:2000 - for A3 plot

outline of survey area

5.00
4.17
3.33
2.50
1.67
0.83
0.00
-0.83
-1.67
-2.50
-3.33
-4.17
-5.00 nT

Area 18

Area 17

Area 16

Area 15(2)

885
884
883
882
881

246 247 248 249 250

9753
Abyssinia Wood
0048
Abyssinia W(
0033
9410
6006
6118
34.0m

Portland Burn
Issues
Sinks
Issues

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Potland Burn, Ashington, Northumberland

geophysical surveys

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Figure 35

Area 15(2), 16, 17 & 18, geophysical interpretation

on behalf of
Tyne and Wear Museums
Archaeology Department

0 100m
scale 1:2000 - for A3 plot

outline of survey area

positive magnetic anomalies

dipolar magnetic anomalies

Area 18

Area 17

Area 16

Area 15(2)

9753

Abyssinia Wood

0048

Abyssinia W(

0033

Portland Burn

Issues

Sinks

6118

34.0m

9410

6006

885

884

883

882

881

246

247

248

249

250

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Figure 36

Areas 15(2), 16, 17 & 18, archaeological interpretation

on behalf of
Tyne and Wear Museums Archaeology Department

0 100m

scale 1:2000 - for A3 plot

outline of survey area

soil-filled features

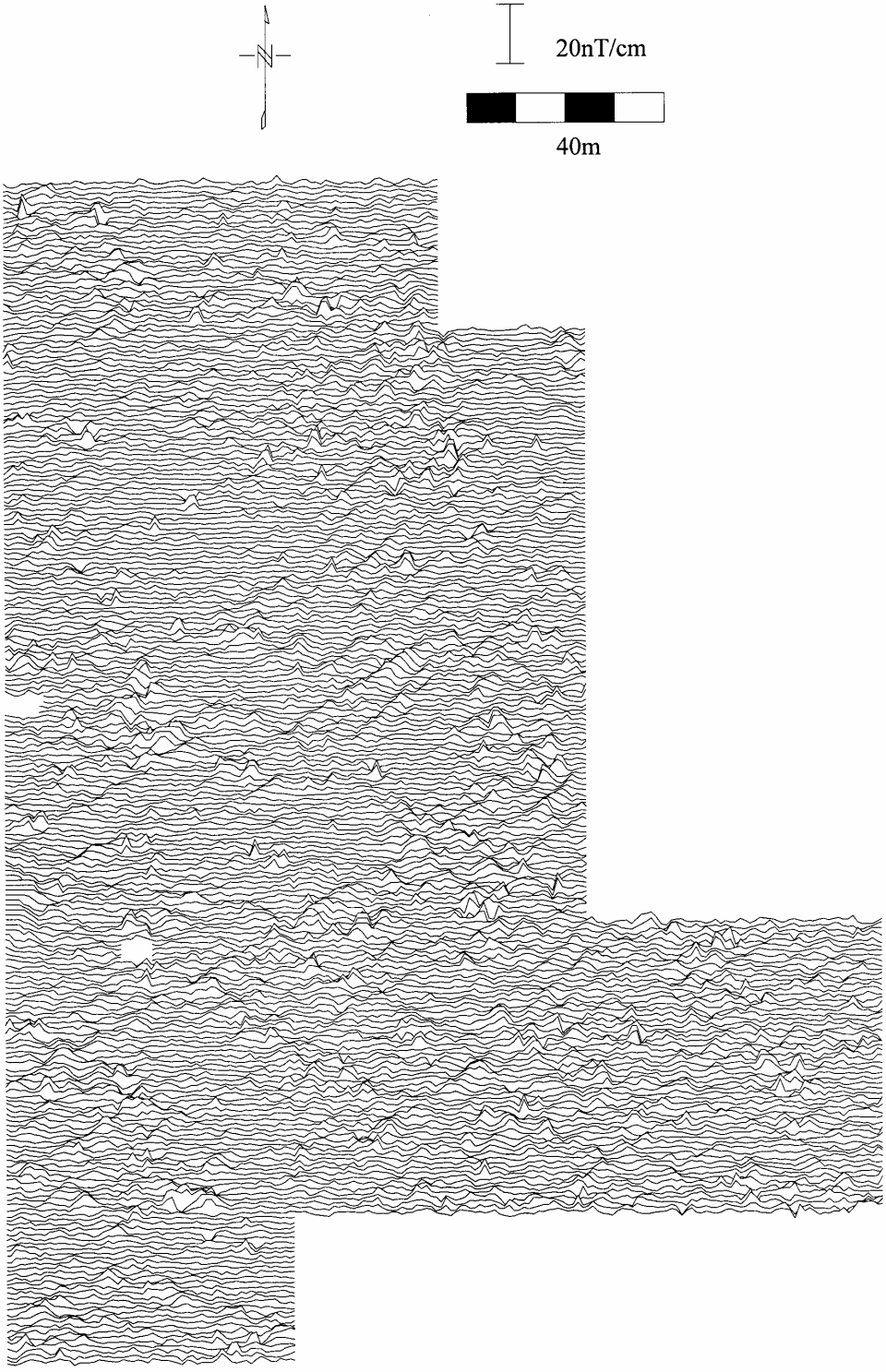
service pipes

orientation of ridge and furrow

Appendix I: Trace plots of geophysical data

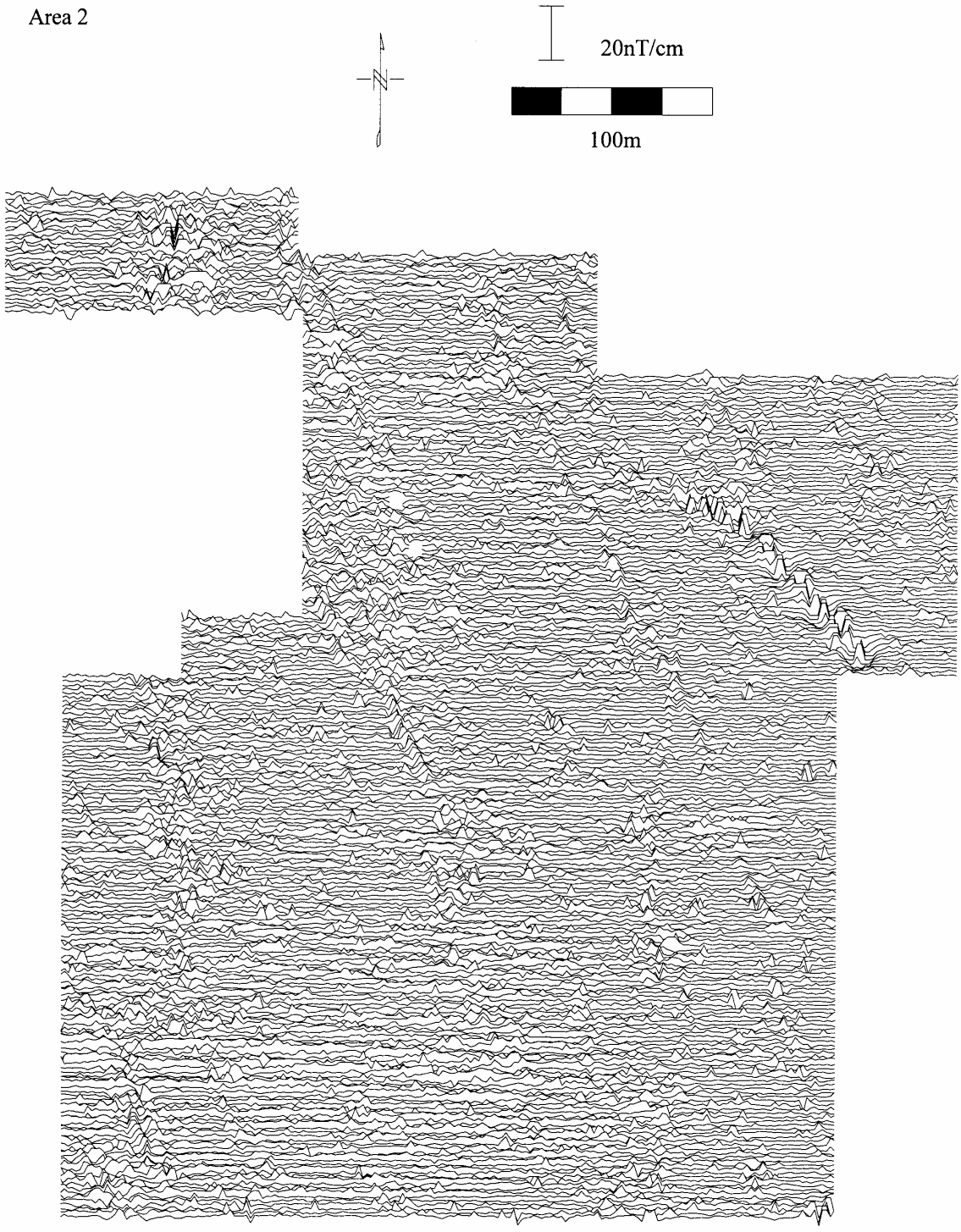
Trace plot

Area 1



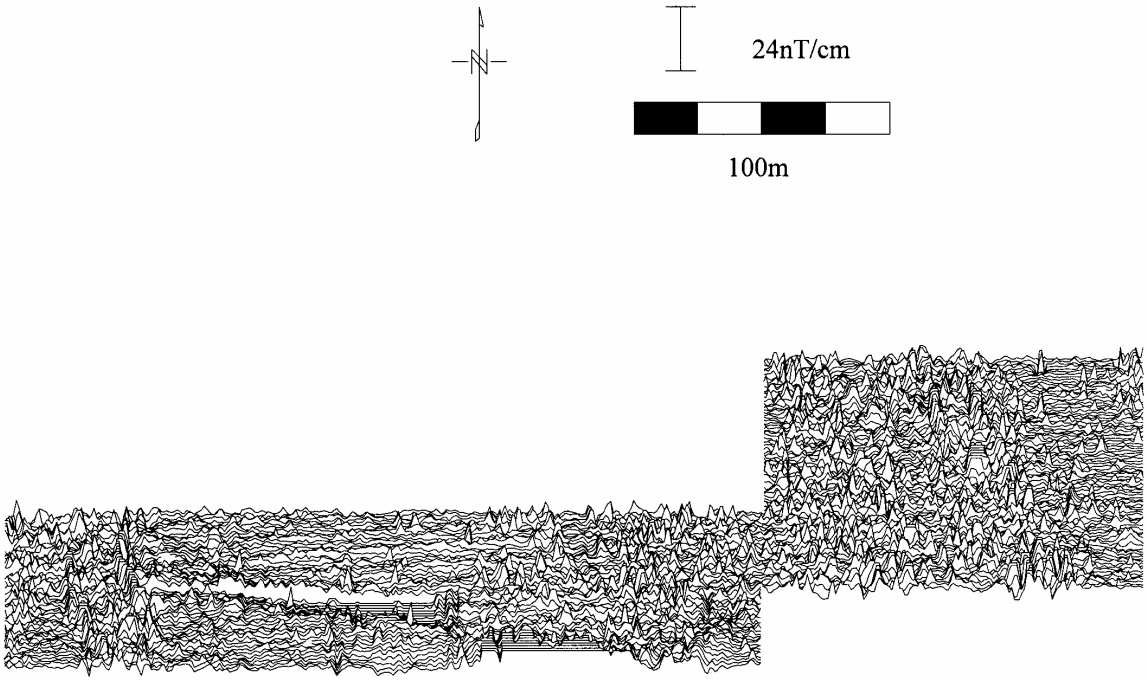
