

**GEOPHYSICAL SURVEY
OF LAND AT
WYKHAM PARK,
BANBURY,
OXFORDSHIRE**



GEOPHYSICAL SURVEY REPORT
CP. No: CP10352
01/11/2012



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DOCUMENT TITLE: Land at Wykham Park, Banbury, Oxfordshire
DOCUMENT TYPE: Geophysical Survey Report
CLIENT: Wardell Armstrong LLP
CP NUMBER: CP10352
HER: -
PLANNING APP. NO: -
OASIS REFERENCE: wardella2-136469
PRINT DATE: 01/11/2012
GRID REFERENCE: SP 448 387

Quality Assurance

This report covers works as outlined in the brief for the above-named project as issued by the relevant authority, and as outlined in the agreed programme of works. Any deviation to the programme of works has been agreed by all parties. The works have been carried out according to the guidelines set out in the Institute for Archaeologists (IfA) Standards, Policy Statements and Codes of Conduct. The report has been prepared in keeping with the guidance set out by WA Archaeology Ltd on the preparation of reports.

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SUMMARY

Between 1st and 12th October 2012, Wardell Armstrong Archaeology Ltd (WAA), undertook geophysical surveys of land at Wykham Park near Banbury, Oxfordshire, at the request of Wardell Armstrong LLP. This work was undertaken on behalf of their client, in order to provide information in support of a planning application for a proposed new residential development at the site. The site lies within an area of significant archaeological potential, which includes an Iron Age settlement on the western periphery of the proposed development area, and crop mark evidence for a possible Neolithic enclosure to the south.

The objective of the geophysical surveys was to determine the presence/absence, nature and extent of any potential archaeological features present within the study area, and to determine any areas of potential disturbance of the archaeological resource caused by modern intrusions. The results of the project were to be used to inform the need for further evaluation work and/or mitigation measures, should potential significant archaeological remains be identified during the project.

Geomagnetic surveys covering c.50ha of land were conducted within six fields north of Wykham Park Farm, covering the location of a proposed new development. The geophysical surveys detected evidence for a series of small enclosures on the north side of the site, confirming that the study area was occupied in prehistory. The eastern boundary ditch of the known Iron Age settlement was also detected by the present survey on the western edge of the study area. A series of other probable boundary features were detected across a large part of the study area, some of which are likely to represent associated field systems and/or routeways. A distinctive boundary feature was detected on the west side of the site, which may represent an enclosure entrance or droveway.

A probable double-ditched feature was also detected on the east side of the site which appears to define a routeway, and which could possibly be associated with the Neolithic causewayed enclosure. A number of other possible soil-filled features have been detected, some of which could be soil-filled pits. Two Neolithic pits have previously been recorded 180m to the south of the site.

The remains of probable ridge and furrow cultivation of probable medieval or post-medieval date was detected across the majority of the survey area, indicating that the site lay within an open field system. At least two phases of early cultivation have been detected as well as the modern plough texture. A number of the early features detected appear to have been truncated by the later ridge and furrow cultivation.

ACKNOWLEDGEMENTS

Wardell Armstrong Archaeology Ltd would like to thank Allison Pritchard, Wardell Armstrong LLP. Wardell Armstrong Archaeology Ltd would also like to extend their thanks to Charlotte Dawson and Helen Martin-Bacon, for their assistance with the project.

The geophysical surveys were undertaken by Angus Clark, Kevin Mounsey, Katheryn Ormston and Julian Thorley. The report was written and illustrated by Martin Railton. The project was also managed by Martin Railton, Senior Project Manager for WAA Ltd.

1 INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

- 1.1.1 Between 1st and 12th October 2012, Wardell Armstrong Archaeology Ltd (WAA), undertook a geophysical survey of land at Wykham Park near Banbury, at the request of Wardell Armstrong LLP. This work was undertaken on behalf of their client, in order to provide information in support of a planning application for a proposed new residential development at the site.
- 1.1.2 The study area comprised six arable fields to the north of Wykham Park Farm, on the southern edge of Banbury, at Easington (centred on NGR SP 448 387). The total area of the geophysical survey amounted to c.50ha of land, situated south of a green lane, known as Salt Way, and southeast of Bloxham Road (Figure 1).
- 1.1.3 The site lies in an area of significant archaeological potential, which includes a number of known prehistoric monuments. The survey area is immediately to the southeast of an Iron Age settlement site (HER reference MOX24118) and north a Neolithic causewayed enclosure (HER reference MOX4460).
- 1.1.4 The objective of the geophysical survey was to determine the presence/absence, nature and extent of any potential archaeological features present within the study area, and to determine any areas of potential disturbance of the archaeological resource caused by modern intrusions. The results of the project were to be used to inform the need for further evaluation work and/or mitigation measures, should potential significant archaeological remains be identified during the project.

2 METHODOLOGY

2.1 STANDARDS

- 2.1.1 The work was consistent with the relevant standards and procedures set out in the standard and guidance of the Institute for Archaeologists (IfA 2011), and English Heritage Guidelines (English Heritage 2008).
- 2.1.2 The fieldwork programme was followed by an assessment of the data as set out in the *Management of Archaeological Projects* (English Heritage 1991) and *Management of Research Projects in the Historic Environment* (English Heritage 2006).

2.2 GEOPHYSICAL SURVEY

- 2.2.1 **Technique Selection:** geomagnetic survey was selected as the most appropriate technique, given the non-igneous environment, and the expected presence of cut archaeological features at depths of no more than 1.5m. This technique had successfully detected archaeological remains to the northwest of the present study area in 2011 (Bartlett-Clark Consultancy 2011). The technique involves the use of hand-held gradiometers, which measure variations in the vertical component of the earth's magnetic field. These variations can be due to the presence of sub-surface archaeological features. Data were recorded by the instruments and downloaded into a laptop computer for initial data processing in the field using specialist software.
- 2.2.2 **Field Methods:** the geophysical study area measured c.50ha in total and comprised a six separate fields at the time of the survey (Areas 1-6). A 30m grid was established across each area, and tied-in to known Ordnance Survey points using a Trimble 3605DR Geodimeter total station with datalogger.
- 2.2.3 Geomagnetic measurements were determined using a Bartington Grad601-2 dual gradiometer system, with twin sensors set 1m apart. It was expected that significant archaeological features at a depth of up to 1.5m would be detected using this arrangement. The survey was undertaken using a zig-zag traverse scheme, with data being logged in 30m grid units. A sample interval of 0.25m was used, with a traverse interval of 1m, providing 3600 sample measurements per grid unit. The data were downloaded on site into a laptop computer for processing and storage.
- 2.2.4 **Data Processing:** geophysical survey data were processed using ArchaeoSurveyor II software, which was used to produce 'grey-scale'

images of the raw data. Positive magnetic anomalies are displayed as dark grey, and negative magnetic anomalies are displayed as light grey. A palette bar shows the relationship between the grey shades and geomagnetic values in nT.

- 2.2.5 Raw data were processed in order to further define and highlight the archaeological features detected. The following basic data processing functions were used:

Despike: to locate and suppress random iron spikes in the gradiometer data.

Clip: to clip data to specified maximum and minimum values, in order to limit large noise spikes in the geophysical data.

Destagger: to reduce the effect of staggered gradiometer data, sometimes caused by difficult working conditions, topography, or operator error.

Interpolate: to match the traverse and sample intervals in the gradiometer data.

- 2.2.6 **Interpretation:** three types of geophysical anomaly were detected in the gradiometer data:

positive magnetic: regions of anomalously high or positive magnetic data, which may be associated with the presence of high magnetic susceptibility soil-filled features, such as pits or ditches.

negative magnetic: regions of anomalously low or negative magnetic data, which may be associated with the presence of low magnetic susceptibility stone-built features, or voids.

dipolar magnetic: regions of paired positive and negative magnetic anomalies, which typically reflect ferrous or fired materials, including fired/ferrous debris in the topsoil, modern services, metallic structures, or fired structures, such as kilns or hearths.

- 2.2.7 **Presentation:** the grey-scale images were combined with site survey data and Ordnance Survey data to produce the geophysical survey plans. A colour-coded geophysical interpretation diagram is provided, showing the locations and extent of positive, negative and dipolar geomagnetic anomalies.

- 2.2.8 An archaeological interpretation diagram is provided, which is based on the interpretation of the geophysical survey results, in light of the archaeological and historical background of the site.

- 2.2.9 Trace plots of the unprocessed geophysical data are available if required.

2.3 ARCHIVE

- 2.3.1 The data archive for the geophysical survey has been created in accordance with the recommendations of the Archaeology Data Service (ADS 2001). This archive is currently held at the company offices at Carlisle, Cumbria.
- 2.3.2 One copy of the final report will be deposited with the County Historic Environment Record, where viewing will be available on request. The project is also registered with the **Online Access to the Index of archaeological investigations (OASIS)**, where a digital copy of the report will be made available.
- 2.3.3 The OASIS reference for this project is wardella2-136469.

3 BACKGROUND

3.1 LOCATION AND GEOLOGICAL CONTEXT

- 3.1.1 The proposed development area lies to the south of Easington near Banbury in Oxfordshire. The study area comprised six fields, predominantly in the Parish of Banbury (centred on NGR SP 448 387). The eastern most field is located within the Parish of Adderbury. A green lane, the Salt Way, bounds much of the site to the north and Bloxham Road is present to the west. Wykham Park Farm and Wykham Farm lies immediately to the south of the site (Figure 1).
- 3.1.2 The ground, which is relatively flat, lies at c.133m Above Ordnance Datum (AOD). The geology of the area comprises Jurassic rocks of the Whitby mudstone formation (BGS 2012).

3.2 HISTORICAL CONTEXT

- 3.2.1 **Introduction:** an Archaeology and Cultural Heritage Assessment of the site has been undertaken by Wardell Armstrong LLP, a summary of which is provided below (Wardell Armstrong 2012). Baseline information was gathered from the Historic Environment Record (HER) held by Oxfordshire County Council and the County Record Office.
- 3.2.2 **Prehistoric (up to c.700 BP):** The topography and geology of the area does not appear to have been conducive to early activity dating to the Palaeolithic or Mesolithic periods (Little 2003) and there is no evidence for Palaeolithic or Mesolithic activity within the boundary of the site. During these early periods activity appears to have been focused on the Thames River gravels located to the south.
- 3.2.3 There is evidence near the site for activity in the Neolithic period. A curvilinear cropmark, has been identified on air photographs approximately 160m south of the survey area, immediately to the south of Wykham Farm Cottages. This has been interpreted as a segment of a Neolithic causewayed enclosure (HER reference MOX4460).
- 3.2.4 Within the region these ceremonial monuments are found along the River Thames and its tributaries. The River Cherwell, a major tributary to the Thames, is currently present approximately 2km east of the enclosure. The enclosures were typically 200-400m in diameter (Wilson 2000). It is therefore possible that the northern extent of the enclosure may have encroached within the survey area.
- 3.2.5 Two early Neolithic pits are recorded 180m south of the site, to the west of the enclosure (HER reference MOX12816). One of the pits contained 174

- sherds of early Neolithic pottery and is thought to have been contemporary with the causewayed enclosure, whilst the other pit contained 71 sherds of late Neolithic pottery. The findspot of a Neolithic axe is also recorded 940m west of the site boundary (HER reference MOX4264).
- 3.2.6 The continued use of the landscape is attested to by two Bronze Age (2350 – 600 BC) round barrows which are recorded 200m south of the site (HER reference MOX12183).
- 3.2.7 Iron Age (600 BC - 50 AD) activity, is represented by a roundhouse which has been identified within a square enclosure immediately to the west of the site boundary (HER reference MOX24118). This is believed to be an Iron Age farmstead that probably extended to within the survey area.
- 3.2.8 In addition, the Salt Way, a trackway which bounds the site the north, may reflect a routeway which was in use as early as the prehistoric period (Little 2003).
- 3.2.9 **Romano British (AD 410 - 5th century):** Wykham Lane, located to the south of the site is thought to have been in use by the Roman period (Little 2003). Evidence for Roman occupation immediately to the south of the Lane was also recorded in the mid nineteenth century. This comprises a possible villa site, situated 550m south of the site, which was evidenced by tesserae, walls and a stone built oven or kiln along with human remains, animal bone, pottery and coins (HER reference MOX4267).
- 3.2.10 **Early Medieval (5th century – mid 11th century):** The settlement at Banbury, possibly incorporating a Saxon minster, is thought to have originated in the Late Saxon period (Little 2003). This was probably a defended enclosure on a knoll of well drained gravel located approximately 2km north-east of the site.
- 3.2.11 Late Anglo Saxon pottery has been retrieved from the Bodicote, located 660m south-east of the site (HER reference MOX4444).
- 3.2.12 **Medieval (mid 11th century - 16th century):** following the Norman conquest, the landscape around the site would also have continued to develop during the medieval period. In 1086 a settlement at Banbury was verified by its inclusion in the Domesday Book. It was recorded as being within the Banbury Hundred held by the Bishop of Lincoln. At the time of Domesday Banbury was an agricultural village. It was only after the construction of a timber built castle in 1135 AD, on the earlier site of the defended Saxon enclosure, that a town developed c.2km north-east of the site (Potts 1958 and Little 2003).
- 3.2.13 The hamlet of Wykham was given a separate entry in the Domesday Book

due to its status as a sub-manor which was not taxed, paying tithes as it did to Eynsham Abbey. It was held by Robert one of the Bishop of Lincoln's knights and included a mill which was present c.1km south-west of the site. The Christian name, Robert, was perpetuated by following generations of the family, thus the name Robert appears in conjunction with the Wykham Manor up until 1322 at which point the Manor was removed from the family and granted by Edward II to Sir Robert de Arden (Potts 1958).

- 3.2.14 In 1330 it is known that a substantial residence was present at Wykham when it was recorded that a licence had been obtained by Sir Robert de Arden to fortify his manor with a wall. This was located 560m south of the site (HER reference MOX4310). An associated medieval village is thought to have been located to the south of the manor-house, 670m south of the site (HER reference MOX4265). It is likely that the land within the site boundary was located within the village's open-field system. No upstanding remains of the medieval manor-house or village remain.
- 3.2.15 In 1346 it was recorded that Wykham had been returned to a Robert Wykham however this was short-lived as in 1428 the heir of Sir Richard Archer, probably his daughter (the wife of Sir John Dynham), was recorded as holding land which had formerly belonged to Robert Wykham (Potts 1958). Indeed Sir John Dynham was recorded as tenancing the manor-house in 1441 (Crossley 1972). Subsequently in 1501 the Wykham Manor was divided but in 1601 it was re-formed under Thomas Chamberlayne, a judge (Crossley 1972). The earliest surviving buildings at the manor-house date to this time (Listed Building references 1283504 and 1046181).
- 3.2.16 It should also be noted that if it was not in use prior to this period, the Salt Way which bounds the site to the north was probably in use by the medieval period as part of a wider routeway transporting salt from Droitwich to London (Wardell Armstrong 2012).
- 3.2.17 *Post-medieval (16th century – 19th century)* the dissolution of the monasteries (1536-1541) traditionally marks the start of the post-medieval period. From c.1540 there was a step-change in the rate of exploitation of natural resources leading to radical changes to the landscape.
- 3.2.18 At some point during the early part of this period, before 1688, a park was created at Wykham manor-house by the Chamberlayne Family (HER reference MOX4308).
- 3.2.19 By the start of the 19th century, after numerous family inheritances, Wykham Manor was sold and split into two. Land within the eastern half of the site was sold to Samuel Gist who also purchased Wykham Farm,

which was located by this time to the immediate south of the eastern part of the site. The manor-house and the land within the western half of the site boundary was sold to James King and later to Captain Daniel Webb (Crossley 1972). During this time the manor-house was extended and rebuilt (Wardell Armstrong 2012).

3.2.20 The 1852 Wickham Tithe Map (frontispiece), shows the land within the site boundary as being owned by Daniel Webb and Samuel Gist. Daniel Webb who owned the manor-house owned plots 72, 73 and 87. Samuel Gist who owned Wykham Farm owned plots 69, 70, 71 and 88. The names of three of the plots, 'Roberts Road Ground' (plot 88), 'Robert's Middle Ground' (plot 70) and 'Roberts Ground' (plot 71) possibly refer to the ownership of the land during the medieval period by Robert of Wykham.

3.2.21 By the time of the 1882 Ordnance Survey map a parcel of land to the north of Wykham Lane, which borders the south-west corner of the site, had become incorporated into the parkland. This appears to have been so that the manor-house could be accessed by a new driveway. By 1923 this new driveway had been slightly altered and a lodge house constructed to the immediate west of the site. The current course of the driveway and the lodge house form the main entrance to the manor-house as it stands today; used as a school since 1969.

3.2.22 Within the site boundary, historic Ordnance Survey maps show that, whilst most of the boundaries depicted in 1852 remain, three of the boundaries shown in the centre of the site in 1852 have since been removed. This was undertaken in the 1980s-1990s probably to create one large field more suited to modern agriculture.

3.3 PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

3.3.1 An archaeological watching brief was undertaken in 2005 during the stripping of a 20m wide easement for a pipeline, which crossed the eastern end of the site. Finds from the ploughsoil indicated that the area was cultivated during the medieval period, possibly from the thirteenth century onwards. No features were recorded within the survey area. However, two Neolithic pits were recorded 180m to the south of the site (John Moore Heritage Services 2005).

3.3.2 In 2012 a geophysical survey was undertaken within a field immediately to the northwest of the present study area. The geophysical survey identified a series of linear features and a square enclosure with a central circular feature, indicative of an Iron Age farmstead (Bartlett-Clark Consultancy 2012). Outside of the enclosures a possible trackway was

identified and a series of pits. Evidence for the former presence of ridge and furrow was also recorded across the entire field.

- 3.3.3 Subsequent trial trenching confirmed the presence of a small Iron Age farmstead with a central roundhouse. The enclosure appeared to extend eastwards beyond the confines of the field and into the boundary of the present survey area. Finds comprised pottery dating as late as the mid 1st century AD and evidence for nearby metal working was indicated by the find of a piece of slag and hammerscale. The remains of ridge and furrow were also confirmed demonstrating that the field lay within a medieval open field system (Cotswold Archaeology 2012).

