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**LAND AT LEE LANE
ROYSTON
BARNSELY**

**GEOPHYSICAL SURVEY
REPORT**

DATE ISSUED: January 2014
JOB NUMBER: CP10757
GRID REFERENCE: SE 349 114
OASIS REFERENCE: wardella2-167939

STRATEGIC LAND GROUP

LAND AT LEE LANE

ROYSTON, BARNSLEY

SOUTH YORKSHIRE

**GEOPHYSICAL SURVEY
REPORT**

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CONTENTS

SUMMARY.....	5
ACKNOWLEDGEMENTS	6
1 INTRODUCTION	7
1.1 Circumstances of the Project (Figure 1).....	7
2 METHODOLOGY.....	8
2.1 Project Design	8
2.2 Geophysical Surveys.....	8
2.3 Archive	9
3 BACKGROUND	11
3.1 Location and Geological Context	11
3.2 Historical Context	11
3.3 Previous Archaeological Work.....	14
4 THE GEOPHYSICAL SURVEYS	16
4.1 Introduction (Figure 2)	16
4.2 Area 1 (Figures 3-5)	16
4.3 Area 2 (Figures 3-5)	17
4.4 Area 3 (Figures 3-5)	17
4.5 Area 4 (Figures 3-5)	17
4.6 Discussion (Figure 5)	18
5 CONCLUSIONS	19
5.1 Conclusions.....	19
6 BIBLIOGRAPHY	20
6.1 Secondary Sources.....	20
APPENDIX 1: TRACE PLOTS	21
APPENDIX 2: FIGURES	22

ILLUSTRATIONS

FIGURES (APPENDIX 2)

FIGURE 1: SITE LOCATION

FIGURE 2: LOCATION OF THE GEOPHYSICAL SURVEY AREAS

FIGURE 3: GEOPHYSICAL SURVEYS

FIGURE 4: GEOPHYSICAL INTERPRETATION

FIGURE 5: ARCHAEOLOGICAL INTERPRETATION

SUMMARY

In December 2013 Wardell Armstrong Archaeology undertook geophysical surveys of land at Lee Lane, Royston near Barnsley, South Yorkshire, at the request of Strategic Land Group. This work was undertaken to provide information to support a planning application for a new residential development at the site, comprising 200 units.

It was believed that archaeological remains could survive at the site, as the proposed development area lies within a landscape containing evidence for prehistoric activity. To the northwest of the proposed development area is the scheduled ancient monument described as 'Late prehistoric settlement in Notton Park' (SAM No. 31522). A desk-based assessment, currently being undertaken by Wardell Armstrong LLP, has also identified a cropmark within the proposed development area.

The objective of the geophysical surveys was to determine the presence/absence, nature and extent of potential archaeological features within the study area, and the presence/absence of any known modern features within the survey area, which may affect the results.

The study area comprised several fields of pasture land on the west side of Royston, measuring approximately 8ha in total. It was bounded by Lee Lane to the south, and lay immediately to the east of Lee Lane Farm. The surveys detected agricultural features over the majority of the survey areas, comprising a series of possible early field boundaries, evidence for ridge and furrow cultivation, and a series of land drains.

The geomagnetic surveys also detected possible evidence for prehistoric activity in the form of two possible oval enclosures at the centre of the site. However these features appeared indistinct in the gradiometer data and the precise nature of these features is uncertain. No potential archaeological features were detected on the east side of the study area in an area, where cropmarks had previously been identified on air photographs of the site.

ACKNOWLEDGEMENTS

Wardell Armstrong Archaeology would like to thank Nick Uttley of Bowsall, and Andy Lines, Archaeologist, South Yorkshire Archaeology Service for all assistance throughout the project.

Wardell Armstrong Archaeology would also like to extend their thanks to Alan Clayton for his assistance during the fieldwork.

The geophysical surveys were undertaken by Kevin Mounsey and Kevin Horsley of Wardell Armstrong Archaeology (WAA). The project was managed by Martin Railton BA (Hons) MA MIfA, Project Manager for WAA. The report was written by Martin Railton and the drawings were produced by Adrian Bailey and Martin Railton.

1 INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT (FIGURE 1)

- 1.1.1 Between 10th and 13th December 2013 Wardell Armstrong Archaeology undertook geophysical surveys of land at Lee Lane, Royston, near Barnsley in South Yorkshire, at the request of Strategic Land Group. This work was undertaken to provide information to support a planning application for a new residential development at the site, comprising 200 units. The archaeological work was undertaken in accordance with a Wardell Armstrong Archaeology project design, which was submitted to, and approved by Andy Lines, Archaeologist, South Yorkshire Archaeology Service, prior to the start of the project. This is in line with government advice as set out in Section 12 of the National Planning Policy Framework (NPPF 2012).
- 1.1.2 The study area comprised several fields of pasture land on the west side of Royston, measuring approximately 8ha in total. It was bounded by Lee Lane to the south, and lay immediately to the east of Lee Lane Farm (Figure 1). The site is centred on Ordnance Survey grid reference SE 349 114.
- 1.1.3 It was believed that archaeological remains could survive at the site, as the proposed development area lies within a landscape containing evidence for prehistoric activity. To the northwest of the proposed development area is the scheduled ancient monument described as 'Late prehistoric settlement in Notton Park' (SAM No. 31522). This site includes an ovoid late prehistoric enclosed settlement, surrounded by banks and a ditch. A desk-based assessment, currently being undertaken by Wardell Armstrong LLP, has also identified a cropmark within the proposed development area. The site is presently not recorded in the South Yorkshire Sites and Monuments Record (SMR), but is recorded elsewhere as a possible Iron Age/Roman incomplete ditched enclosure.
- 1.1.4 The objective of the geophysical surveys was therefore to determine the presence/absence, nature and extent of potential archaeological features within the survey area, and the presence/absence of any known modern features within the survey area, which may affect the results. The results of the project were to be used to inform the need for further archaeological work, or mitigation measures, should potential significant archaeological remains be identified during the project.
- 1.1.5 This report outlines the results of the geophysical surveys undertaken, and includes an interpretation of the geophysical survey results, in light of the archaeological and historical background of the site, with recommendations for further work where necessary.

2 METHODOLOGY

2.1 PROJECT DESIGN

- 2.1.1 A project design was submitted by Wardell Armstrong Archaeology in response to a request by Strategic Land Group, for a geophysical survey of the study area. Following acceptance of the project design by South Yorkshire Archaeology Service, Wardell Armstrong Archaeology was commissioned by the client to undertake the work. The project design was adhered to in full, and the work was consistent with English Heritage guidelines (English Heritage 2007 and 2008), and in accordance with the standard and guidance of the Institute for Archaeologists (IfA 2011).

2.2 GEOPHYSICAL SURVEYS

- 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 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.8ha divided into two separate fields and several smaller horse paddocks, some of which were subdivided by electric/post & wire fencing and were too small to survey. The western part of the site was also excluded due to the land being overgrown and because of access issues. Geophysical survey was therefore only undertaken over the eastern portion of the site (Areas 1-4). A 30m grid was established in 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, with measurements being recorded at the centre of each grid cell. 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 (despike threshold 1.5 with window size 3 x 3).