Trace plot

Area 2



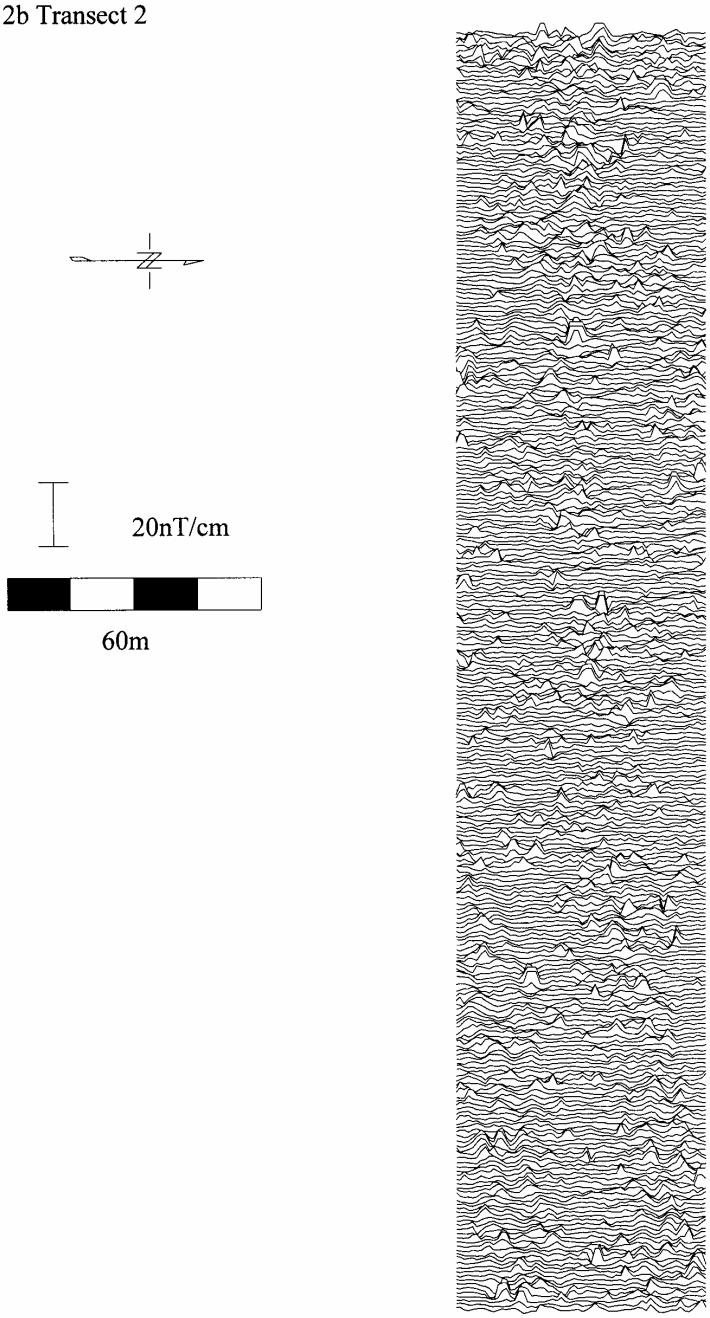
Trace plot

Area 2b Transect 1



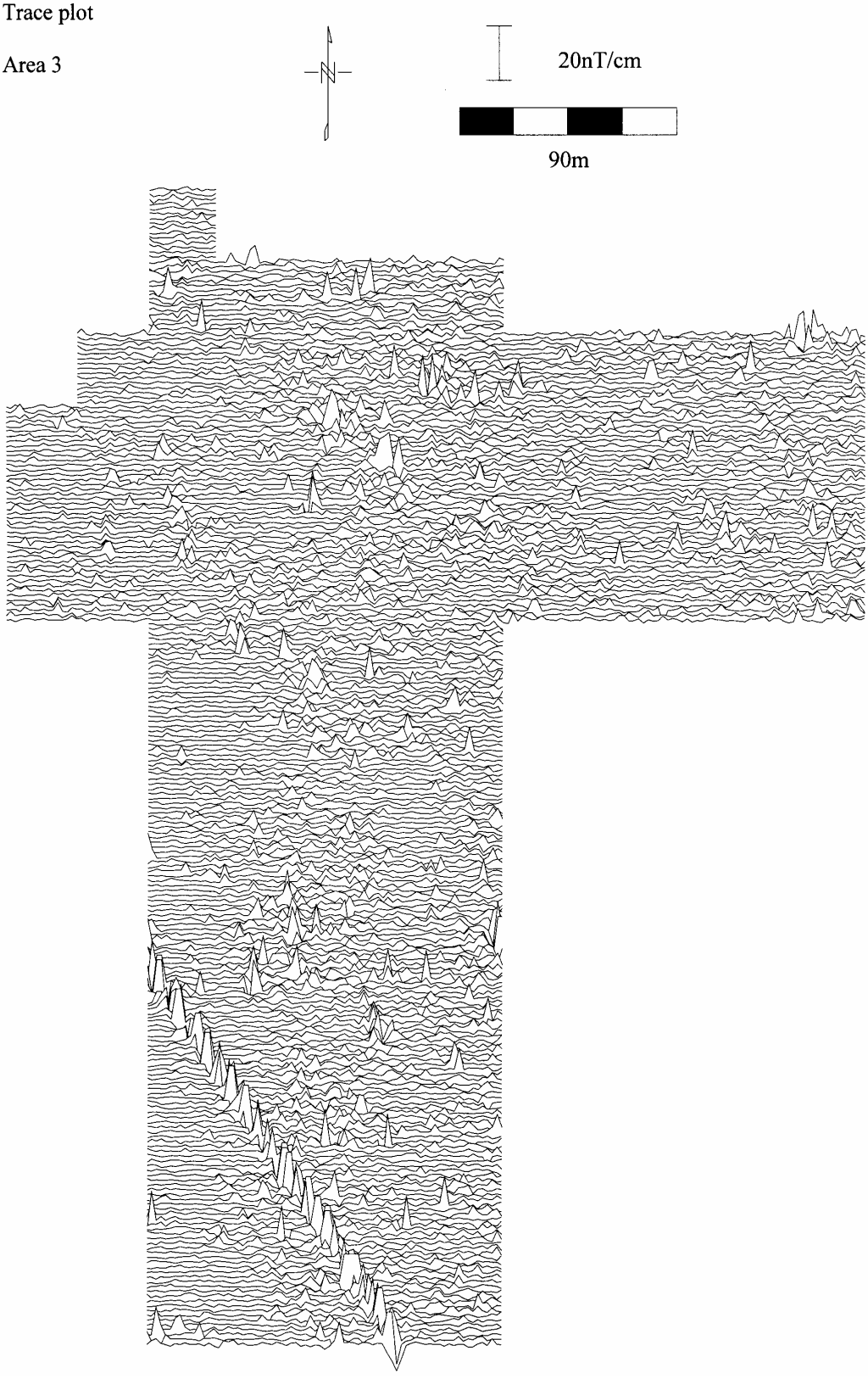
Trace plot

Area 2b Transect 2



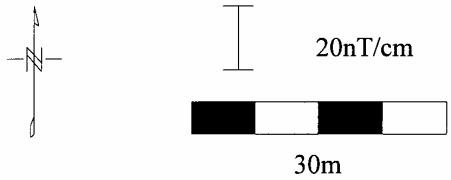
Trace plot

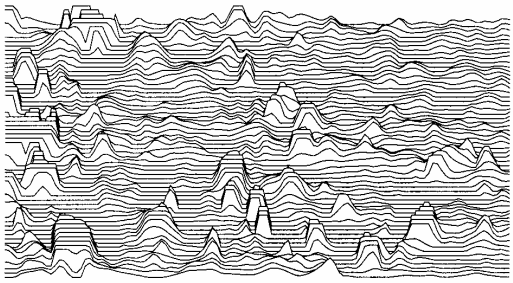
Area 3



Trace plot

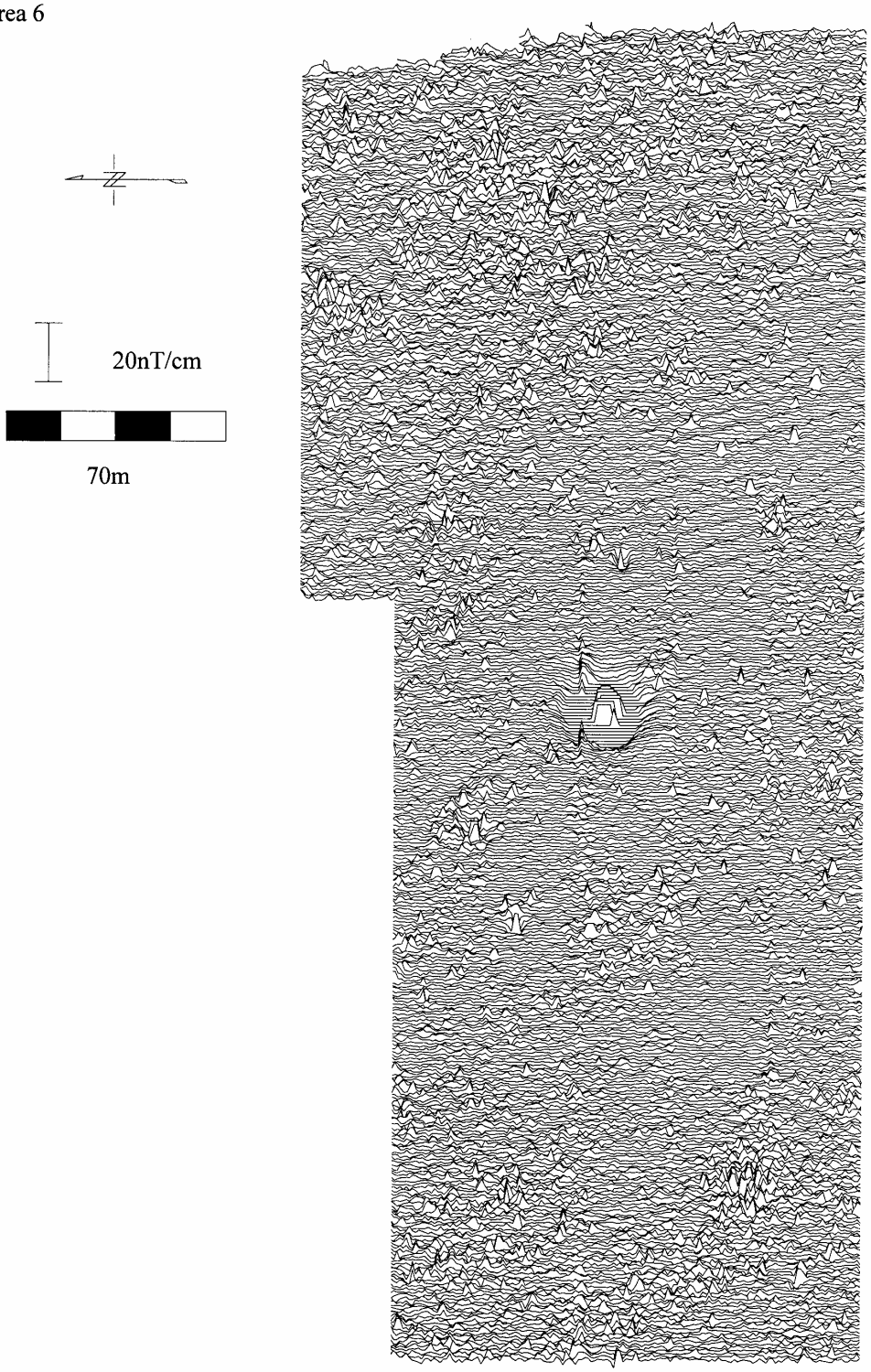
Area 4