4 THE GEOPHYSICAL SURVEY

4.1 INTRODUCTION (FIGURE 1)

- 4.1.1 The geophysical survey was undertaken between 1st and 12th October 2012. Geomagnetic survey was undertaken over the majority of the study area which measured c.50ha in total (Figure 1). At the time of the survey the proposed development area comprised six arable fields (Areas 1-6), subdivided by hedgerows and fences.
- 4.1.2 A substantial ditch subdivided the eastern-most field (Area 6) from the remainder of the survey areas. This ditch followed the line of the Parish Boundary between Banbury and Adderbury, and was planted on either side with trees, resulting in a strip of land that could not be surveyed.
- 4.1.3 A number of telegraph posts were also present on the northern and western sides of the study area, some of which produced strong dipolar anomalies in the gradiometer data. The approximate locations of these are marked on the archaeological interpretation plans.
- 4.1.4 A number of small discrete dipolar magnetic anomalies were also detected across the whole of the study area. These are almost certainly caused by fired/ferrous litter in the topsoil, which is typical for modern agricultural land. These anomalies are indicated on the geophysical interpretation drawings, but not referred to again in the subsequent interpretations.
- 4.1.5 In the following discussion numbers in brackets () correspond to the locations of the potential archaeological features detected during the surveys, which are also noted on the corresponding archaeological interpretation plans.

4.2 AREA 1 (FIGURES 2-7)

- 4.2.1 Area 1 was situated on the west side of the study area, east of Bloxham road. A number of very strong dipolar magnetic anomalies were detected on the northwest side of Area 1, due to the presence telegraph posts and associated ferrous material. A number of other strong dipolar magnetic anomalies were detected, which may also represent modern fired/ferrous features.
- 4.2.2 The modern plough texture was detected on the eastern side of Area 1, aligned north to south, which produced a 'striping' effect in the gradiometer data. A linear positive magnetic anomaly was also detected along the western edge of the survey area, which is believed to correspond to the limit of modern ploughing. A similar feature was detected on the east side of the survey area, which also corresponded to the field edge.

- 4.2.3 A very strong linear dipolar magnetic anomaly was detected crossing the southern side of Area 1, aligned northwest to southeast, which is almost certainly a modern service pipe.
- 4.2.4 A series of parallel linear positive magnetic anomalies were detected on the north side of Area 1, aligned approximately east to west (1). These features were spaced on average c.8.5m apart, and are interpreted as the soil-filled furrows, of former ridge and furrow cultivation. These features became indistinct towards the south, where they may have been removed by later activity.
- 4.2.5 A 30m-long linear positive magnetic anomaly was detected on the west side of the survey area, aligned north to south, which may correspond to the location of a section of soil-filled ditch (2). Further linear positive magnetic anomalies were detected to the south, which are also interpreted as possible soil-filled ditches, although these were less distinct (3).
- 4.2.6 A concentration of irregular positive magnetic anomalies was detected within the central northern part of the survey area, the nature of which is uncertain (4). The location of these features coincided with a broad diffuse magnetic anomaly measuring approximately 55m in diameter, which may either relate to the underlying geology or an area of disturbed ground. It is possible that the positive anomalies represented soil-filled features, such as pits, however these may also have been geological features. A number of small positive magnetic anomalies were also detected nearby, which may also be soil-filled features, but this is uncertain. A very similar concentration of diffuse and positive magnetic anomalies was detected on the southern edge Area 1 (7).
- 4.2.7 A strong L-shaped positive magnetic anomaly was detected on the western side of the survey area, which was believed to be a soil-filled boundary ditch (5). This feature ran northeast to southwest for 155m before turning southeast for a further 70m. The northern terminus of this feature was uncertain due to the presence of the diffuse anomaly (4), however, the southern terminus of this feature was more distinct and appeared to terminate within the southern part of Area 1.
- 4.2.8 Another 55m-long linear positive magnetic anomaly was detected to the south of this feature, aligned northwest to southeast, which was also interpreted as a soil-filled boundary ditch (6). This feature may well be associated, as together they appear to form an opening. A parallel weak linear positive magnetic anomaly was detected to the south.
- 4.2.9 A further 32m-long linear positive magnetic anomaly was detected on the south side of the survey area, aligned north to south, which may also represent a soil-filled ditch. It is possible that this feature is associated

with the L-shaped boundary feature (5) and parallel ditch (6) to the south (see Discussion in Section 4.8 below).

4.2.10 Three discrete positive magnetic anomalies were detected to the north of the L-shaped feature, which may represent soil-filled pits. A number of other irregular positive and diffuse magnetic anomalies were detected to the south of these, the nature of which is uncertain.

4.3 AREA 2 (FIGURES 8-13)

4.3.1 Area 2 was situated immediately to the east of Area 1, on the south side of the study area. The modern plough texture was detected across the whole of Area 2, aligned east to west, which produced a distinct 'striping' effect in the gradiometer data.

4.3.2 In addition, series of parallel positive magnetic anomalies were detected crossing the majority of the survey area, aligned east to west, which are interpreted as evidence of former ridge and furrow cultivation (8). These anomalies were spaced between 7m and 9m apart, and may represent the remains of ridge and furrow cultivation of possible medieval or post-medieval date.

4.3.3 A further series of parallel positive magnetic anomalies were detected crossing the west side of Area 2, aligned north to south, which almost certainly represented a separate phase of cultivation (9). These features were spaced on average *c.*8m apart, and appeared to represent a later phase of ridge and furrow cultivation, which may have partly removed the earlier features.

4.3.4 A circular positive magnetic anomaly was detected on the western edge of Area 2, which was interpreted as a soil-filled ditch or gully (10). This feature measured 5.6m in diameter and may possibly represent the ring ditch of a round house or barrow.

4.3.5 A curvilinear positive magnetic anomaly was detected on the southeast side of Area 2, which was interpreted as another soil-filled ditch (11). This feature measured *c.*142m long, aligned approximately east to west, and appeared to have been truncated by the ridge and furrow cultivation.

4.4 AREA 3 (FIGURES 14-19)

4.4.1 Area 3 was situated immediately to the east of Area 1, and north of Area 2. The area investigated by the 2011 geophysical survey lay immediately to the north of Area 3.

4.4.2 Parallel positive magnetic anomalies were detected across the whole of Area 3, aligned east to west, and north to south, which were interpreted as

evidence of former ridge and furrow cultivation (12). These features were spaced between 7m and 9m apart, and appeared to represent two distinct phases of cultivation of probable medieval or post-medieval date.

4.4.3 A series of indistinct linear positive magnetic anomalies were detected at the southwest corner of Area 3, aligned east to west and north to south, which were interpreted as possible soil-filled ditches (13). These appeared to enclose a diffuse magnetic anomaly measuring approximately 60m across, the nature of which was uncertain. It is possible that this anomaly either related to the underlying geology or an area of disturbed ground.

4.4.4 A linear positive magnetic anomaly was detected crossing the east side of Area 3, aligned northwest to southeast, which is believed to be a soil-filled ditch (14). This feature appears to have been truncated by the ridge and furrow cultivation, but is almost certainly the same feature detected during the 2011 geophysical survey in the field to the north. A section of this feature was subsequently excavated but was undated.

4.5 AREA 4 (FIGURES 20-31)

4.5.1 Area 4 was situated at the centre of the proposed development area and was the largest of the fields surveyed. The area investigated by the 2011 geophysical survey lay immediately to the west of Area 4. The geophysical survey identified a series of linear features including a square enclosure with a central circular feature, indicative of an Iron Age farmstead.

4.5.2 Two discrete dipolar magnetic anomalies were detected on the northern edge of the survey area, which are interpreted as modern ferrous features. A linear dipolar magnetic anomaly was also detected crossing the northwest corner of Area 4, which is probably a modern service pipe.

4.5.3 A series of parallel positive magnetic anomalies was detected across the west and south parts of Area 4, aligned east to west, which are interpreted as further evidence of former ridge and furrow cultivation (15). These features were spaced between 7m and 9m apart, and had a curving S-shaped profile, indicative of medieval cultivation. A further series of parallel positive magnetic anomalies was detected across the northwest side of Area 4, aligned north to south, which almost certainly represents a separate phase of cultivation of medieval or post-medieval date (16).

4.5.4 A linear positive magnetic anomaly was detected on the northwest edge of the survey area, which is believed to be a soil-filled enclosure ditch (17). This feature was c.42m long, aligned north to south, curving westwards at the south end. This feature closely corresponded to the location of the Iron

- Age farmstead detected by the 2011 geophysical survey, and is believed to represent the east side of the square enclosure.
- 4.5.5 A further 131m-long linear positive magnetic anomaly was detected to the east of this feature, aligned approximately east to west, which is interpreted as a soil-filled boundary ditch (18). A weak linear positive magnetic anomaly was detected to the north of this, aligned north to south, which may be associated, but this is uncertain.
- 4.5.6 A rectilinear positive magnetic anomaly was detected on the north side of the survey area, which may represent the soil-filled ditch of another prehistoric sub-rectangular enclosure (19). This feature measured 21m north to south and 16m east to west, with continuous ditches on the north and west sides. The south and east sides were less distinct and may have been disturbed by later cultivation practices. A short linear magnetic anomaly was detected crossing the east side of this feature, which may represent part of another soil-filled ditch or a plough furrow.
- 4.5.7 A rectilinear positive magnetic anomaly was also detected on the northern edge of the survey area, close to the northeast corner of Area 4 (20). This feature measured 13m northeast to southwest, and 7m northwest to southeast, but probably extended outside of the survey area to the north. The feature is interpreted as the southern half of another possible soil-filled enclosure ditch or ring ditch of possible prehistoric date.
- 4.5.8 Another rectilinear positive magnetic anomaly was detected at the northeast corner of Area 4, which is believed to represent another soil-filled enclosure ditch (21). This feature measured 29m long north to south and 20m wide east to west, with a possible entrance on the west side. Evidence for ridge and furrow cultivation was detected crossing this feature, which may have disturbed the interior and the enclosure ditches.
- 4.5.9 A curvilinear positive magnetic anomaly was detected on the southwest side of Area 4, which is interpreted as a soil-filled boundary ditch (22). This feature measured c.165m long, aligned approximately north to south, and appeared to have been truncated by the ridge and furrow cultivation. This feature aligned with another linear feature detected crossing Area 3, and is almost certainly part of the same boundary feature, which was also detected during the 2011 geophysical survey.
- 4.5.10 Another linear positive magnetic anomaly was detected on the south side of Area 4, which is also interpreted as a soil-filled boundary ditch (23). This feature was only detected intermittently, and may also have been truncated by the ridge and furrow cultivation.

4.5.11 A further curvilinear positive magnetic anomaly was detected on the east side of Area 4, which is interpreted as another section soil-filled boundary ditch (24). This feature measured *c.*87m long, aligned approximately north to south, and appeared to have been truncated at the north and south ends. Further short linear positive magnetic anomalies were detected in this area, which may also represent further sections of soil-filled boundary ditches (25).

4.6 AREA 5 (FIGURES 32-34)

4.6.1 Area 5 was situated on the east side of the proposed development area north of Wykham Farm Cottage. A substantial ditch was present on the east side of the survey area, planted on either side with trees, which could not be surveyed.

4.6.2 A very strong linear dipolar magnetic anomaly was detected running along the southern and eastern edges of the survey area, which is believed to be a modern pipeline. A watching brief was undertaken in 2005 during the stripping of a 20m wide easement for this pipeline. A linear negative magnetic anomaly was also detected on the east side of the survey area, which may be associated with this activity.

4.6.3 Another strong linear dipolar magnetic anomaly was detected running across the east side of the survey area, which is almost certainly another modern service pipe. A telegraph pole was also present on the west side of Area 5, which produced a strong dipolar magnetic anomaly in the gradiometer data.

4.6.4 The modern plough texture was detected in Area 5, aligned north to south, which produced a 'striping' effect in the gradiometer data. In addition, series of parallel positive magnetic anomalies were detected crossing the majority of the survey area, aligned north to south, which are interpreted as evidence of former ridge and furrow cultivation (26). These anomalies were spaced between 7m and 10m apart, and may represent the remains of ridge and furrow cultivation of possible medieval or post-medieval date.

4.6.5 A series of curvilinear positive magnetic anomalies were detected on the north side of Area 5, which are interpreted as soil-filled ditches (27). The largest of these features crossed the whole of the survey area, aligned northwest to southeast and may represent a former boundary ditch.

4.6.6 Two curvilinear positive magnetic anomalies were detected crossing the centre of Area 5 aligned northwest to southeast, which may possibly represent further soil-filled boundary ditches (28). These features defined

a broad feature crossing the site, which may represent a former routeway. However, it is also possible that these features correspond to a natural feature, such as a palaeochannel. A linear negative magnetic anomaly was detected to the south, which may be associated.

- 4.6.7 A possible rectilinear positive magnetic anomaly was detected at the southeast corner of Area 5, which may represent a soil-filled enclosure ditch (29). This feature measured 30m long east to west and 20m north to south, but was very indistinct. This may be due to the presence of modern activity in the area, including nearby services.
- 4.6.8 A curvilinear positive magnetic anomaly was detected on the south side of Area 5, which is interpreted as a soil-filled boundary ditch (30). This feature appeared intermittently in the gradiometer data, which may be due to truncation by the ridge and furrow cultivation.
- 4.6.9 A number of other curvilinear positive magnetic anomalies were detected on the south side of Area 5, which may possibly represent further soil-filled boundary ditches (31), but these were less distinct.
- 4.6.10 A number of discrete positive magnetic anomalies were detected on the east side of the survey area, which may represent further soil-filled features, such as pits (32). However, given the level of modern disturbance in the vicinity, the interpretation of these is uncertain.

4.7 AREA 6 (FIGURES 35-37)

- 4.7.1 Area 6 was situated on the east side of the proposed development area northeast of Wykham Farm Cottage, and east of Area 5. A ditch subdivided these two areas, planted on either side with trees, which could not be surveyed. Strong dipolar magnetic anomalies were detected on the northern edge of the survey area, due to the presence of modern fences.
- 4.7.2 The modern plough texture was also detected in Area 6, aligned north to south, which produced a 'striping' effect in the gradiometer data. A series of parallel positive magnetic anomalies were also detected crossing the majority of the survey area, aligned north to south, which are indicative of further ridge and furrow cultivation.
- 4.7.3 In addition, a series of parallel positive magnetic anomalies were detected crossing the majority of the survey area, aligned east to west and spaced between 10m and 20m apart, which are interpreted as evidence of a separate phase of ridge and furrow cultivation (33). However, given the spacing, it is also possible that these represent land drains.
- 4.7.4 Several curvilinear positive magnetic anomalies were detected on the north side of Area 6, which may represent soil-filled boundary ditches

(32). The largest feature was 64m long, aligned approximately northwest to southeast, but appeared to continue outside of the survey area to the north and east.

4.7.5 Two parallel linear positive magnetic anomalies were detected crossing Area 6, aligned northeast to southwest, which are interpreted as soil-filled ditches (35). These features were spaced between 13m and 16m apart and may represent a former routeway. These features were intermittent, and may have been truncated by later activity. The northwest boundary appeared to be a double-ditched feature at the north end.

4.8 DISCUSSION (FIGURE 38)

4.8.1 A number of modern features have been detected, including a series of telegraph posts and service pipes. A major pipeline has been detected crossing the east side of the study area, which created strong dipolar anomalies in the gradiometer data. These anomalies will undoubtedly have masked the presence of potential archaeological features in this area.

4.8.2 Evidence for medieval or post-medieval ridge and furrow cultivation has been detected across the whole of the survey area, and was also detected during the 2011 geophysical survey to the northwest of the present study area (Bartlett-Clark Consultancy 2012). At least two separate phases of cultivation have been revealed, as well as the modern plough texture, which has been detected in several of the fields. The distribution of the furrows suggests that the site was within a medieval open field system. The distribution of furrows in Area 2 and Area 3, suggests that these fields were previously subdivided (Figure 38). Finds collected during a watching brief undertaken in 2005 on the eastern end of the site, suggested the area was cultivated from the thirteenth century onwards (John Moore Heritage Services 2005).

4.8.3 A significant number of linear features have been detected, which are interpreted as soil-filled boundary ditches. These are widely distributed across the study area, but are most well-preserved on the east and west sides of the site. A number of these appear to have been truncated by the ridge and furrow cultivation, and may therefore represent earlier boundary features. One of these features was detected crossing the whole of the study area (within Area 3 and Area 4) with a northwest to southeast alignment, and was also detected during the 2011 geophysical survey to the northwest of the proposed development area. This feature was sample excavated and found to be an amorphous cut with ill-defined edges and an irregular base, interpreted as a former hedgerow (Cotswold Archaeology 2012). The dating of this feature is unknown.

- 4.8.4 One of the most significant boundary features was a probable L-shaped ditch on the west side of the site in Area 1, with further similar features to the south. Together these features appeared to form a 'funnel', which may represent an enclosure entrance or part of a former drove-way for stock.
- 4.8.5 Possible evidence for former route ways was also detected on the east side of the site in Area 6. Two parallel features may represent the ditches of a former road or trackway. These lead southwest towards Wykham Farm Cottage and the location of a recorded cropmark enclosure, which has been identified on air photographs approximately 160m south of the survey area. This has been interpreted as a segment of a Neolithic causewayed enclosure (HER reference MOX4460). The possibility exists that these features are associated and are therefore prehistoric. A further possible routeway was detected in Area 5, although the exact nature of this is uncertain.
- 4.8.6 Previous trial trenching has confirmed the presence of a small Iron Age farmstead with a central roundhouse, immediately to the northwest of the present study area. The eastern boundary ditch of this enclosure was detected by the present survey on the western edge of Area 4. Finds from the excavation comprised pottery dating as late as the mid 1st century AD and evidence for nearby metal working was indicated by the find of a piece of slag and hammerscale (Cotswold Archaeology 2012).
- 4.8.7 In addition, the presence of at least three (possibly four) other rectilinear enclosures of probable Iron Age date had been indicated by the present geophysical surveys. These all lie on the north side of the site, and lie in an approximate line, with a northwest to southeast alignment. Three of these lie on the north side of Area 4 and measure between 13m and 29m across. A further possible enclosure was detected in Area 5, although modern disturbance in this area, made the exact nature of this feature uncertain. No evidence for a central round house was detected in any of these enclosures, which appear to have been disturbed by later ploughing. However, a possible round house site was detected on the west side of Area 2.