Clip: to clip data to specified maximum and minimum values, in order to limit large noise spikes in the geophysical data (clipped between -6 and 6nT).

Destagger: to reduce the effect of staggered gradiometer data, sometimes caused by difficult working conditions, topography, or operator error (destaggered by - 2 intervals in each traverse direction).

- 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 features of low magnetic susceptibility, such as stone-built features, geological features, land-drains or sub-surface 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 figure (Figure 3). Colour-coded geophysical interpretation diagrams are provided (Figure 4), showing the locations and extent of positive, negative, dipolar, geomagnetic anomalies, and areas of anomalously high or low resistance.

- 2.2.8 Archaeological interpretation diagrams are also provided (Figure 5), which are 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 included in Appendix 1 (which have been clipped for display purposes only to the range 100 to 100nT).

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 2013). 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 **wardella2-167939**.

3 BACKGROUND

3.1 LOCATION AND GEOLOGICAL CONTEXT

- 3.1.1 The proposed development area is located to the west side of Royston, on the north side of Lee Lane, between residential properties on Applehaigh View, Parkhead Close and Tanfield Close, and Lee Lane Farm. The site is bounded to the south by Lee Lane and to the north by a disused railway line now used as a footpath (Figures 1 & 2). The site is centred on Ordnance Survey grid reference SE 349 114.
- 3.1.2 The solid geology of the area comprises 'Oaks Rock' sandstone, sedimentary bedrock which was formed approximately 311 to 314 million years ago in the Carboniferous period (BGS 2001). The overlying soils are slowly permeable seasonally waterlogged clayey, fine loamy over clayey, and fine silty soils, known as Dale soils (SSEW 1980).

3.2 HISTORICAL CONTEXT

- 3.2.1 **Introduction:** An archaeological desk-based assessment of the site is being undertaken by Wardell Armstrong LLP, in order to achieve an understanding of the nature of the existing resource regarding the geographical, topographical, archaeological and historical context of the site. A summary of the results of this assessment is included below. This historical background is compiled mostly from secondary sources, and is intended only as a brief summary of historical developments specific to the study area.
- 3.2.2 **Prehistoric:** To the northwest of the proposed development area is the scheduled ancient monument described as 'Late prehistoric settlement in Notton Park'. This site includes a late prehistoric enclosed settlement, which is ovoid in shape with a ditch that has inner and outer banks. The HER entry refers to the site being surveyed in c.1974, although no additional information is given regarding evidence for dating the site (HER No. 4279). In general, few enclosed settlement sites such as this have been excavated, but they are thought to date from between the Late Bronze Age to the Romano-British period (c.1000BC to AD400). Examples which have been excavated have provided evidence of settlement. Unexcavated examples occasionally have levelled areas which may have contained buildings, but a proportion may have functioned primarily as stock enclosures (SM No. 31522).
- 3.2.3 Located to the north side of Lee Lane are several HER sites, which relate to cropmarks identified through aerial photography, and which may date to this period. Immediately to the north of the former railway line (which forms the northern part of the proposed development area site boundary) are two cropmark sites. The first (HER No. 465) is recorded as a very faint cropmark of a large trapeziform enclosure, with linear ditches to the west and east of unknown function. To the north of this site, on the north side of Applehaigh

Quarry, is a cropmark of a small sub-circular enclosure which has been tentatively dated to between the prehistoric and Roman periods (HER No. 466).

- 3.2.4 Of particular relevance to the present study, is the identification by aerial photography of a cropmark within east side of the proposed development area. This site is presently not recorded in the South Yorkshire Sites and Monuments Record; however it is listed on PastScape as a possible Iron Age/Roman incomplete ditched enclosure which is only visible on one photograph. The entry also suggests, however, that this site could be 'agricultural in origin' (PastScape 2013, Monument No. 1394622).
- 3.2.5 **Roman:** The cropmark evidence already referred to could represent activity during this period. Archaeological work on cropmark sites at Shafton, located to the east of Royston, has revealed slight evidence for Romano-British activity. Excavations in advance of the construction of the Shafton Bypass identified a 0.06ha circular enclosure and internal features which may have dated to the 1st to 2nd century AD (Archaeological Services WYAS 2001), and at High Street, Shafton, archaeological work has revealed evidence for a field and enclosure which may have had pre-Roman origins, although the greater deposition of artefacts occurred in the 2nd century AD, and it was suggested that the enclosure, at least, had been abandoned by the 3rd century. The types of ceramics recovered at this site indicated that this was a typical rural Romano-British settlement with generally low levels of pottery use and deposition (Archaeological Services WYAS 2002a).
- 3.2.6 **Medieval:** Royston is listed in the Domesday Book of 1086 under Staincross Wapentake. The entry for the settlement, as it was at that date, read: '*In Rorestone [Royston] Ulfac and Norman had 4 carucates of land for geld, where 3 ploughs can be. Now Ulchel has (it) of Ilbert. He (has) 2 villeins there, as 3 bordars with 1 plough and 1 acre of meadow, pasturable wood (land) 6 furlongs in length and 4 in breadth*' (Page 1974, 248).
- 3.2.7 The earliest area of settlement at Royston may have been around the site of the Church of St John the Baptist, located over one kilometre to the east of the proposed development site on Lee Lane. This church, which is Grade I listed, contains within its fabric some 14th century work, but is predominantly of 15th century date.
- 3.2.8 The South Yorkshire Sites and Monuments Record contains one entry within the assessment 1km search radius which could relate to this period; Notton Park, which is located to the north-west (HER No. 4273). Although it is listed as a post-medieval park, it has been suggested that it may have had medieval origins, although the earliest reference appears to be its presence on Saxton's map of 1599. It is unclear where the boundary of this park may have extended (the park 'pale' or bank), and the HER entry suggests that the south-east side may have been coincident with Royston township boundary, and as a consequence the park boundary may not have extended into the area of the proposed development area on Lee Lane.

