ARCHAEOLOGICAL EVALUATION REPORT:

GEOPHYSICAL SURVEY BY MAGNETOMETRY ON LAND OFF WOOD LANE, QUORN, LEICESTERSHIRE

Planning Reference: Pre-Planning
NGR: SK 5650 1585
AAL Site Code: QUWL 12
Oasis ID: allenarc1-135673

Report prepared for Landmark Planning Limited on behalf of RCSIPPS

By
Allen Archaeology Limited

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Cover image: View of the site taken from the north-east corner looking west

Executive Summary

- A geophysical survey by magnetometer was undertaken by Allen Archaeology Limited for Landmark Planning Limited on behalf of RCSIPPS on land off Wood Lane, Quorn in Leicestershire.

- The survey has revealed evidence of archaeological activity, almost certainly relating to the WW2 prisoner of war camp and associated military base that was in existence on the site. These remains include tracks, and possibly services, as well as responses associated with earthworks that were observed during the survey.

- A number of dipolar responses with some examples highlighted as yellow circles on the interpretative plot, were detected across the survey area. These are likely to be associated with ferrous waste or highly fired material within the ploughsoil.

- The magnetometer survey has shown that there is considerable magnetic disturbance across the site, the majority of which is associated with the WW2 prisoner of war camp and military base. The previous desk-based assessment has indicated that the site probably lies within the environs of a former Roman town; although the survey has not identified any elements associated with this. It should be noted however that the magnetic noise generated by the WW2 remains may have masked earlier deposits.

1.0 Introduction

1.1 A geophysical survey by magnetometer was undertaken by Allen Archaeology Limited on land to the west of Wood Lane and to the south of Northage Close. The works were commissioned by Landmark Planning Limited on behalf of RCSIPPS.

1.2 The site works and reporting conform to current national guidelines, as set out in '*Geophysical Survey in Archaeological Field Evaluation*' (English Heritage 2008), '*The Use of Geophysical Techniques in Archaeological Evaluations*' (IFA Paper 6) and the Institute for Archaeologists '*Standard and guidance for archaeological geophysical survey*' (IfA 2011).

1.3 The site is archaeologically sensitive, lying in an area of archaeological interest and potential.

2.0 Site Location and Description

2.1 Quorn is located approximately 12km to the north of the centre of Leicester, and 4km southeast of Loughborough in the administrative district of Charnwood Borough Council. The proposed development site itself (hereafter referred to as 'the site') is c.1.0 hectares in area and is centred 800m southeast of the historic core of Quorn, centred on NGR SK 5650 1585. The site is bordered by housing to the north, pasture to the west and woodland to the south, is generally flat and lies at c.96m OD.

2.2 The bedrock geology comprises Gunthorpe Member Mudstone, overlain by superficial sands, gravel, clay and silt (http://mapapps.bgs.ac.uk/geologyofbritain/ home.html).

3.0 Planning Background

3.1 The proposal comprises a residential development of a large area of land southeast of Quorn. An indicative proposal for 25 residential units with associated access and infrastructure has been produced for the site, although this is indicative and may be revised prior to application.

3.2 The purpose of the current works is to provide detailed information that will aid the determination of the nature and extent of the potential archaeological resource within the proposed development area.

3.3 The approach adopted is consistent with the guidelines that are set out in the National Planning Policy Framework (Department for Communities and Local Government 2012).

4.0 Archaeological and Historical Background

4.1 An archaeological desk-based assessment has been prepared for the scheme (AAL 2012), the findings of which are summarised here.

4.2 There has been surprisingly little prehistoric evidence found in the study area with the earliest evidence for archaeological activity being a number of later Iron Age brooches being discovered amongst material of Romano-British date.

4.3 There is extensive evidence from the Romano-British period which has led to suggestions of the presence of a Roman town in the area. Numerous findspots in the surrounding area attest to this activity all within 400m of the site. These consist of pottery, large numbers of coins, a lead die and a brooch. Particularly large quantities of finds have been found 120m to the north-northeast on the Millwood Estate where over 150 coins, numerous brooches, including later Iron Age examples, and remains of buildings were uncovered in the 1990s. 200m to the northeast, archaeological evaluation has revealed a Roman grave containing a juvenile and adult skeleton, along with two ditches. Further undated burials were noted in this area in the 1950s which could also date from the Roman period.

