Report on the Fieldwork at the Fovant Badges and Chiselbury Camp, Wiltshire, July 2016 and August 2017

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SREP 6/2017

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Summary

This report presents the results of fieldwork at the Fovant Badges and Chiselbury Camp, near Fovant in Wiltshire, conducted in June and July 2016 and August 2017. It specifies the field methodology together with an interpretation discussion of the results of the fieldwork. Two seasons of fieldwork were conducted by the University of Southampton, in collaboration with the Fovant Badges Society and Solent University, to aid in the cutting of a new badge on the downland, and to investigate the archaeology of the Badges, the World War I camp in the valley, and the Iron Age hillfort on the top of the downs. Work comprised excavation and non-intrusive survey, mainly through the use of geophysics.

The preliminary results show that the new badge design was successfully cut into the downland. The geophysical survey prior to excavation indicated that no remains of any other badge impinged on the area, and excavation removed 0.15m-0.20m of colluvium before the badge was chalked. A number of 0.303 bullets were recovered from the turf, presumably originating from the WWI gun ranges in the valley. Excavation of one of the borrow pits revealed the cut of the pit. Remains of netting from the Second World War and a 0.303 cartridge were recovered.

Results of the geophysics were initially constrained by the crop regime in the valley, but results of survey in the cricket ground revealed possible remains from the WWI camp along the edge of the field. In 2017 the continuation of this survey, and the inclusion of fieldwalking and magnetic susceptibility survey, revealed part of the plan of the WWI camp, including the presence of structural remains, drainage features, and other parts of the camp infrastructure. In addition the survey revealed possible practice trenches located to the south of the camp buildings.

The survey of the Iron Age hillfort revealed features possibly of Late Bronze Age, Iron Age and modern origin, showing that a number of ditch features possibly pre-dated the construction of the Iron Age hillfort.

1. Introduction

Between the 15th June and 28th July 2016 and 31st July and 18th August 2017, fieldwork was conducted at the Fovant Badges and Chiselbury Camp, close to the village of Fovant in Wiltshire (Fig. 1). These formed two seasons of work undertaken as part of a collaboration with the Fovant Badges Society and Solent University to assist in the cutting of a new badge on the downs, and to investigate the nature of the archaeology of the Badges, the WWI camp in the valley, and the Iron Age hillfort on top of the downland. The fieldwork was conducted by members of the Fovant Badges Society, staff and students from the Department of Archaeology at the University of Southampton, and students from Solent University. In addition teams of volunteers from Fovant, and armed forces and charitable organisations were also involved. The fieldwork resulted in the completion of cutting and chalking of the new badge, excavation of part of one of the borrow pits between the London

Rifle Brigade badge and the Wiltshire regiment badge, and the geophysical survey of Chiselbury Camp and the cricket ground close to East Farm. Due to the crop regime in July of 2016, none of the arable fields around East Farm, where the WWI camp was located, could be surveyed. However, work on the fields was conducted in 2017, including magnetometer survey and magnetic susceptibility survey in the fields, and fieldwalking of part of the fields also.

1.1 Location of the Fovant Badges and Chiselbury Camp and their Setting

The Fovant Badges and Chiselbury Camp are located on the northward-facing scarp slope of Fovant Down, some 2km to the south of the village of Fovant (Fig. 1), in Wiltshire (SU 0161 2822).

Figure 1 Location of Fovant, Wiltshire

The Fovant Badges are located on the north-west and north facing scarp slope of the Fovant Down, one part of an escarpment of downland rising to the south of the River Nadder and running from west to east, forming the West Wiltshire Downs. The site is located within the Cranborne Chase and West Wiltshire Downs Area of Outstanding Natural Beauty (AONB). The downs are marked by several archaeological sites in the vicinity, and quarrying of the natural chalk has occurred in historical times immediately downslope of the Badges. The escarpment that the Badges are cut into slopes steeply down to the Nadder valley, with a gradient approaching 30° from the vertical, leading to erosion of the chalk from the surrounding downland and from the Badges themselves. The terrain is unimproved pasture used for grazing cattle. The grass vegetation has a tendency to encroach on the chalk cut features, and fencing has been placed around the Badges to protect them from damage by livestock.

A number of Iron Age features are present, particularly on the downland around the Fovant Badges. An Iron Age sword and scabbard (MWI5752) were found some 500m to the south of the Badges on the oxdrove to the west of Chiselbury Camp. A large enclosed settlement (MWI5750) is located on Fifield Down East. In addition the area of the Downs is covered by a pattern of field systems. Chiselbury Camp (MWI5751) is located 200m to the east and south of the Fovant Badges, comprising the bank and ditch enclosure of a univallate hillfort with a sub-semicircular outwork to the south-east. Iron Age pottery and a lead spindle whorl were found outside of the hillfort. The hillfort is abutted to the north and south by cross dykes. The northern dyke cuts across the eastern side of the scheduled area for the Fovant Badges.

Some Roman finds are located across the study area. A Roman corn-grinding stone and pottery fragments (MWI5758) were found at Fir Hill, and three Romano-British graves (MWI 5757 were uncovered in Fovant, including greyware pottery and hobnails. Roman pottery, coins and a brooch (MWI5754) were found on Fifield Down. A Romano-British coin, spindle whorl and pottery fragments (MWI5753) were found at Chiselbury Camp. No evidence of activity in the Roman period is recorded within the scheduled area of the Fovant Badges.

Figure 2 Map showing the distribution of archaeological sites in the Sites and Monuments Record, and the air photographic interpretation for the area

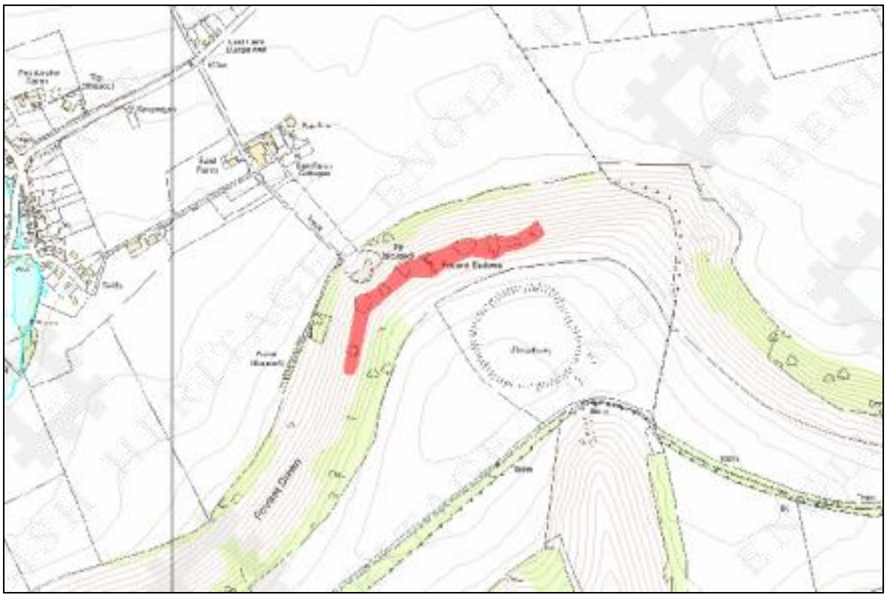


Figure 3 The scheduled area of the Fovant Badges

1.2 The Fovant Badges and WWI Camp

Within the scheduled area of the Badges a number of extant chalk-cut badges are visible to the naked eye, and in the historical photographic and air photographic imagery (Strutt and Barker 2014). The Badges visible in 2013 are as follows:

1. Royal Wiltshire Yeomanry Badge
2. YMCA Badge
3. 6th Battalion the City of London Regiment Badge
4. Australian Imperial Force Badge (now known as the Australian Commonwealth Military Forces Badge)
5. Royal Corps of Signals Badge
6. The Wiltshire Regiment Badge
7. The London Rifle Brigade Badge
8. The Post Office Rifles Badge
9. The Devonshire Regiment Badge

The air photographic imagery and photographs of the downland also indicate the full extent and location of the following badges now not visible on the ground:

1. Royal Army Medical Corps
2. 35th Training Reserve Battalion
3. 37th Training Reserve Battalion
4. 35th Training Reserve Battalion – Drums

5. 9th Royal Berkshire Regiment

Figure 4 **Map showing all of the Fovant Badges, with their positions rectified from the air photographic imagery, and the curtilage of Chiselbury Camp**

As part of the landscape of the Fovant Badges, the location and plan of the army barracks in the vicinity of the Badges is important. The barracks formed the main base for soldiers training, who cut the badges during the period of the First World War.

1.3 Chiselbury Camp

To the east of the Badges, a univallate Iron Age hillfort is visible (Fig. 4). The site provides a defended enclosure surrounded by a series of field systems. To date no archaeological investigation of the hillfort has been conducted, and as part of the proposed project the site would make an excellent focus for non-intrusive archaeological fieldwork, in particular geophysical survey.

1.4 The Aims of the 2016 Fieldwork

The aims of the fieldwork were to:

- Assist in the cutting and chalking of the new badge on the site.
- Assess the presence and extent of archaeological remains within the curtilage of the Fovant Badges, with a focus on the area of the new badge, and excavate part of one of the borrow pits used for the chalking of the original badges.
- Map the nature and extent of the WWI barracks located in the fields to the north of the Fovant Badges.
- To assess the potential for archaeological remains in the area pre-dating the Badges, in particular the nature of the univallate hillfort to the east of the Badges.

Further details of the objectives and rationale behind the fieldwork are summarised in the written scheme of investigation for the project (Strutt 2016).

1.5 Project Involvement

As part of the project there was a focus on community involvement with all aspects of the fieldwork. The aim was to involve members of the Fovant Badges Society and other members of the public in the area as part of an outreach initiative, involving them in archaeological fieldwork and the cutting of the new badge. To that end the fieldwork involved a number of different institutions and groups in the archaeological work, these included the Fovant Badges Society, Solent University and the University of Southampton, in addition to volunteers from the local community and further afield in Wiltshire, from the armed forces including the Royal Corp of Logistics and Royal Corps of Signals.

2. Fieldwork Methodology

2.1 The Geophysical Survey

For the geophysical surveys at the Fovant Badges and Chiselbury a variety of techniques were applied, including magnetometry, earth resistance and Ground Penetrating Radar (GPR). Results of these techniques are extremely dependent on the geology of the particular area, and whether the archaeological remains are derived from the same materials. Magnetometry is a passive technique which uses sensors to measure variations in the strength of the Earth's magnetic field in nanotesla (nT). Earth resistance is based on the passing of an electrical current through the soil and measuring the resistance to the current. GPR survey utilizes an electromagnetic radar wave propagated through the soil to search for changes in soil composition and structures, measuring the time in nanoseconds (ns) taken for the radar wave to be sent and the reflected wave to return.

As part of the survey these techniques were applied to facilitate a comparison of their effectiveness, particularly across the area of the proposed badge. The underlying chalk geology, and the cut nature of the badges have rarely been the subject of such investigation, the figure of the Cerne Abbas giant in Dorset and the Uffington white horse and Long Man of Wilmington being an exception (Castleden 1996). In addition the presence of possible pit and ditch features in the archaeological record at Chiselbury Camp, and more substantial archaeological remains associated with the WWI camp below the badges, together with the need for rapid survey over large areas, provided ideal conditions for magnetometry.

2.1.1 Techniques of Geophysical Survey: Magnetometry, Earth Resistance, and Ground Penetrating Radar (GPR)

Magnetic prospection of soils is based on the measurement of differences in magnitudes of the earth's magnetic field at points over a specific area (Fig. 5). The iron content of a soil provides the basis for its magnetic properties, with the presence of minerals such as magnetite, maghaemite and haematite iron oxides all affecting the magnetic properties of soils. Although variations in the earth's magnetic field which are associated with archaeological features are weak, especially considering the overall strength of the magnetic field of around 48 Teslas (48,000 nanoTesla, or nT). It follows that these instruments are very sensitive indeed.

