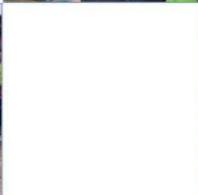
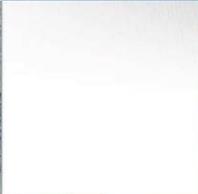
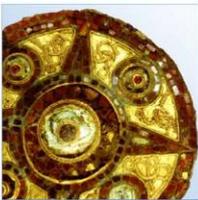
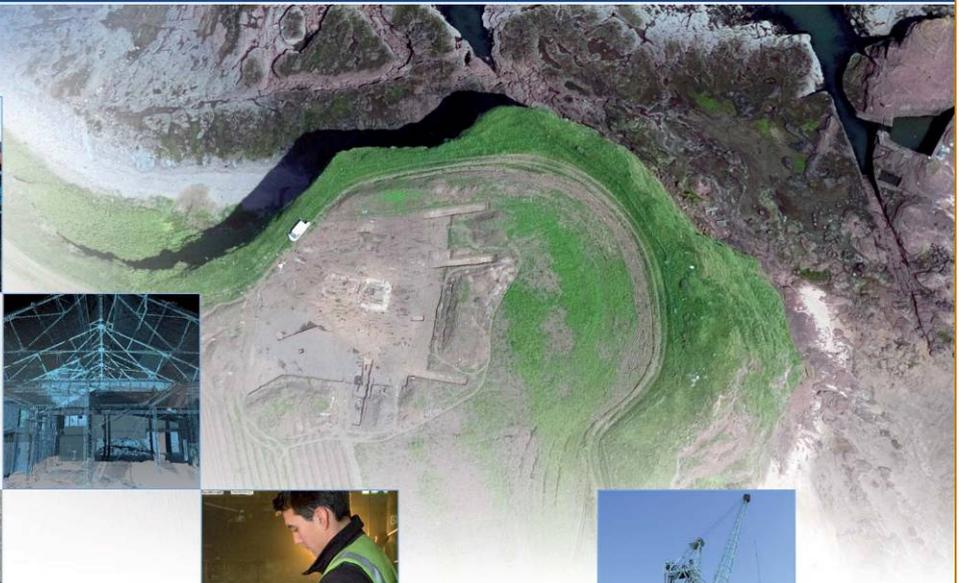


A96 Dualling Inverness to Nairn (including Nairn Bypass) Highlands Archaeological Geophysical Survey (Phase 2)

National Grid Reference Number: NH 8020 5260

AOC Project No: 23327

Date: June 2016



ARCHAEOLOGY

HERITAGE

CONSERVATION

A96 Dualling Inverness to Nairn (including Nairn Bypass), Highlands Archaeological Geophysical Survey, (Phase 2)

Commissioned by: Jacobs U.K. Limited
160 Dundee Street
Edinburgh
EH11 1DQ

National Grid References (NGR): NH 8020 5260 (centred)

AOC Project No: 23327

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Date: June 2016

This document has been prepared in accordance with AOC standard operating procedures.

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Non-Technical Summary

AOC Archaeology Group was commissioned by Jacobs U.K. Limited to undertake an archaeological geophysical (gradiometer) survey over twelve areas of land along the preferred route of the A96 Dualling Inverness to Nairn (including Nairn Bypass) project to investigate the potential for buried archaeological remains. This report is an addendum to the initial phase of survey work undertaken in April 2016 by AOC.

A detailed gradiometer survey was undertaken over approximately 30ha of agricultural land (centred at NH 8020 5260) with some of the proposed survey areas unsurveyable due to crop and access issues. A number of anomalies of possible archaeological potential were detected as well as modern features such as plough lines, land drains and buried utilities.

The anomalies of archaeological potential identified are a number of discrete linear, curvilinear and rectilinear anomalies that have been interpreted as cut features that would relate to former human settlement activity. These include several possible enclosure ditches, two possible ring ditches, a track way, possible structural remains with associated ditches and pits and a number of discrete pits of a size that could indicate quarrying or midden deposits. Across the survey area there are large areas of modern and geological disturbance including at least modern pipe lines which would mask weaker, potentially archaeological features and subsequently detailed interpretation in these areas is tentative.

1 Introduction

- 1.1 AOC Archaeology Group was commissioned by Jacobs U.K. Limited to undertake a geophysical (gradiometer) survey over twelve areas of land along the preferred route of the A96 Dualling project between Inverness and Nairn, Moray to investigate the potential for buried archaeological remains.
- 1.2 The geophysical survey was carried out to provide information on the extent and significance of potential buried archaeological remains along the route of the A96 dualling works. It is the second phase of geophysical survey work following on from a previous gradiometer survey in April 2016 (AOC Archaeology Group 2016).

2 Site location and description

- 2.1 The site includes twelve survey areas on predominantly agricultural land running between Inverness and Nairn, largely following the route of the current A96 (centred at NH 8020 5260; Figure 1). The areas targeted with geophysical survey had a variety of different land uses. The detailed gradiometer survey covered approximately 30ha of agricultural land with some of the proposed survey areas unsurveyable due to crop and access issues.
- 2.2 The natural topography undulates, ranging between Inverness and Nairn from 20m above Ordnance Datum (aOD) to 50m (aOD), with the present course of the A96 being positioned in a depression between the higher coastal areas to the north and hills to the south.
- 2.3 The bedrock geology between Inverness and Nairn largely comprises Middle Old Red Sandstone (undifferentiated) - Conglomerate, Sandstone, Siltstone and Mudstone, with an area to the south-east of Nairn being composed of Unnamed Igneous Intrusion, Late Silurian To Early Devonian - Felsic-rock (BGS 2015).
- 2.4 Gradiometer survey is recommended over any sedimentary geology, but thermoremanent effects on some igneous rock types can be variable to magnetic based surveys. (David *et al.* 2008, 15).

3 Archaeological Background

- 3.1 The following section summarises the archaeological background outlined in the Specification for Archaeological Geophysical Survey and Metal Detecting prepared by Jacobs U.K. Limited in 2015 (Curtis 2015). From the number and types of known archaeological sites within the surrounding area it can be seen that there is high potential for unknown sites of all periods especially prehistoric periods.
- 3.2 The earliest recorded human activity within the vicinity of the site dates to the Mesolithic period, evidence of which has been revealed during excavations at 13-24 Castle Street in Inverness (National Record of the Historic Environment (NRHE) No. NH64NE 104) with the discovery of several flints, chips and charcoal. Two shell middens (NRHE Nos. NH64NE 38 and NH74NW 81) identified at in the area are also of Mesolithic date.
- 3.3 The Neolithic and Bronze Age periods are largely characterised by religious monuments such as the stone circles at Upper Cullerine (NRHE No. NH74NW 77) and upstanding stones at Milton (NRHE No. NH74NW 11). There are a several Bronze Age funerary monuments within the vicinity of the survey area including the chambered cairn at Culloden (NRHE No. NH 74 NW 5) and the Clava Cairns (NRHE No. NH74SE 1 to NH74SE 4), which comprise a complex of passage cairns, rings cairns, a kerb cairn and standing stones. Individual burial cists have also been excavated in the general area, such as the two cist burials located at Holm Mains Farm (NRHE No. NH64SE 356). Material evidence dating to these periods includes a variety of stone artefacts discovered at

Allanfearn (NRHE No. NH74NW 79), Balloch (NRHE No. NH74NW 78) and Clava (NRHE No. NH74SE1 to NH74SE 4). Evidence of hut circles, field systems and clearance cairns have been found at Eastertown (NRHE No. NH63SW 46). Settlements relating to this period largely exist as cropmarks, such as ring ditches, including those of the Scheduled Monument of a ring ditch and enclosure at Allanfearn (NRHE No. NH74NW 86; SM5008).

- 3.4 To the south of Inverness at Culduthel Mains Farm lies a former multi phased settlement (NRHE No. NH64SE 241), comprising a substantial Iron Age settlement and industrial centre with material relating to the Neolithic, Iron Age and Romano-British periods.
- 3.5 The Roman occupation in northern Scotland is largely characterised by marching camps relating to the military campaigns of AD 84 and the 3rd century AD. In the wider area around the Scheme several temporary marching camps have been recorded at Thomshill near Elgin (NRHE No. NJ25NW 2) and Burghead (Ptoroton) (NRHE No. NJ16NW 2), as well as a Roman fort at Easter Galcantray (NRHE No. NH84NW 20).
- 3.6 Evidence of the Picts in northern Scotland during the post-Roman period is largely defined by symbol stones, such as that of Sueno's Stone, Forres (NRHE No. NJ05NW 1), and forts including that at Burghead (NRHE No. NJ16NW 1), which was of significant power during the Pictish period and is located to the north-east of the survey area.
- 3.7 From the 8th century, Norse occupation began in the northern isles of Scotland and by the mid 9th century the Norse were frequently invading and settling along the coast. In 884 AD Sigurd the Powerful captured Burghead and the site became the centre of Norse power within Moray.
- 3.8 During the medieval period the Highlands saw a period of considerable social and economic change with the development of the clan system and the erection of numerous castles. For example the 14th century Cawdor Castle (NRHE No. NH84NW 1) is located to the south of the Scheme. The Old Miller's Cottage (NRHE No. NH95SW 8; SM11644), to the south-east of the Scheme, comprises the remains of a motte and bailey castle.
- 3.9 The post-medieval period involved much political and religious turmoil between Scotland and England with several Jacobite Risings which resulted in the Battle of Culloden in 1746 (NRHE No. NH95SW 8; BTL6; SM967), which was fought at Drumossie Moor to the south of the Scheme. Following this battle, several defensive sites were constructed such as that of Fort George (NRHE No. NH75NE 3; SM90146), as well as a system of military roads leading between the forts and military garrisons.
- 3.10 During the 18th and 19th centuries agricultural and economic improvements resulted in large changes to the landscape with increases in land enclosures, quarrying, reforestation and the burning of lime for fertilizer. This period also saw the construction of the Inverness to Nairn Railway line, which was opened in 1855 and, by 1861, had been absorbed into the Aberdeen and Inverness Junction Railway.

4 Aims

- 4.1 The aim of the geophysical survey was to identify any potential archaeological anomalies that would enhance the current understanding of the archaeological resource along the route.
- 4.2 The results of the geophysical survey have been assessed and interpreted, together with the known archaeological potential of the area, to gain a clearer understanding of potential buried remains within the survey area.
- 4.3 Specifically the aims of the gradiometer survey were to

- locate, record and characterise any surviving sub-surface archaeological remains within the site
- provide an assessment of the potential significance of any identified archaeological remains in a local, regional and (if relevant) national context
- produce a comprehensive site archive and report

5 Methodology

- 5.1 Parameters were selected that were suitable for the prospective aims of the survey and in accordance with recommended professional good practice (David *et al.* 2008, 8).
- 5.2 The gradiometer survey was carried out using a Bartington Grad601-2 fluxgate gradiometer (see Appendix 1 and 2). Data was collected on an east-west alignment using zig-zag traverses, with a sample interval of 0.25m and a traverse interval of 1m.
- 5.3 Data were collected in 30m by 30m grids within the proposed survey areas, totalling a surveyed area of approximately 30ha.
- 5.4 An attempt was made to avoid metal obstacles present within the survey area as gradiometer survey is affected by 'above-ground noise'. This included areas of electric fencing.
- 5.5 All geophysical survey work was carried out in accordance with recommended good practice specified in guideline documents published by English Heritage (David *et al.* 2008), and the Chartered Institute for Archaeologists *Standard and Guidance for archaeological geophysical survey* (2014). Data processing, storage and documentation were carried out in accordance with the good practice specifications detailed in the guidelines issued by the Archaeology Data Service (Schmidt and Ernenwein 2011).
- 5.6 The gradiometer data were downloaded using the Bartington Grad601 PC Software v313 and processed using Geoscan Geoplot v3.0. Data processing applied included zero mean traverse to adjust for heading errors, de-staggering to correct for differences in the surveyor's gait when walking and an interpolation to enhance the data image. Raw and processed data are visualised as greyscale plots and minimally processed XY trace plots (Figures 3 to 26). The details of all data processing applied can be found in Appendices 3 and 4.
- 5.7 Interpreted point, polyline and polygon layers were created as layers in AutoCAD and technical terminology used to describe identified features can be found in Appendix 5.

6 Results and Interpretation

- 6.1 The gradiometer survey results have been visualised as greyscale plots with raw data plotted at -5 to 10nT and processed data plotted at -1 to 2nT; these are followed by an interpretation of each area (**Figures 3 to 26**). An individual characterisation of identified anomalies can be found in Appendix 6.

Area 1 (Figures 3-5)

- 6.2 Within Area 1 a number of possible archaeological anomalies composed of a weak change in signal values compared to background readings, or are composed of incomplete patterning, have been recorded (**IV1-IV4**). The linear positive magnetic responses are likely to represent ditches with **IV1a** and **IV1b** probably forming part of the same enclosure ditch which has been truncated by the modern pipeline **IV6**. A curvilinear positive response at **IV2** is approximately 10m in diameter and could represent a ring ditch. Shorter sections of ditch are possibly surviving at **IV3a** and **IV3b**. **IV4** is a semi-circular negative response with one, very tentative, similar but smaller semi-circular anomaly to the west. A negative magnetic response would suggest either a ploughed out bank or possibly a

stone-lined or paved area with a material less magnetic than the surrounding topsoil. Interpretation is tentative and it is unclear whether these anomalies are of an archaeological or a natural geological origin.

- 6.3 A number of areas of geology have been detected within Area 1 (**IV5**). These consist of areas of disturbance composed of irregular significant increase or decreases in values compared with background readings and are likely to indicate natural variations in soil composition or geology.
- 6.4 A linear trend was detected (**IV6**) comprising contrasting positive and negative values. Such anomalies usually signify a feature with a high level of magnetisation and are likely to represent modern pipe lines. The surrounding ferrous response along the pipe line will mask any weaker anomalies of possible archaeological potential within the vicinity.

Area 2 (Figures 6-8)

- 6.5 A number of possible archaeological trends, comprising anomalies composed of a weak change in signal values compared to background reading, or composed of incomplete patterning, were recorded (**IV7-IV9**). A pair of parallel linear positive anomalies (**IV7**) could represent surviving sections of enclosure ditches. A curving, or approximately L-shaped, anomaly with a positive linear response (**IV8**) and a short section of positive response (**IV9**) are all likely to represent sections of ditches possibly relating to enclosures or former field boundaries.
- 6.6 An area of curvilinear, circular and rectilinear weakly positive trends was identified (**IV10**) which could represent a series of circular and rectilinear ditches, possibly indicating an area of settlement. These weak trends lie between two areas of strong magnetic response relating to a modern pipe line and an area of modern ferrous material. A pair of parallel weakly positive linear trends was also identified (**IV11**) which could represent former field boundaries as they are in a similar alignment to the current field boundary. Interpretation was tentative and it is unclear whether these anomalies are of an archaeological or natural geological origin.
- 6.7 A linear anomaly was detected (**IV12**) comprising contrasting positive and negative values. Such anomalies usually signify a feature with a high level of magnetisation and are likely to represent modern pipe lines. The surrounding ferrous response along the pipe line will mask any weaker anomalies of possible archaeological potential within the vicinity.

Area 3 (Figures 9-11)

- 6.8 A linear positive anomaly oriented north-west to south-east (**IV13**) is typical of a ditch-type response and as it is aligned approximately with the current field boundary it could represent a former field boundary ditch.
- 6.9 There are two similar, approximately L-shaped anomalies (**IV14** and **IV15**) with a decreased signal, compared to the background values, suggesting they could be either representing a bank or be features constructed of a material which is less magnetic in contrast to the surrounding matrix, such as a sandstone or limestone bedrock. These anomalies could be structural and therefore archaeological in origin but due to their incomplete nature are difficult to interpret.
- 6.10 Several anomalies forming linear and curvilinear trends in a discrete, approximately rectangular area, have been identified (**IV16**). These increased signals, compared to the background values, suggest that they could be archaeological in origin; possibly structural or forming older field divisions. However, poor patterning of these response values makes interpretation difficult.
- 6.11 A weakly positive, curving linear (**IV17**) is possibly a ditch type response, it is not aligned with any current field boundaries and could represent a surviving section of ditch.

- 6.12 Trends likely to denote the presence of ploughing, and relating to modern agricultural activity, have been detected (**IV18**). These comprise a series of repeating, parallel anomalies of a linear form either composed of an increased or decreased signal compared to background values.
- 6.13 A linear anomaly was detected (**IV19**) comprising contrasting positive and negative values. Such anomalies usually signify a feature with a high level of magnetisation and are likely to represent modern pipe lines. The surrounding ferrous response along the pipe line will mask any weaker anomalies of possible archaeological potential within the vicinity.

Area 5 (Figures 12-14)

- 6.14 Within this area a number of possible archaeological trends comprising anomalies composed of a weak change in signal values compared to background readings or are composed of incomplete patterning, have been recorded (**IV20** to **IV32**). Anomalies **IV22**, **IV26** and **IV27** represent discrete, sub-oval pit-type responses. These measure between 2-4m in length and possibly represent quarry pits. Anomaly **IV20** is a large but narrow rectilinear ditch-type response possibly representing an enclosure ditch due to its size. Anomalies **IV21**, **IV23**, **IV24**, **IV28** and **IV31** are short, rectilinear ditch-type responses which could represent surviving sections of small enclosures.
- 6.15 Anomaly **IV29**, which is a long, straight section of ditch-type response appears to truncate or is truncated by a more complex curvilinear enclosure ditch (**IV30**) and indicates more than one phase visible in the gradiometer data in this area. Finally, anomaly **IV32** is a large U-shaped positive anomaly probably representing a ditch-type response, possibly an enclosure ditch. Interpretation is tentative and it is unclear as to whether anomalies are of an archaeological nature or glacial or geological in origin.
- 6.16 An agricultural headland caused by ploughing was recorded around the edge of the field boundary as a curvilinear trend (**IV33**).
- 6.17 Trends likely to denote the presence of ploughing and relating to modern agricultural activity have been detected predominantly oriented north-east to south-west (**IV34** and **IV35**) with a smaller area of ploughing trends oriented north-west to south-east (**IV36**). These ploughing trends comprise a series of regular, parallel anomalies of a linear form either composed of an increased or decreased signal compared to background values.
- 6.18 Two linear trends were detected (**IV37** and **IV38**) comprising contrasting positive and negative values. Such anomalies usually signify a feature with a high level of magnetisation and are likely to represent modern pipe lines. The surrounding ferrous response along the pipe line will mask any weaker anomalies of possible archaeological potential within the vicinity.

Area 6 (Figures 12-14)

- 6.19 An area of disturbance likely to be caused by modern disturbances such as dumped material has been recorded across the majority of area. It is characterised by significant increases or decreases in values compared with background readings. This could also represent a combination of areas of geology, as these consist of areas of disturbance composed of irregular significant increase or decreases in values compared with background readings.

Area 7a (Figures 15-17)

- 6.20 Two linear trends were detected in Area 7a (**IV39**) comprising contrasting positive and negative values. Such anomalies usually signify a feature with a high level of magnetisation and are likely to represent modern pipe lines.

Area 7b (Figures 15-17)

- 6.21 A number of areas of positive magnetic response have been detected within Area 7b (**IV41** and **IV42**), they have been interpreted as possible archaeology but due to some of their more irregular morphology (see **IV41**) they could also indicate natural variations in the soil composition or geology.
- 6.22 A large curving area of increased magnetic response (**IV40**) could possibly indicate a ditch with a more complex series of ditches at its eastern end (**IV41**). A similar response to **IV41** is seen at **IV43** which is also tentatively interpreted as archaeology and could represent a section of ditch. A weakly positive curvilinear anomaly (**IV42**) could also represent a surviving section of ditch. Ploughing, presumed to be modern, is visible as weakly contrasting positive and negative linear trends oriented north-west to south-east and also north to south.

Area 7c (Figures 15-17)

- 6.23 A number of discrete linear trends have been identified (**IV44**). These are represented by weakly increased signals, compared to the background values, although poor patterning of these response values makes interpretation difficult and more tentative. They could be natural or geological in origin but due to their linear morphology have been interpreted as possible archaeology.

Area 10 (Figures 18-20)

- 6.24 Several discrete linear, curvilinear and sub-oval anomalies have been identified (**IV45** to **IV51**) which are likely to be in response to ditches and larger pits. These are represented by increased signals, compared to the background values, although poor patterning of these response values makes interpretation difficult and more tentative. The overall shape is of an irregular area of enclosure.
- 6.25 Several weak linear trends have been identified (**IV52** to **IV55**) which could indicate possible archaeology but are too ephemeral to be characterised further.
- 6.26 Trends likely to denote the presence of ploughing and relating to modern agricultural activity have been detected (**IV56**). These comprise a series of regular anomalies of a linear form, either composed of an increased or decreased signal compared to background values.
- 6.27 A linear trend runs along the northern boundary of Area 10 (**IV57**) comprising contrasting positive and negative values. Such anomalies usually signify a feature with a high level of magnetisation and are likely to represent modern pipe lines. The surrounding ferrous response along the pipe line will mask any weaker anomalies of possible archaeological potential within the vicinity.
- 6.28 A modern anomaly has been detected (**IV58**) with a high level of magnetisation, and represents the location of a borehole.

Area 11 (Figures 21-23)

- 6.29 Within Area 11 a number of possible archaeological trends comprising anomalies composed of a weak change in signal values compared to background reading, or are composed of incomplete patterning, have been recorded (**IV59** to **IV75**). Interpretation is tentative and it is unclear whether all of these anomalies are of an archaeological origin but some of the more regularly defined anomalies are likely to be archaeological and not geological in origin.
- 6.30 There are approximately two main areas of activity with a western area defined by a weakly positive, curvilinear ditch-type response (**IV59**) enclosing several rectilinear enclosure ditches or structural features between **IV61** and **IV71**. Isolated circular anomalies composed of an increase in magnetic values with a patterning that is suggestive of buried remains such as the infill of a pit have been identified in this area (**IV60**). Of particular note is a rectangular shaped positive anomaly (**IV65**) measuring approximately 17 x 12m and oriented south-west to north-east, it is possibly in response to structural remains. Further rectilinear but larger anomalies oriented on the same alignment (**IV66** to **IV68**) are likely to represent enclosures and are possibly associated.