4.8.9 Possible soil-filled ditches have been detected in Area 1 and Area 3, which may represent further prehistoric activity, but these are indistinct, making interpretation difficult. Similarly there are a number of anomalies in Area 5, which may represent soil-filled features, but this is uncertain. Two Neolithic pits have been recorded 180m to the south of the site (John Moore Heritage Services 2005), and it is possible that similar features have been detected by the surveys. However, this would only be clarified through further detailed survey and/or trial trench evaluation.

5 CONCLUSIONS

5.1 CONCLUSIONS

- 5.1.1 Geomagnetic surveys covering c.50ha of land have been conducted within six fields north of Wykham Park Farm, on the southern edge of Banbury, covering the location of a proposed new development. The site lies within an area of significant archaeological potential, which includes a known Iron Age farmstead and cropmark evidence for a possible Neolithic causewayed enclosure.
- 5.1.2 The geophysical survey has detected evidence for a series of small enclosures on the north side of the site, confirming that the study area was indeed occupied in prehistory. The eastern boundary ditch of the known Iron Age farmstead was also detected by the present survey on the western edge of the study area. A series of other probable boundary features has also been detected, some of which are likely to represent associated field systems and/or routeways. A distinctive boundary feature was detected on the west side of the site, which may represent an enclosure entrance or driveway.
- 5.1.3 A probable double-ditched feature was detected on the east side of the site, which could possibly be associated with the putative Neolithic causewayed enclosure and could therefore be one of the earliest features detected, however, this could also be a later routeway. A number of other possible soil-filled features have been detected, some of which could be soil-filled pits.
- 5.1.4 The remains of probable ridge and furrow cultivation of probable medieval or post-medieval date has been detected across the majority of the survey area, indicating that the site lay within an open field system. At least two phases of early cultivation have been detected as well as the modern plough texture.
- 5.1.5 A number of indistinct geophysical anomalies have been detected, the nature of which is uncertain. It is possible that some of these relate to geological or topographic features.
- 5.1.6 It is recommended that the results of the geophysical survey are tested through the excavation of a number of trial trenches, targeting the geophysical anomalies detected. This would provide further information regarding the quality, date and depths of the features identified.

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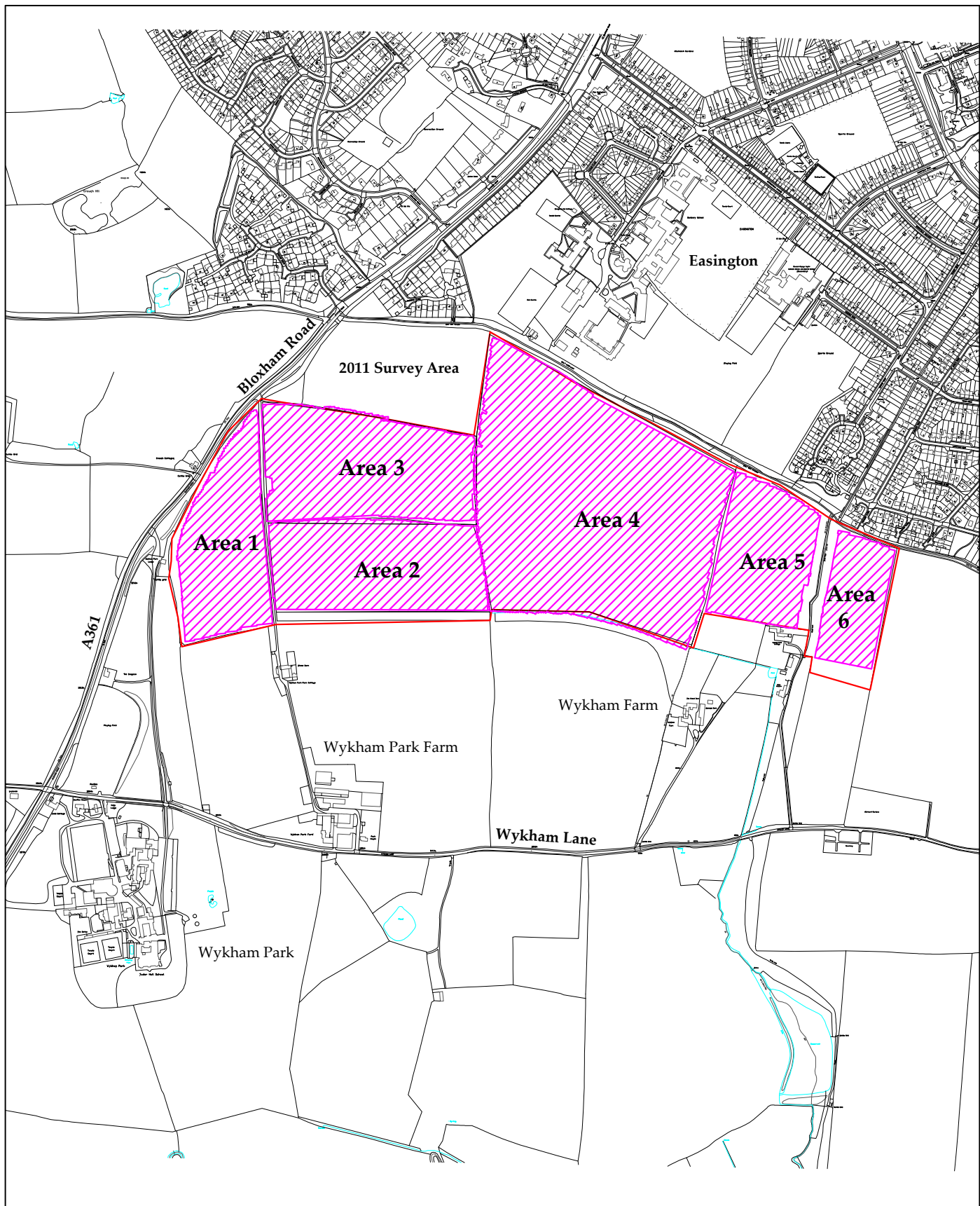
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APPENDIX 1: FIGURES



WAArchaeology Ltd
2012

PROJECT: Wykham Park, Easington
SCALE: 1:10,000 at A4
REPORT No: CP 10352
CLIENT: Wardell Armstrong LLP
DRAWN BY: MDR
DATE: October 2012
FIGURE No: 1

KEY:

-  outline of proposed development area
-  geophysical survey areas



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Figure 1 : Locations of the survey areas (Areas 1-6)



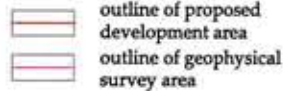
COMMISSIONED BY:

Wardell Armstrong LLP

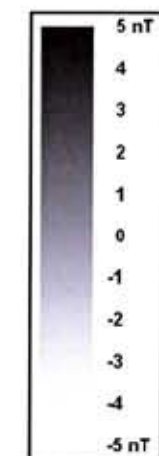
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DATE: October 2012



 outline of proposed
 development area
 outline of geophysical
 survey area









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Figure No: 2

Figure 2 : Geophysical survey of Area 1 (northern end)



-  outline of proposed development area
-  outline of geophysical survey area
-  positive magnetic anomaly
-  negative magnetic anomaly
-  dipolar magnetic anomaly
-  diffuse magnetic anomaly

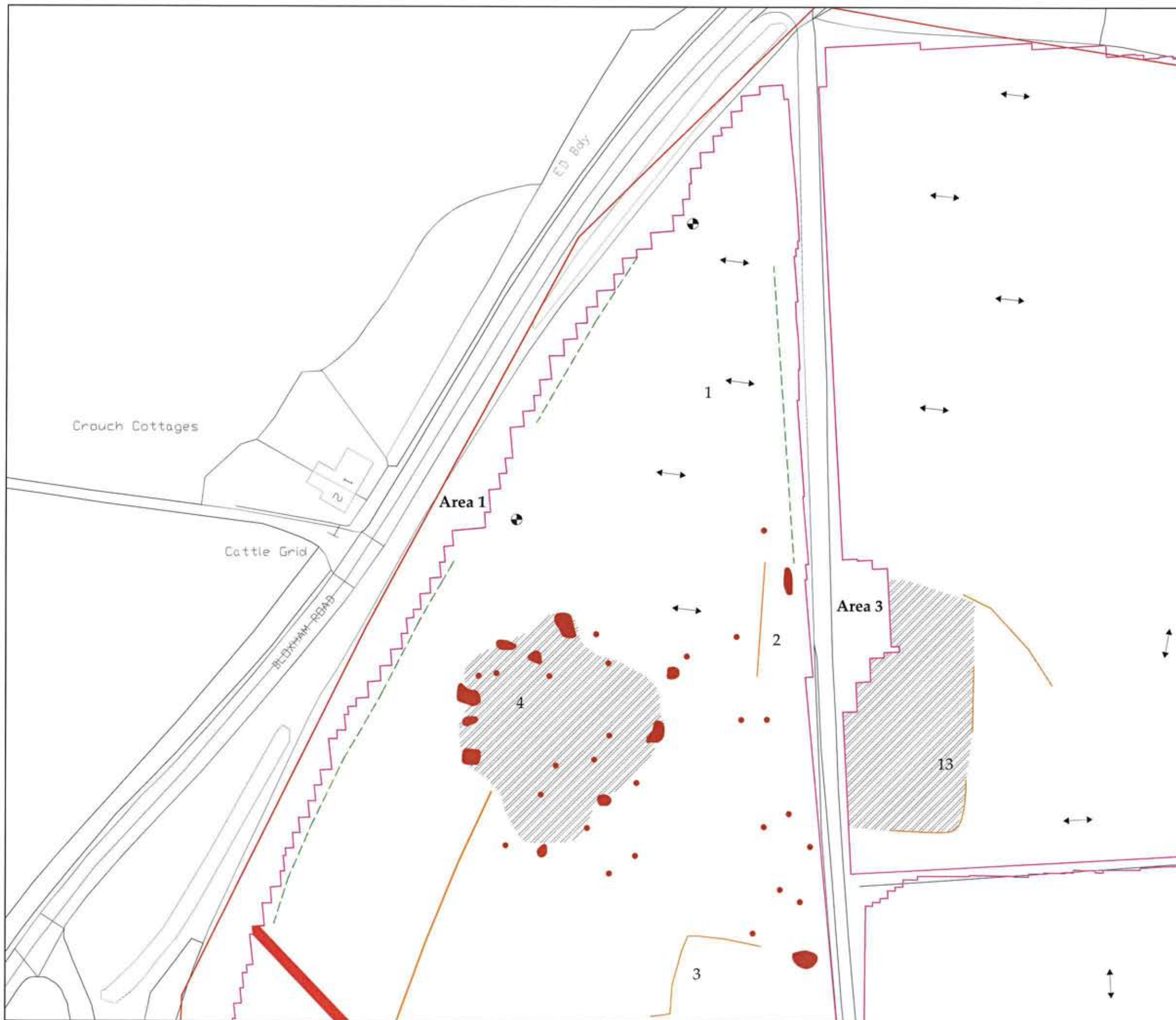


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Figure No: 3

Figure 3 : Geophysical interpretation of Area 1 (northern end)



- outline of proposed development area
- outline of geophysical survey area
- direction of ridge & furrow
- limit of ploughing
- service pipes
- soil-filled ditches
- possible soil-filled features
- disturbed ground/geology
- telegraph pole

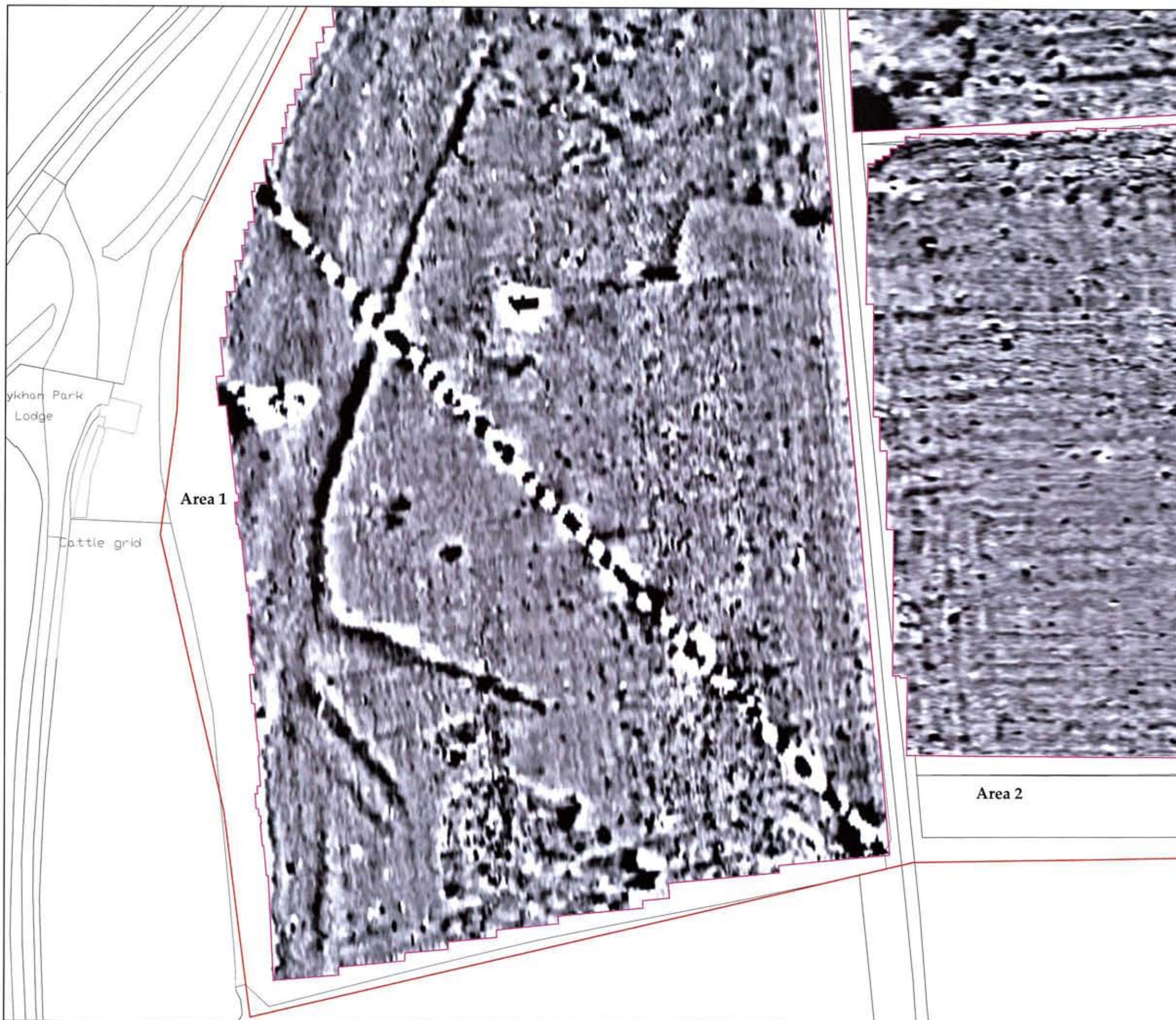




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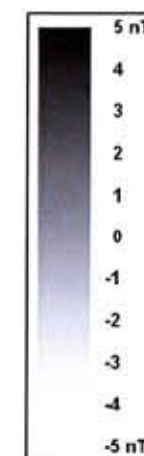
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Figure No: 4

Figure 4 : Archaeological interpretation of Area 1 (northern end)



-  outline of proposed development area
-  outline of geophysical survey area



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Figure No: 5

Figure 5 : Geophysical survey of Area 1 (southern end)



Figure 6 : Geophysical interpretation of Area 1 (southern end)