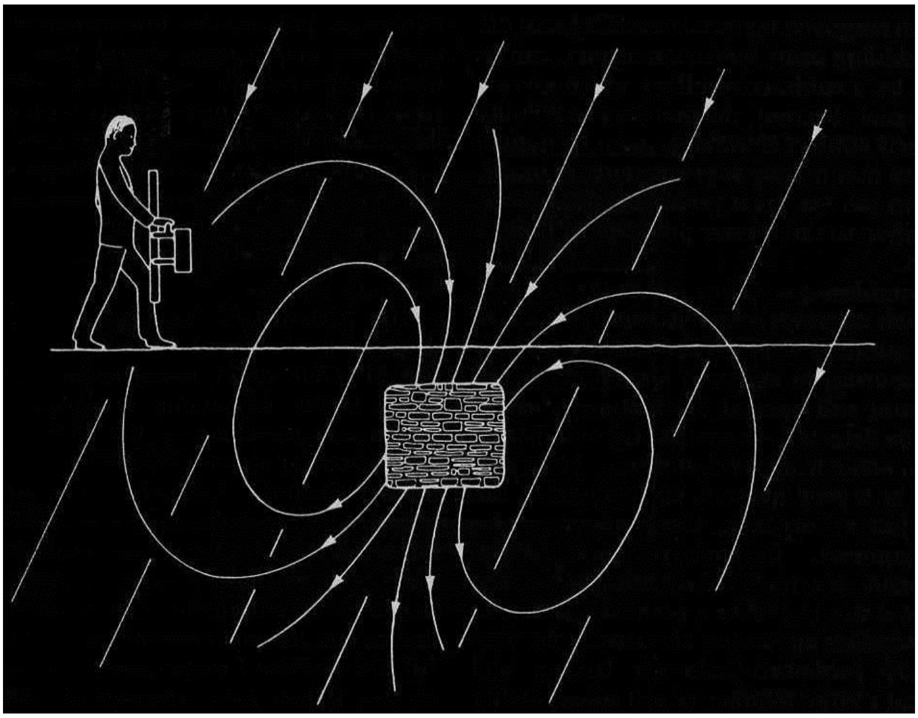


Figure 5 Schematic diagram indicating the use of a magnetometer over archaeological remains, and the local magnetic field of the buried objects in relation to the earth's magnetic field (from Clark 1996)

Three basic types of magnetometer are available to the archaeologist; proton magnetometers, fluxgate gradiometers, and alkali vapour magnetometers (also known as caesium magnetometers, or optically pumped magnetometers). Fluxgate instruments are based around a highly permeable nickel iron alloy core, which is magnetised by the earth's magnetic field, together with an alternating field applied via a primary winding. Due to the fluxgate's directional method of functioning, a single fluxgate cannot be utilised on its own, as it cannot be held at a constant angle to the earth's magnetic field. Gradiometers therefore have two fluxgates positioned vertically to one another on a rigid staff. This reduces the effects of instrument orientation on readings. Fluxgate gradiometers are sensitive to 0.5nT or below depending on the instrument. However, they can rarely detect features which are located deeper than 1m below the surface of the ground.

Archaeological features such as brick walls, hearths, kilns and disturbed building material will be represented in the results, as well as more ephemeral changes in soil, allowing location of foundation trenches, pits and ditches. Results are however extremely dependent on the geology of the particular area, and whether the archaeological remains are derived from the same materials. Around 1.5 hectares can be surveyed each day.

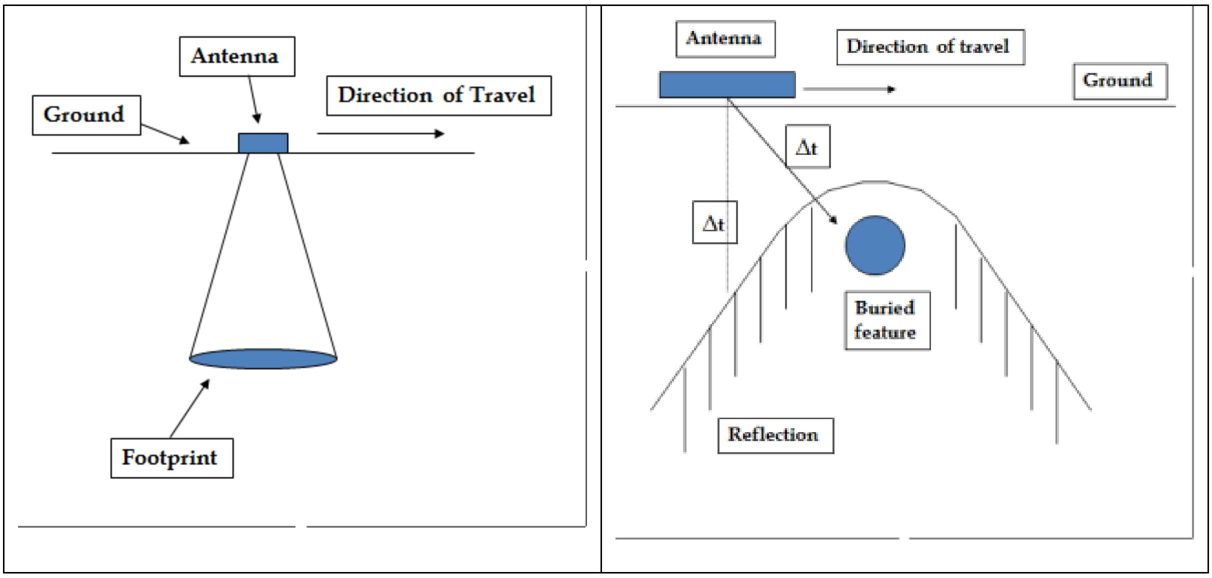


Figure 6 Diagram showing the footprint of a GPR radio signal and the response to a spherical object with the resulting hyperbola to demonstrate the propagation of the signal over distance and time (after Conyers and Goodman 1997)

Ground Penetrating Radar (GPR) uses an electromagnetic radar wave propagated through the soil to search for changes in soil composition and structures (Conyers and Goodman 1997, 23ff), measuring the time in nanoseconds (ns) taken for the radar wave to be sent and the reflected wave to return (Fig. 6). The variations in the Relative Dielectric Permittivity (RDP) in different deposits produces reflections in the profile data of the survey. Lower frequency survey antennae (50Mhz or 100Mhz) are generally used for geological survey, whereas higher frequency antennae (250Mhz, 500Mhz or 800Mhz) are utilised for archaeological surveys. The technique has been applied successfully on a range of archaeological sites, in particular over substantial urban archaeological remains (Gaffney et al. 2004, 207ff; Leckebusch 2001, 52ff; Nishimura and Goodman 2000; Neubauer et al. 2002).

Twin probe array earth resistance survey is based on the ability of sub-surface materials to conduct an electrical current passed through them. All materials will allow the passing of an electrical current through them to a greater or lesser extent. There are extreme cases of conductive and non-conductive material (Scollar et al 1990, 307), but differences in the structural and chemical make-up of soils mean that there are varying degrees of resistance to an electrical current (Clark 1996, 27). The technique is based on the passing of an electrical current from probes into the earth to measure variations in resistance over a survey area. Resistance is measured in ohms (Ω), whereas resistivity, the resistance in a given volume of earth, is measured in ohm-metres (Ωm). Four probes are generally utilised for electrical profiling (Gaffney et al. 1991, 2), two current and two potential probes. Survey can be undertaken using a number of different probe arrays; twin probe, Wenner, Double-Dipole, Schlumberger and Square arrays.

2.2 Magnetic Susceptibility

In addition to the geophysical techniques applied in 2016 and 2017, the 2017 was also characterised by the use of magnetic susceptibility as a way of assessing the distribution of ferrimagnetic material associated with the WWI camp. Magnetic susceptibility measures the presence of ferrous oxides in deposits, traditionally either through a field system utilising an induction loop, or by taking soil samples, drying and grinding them, and using a laboratory sensor to take the measurements. Increased magnetic susceptibility is usually found where increased ferrous oxides are present in the soil, usually in the form of magnetite or maghaemite, iron objects, or similar soils whose magnetic properties have been altered through human activity. The induction loop sensor field method is relatively time-consuming in relation to magnetometry. However, the lower survey resolution (measurements being taken at 10m intervals rather than 0.25m intervals) means that this method provides an excellent tool for prospecting over a large area. The nature of possible deposits at the WWI camp at Fovant made this a useful technique to apply.

2.3 Fieldwalking

While the geophysical methods outlined in this section provide excellent possibilities in terms of locating and evaluating the nature of archaeological remains, there are limits to the methods in terms of understanding possible chronology or types of materials associated with the results of such surveys. Thus the 2017 field season, where work was conducted over arable fields, also included fieldwalking as part of the survey methodology.

Fieldwalking is conducted in a systematic fashion, with collection of any finds associated with the archaeology of an area being collected, including pottery, CBM, flint, glass, metal finds and so forth. A unit of collection is generally used to ensure that finds can be mapped by presence, count or weight over a particular area. The area is walked by a survey team following stringent practices, and the results are recorded in the field and fnds, where needed, are collected and bagged. These results can then be mapped together with the results of other survey techniques to facilitate a more holistic interpretation of the archaeological remains at a site. The application of surface collection and fieldwalking was deemed useful for the WWI camp as preliminary reconnaissance of the area indicated substantial finds in the ploughsoil.

2.4 Survey Strategy

For the survey and excavations at the Fovant Badges, the WWI camp and Chiselbury Camp, a series of primary survey markers were established in the landscape using a Leica Viva GPS with Smartnet, utilising the Ordnance Survey coordinate system OSGB36. These primary stations were placed at secure locations in the valley and on the downs, and their locations were picked to ensure intervisibility between the points, and good visibility of the areas under investigation.

Survey during the major part of the field season was then undertaken using a Leica TS2 total station with Flexline (Fig. 7). Wooden survey pegs and spray markers were set out at 30m by 30m intervals, and the grids for all areas were georeferenced together with the other landscape features and breaks of slope recorded during the topographic survey of the site.

Figure 7 Survey being undertaken at Chiselbury Camp using the Leica TS2 Flexline total station (photo: D. Barker)

In 2017 the major part of the survey was conducted with a Leica GS16 GPS with Smartnet, allowing all locations to be mapped directly into the Ordnance Survey grid coordinate system. This instrument was utilised for gridding out all of the geophysical survey grids, and locating the points for measurement using the magnetic susceptibility instrument.

Figure 8 **Magnetic susceptiblity Survey being conducted using a Bartington MS2D meter (left) and the Leica GPS with Smartnet (photo: K. Strutt)**

Figure 9 **Earth resistance survey being carried out across the area for the proposed badge, using a Geoscan Research RM15 with twin probe array (photo: D. Barker)**

Earth resistance survey across the area of the proposed badge was carried out using a Geoscan Research RM15 resistance meter, with measurements taken at 0.5m intervals along traverses spaced 0.5m apart (Fig. 9). A twin probe array was used with the instrument, with the mobile probes spaced 0.5m apart. Data was downloaded into Geoplot 4.0 software. The data was despiked to remove any small-scale high range anomalies, and the grids were edgematched, to ensure that all of the background readings in the dataset were uniform. A high pass filter of the data was performed to remove any low frequency variations caused by the geology, and a low pass filter was also carried out to remove high frequency noise.

Figure 10 **GPR survey being conducted over the area of the proposed badge using a Sensors and Software Noggin Plus with Smartcart and 500MHz antenna (photo: D. Barker)**

The GPR survey across the area of the proposed badge was conducted with a Sensors and Software Noggin Plus system with 500Mhz antenna and Smartcart (Fig. 10). Data was collected along traverses spaced 0.5m apart in an east-west direction over the survey area. Data were processed using GPR Slice software. The different survey profiles were presented in their relative positions, and all profiles were then processed to remove background noise. A bandpass filter was applied to each profile to remove all high and low frequency readings. The presence of hyperbola in the data were utilised to produce an estimation of signal velocity through the deposits at each site, facilitating a calculation of the depth of different features across each site. Profiles were then converted into grid data and were sliced horizontally to produce a series of time slices through each survey area.

Figure 11 Magnetometer survey being conducted using a Bartington Instruments Grad 601 fluxgate gradiometer (photo: K. Strutt)

Figure 12 Earth resistance survey being undertaken at the cricket ground using a Geoscan Research RM15 with twin probe array (photo: K. Strutt)

At Chiselbury Camp and in the cricket ground around East Farm a magnetometer survey was conducted using a Bartington Instruments Grad 601 dual sensor fluxgate gradiometer (Figs 11 and 14). Measurements were taken at 0.25m intervals on 0.5m traverses, with data collected in zig-zag fashion. The survey data were processed using Geoplot 3.0 software. The processing of data was necessary to remove any effects produced by broad variations in geology, or small-scale localised changes in magnetism of material close to the present ground surface. Magnetometer data were despiked to remove any extreme magnetic values caused by metallic objects. A zero mean traverse function was then applied to remove any drift caused by changes in the magnetic field. A low pass filter was then applied to remove any high frequency readings, and results were then interpolated to 0.5m resolution across the traverses.

Figure 13 Earth resistance survey being undertaken at Chiselbury Camp using a Geoscan Research RM15 with twin probe array (photo: K. Strutt)

The earth resistance survey at Chiselbury Camp and the cricket ground was carried out using a Geoscan Research RM15 resistance meter, with measurements taken at 1.0m intervals along traverses spaced 1.0m apart (Figs 12 and 13). A twin probe array was used with the instrument, with the mobile probes spaced 0.5m apart. Data was downloaded into Geoplot 4.0 software. The data was despiked to remove any small-scale high range anomalies, and the grids were edgematched, to ensure that all of the background readings in the dataset were uniform. A high pass filter of the data was performed to remove any low frequency variations caused by the geology, and a low pass filter was also carried out to remove high frequency noise.