- 6.31 The eastern area has two large linear ditch-type responses (**IV72** and **IV74**) which are aligned south-west to north-east; although **IV72** has a stronger magnetic response than **IV74**. A complex series of rectilinear and short linear anomalies (**IV73**) could possibly indicate further ditches and possible archaeological remains.
- 6.32 A smaller area (**IV75**) in the north-east corner of Area 11 contains much weaker and narrow positive and negative linear anomalies that could indicate further ditches but it cannot be ascertained whether they are associated with the other areas of more concentrated anomalies.
- 6.33 The eastern area is separated from the western area by a zone of relatively quieter magnetic background with no identified anomalies within it except several ploughing trends. This could suggest it was an open area. Similarly the area around **IV60** has less magnetic background noise and could also have been an open area. This area is between the possible enclosure ditch at **IV59** and the area containing several possible enclosure ditches or structural remains bordered by **IV61**, **IV62** and **IV64**.
- 6.34 Two weakly contrasting linear trends (**IV76** and **IV77**) have been flagged as possible archaeology and could be of a ditch-type response, their ephemeral response prevents them from being characterised further.
- 6.35 Trends likely to denote the presence of ploughing and relating to modern agricultural activity have been detected (**IV78**). These comprise a series of regular anomalies of a linear form either composed of an increased or decreased signal compared to background values.
- 6.36 A modern anomaly has been detected in Area 11 (**IV79**) with a high level of magnetisation, and represents the location of a borehole.

Area 12 (Figures 24-26)

- 6.37 The most significant anomaly in this area (**IV80**) is a pair of parallel, weakly positive ditch-type responses that, from their morphology, could be a possible track-way. They are oriented approximately north-west to south-east and probably continue outside of the surveyed area.
- 6.38 Several discrete anomalies forming linear trends have been identified (**IV81**, **IV82**, **IV83**). These increased signals, compared to the background values, suggest that they could be archaeological in origin. However, poor patterning of these response values makes interpretation difficult.

7 Conclusion

- 7.1 The gradiometer survey has identified a number of possible archaeological anomalies and trends across the surveyed areas. These anomalies include features such as enclosure ditches, probable former field boundaries, some possible ring ditches, trackway, pits and structural remains. Although the anomalies cannot be dated from the geophysics alone the background archaeological summary identified potential for unknown sites from all periods especially the prehistoric period.
- 7.2 A number of linear and curvilinear trends have been identified but due to their poor strength and patterning only a tentative interpretation can be formed as to their origin, and many of these could be natural or geological variations. These have been identified as possible linear archaeological anomalies.
- 7.3 A number of agricultural trends, most likely related to former ploughing regimes and headlands, have been identified and are probably associated with more recent or modern farming in the area.
- 7.4 Throughout most of the areas pipe trends have been seen which relate to gas markers seen on the ground with a number of modern services identified in the data. These pipe anomalies have reduced

the available area suitable for archaeological geophysical investigation due to the halo which is given off from anomalies of this strength. Areas 1, 2, 3, 5, 7a and 10 all have modern pipe lines identified within them. No anomalies of archaeological potential were identified within the associated areas of ferrous 'halo' response surrounding the modern pipe lines.

- 7.5 Many non-archaeological anomalies have also been identified relating to modern ferrous material and most likely deposited as a result of more recent agricultural practices.

8 Statement of Indemnity

- 8.1 Although the results and interpretation detailed in this report have been produced as accurately as possible, it should be noted that the conclusions offered are a subjective assessment of collected data sets.
- 8.2 The success of a geophysical survey in identifying archaeological remains can be heavily influenced by several factors, including geology, seasonality, field conditions, the technique used and the properties of archaeological features being detected. Therefore geophysical survey may only reveal certain archaeological features and not create a complete plan of all the archaeological remains within a survey area.

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Appendix 1: Survey Information

Field	Description
Surveyor	AOC Archaeology
Client	Jacobs U.K. Limited
Site	A96 Dualling Inverness to Nairn (including Nairn Bypass) (Phase 2)
County	Highland
NGR	NH 8020 5260
Solid geology	Between Inverness and Nairn : Middle Old Red Sandstone (undifferentiated) (BGS 2015). Area to the south-east of Nairn: Unnamed Igneous Intrusion, Late Silurian To Early Devonian - Felsic-rock (BGS 2015).
Soil composition	Conglomerate, Sandstone, Siltstone and Mudstone (BGS 2015)
Historical documentation/ mapping on site	
Known archaeology on site	
Scheduled Ancient Monument	No
Land use/ field condition	Mixed - pasture and arable
Duration	Phase Two
Weather	Periods of sun and rain.
Survey type	Gradiometer Survey
Instrumentation	Trimble GXOR system Bartington Grad 601-2
Area covered	Approximately 30ha
Data collection staffing	James Lawton and Kimberley Teale
Download software	Grad601 PC Software v313
Processing software	Geoplot v3.0
Visualisation software	AutoCAD LT 2009
Report title	A96 Dualling Inverness to Nairn, Highlands (Phase 2)
Project number	51568
Report Author	James Lawton
Report approved by	Graeme Cavers

Appendix 2: Archaeological Prospection Techniques, Instrumentation and Software Utilised

Gradiometer survey

Gradiometer surveys measure small changes in the earth's magnetic field. Archaeological materials and activity can be detected by identifying changes to the magnetic values caused by the presence of weakly magnetised iron oxides in the soil (Aspinall *et al.*, 2008, 23; Sharma, 1997, 105). Human inhabitation often causes alterations to the magnetic properties of the ground (Aspinall *et al.*, 2008, 21). There are two physical transformations that produce a significant contrast between the magnetic properties of archaeological features and the surrounding soil: the enhancement of magnetic susceptibility and thermoremanent magnetization (Aspinall *et al.*, 2008, 21; Heron and Gaffney 1987, 72).

Ditches and pits can be easily detected through gradiometer survey as the top soil is generally suggested to have a greater magnetisation than the subsoil caused by human habitation. Also areas of burning or materials which have been subjected to heat commonly have high magnetic signatures, examples include: hearths, kilns, fired clay and mudbricks (Clark 1996, 65; Lowe and Fogel 2010, 24). It should be noted that negative anomalies can also be useful for characterising archaeological features. If the buried remains are composed of a material with a lower magnetisation compared with the surrounding soil, the surrounding soil will consequently have a greater magnetisation resulting in the feature displaying a negative signature. For example, stone materials of a structural nature that are composed of sedimentary rocks are considered non-magnetic and so will appear a negative features within the data set.

Ferrous objects- i.e. iron and its alloys- are strongly magnetic and are typically detected as high-value peaks in gradiometer survey data, though it is not usually possible to determine whether these relate to archaeological or modern objects.

Although gradiometer surveys have been successfully carried out in all areas of the United Kingdom, the effectiveness of the technique is lessened in areas with complex geology, particularly where igneous and metamorphic bedrock is present. All magnetic geophysical surveys must therefore take the effects of background geological and geomorphological conditions into account.

Gradiometer survey instrumentation

AOC Archaeology's gradiometer surveys are carried out using Bartington Grad601-2 magnetic gradiometers. The Grad601-2 is a high-stability fluxgate magnetic gradient sensor, which uses a 1m sensor separation. The detection resolution is from 0.03 nT/m to 0.1nT/m, depending on the sensor parameters selected, making the Grad601-2 an ideal instrument for prospective survey of large areas as well as detailed surveys of known archaeology. The instrument stores the data collected on an on-board data-logger, which is then downloaded as a series of survey grids for processing.

Gradiometer survey software

Following the survey, gradiometer data was downloaded from the instrument using Grad601 PC Software v313. Survey grids were then assembled into composites and enhanced using a range of processing techniques are applied to the data using Geoscan's Geoplot v3.0 (see Appendix 3 for a summary of the processes used in Geoplot and Appendix 4 for a list of processes used to create final data plots).

Appendix 3: Summary of Processes used in Geoplot

Process	Effect
Clip	Replaces data values outside a specified range, in order to display important data with relative values stretched across the display range.
De-spike	Removes exceptionally high values represented in the data that can obscure the visibility of archaeological features. In resistivity survey, these can be caused by poor contact of the mobile probes with the ground; in gradiometer survey, these can be caused by highly magnetic items such as buried ferrous objects.
De-stagger	Counteracts the striping effect caused by misalignment of data when collected on a zig-zag traverse pattern.
Edge Match	Counteracts edge effects in grid composites by subtracting the difference between mean values in the two lines either side of the grid edge.
High pass filter	Removes low-frequency, large scale detail in order to remove background trends in the data, such as variations in geology.
Interpolate	Increases the resolution of a survey by interpolating new values between surveyed data points
Low Pass filter	Uses a Gaussian filter to remove high-frequency, small scale detail, typically for smoothing or generalising data.
Periodic Filter	Used to either remove or reduce amplitudes of constant and reoccurring features that distort other potential patterns. An example of which is plough lines.
Wallis filter	Applies a locally adaptive contrast enhancement filter.
Zero Mean Grid	Resets the mean value of each grid to zero, in order to counteract edge discontinuities in composite assemblies.
Zero Mean Traverse	Resets the mean value of each traverse to zero, in order to address the effect of striping in the data and counteract edge effects.

Appendix 4: Survey Processing Steps

Process	Extent
Survey Area	
Zero Mean Traverse	All LMS =on, threshold -5 to 5
Despike	X=1 Y=1 Thr = 3 Repl = Mean
Clip	Min =-5 Max = 5
Destagger	All grids dir Shift = 2 Line Pattern 34-78 Dual-DS
Low Pass filter	X=1 Y=1 Wt=G
Interpolate	Y, Expand – Expand –SinX/X x2
Raw Palette Scale	Grey55 Min= -1 Max= 2
Palette Scale	Grey55 Min= -1 Max= 2

Appendix 5: Technical Terminology

Type of Anomaly	Description
Archaeology	
(Isolated Linear trends)	
Linear trend (field boundary)	Isolated long linear anomalies that are likely to relate to field boundaries. Signal may appear inconsistent but patterning and positioning, especially when compared with historic mapping suggests such anomalies belong to former field division systems
Linear trend (field boundary?)	Anomalies of a long linear form, but lack the necessary patterning, signal strength or positioning to be positively identified as field boundaries.
Archaeology	
Linear trend (fortification)	Linear anomalies that are composed of a patterning and positioning that is likely to relate to structural remains such as town fortifications. These anomalies can be composed of either an increase or decrease in magnetic values, relating to in-filled ditches or buried walls.
Linear trend (road)	A regular linear trend that is identified through the absence of buried remains, especially through areas containing a variety of rectilinear anomalies that appear to have structural associations.
Linear trend (archaeology)	These can either be isolated linear anomalies or rectilinear in form and often suggest the presence of structural remains. Anomalies are either characterised by an increase or decrease in signal compared to background values depending on the properties of the feature being recorded.
Disturbed area (archaeology)	These are characterised by a general increase or decrease in the magnetic background over a localised area but do not appear as having a linear form. These anomalies do not have the high dipolar response which are manifested in an 'iron spike' anomaly, and can be the result of in-filled pits and post-holes, or kilns.
Pit	Isolated circular anomalies composed of an increase in magnetic values with a patterning that is suggestive of buried remains such as the infill of a pit
Discrete	
Linear trend (archaeology?)	Anomalies of a linear form either composed of an increased or decreased signal compared to background values. It is possible these anomalies belong to structural remains, but poor patterning or response values makes interpretation difficult.
Disturbed area (archaeological?)	Anomalies with an increase or decrease in values compared with background reading over a localised area. Poor patterning or weak signal changes creates difficulty in defining the nature of the archaeology and so interpretation is fairly tentative. On certain geologies these anomalies could be caused by in-filled natural features, and it would be necessary to undertake intrusive archaeological investigation to establish their form and character.
Possible archaeology (Unclear to origins of the remains)	Anomalies composed of a weak change in signal values compared to background reading or are composed of incomplete patterning. Consequently, interpretation is tentative and it is unclear to whether anomalies belong to an archaeological nature.

(Archaeology?) (Unclear to origins of the remains)	Like with above, but located in an area previously excavated so is either potentially a product of excavation related activity or relates to subtle changes in the magnetic properties in the soil caused by earlier activity, which was not detected during previous archaeological assessment works.
Area of Disturbance (archaeology?)	A large area of general disturbance which could relate to earlier human activity which has caused an increase in the magnetic properties of the soil. Generally these areas contain a variety of increased and decreased magnetic values, but lack sufficient patterning for detailed interpretation. They could indicate the presence of buried rubble relating to fallen structures, or instead denote modern material either caused by quarrying or agricultural activity.
Pit?	Isolated circular anomalies composed of an increase in magnetic values with a patterning that may be suggestive of buried remains such as the infill of a pit.
Linear trend (plough lines)	A series of regular anomalies of a linear form either composed of an increased or decreased signal compared to background values. Likely to denote the presence of ploughing and relating to archaeological agricultural activity such as ridge and furrow.
Non- Archaeology	
Linear trend (plough lines)	A series of regular anomalies of a linear form either composed of an increased or decreased signal compared to background values. Likely to denote the presence of ploughing and relating to modern agricultural activity.
Linear trend (agricultural)	Series of linear anomalies, of an indeterminate date, likely to have been caused by agricultural activity such as ploughing and land drainage
Linear trend (modern?)	Anomalies of a linear form that are likely to belong to modern features, but are composed of values, patterning or positioning which makes definite interpretation difficult
Disturbed area (modern?)	Area of disturbance that is composed of significant increases or decreases in values compared with background readings. It is highly likely that these readings are caused by modern disturbances, but interpretation is tentative.
Linear trend (modern)	Anomalies of a linear form often composed of contrasting positive and negative values. Such anomalies usually signify a feature with a high level of magnetisation and are likely to belong to modern activity such as pipe lines
Disturbed area (modern)	Area of disturbance that is likely to be caused by modern disturbances and is characterised by significant increases or decreases in values compared with background readings.
Isolated dipolar anomalies (iron spikes)	Response normally caused by ferrous materials on the surface or within the top soil of the site, which cause a 'spike' representing a rapid variation in the magnetic response. These are generally not assessed to be archaeological when surveying on rural sites, and generally represent modern material often re-deposited during manuring.
Geology	Area of disturbance that is composed of irregular significant increase or decreases in values compared with background readings and are likely to indicate natural variations in soil composition or geology

Appendix 6: Individual Characterisation of Identified Anomalies

Anomaly Identifier	Type of Archaeology
Site Name: A96 Dualling Inverness to Nairn, Highlands	
Gradiometer survey	
IV1	Possible archaeology
IV2	Possible archaeology
IV3	Possible archaeology
IV4	Possible archaeology
IV5	Ferrous/Geology
IV6	Modern pipeline
IV7	Possible archaeology
IV8	Possible archaeology
IV9	Possible archaeology
IV10	Linear trend (archaeology?)
IV11	Linear trend (archaeology?)
IV12	Modern pipeline
IV13	Possible archaeology
IV14	Possible archaeology
IV15	Possible archaeology
IV16	Possible archaeology
IV17	Linear trend (archaeology?)
IV19	Modern pipeline
IV20	Possible archaeology
IV21	Possible archaeology
IV22	Possible archaeology
IV23	Possible archaeology
IV24	Possible archaeology
IV25	Possible archaeology
IV26	Possible archaeology
IV27	Possible archaeology
IV28	Possible archaeology
IV29	Possible archaeology
IV30	Possible archaeology
IV31	Possible archaeology
IV32	Possible archaeology
IV33	Linear trend (archaeology?)
IV34	Linear trend (plough lines)
IV35	Linear trend (plough lines)
IV36	Linear trend (plough lines)
IV37	Modern pipeline
IV38	Modern pipeline
IV39	Modern pipeline
IV40	Possible archaeology/geology (Unclear to origins of the remains)
IV41	Possible archaeology/geology (Unclear to origins of the remains)
IV42	Possible archaeology/geology (Unclear to origins of the remains)
IV43	Possible archaeology/geology (Unclear to origins of the remains)

IV44	Linear trend (archaeology?)
IV45	Possible archaeology/geology (Unclear to origins of the remains)
IV46	Possible archaeology/geology (Unclear to origins of the remains)
IV47	Possible archaeology/geology (Unclear to origins of the remains)
IV48	Possible archaeology/geology (Unclear to origins of the remains)
IV49	Possible archaeology/geology (Unclear to origins of the remains)
IV50	Possible archaeology/geology (Unclear to origins of the remains)
IV51	Possible archaeology/geology (Unclear to origins of the remains)
IV52	Linear trend (archaeology?)
IV53	Linear trend (archaeology?)
IV54	Linear trend (archaeology?)
IV55	Linear trend (archaeology?)
IV56	Linear trend (plough lines)
IV57	Modern pipeline
IV58	Borehole location
IV59	Possible archaeology (Unclear to origins of the remains)
IV60	Possible archaeology (Unclear to origins of the remains)
IV61	Possible archaeology (Unclear to origins of the remains)
IV62	Possible archaeology (Unclear to origins of the remains)
IV63	Possible archaeology (Unclear to origins of the remains)
IV64	Possible archaeology (Unclear to origins of the remains)
IV65	Possible archaeology (Unclear to origins of the remains)
IV66	Possible archaeology (Unclear to origins of the remains)
IV67	Possible archaeology (Unclear to origins of the remains)
IV68	Possible archaeology (Unclear to origins of the remains)
IV69	Possible archaeology (Unclear to origins of the remains)
IV70	Possible archaeology (Unclear to origins of the remains)
IV71	Possible archaeology (Unclear to origins of the remains)
IV72	Possible archaeology (Unclear to origins of the remains)
IV73	Possible archaeology (Unclear to origins of the remains)
IV74	Possible archaeology (Unclear to origins of the remains)
IV75	Possible archaeology (Unclear to origins of the remains)
IV76	Linear trend (archaeology?)
IV77	Linear trend (archaeology?)
IV78	Linear trend (plough lines)
IV79	Borehole location
IV80	Possible archaeology
IV81	Linear trend (archaeology?)
IV82	Linear trend (archaeology?)
IV83	Linear trend (archaeology?)

Appendix 7: Discovery and Excavation Scotland Entry

LOCAL AUTHORITY:	Highland Council
PROJECT TITLE/SITE NAME:	A96 Dualling Inverness to Nairn (including Nairn Bypass); Geophysical Survey (Phase 2)
PROJECT CODE:	AOC 23327
PARISH:	Auldearn
NAME OF CONTRIBUTOR:	James Lawton; Kimberley Teale; Genevieve Shaw
NAME OF ORGANISATION:	AOC Archaeology Group
TYPE(S) OF PROJECT:	Geophysical Survey (gradiometry)
NMRS NO(S):	None
SITE/MONUMENT TYPE(S):	possible enclosure ditches, two possible ring ditches, a track way, possible structural remains with associated ditches and pits and a number of discrete pits of a size that could indicate quarrying or midden deposits
SIGNIFICANT FINDS:	None
NGR (2 letters, 6 figures)	NH 8020 5260 (centred)
START DATE (this season)	16 th May 2016
END DATE (this season)	26 th May 2016
PREVIOUS WORK (incl. DES ref.)	None
MAIN (NARRATIVE) DESCRIPTION: (May include information from other fields)	<p>AOC Archaeology Group was commissioned by Jacobs U.K. Limited to undertake an archaeological geophysical (gradiometer) survey to investigate the potential for buried archaeological remains between Inverness and Nairn, Highland as part of the cultural heritage assessment works for the A96 Dualling Inverness to Nairn (including Nairn Bypass) project. A detailed gradiometer survey was undertaken over approximately 30ha of agricultural land (centred at NH 8020 5260) with some of the proposed survey areas unsurveyable due to crop and access issues. A number of anomalies of possible archaeological potential were detected as well as modern features such as plough lines, land drains and buried utilities.</p> <p>The anomalies of archaeological potential identified are a number of discrete linear, curvilinear and rectilinear anomalies that have been interpreted as cut features that would relate to former human settlement activity. These include several possible enclosure ditches, two possible ring ditches, a track way, possible structural remains with associated ditches and pits and a number of discrete pits of a size that could indicate quarrying or midden deposits. Across the survey area there are large areas of modern and geological disturbance including at least modern pipe lines which would mask weaker, potentially archaeological features and subsequently detailed interpretation in these areas is tentative.</p>
PROPOSED FUTURE WORK:	None
CAPTION(S) FOR ILLUSTRS:	N/A
SPONSOR OR FUNDING BODY:	Transport Scotland
ADDRESS OF MAIN CONTRIBUTOR:	AOC Archaeology Group; Edgefield Road Industrial Estate; Loanhead, Midlothian, EH20 9SY
EMAIL ADDRESS:	admin@aocarchaeology.com
ARCHIVE LOCATION	Archive to be deposited in NRHE held by Historic Environment Scotland