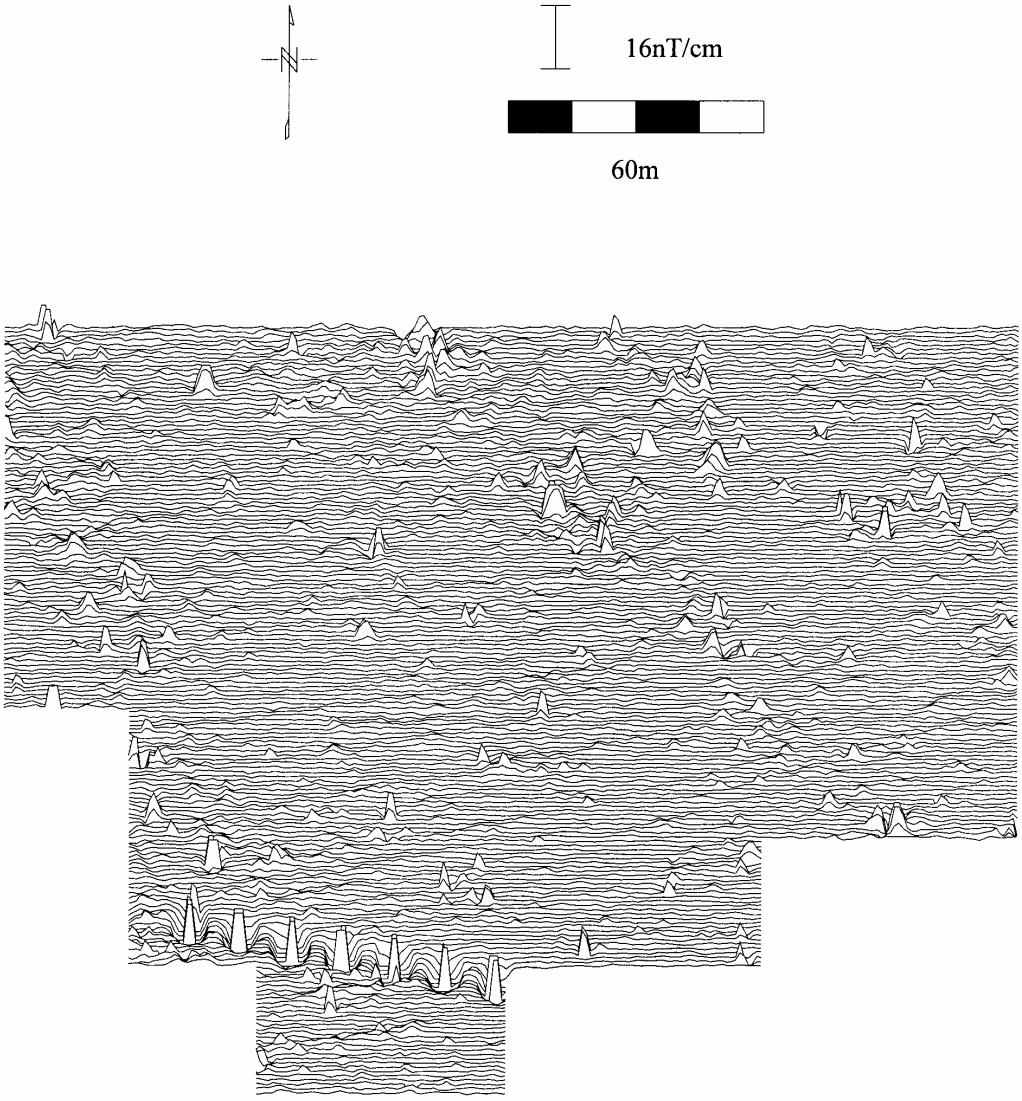
Trace plot

Area 6



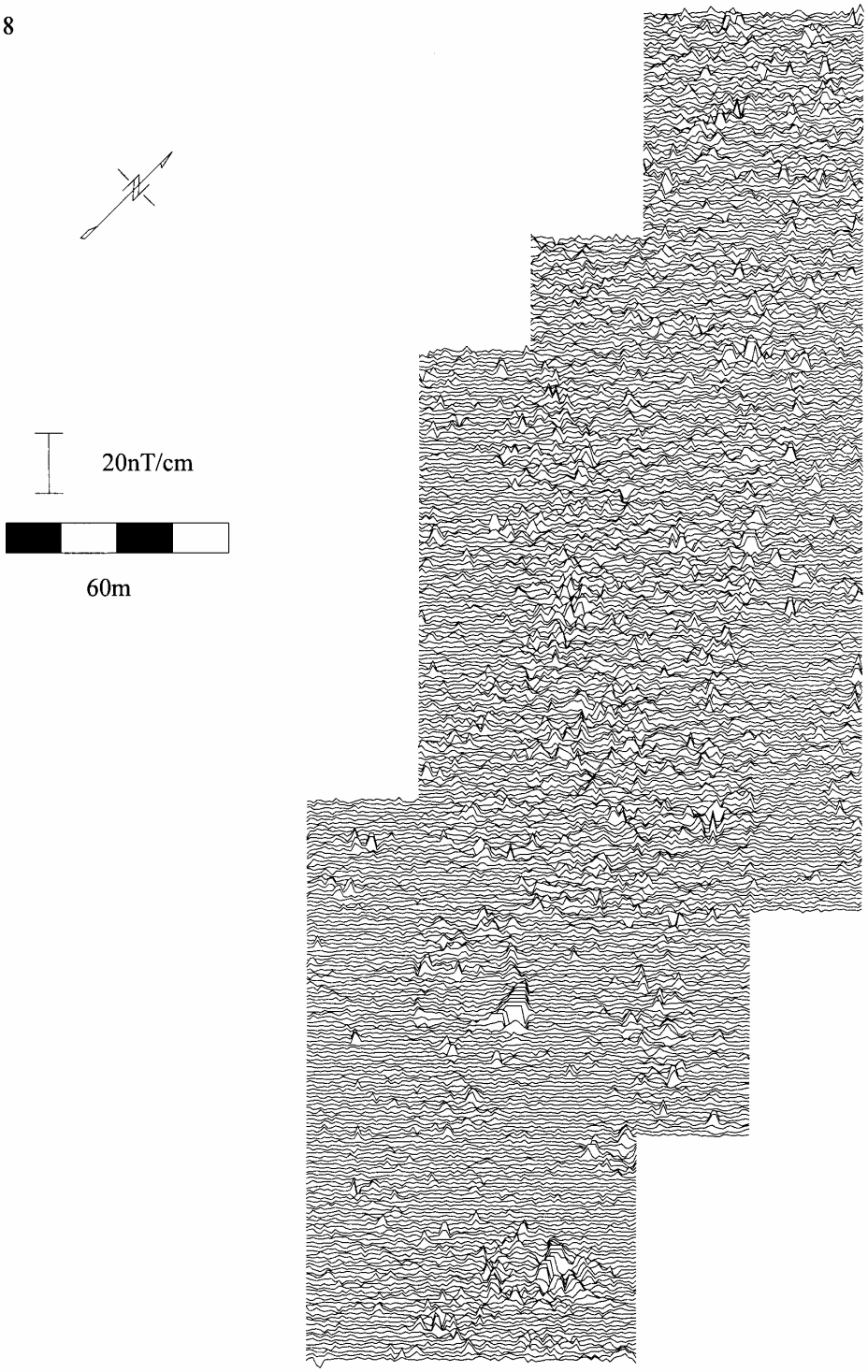
Trace plot

Area 7



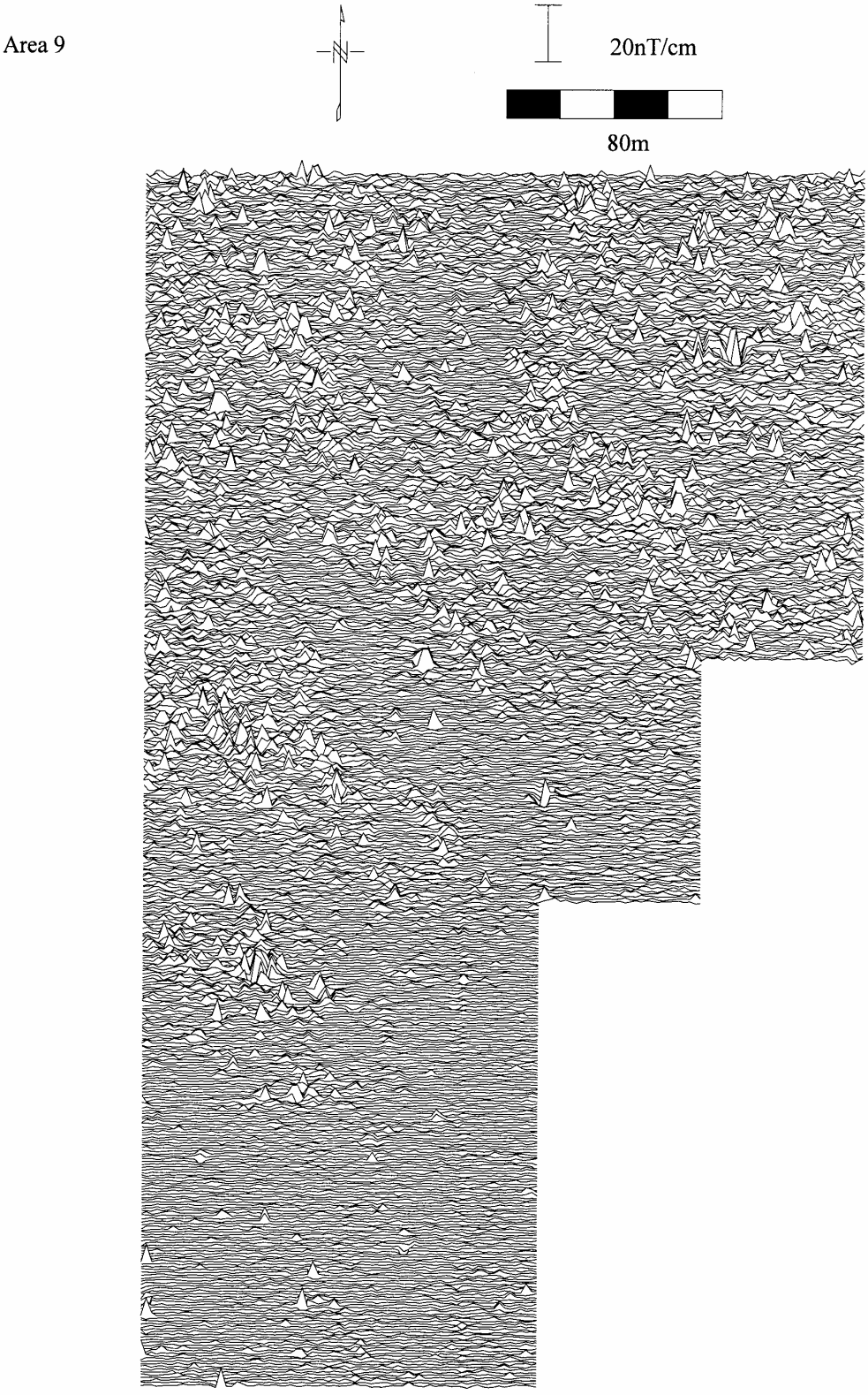
Trace plot

Area 8



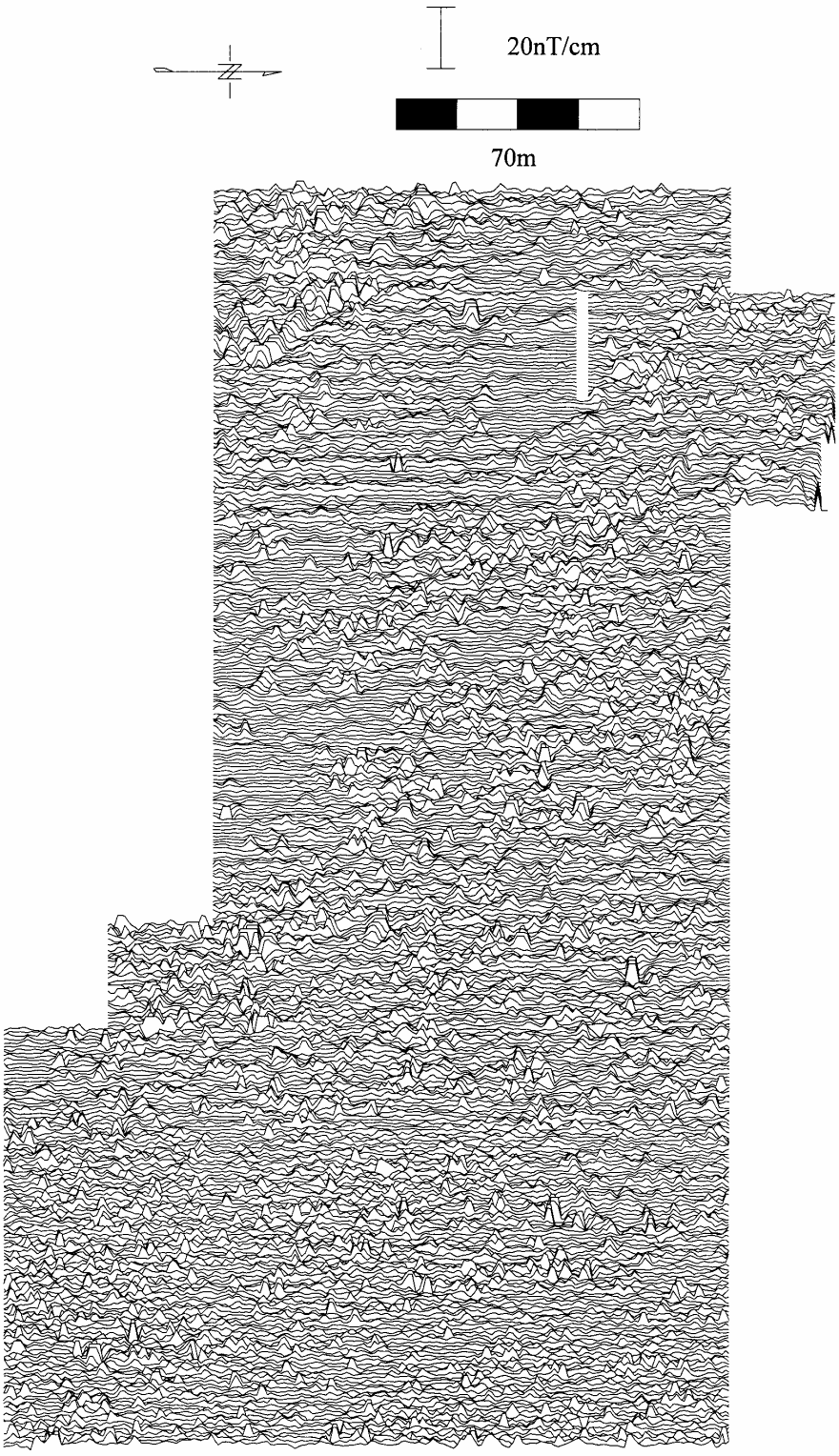
Trace Plot

Area 9



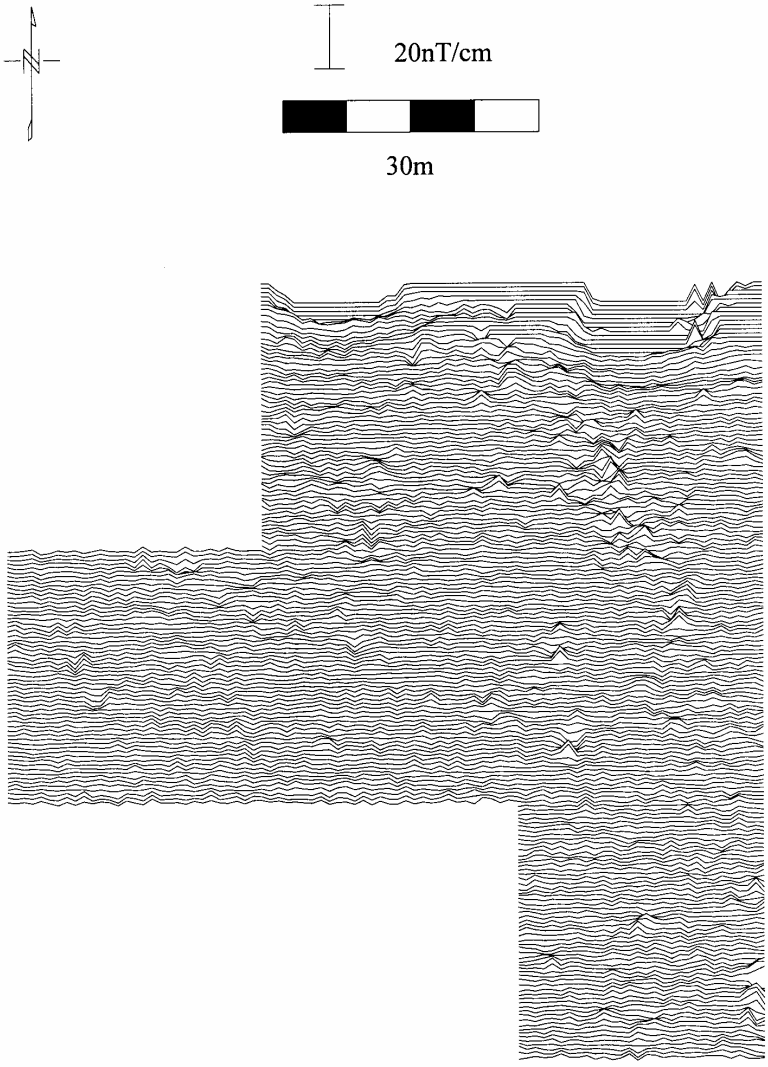
Trace plot

Area 9b



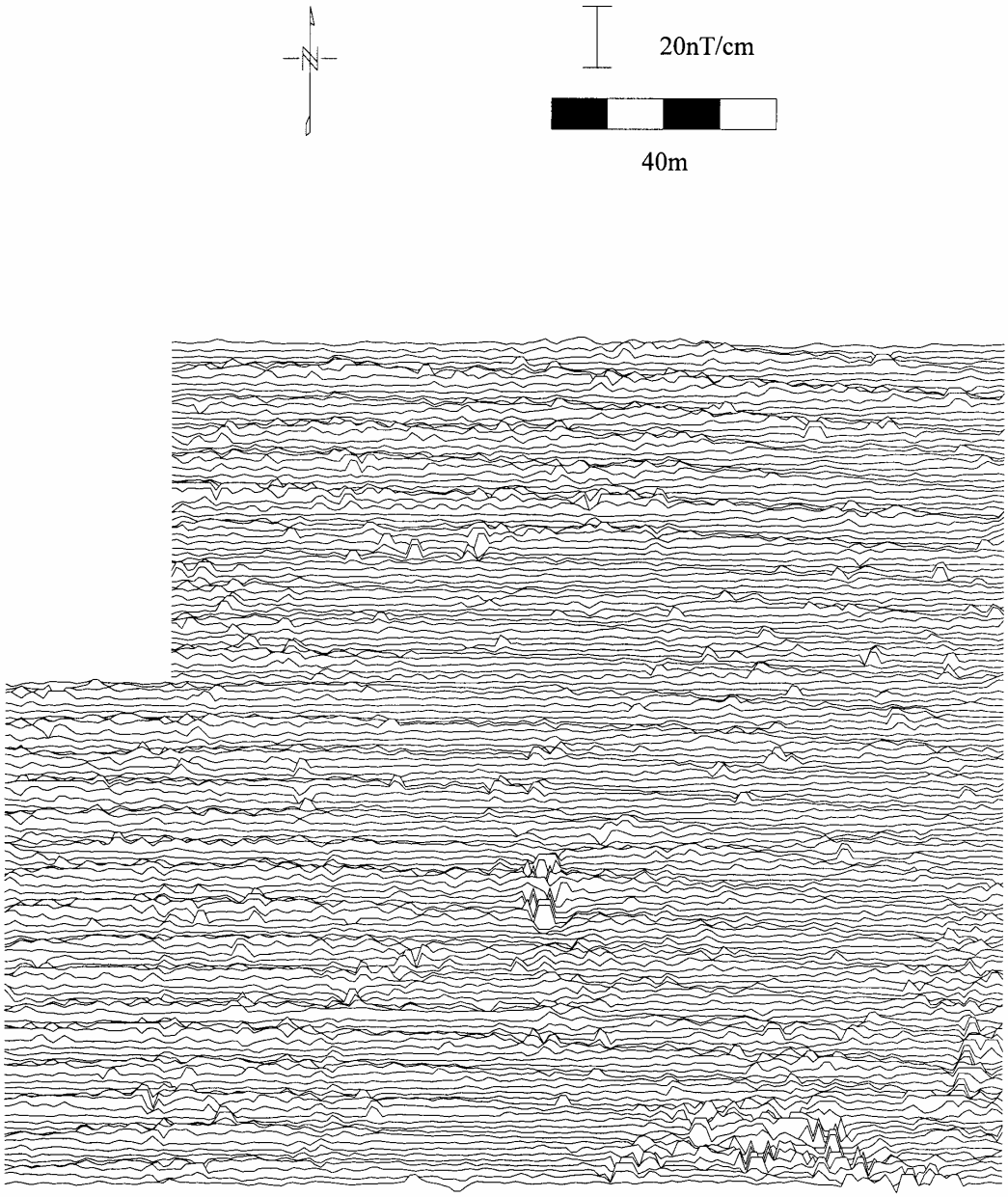