The data from each survey were exported as a series of bitmaps, and were imported into and georeferenced in a GIS, relating directly to other salient spatial information such as AutoCAD maps of the site and relevant air photographic imagery. An interpretation layer of archaeological and modern features was digitized deriving the nature of different anomalies in the survey data from their form, extent, size and other appropriate information. As no direct chronological information can be derived from the geophysical survey data, much of this had to be inferred from the morphology of anomalies, and the relationships between different features.

Figure 14 Magnetometry being conducted by the survey team in the field containing part of the WWI camp (photo: K. Strutt)

In addition the magnetic susceptibility survey was conducted using a Bartington Instruments MS-2 with field induction loop (Fig. 15). Measurements were taken at 10m intervals across the northern and central parts of the main field below the Fovant Badges, covering and extending the area surveyed using the magnetometry. Results of the survey were recorded in an Excel spreadsheet, and were imported into ArcGIS as XYZ files. The values were then represented as circles of increasing diameter based on the magnetic susceptibility reading.

Fieldwalking was conducted by all of the survey team (Fig. 16). The basic unit of fieldwalking was the 30m by 30m grids used for the geophysical survey. These were subdivided into areas measuring 10m from east to west and 5m from north to south. The team was organised with one person each walking a 5m strip in 10m sections within each 30m by 30m grid. Due to the considerable quantity of material a strategy was devised where all glass and pottery were collected, and were weighed by each 10m by 5m unit at the end of each grid. The count and weight were recorded for all fragments and sherds, and diagnostic pottery (rims, bases and handles) were kept and photographed. All other material (tile, brick, bone, metal) was recorded in terms of presence and absence using the 30m by 30m grid unit.

Figure 15 Magnetic susceptibility being carried out using the Bartington Instruments MS-2 (photo: K. Strutt)

Figure 16 Fieldwalking being undertaken in the field below the Fovant Badges (photo: K. Strutt)

Data were collated into an Access database, and tables were then imported into ArcGIS for the production of distribution images.

2.5 The Badge Cutting and Borrow Pit Excavation

Figure 17 The Fovant Badges prior to the cutting of the new badge (photo K. Strutt)

The cutting of the new badge was undertaken by a group of students and volunteers, based on a design by Rupert Williamson and a template constructed by Richard Bullard. Further information on the badge design and the creation of the new badge can be found elsewhere. However, in summary the design of the badge was prepared by Rupert Williamson with the assistance of the Fovant Badges Society. The badge was designed to take into account the dip slope of the downland, and the proposed location was placed between the Wiltshire Regiment and Devonshire Regiment badges, towards the western end of the Fovant Badges scheduled area (Strutt 2016).

Figure 18 **The badge marked out on the downland using plastic sheeting and plastic pegs (photo: K. Strutt)**

Figure 19 **The excavation team working on the bottom of the poppy design (photo: K. Strutt)**

The badge design was mapped onto a grid layout, and pegs and lines were established on the hillslope matching this grid. Finally the badge design was cut into white polythene sheeting by Richard Bullard at the final scale. These pieces of the design were then unfolded on the hillside and matched to the established grid (Fig. 18). The polythene sheeting was then pegged in place using green plastic pegs, prior to the 2016 Drumhead Service on 3rd July 2016. All of the components of the design were removed as the badge cutting proceeded, and were removed completely from the hillside at the end of the season, ensuring limited impact on the grassland.

Figure 20 Students and volunteers deturfing down to 0.15-0.20m below the surface of the downland (photo: K. Strutt)

Cutting of the new badge commenced on 4th July 2016, with a mixed team of students and volunteers on the hillside. Most of the cutting and chalking were conducted in the first fortnight of the season, up to 16th July, with some tidying of the design continuing throughout the summer. Access to the area was limited to a lower path running from the valley up to the badge, and an upper path coming along a track from the top of the downland. The same track was used as that used for the standard annual maintenance of the badges. To cut the design into the grassland, mattaocks and spades were used to deturf the line of the design (Figs 19 and 20). This removed the top turf and approximately 0.1m of the underlying soil and root system. These sections of turf were then laid along the base of the poppy design and numbering to provide a lip to contain the chalk rubble that was being used to define the badge. To this was added the remaining 0.05-0.1m of topsoil or colluvium from the cutting.

Figure 21 Timothy Sly and Richard Bullard filling one of the chalk bags for chalking of the design (photo: K. Strutt)

Figure 22 Oliver and Richard take a short break from filling bags with chalk (photo: K. Strutt)

The cut badge was then chalked to define the design and make is stand out from the surrounding landscape, similar to the way in which the original WWI badges were chalked. In this instance, rather than chalk being taken from the surrounding downland from borrow pits, chalk was transported to the top of the down for the purpose. To bring the chalk down the material was shovelled into rubble bags (Figs 21 and 22) and was carried or pulled downslope to the badge. The chalk rubble was then shovelled into the cutting to emphasise the line of the design. An archaeologist was present on the site at all times, working with the students and volunteers, and looking for evidence of any archaeology during the badge construction. As the cutting only removed c. 0.2m of topsoil from the line of the design, only colluvium was excavated in the area, and no evidence of archaeological remains or earlier badges was found. Details of small finds from the area are given in Section 3.

Figure 23 Drawing the plan and section of the borrow pit excavation (photo: D. Barker)

In addition to the cutting of the badge, a borrow pit situated between the Wiltshire Regiment badge and the London Rifle Brigade badge was also partly excavated. The borrow pit was located as a substantial hollow in the hillside, and the excavation area was established using a total station. Excavation was conducted by students and volunteers under the supervision of Dominic Barker. The area was quadranted, and deturfed using spades and mattocks. Mattocks and trowels were then used to excavate one of the quadrants by context. All finds were bagged by context. The excavation was photographed, and plan and section drawings undertaken (Fig. 23) at the end of the work, prior to backfilling of the trench and replacement of the turf.

3. Results of the Fieldwork

The nature of the 2016 and 2017 fieldwork meant that a number of very diverse activities were carried out during the season, centred either on the Fovant Badges, on the fields in the valley below the Badges, or at Chiselbury Camp. The results below are broken into three sections; the topographic control for the season, the results of the geophysical surveys, and the instrusive work through the cutting of the badge and the excavation of the borrow pit.

3.1 The Topographic Control Points

The use of the GPS with Smartnet to establish control points, and the use between these initial stations of total station survey, allowed a precise grid of survey markers to be established across the different survey areas. These included the locating of the geophysical survey areas on the Fovant Badges, Chiselbury Camp and the cricket ground, the excavation location over the borrow pit, and allowed the surveying in of the completed new badge. The principle markers have been left in the ground on the top of the downland, to facilitate the re-establishing of the survey grid at a later date for potential future work. Work in the norths to the east of East Farm was conducted using the Leica GPS with Smartnet. Due to the arable nature of this area, no permanent markers were left in the field, although the grid could be re-established using the permanent markers elsewhere.

3.2 The Geophysical Surveys

In total some 5.5 hectares of magnetometry was conducted in the season, together with 2.1 hectares of earth resistance and 0.2 hectares of GPR survey. The survey work was distributed between the area for the new badge, Chiselbury Camp and the cricket ground to the west of East Farm in the valley.

3.2.1 The Geophysical Survey on the Area for the New Badge

The earth resistance survey (Figs 20 and 21) and the GPR survey (Figs 22 and 23) across the area of the new badge were designed to detect the presence of remains of any other WWI badge cut into the chalk, and to ensure that the cutting of the badge did not interfere or damage any archaeological features present in the area. The badge itself was located using the results of a desk-based assessment on the area (Strutt and Barker 2014) to locate the presence of any possible overgrown badges. This study noted the presence of an old badge, that of the 35th Battalion the 'Drums' badge. Thus the site of the new badge was located to the north of the site of this old badge. While the presence of an archaeologist on site was deemed sufficient to ensure that any archaeology was recorded during the badge construction, the geophysical survey was conducted to ensure that no buried archaeological feature was affected by the badge construction, and to facilitate some research into the relative merits of geophysical survey over chalk-cut figures.

Figure 24 **Results of the earth resistance survey across the area of the proposed badge, with the badge design superimposed**

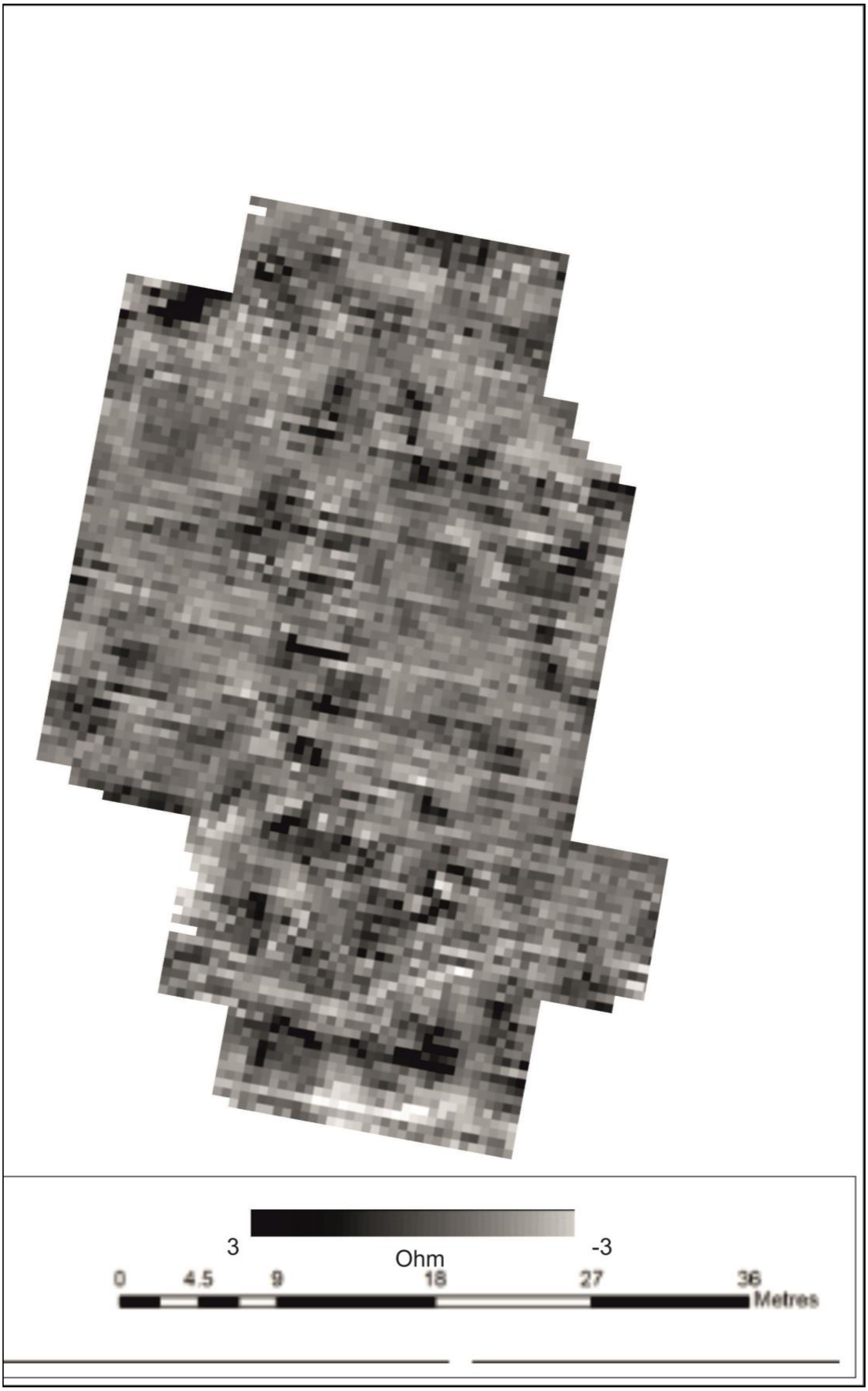


Figure 25 Results of the earth resistance survey across the area of the proposed badge