- 3.2.9 *Post-medieval and Modern:* There are references to small coal pits being worked in the Dearne Valley during the 17th and 18th centuries, and coal has been worked in the Carlton, Cudworth and Monk Bretton area since at least the 16th century (Elliott 1985, 10), although during these periods it would appear that Royston was largely agricultural in character. Certainly the land immediately to the north of the township boundary (to the north side of the proposed development area), which formed part of John Hutchinson's farm at Applehaigh in 1689, was clearly enclosed into regularly-sized fields with names attributed to them by this date (Elliott 1985, 36).
- 3.2.10 A map of the 'Glebe Land of Royston 1680-1800' reproduced by Elliott, indicates that the land on the north side of Lee Lane was known as 'Great West Field' and was divided into strip fields, all orientated north to south. In the middle of the 18th century, a Will of Richard Dunn, farmer, dated 1747/48, refers to Dunn having scattered plots of land situated off High Street and Lee Lane, along Senior Lane (now Midland Road) and in the Windmill Hill area. Reference is made to 'Little West Field' where 'wheat [is] sown and growing 6 acres'.
- 3.2.11 The western side of Royston was dominated by two former open fields in the 18th century, the Great West Field and Little West Field. The distinct pattern of land ownership can be clearly seen here by reference to the Enclosure Map of 1772, which shows the land along the south side of Lee Lane as strip fields with trackways alongside some, and with access tracks to the south side. The fields on the north side of Lee Lane were apparently larger at this date, but also had access tracks. This map indicates that in the second half of the 18th century, the proposed development area was being utilised for agriculture, located on the western edge of the village. Jeffreys Map of the County of York 1771 appears to confirm that the 18th century settlement of Royston was located to the east of the proposed development area as shown by the representation of Lee Lane and the stump of what is now the track which leads from High Street past West End Crescent and in a south-westerly direction. It is interesting to note that oral evidence from 1971 has indicated that the strip fields which were located along Lee Lane remained visible 'only a few years ago', and were individually owned and cultivated, although most were left to grass because of their narrow dimensions (Elliott 1985, 8).
- 3.2.12 Both Jeffreys map of 1771, and Greenwood's map of 1834, show Royston as a settlement in the late 18th and early 19th centuries which was located at the cross roads of two roads. Elliott has noted: 'The village developed as an important cross road. The north-south axis was part of a route way between Barnsley and Wakefield, whilst the west to east road enabled travellers to reach either the Pennine or eastern market towns, such as Pontefract. The main settlement was along the western routeway (High Street) and, to a slightly lesser extent, to the south along Church Street' (Elliott 1985, 8).
- 3.2.13 During the 18th century, Royston emerged as a small market gardening centre, with the area between High Street and Back Lane being an intensively worked

area of cottage closes, gardens, and orchards. Royston appears to have remained agricultural in character with little in the way of industrial activity.

- 3.2.14 The First Edition Ordnance Survey map of 1851 shows the proposed development area was located on the western edge of the village of Royston at this date, with little in the way of industrial activity apart from a 'Gravel Pit' to the south-west, and sandstone quarries at Applehaigh to the north. The area was subdivided into a number of regular rectangular fields by this date, although an unusual inverted S-shaped boundary may reflect medieval origins.
- 3.2.15 By the end of the 19th century the Barnsley Coal Railway Extension of the M S & L Railway had been constructed immediately to the west of the site leading towards Applehaigh Clough, the northern end of which was labelled 'Old Railway' indicating it had gone out of use, with a branch line leading off to the north-east, part of which now forms part of the northern boundary of the present study site. This map shows that the proposed development area itself was subdivided into five fields.
- 3.2.16 Between 1907 and 1938 there appears to have been some residential development in the village of Royston, but this was generally located to the east of the proposed development area, particularly on Station Road, with the creation of Newton Avenue, and to the north and south of Midland Road, for example the newly-constructed Park View, Park Avenue and Park Crescent. The only residential development to occur in close proximity to Lee Lane by this date was the creation of West End Crescent which utilised part of the alignment of Field Lane. The only slight changes which had occurred within the proposed development area site boundary by 1938 was the loss of some of the field boundaries.

3.3 PREVIOUS ARCHAEOLOGICAL WORK

- 3.3.1 In 2002, Archaeological Services WYAS undertook a desk-based assessment of an area of land to the north side of Cropton Road, Royston, South Yorkshire. Although this site is not located within the 1km search radius, it is of relevance as part of this work involved the plotting of aerial photographic evidence. For the area around Lee Lane, these photographs were noted to show evidence for ridge and furrow to the south of Lee Lane, as well as an 'unusual field boundary' in the field to the north side of the road (within the proposed development site boundary) which was noted to be 'at odds with the surrounding medieval pattern and may indicate the presence of an earlier feature. Although extant in the late 1980s, but later removed, it is evident on recent photographs by light-toned soil marks'. This assessment also highlighted the presence of a possible trackway at Muscle Hill on the south side of Lee Lane (Archaeological Services WYAS 2002b).
- 3.3.2 As part of the current desk-based assessment being undertaken by Wardell Armstrong LLP an enquiry was made with the National Monuments Record

(NMR) regarding aerial photographs within their collection of which three provided useful information:

- MAL/77026/V/118, dated 10th August 1977: the eastern side of the proposed development area is shown on this view, and within the site boundary it shows a large D-shaped feature which may be all that remains of a former circular enclosure which has been truncated to its east side by housing and gardens to the north side of Lee Lane. Various other crop or soil marks are visible on this photograph, however it is unclear if they relate to the possible enclosure, or represent features such as informal footpaths. The D-shaped cropmark is recorded on PastScape and suggested to represent part of a possible Iron Age/Roman incomplete ditched enclosure.
- MAL/79040/136, dated 22nd September 1979: this photograph shows that construction work was underway for the housing now located immediately to the east of the proposed development area (now the south end of Applehaigh View). These works appear to have been utilising a compound or construction area located within the south-east corner of the proposed development site, and although it is unclear due to the height that the photograph was taken, it appears that there were some small structures may have been present. This photograph also shows two areas of dark ground; these possibly represent either former field ponds or are geological in origin. The only other feature noted was the field boundary which had previously been identified by Archaeological Services WYAS, which was noted to be unusual as it does not relate to the surrounding field boundaries.
- OS/89184/481, dated 17th May 1989: this vertical photograph shows part of an apparent cropmark which is visible as a straight line orientated north to south, with a curved corner at its south end, before heading off in an easterly direction to meet the line of Lee Lane. The north end of the straight line also appears to change to a curving angle before heading off to the east; these marks appear as part of a 'playing card' shape, although it has been considered that the top may actually relate to a footpath. To the east of this there is a short section of a curving cropmark, possibly that which has already been referred to above (Aerial Photograph MAL/79040/136).

4 THE GEOPHYSICAL SURVEYS

4.1 INTRODUCTION (FIGURE 2)

- 4.1.1 The geophysical surveys were undertaken between 10th and 13th December 2013. Geomagnetic survey was undertaken over four separate areas of pasture (Areas 1-4) on the east side of the study area (Figure 2). The remaining areas were either too small or overgrown to be surveyed, and access to western parts of the site was not possible at the time of the survey. Each area was subdivided by field boundaries consisting of post and wire fences. These fences produced strong dipolar magnetic anomalies around the periphery of the survey areas.
- 4.1.2 Small discrete dipolar magnetic anomalies were 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.