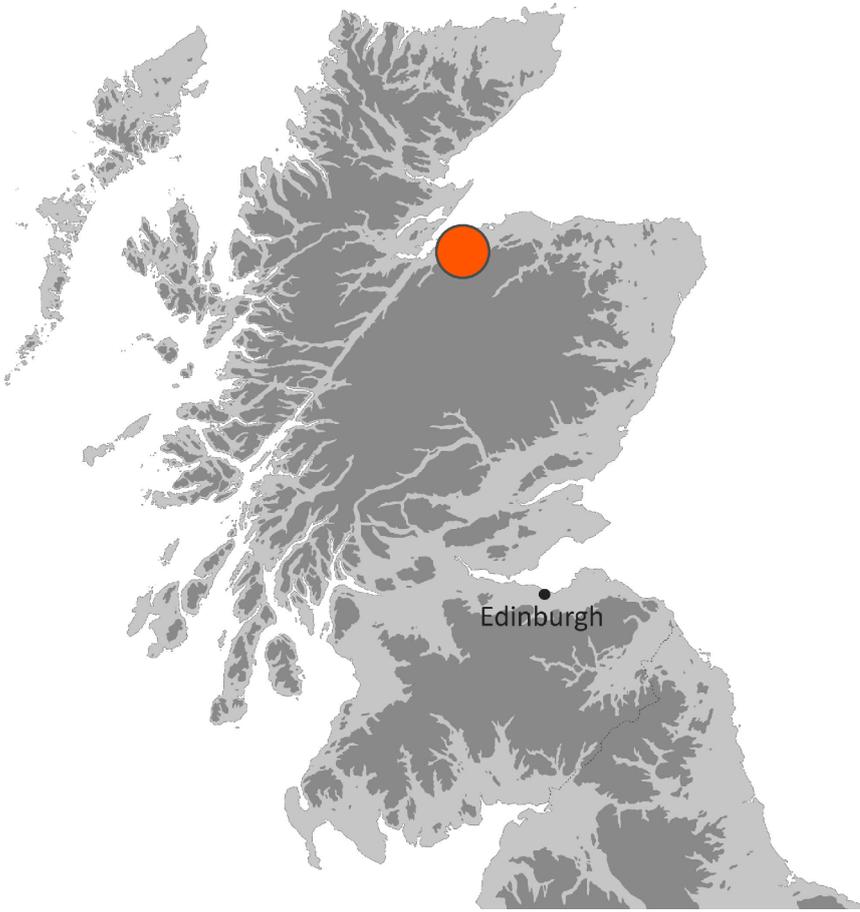
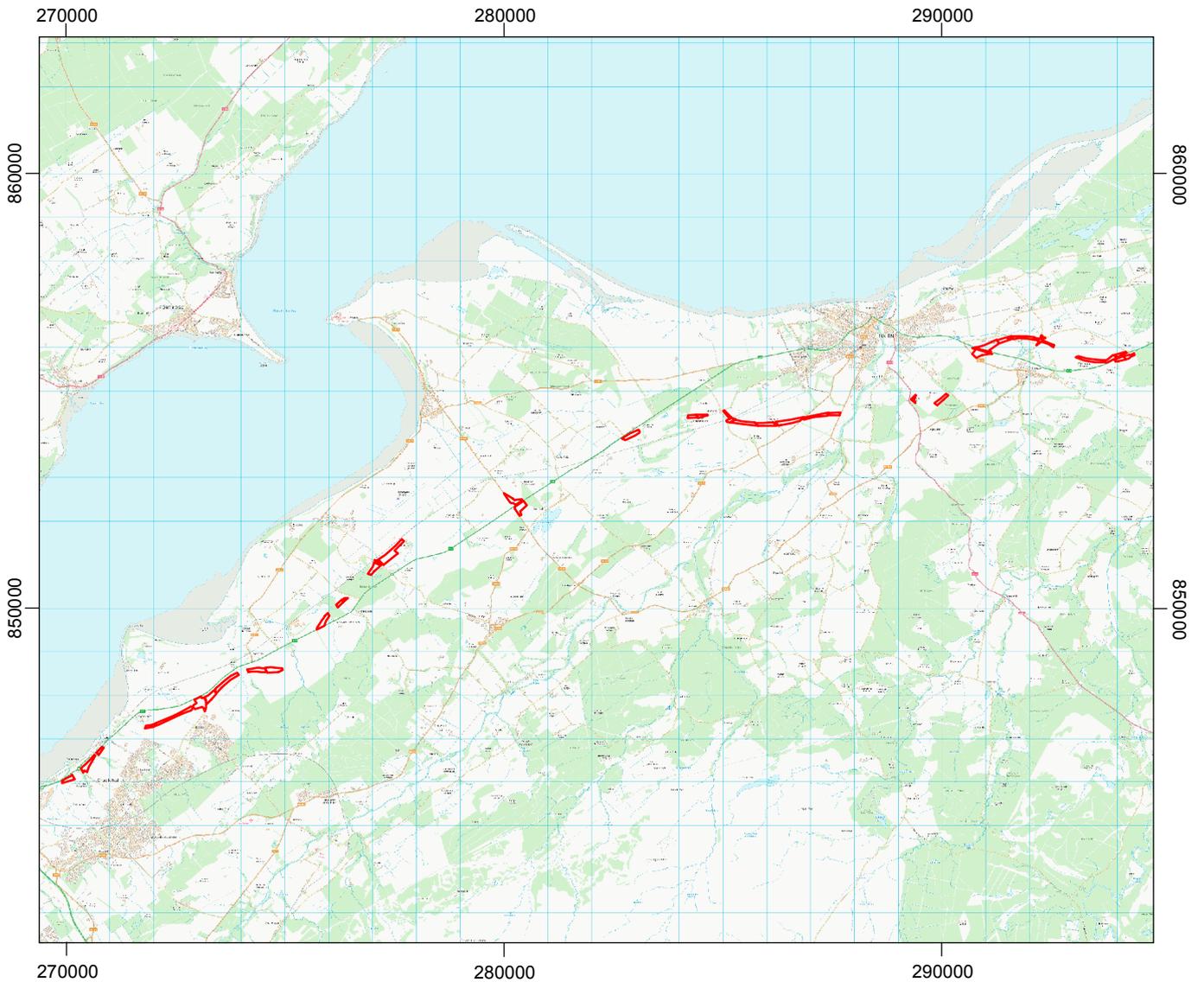
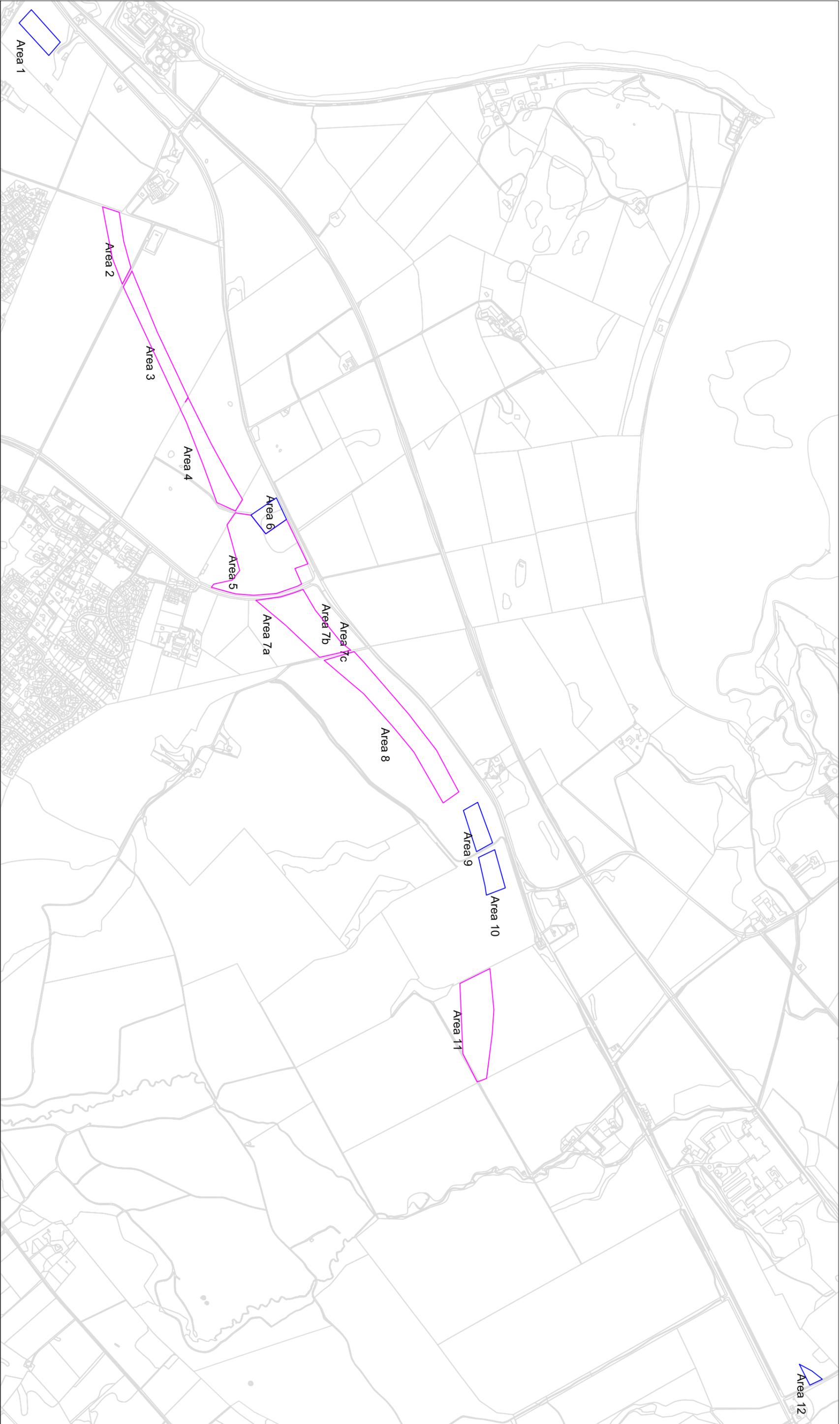


Figure 1	N
Site Location	
Based on data provided by the Ordnance Survey with the permission of the Controller of Her Majesty's Stationery Office.	
© Ordnance Survey OpenData, Crown Copyright. License no. AL 100016114	



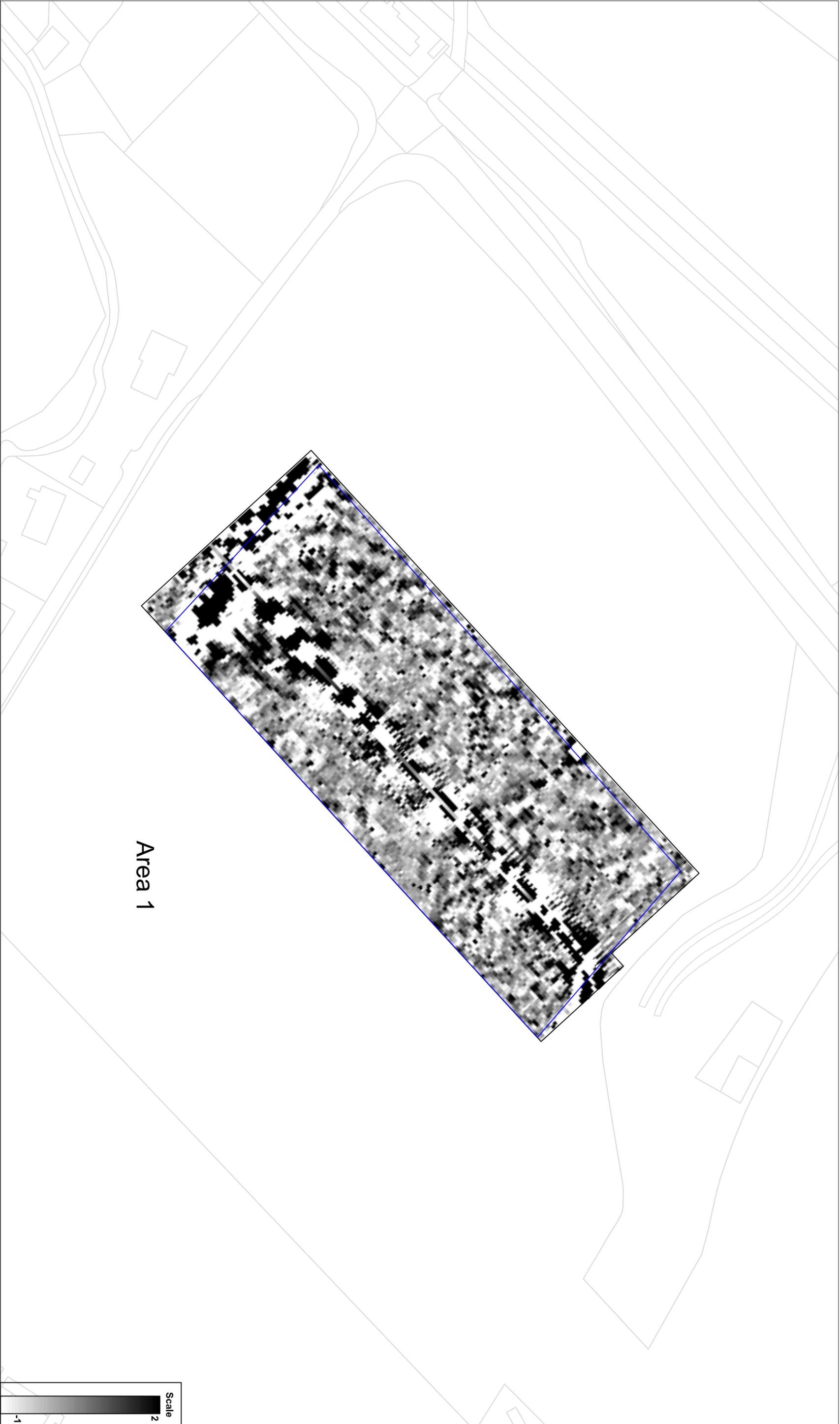


Location of survey areas

Figure 2



0
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500m



Unprocessed gradiometer survey results - greyscale plot: Area 1

Figure
3



0
1:1000 at A3
40m

Scale
2
-1



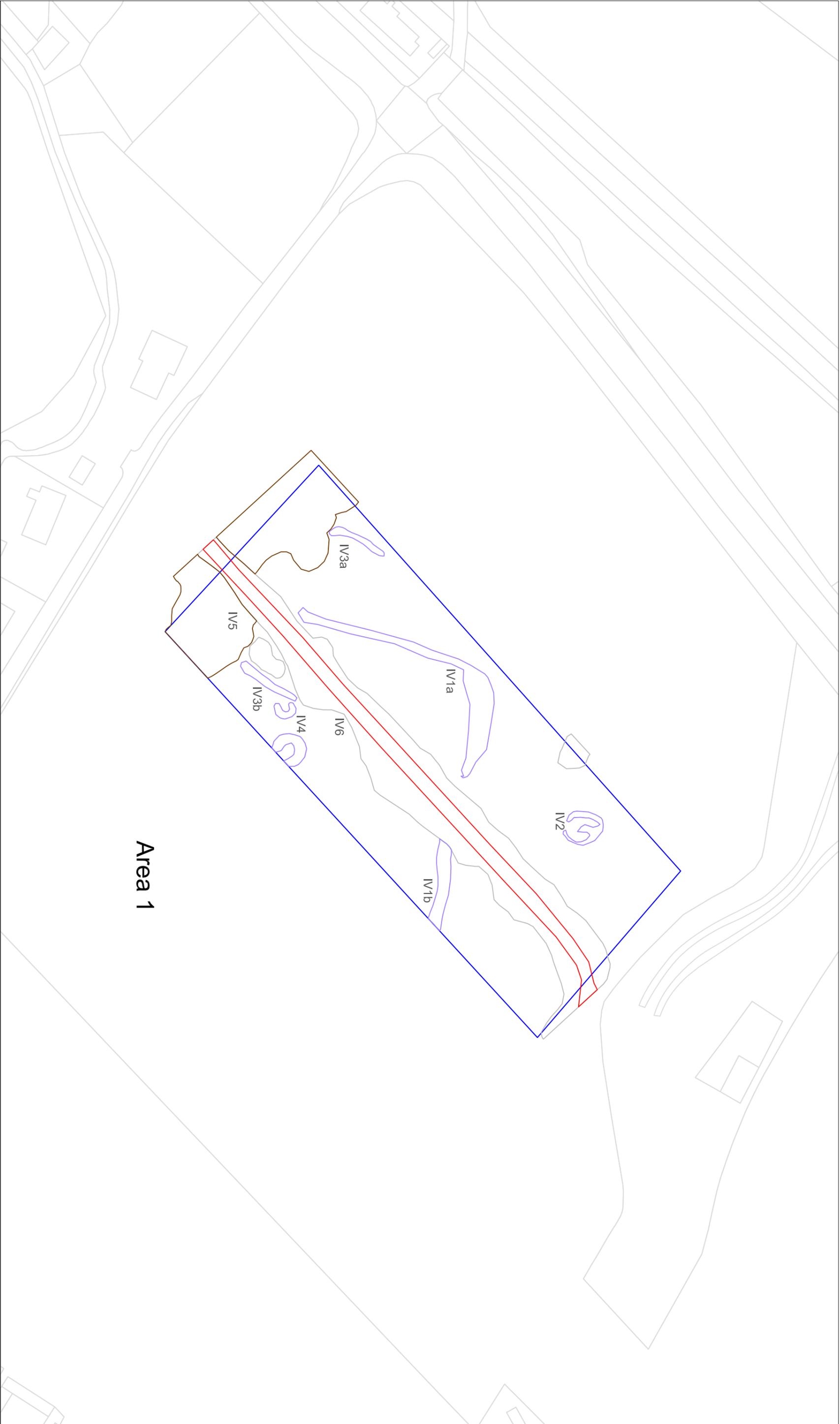
Processed gradiometer survey results - greyscale plot: Area 1

Figure
4



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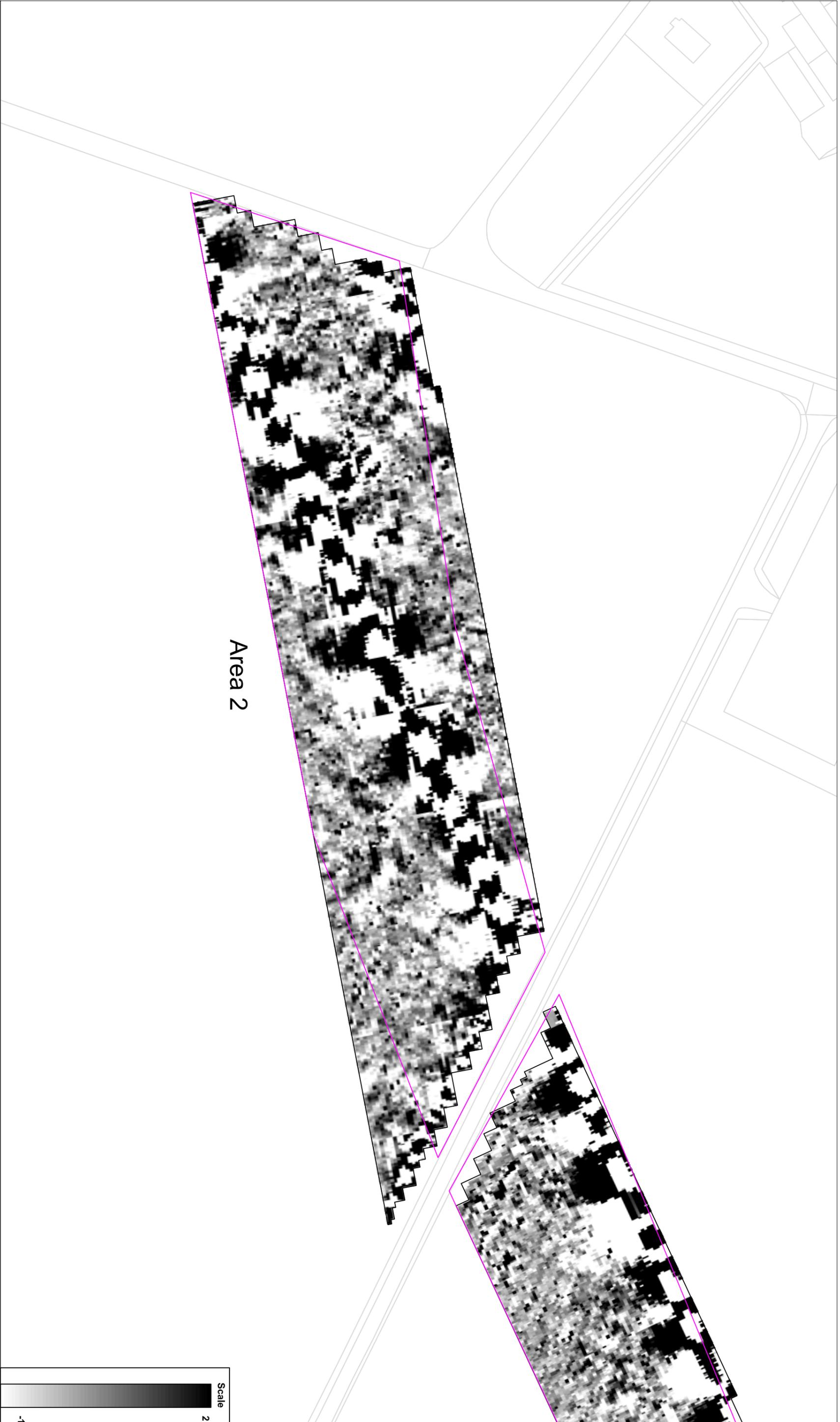
Scale
2
-1



Area 1

Interpretation of gradiometer survey results: Area 1

<p>Figure 5</p>		<p>Possible archaeology Linear trend (plough)</p> <p>Linear trend (archaeology?) Possible archaeology Linear trend (modern) Disturbed area (modern)</p>	<p>Survey area Modern services Ferrous Geology</p>	<p>1:1000 at A3</p>	
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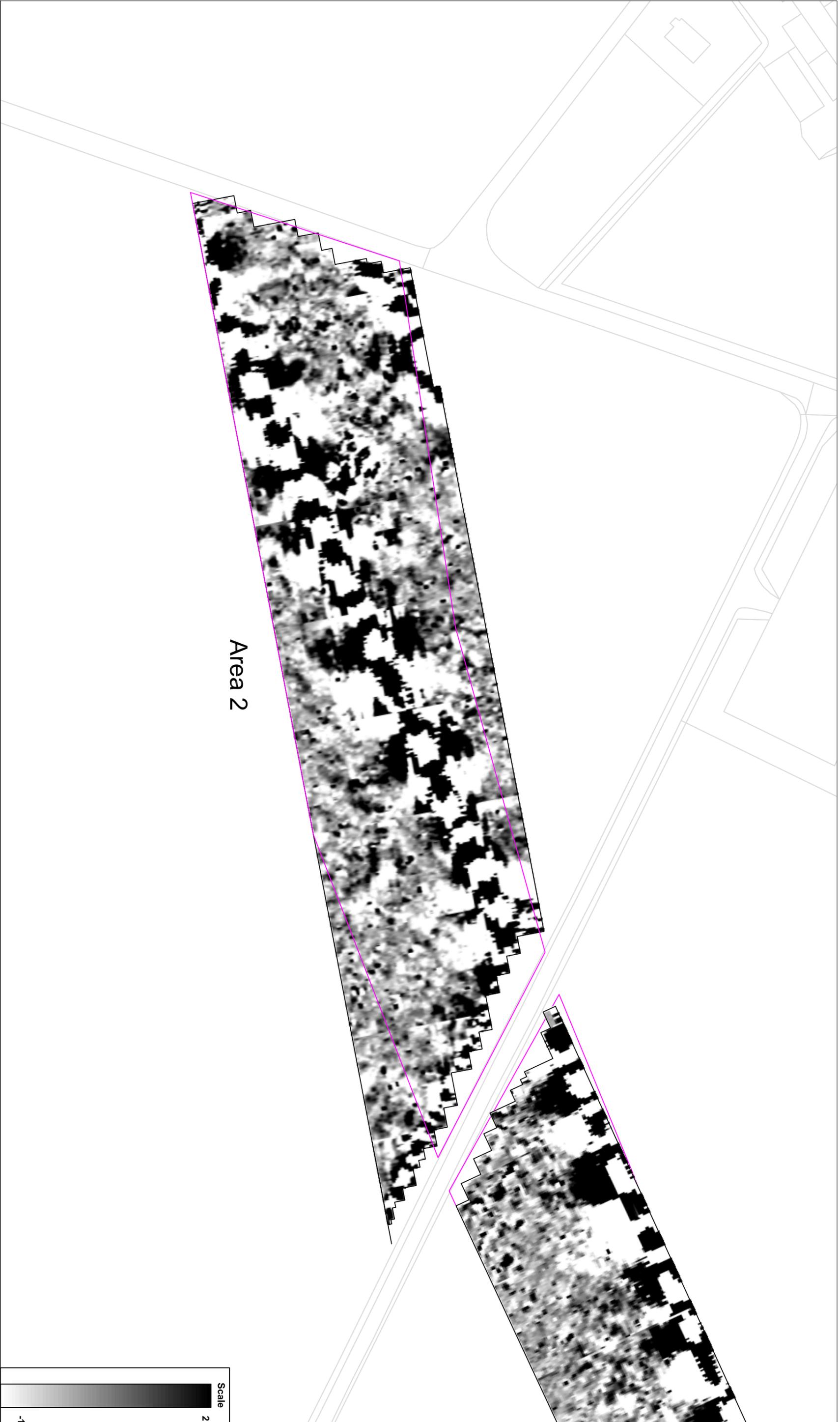
Unprocessed gradiometer survey results - greyscale plot: Area 2