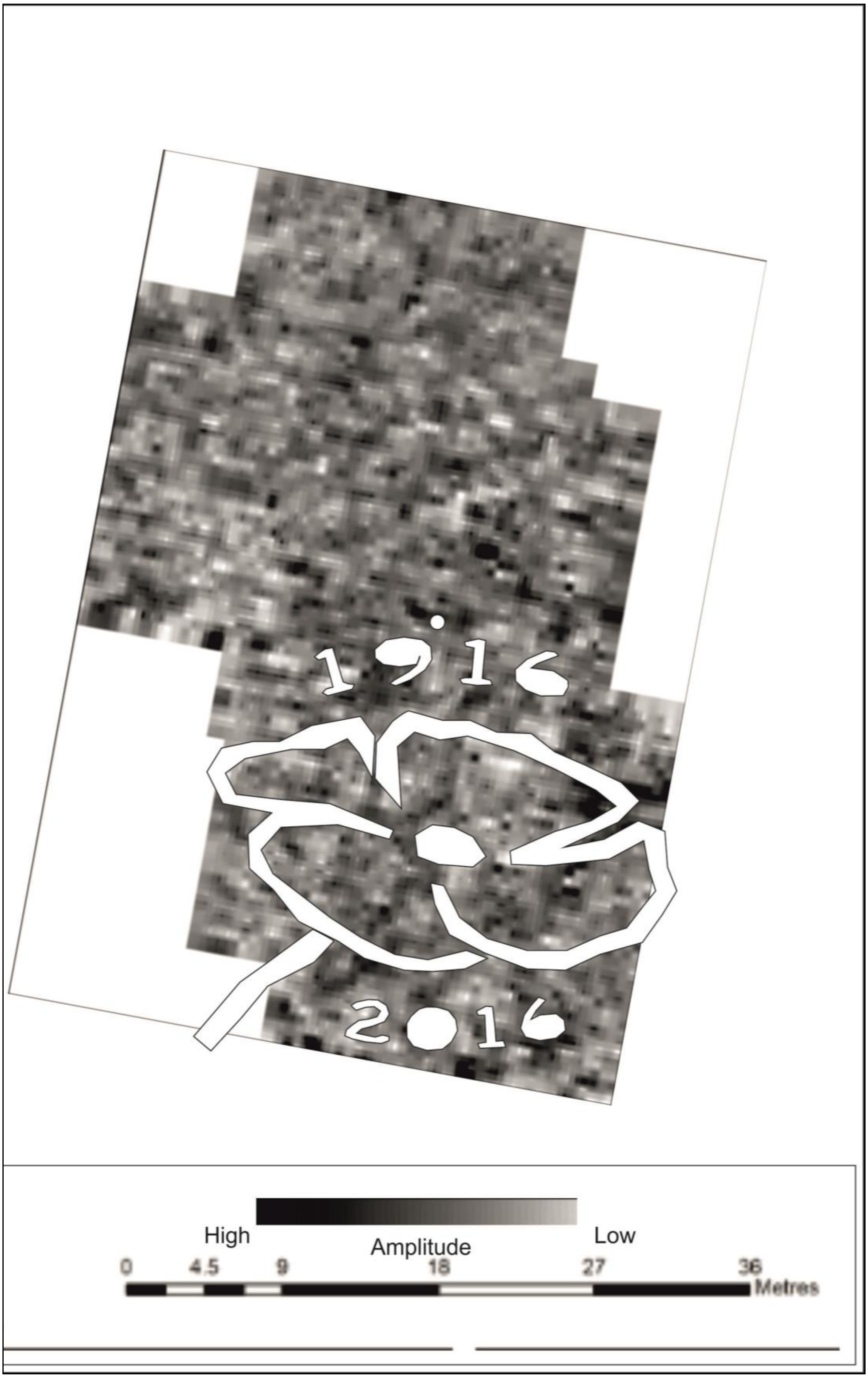


Figure 26 **Results of the GPR survey across the area of the proposed badge, with the badge design superimposed**

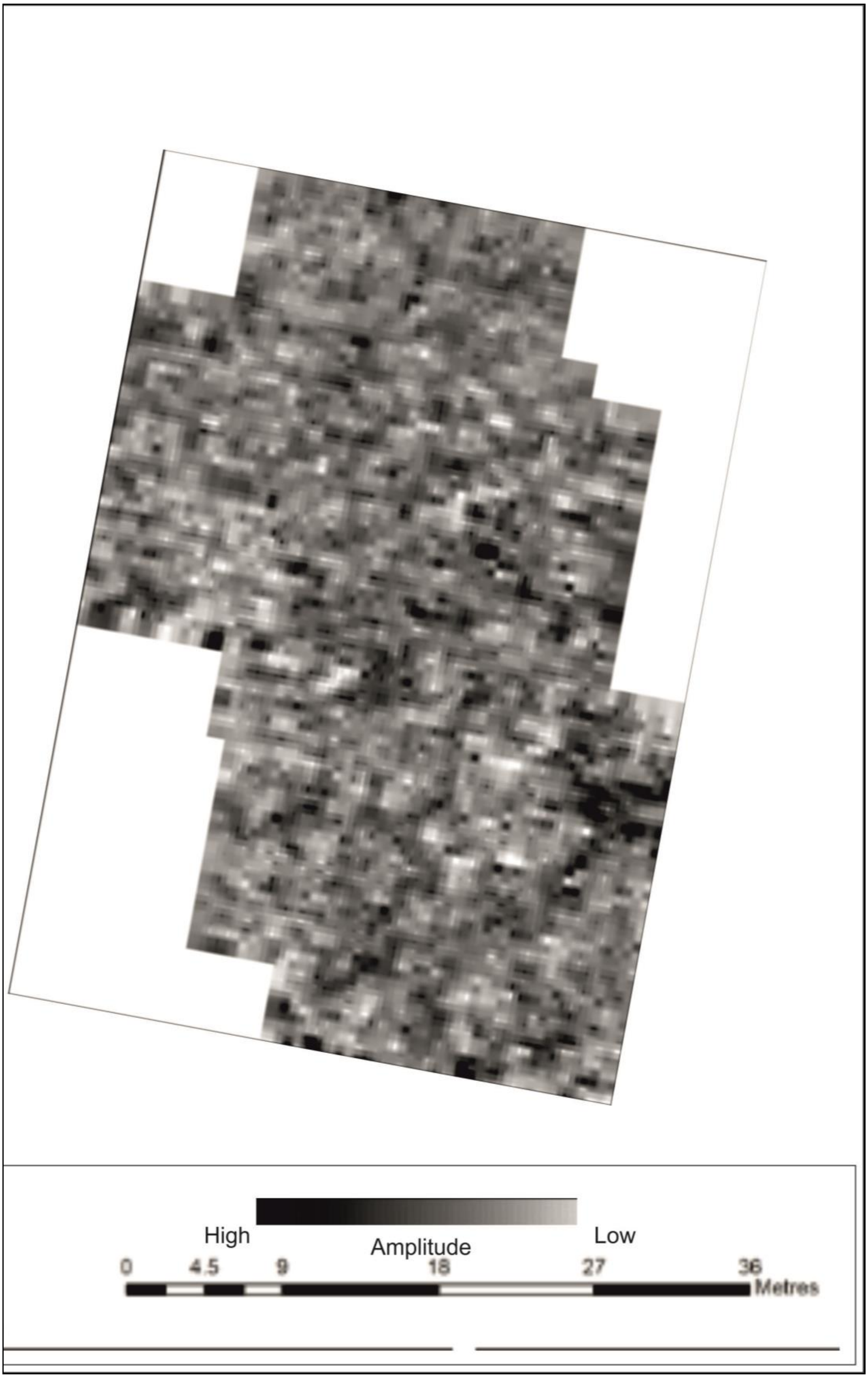


Figure 27 Results of the GPR survey across the area of the proposed badge

The survey results, particularly the earth resistance survey, indicate the presence of sheep tracks across the area. To the south of the badge design several high resistance discrete anomalies may also mark possible remains of figures from the old Drums insignia. However, the form of these is inconclusive. Other high resistance anomalies appear in the area of the new badge, but seems to represent variations in the natural chalk and colluvium rather than figures or parts of insignia. The GPR results only indicate variations in the colluvium and subsoil, with flint nodules showing as high amplitude anomalies. No evidence for the high resistance anomalies in the earth resistance survey are apparent.

3.2.2 The Geophysical Survey at Chiselbury Camp

3.2.2.1 The Magnetometry

The magnetometer survey at Chiselbury Camp (Figs 28 and 29) revealed a number of buried features. Within the curtilage of the hillfort, a series of negative linear anomalies run parallel with the extant bank of the monument, from the north-west quadrant **[m1.1]**, round to the north-east **[m1.2]** and **[m1.3]**, to the east **[m1.4]** and south-east **[m1.5]** to the south-west and west **[m1.6]** and **[m1.7]**. In total the feature runs for over 640m, encompassing some 3.1 hectares. The feature seems to represent later activity at the site, possibly a furrow ploughed into the chalk around the hillfort interior. Outside of this feature and closer to the extant hillfort bank a positive linear anomaly visible in sections of the survey seems to indicate a small inner ditch to the site. A section running for c. 130m and measuring c. 3m across **[m1.8]** and **[m1.9]** marks the western section of the ditch. A similar section runs for 80m along the northern section of the site **[m1.10]**, and a north-eastern section runs for 80m **[m1.11]**. The feature continues along the eastern side of the hillfort **[m1.12]**.

The northern part of the hillfort interior is covered with negative linear anomalies **[m1.13]** and **[m1.14]**, up to 114m in length and 4m apart, marking the furrows of narrow rig, mot probably Victorian ploughing of the interior of the hillfort. Traces of these anomalies grow fainter to the south **[m1.15]** and **[m1.16]** perhaps indicating greater plough damage from later farming activity.

The centre of the hillfort is marked by four substantial anomalies, all discrete, lozenge-shaped and dipolar **[m1.17]**, **[m1.18]**, **[m1.19]** and **[m1.20]**. All measure approximately 18m from east to west and 8m from north to south. These seem to mark possible post-medieval dewponds, matching depressions in the topography. These features have been noted in magnetometer surveys of other chalk downland sites e.g. West Pimperne Farm, Blandford, Dorset (Barker, 2015)

Other linear and discrete anomalies in the hillfort mark possible prehistoric features. A substantial curvilinear anomaly **[m1.21]** marks a ditch running for c. 60m enclosing part of the north-western section of the hillfort. A series of curvilinear and discrete positive anomalies **[m1.22]** mark pits and titches in the vicinity. A series of interconnected ditch features **[m1.23]** run across the north-western part of the site, and a linear anomaly **[m1.24]** runs from east to west over the area. A further ditch **[m1.25]** turns to the south, and a small enclosure some 12m across **[m1.26]** is located close to the bank of the hillfort. A large linear positive anomaly, marking a central ditch, runs from north to south through the monument **[m1.27]** for a distance of 104m, before turning **[m1.28]** and running for a further 64m to the south-west **[m1.29]**. This is crossed by a ditch feature **[m1.30]** running from north-west to south-east for a distance of 45m. Two linear anomalies to the east **[m1.31]** and **[m1.32]** mark part of a possible enclosure. The central part of the site is marked by a number of discrete positive anomalies **[m1.33]** and **[m1.34]**, and a scatter of discrete positive anomalies, marking possible pits, are visible in the eastern part of the site **[m1.35], [m1.36]** and **[m1.37]**.

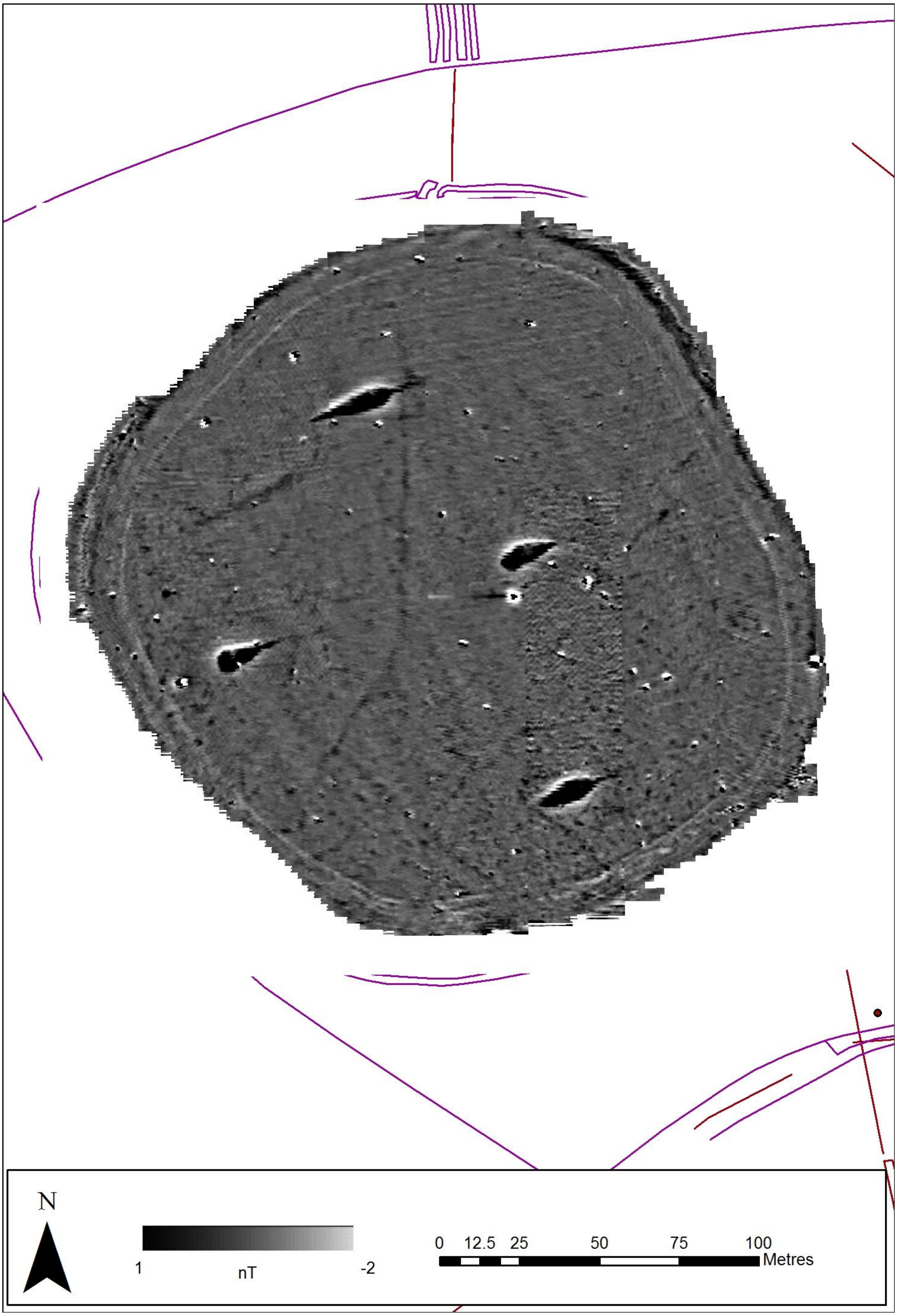


Figure 28 **Greyscale image of the results of the magnetometer survey at Chiselbury Camp**