4.4 This evidence has led to the suggestion that the area once formed a small Roman town which was situated along the line of the Saltway, a road which ran through this area towards Six Hills to the northeast. The exact extent of the town is unclear but an area between Mountsorrel Quarry and Barrow has been postulated which covers the area of the development site. The exact course of the Saltway is also unclear but is postulated to run across the western end of the development.

4.5 The next evidence for recorded activity relates to a medieval deer park which lies to the southwest. This was known variously as Quorndon Park, Buddon Park or Barron Park and was known to have existed in 1273, with further references made to it in 1496 (LHER MLE814). It may have been centred on a moated medieval site 900m to the southwest and the extent of the park has largely been mapped using existing boundaries and cropmarks. The course of the north-eastern boundary of the park is unclear although it may relate to undated earthworks observed to the east of the site and may also relate to extant earthworks along the southern boundary of the site.

4.6 The site is situated to the southeast of the historic core of the town. Quorn is not mentioned in the Domesday Book of 1086 AD; first being documented in the 13th century, in the Lincoln Episcopal Register. The development site lies c.400m from the core of the village and there is only one Listed Building recorded in the study area; The Limes, 29 Leicester Road which is a late 18th century red brick house with Swithland slate roof, located 420m to the north of the site.

4.7 The site lies within the parkland of Quorndon House which is a Grade II Listed Building, which itself lies just outside the study area to the northwest. The house was built in 1820 and the park may also have been established at this time.

4.8 The site of a Second World War Prisoner of War Camp is recorded just to the north-west of the site. The camp was known initially as Camp 9, although this was later changed to Camp 183 (Thomas 2003, 4). The camp was of a standard type and would typically consist of water towers, offices, officer's mess, a canteen, guard rooms, barrack huts, ablution blocks, cell blocks, a camp reception station (medical facility/hospital), a cookhouse, dining rooms,

recreation rooms and living huts or tents (*ibid.*), although the exact layout and arrangement of these at Quorn is unclear. The camp was also used to station soldiers and in the run up to D-Day housed American paratroopers bound for northern France. After the war the camp continued to be used as military base housing soldiers until 1959 when part of the site was used for housing and part reverted back to parkland (http://www.quornmuseum.com/display.php?id=1014).

5.0 Methodology

5.0.1 The geophysical survey consisted of a detailed gradiometer survey of the area available for survey, totalling approximately one hectare. The eastern part of the site could not be surveyed due to woodland coverage.

5.0.2 The fieldwork was carried out by a team of two experienced geophysicists from AAL over a period of one working day. The site was divided into 30m by 30m grids, established on site with reference to local fixed boundaries and these were recorded in the surveyor's site notes.

5.0.3 The survey was undertaken using a Bartington Grad601-2 Dual Fluxgate Gradiometer with an onboard automatic DL601 data logger. This instrument is a highly stable magnetometer which utilises two vertically aligned fluxgates, one positioned 1m above the other. This arrangement is then duplicated and separated by a 1m cross bar. The 1m vertical spacing of the fluxgates provides for deeper anomaly detection capabilities than 0.5m spaced fluxgates. The dual arrangement allows for rapid assessment of the archaeological potential of the site. Data storage from the two fluxgate pairs is automatically combined into one file and stored using the onboard data logger.

5.0.4 Data collection was undertaken in a zigzag traverse pattern, using a sample interval of 0.25m and a traverse interval of 1m.