Figure
6



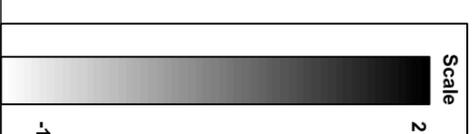
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Processed gradiometer survey results - greyscale plot: Area 2

Figure
7





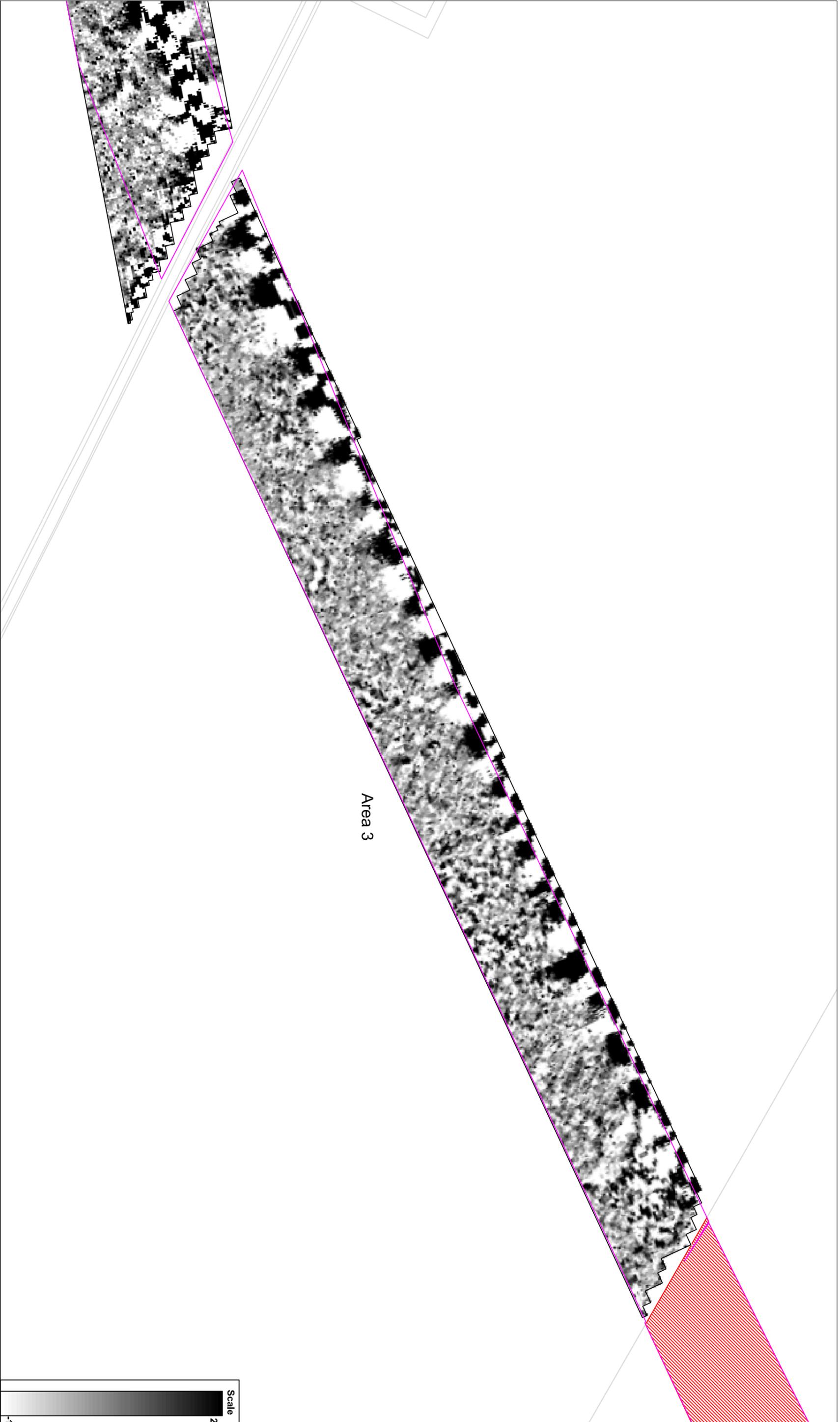
Interpretation of gradiometer survey results: Area 2

Figure 8



- Possible archaeology
- Linear trend (plough)
- Linear trend (archaeology?)
- Possible archaeology
- Linear trend (modern)
- Disturbed area (modern)
- Survey area
- Modern Services
- Ferrous

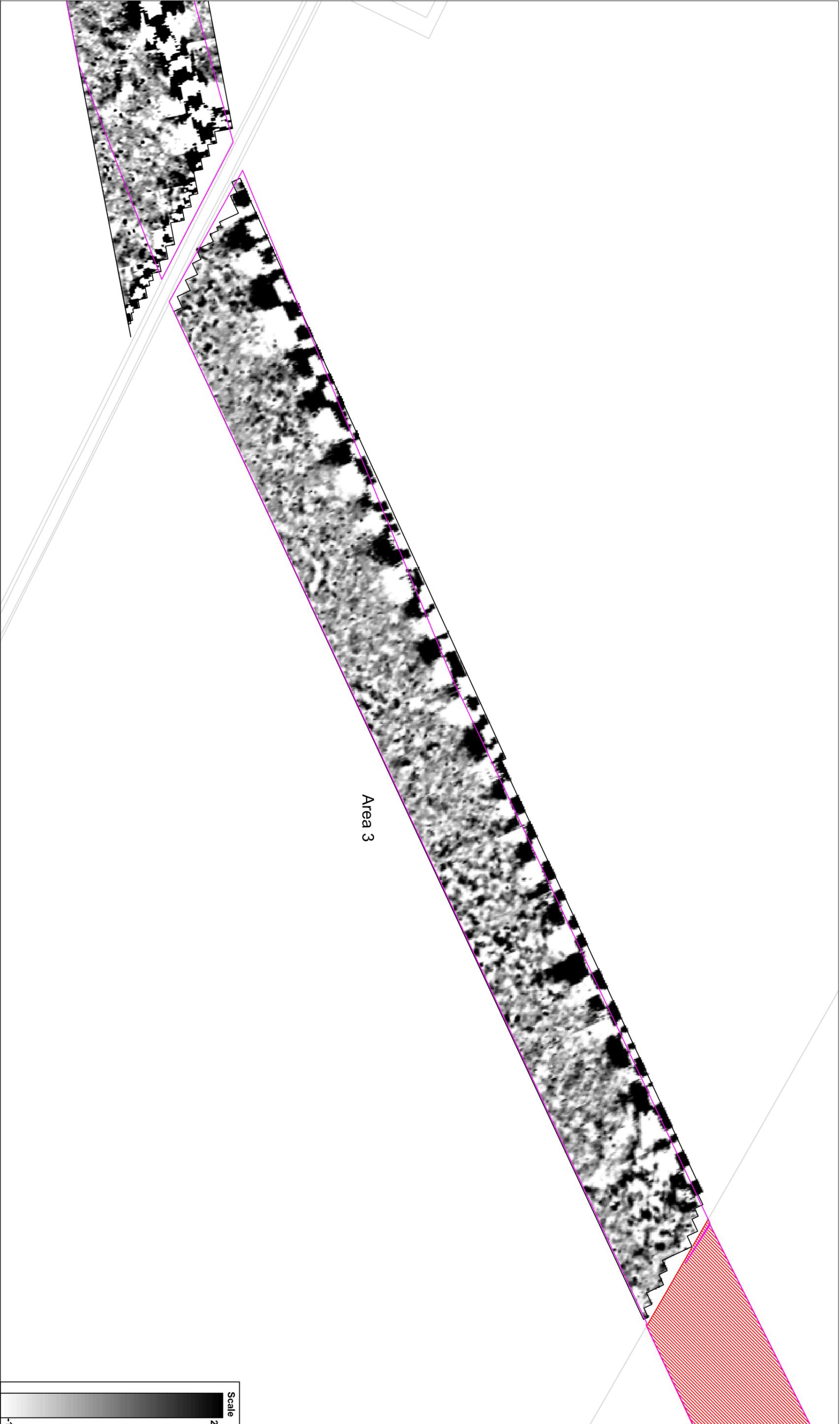




Unprocessed gradiometer survey results - greyscale plot: Area 3

Figure
9

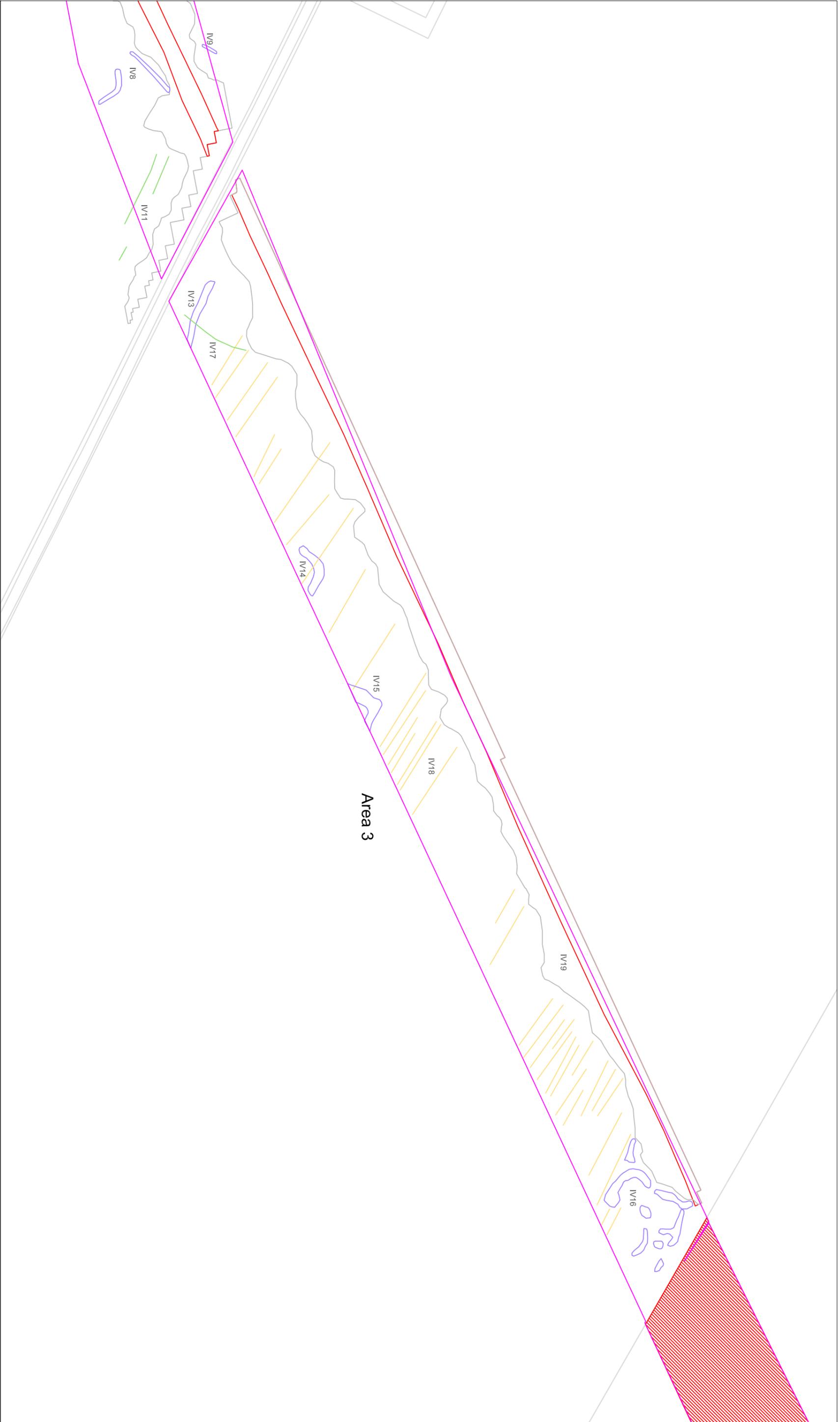




Processed gradiometer survey results - greyscale plot: Area 3

Figure
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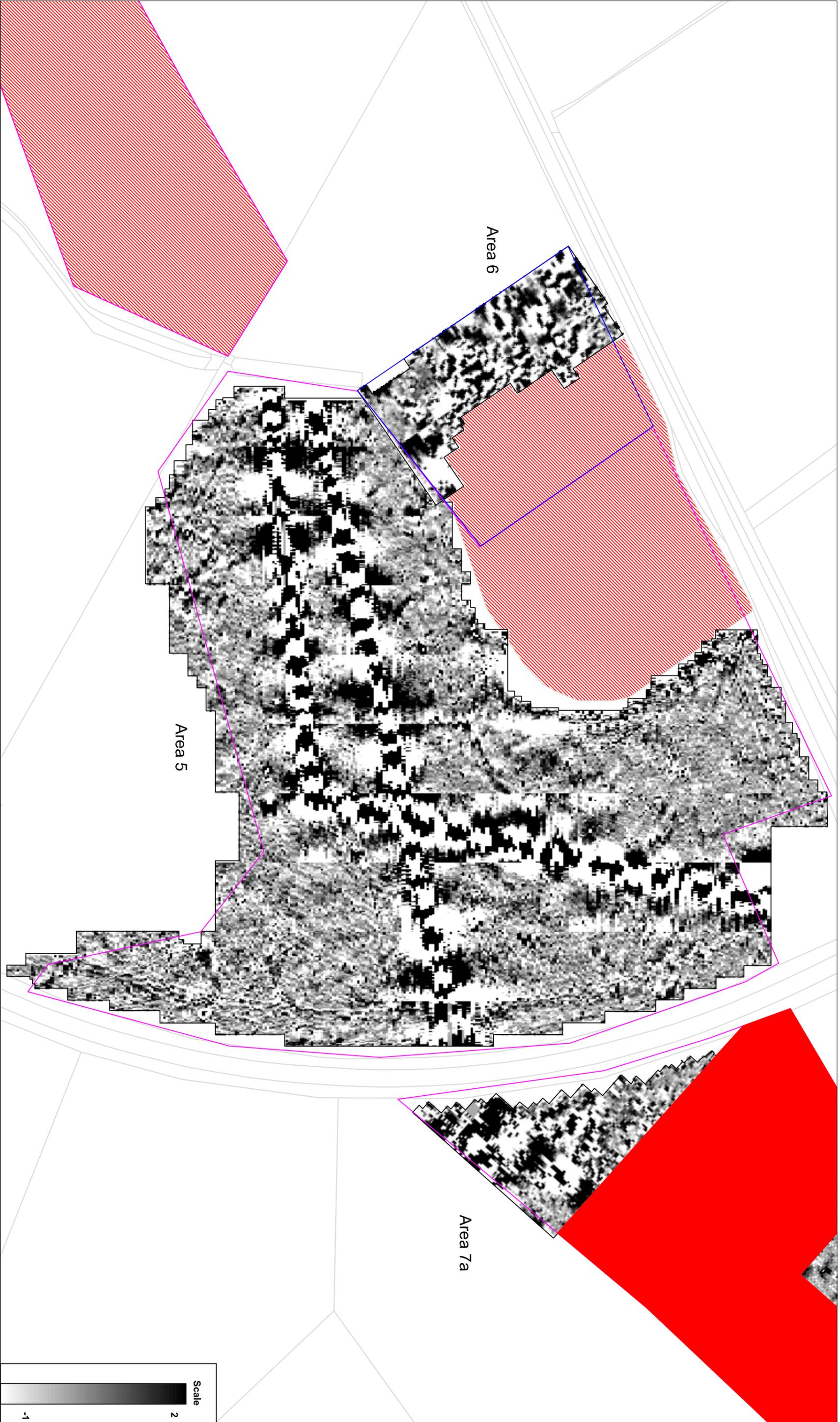
Interpretation of gradiometer survey results: Area 3

Figure 11

-  Possible archaeology
-  Linear trend (plough)
-  Linear trend (archaeology?)
-  Possible archaeology
-  Linear trend (modern)
-  Disturbed area (modern)
-  Survey area

0 60m
1:1500 at A3





Unprocessed gradiometer survey results - greyscale plots: Areas 5 and 6

Figure 12



0
1:1500 at A3
60m



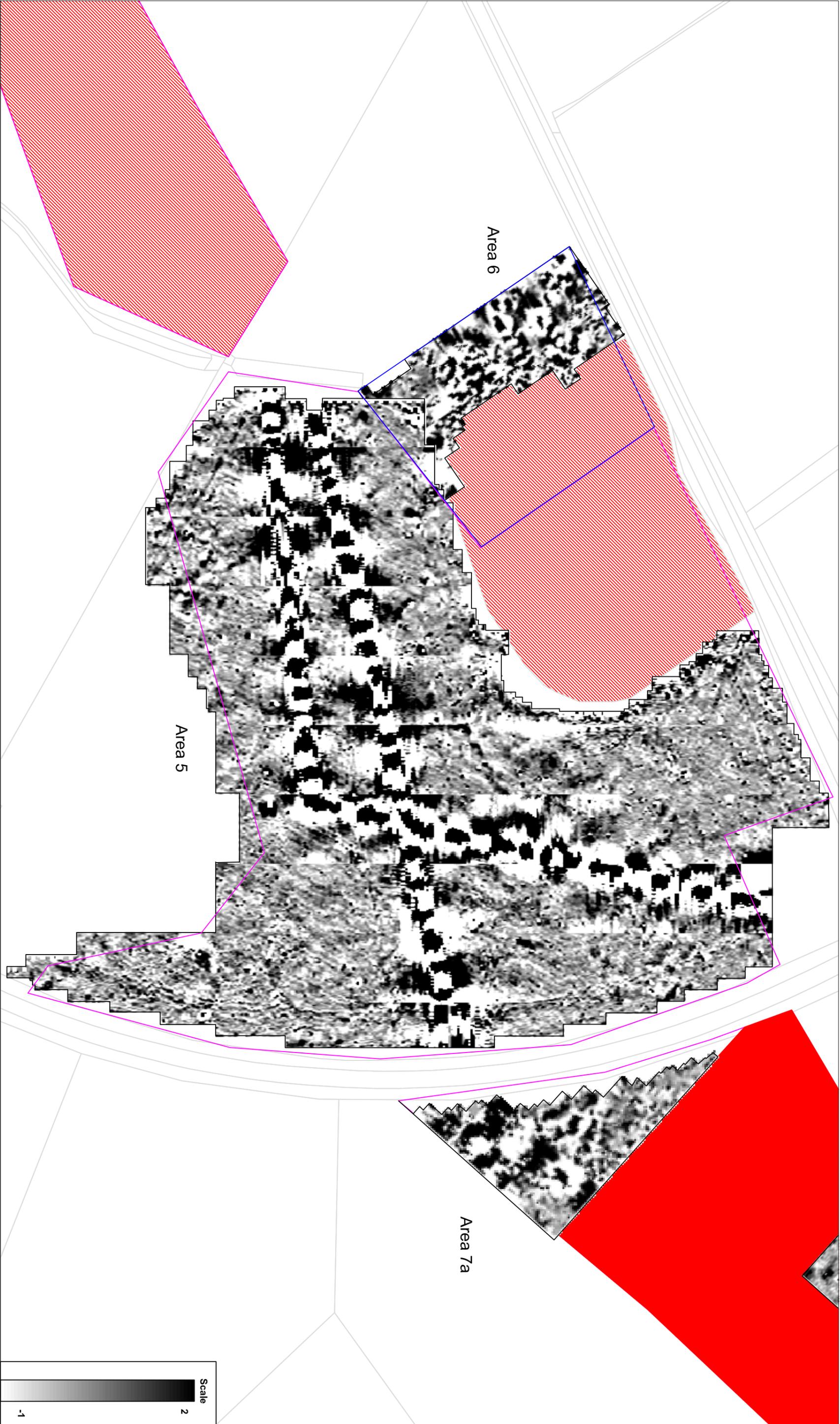
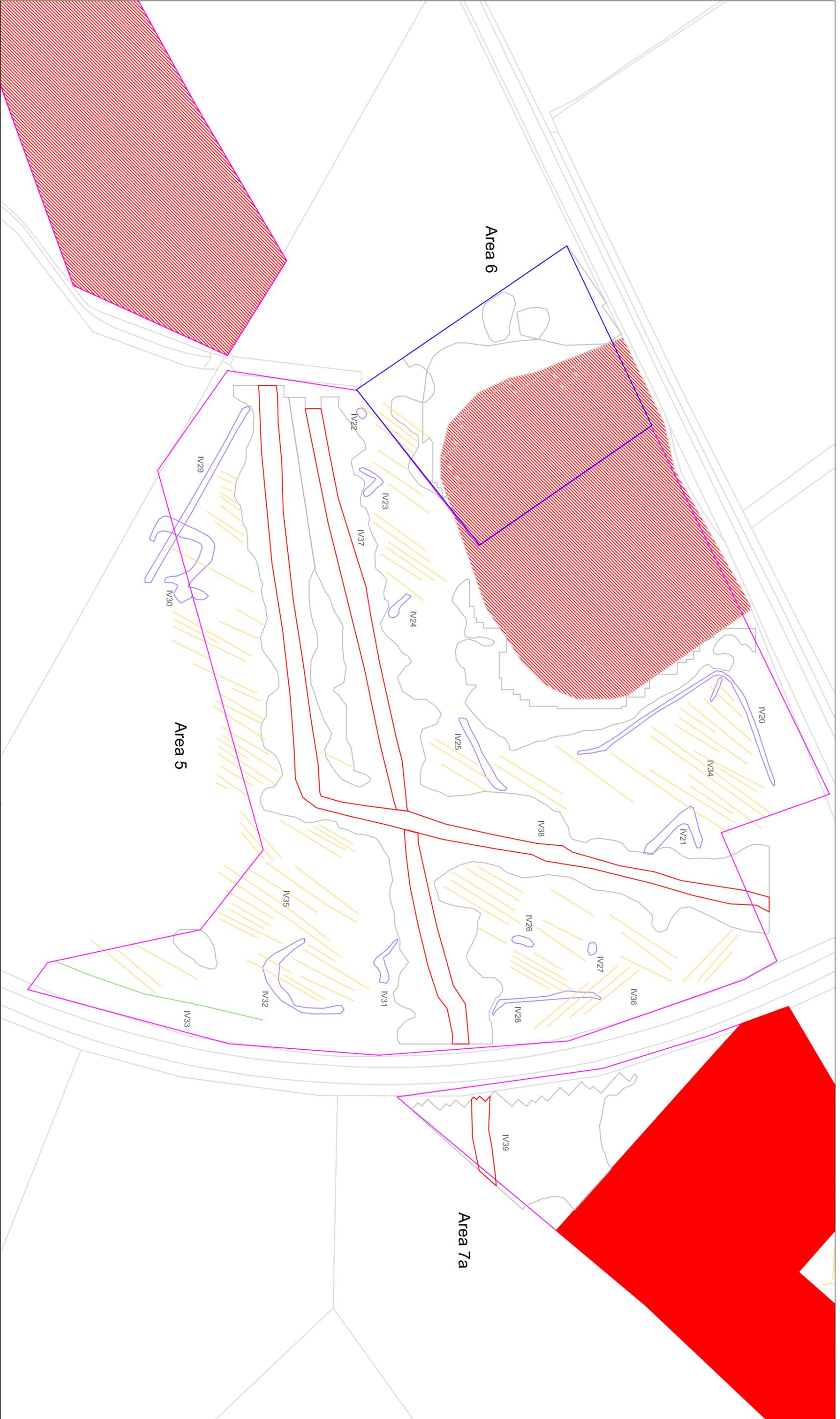