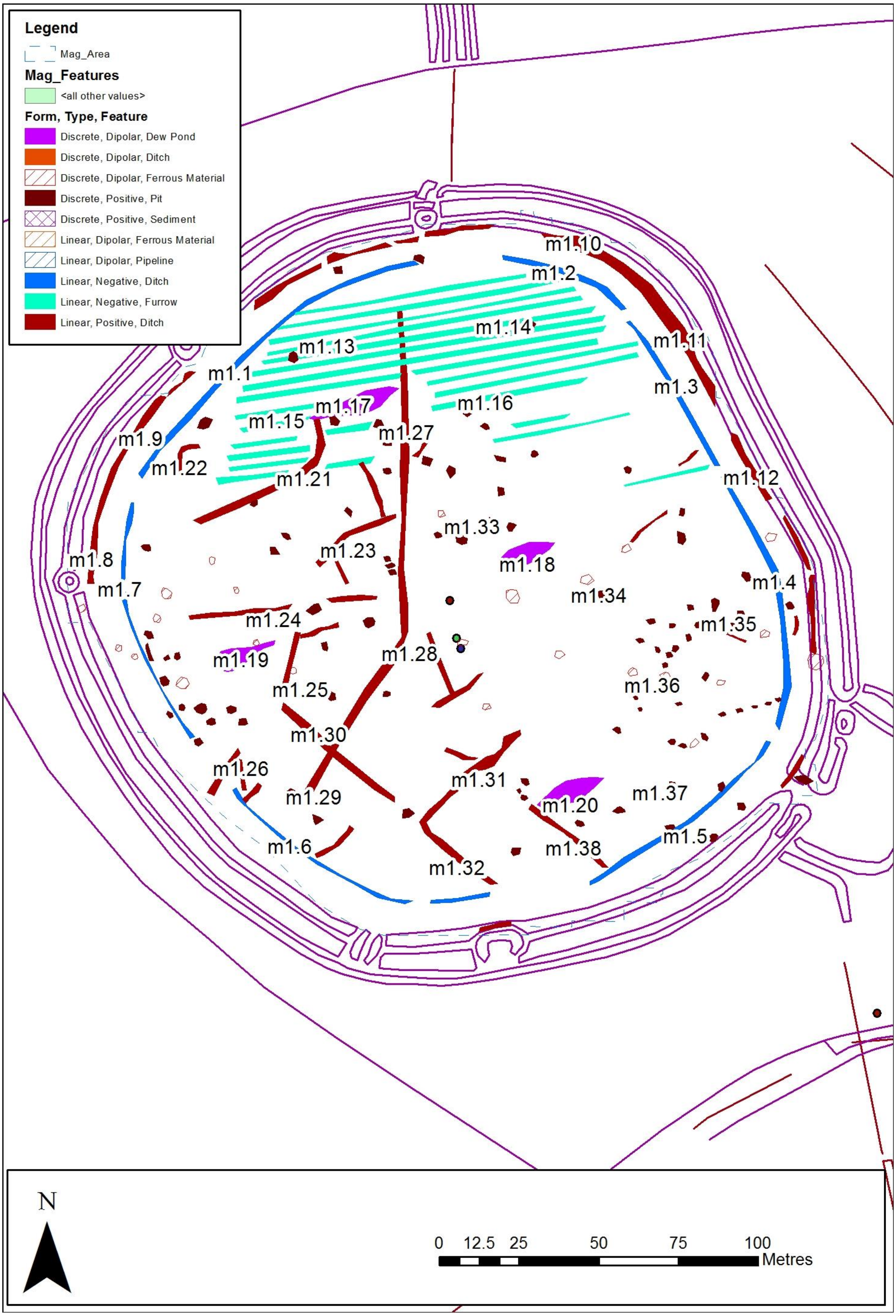


Figure 29 **Interpretation plot derived from the results of the magnetometer survey at Chiselbury Camp**

3.1.2.2 The Earth Resistance Survey

In the earth resistance survey at Chiselbury Camp (Figs 30 and 31), a strong high resistance linear anomaly **[r1.1]**, **[r1.2]** and **[r1.3]** curves from north-west to the east in the hillfort. This is matched by a fainter linear anomaly **[r1.4]** and **[r1.5]** mirroring the first feature, marking a large funnel-shaped anomaly encompassing the western part of the hillfort interior. A number of high amplitude linear anomalies **[r1.6]**, **[r1.7]**, **[r1.8]** run alongside the northern feature, with further linear anomalies **[r1.9]** and **[r1.10]** to the south and east. A linear anomaly **[r1.11]** runs to the north of these features, close to the extant remains of the hillfort defences. A large rectilinear anomaly **[r1.12]** and **[r1.13]** some 12m across also indicates a possible ditched structure or feature. A similar pattern of high resistance linear anomalies are visible to the south **[r1.14]** and **[r1.15]** marking possible rubble-filled ditches. A substantial linear high resistance anomaly **[r1.16]** and **[r1.17]** marks remains of a possible rubble-filled inner ditch to the hillfort defences.

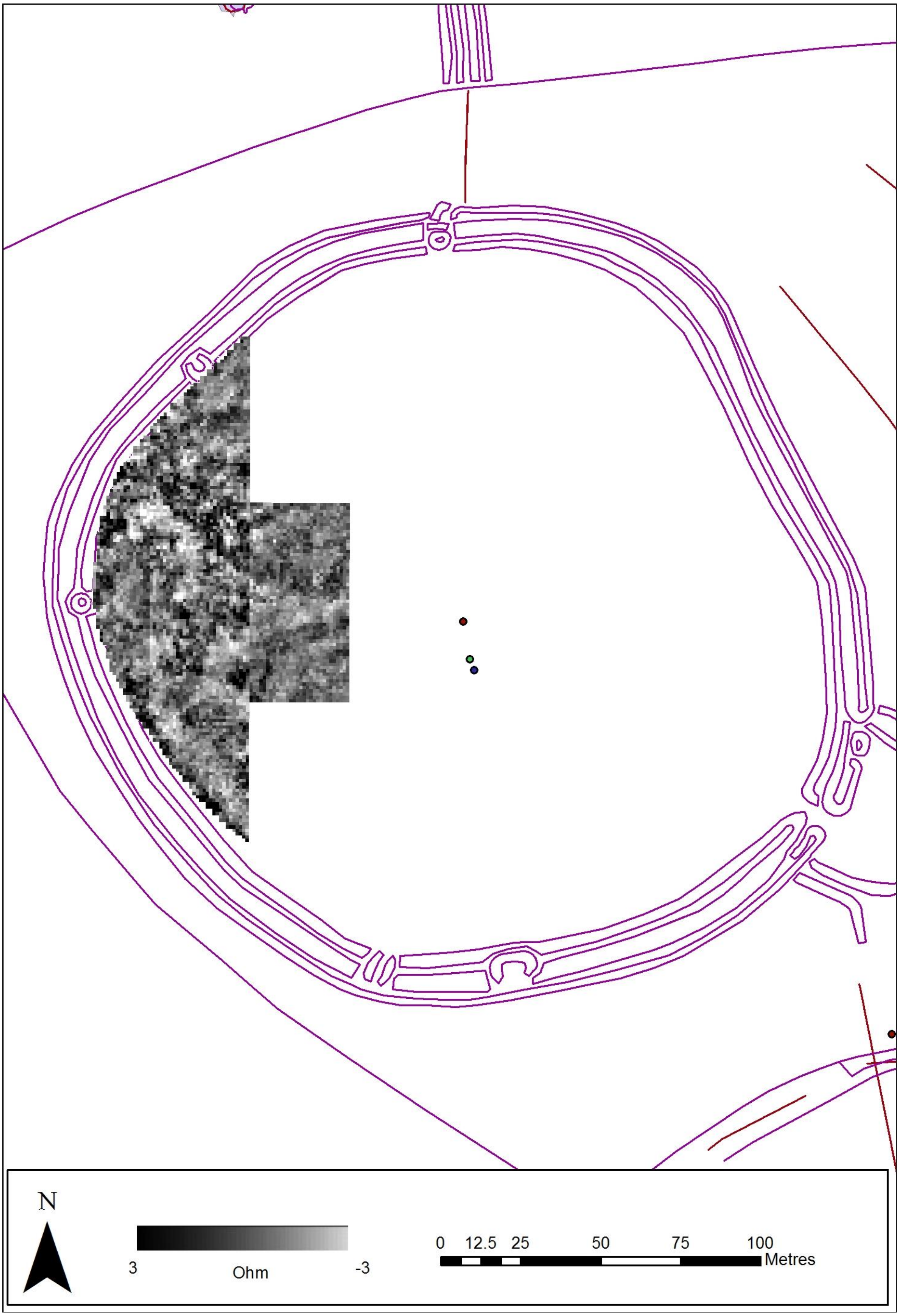


Figure 30 **Greyscale image of the results of the earth resistance survey at Chiselbury Camp**

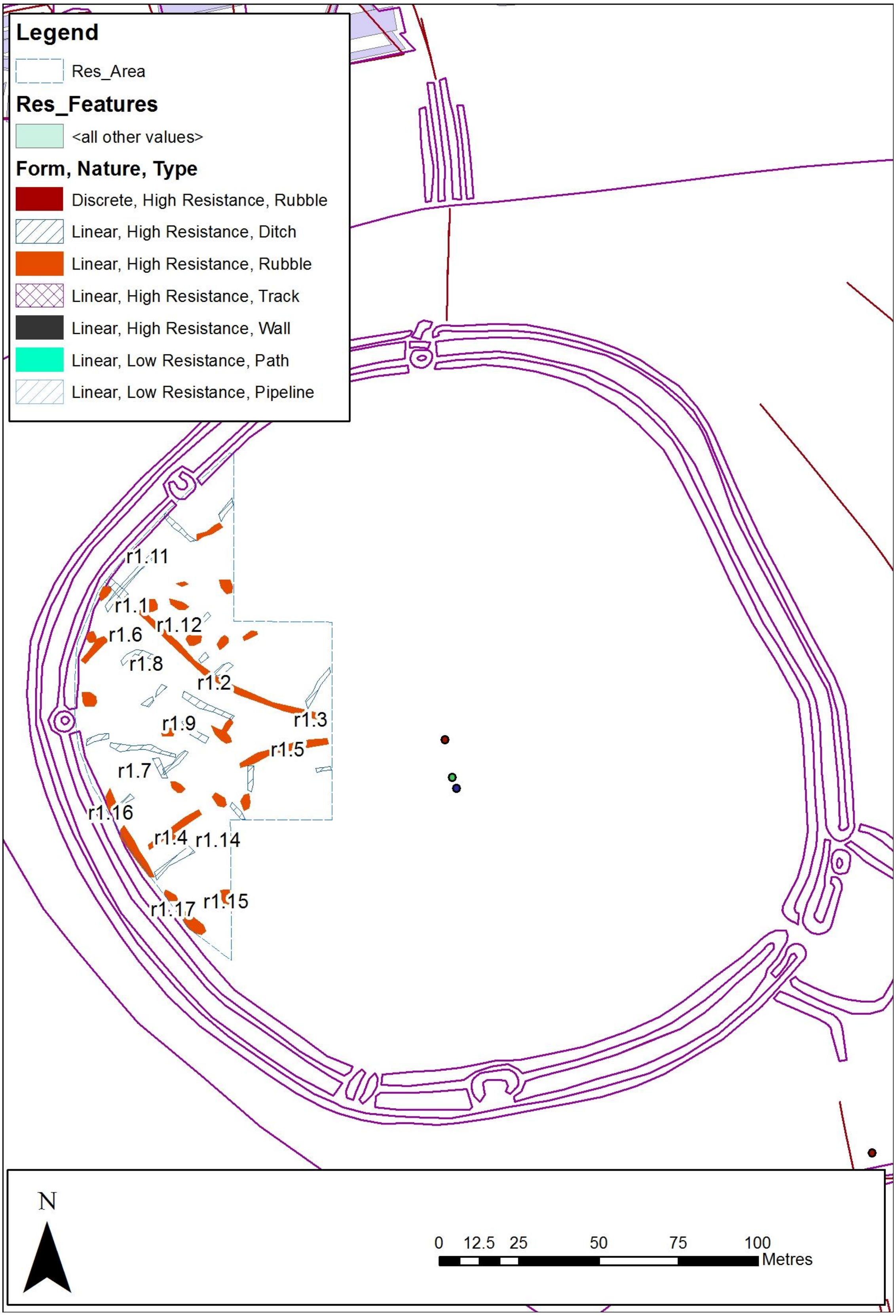


Figure 31 **Interpretation plot derived from the results of the earth resistance survey at Chiselbury Camp**