Trace plot

Area 10



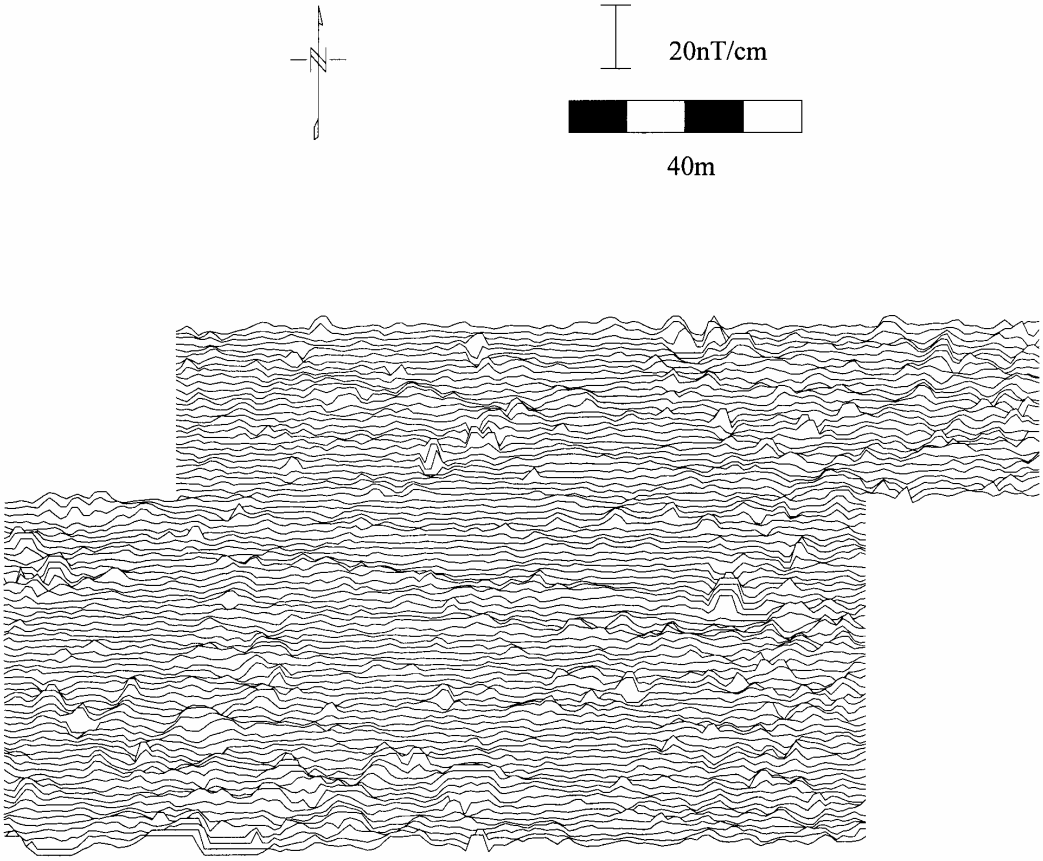
Trace plot

Area 13



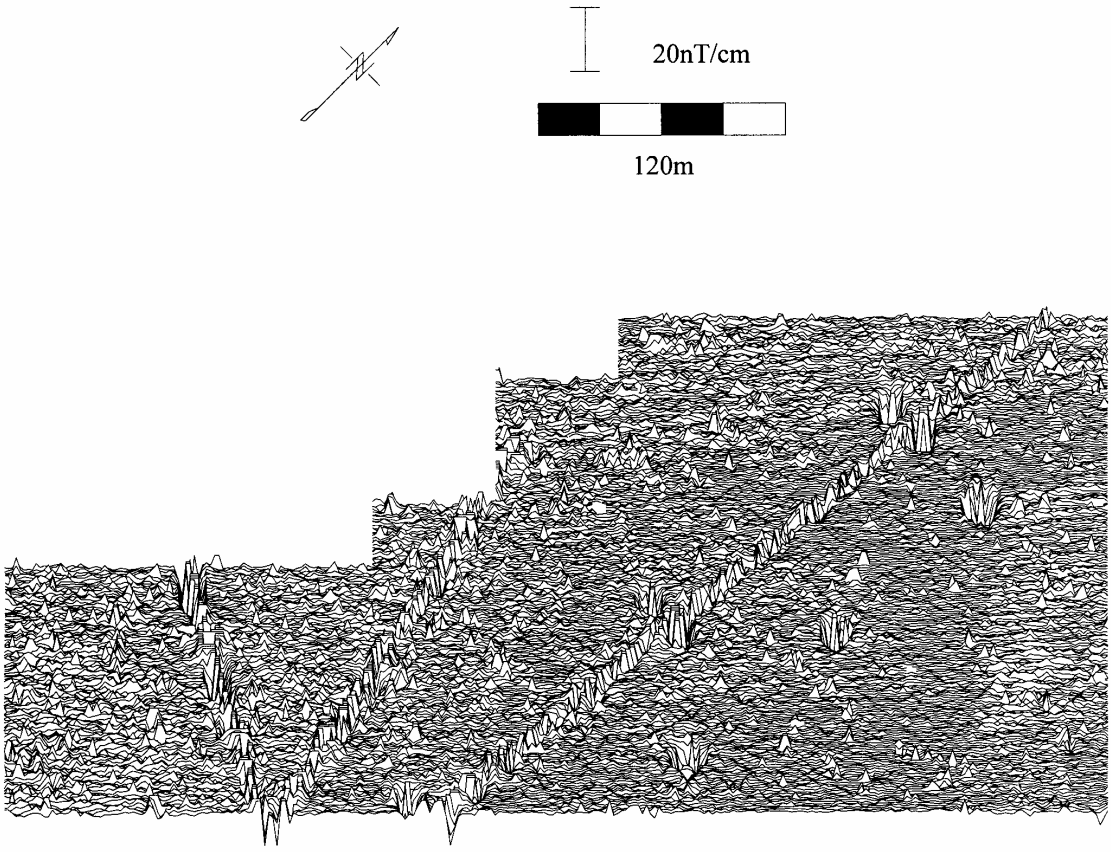
Trace plot

Area 14



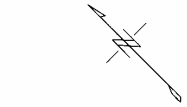
Trace plot

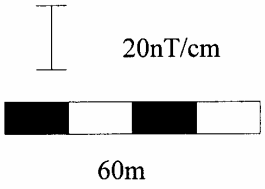
Area 15 Transect 1

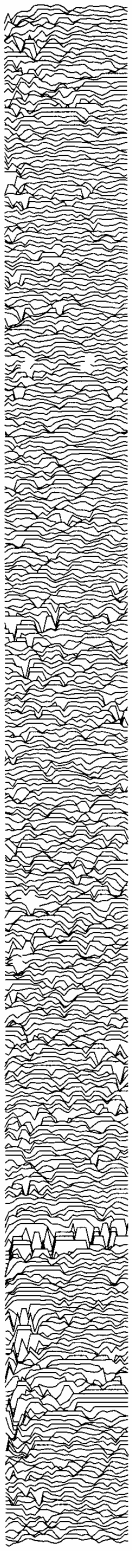


Trace plot

Area 15 Transect 2