4.2 AREA 1 (FIGURES 3-5)

- 4.2.1 Area 1 comprised a large rectangular field on the east side of the survey area, and corresponded to the area of identified cropmarks on the 1977 air photograph (described above in Section 3.3).
- 4.2.2 A strong dipolar magnetic anomaly was detected on the west side of Area 1, due to the presence of a metal drain cover. Strong dipolar magnetic anomalies were also detected on the south side of Area 1, which are probably due to modern fired/ferrous material in the topsoil.
- 4.2.3 A parallel series of positive linear magnetic anomalies were detected on the south side of Area 1, aligned north to south. These were spaced on average 12m apart and are interpreted as a series of land drains.
- 4.2.4 Two positive linear magnetic anomalies were also detected on the south side of Area 1, aligned northeast to southwest, which may represent soil-filled boundary features, such as early field boundaries. However, it is also possible that these represent further land drains.
- 4.2.5 A number of weak negative and positive linear features were detected on the north side of Area 1, which may also represent former boundary features or land drains.
- 4.2.6 A parallel series of very weak positive linear magnetic anomalies was detected crossing the north side of Area 1, aligned east to west. These features were spaced on average c.5m apart, and probably represent the furrows of former ridge and furrow cultivation, of possible medieval or post-medieval date.
- 4.2.7 No potential archaeological features were detected in the area of identified cropmarks.

4.3 AREA 2 (FIGURES 3-5)

- 4.3.1 Area 2 comprised a small triangular field on the north side of the study area, bounded to the north by the disused railway line. Strong dipolar magnetic anomalies were detected on the east side of this area due to the presence of two metal gates and fences.
- 4.3.2 A parallel series of positive and negative linear magnetic anomalies was detected crossing Area 2, aligned east to west, which almost certainly represent the remains of further ridge and furrow cultivation, of possible medieval or post-medieval date, similar to that detected in Area 1 to the south.

4.4 AREA 3 (FIGURES 3-5)

- 4.4.1 Area 3 comprised the eastern portion of a large field on the west side of the survey area, immediately to the west of Area 1. The western side of Area 2 was too overgrown to be surveyed. Strong dipolar magnetic anomalies were detected on the east side of this area due to the presence of further metal gates.
- 4.4.2 Two positive linear magnetic anomalies were also detected on the south side of Area 3, aligned northeast to southwest, which were continuations of the features detected in Area 1. These may represent soil-filled boundary features, such as early field boundaries. However, as noted above it is also possible that these represent land drains.
- 4.4.3 A number of other weak negative and positive linear features were detected on the north side of Area 3, aligned northwest to southeast, which may also represent former boundary features or land drains.
- 4.4.4 A parallel series of very weak positive linear magnetic anomalies was detected crossing the north side of Area 3, aligned east to west. These features were spaced on average c.5m apart, and probably represent the furrows of former ridge and furrow cultivation, of possible medieval or post-medieval date, similar to those detected in Area 1.
- 4.4.5 Several very weak curvilinear negative magnetic anomalies were detected on the north side and south side of Area 3, the nature of which is uncertain. The northern anomalies appeared to define a possible oval enclosure measuring approximately 30m in diameter, with internal features. The southern anomalies also appeared to define a circular feature measuring approximately 20m in diameter. Although the nature of these is uncertain, it is feasible that these features represent prehistoric enclosures, given the evidence for a late prehistoric settlement in Notton Park to the north.

4.5 AREA 4 (FIGURES 3-5)

- 4.5.1 Area 4 comprised a small rectangular field on the south side of the study area, immediately to the west of Area 1, and east of Area 3. Ridge and furrow earthworks were visible at the surface in this area, aligned east to west. The west side of this area could not be surveyed due to the presence of a horse shed.

4.5.2 Concentrations of small dipolar magnetic anomalies were detected over the whole of this area making identification of features difficult. However, a positive linear magnetic anomaly was detected crossing the centre of Area 4, aligned northeast to southwest, which is a continuation of a feature detected in Area 1 and Area 3, and is interpreted as a boundary feature or land drain.

4.6 DISCUSSION (FIGURE 5)

4.6.1 Agricultural features were detected over the majority of the survey areas, comprising evidence for former ridge and furrow cultivation and a series of land drains. A number of other regular linear features were detected crossing the site, which may represent former field boundaries of medieval or post-medieval date. Historic maps indicate former strip fields in this area, and it is possible that some of these features relate to similar field boundaries. However, this is unconfirmed based on the results of the geophysical surveys alone, and it is also possible that these represent post-medieval land drains.

4.6.2 Potentially the most interesting features detected were two possible enclosures in Area 3. Although these appeared indistinct in the survey data the presence of nearby prehistoric settlements gives weight to the suggestion that these are also early settlement features.

5 CONCLUSIONS

5.1 CONCLUSIONS

- 5.1.1 Geomagnetic surveys covering c.6ha of land in total have been conducted within four pastoral fields to the west of Royston, covering the proposed location of a new residential development.
- 5.1.2 Agricultural features were detected over the majority of the survey areas, comprising a series of possible early field boundaries, evidence for ridge and furrow cultivation, and a series of land drains.
- 5.1.3 The geomagnetic surveys detected also detected possible evidence for prehistoric activity in the form of two possible oval enclosures at the centre of the site. However these features appeared indistinct in the gradiometer data and the precise nature of these is uncertain.
- 5.1.4 No potential archaeological features were detected on the east side of the study area in an area where cropmarks had previously been identified on air photographs of the site.