5.1 Summary of Survey Parameters

5.1.1 Fluxgate Magnetometer

Instrument:	Bartington Grad601-2 Dual Fluxgate Gradiometer
Sample interval:	0.25m
Traverse interval:	1.00m
Traverse separation:	1.00m
Traverse method:	Zigzag
Resolution:	0.1 nT
Processing software:	ArchaeoSurveyor 2.5
Surface conditions:	Pasture, Trees, Earthworks
Area surveyed:	1.0 ha
Date surveyed:	Tuesday 9th October 2012
Surveyor:	Robert Evershed
Survey assistants:	Iain Pringle
Data interpretation:	Robert Evershed and Mark Allen

5.2 Data Collection and Processing

5.2.1 The grids were marked out using tapes from the northeast corner of the site. The collection of magnetic data using a north – south traverse pattern is preferable for a magnetic survey, as enhancements to the magnetic field caused by buried features is mapped increasingly stronger the closer the traverse direction can get to a magnetic north – south direction (Breiner 1999). On this occasion magnetic data was collected on the preferred alignment due to the orientation of the survey grids. Data was collected by making successive parallel traverses across each grid in a zigzag pattern. Several key points of the survey grids were tied in to known/fixed features.

5.2.2 The data collected from the survey has been analysed using the current version of ArchaeoSurveyor 2.5. The resulting data set plots are presented with positive nT/m values and high resistance as black and negative nT/m values and low resistance as white.

The data sets have been subjected to processing using the following filters:

- De-stripe (also known as Zero Mean Traverse or ZMT)
- Clipping

5.2.3 The de-stripe process is used to equalise underlying differences between grids or traverses. Differences are most often caused by directional effects inherent to magnetic surveying instruments, instrument drift, instrument orientation (for example off-axis surveying or heading errors) and delays between surveying adjacent grids. The de-stripe process is used with care however as it can sometimes have an adverse effect on linear features that run parallel to the orientation of the process.

5.2.4 The clipping process is used to remove extreme data point values which can mask fine detail in the data set. Excluding these values allows the details to show through.

5.2.5 Plots of the data are presented in processed linear greyscale (smoothed) with any corrections to the measured values or filtering processes noted, and as separate simplified graphical interpretations of the main anomalies detected.

6.0 Magnetometer Survey Results (Figures 3 – 6)

6.1 For the purpose of interpreting the anomalies, the survey data has been processed to the values of -3 to 3 nT/m (Figure 3). This enhances faint anomalies that may otherwise not be noted in the data; however it also includes all ferrous and other magnetically enhanced material within the study area, making the resulting greyscale image particularly 'noisy'. The survey results revealed a number of anomalies across the data set, and these are discussed in turn and noted as single digit numbers in square brackets below and on Figure 3.

6.2 Anomaly [1] is an area of magnetic noise most likely produced by the metal fencing running along the northern border of the site. There may well be some waste and detritus associated with house building to the north that also contributes to the noise.

6.3 A large amorphous area of magnetic noise, [2], is evident in the eastern half of the survey. This is most probably associated with the WW2 prisoner of war camp and military base that was once located in the area. The noise is potentially a result of waste and detritus dating from and

after that period of time. There are also some earthworks within this area, comprising low curvilinear banks that most likely date from the same period. Any potential magnetic signature for these banks is hidden by the extraneous magnetic noise in this area.

6.4 Anomaly [3] reflects magnetic noise almost certainly produced by an earthwork bank running along the southern border of the site.

6.5 The positive linear anomalies [4] almost certainly correspond to tracks present during the use of the land as a military base and shown on an aerial photograph dated to 1945 (AAL 2012, Figure 7). These produced a magnetic reading of up to 20nT/m.

6.6 Dipolar linear anomalies [5] are likely to be caused by service pipes relating to the former military base.

6.7 An amorphous positive magnetic anomaly was identified at the northwest corner of the survey, [6]. This appears to correlate with low earthworks at this location that were noted by the surveyors. These produced a magnetic reading of between 6-8 nT/m and were probably associated with the WW2 remains.

6.8 A number of dipolar responses were detected across the survey area with stronger examples shown as yellow circles on the Figure 3 interpretative plot. These are likely to reflect ferrous waste or highly fired material within the soil.

7.0 Discussion and Conclusions

7.1 The conditions proved relatively receptive to geophysical surveying, and this has identified evidence for anthropogenic activity across the study area. The results almost certainly portray remains of the WW2 prisoner of war camp and associated military base.