Figure 13





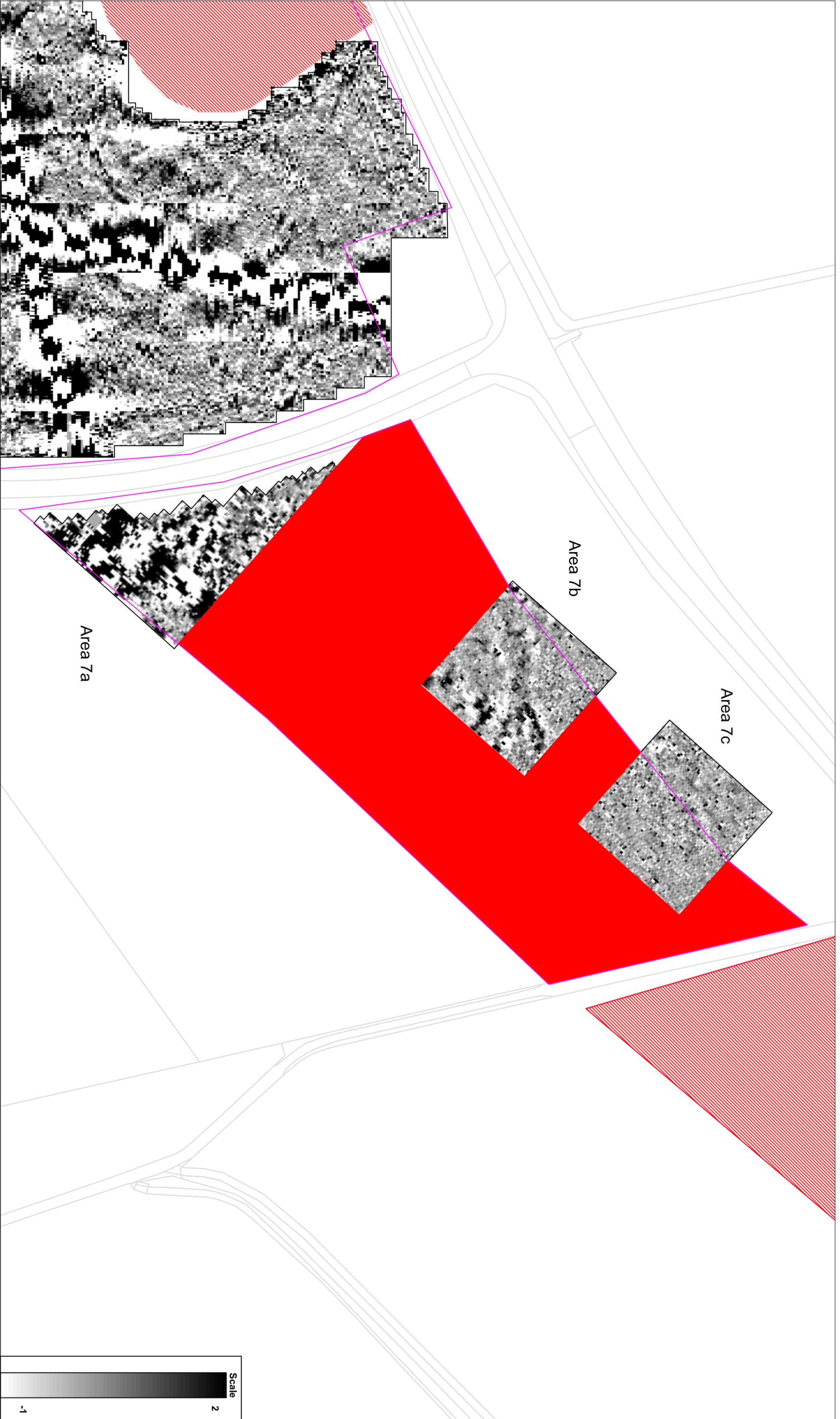
Interpretation of gradiometer survey results: Areas 5 and 6

Figure 14



- Possible archaeology
- Linear trend (plough)
- Linear trend (archaeology?)
- Possible archaeology
- Linear trend (modern)
- Disturbed area (modern)
- Modern services
- Ferrous





Unprocessed gradiometer survey results - greyscale plot: Area 7

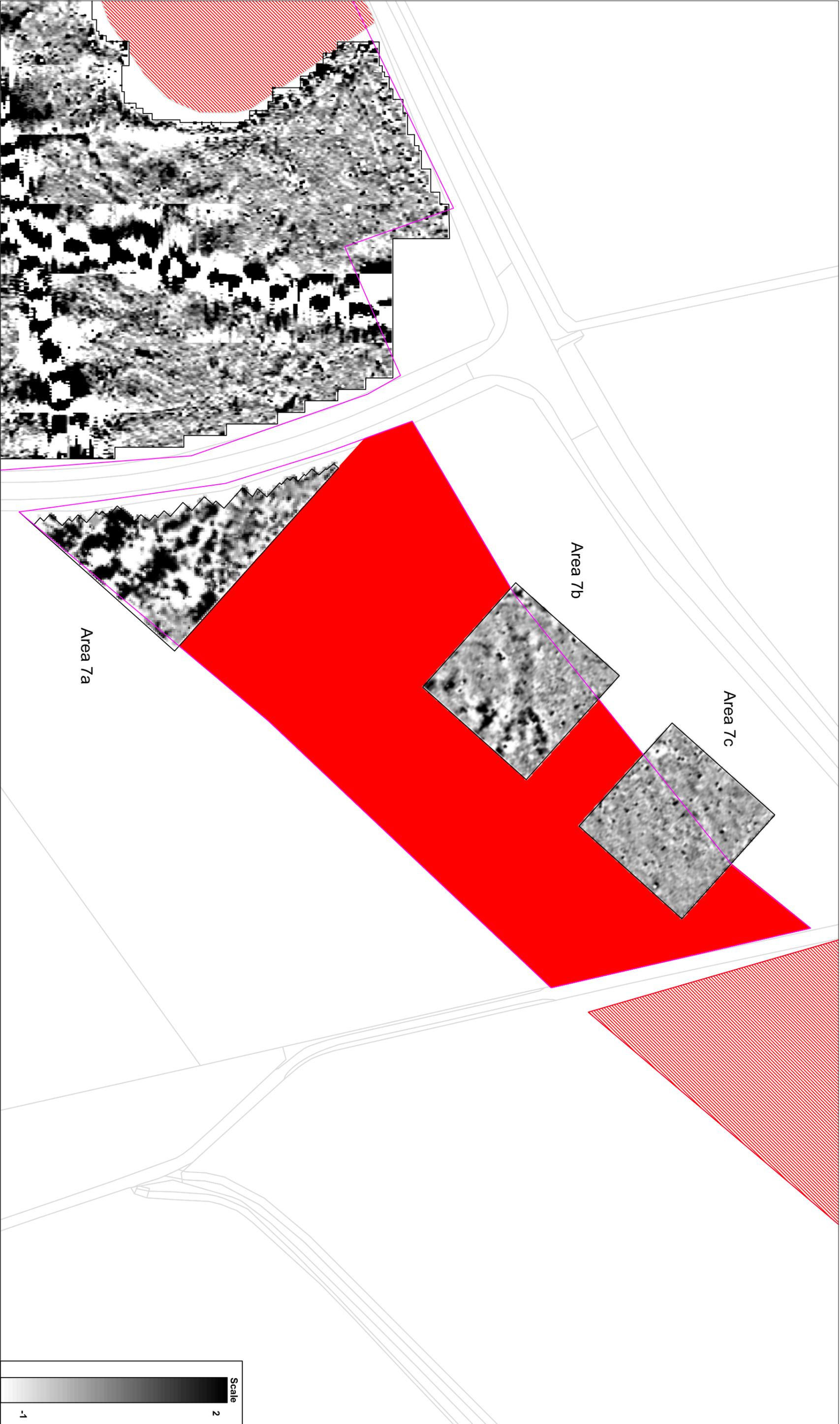
Figure 15



0
1:1500 at A3
60m

Scale
2
-1





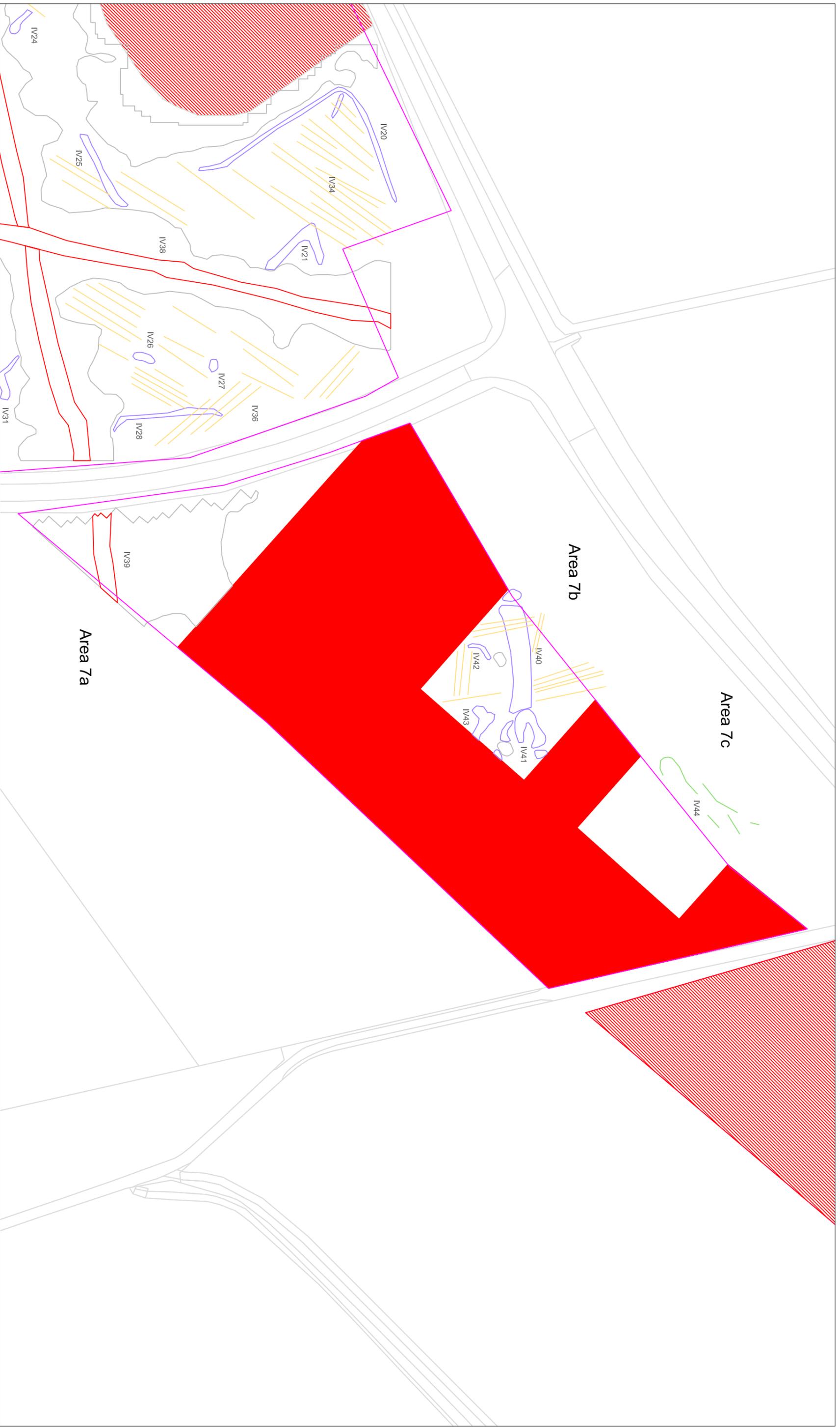
Processed gradiometer survey results - greyscale plot: Area 7

Figure 16



0
1:1500 at A3
60m

Scale
2
-1



Interpretation of gradiometer survey results: Area 7

Figure 17



-  Possible archaeology
-  Linear trend (plough)
-  Linear trend (archaeology?)
-  Possible archaeology
-  Linear trend (modern)
-  Disturbed area (modern)
-  Survey area
-  Modern services
-  Ferrous





Unprocessed gradiometer survey results - greyscale plot: Area 10

Figure
18



0
40m
1:1000 at A3

Scale
2
-1





Processed gradiometer survey results - greyscale plot: Area 10

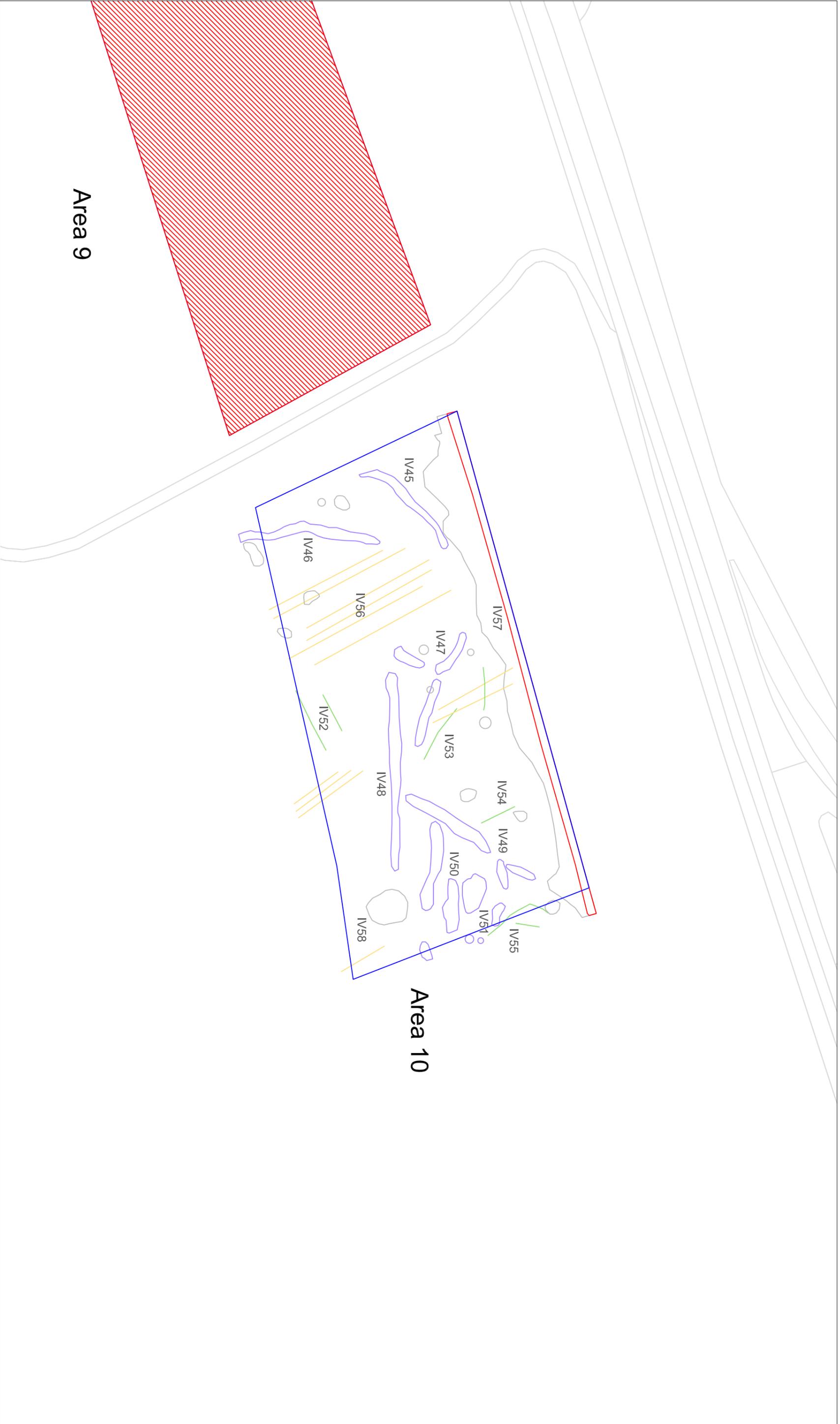
Figure 19



0 40m
1:1000 at A3



Scale
2
-1



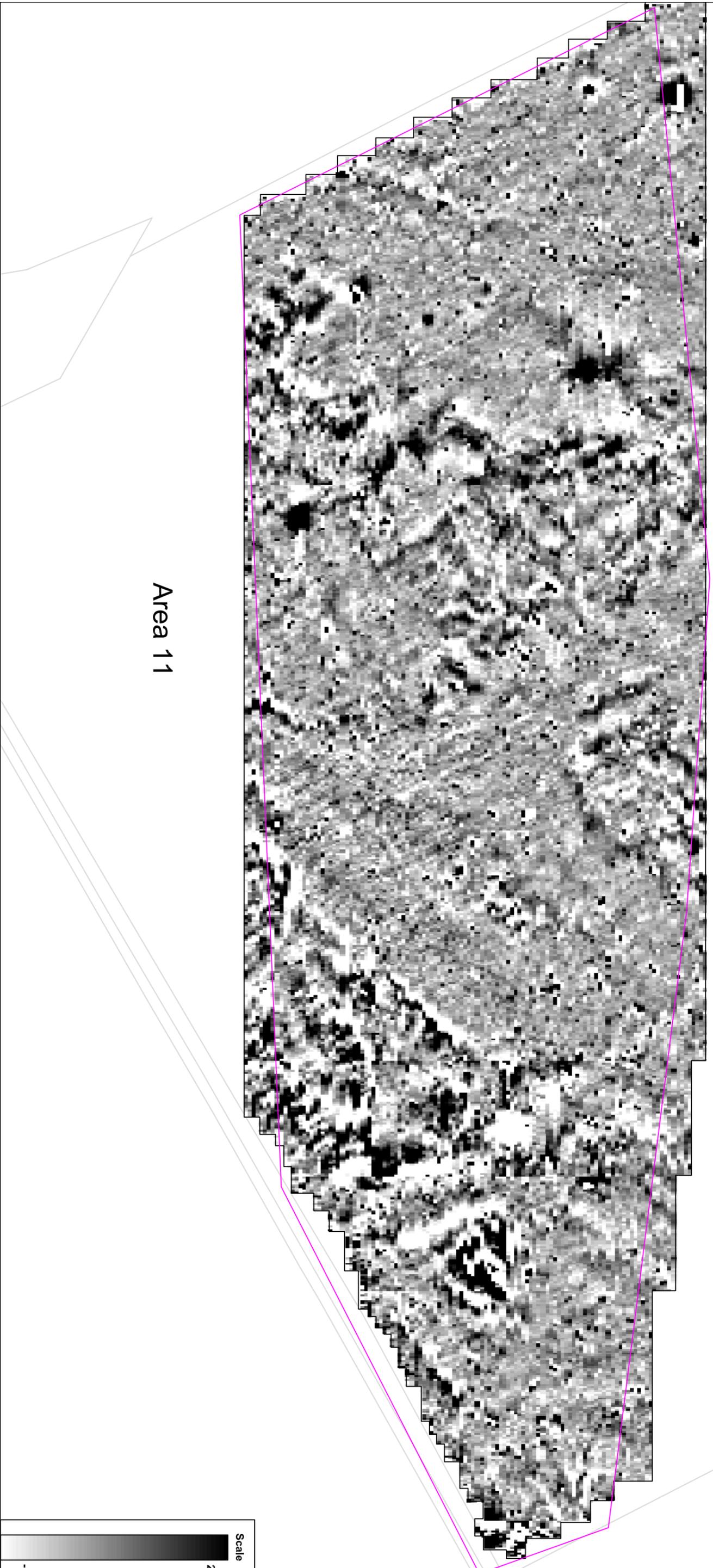
Interpretation of gradiometer survey results: Area 10

Figure 20



- Possible archaeology
- Linear trend (plough)
- Linear trend (archaeology?)
- Possible archaeology
- Linear trend (modern)
- Disturbed area (modern)
- Modern services
- Ferrous
- Survey area





Area 11

Unprocessed gradiometer survey results - greyscale plots: Area 11



Figure
21



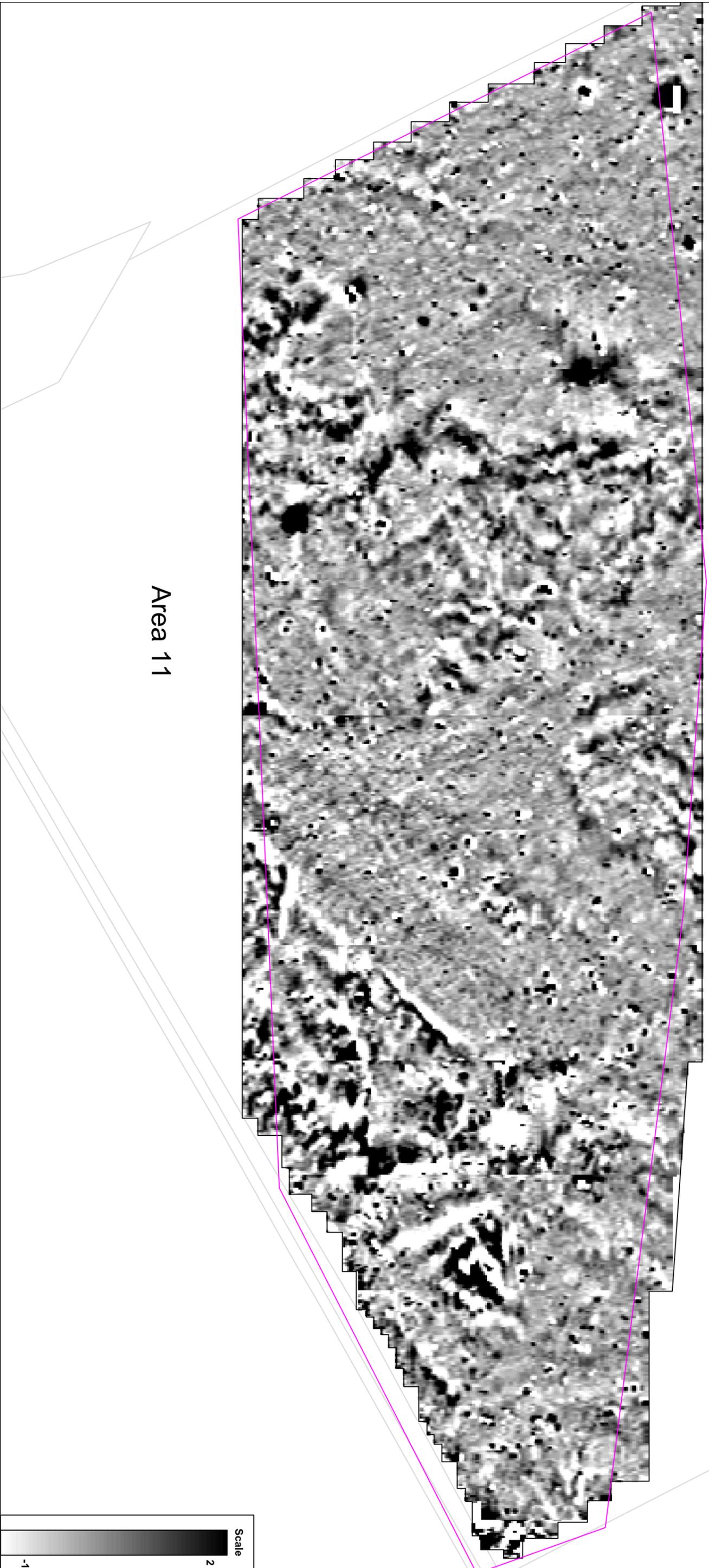


Figure
22



0
40m
1:1000 at A3



Area 11

Interpretation of gradiometer survey results: Area 11

Figure 23



- Possible archaeology
- Linear trend (plough)
- Linear trend (archaeology?)
- Possible archaeology
- Linear trend (modern)
- Disturbed area (modern)
- Survey area
- Ferrous