3.2.3 The Geophysical Survey Below the Badges

3.2.3.1 The Magnetometry

The survey of the cricket ground (Figs 32 and 33) produced some evidence of archaeological features. Most prominent in the results, however, were a series of dipolar linear anomalies, the first skirting East Farm **[m2.1]**, **[m2.2]** and **[m2.3]** measuring some 55m by 30m, marking a possible pipeline, and a linear anomaly to the west **[m2.6]** and **[m2.7]** running some 62m marking a further pipeline. Two discrete dipolar anomalies **[m2.4]** and **[m2.5]** mark modern ferrous material, and a linear anomaly **[m2.8]** marks a possible ditch or similar feature, possibly associated with the WWI army camp. A few dipolar discrete anomalies **[m2.9]** mark possible material associated with the camp, and a series of discrete positive anomalies **[m2.10]** and **[m2.11]** may also indicate deposits associated with the camp. A broad band of positive response is visible running across the centre of the cricket ground **[m2.12]** and **[m2.13]** marking possible changes in the sediment. A series of discrete positive anomalies in a line **[m2.14]** and **[m2.15]** mark a possible feature associated with the camp. Finally a series of dipolar anomalies along the western edge of the cricket ground **[m2.18]**, **[m2.19]** and **[m2.20]** all linear in form mark the possible edge of camp structures.

Figure 32 **Greyscale image of the results of the magnetometer survey at the cricket ground**

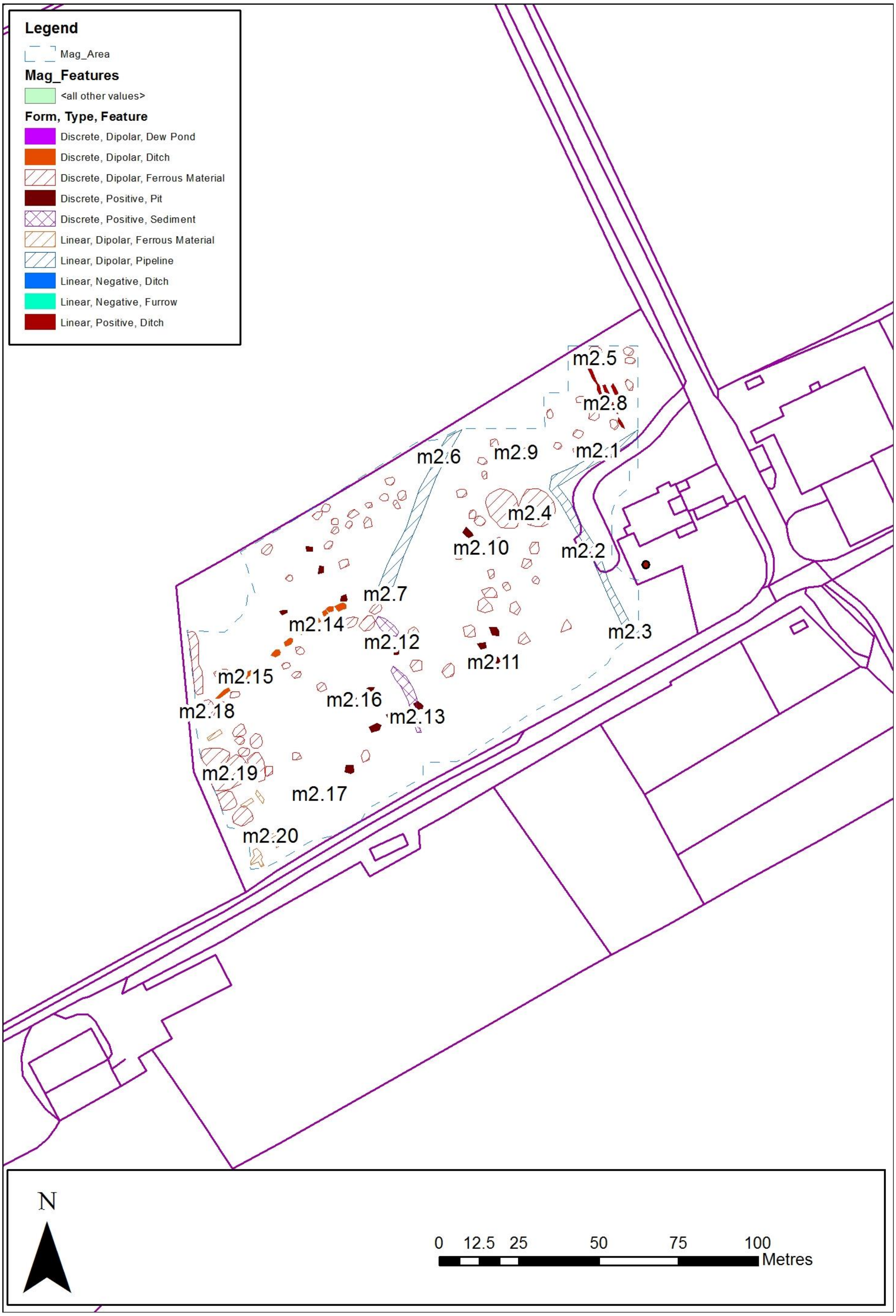


Figure 33 **Interpretation plot derived from the results of the magnetometer survey at the cricket ground**

3.2.3.2 The Earth Resistance Survey

Results of the earth resistance survey at the cricket ground (Figs 34 and 35) reveal a number of buried features associated with both modern infrastructure and possible remains of the WWI army camp at Fovant. In the eastern part of the survey area a low resistance linear anomaly **[r2.1]** and a curvilinear low resistance anomaly **[r2.2]**, **[r2.3]** and **[r2.4]** mark the remains of two pathways, one the extant gravel drive of East Farm. To the west a low resistance linear anomaly **[r2.5]** and **[r2.6]** marks a possible water pipeline. A further possible pipeline is represented as a linear low resistance anomaly to the west **[r2.7]**. A series of high resistance discrete anomalies **[m2.8]** and **[r2.9]** are located under the platform of land associated with East Farm. These may indicate rubble associated with previous settlement at the farm. Other areas of high resistance **[r2.10]** and **[r2.11]** mark further rubble to the north. A linear band of high resistance readings **[r2.12]** and **[r2.13]** measuring 85m by 5m may mark possible hard standing of a track or road, possibly associated with the WWI camp. Along the western fringe of the cricket ground several linear high resistance anomalies **[r2.14]**, **[r2.15]** and **[r2.16]** all mark possible remains of structures associated with the WWI camp. Two fainter high resistance linear anomalies **[r2.17]** and **[r2.18]** mark possible trackways, and a series of high resistance anomalies **[r2.19]** and **[r2.20]** run from north to south across the area.

Figure 34 **Greyscale image of the results of the earth resistance survey at the cricket ground**

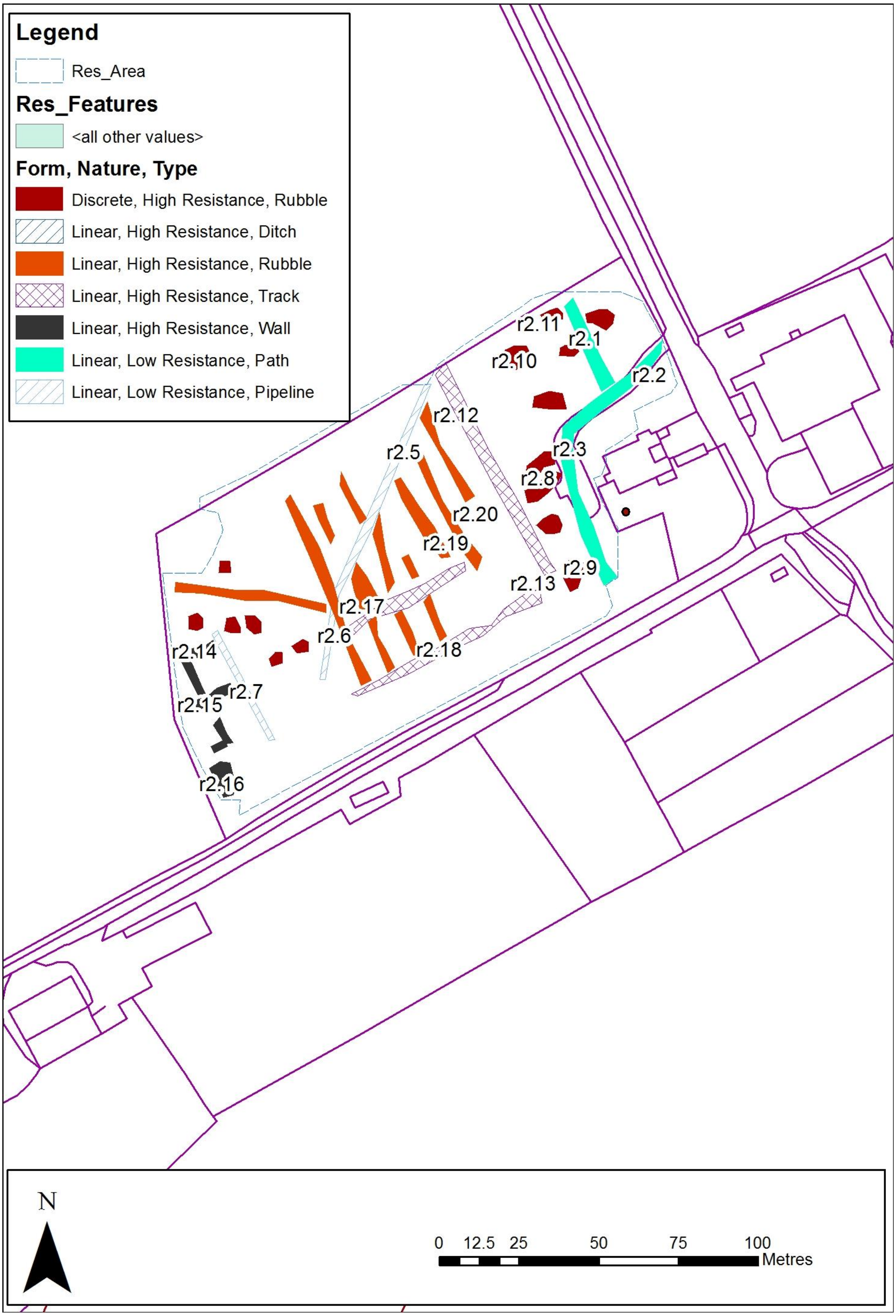


Figure 35 Interpretation plot derived from the results of the earth resistance survey at the cricket ground

3.2.4 The 2017 Geophysical Survey

In 2017 a geophysical survey comprising magnetometry and magnetic susceptibility survey was conducted in the field to the east of the farm, overlying one of the principle areas of the WWI camp. Approximately 8 hectares of magnetometry were conducted, with over 16 hectares of magnetic susceptibility.

3.2.4.1 The Magnetometry

Results of the magnetometry (Figs 36, 37 and 39) indicate a substantial number of anomalies associated with the layout of the WWI army camp. In the north-west corner of the survey area (Figs 38, 40 and 41) a series of dipolar discrete anomalies **[m3.1]** mark an area measuring some 22m across. The area has limited anomalies in its centre, and this clear area continues in the results to the north-east **[m3.2]** and **[m3.3]** with some discrete anomalies marking possible infrastructure from the camp. A line of discrete dipolar anomalies **[m3.4]** run from north to south, marking the possible line of a track or path of the camp, and finishing at a rectilinear anomaly **[m3.5]** with discrete anomalies to the east **[m3.6]** marking a possible structure measuring some 18m across. A clear area is located to the east of the structure **[m3.7]**. This area, across the breadth of the survey, is marked by a faint positive linear anomaly **[m3.8]** some 28m long, marking a possible ditch, gully or wall along the northern portion of the camp. Similar linear anomalies **[m3.9]**, **[m3.10]** and **[m3.11]** demarcate the edge of features further to the east, with the overall effect showing a clear difference between the clearer area to the north of this line, and the anomalies visible to the south.