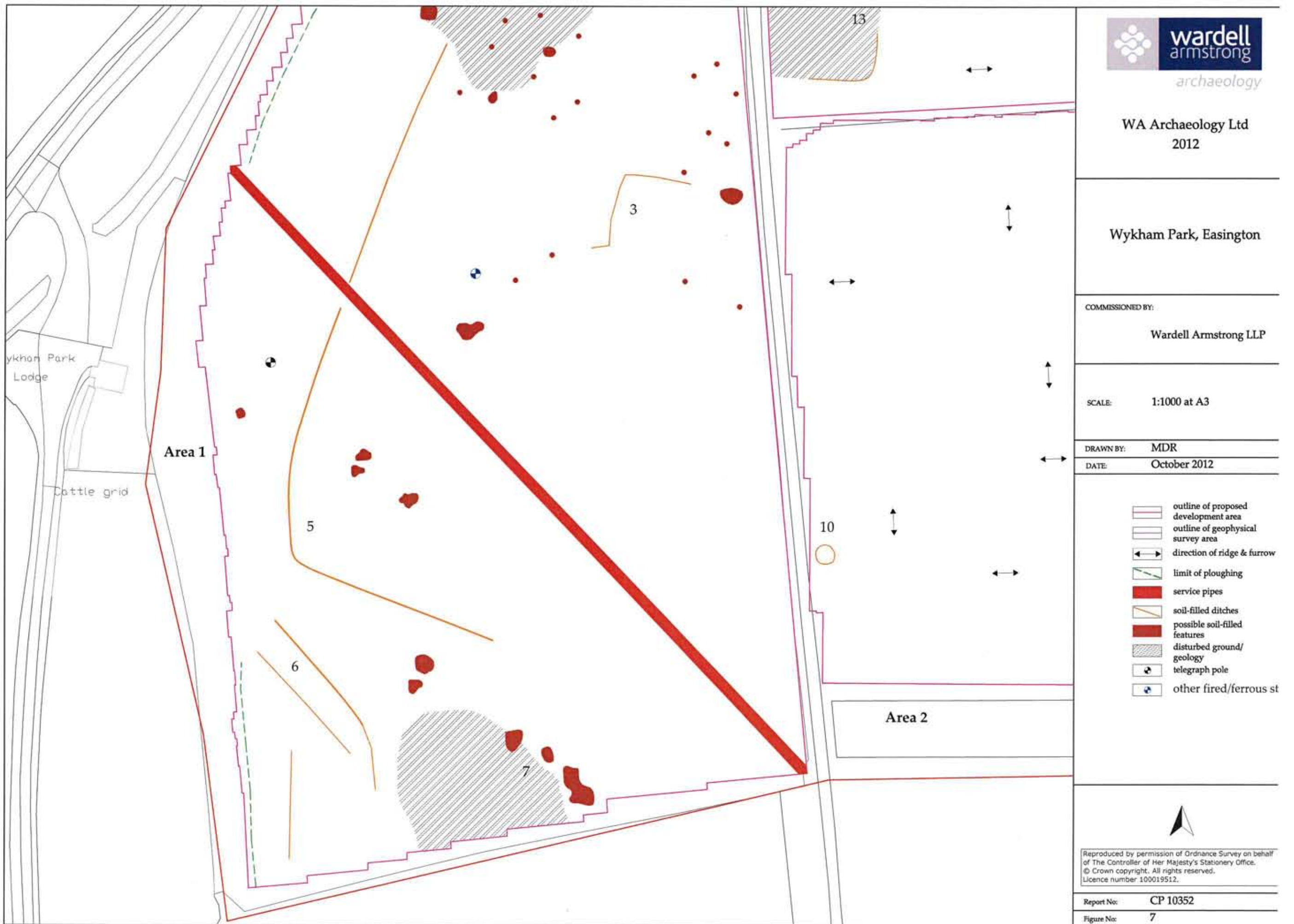
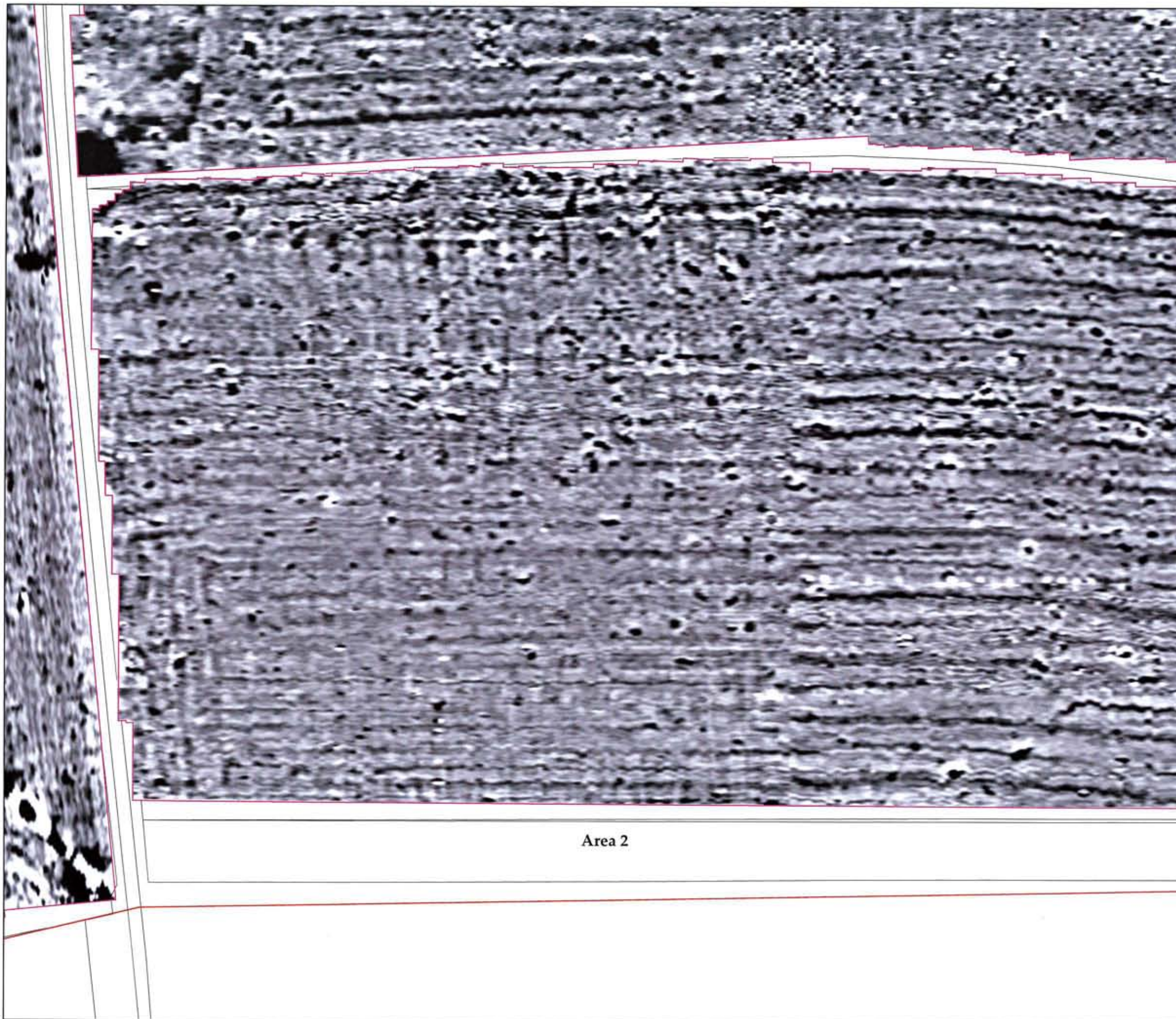


Figure 7 : Archaeological interpretation of Area 1 (southern end)




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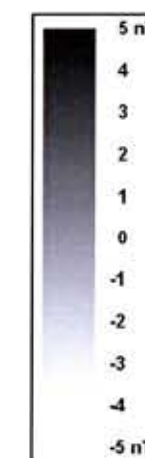
Wardell Armstrong LLP

SCALE: 1:1000 at A3

DRAWN BY: MDR

DATE: October 2012


 outline of proposed
 development area
 outline of geophysical
 survey area









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Figure No: 8

Figure 8 : Geophysical survey of Area 2 (western end)



-  outline of proposed development area
-  outline of geophysical survey area
-  positive magnetic anomaly
-  negative magnetic anomaly
-  dipolar magnetic anomaly
-  diffuse magnetic anomaly



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Figure No: 9

Figure 9 : Geophysical interpretation of Area 2 (western end)











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DATE: October 2012

-  outline of proposed development area
-  outline of geophysical survey area
-  direction of ridge & furrow
-  limit of ploughing
-  service pipes
-  soil-filled ditches
-  possible soil-filled features
-  disturbed ground/ geology

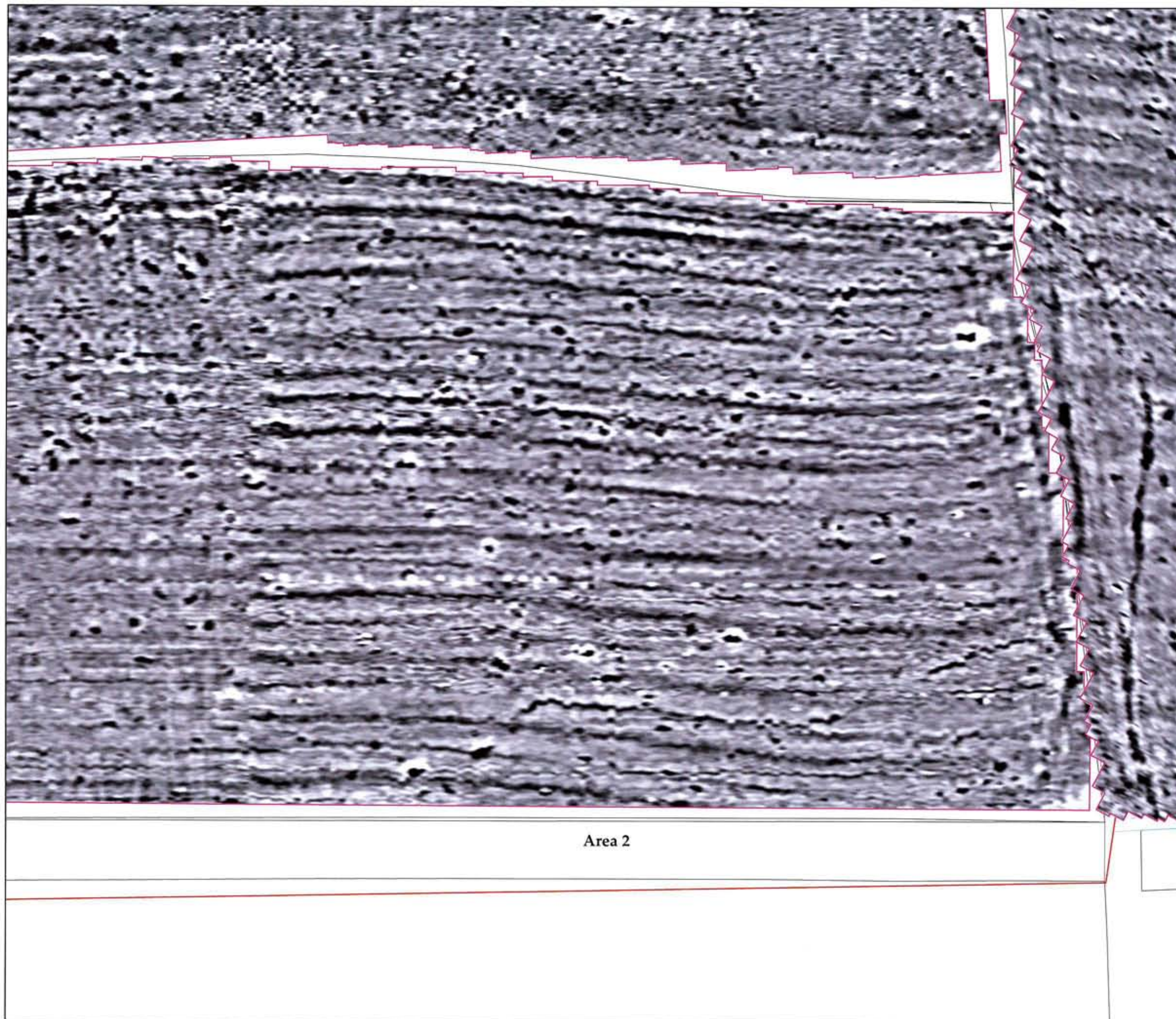




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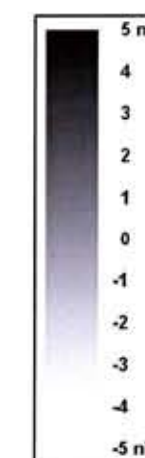
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Figure No: 10

Figure 10 : Archaeological interpretation of Area 2 (western end)



-  outline of proposed development area
-  outline of geophysical survey area

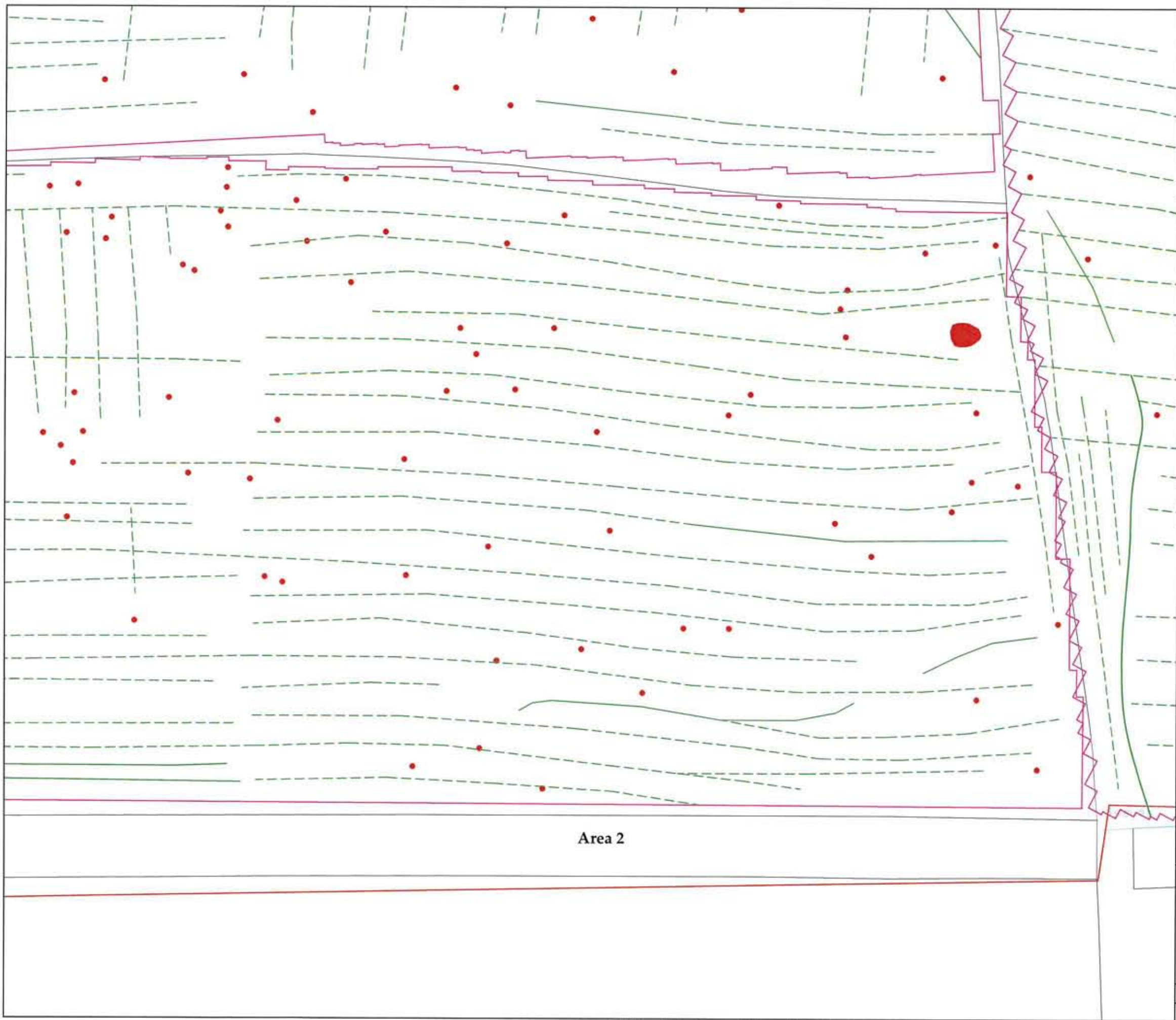








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Figure No: 11

Figure 11 : Geophysical survey of Area 2 (eastern end)



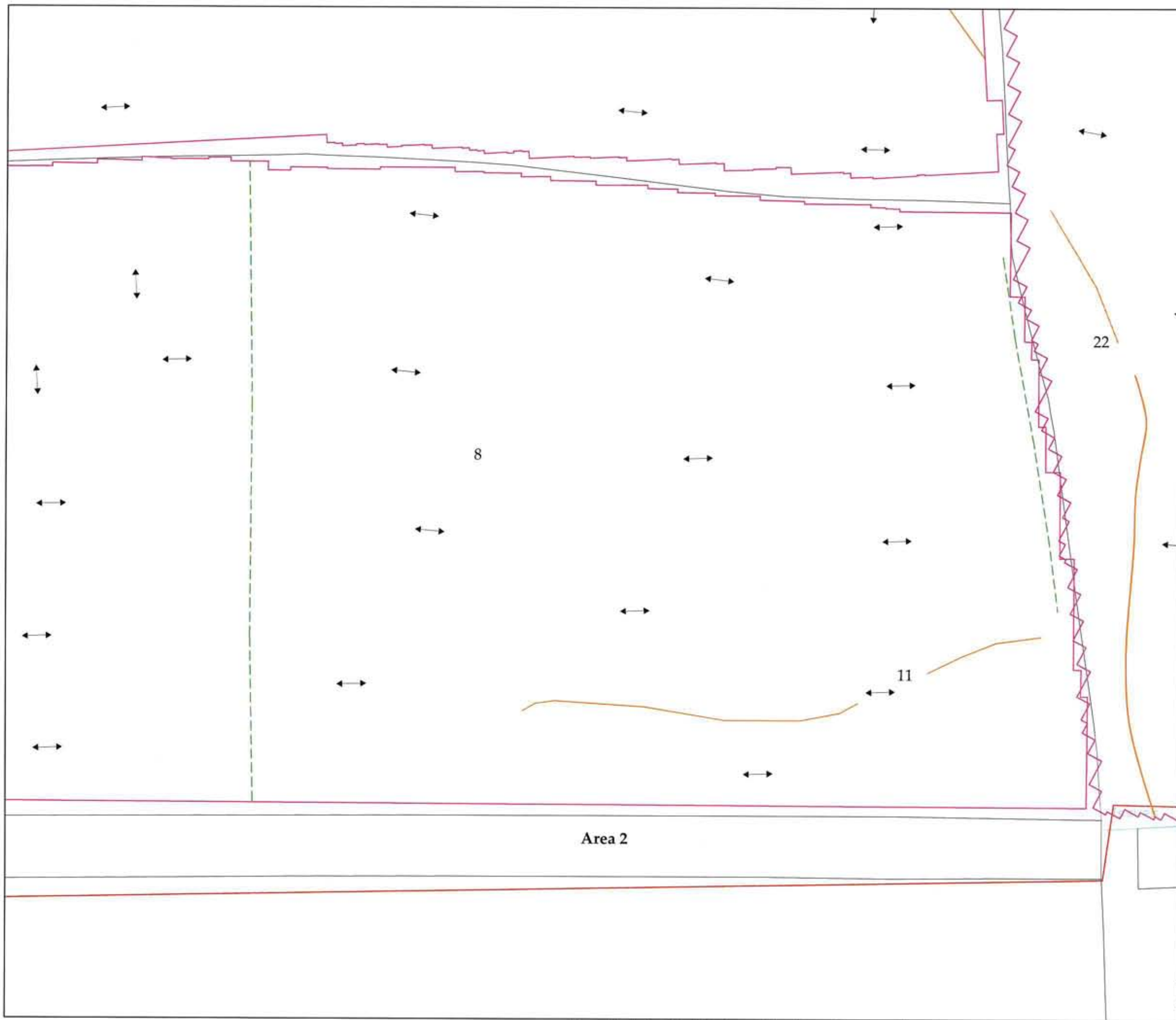
-  outline of proposed development area
-  outline of geophysical survey area
-  positive magnetic anomaly
-  negative magnetic anomaly
-  dipolar magnetic anomaly
-  diffuse magnetic anomaly



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Figure No: 12

Figure 12 : Geophysical interpretation of Area 2 (eastern end)