Unprocessed gradiometer survey results - greyscale plot: Area 12

Figure
24



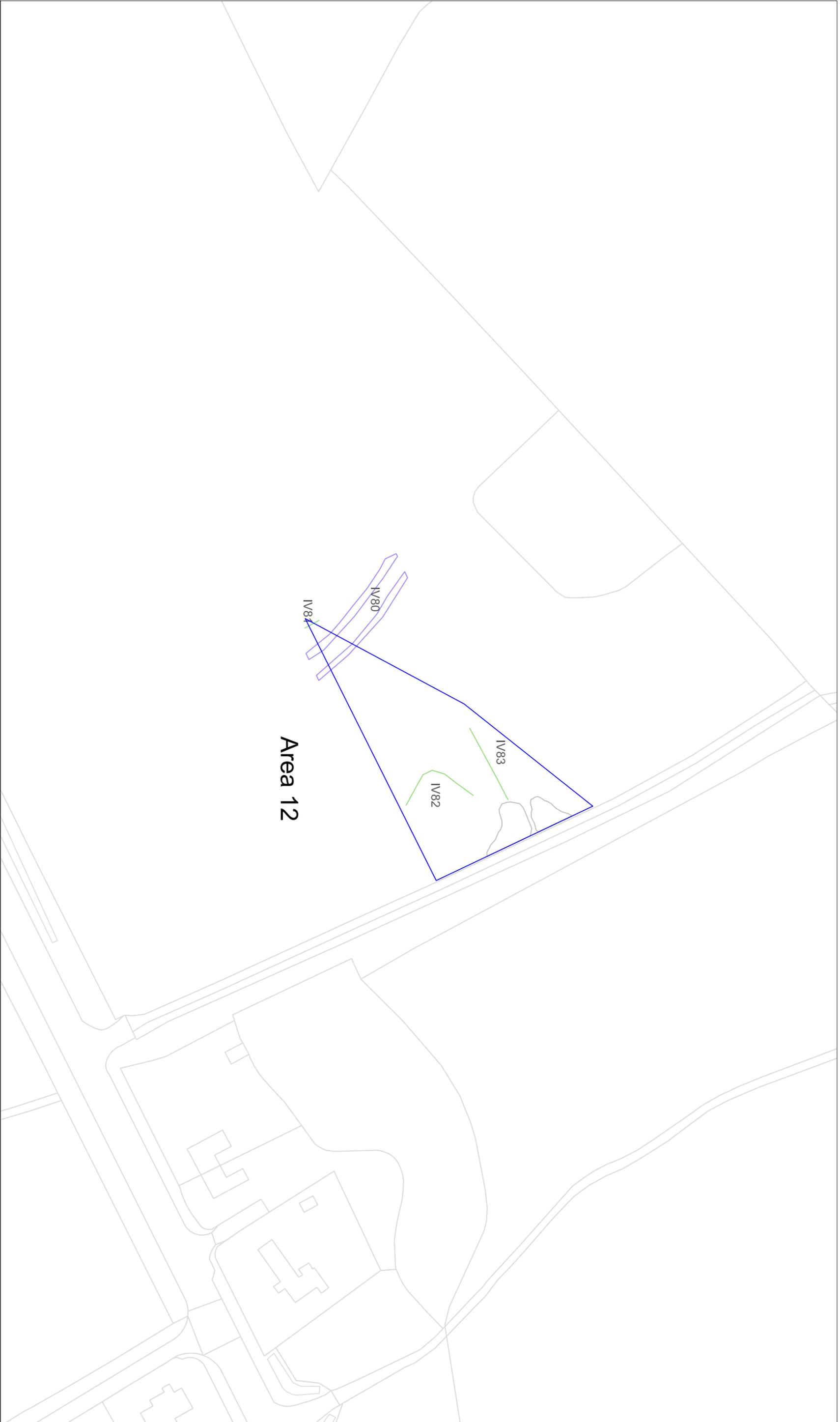
0
1:1000 at A3
40m





Figure
25





Interpretation of gradiometer survey results: Area 12

Figure 26



-  Possible archaeology
-  Linear trend (archaeology?)
-  Possible archaeology
-  Linear trend (modern)
-  Survey area
-  Ferrous





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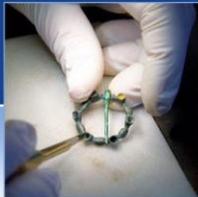
A96 Dualling: Inverness to Nairn (including Nairn Bypass) Archaeological Metal Detecting Survey Data Structure Report

AOC 23327

Client Project Ref No.: B2103500/EN/01/RP/001

24th March 2016

Oasis Number: 1-244891



A96 Dualling: Inverness to Nairn (including Nairn Bypass) Archaeological Metal Detecting Survey Report

On Behalf of:	Jacobs U.K. Ltd 160 Dundee Street Edinburgh E11 1DQ
National Grid Reference (NGR):	NH 90582 55682, NH 91147 55762 & NH 91127 56037
AOC Project No:	23327
Client Project Ref No:	B2103500/EN/01/RP/001
Prepared by:	Rob Engl, Dawn McLaren, David Caldwell
Date of Fieldwork:	15 th February – 03 rd March 2016
Date of Report:	31st March 2016

This document has been prepared in accordance with AOC standard operating procedures.

Author: Rob Engl, Dawn McLaren, David Caldwell **Date:** 23rd March 2016

Approved by (Manager): G.Cavers **Date:** 31st March 2016

Approved by (QA): A.Heald **Date:** 31st March 2016

Draft/Final Report Stage: Final **Date:** 31st March 2016

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Summary

This report presents the results of an archaeological metal detecting survey undertaken by AOC Archaeology Group on three land parcels at the village of Auldearn, Highland, as part of the cultural heritage assessment work associated with the proposed dualling of the A96, including the Nairn bypass. The land parcels totalled 74.4 hectares and were situated at NH 90582 55682, NH 91147 55762 & NH 91127 56037 (centered), respectively.

The survey was undertaken in order to assess the possible impact of the proposed works on the site of the Battle of Auldearn (1645).

The metal detecting survey recovered 96 metal artefacts. The metal finds included two impacted lead musket balls, lead scrap, a silver plated charm, copper buckles, buttons, a 19th century Temperance Society badge and 17th century, Victorian and Late Georgian coinage. A copper ratchet mechanism, probably from a crossbow, was also recovered. Numerous pieces of modern agricultural machinery and detritus were also detected. All of the fields were heavily contaminated with modern material: drinks cans and other debris. These were heavily concentrated around the perimeters especially those bordering the A96 and the minor roads.

Although the two impacted musket balls and lead scrap may be associated with fighting occurring during the battle of Auldearn (1645), the results of the survey are not considered to represent definitive evidence for the battle.

1. INTRODUCTION

2. AOC Archaeology Group was commissioned by Jacobs U.K. Ltd on behalf of their client, Transport Scotland, to undertake an archaeological metal detecting survey on three land parcels as part of the cultural heritage assessment work associated with the proposed dualling of the A96 Inverness to Nairn including the Nairn Bypass. The survey was conducted in accordance with the principles set out in *Scottish Planning Policy* (Scottish Government 2014) and *Scottish Government Planning and Archaeology (2/2011)*, and according to the methodology agreed with Jacobs in document B2103500/EN/CH/RP/001, *Specification for Archaeological Geophysical Survey and Metal Detecting*.

3. The survey focussed on three parcels of land, totalling 74.4 Ha. These areas were almost entirely located within the Designated Inventory Battlefield (BTL3), although the main area of conflict is thought to be located south and east of the surveyed area.

4. The most significant artefacts recovered during the metal detecting survey were two impacted lead musket balls. In addition, a further 96 metal finds were recorded. These included lead scrap, a silver plated charm, copper buckles, buttons, a 19th century Temperance Society badge and Victorian and Late Georgian coinage.

5. Site Location

6. The metal detecting survey was undertaken within arable fields and pasture located to the immediate west and north-west of the village of Auldearn. The area was divided into three land parcels, amounting to 74.4 hectares. The survey area is bisected by the A96 and the B 9111 roads. The survey area was bounded by further agricultural land to the south and west and by a minor road to the north.

7. The survey area was composed of gently undulating ground and ranged from 15.0 m to 30.0 m OD.

8. The location (centred) and extent of the land parcels are as follows.

- Area MD1, NGR: NH 90582 55682
- Area MD2, NGR: NH 91147 55762
- Area MD3, NGR: NH 91127 56037

9. Archaeological Background

10. The Battle of Auldearn 1645 Historical Context (based on Battlefield Trust Report 2005)

11. The Battle of Auldearn was fought on the 9th May 1645 between the troops of the Scottish Covenanter alliance with the English parliament and those of the English royalist army, forming part of the Wars of the Three Kingdoms. Following the royalist defeat at Marston Moor, Yorkshire (1644), the King appointed the Marquis of Montrose as his military commander in Scotland. Montrose then won a series of engagements against the Covenanting forces, defeating them at Tippermuir, Aberdeen, Fyvie and Inverlochy. In April he attempted an assault on Dundee and retreated northwards pursued by a Covenanting army under Hurry. The Covenanting forces got between the royalists and Inverness, with the royalists retreating eastwards to Auldearn where they quartered.

12. On the 9th of May, the two armies clashed. The Covenanter advance was met by Montrose's second in command Alisdair MacColla, who led the most forward royalist troops. MacColla took up a strong position just west of Auldearn, probably on Garlic Hill, protected by marshy ground.
13. The resulting action took the form of periods of intense fighting interspersed with lulls where the troops regrouped. The battle started with an intense fire-fight during which the Covenanters drove MacColla's outnumbered troops back to Auldearn village. Here from the village enclosures the royalists managed to hold off the attack aided by the difficult ground. MacColla counter-attacked, before also becoming bogged down and was forced back to the village where fighting continued house to house.
14. The royalists finally concentrated the main body of their troops west of the village and again moved to counter attack. Reid (2003) suggests that there were outflanking attacks to the north and south as well as support through the village. The attacks drove off the Covenanter cavalry on the flanks and exposed the Covenanter infantry. A combined assault on the infantry by royalist infantry and cavalry saw many Covenanter casualties and the retreat south-westwards. Montrose then took his army eastwards across the Spey.

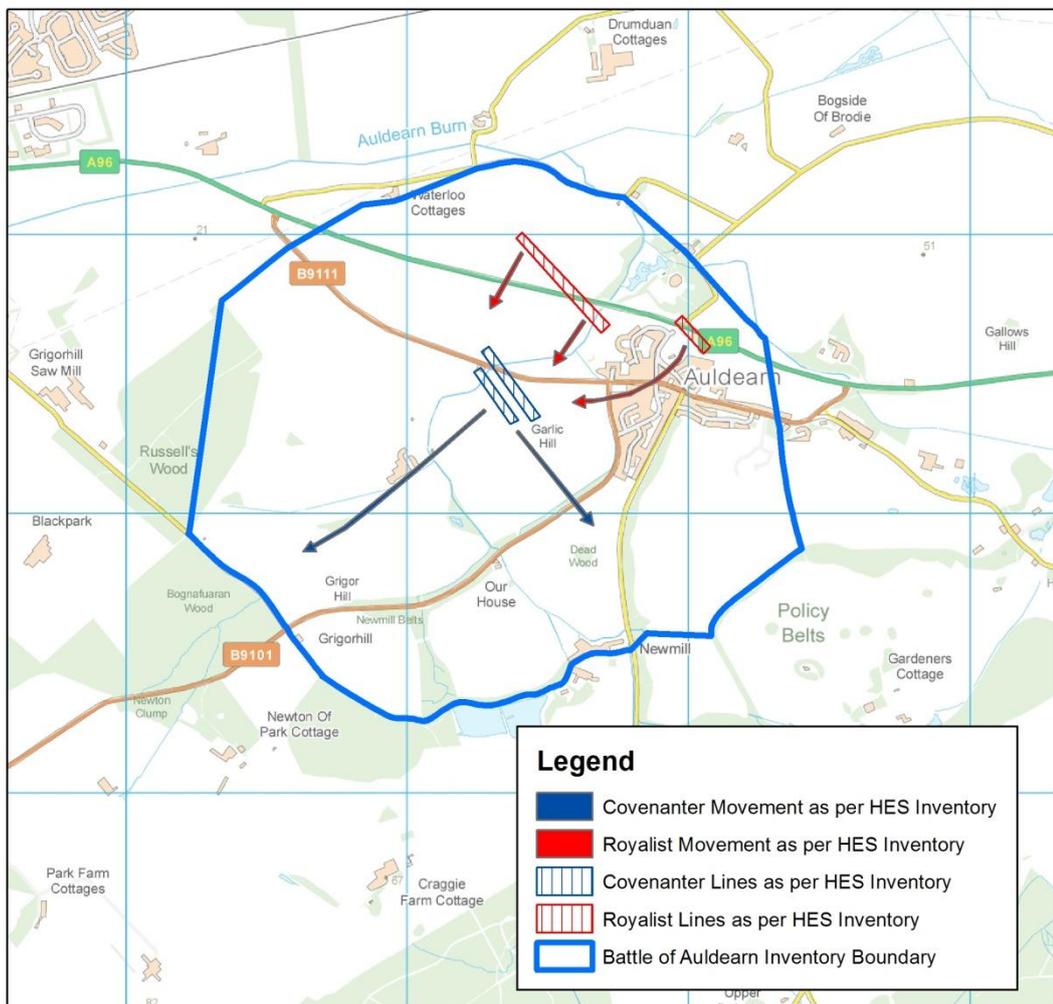


Figure 1: Location of the Battle of Auldearn showing the principal troop positions and movements ((C) OS OpenData)

15. OBJECTIVES

16. The objectives of the Metal Detecting Survey were:

- I. To identify (where possible) the extent of the battlefield within the survey area;
- II. To establish the presence/absence and preservation of artefacts associated with the battle within the survey area;
- III. To disseminate the results of the archaeological metal detecting survey through the deposition of an ordered archive and detailed report at the NMRS.

17. METHODOLOGY

18. The metal detector survey was undertaken on three land parcels (MD1, MD2, MD3, Figure 2) set within arable fields and pasture to the immediate west and north-west of the village of Auldearn, Highland.

19. The metal detector survey was undertaken using Minelab X-Terra metal detectors, a model of detector which is well suited to the detection of small ferrous and non-ferrous metallic objects typical of battlefield debris, and is equipped with discrimination modes suitable to the detection and identification of a range of object types, meaning it is well suited to general reconnaissance survey. Survey transects were marked out prior to the survey commencing at intervals of 2.5m allowing a degree of overlap between transects to ensure complete coverage of the available area.

20. All artefact locations were tagged, subsequently excavated and then surveyed using a Trimble GPS unit (R6 using VRS Now corrections service) to allow accurate plotting of find densities and artefact types. All modern detritus was removed from site and disposed of responsibly. Artefacts were bagged in accordance with the specifications for artefact retrieval detailed in Section 5 of Jacobs' *Schedule 2: Specification for Archaeological Geophysical Survey and Metal Detecting*, uniquely numbered and returned to AOC Archaeology for storage at the end of each week. Objects deemed to be of modern origin were collected and their positions marked, but were not allocated numbers and recorded as 'General' artefacts.

21. RESULTS

22. The archaeological work was conducted between 15th February and 3rd March 2016. Detecting conditions were generally favourable with clear, calm weather.

23. The majority of the artefacts were recovered from depths ranging between 0.05 m and 0.20 m. An apparent lack of ferrous rock within the area meant that sensitivity could be increased allowing for true signals leading to good rates of detection being achieved. All three land parcels had been heavily contaminated by significant amounts of modern detritus including farm machinery, machine tooled objects, modern coinage and aluminium drinks cans. These items were especially common bordering the A96 and the minor roads. A total of 96 artefacts were recovered for identification. These are listed with their full identification in Appendix 2.

24. **Land Parcel MD1 (Figure 3)**

25. This area consisted of undulating pasture with top-soil ranging from 0.20 m to 0.35 m. Artefact density was high within the northern part of the parcel with numerous modern coins and detritus being present. The owner of Kinnudie Farm, Mr Philips, informed the survey team that the Nairn Fair had been recently located within the field, and this may account for a large quantity of modern detritus in this area. Artefact density decreased towards the southern boundary although modern detritus was still common along the edges of the parcel.

26. A silver plated charm of probable post medieval date (SF 05) and a silver George III threepenny dated 1817 (SF 15). A number of 18th century objects were recovered from the area. These consisted of a shoe buckle (SF 19), a domed button (SF 21). A 17th century copper coin (SF 04) was also recovered.

27. **Land Parcel MD2 (Figure 4)**

28. Land Parcel MD2 consisted of undulating pasture with the low-lying ground along the southern and south eastern boundary being waterlogged in areas. The top-soil was up to 0.40 m in depth in these areas. This thinned considerably up-slope to the north. Artefact density was high within the eastern and southern parts of the parcel with frequent modern detritus being detected. Artefact density lessened towards the western boundary although modern detritus was still common along the edges of the parcel. The far western corner of the parcel was unavailable for survey due to the presence of an eco-waste dumps was a 50.0 m strip along the north-western boundary was unavailable due to slurry spreading at the time of survey. The total area of unavailable land was 1.2Ha.



Plate 1: View of Dooket Hill from the find location of musket ball SF 39.



Plate 2: Village of Aldern & Garlic Hill from the find location of musket ball SF 30

29. Two impacted lead musket balls (SF 30 & 100) were recovered from the southeastern part of the area Plate 1 and 2). Both had been partially flattened due to impact, with SF 30 almost completely flattened. A segmented strip of lead (SF 24) was also recovered from this area.
30. Other artefacts of note comprised a tag made from a perforated 18th century coin (SF 23) and a half penny coin (SF 31), very worn (possibly George III c.1799); re-used as a token with stamped 'FG' within oval cartouche, off-centre on one face.
31. **Land Parcel MD3 (Figure 5)**
32. Land parcel MD3 was located north of the A96 and consisted of two undulating ploughed fields under crop. The plough-soil was up to 0.40 m in depth in these areas. The crop was low lying and did not affect the survey. Every effort was made to limit disturbance to the crop, and reinstatement was undertaken after each excavation. The survey revealed small concentrations of material situated on the downslopes of the undulating ground. This thinned considerably on the crowns of the slopes. Modern detritus was again present in substantial quantities.
33. Artefacts recovered included two disc shaped copper buttons of 18th century date (SF 43 & 45). A copper bawbee (a Scottish ha'penny, valued at six pence Scots (equal at the time to an English half-penny), issued from the reign of James V of Scotland to the reign of William II of Scotland) (SF 65) and a hollow button (SF 60) of 17th century date were also recovered together with a cast buckle (SF 64), likely to be of 15th – 18th century date. A number of 19th century coins were also identified together with a Temperance Society badge of the Blue Ribbon Gospel Army (SF 48).

34. **Modern Artefacts**

35. A total of 41 'modern' artefacts (67A – 6700) were retrieved for analysis in order to test on site identification. These had little merit for retention with the exception of artefact 67D. This item appears to be a fragment of a linear ratchet made of copper, and possibly associated with a hand-held torsion weapon such as a crossbow. This artefact was excavated from Area MD2.

36. **ARTEFACT APPRAISAL**

Dr Dawn McLaren

37. A total of 96 metal artefacts (including those collected as bulk 'modern' finds) were recovered during the metal detecting survey at Auldearn comprising items of copper alloy, iron and lead which range in date from the 16th or 17th centuries to the present day. The assemblage has been assessed and the significance of each item considered in light of the battle that is purported to have taken place on or near the site of survey in 1645.
38. A small number of items (quantity 36, equalling 38% of the assemblage) are pre-1800 in date or cannot be dated with any confidence due to their current condition (e.g. surface soiling and/or corrosion). Amongst this small group, are a number of items which could broadly date to the 17th century and are potentially contemporary with the Battle of Auldearn. These include a copper alloy coin (SF 4) which is likely to be 16th or 17th century in date; a double loop trapezoidal cast buckle (SF 64) a type in use during the 16th to 18th century; a damaged hollow button (SF 60) which may be 17th or 18th century in date and a white base metal charm or pendant with decoration on both faces (SF 5) which may be post-medieval but the surfaces are entirely obscured by corrosion. In each case, x-radiography is recommended to reveal further surface details and the coin (SF 4) and the possible pendant (SF 5) would benefit from surface cleaning.
39. Possible ammunition is present in the form of two lead shot (SF 30 and SF 100), flattened from impact, whose weight approximates to 24 bore and 20 bore muzzle-loaded guns respectively. Although lead shot was in use during the mid-17th century and at the Battle of Auldearn specifically, there is no demonstrable way of dating shot precisely and their use spans several centuries. Although spent or lost ammunition, such as lead shot, would not be unexpected on a post-medieval battlefield site, a conflict event is not the only explanation for their presence. Hunting, poaching and other sports activities could all explain the presence of lead shot in topsoil and are common finds during metal detecting surveys even in areas where no past conflict is documented. The presence of lead shot is, therefore, interesting in light of the history of the area but not necessarily related to the Battle of Auldearn and the small numbers recovered are not indicative of intense activity. One item that might be significant in this context is the fragment of a bronze or brass linear ratchet mechanism (SF 67 D), a type used in conjunction with early tension composite bows or crossbows. These weapons have a long currency of use and cannot be precisely dated to the mid-17th century but the mechanism fragment represents a notable and interesting find in the context of a possible battle site. X-radiography of this object is recommended to aid closer identification and dating. As noted regarding muzzle-loaded guns, crossbows could also have seen use in local sporting activity and hunting over several centuries. Despite the accounts that bows were used during this battle, no arrowheads were recovered.
40. In addition to the dress accessories and weaponry already discussed are a small group of horse harness components (SF 67O, 67B, 67Q, SF 12, SF 22) which cannot be closely dated. These could be post-medieval to modern in date.