Along the western side of the area a rectilinear anomaly **[m3.12]** measuring 19m by 10m marks the foundations of a structure. This is matched by a larger complex of rectilinear dipolar anomalies **[m3.13]** and **[m3.14]** measuring over 40m by 10m marking the foundations of at least two buildings. Two linear dipolar anomalies **[m3.15]** and **[m3.16]** positioned orthogonally to one another mark possible remains of drainage or sewer pipes for the camp. To the east a linear anomaly **[m3.17]** and a distribution of dipolar discrete anomalies **[m3.18]** mark the footprint of ephemeral camp structures. This form of anomaly continues to the east **[m3.19]** with a scatter of discrete dipolar anomalies indicating ferrous material distributed across the area, and linear anomalies **[m3.20]** indicating possible building foundations. The southern edge of these structures is marked by two linear anomalies **[m3.21]** and **[m3.22]** stretching 40m from east to west. A second area of discrete dipolar anomalies **[m3.23]**, **[m3.24]** and **[m3.25]** with linear anomalies marks a second footprint of camp structure. This material continues further to the east **[m3.26]** and to the edge of the survey area.

In the south-west area of the survey, a line of dipolar discrete anomalies **[m3.27]** and **[m3.28]** running for a distance of 145m marks the line of a modern pipeline or similar feature. This is matched by a further substantial linear dipolar anomaly **[m3.29]** and **[m3.30]** running north-east to south-west for a distance of 280m, marking a further modern pipeline. These modern features cut through an area of discrete and linear anomalies associated with camp structures. Several dipolar anomalies **[m3.31]** and linear anomalies **[m3.32]** indicate a building and footprint of more ephemeral structures measuring some 25m across. A further dipolar anomaly **[m3.33]** is located immediately to the south.

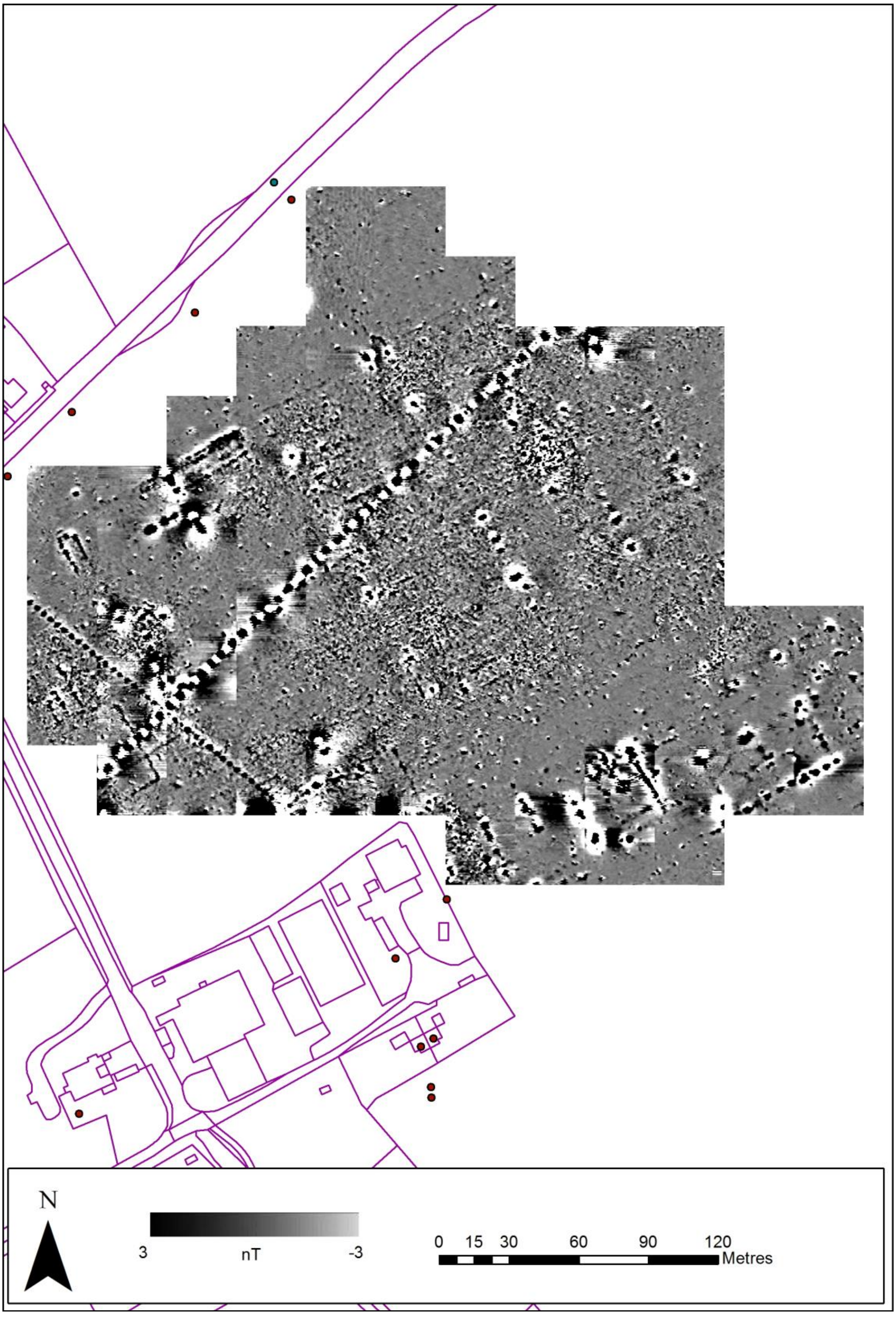


Figure 36 **Greyscale image of the results of the magnetometry in the WWI camp field**

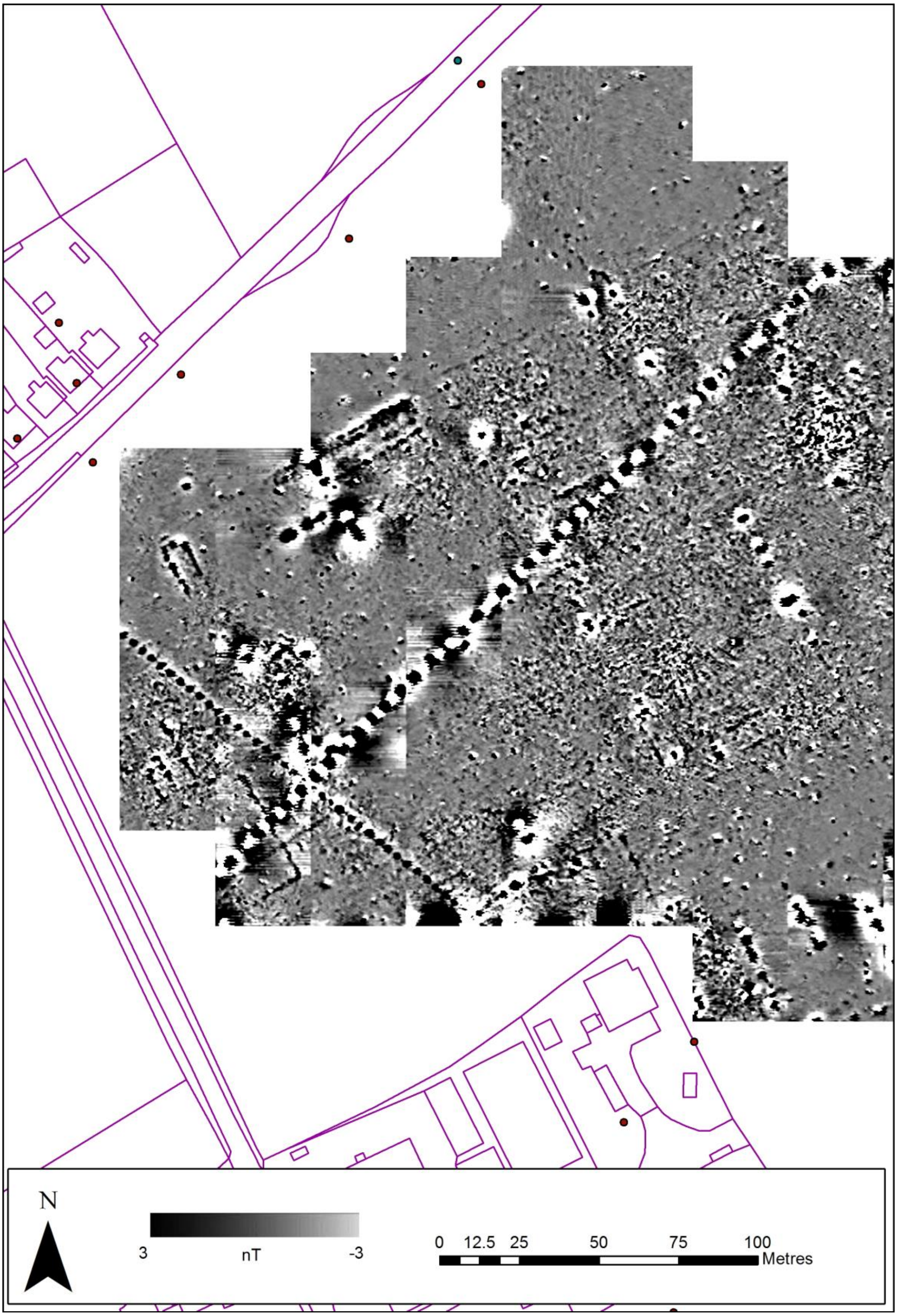


Figure 37 **Greyscale image showing results of the magnetometry from the western part of the WWI camp survey area**

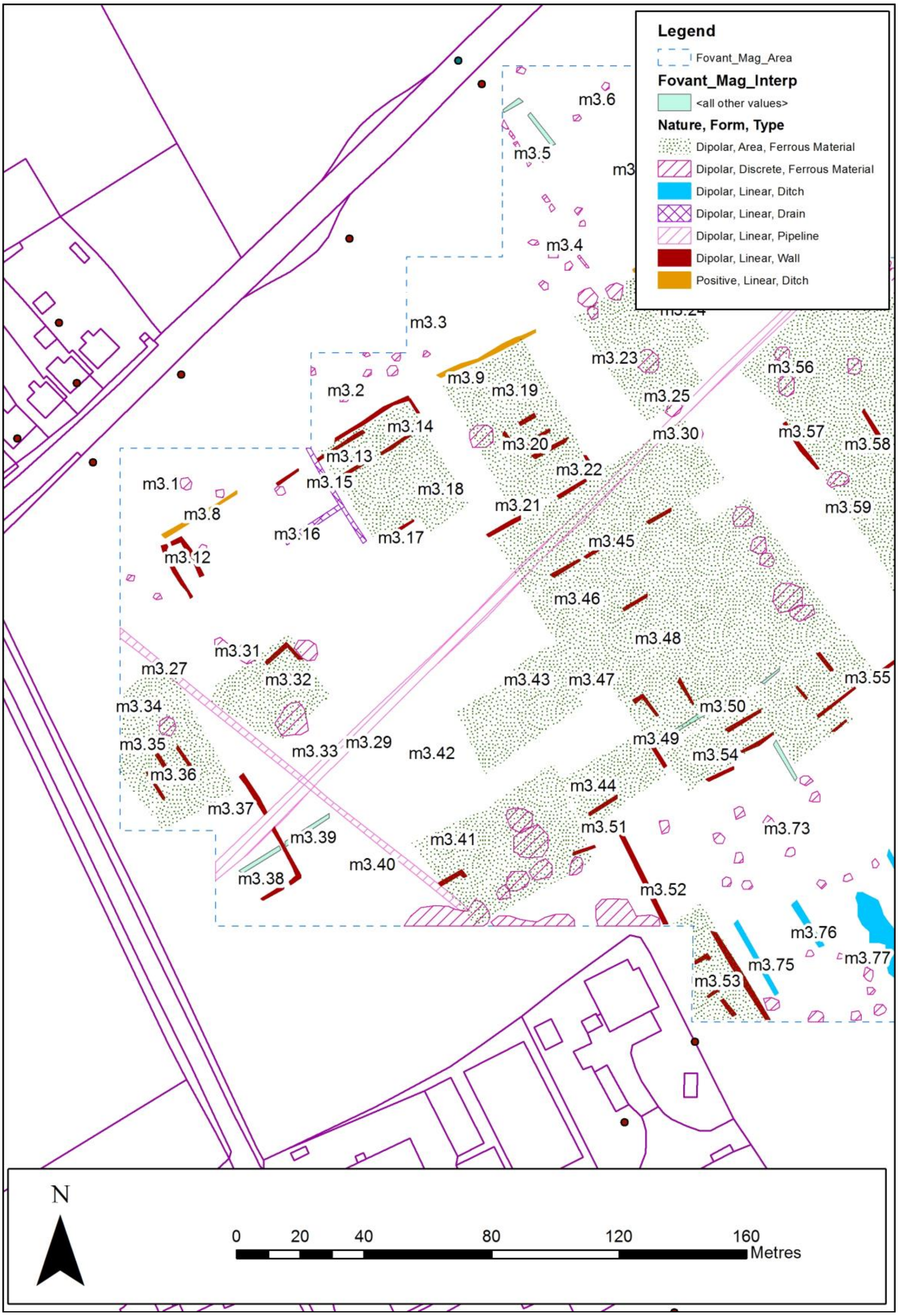


Figure 38 **Interpretation plot derived from the results of the magnetometer survey in the western part of the WWI camp field survey area**