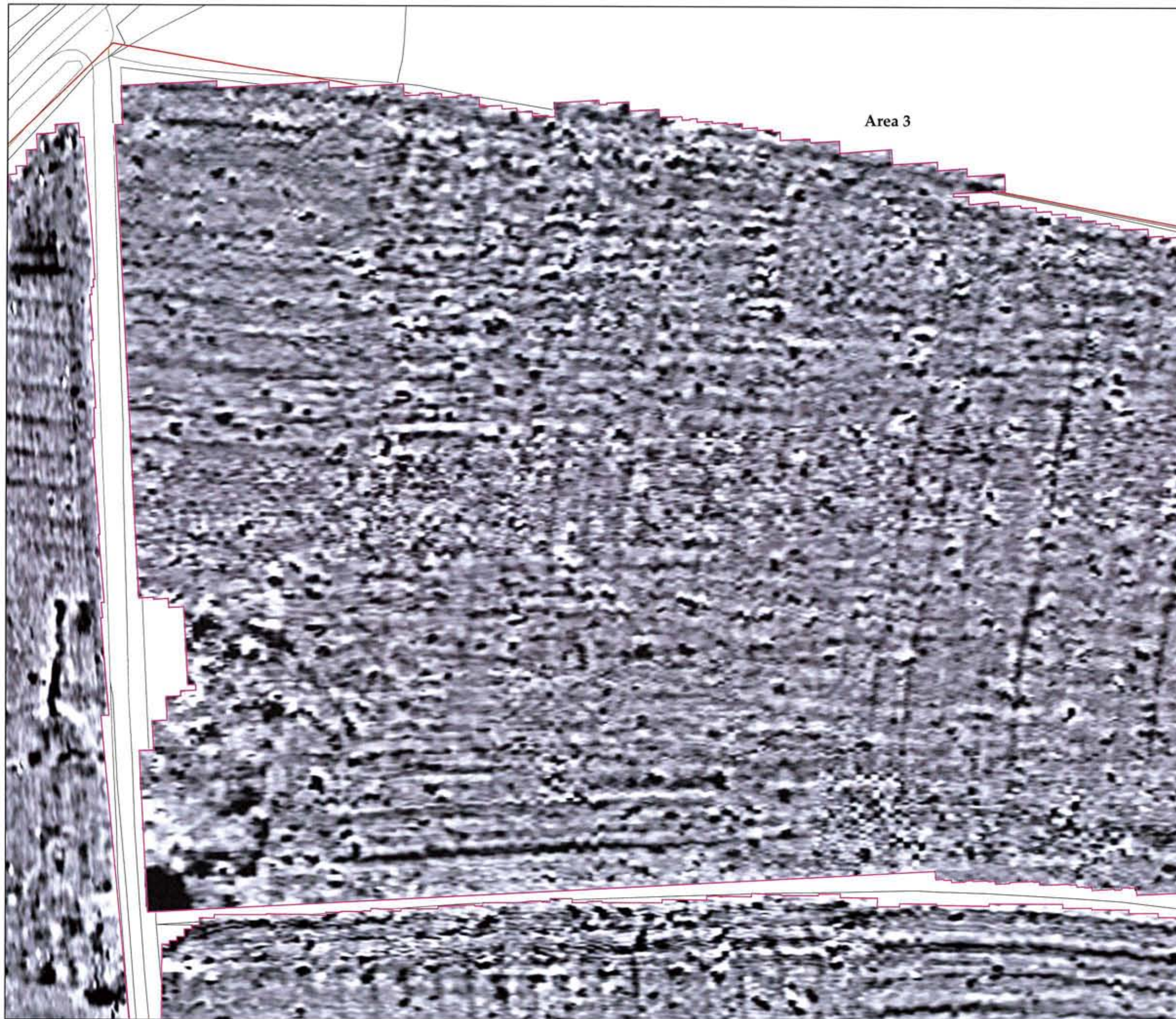


- outline of proposed development area
- outline of geophysical survey area
- direction of ridge & furrow
- limit of ploughing
- service pipes
- soil-filled ditches
- possible soil-filled features



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Figure 13 : Archaeological interpretation of Area 2 (eastern end)




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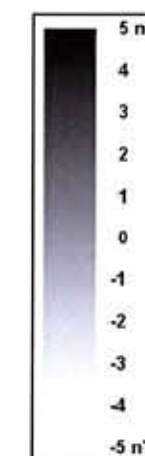
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DATE: October 2012


 outline of proposed
 development area
 outline of geophysical
 survey area









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Figure No: 14

Figure 14 : Geophysical survey of Area 3 (western end)



-  outline of proposed development area
-  outline of geophysical survey area
-  positive magnetic anomaly
-  negative magnetic anomaly
-  dipolar magnetic anomaly
-  diffuse magnetic anomaly











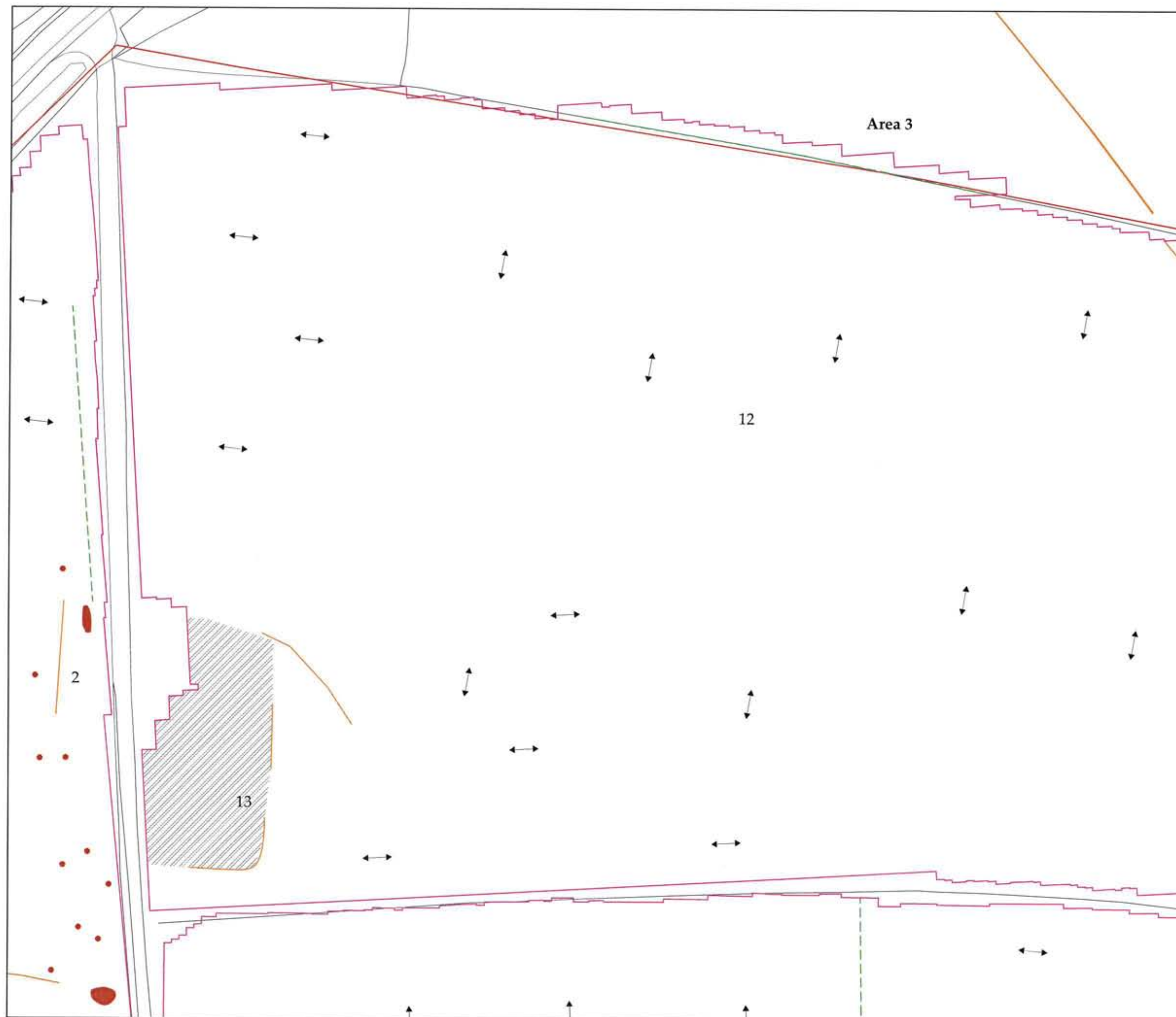
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Figure No: 15

Figure 15 : Geophysical interpretation of Area 3 (western end)

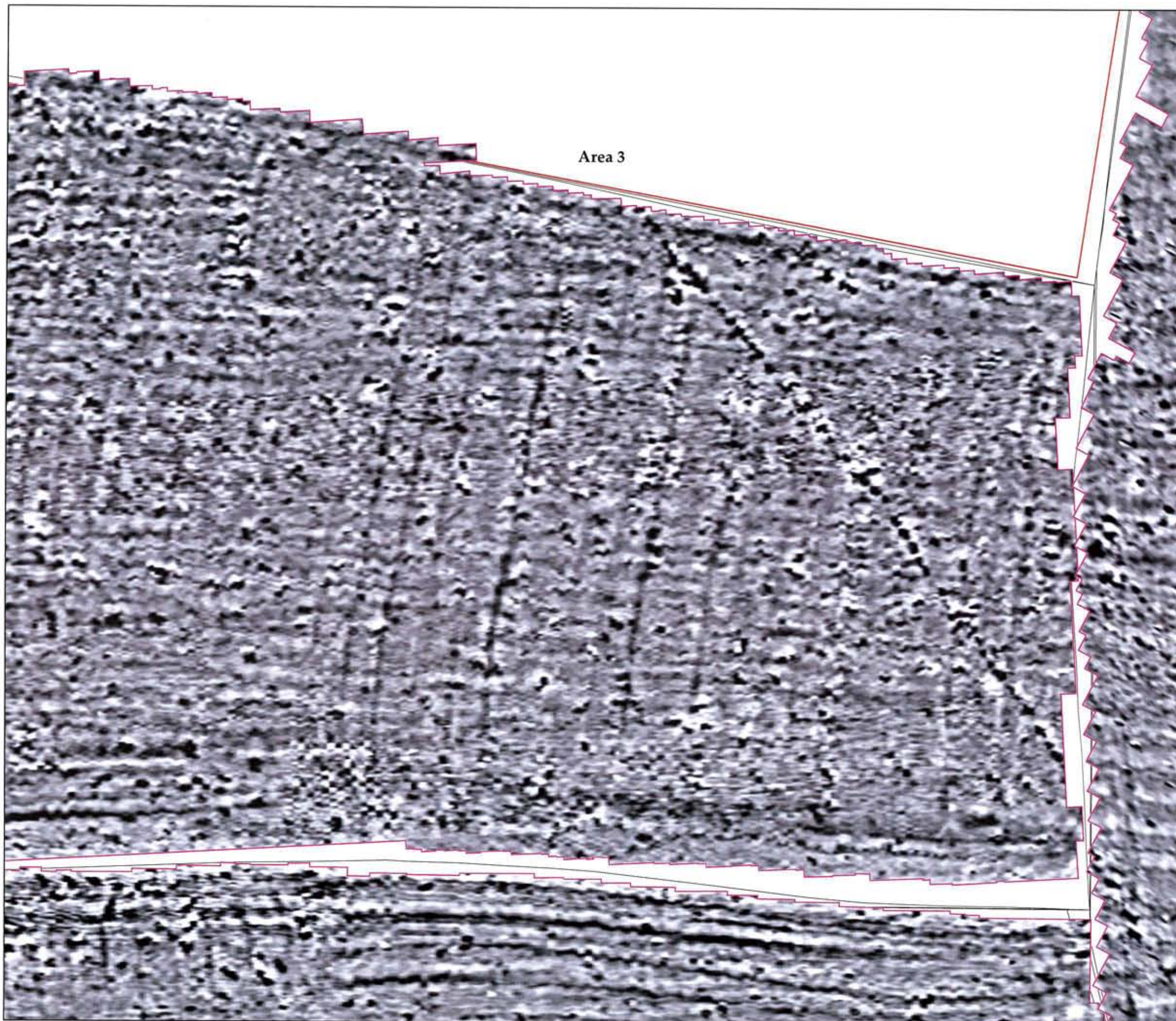
-  outline of proposed development area
-  outline of geophysical survey area
-  direction of ridge & furrow
-  limit of ploughing
-  service pipes
-  soil-filled ditches
-  possible soil-filled features
-  disturbed ground/ geology





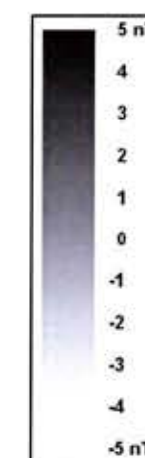
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Figure No: 16

Figure 16 : Archaeological interpretation of Area 3 (western end)



-  outline of proposed development area
-  outline of geophysical survey area

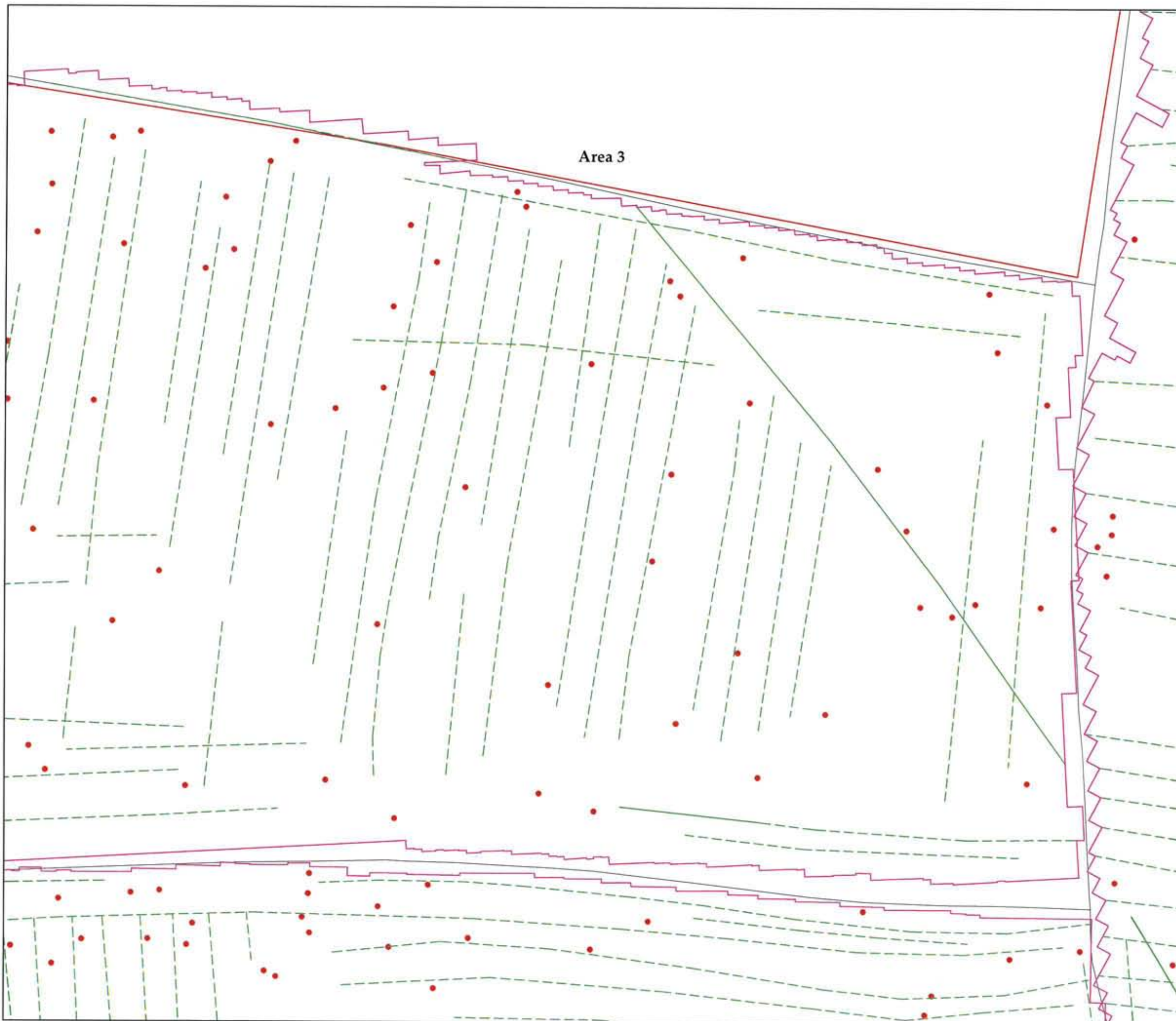








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Figure No: 17

Figure 17 : Geophysical survey of Area 3 (eastern end)



-  outline of proposed development area
-  outline of geophysical survey area
-  positive magnetic anomaly
-  negative magnetic anomaly
-  dipolar magnetic anomaly
-  diffuse magnetic anomaly