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APPENDIX 1: TRACE PLOTS

APPENDIX 2: FIGURES

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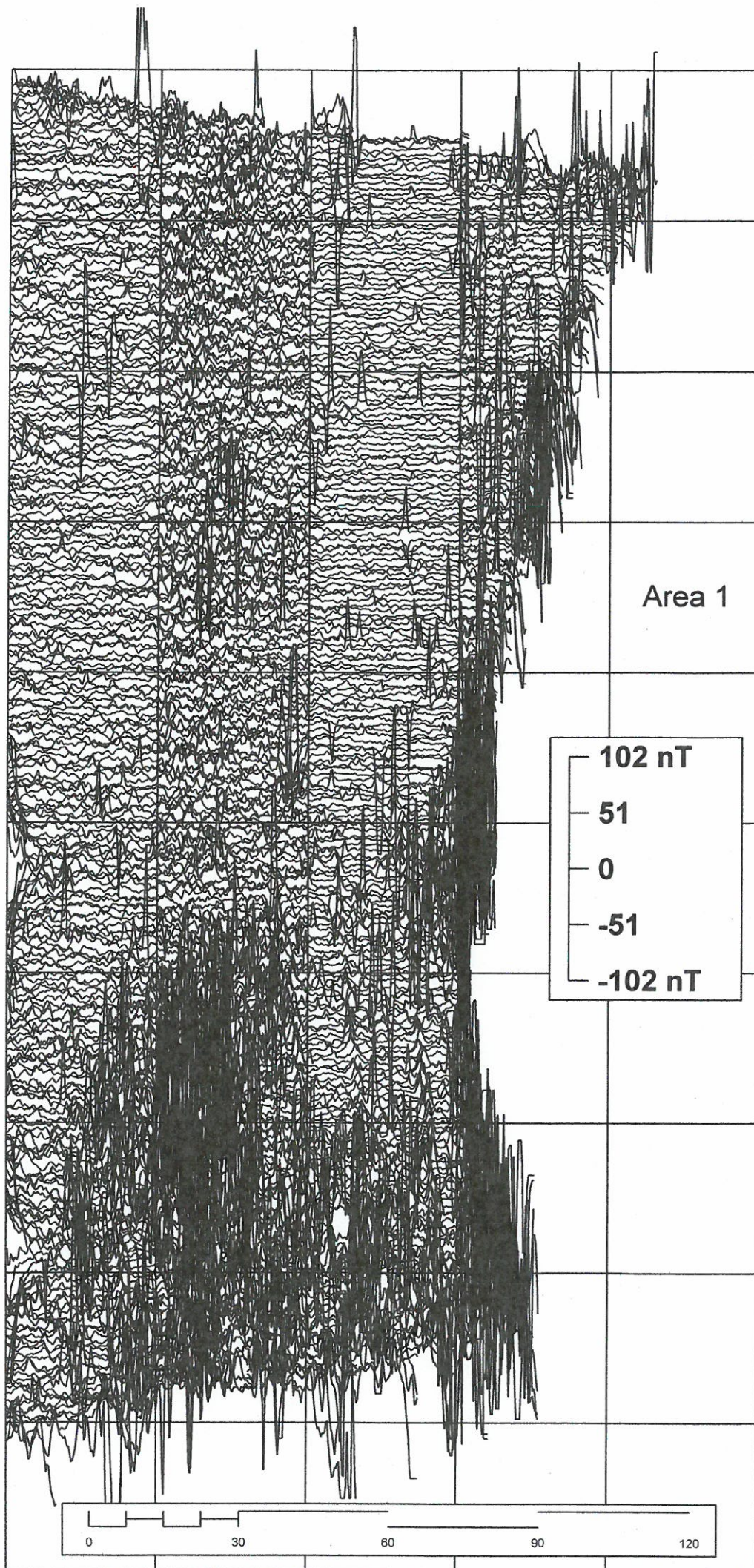