41. The majority of the artefacts (62 %) are modern in date (defined as post-1860) and considered to be of little or no archaeological value. These include a range of copper coins, modern ordnance from hunting (e.g. shot gun cartridge caps), dress accessories, farm equipment and various household fittings. It is likely that these came to be incorporated in the soils at Auldearn through various processes namely as casual losses during use, deliberate discard relating to farming activities/occupation of the area and the spreading of 'nightsoil' as fertiliser on agricultural land. These items have been identified and recorded on the artefact inventory of the metal detected objects recovered during the survey but there is no merit in their retention.

Recommendations

42. X-radiography of copper alloy and iron items identified as pre-1860 in date or not closely dated in their current condition (Q= 29) to aid identification and to create a stable archive record of the condition of the objects. A further 7 lead objects are recommended for retention but x-radiography is unnecessary.
43. Surface cleaning by an artefact conservator of 3 items (SF 4 & SF 65 coins; SF 5 possible pendant or charm) to reveal surface details and to stabilise for long-term curation if deemed appropriate following x-radiography.
44. Further study after x-radiography of a small group of objects would be beneficial in terms of clarifying details of date and function (e.g. SF 5 pendant or charm, SF 67 D ratchet mechanism, SF 1, 4, 40, 55, 65 coins).
45. Discard of all post-1860 artefacts prior to archiving and reporting to the Scottish Treasure Trove Unit is recommended.

46. SIGNIFICANCE OF THE ASSEMBLAGE WITH REGARD TO THE BATTLE

Dr David Caldwell

47. The 96 metal finds from the designated site of the battle of Auldearn on 9 May 1645, recovered from a recent metal detecting survey, have been sorted and listed by Dr Dawn McLaren (above). This brief report has the sole purpose of considering the assemblage in relation to the battle. It does so by posing three questions:
48. Q. *Does the assemblage contain material that can be dated to the period of the battle?*
A. Many of the items are manifestly of 19th- and 20th-century date, like the cap from a bottle of beer (67 KK) and post-1860 British copper coins. Some other items, like two pieces of lead shot (SF 30, SF 100) and iron fittings including possible harness and bridle components (67 O, 67 P, 67 Q, 67 MM) might be, but are probably not as early as 1645. Two buttons (SF 21, SF 60) were considered carefully since they are types which are known to date earlier than 1645, but it was concluded that neither is likely to date prior to the 18th century. One coin (SF 4) appears most likely to be a small denomination billon or copper coin of the 16th or 17th century. It is probable that this can be confirmed by cleaning.
49. Q. *Of the material of the right date, can any be recognised as significant in the context of a battle?*
A. Only two items are potentially of significance in this context, the two pieces of lead shot (SF 30, SF 100), both considerably deformed as a result of impact after firing. They have weights of 18.79gr and 23.13gr, approximating to 24 bore and 20 bore respectively, not out of the ordinary for sporting guns used for shooting birds and small mammals. The assemblage also contains the remains of later cartridges for breech-loading guns and a lid (67 GG), possibly for a percussion cap dispenser. These are indicative of local sporting activity.

50. Q. *Are there adequate explanations for this assemblage unrelated to the battle?*
 A. A career spanning 38 years in National Museums Scotland dealing with post-medieval archaeological assemblages and issues to do with Treasure Trove and metal detectorists suggests to the writer that there is nothing unusual about the present assemblage. There are fields in other locations with no known history of military deployments which have produced many more pieces of shot. Elsewhere, artefacts that can confidently be assigned to the 17th century are by no means uncommon. The writer is not aware of any comprehensive, detailed scientific studies for how assemblages like this are formed but the processes clearly must include casual losses by passers-by, farming activities, sports shooting, and the spread of artefacts incorporated in manure. All of these are common, usual events.
51. It is only reasonable to conclude from this analysis that this artefact assemblage provides no evidence for the battle of Auldearn. That is not to say that the military manoeuvres did not take place in the area covered, just that there is no trace of them here.

52. **Metal Detecting Survey: Conclusion**

53. The metal detecting survey carried out on the 74 Ha in the NW portion of the Battle of Auldearn has provided limited evidence for activity related to the battle. Although musket balls were among the artefacts recovered, these are impossible to date closely and need not be directly associated with the 1645 conflict. Other objects potentially dating to the mid 17th century are, similarly, impossible to relate directly to the battle, and could equally relate to casual losses at any time prior to or since 1645.

54. **REFERENCES**

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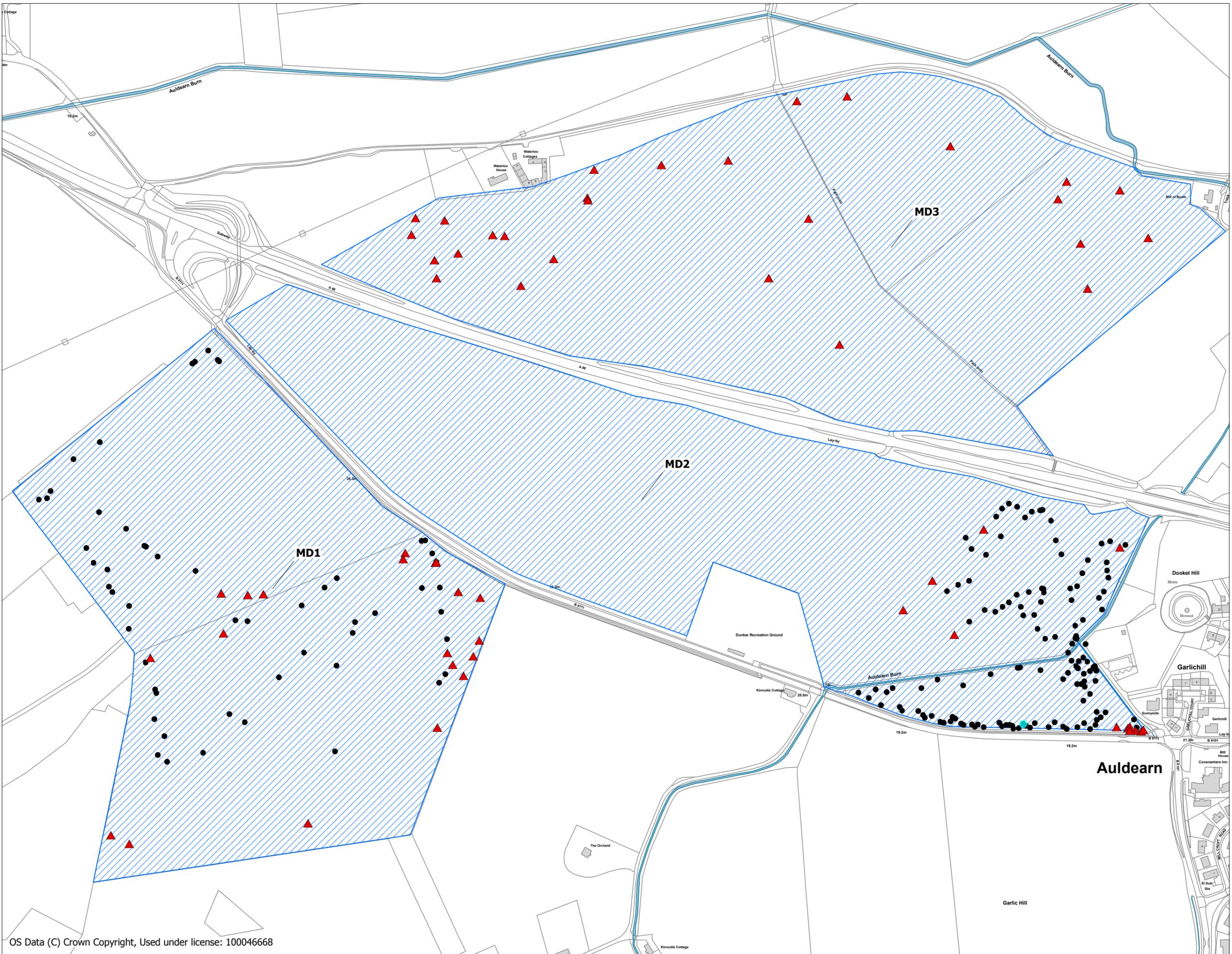
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Figure 2

Location of MD Survey area and general finds distribution (1:4000)

- MD Survey Finds
- Find
- ▲ SF (Find)
 - General
 - ▨ MD Parcels
 - Scheduled Monuments



AOC Project: 22327

Spatial Reference
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PCS: British National Grid
GCS: GCS OSGB 1936
Datum: OSGB 1936

Map Center: 291,052 855,778



Scale 1:4,000 at A3

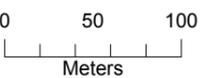


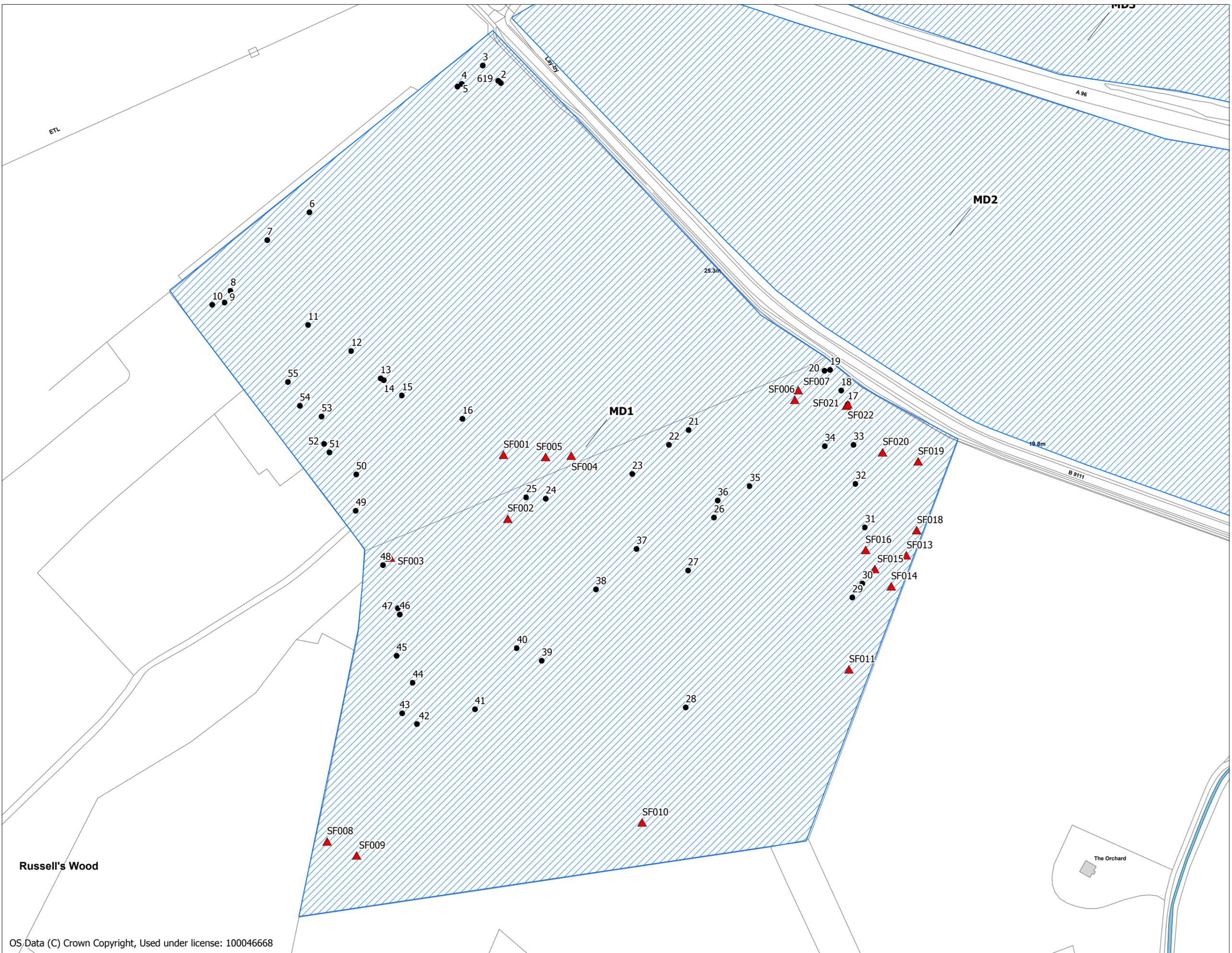
Figure 3

MD1: Distribution of artefacts

MD Survey Finds

Find

- ▲ SF (Find)
- General
- MD Parcels
- Scheduled Monuments



AOC Project: 22327

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 PCS: British National Grid
 GCS: GCS OSGB 1936
 Datum: OSGB 1936

Map Center: 290,669 855,625



Scale 1:2,500 at A3

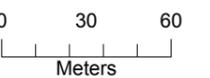
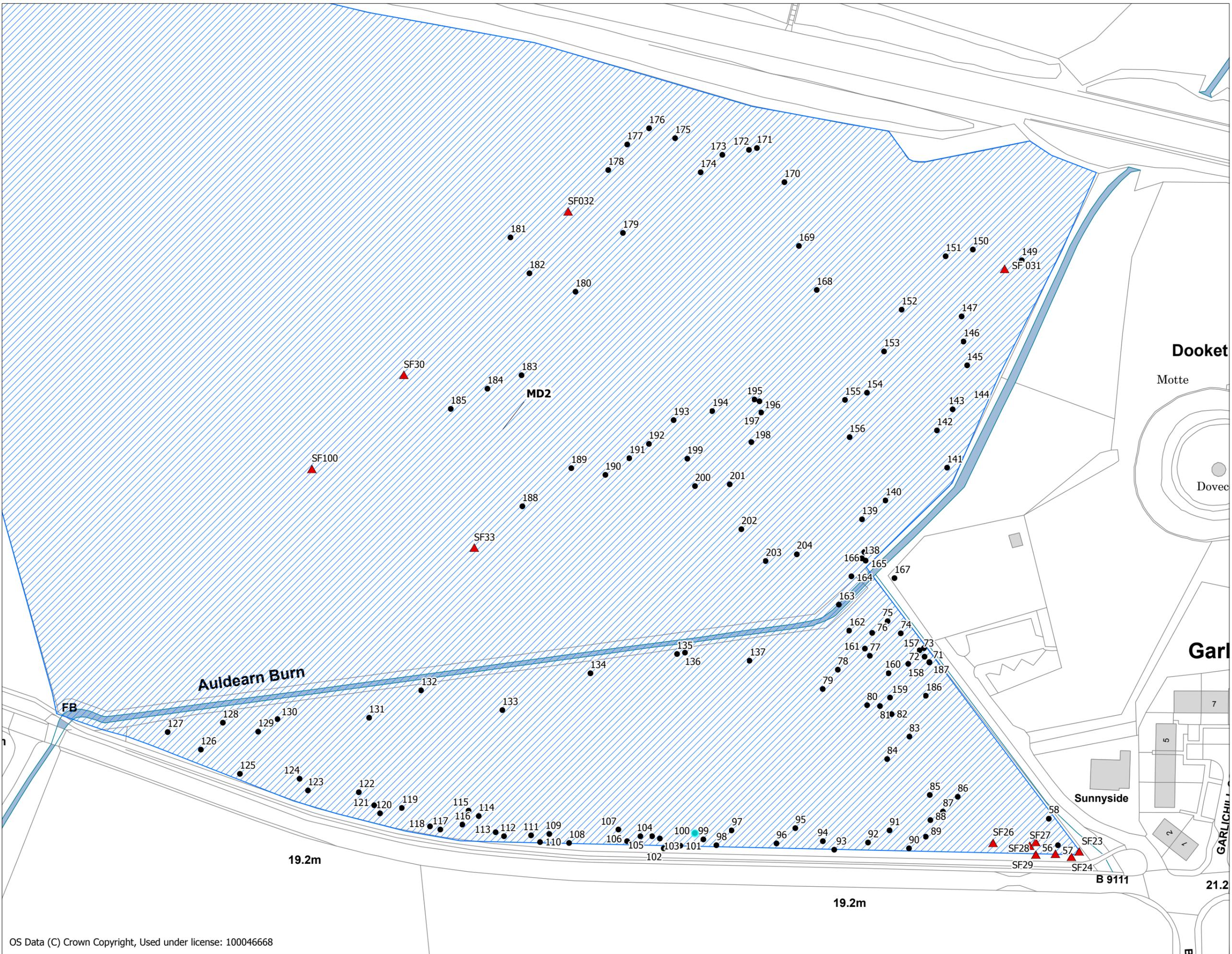


Figure 4

MD2: Distribution of artefacts

MD Survey Finds

- Find
- ▲ SF (Find)
 - General
 - MD Parcels
 - Scheduled Monuments



AOC Project: 22327

Spatial Reference
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 PCS: British National Grid
 GCS: GCS OSGB 1936
 Datum: OSGB 1936

Map Center: 291,503 855,620



Scale 1:1,250 at A3

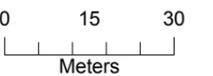


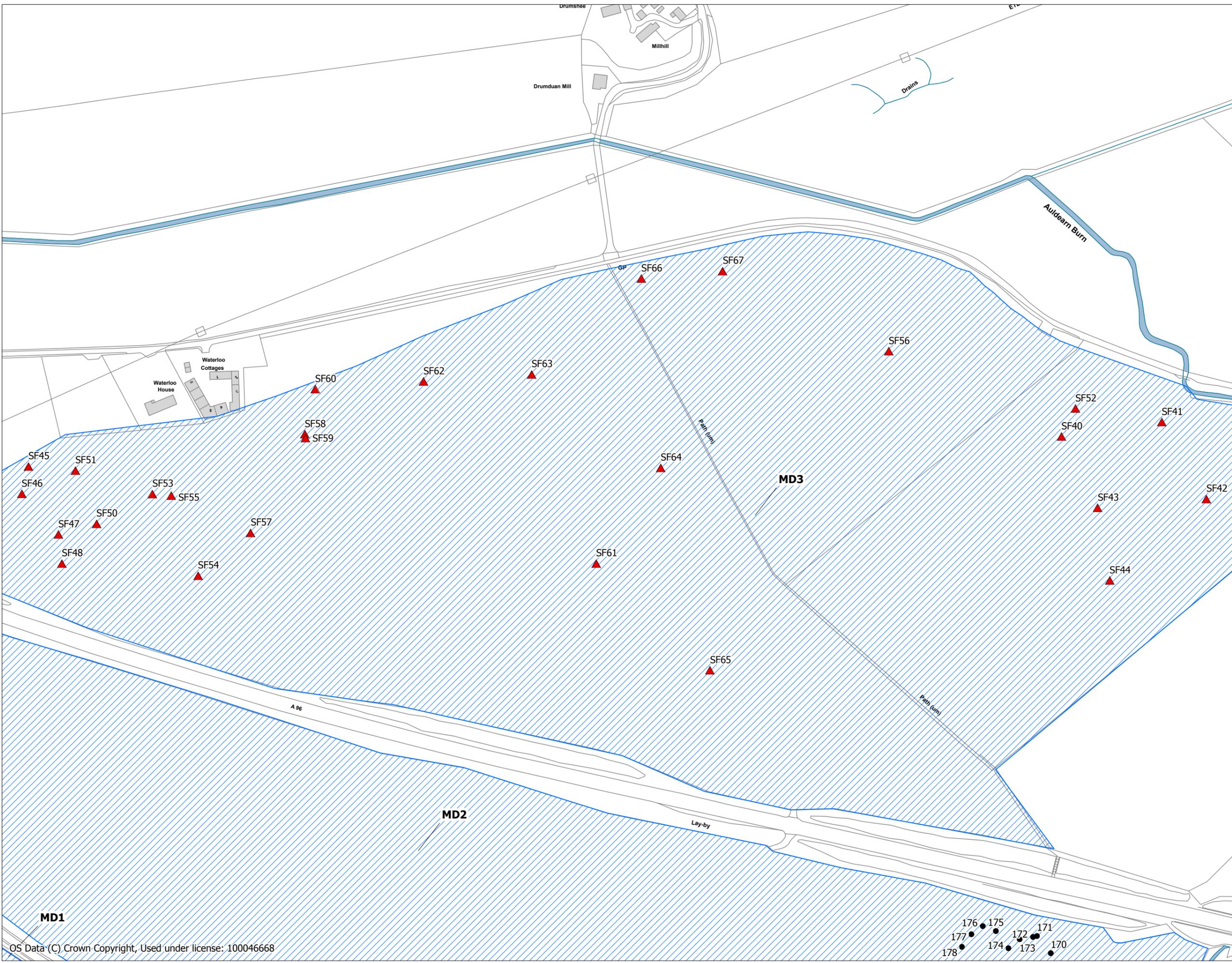
Figure 5

MD3: Distribution of artefacts

MD Survey Finds

Find

- ▲ SF (Find)
- General
- MD Parcels
- Scheduled Monuments



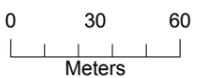
AOC Project: 22327

Spatial Reference
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Map Center: 291,249 856,074



Scale 1:2,501 at A3



**A96 Dualling Inverness to Nairn
(including Nairn Bypass);
Archaeological Metal Detecting Survey
Data Structure Report
Section 2: Appendices**

APPENDIX 1: List of the metal detected artefacts

SF	Material	Spot ID	Comments	Recommendations
1	CuA	Coin, surfaces very worn	Surfaces heavily worn	Retain; x-ray; merits further study
2	CuA	Half penny coin, surfaces soiled. Edward VII (mint ?1903)	Surfaces soiled but in good condition; modern - no merit in retention	Discard
3	CuA	Ribbed bullet?	Surfaces soiled	retain
4	CuA	Small copper (?hardhead) coin, surfaces very worn and obscured by corrosion. ?17th century	surfaces worn and corroded, clean?	Retain; x-ray; conservation; merits further study
5	?	White base metal disc-shaped pendant or charm (silver looking plate over ?); heavily corroded. One face bears a ?shield surrounded by an inscription 'LONG MAY YOU.....' ; the obverse face has a detailed crown but obscured by waxy corrosion. Post-medieval?	Surfaces corroded, ?clean	Retain; x-ray; conservation; merits further study
6	CuA	Fragmentary perforated sheet fitting	Surfaces soiled	Retain; x-ray
7	CuA/Fe	Damaged CuA toothed cog with nub of iron pin in situ at centre; machine part, modern	Surfaces soiled and corroded	Discard
8	CuA	Component of hydraulic piston for farm machinery? Modern	Surfaces soiled but otherwise in good condition; modern - no merit in retention	Discard
9	CuA	Fragment of an enamelled toy car; modern	incomplete, surfaces soiled. Modern -no merit in retention	Discard
10	CuA	Modern one penny coin; George V (minted 1921)	Surfaces soiled but in good condition; modern - no merit in retention	Discard
11	CuA	Pivoting ring fitting; modern. Stamped 'BRITISH MADE' AND '?HA116 WROUGHT'	Surfaces soiled; modern - no merit in retention	Discard
12	Fe	Iron ring fitting (?from vessel, horse harness, vehicle?); not closely datable	Surfaces corroded	Retain; x-ray
13	Fe	Upright rim sherd from a large iron pot or cauldron, vertical casting ridge at one broken edge.	Surfaces corroded	Retain; x-ray