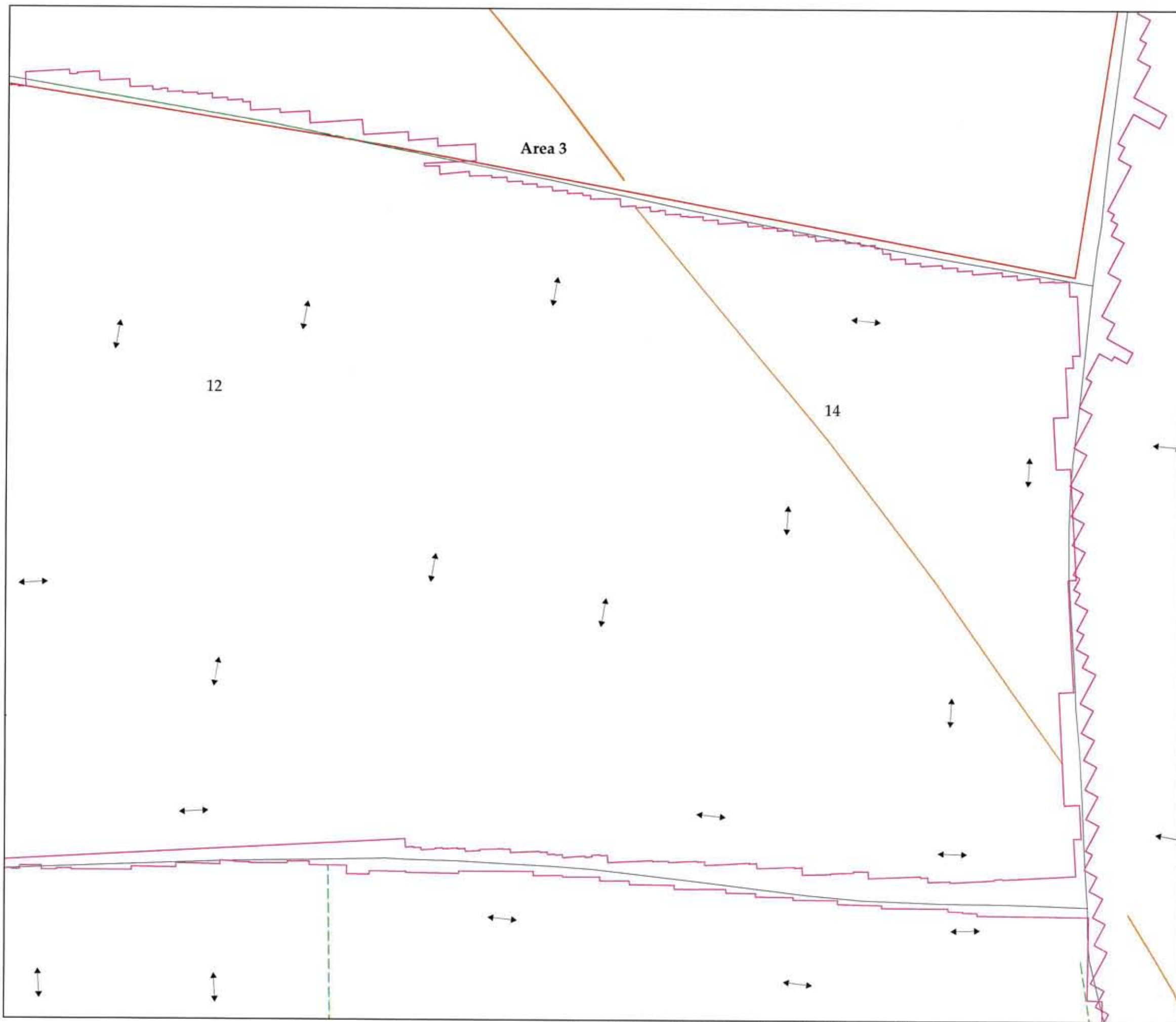


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Figure No: 18

Figure 18 : Geophysical interpretation of Area 3 (eastern end)

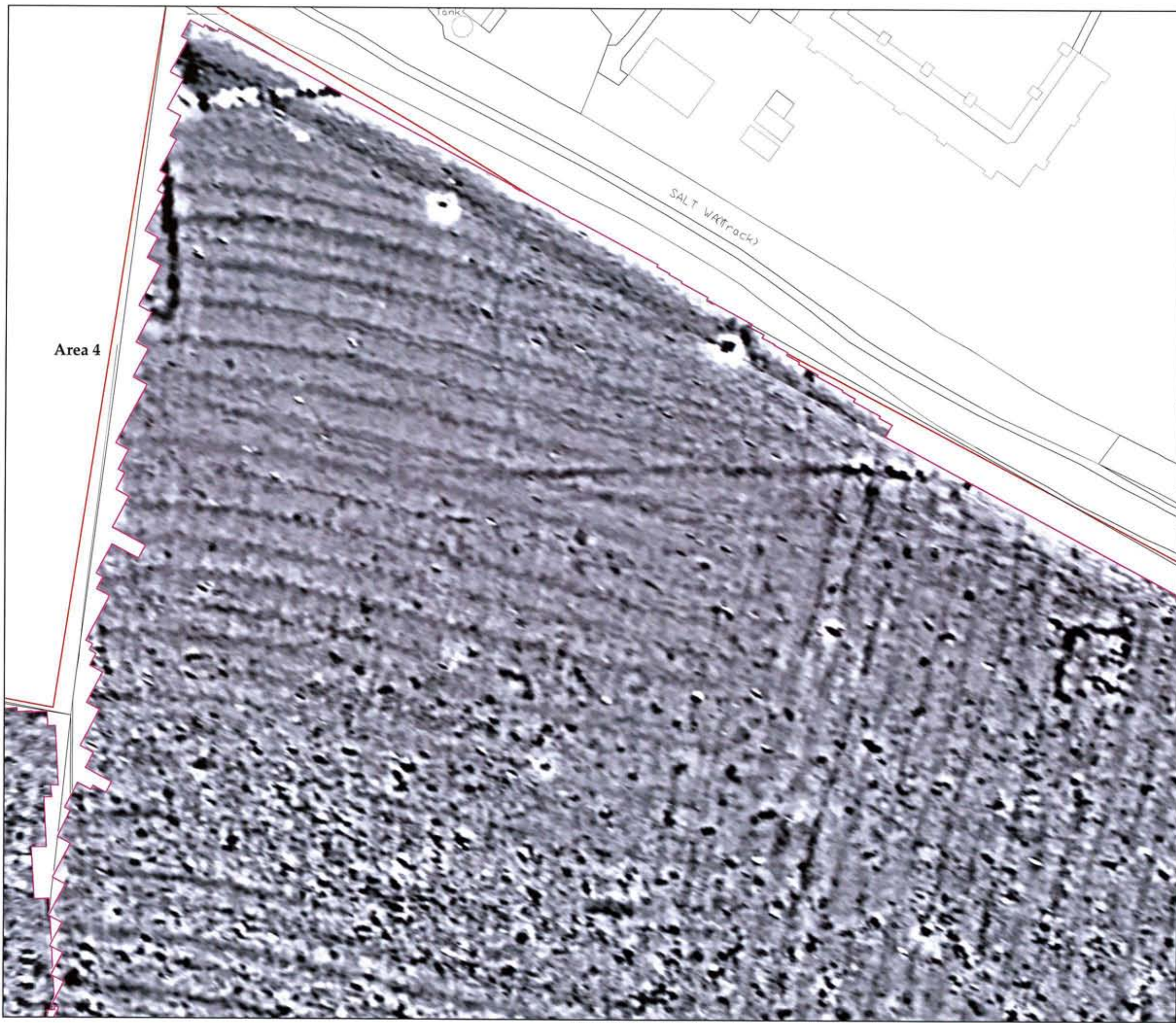


- outline of proposed development area
- outline of geophysical survey area
- direction of ridge & furrow
- limit of ploughing
- service pipes
- soil-filled ditches
- possible soil-filled features



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Figure 19 : Archaeological interpretation of Area 3 (eastern end)





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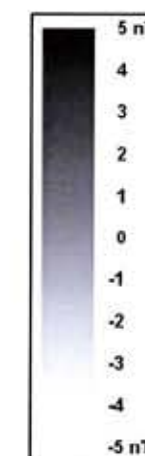
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-  outline of proposed development area
-  outline of geophysical survey area



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Figure No: 20

Figure 20 : Geophysical survey of Area 4 (northwest quadrant)









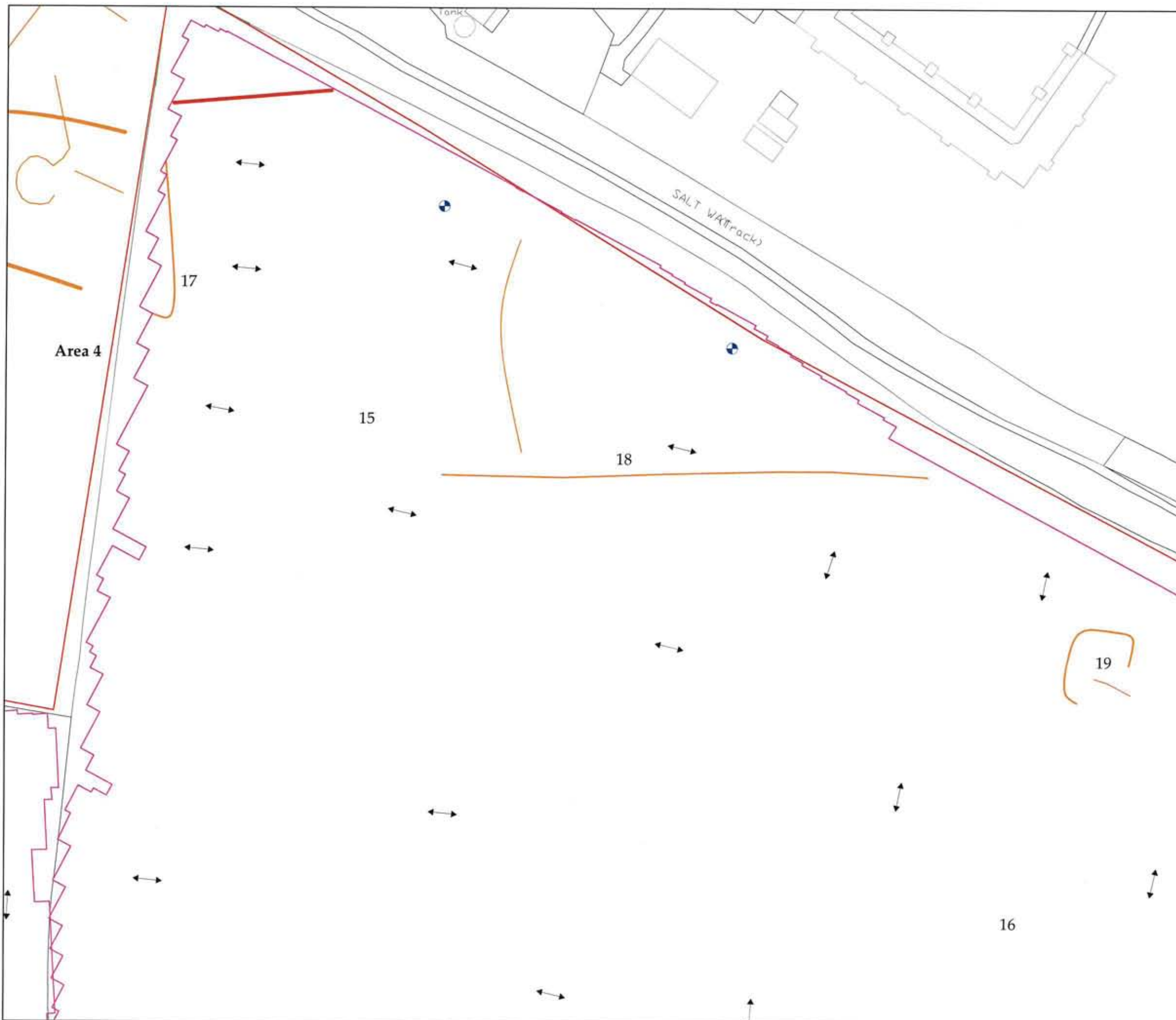
-  outline of proposed development area
-  outline of geophysical survey area
-  positive magnetic anomaly
-  negative magnetic anomaly
-  dipolar magnetic anomaly
-  diffuse magnetic anomaly



Figure 21 : Geophysical interpretation of Area 4 (northwest quadrant)



- outline of proposed development area
- outline of geophysical survey area
- direction of ridge & furrow
- limit of ploughing
- service pipes
- soil-filled ditches
- possible soil-filled features
- disturbed ground/ geology
- telegraph pole
- other fired/ferrous st





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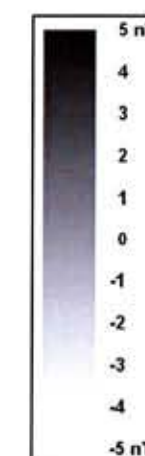
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Figure No: 22

Figure 22 : Archaeological interpretation of Area 4 (northwest quadrant)



-  outline of proposed development area
-  outline of geophysical survey area



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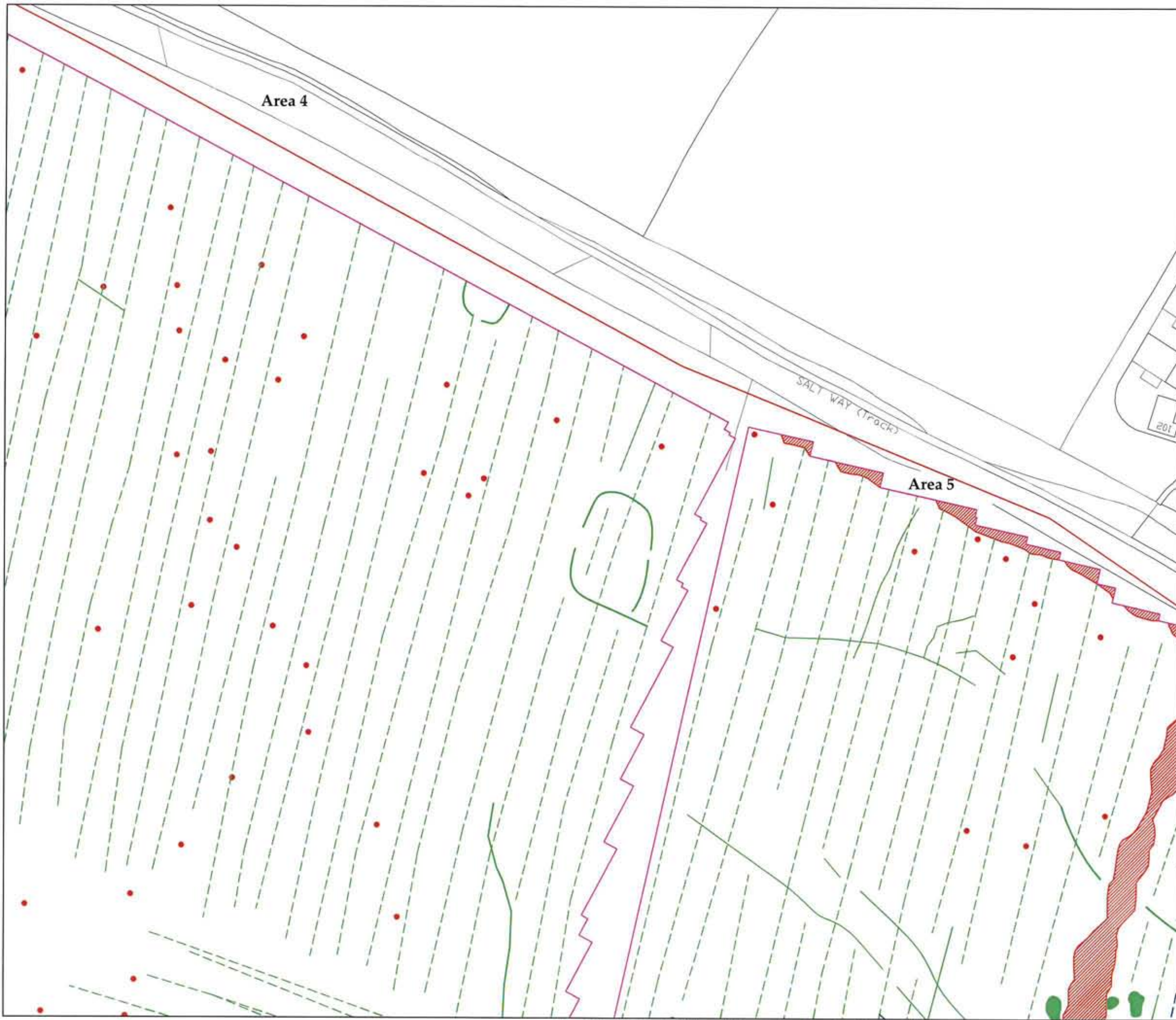
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




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Figure No:

23

Figure 23 : Geophysical survey of Area 4 (northeast quadrant)



-  outline of proposed development area
-  outline of geophysical survey area
-  positive magnetic anomaly
-  negative magnetic anomaly
-  dipolar magnetic anomaly
-  diffuse magnetic anomaly










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Figure No: 24

Figure 24 : Geophysical interpretation of Area 4 (northeast quadrant)

-  outline of proposed development area
-  outline of geophysical survey area
-  direction of ridge & furrow
-  limit of ploughing
-  service pipes
-  soil-filled ditches
-  possible soil-filled features