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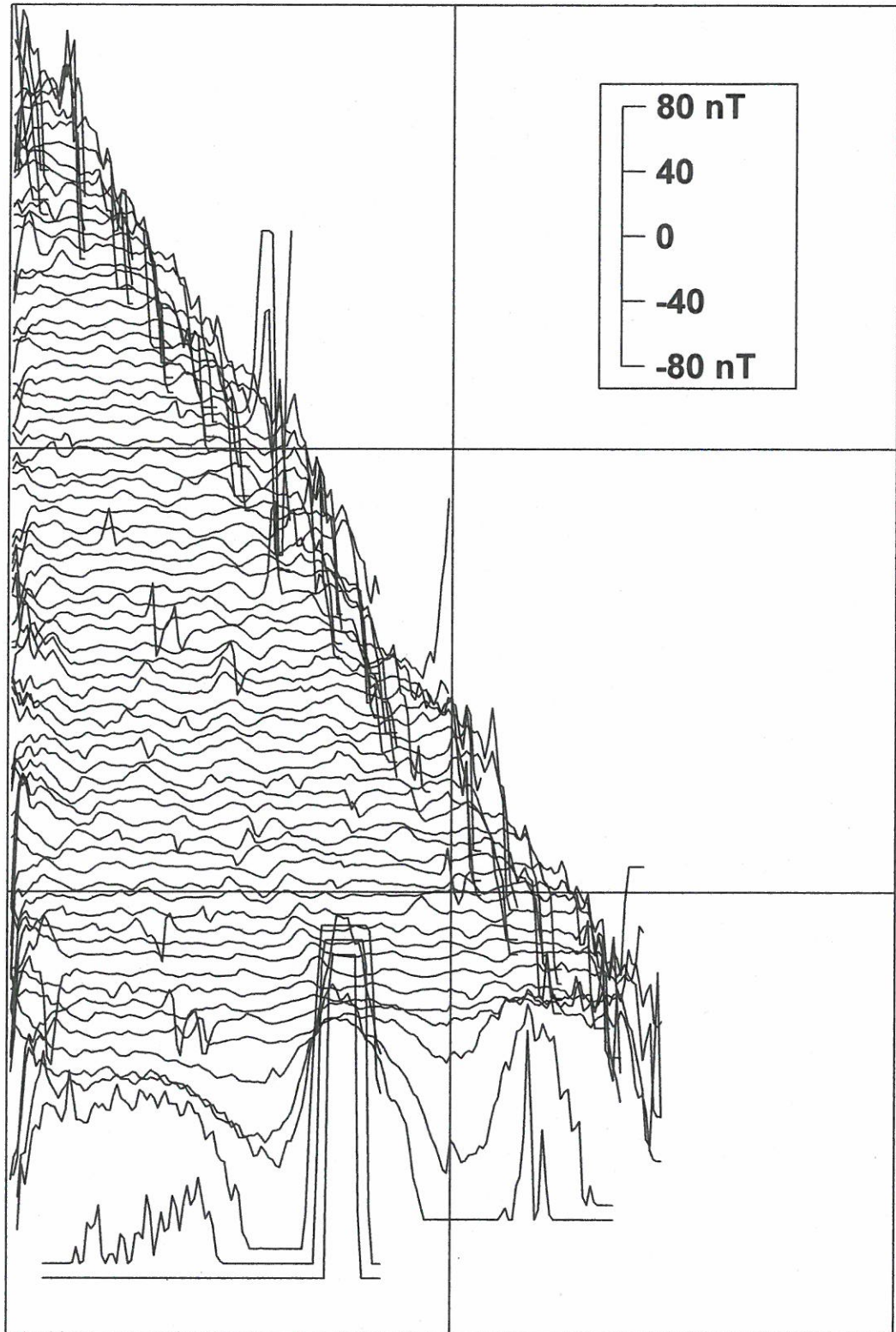
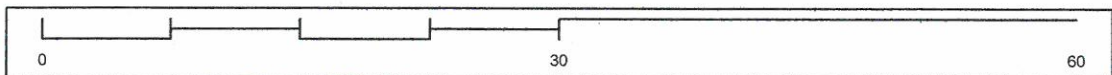
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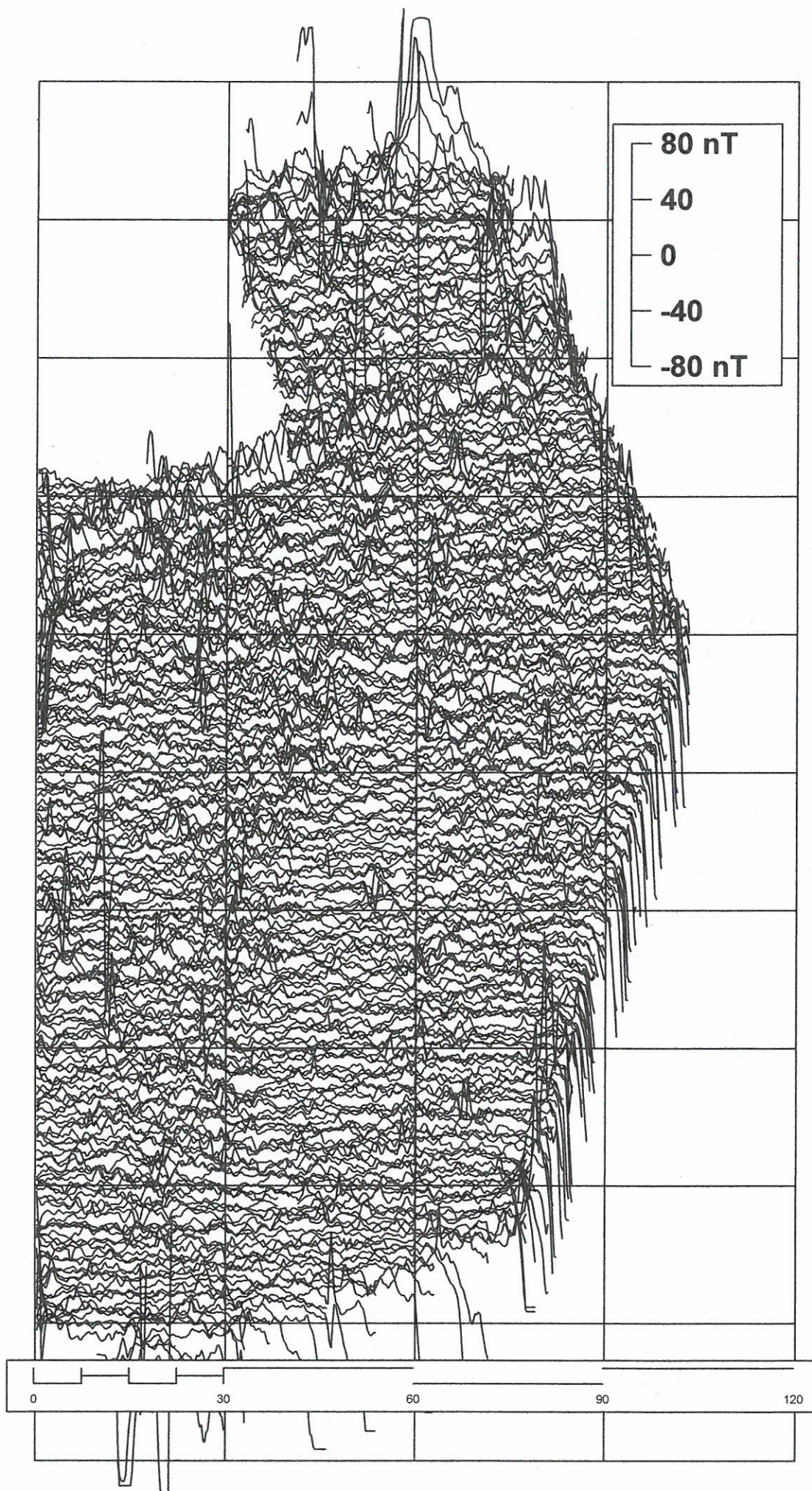