7.2 A number of positive linear anomalies reflect former tracks associated with the military base as shown on an aerial photograph reproduced within the archaeological desk-based assessment (AAL 2012, Figure 7).

7.3 A series of linear dipolar responses were also noted and these may relate to service pipes associated with the military base.

7.4 Across the site there are a number of earthworks, including banks and ditches acting as the southern boundary to the survey area, a curvilinear bank in the northwest corner of the site, and a further undulation on the eastern side, both of which likely date to the WW2 camp. The high level of magnetic noise in parts of the site has masked any potential responses from some of these earthworks however.

7.5 Scattered randomly throughout the site are a number of strong and weak dipolar responses. The characteristic dipole response of pairs of positive and negative ‘spikes’ suggests near-surface ferrous metal or other highly fired material.

7.6 The magnetometer survey has shown that there is considerable magnetic disturbance across the site, largely associated with the WW2 prisoner of war camp and military base. The previous desk-based assessment has indicated that the site probably lies within the environs of a former Roman town; however the survey has not identified any anomalies likely to be associated with

this period of activity. It should be noted however that the magnetic noise identified across much of the site may have masked the responses from any earlier features present on the site.

8.0 Effectiveness of Methodology

8.1 The survey has proved particularly appropriate for identifying and plotting remains associated with the former WW2 prisoner of war camp and military base; however due to the magnetic disturbance generated by this modern activity, it is has not been possible to discount the potential for earlier deposits of archaeological significance to be present on the site.

8.2 Magnetometry surveying was the prospection technique best suited to the identification of archaeological remains on the site however, as other techniques would have required justification and may have proved too time consuming or cost-prohibitive.

9.0 Acknowledgements

9.1 Allen Archaeology would like to thank Landmark Planning Limited and their client RCSIPPS for this commission.

10.0 References

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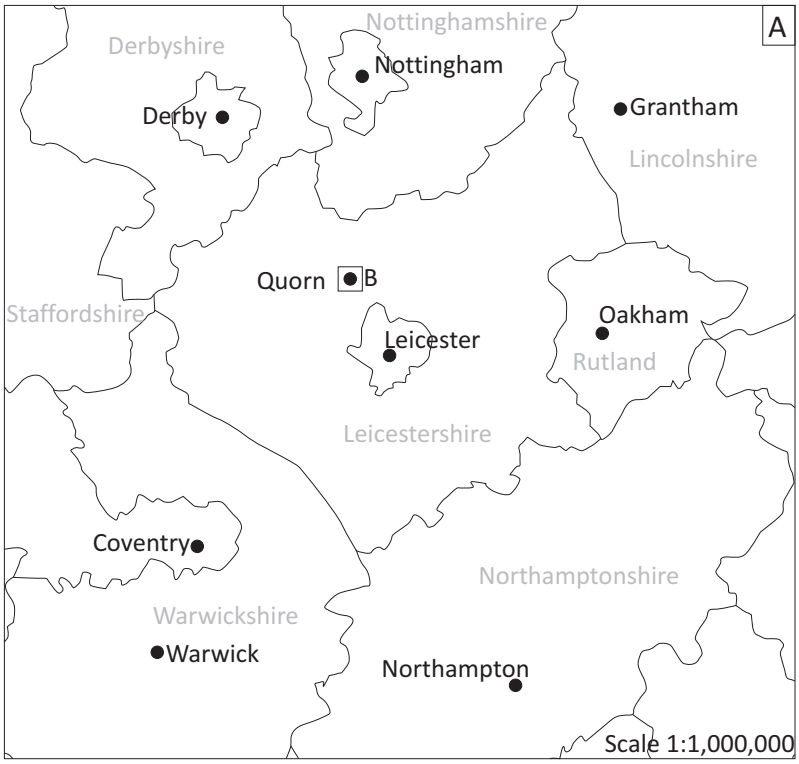

Figure 1: Site location with proposed development area in red

Site Code	QUWL 12
Scales	1:10,000,000 1:1,000,000 1:25,000 @ A4
Drawn by	R Eversheed
Date	23/10/12