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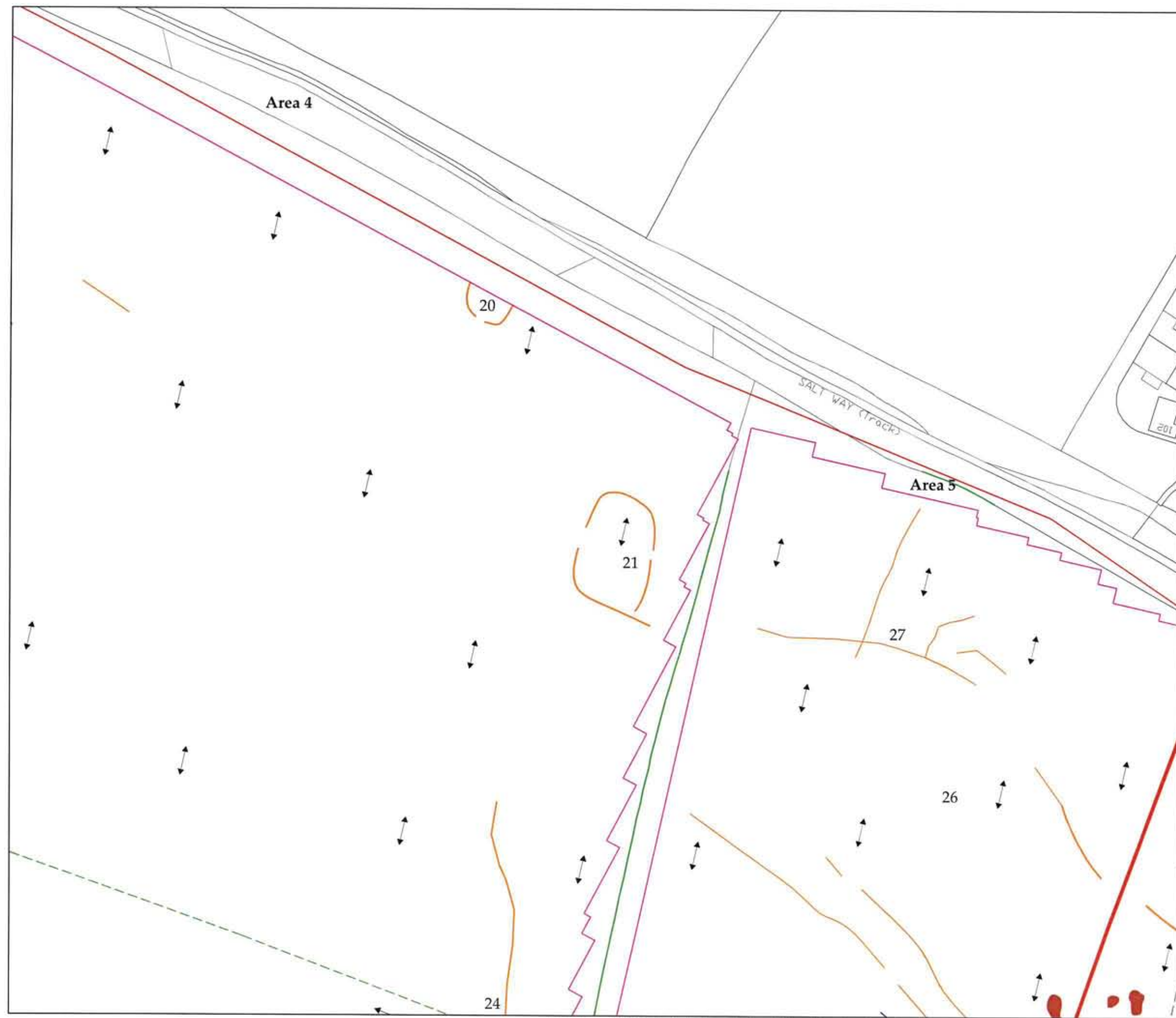
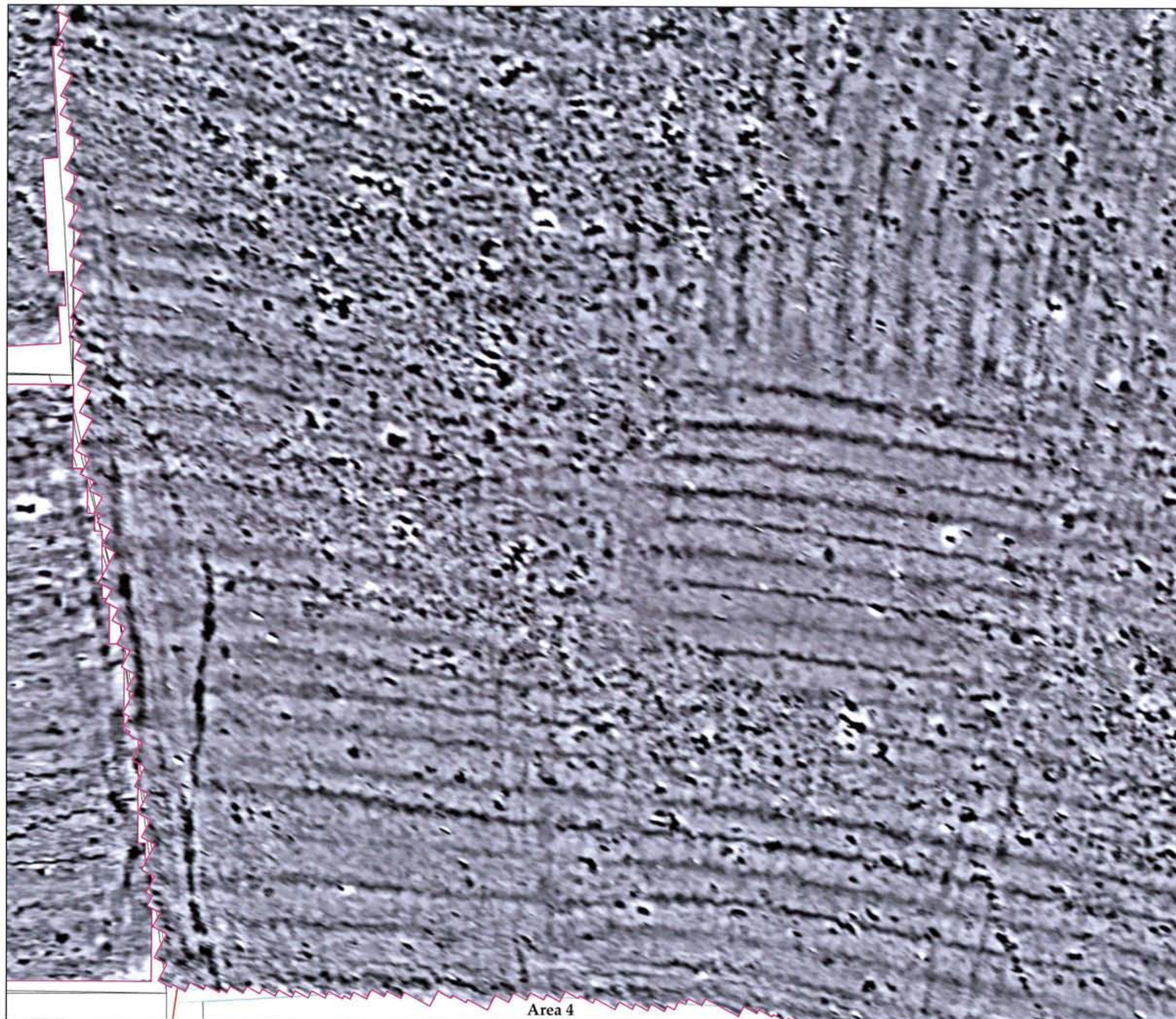


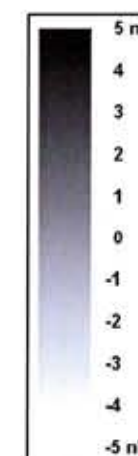


Figure 25 : Archaeological interpretation of Area 4 (northeast quadrant)



-  outline of proposed development area
-  outline of geophysical survey area



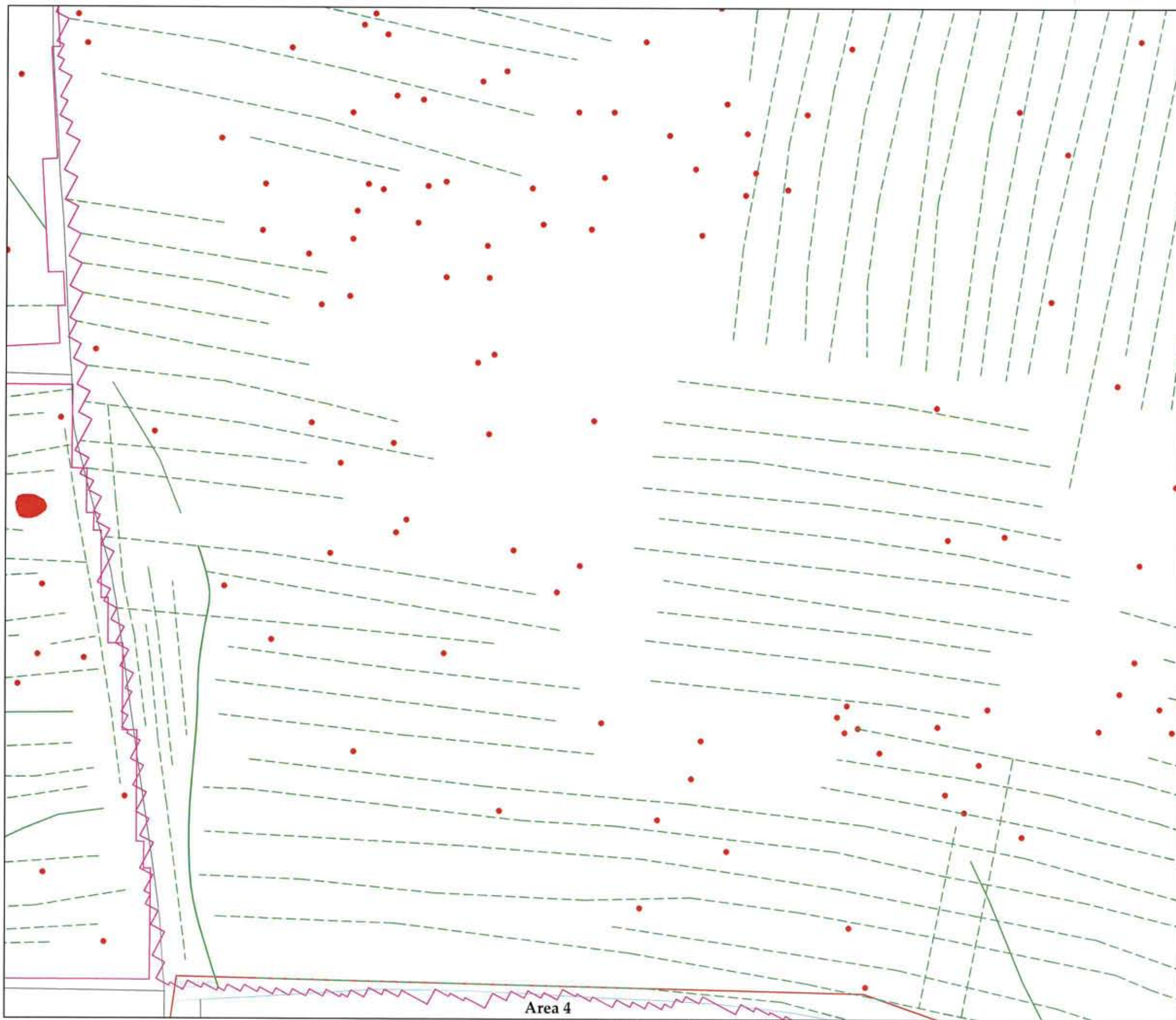
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Figure No: 26

Area 4

Figure 26 : Geophysical survey of Area 4 (southwest quadrant)



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-  outline of proposed development area
-  outline of geophysical survey area
-  positive magnetic anomaly
-  negative magnetic anomaly
-  dipolar magnetic anomaly
-  diffuse magnetic anomaly



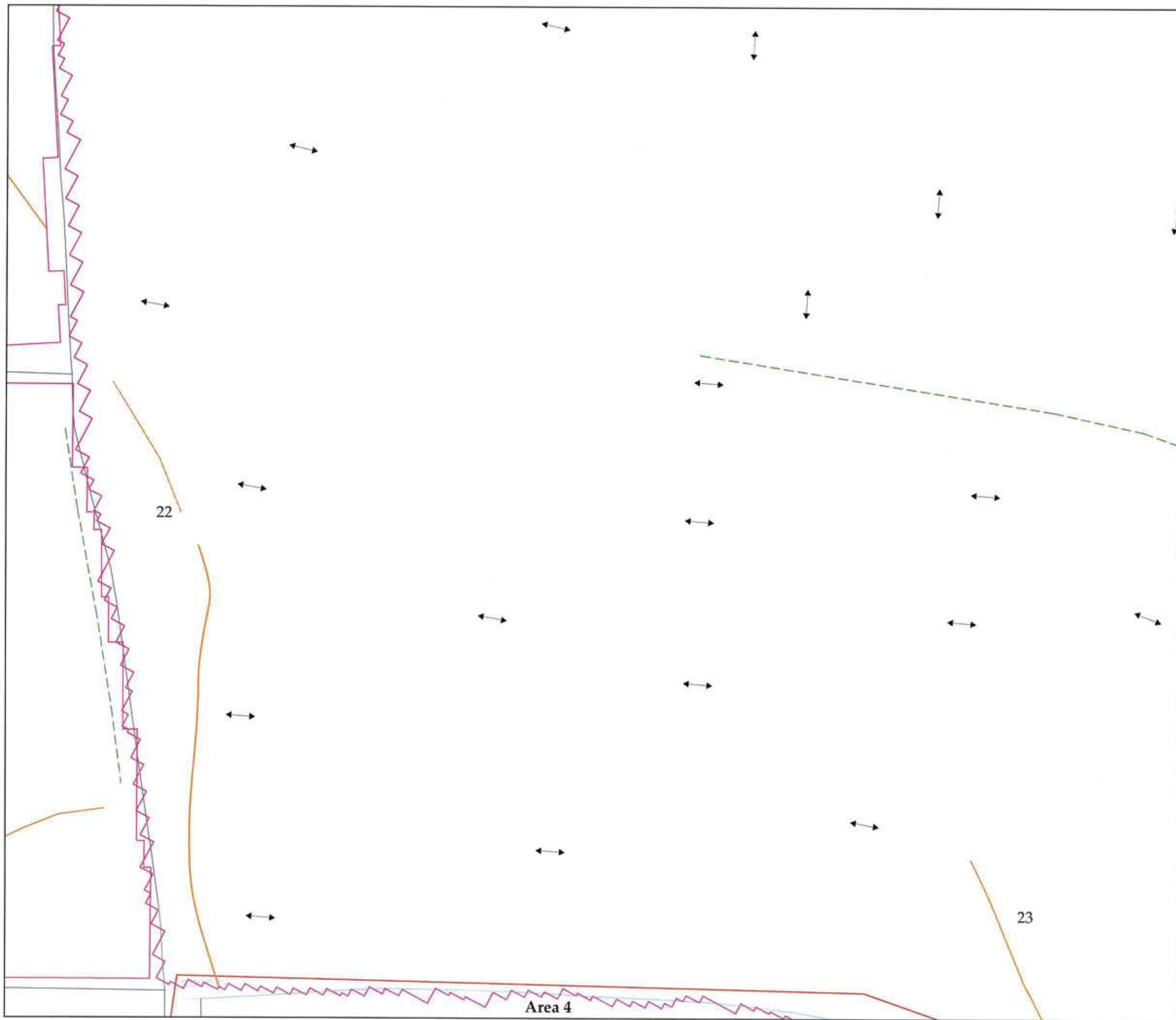
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Figure No: 27

Area 4

Figure 27 : Geophysical interpretation of Area 4 (southwest quadrant)



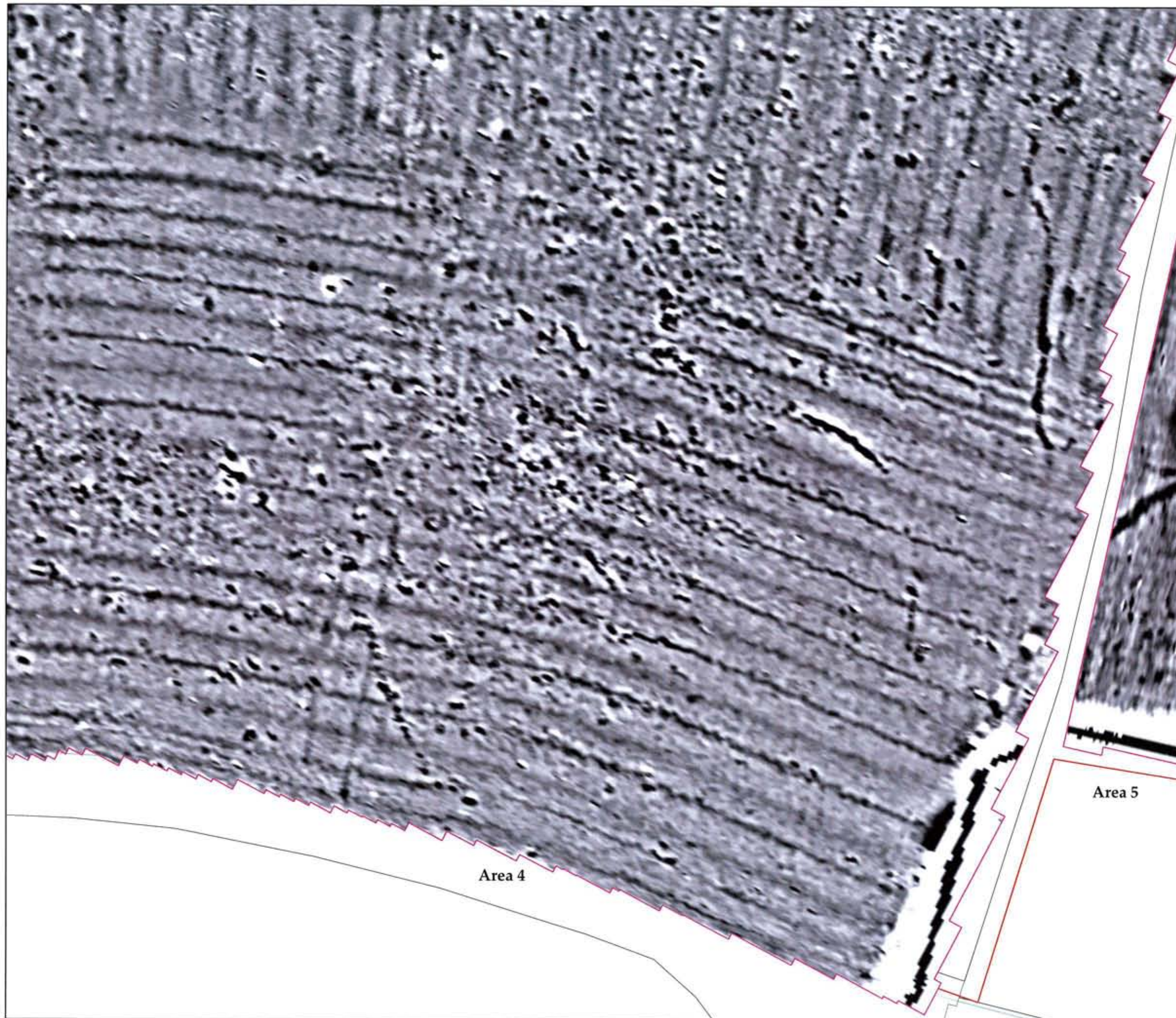
- outline of proposed development area
- outline of geophysical survey area
- direction of ridge & furrow
- limit of ploughing
- service pipes
- soil-filled ditches
- possible soil-filled features



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Figure No: 28

Figure 28 : Archaeological interpretation of Area 4 (southwest quadrant)