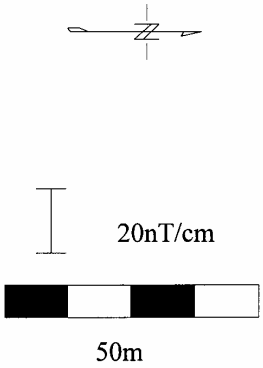


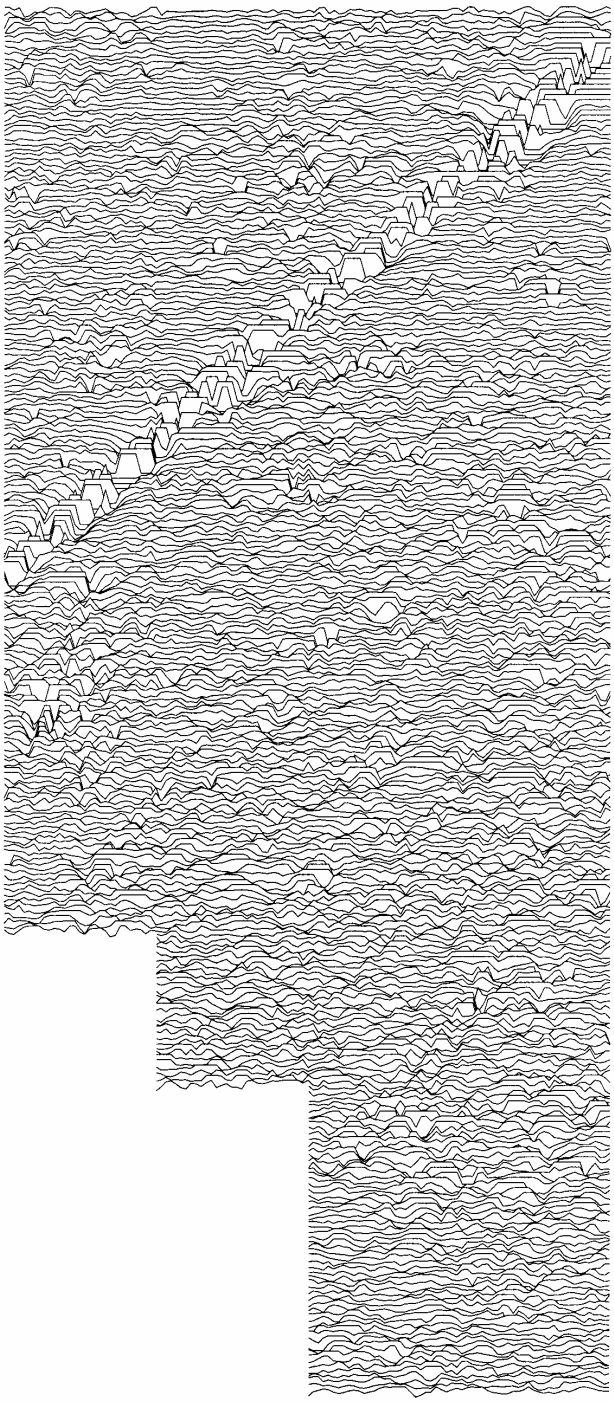




Trace plot

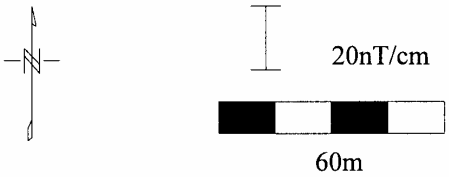
Area 16

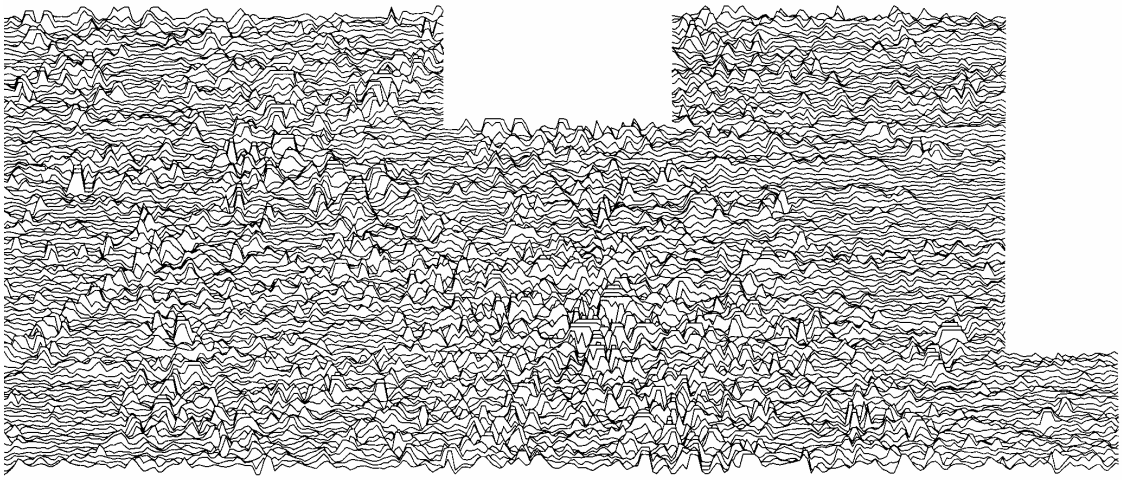




Trace plot

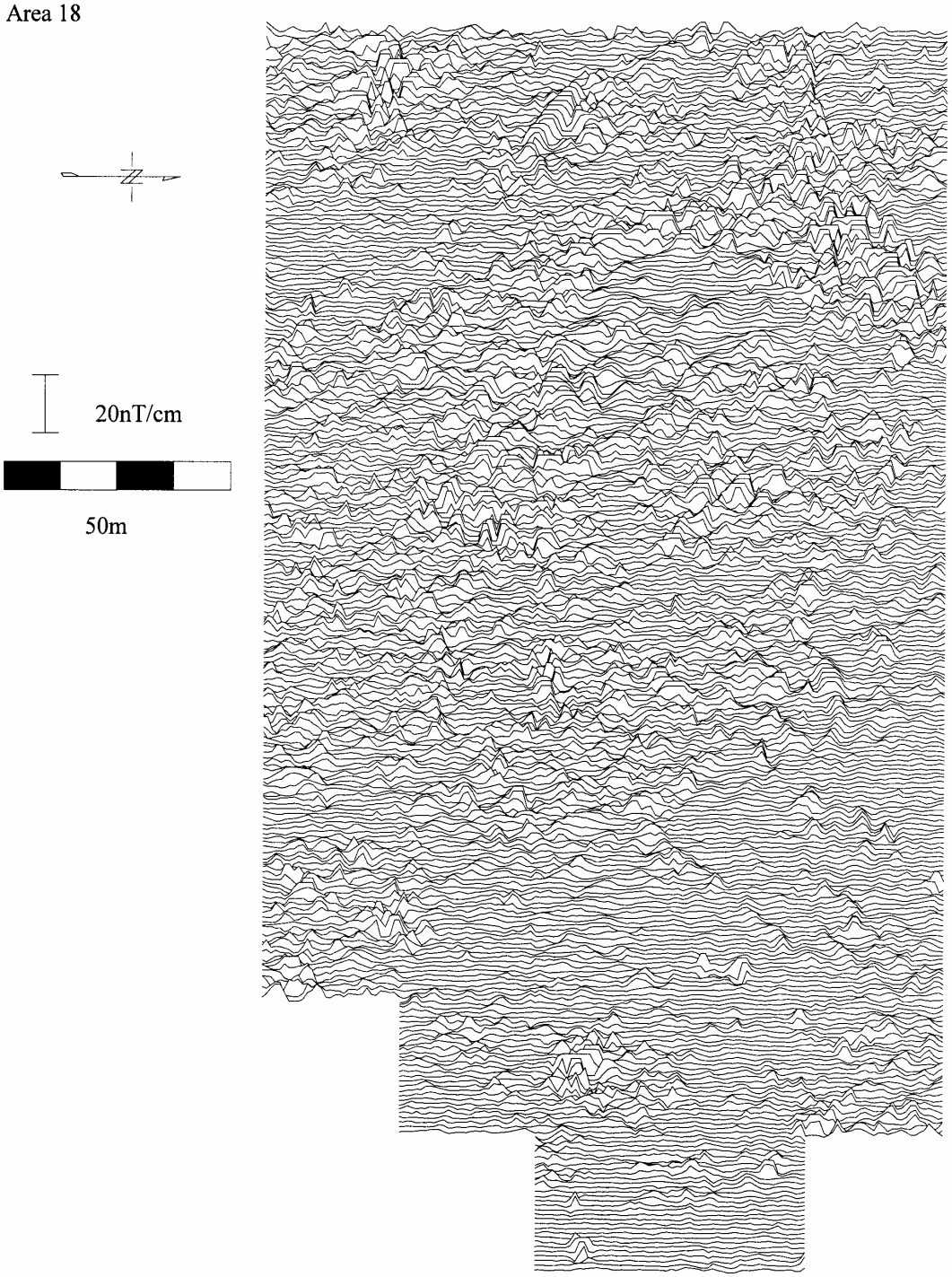
Area 17





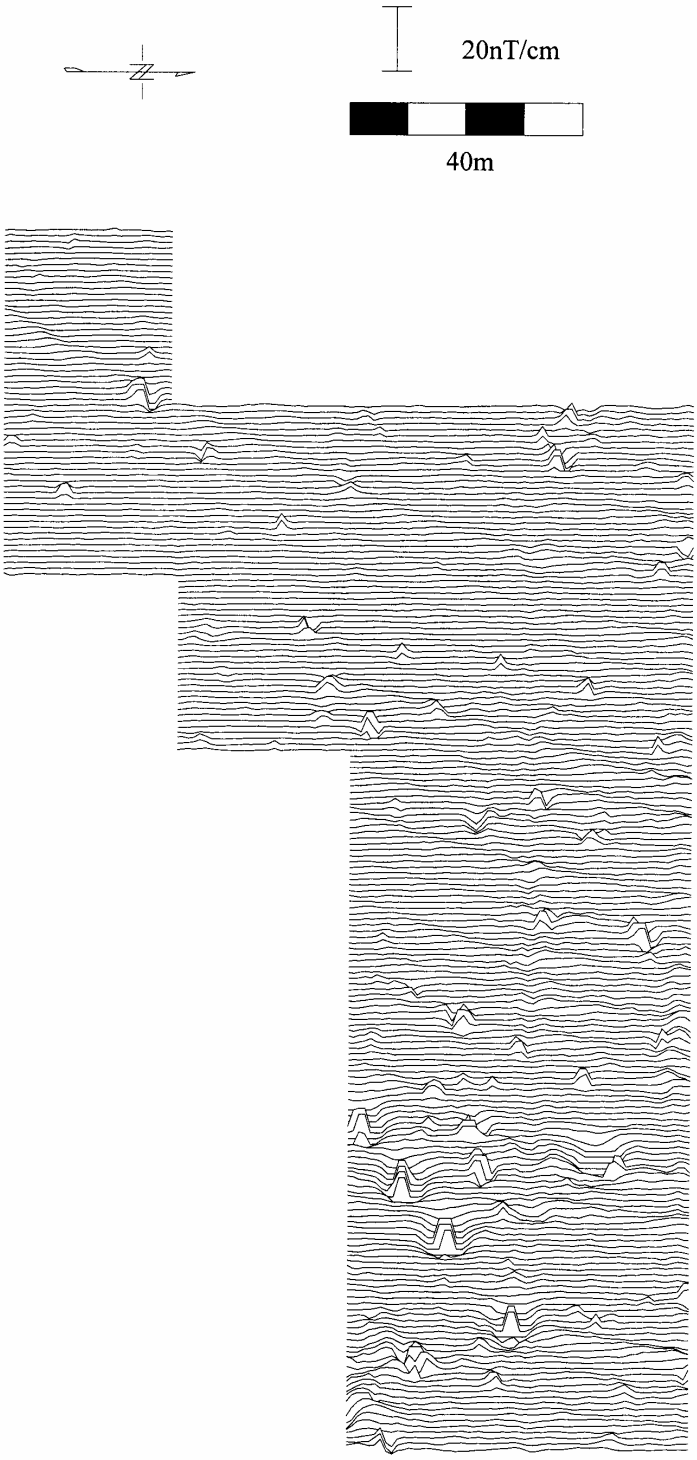
Trace plot

Area 18



Trace plot

Area 19



Trace plot

Area 20