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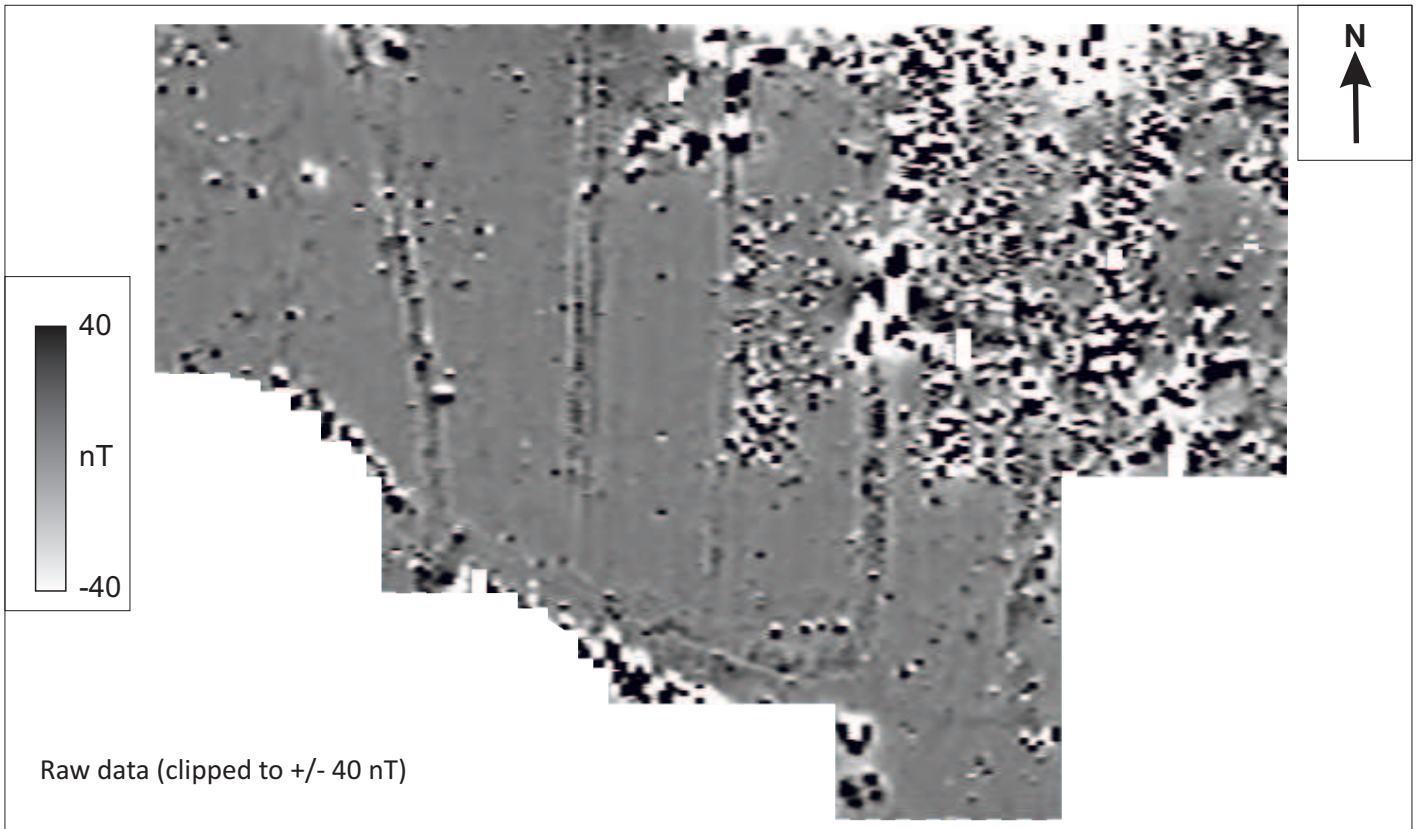
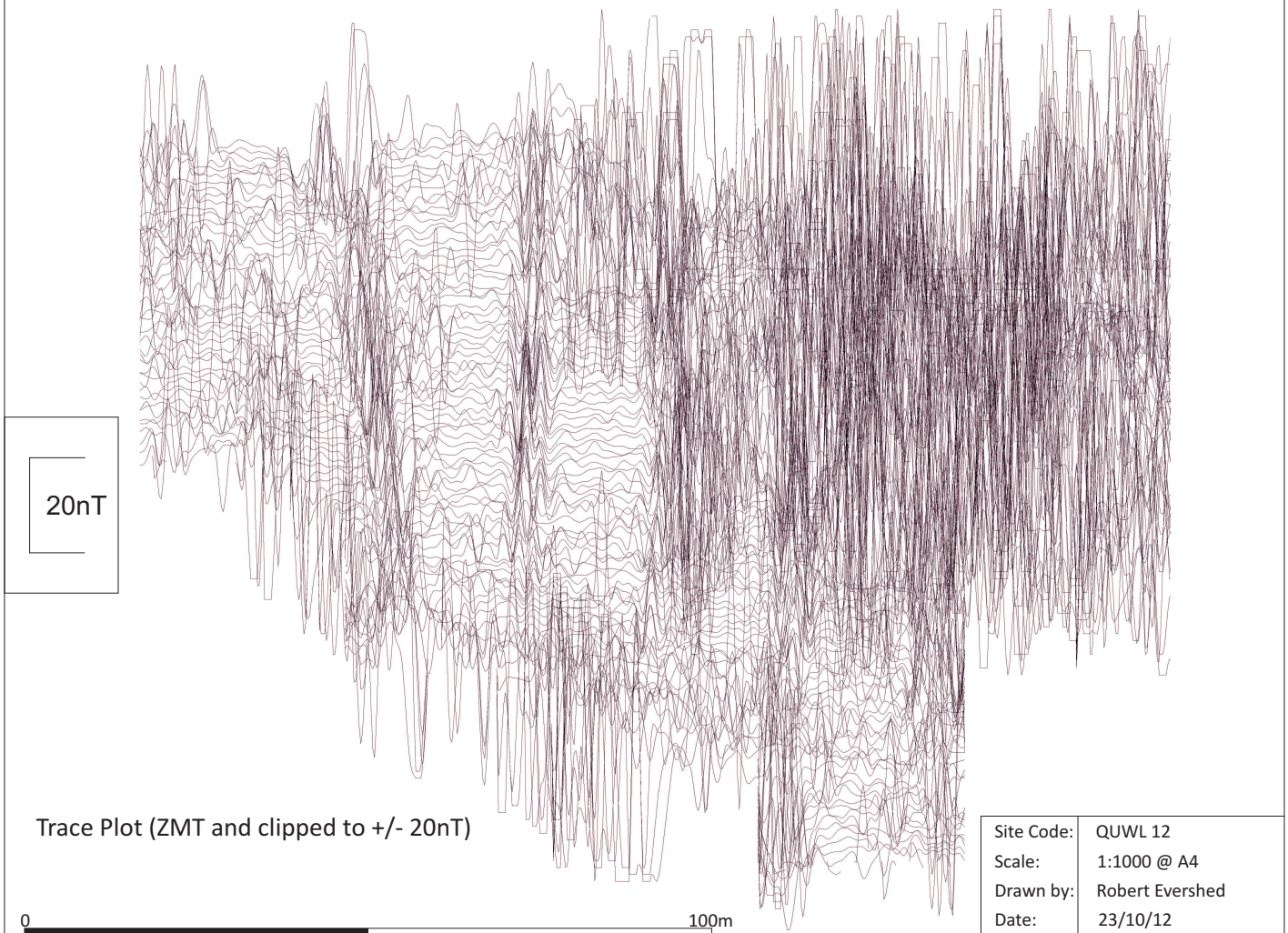