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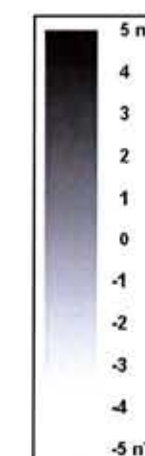
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DATE: October 2012

outline of proposed
development area
outline of geophysical
survey area









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Figure No: 29

Figure 29 : Geophysical survey of Area 4 (southeast quadrant)



-  outline of proposed development area
-  outline of geophysical survey area
-  positive magnetic anomaly
-  negative magnetic anomaly
-  dipolar magnetic anomaly
-  diffuse magnetic anomaly

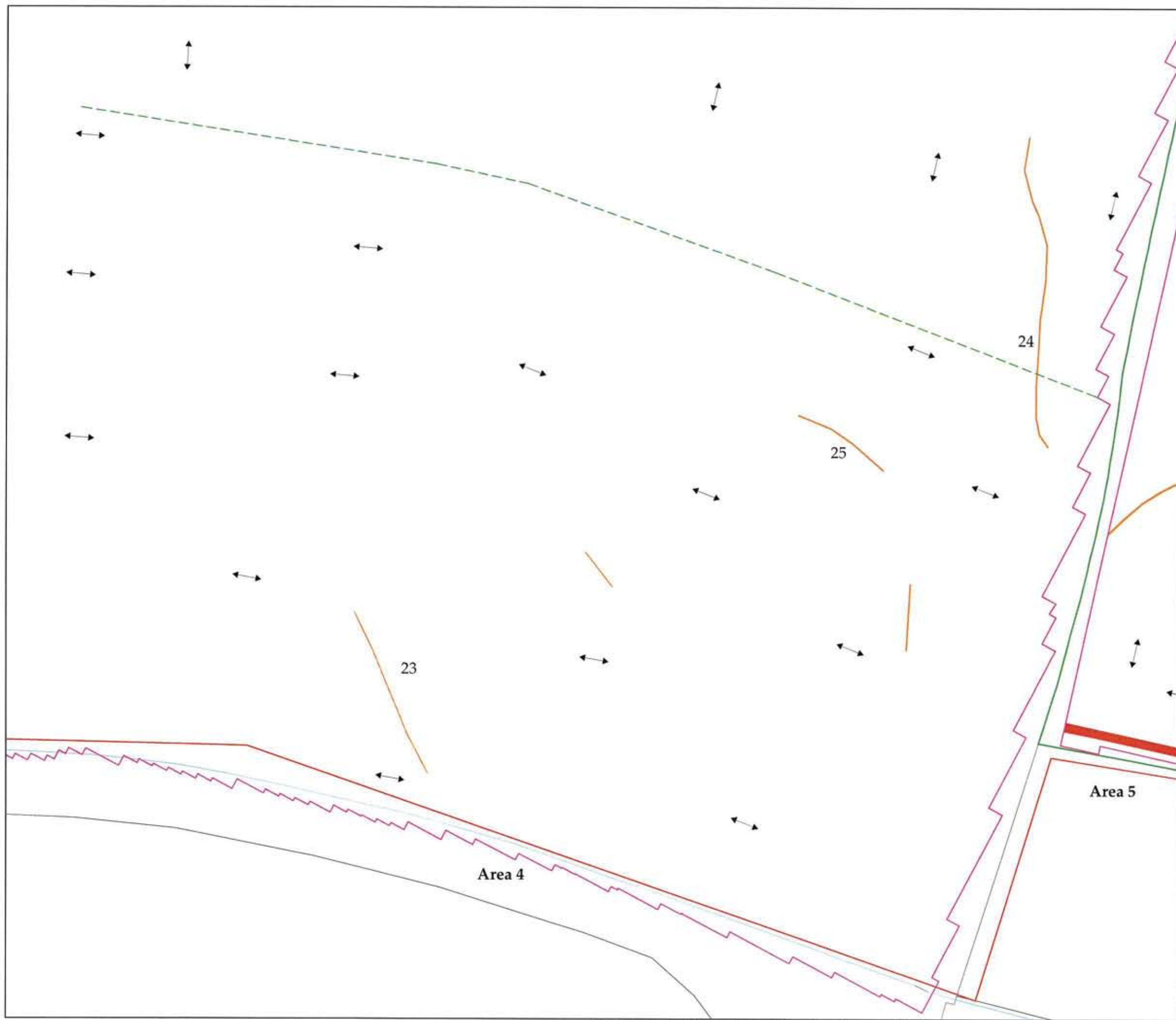


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Figure No: 30

Figure 30 : Geophysical interpretation of Area 4 (southeast quadrant)



- outline of proposed development area
- outline of geophysical survey area
- direction of ridge & furrow
- limit of ploughing
- service pipes
- soil-filled ditches
- possible soil-filled features



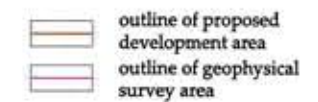
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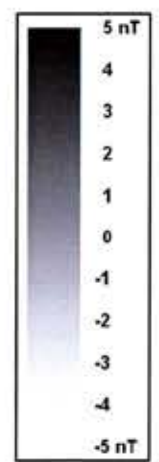
Figure No: 31

Figure 31 : Archaeological interpretation of Area 4 (southeast quadrant)











 outline of proposed development area
 outline of geophysical survey area



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Figure 32 : Geophysical survey of Area 5

-  outline of proposed development area
-  outline of geophysical survey area
-  positive magnetic anomaly
-  negative magnetic anomaly
-  dipolar magnetic anomaly
-  diffuse magnetic anomaly



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Figure No: 33



Figure 33 : Geophysical interpretation of Area 5



-  outline of proposed development area
-  outline of geophysical survey area
-  direction of ridge & furrow
-  limit of ploughing
-  service pipes
-  soil-filled ditches
-  possible soil-filled features
-  limit of easement/land drain
-  telegraph pole

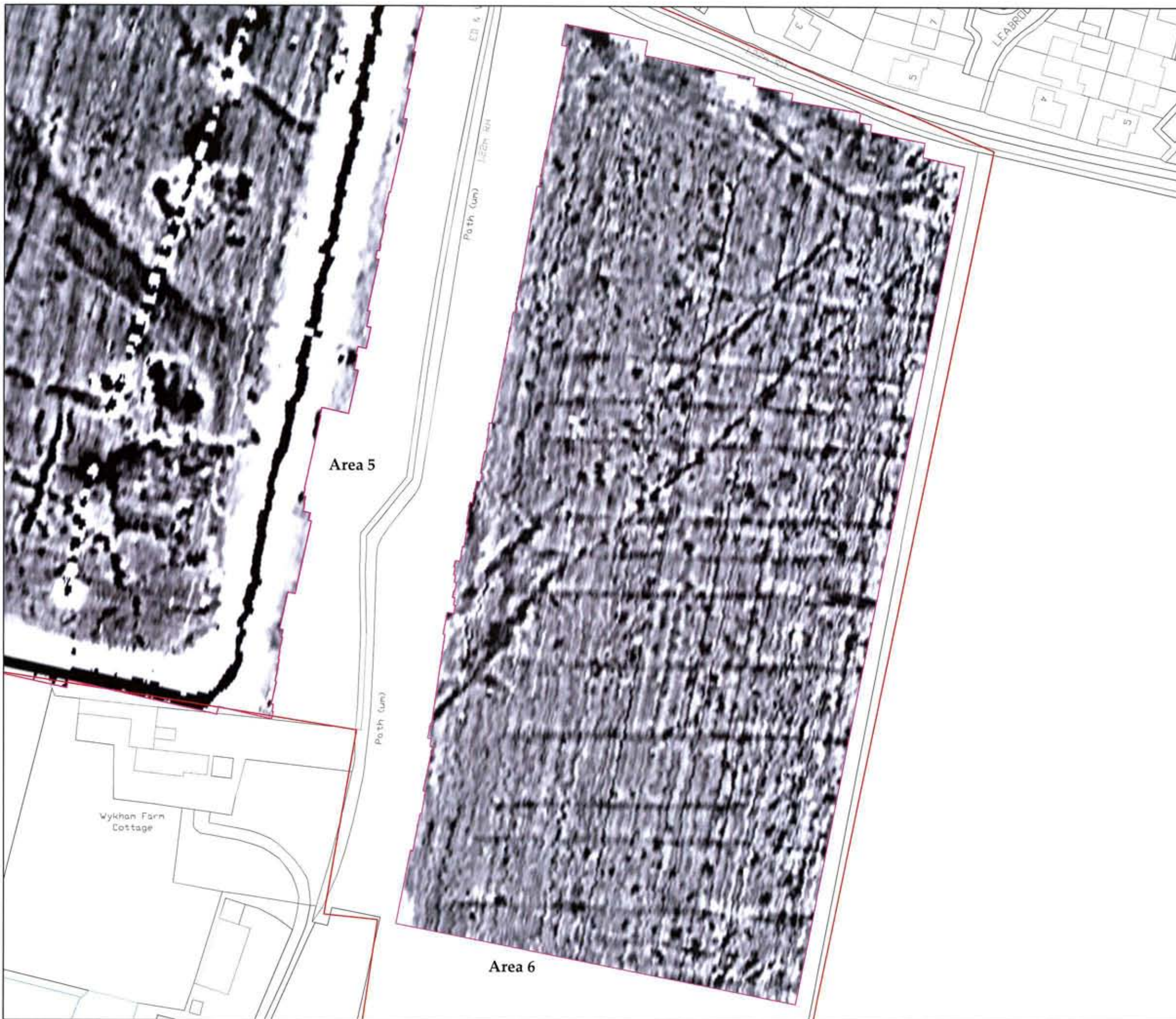


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Figure No: 34

Figure 34 : Archaeological interpretation of Area 5





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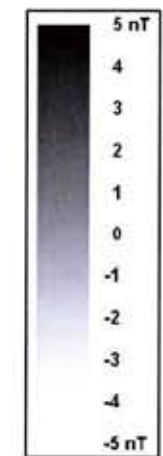
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-  outline of proposed development area
-  outline of geophysical survey area



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Figure No: 35

Figure 35 : Geophysical survey of Area 6









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-  outline of proposed development area
-  outline of geophysical survey area
-  positive magnetic anomaly
-  negative magnetic anomaly
-  dipolar magnetic anomaly
-  diffuse magnetic anomaly



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Figure No: 36

Figure 36 : Geophysical interpretation of Area 6








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-  outline of proposed development area
-  outline of geophysical survey area
-  direction of ridge & furrow
-  limit of ploughing
-  service pipes
-  soil-filled ditches
-  possible soil-filled features



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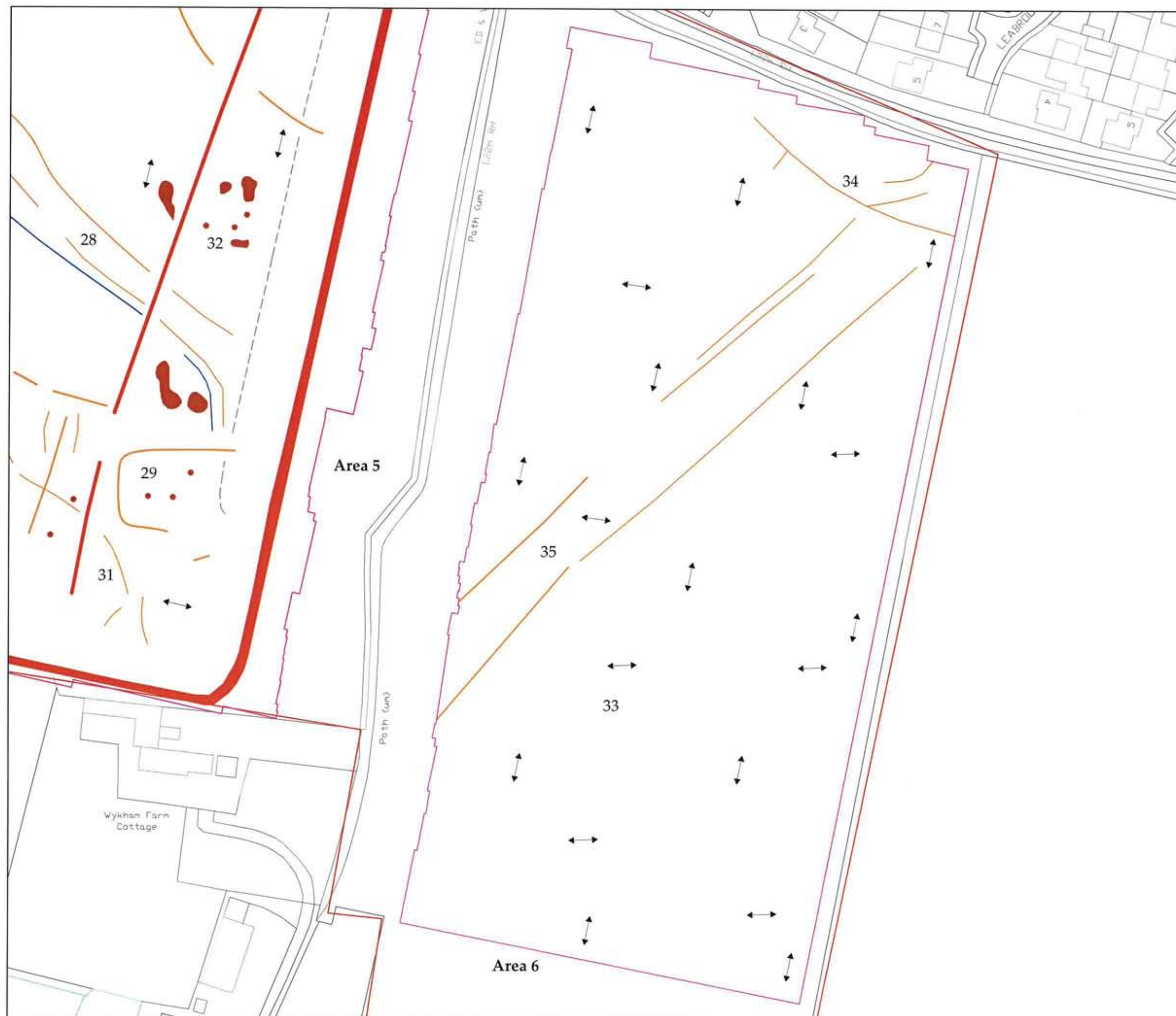


Figure 37 : Archaeological interpretation of Area 6

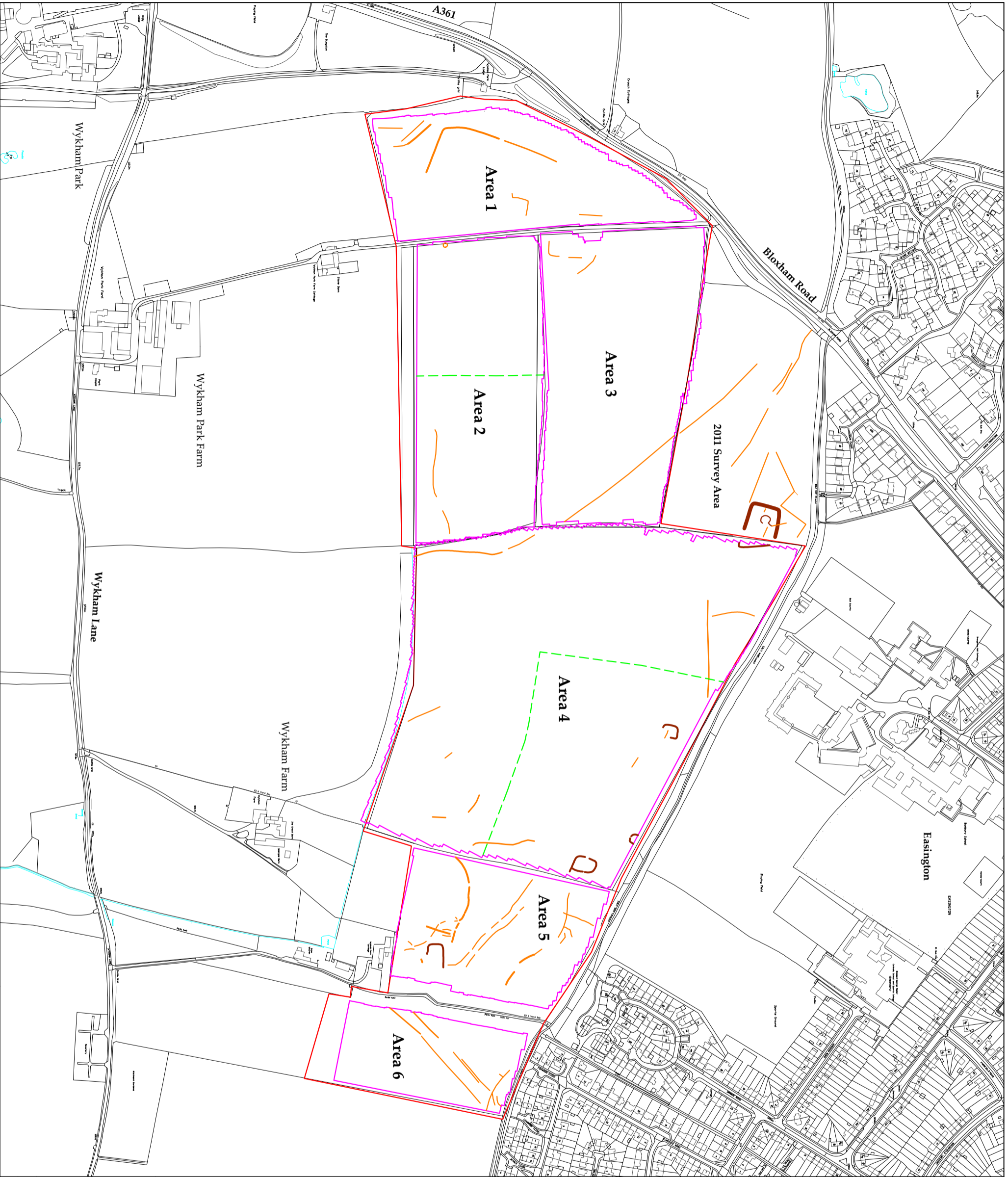


Figure 38 : Plan showing distribution potential archaeological features detected



WA Archaeology Ltd
2012

Wykham Park, Easington

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- outline of proposed development area
- outline of geophysical survey area
- soil-filled enclosure
- ditches
- probable soil-filled ditches
- probable medieval subdivisions



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