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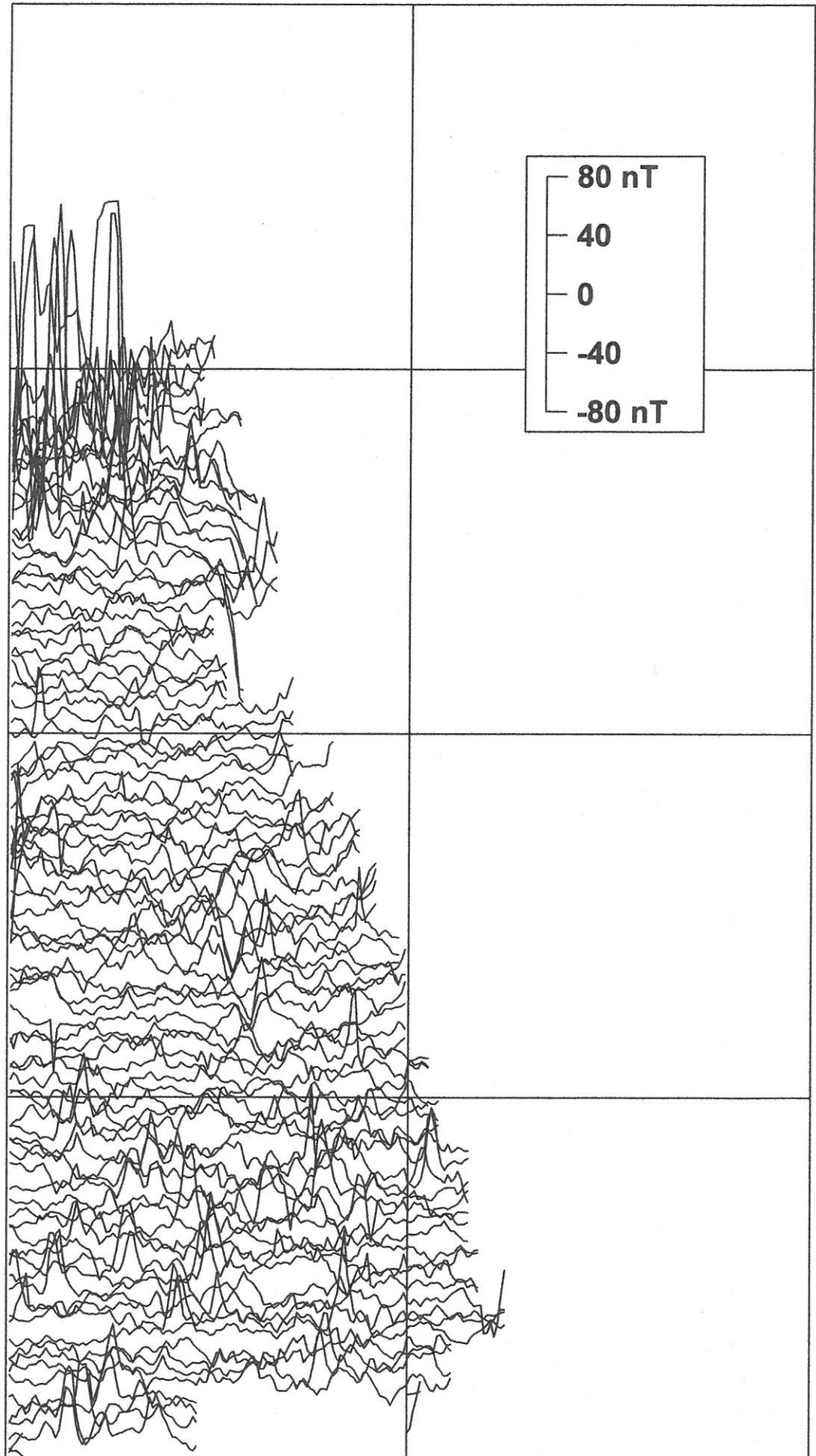
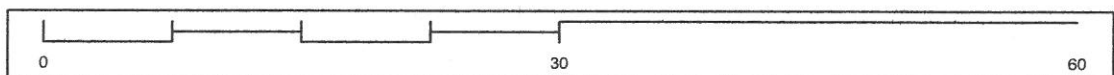
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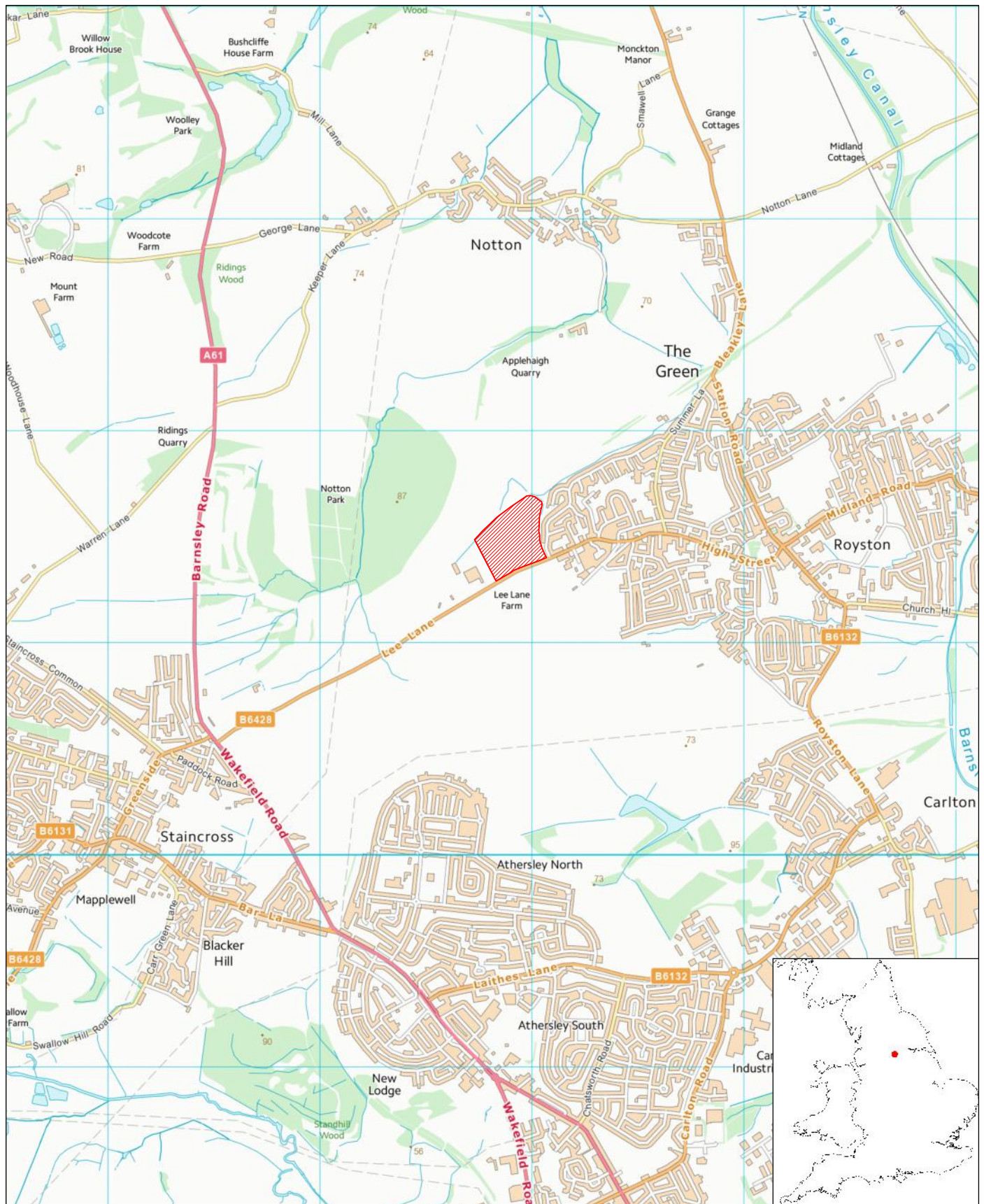
Area 3