Raw data (clipped to +/- 40 nT)



Trace Plot (ZMT and clipped to +/- 20nT)

0 100m

Scale 1:1000

Site Code:	QUWL 12
Scale:	1:1000 @ A4
Drawn by:	Robert Evershed
Date:	23/10/12

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Figure 2: Greyscale raw data and processed trace plot

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Scale:	1:1000 @ A4
Drawn by:	Robert Evershed
Date:	23/10/12

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Figure 3: Processed greyscale plot of survey area with interpretation

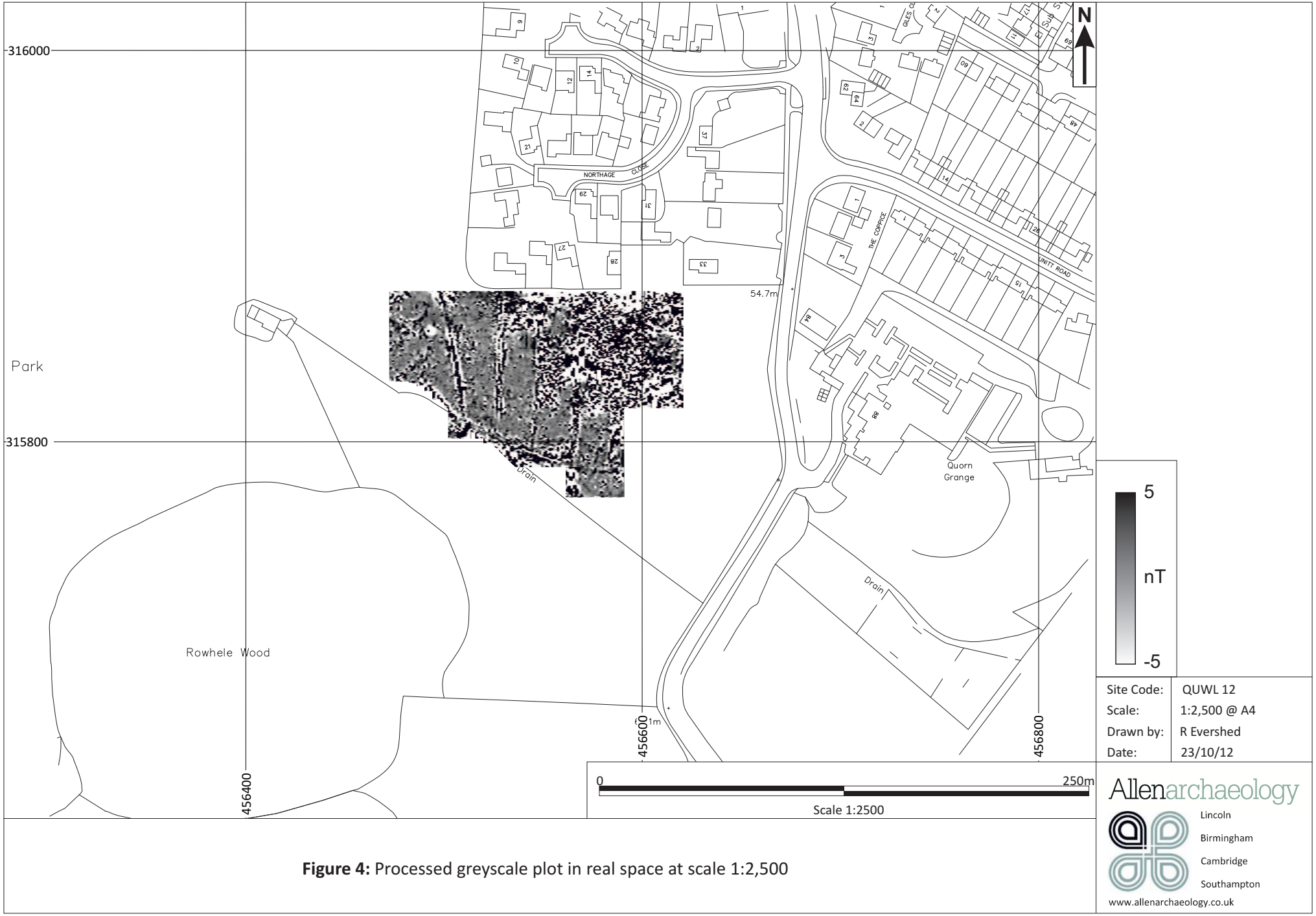

Figure 4: Processed greyscale plot in real space at scale 1:2,500

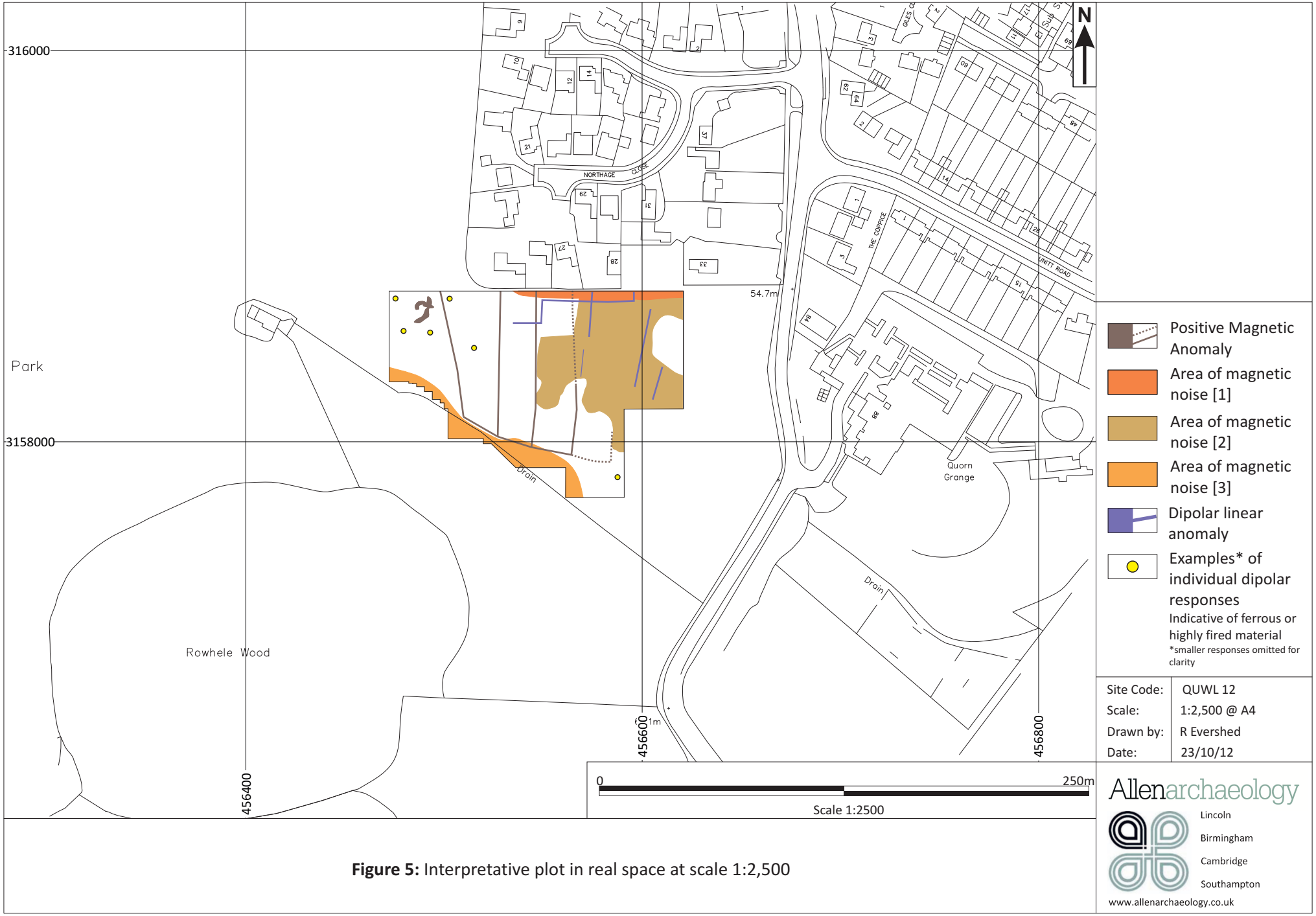

Figure 5: Interpretative plot in real space at scale 1:2,500

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