14	Fe	Fragment of a heavily corroded iron object, possibly an incomplete padlock.	Surfaces obscured by corrosion. Xradiography?	Retain; x-ray
15	Ae	George III coin (minted 1814)	Surfaces tarnished but in good condition	Discard
16	CuA	Victorian penny (minted 1863)	Surfaces soiled but in good condition; modern - no merit in retention	Discard
17	Pb	Lead bullet	Surfaces soiled	retain
18	Fe	large D-shaped iron buckle	Surfaces heavily corroded	Retain; x-ray
19	CuA	Frame from shoe buckle; central bar lost. (c.18th century?)	Surfaces soiled	Retain; x-ray
20	CuA	Decorative brass fitting, strap fitting?	Surfaces soiled	Retain; x-ray
21	CuA	Small, two-part, hollow domed button; complete (c.18th c)	Good condition	Retain; x-ray
22	CuA	Brass ring, surfaces tinned. Possible horse harness fitting. Not closely datable	Surfaces soiled and tarnished	Retain; x-ray
23	CuA	Tag; worn disc with small perforation adjacent to curving edge for suspension. Probably a modified coin (c.18th C?)	Surfaces very worn	Retain; x-ray
24	Pb	Thick strip of lead, segmented along one edge; scrap for making shot?	surfaces soiled	retain
25				
26	CuA	Tube or pipe fragment, surfaces heavily corroded	Surfaces heavily soiled and corroded	Discard
27	CuA	Modern one penny coin, George VI (minted 1937)	Surfaces soiled but in good condition; modern - no merit in retention	Discard
28	Pb	Lead bale seal, surfaces distorted and soiled	Surfaces soiled	Discard
29				
30	Pb	Flattened lead shot (19g)	Surfaces soiled	retain
31	CuA	Half penny coin, very worn (possibly George III c.1799); re-used as a token with stamped 'FG' within oval cartouche, off-centre on one face.	Surfaces worn	Retain; x-ray
32	CuA	Modern two-pence coin; surfaces poor	Surfaces poor; modern - no merit in retention	Discard
33	CuA	Modern one penny coin; portcullis on reverse face	Surfaces poor; modern - no merit in retention	Discard

34-38 not used				
39	Pb	Hollow lead object, ?distorted bullet	Surfaces heavily soiled	retain
40	CuA	Coin, surfaces completely obscured by corrosion	Surfaces obscured	Retain; x-ray; merits further study
41	CuA	Modern one penny coin, George V (mint date illegible)	Surfaces poor; modern - no merit in retention	Discard
42	CuA	Half penny coin, Victoria (minted 1862)	Good condition; no merit in retention	Discard
43	CuA	Disc-shaped button (plain) with looped fastening at centre of reverse face; complete (c.18th century)	Good condition	Retain; x-ray
44	CuA	Victorian farthing (minted 1884)	Surfaces soiled but in good condition; modern - no merit in retention	Discard
45	CuA	Disc-shaped button (plain) with looped fastening at centre of reverse face; complete (c.18th century)	Good condition	Retain; x-ray
46	CuA	Modern one pence coin, George VI (minted 1938)	Surfaces soiled; modern - no merit in retention	Discard
47				
48	CuA	Victorian badge: Blue Ribbon Gospel Army	Surfaces soiled	Discard
49				
50	CuA	Ferrule	Surfaces soiled but in good condition	Retain; x-ray
51	Pb	Decorative lead fitting (radiating foliate design flanking a central star), perforated at both ends for attachment; possible horse harness/vehicle fitting?	Surfaces soiled	retain
52	CuA	Disc-headed stud; not closely datable	Surfaces stable	Discard
53-54				
55	CuA?	Coin, surfaces completely obscured by corrosion	Surfaces obscured	Retain; x-ray; merits further study
56				
57	CuA	Moulded buckle, Victorian	Surfaces soiled; modern - no merit in retention	Discard
58	CuA	Button head in the shape of a crysanthemum looped fitting on reverse lost	Surfaces soiled and distorted	Retain; x-ray

59	CuA	Half penny coin, George VI (minted 1940)	Surfaces soiled but in good condition; modern - no merit in retention	Discard
60	CuA	Damaged CuA hollow button, looped attachment lost. c.17th century (Dcaldwell= 18th C)	surfaces corroded, cleaning recommended	Retain; x-ray
61	CuA	Wheel from toy car; modern	Incomplete; modern - no merit in retention	Discard
62	Pb	Lead button-shaped weight (18th c)	Fairly good condition.	retain
63	CuA	Half penny coin, heavily worn. George III? (mint date illegible)	Surfaces heavily worn	Discard
64	CuA	Double loop trapezoidal cast buckle (c.late 16th - 18th c)	good condition, complete	Retain; x-ray
65	CuA	Copper Bawbee? Late 17th century. (DCaldwell = George II or III irish halfpenny, 18th C)	surfaces heavily worn; x-ray	Retain; x-ray; conservation; merits further study
66				
100	Pb	Lead shot, flattened on one face from impact (23.1g)	Surfaces soiled	retain
67A	CuA	modern shotgun cartridge caps x 2	Modern - no merit in retention	Discard
67AA	CuA	Modern chrome handle	Modern - no merit in retention	Discard
67B	CuA	Pocket watch (face and back plate lost)	Corroded but recognisable	Discard
67BB	Fe	Modern iron handle/lock mechanism	Modern - no merit in retention	Discard
67C	CuA	Brass trade weight, Victorian (VR marked below crown)	Corroded but recognisable	Discard
67CC	Fe	3 x nails	Modern - no merit in retention	Discard
67D	CuA	Fragment of a linear ratchet, possibly from a hand-held tortion weapon such as a crossbow	Incomplete but in good condition	Retain; x-ray; merits further study
67DD	Fe	4 x nail shanks/rods; incomplete	Modern - no merit in retention	Discard
67E	CuA	Decorated moulded brass strap junction? Victorian? (looks like a clay pipe tamper but boss is hollow)	Fairly good condition	Discard
67EE	CuA	Terminal of knife handle	Surfaces corroded	Discard
67F	CuA	Domed brass mount broken across projecting loop; horse harness fitting?	Surfaces soiled	Retain; x-ray
67FF	Fe	Iron rod, broken at both ends	Surfaces corroded. No merit in retention	Discard
67G	Pb	Lead sheet fragment	Surfaces soiled	Discard

67GG	CuA	Screw cap with looped fitting, possible lid for a percussion cap dispenser (early 19th century)	Surfaces corroded. Modern - no merit in retention	Discard
67H	CuA	Chain	Surfaces soiled. Modern - no merit in retention	Discard
67HH	Fe	Hooked bar, broken at both ends	Surfaces corroded	Discard
67I	Fe	3 x U-shaped staples	Surfaces soiled and corroded	Discard
67II	Aluminium	Aluminium cap (modern)	Modern - no merit in retention	Discard
67J	CuA	Brass threaded bolt with perforated head	Modern - no merit in retention	Discard
67JJ	CuA	Folded sheet	Surfaces soiled	Discard
67K	CuA	Brass toothed cog	Surfaces soiled. Modern - no merit in retention	Discard
67KK	Fe	Budweiser beer cap	Modern - no merit in retention	Discard
67L	Pb	Folded lead strip	Surfaces soiled	Discard
67LL	Pb	Lead pipe/tube fragments x 2	Surfaces soiled	Discard
67M	CuA	Modern machine or vehicle component: cua rectangular strip, broken across double perforations at both ends, two perforations mid length with rivets in situ; traces of white paint or enamel on one face.	Incomplete. Modern - no merit in retention	Discard
67MM	Fe	Iron object ???	Surfaces corroded	Discard
67N	CuA	Modern animal ear tag (marked 427D; N29)	Modern - no merit in retention	Discard
67NN	?	Modern; unidentified	Modern - no merit in retention	Discard
67O	Fe	Bridle bit fragment	Surfaces corroded	Retain; x-ray
67OO	CuA	Modern; unidentified	Modern - no merit in retention	Discard
67P	Fe	Chain links	Surfaces corroded	Retain; x-ray
67PP	Ce	Shard of standard white earthenware bowl, sponge-cut decoration (Victorian)	Modern - no merit in retention	Discard
67Q	Fe	Iron ring (?horse harness)	Surfaces corroded.	Retain; x-ray
67R	CuA	Domed brass mount or fitting, perforated centrally. Edges torn (from removal?)	Surfaces corroded	Discard
67S	CuA	Teaspoon handle, once silver plated (hallmarks on reverse). Kings Pattern = 19th century	Surfaces very worn	Discard
67T	CuA	Curving rim from sheet metal circular cover/mount/plate	Surfaces corroded	Discard
67U	CuA	Nut, modern	Surfaces corroded. Modern - no merit in retention	Discard
67V	CuA	Scissor handle	Modern - no merit in retention	Discard

67W	CuA	Door knob or finial	Surfaces soiled	Discard
67X	Aluminium	Machine/vehicle identification plate	Modern - no merit in retention	Discard
67Y	CuA	Double looped fitting	Surfaces corroded	Discard
67Z	Fe	Iron swivel ring fitting	Surfaces corroded	Discard

APPENDIX 2: Small finds with OS Coordinates

SF	Coord X	Coord Y	Coord Z
1	290586.46	855643.47	27.70
2	290589.39	855596.41	26.99
3	290503.15	855567.76	28.04
4	290636.48	855642.78	26.70
5	290617.61	855641.82	27.22
6	290800.99	855684.09	21.68
7	290803.78	855691.11	21.87
8	290456.32	855358.68	29.84
9	290477.94	855348.40	28.87
10	290688.72	855372.72	28.84
11	290841.20	855485.52	27.75
13	290883.51	855569.49	22.49
14	290872.13	855546.65	23.45
15	290859.91	855559.42	23.14
16	290853.22	855573.43	22.70
18	290891.12	855588.01	21.65
19	290891.95	855638.65	19.52
20	290865.95	855645.32	19.88
21	290839.01	855679.74	19.98
22	290840.08	855680.63	19.95
23	291674.03	855483.18	19.56
24	291671.30	855481.16	19.47
26	291642.30	855486.28	18.68
27	291655.82	855485.24	18.96
28	291658.09	855486.63	18.98
29	291658.03	855481.96	19.05
30	291425.05	855658.64	26.04
31	291646.65	855697.73	19.31
32	291485.62	855718.89	25.27
33	291451.01	855595.01	17.62
40	291573.24	856108.21	19.86
41	291646.74	856118.71	14.74
42	291679.57	856062.46	21.01
43	291599.88	856055.89	24.90
44	291608.54	856002.71	26.75
45	290815.94	856086.17	17.28
46	290811.08	856066.23	19.23
47	290837.90	856036.40	17.85
48	290840.46	856015.07	18.48
50	290865.88	856044.16	16.78
51	290850.34	856083.21	15.16
52	291583.44	856128.77	18.47
53	290906.87	856066.09	15.73
54	290940.32	856006.23	20.80
55	290920.59	856064.85	16.26
56	291446.60	856170.71	19.54
57	290978.97	856037.67	21.09

58	291018.52	856109.93	15.78
59	291018.87	856106.96	16.20
60	291026.18	856142.89	13.43
61	291232.12	856015.07	24.45
62	291105.53	856148.60	15.21
63	291184.81	856153.68	19.83
64	291279.47	856085.20	22.80
65	291315.69	855936.87	25.35
66	291265.25	856223.92	15.52
67	291324.96	856229.46	17.07
100	291391.15	855624.03	20.82

APPENDIX 3: DISCOVERY AND EXCAVATION IN SCOTLAND (DES) REPORT

LOCAL AUTHORITY:	Highland Council
PROJECT TITLE/SITE NAME:	A96 Dualling Inverness to Nairn (including Nairn Bypass); Archaeological Metal Detecting
PROJECT CODE:	AOC 23327
PARISH:	Auldearn
NAME OF CONTRIBUTOR:	Rob Engl
NAME OF ORGANISATION:	AOC Archaeology Group
TYPE(S) OF PROJECT:	Archaeological Metal Detecting Survey
NMRS NO(S):	None
SITE/MONUMENT TYPE(S):	17 th century Battlefield
SIGNIFICANT FINDS:	Three impacted lead musket balls, lead scrap, silver plated charm, 17 th -20 th century coinage, copper crossbow ratchet mechanism, copper buckles and buttons 16 th -20 th century.
NGR (2 letters, 6 figures)	NH 90582 55682, NH 91147 55762 & NH 91127 56037 (centered)
START DATE (this season)	15 th February 2016
END DATE (this season)	3 rd March 2016
PREVIOUS WORK (incl. DES ref.)	None
MAIN (NARRATIVE) DESCRIPTION: (May include information from other fields)	<p><i>An archaeological metal detecting survey was undertaken by AOC Archaeology Group on three land parcels at the village of Auldearn, Highland, as part of the cultural heritage assessment works associated with the proposed dualling of the A96 including the Nairn bypass. The land parcels totalled 74 hectares and were situated at NH 90582 55682, NH 91147 55762 & NH 91127 56037 (centered), respectively.</i></p> <p><i>The survey was undertaken in order to assess the possible impact of the proposed works on the site of the battle of Auldearn 1645.</i></p> <p><i>The metal detecting survey recovered 98 metal artefacts. The metal finds included three impacted lead musket balls, lead scrap, a silver plated charm, copper buckles, buttons, a 19th century Temperance Society badge and 17th century, Victorian and Late Georgian coinage. A copper ratchet mechanism from a probable crossbow was also recovered. Numerous pieces of modern agricultural machinery and detritus were also detected. These were removed from the fields and disposed of. All of the fields were heavily contaminated with modern drinks cans. These were concentrated around the perimeters especially those bordering the A96 and the minor roads.</i></p> <p><i>The three impacted musket balls and lead scrap are likely associated with fighting occurring during the battle of Auldearn 1645.</i></p>
PROPOSED FUTURE WORK:	None
CAPTION(S) FOR ILLUSTRS:	N/A
SPONSOR OR FUNDING BODY:	Transport Scotland
ADDRESS OF MAIN CONTRIBUTOR:	AOC Archaeology Group; Edgefield Road Industrial Estate; Loanhead, Midlothian, EH20 9SY
EMAIL ADDRESS:	admin@aocarchaeology.com
ARCHIVE LOCATION	Archive to be deposited in NMRS



Plate 3: SF1: Coin.



Plate 4: SF4, Coin.



Plate 5: SF5, Charm of pendant.



Plate 6: SF 12, Iron ring fitting.



Plate 7: SF13, Iron vessel rim.



Plate 8: SF14, corroded iron object.



Plate 9: SF18, buckle.



Plate 10: SF19, buckle.



Plate 11: SF20, strap fitting?



Plate 12: SF21, button (18th century).



Plate 13: SF22, ring (horse harness?).

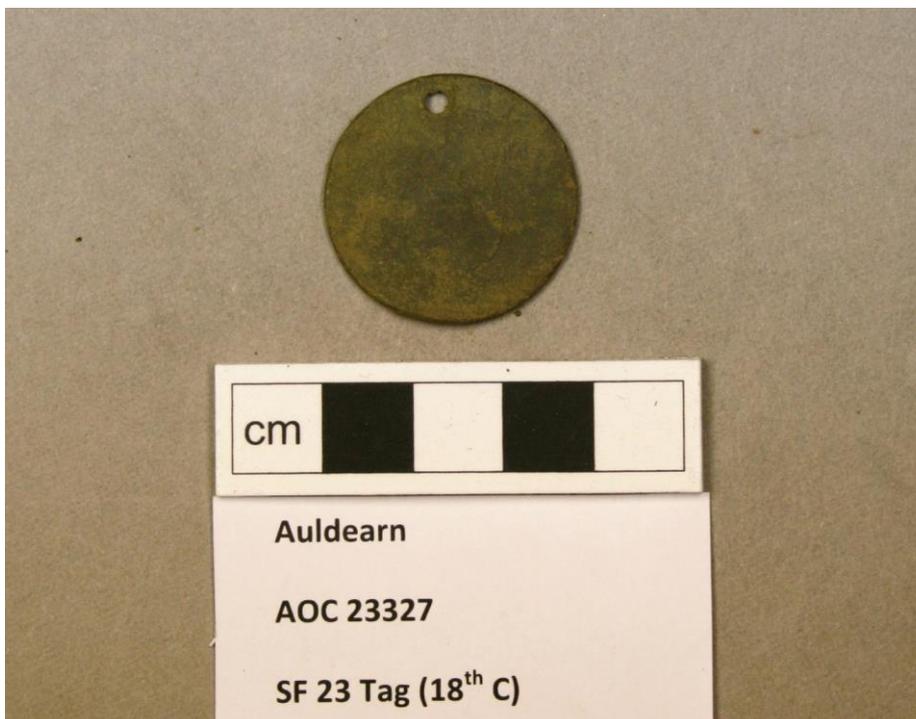


Plate 14: SF23, tag (18th century).



Plate 15: SF24, segmented lead strip.



Plate 16: SF30, lead shot.

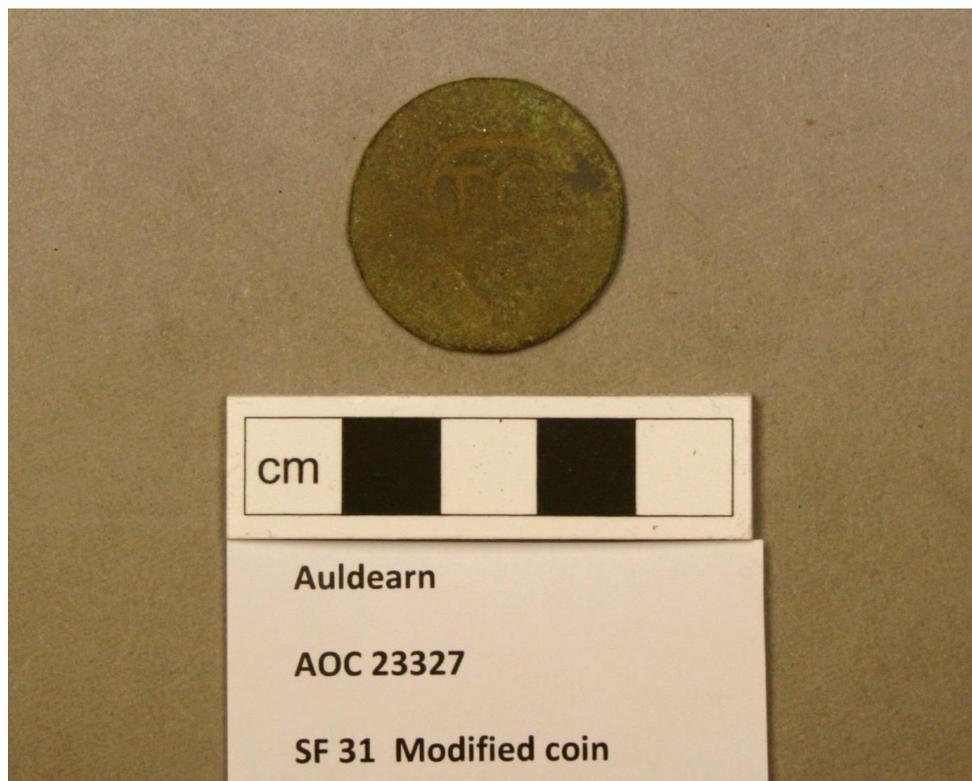


Plate 17: SF31, modified coin.



Plate 18: SF40, coin.

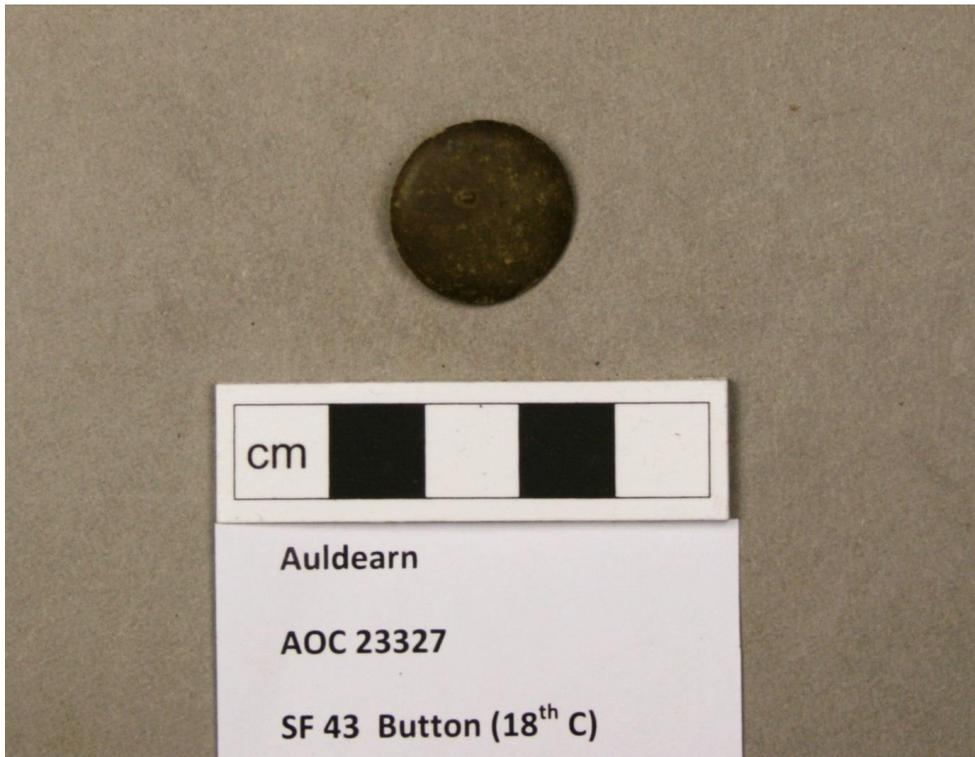


Plate 19: SF43, button (18th century).



Plate 20: SF45, button (18th century).



Plate 21: SF50, ferrule.



Plate 22: SF51, decorative lead fitting.



Plate 23: SF55, coin.



Plate 24: SF58, button.



Plate 25: SF60, button (17th century).



Plate 26: SF64, buckle.



Plate 27: SF65, coin.



Plate 28: SF67D, ratchet fragment.



Plate 29: SF67D, ratchet fragment (side).



Plate 30: SF67D, ratchet fragment (reverse)



Plate 31: SF67O, bridle bit fragment.



Plate 32: SF67P, chain links.



Plate 33: SF67Q, ring (horse harness?).



Plate 34: SF100, lead shot.