Area 4



APPENDIX 2: FIGURES



 <p>Wardell Armstrong Archaeology 2014</p>	<p>PROJECT: Land at Lee Lane, Royston, Barnsley</p> <p>SCALE: 1:25,000 at A4</p> <p>REPORT No: CP10757</p> <p>CLIENT: Strategic Land Group</p> <p>DRAWN BY: AB</p> <p>DATE: January 2014</p> <p>FIGURE: 1</p>	<p>KEY:</p> <div data-bbox="925 1892 1133 1982">  Site location </div>	 <p>Reproduced by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown copyright. All rights reserved. Licence number 100019512</p>
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Figure 1: Site location.

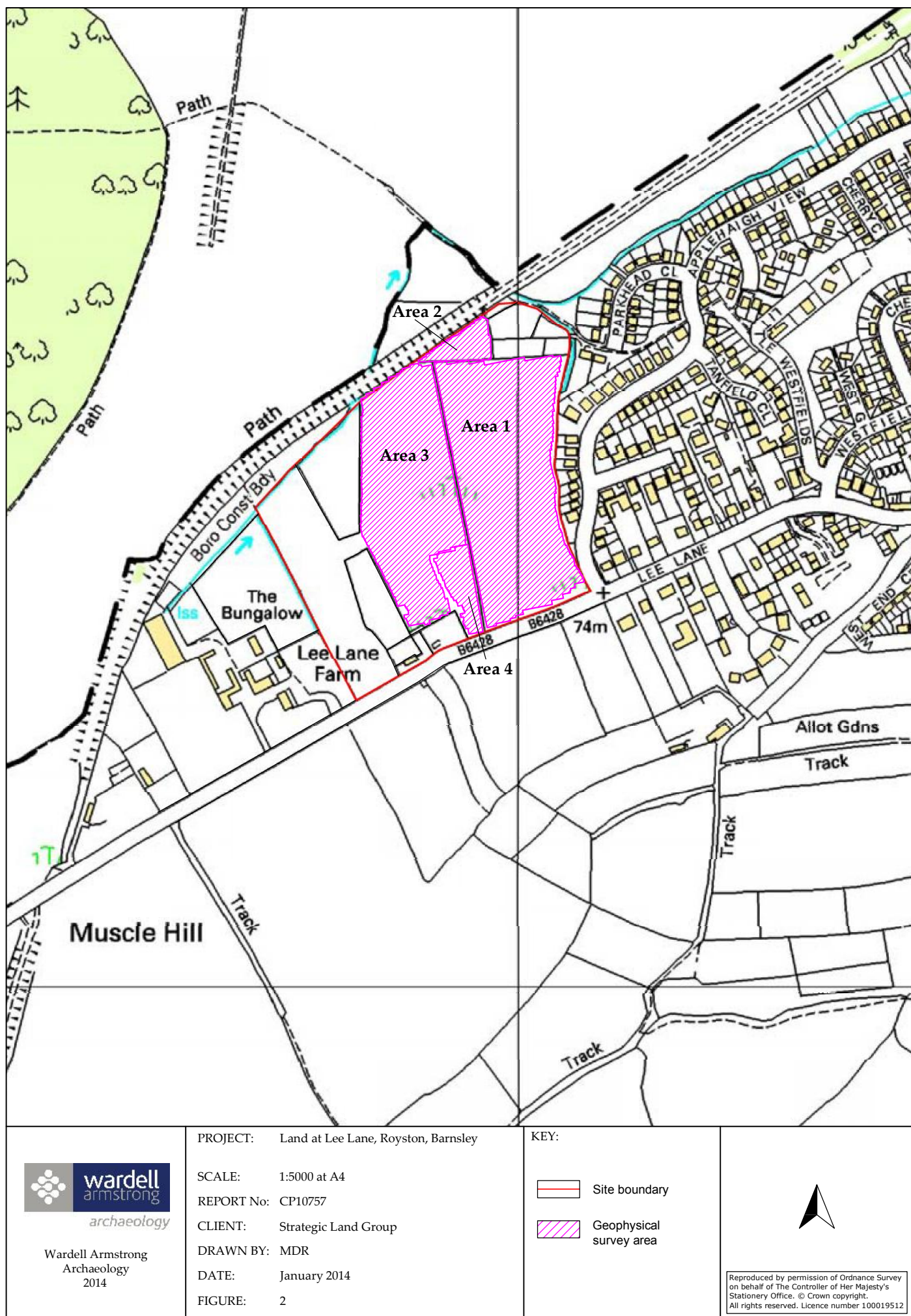


Figure 2: Location of the geophysical survey areas (Areas 1-4)

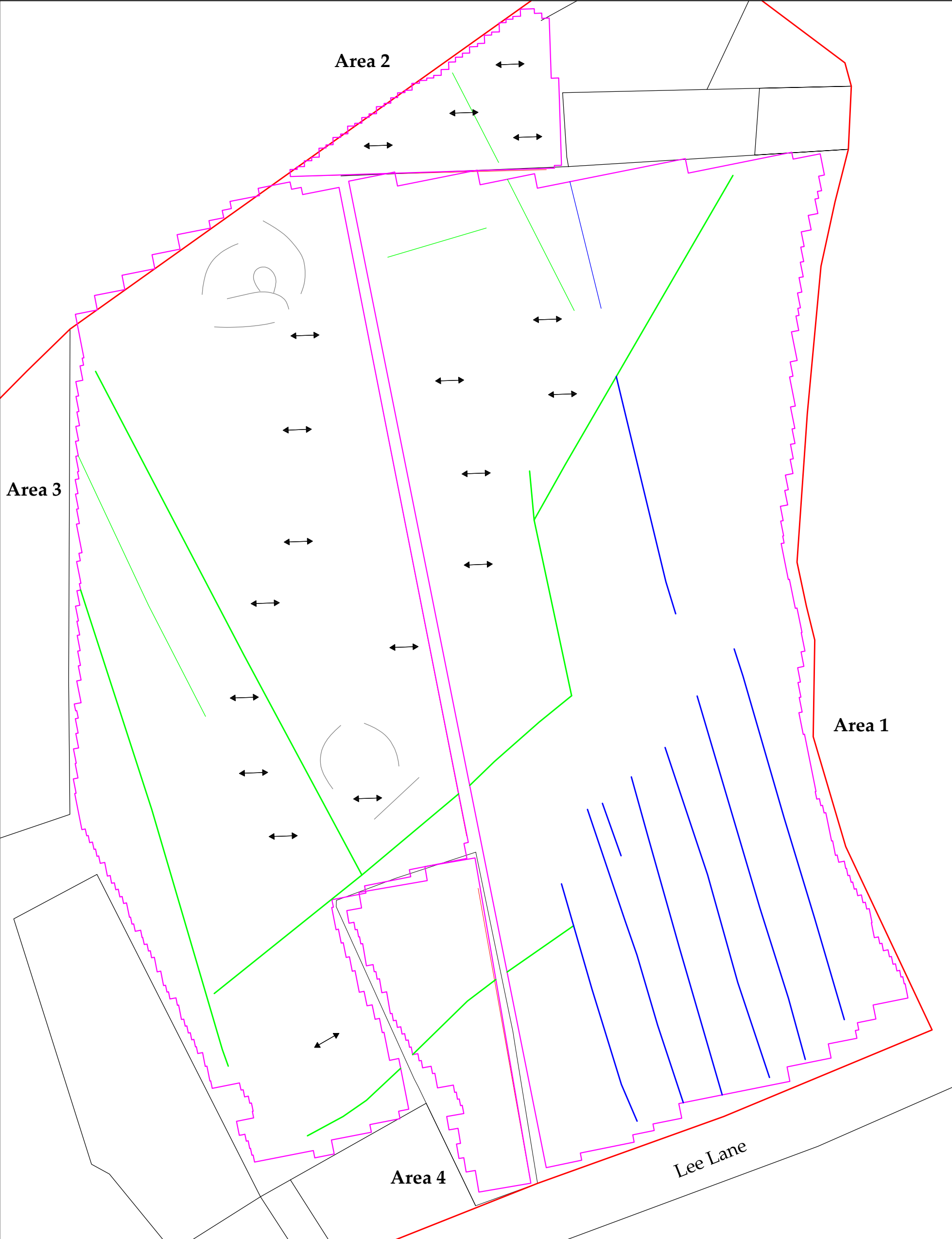


 <p>Wardell Armstrong Archaeology 2014</p>	<p>PROJECT: Land at Lee Lane, Royston, Barnsley</p> <p>SCALE: 1:1000 at A3</p> <p>REPORT No: CP10757</p> <p>CLIENT: Strategic Land Group</p> <p>DRAWN BY: MDR</p> <p>DATE: January 2014</p> <p>FIGURE: 3</p>	<p>KEY:</p> <div> Site outline</div> <div> Outline of geophysical survey area</div>	 <div>Reproduced by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationary Office. © Crown copyright. All rights reserved. Licence number 100019512.</div>
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Figure 3: Geophysical surveys



Figure 4: Geophysical interpretation



 Wardell Armstrong Archaeology 2014	PROJECT: Land at Lee Lane, Royston, Barnsley	KEY:  Site outline  Outline of geophysical survey area  Probable land drain  Direction ridge & furrow  Possible boundary feature/drain  Uncertain feature/archaeology?	 <small>Reproduced by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationary Office. © Crown copyright. All rights reserved. Licence number 100019512.</small>
	SCALE: 1:1000 at A3		
	REPORT No: CP10757		
	CLIENT: Strategic Land Group		
	DRAWN BY: MDR		
DATE: January 2014			
FIGURE: 5			

Figure 5: Archaeological interpretation

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