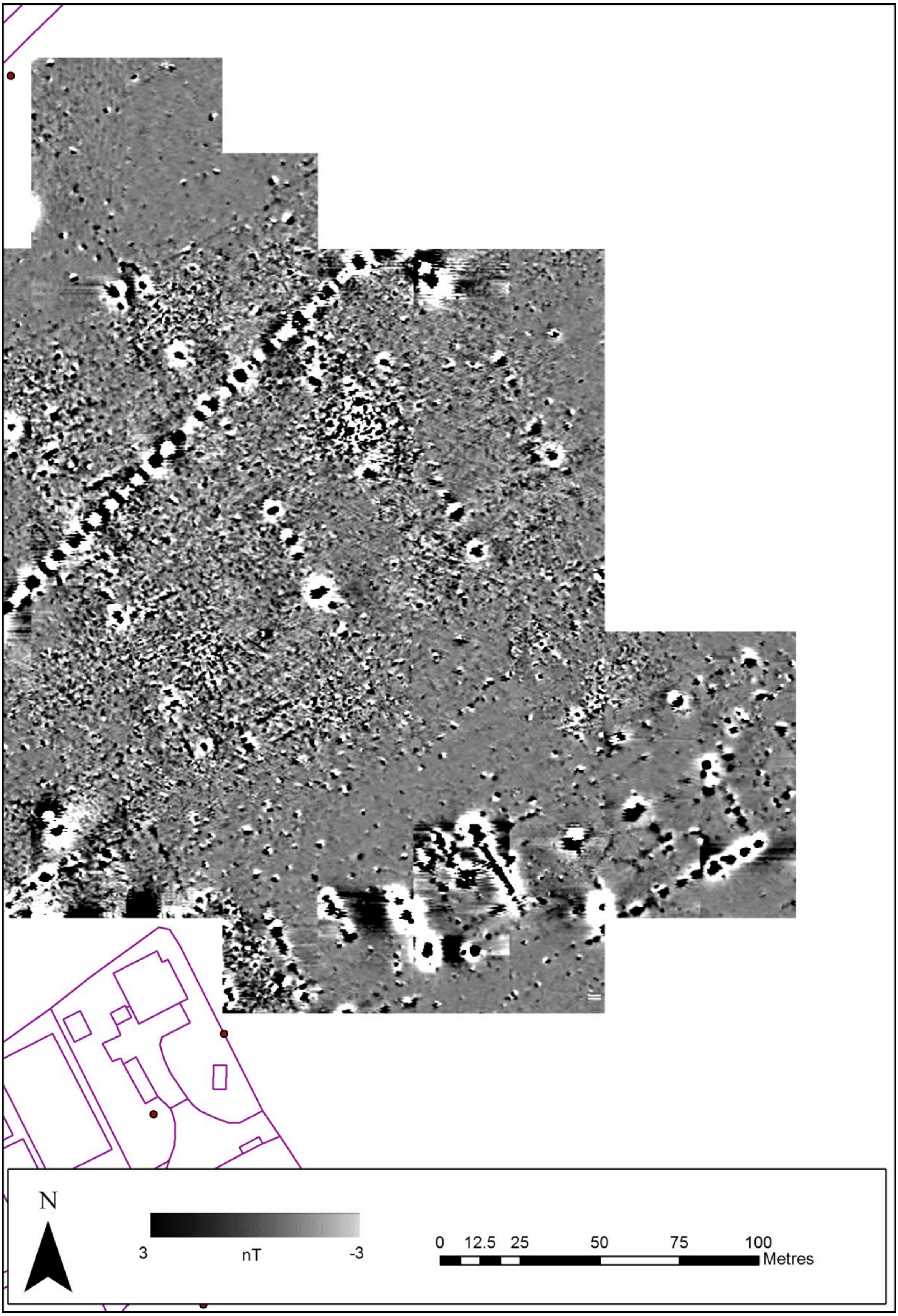


Figure 39 **Greyscale image showing results of the magnetometry from the western part of the WWI camp survey area**

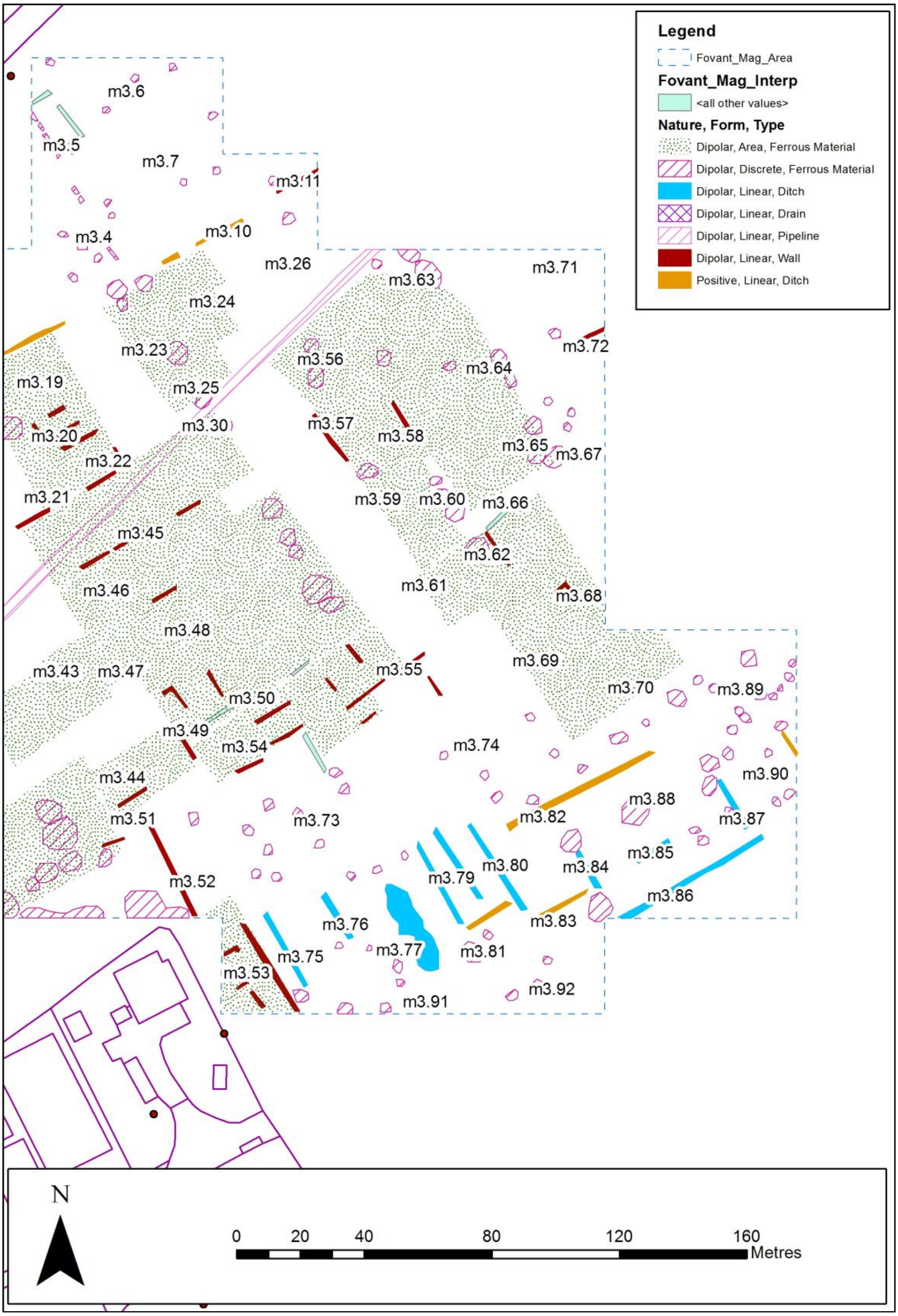


Figure 40 **Interpretation plot derived from the results of the magnetometer survey in the eastern part of the WWI camp field survey area**

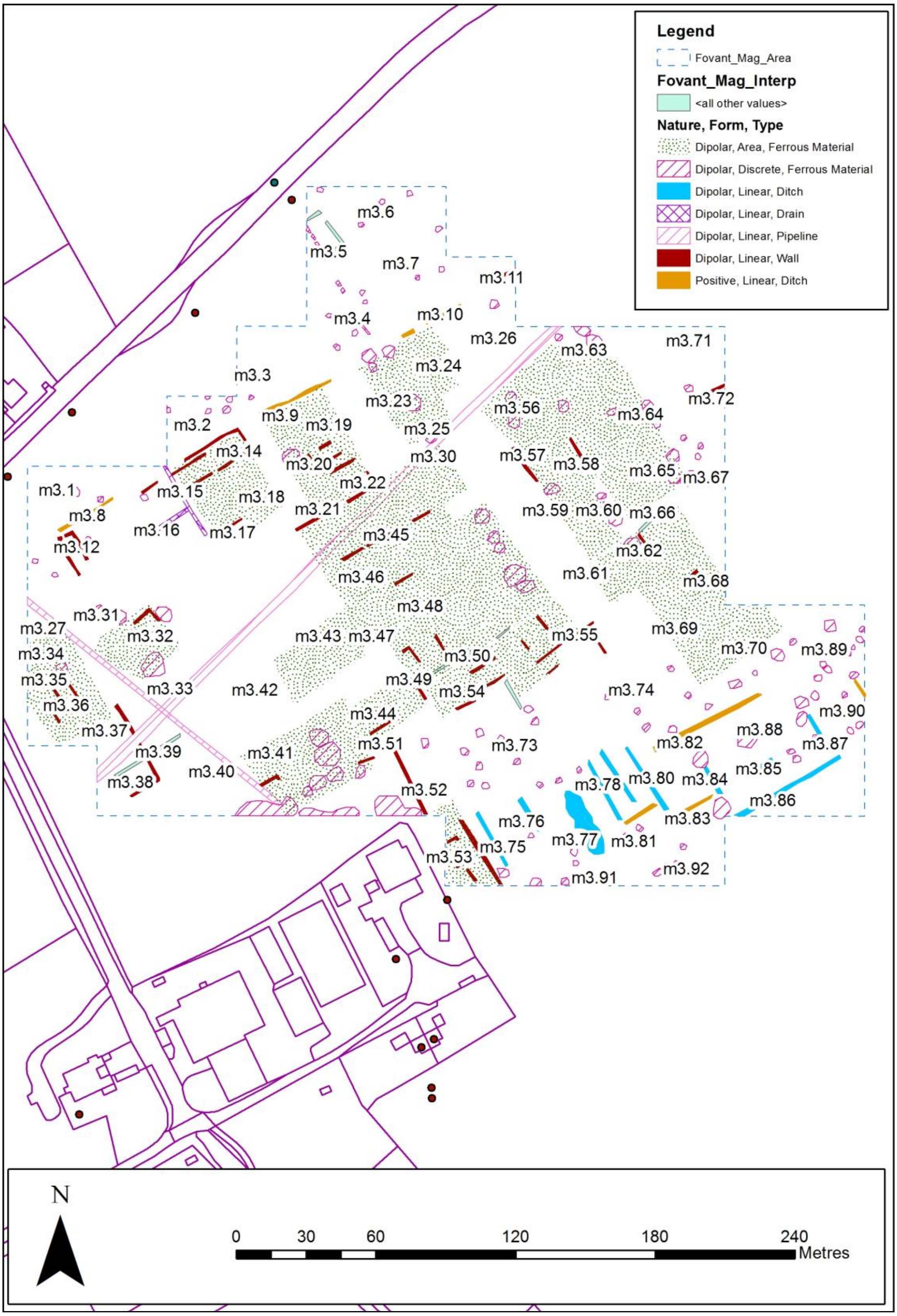


Figure 41 Interpretation plot derived from the results of the magnetometer survey in the WWI camp field

To the west and along the western edge of the survey area a zone of discrete dipolar anomalies **[m3.34]** with two larger dipolar anomalies **[m3.35]** and linear anomalies **[m3.36]** marks foundation of a building and associated deposits. A second rectilinear anomaly **[m3.37]** and **[m3.38]** is cut through by the modern pipeline **[m3.29]** suggesting the presence of drainage or other infrastructure from the camp. A further linear dipolar anomaly **[m3.39]** also suggests similar infrastructure. A spread of discrete dipolar anomalies **[m3.40]** and **[m3.41]** with several small linear anomalies indicated an area of material associated with the WWI camp and possible remnants of foundations. The area immediately to the east is less intensively covered with dipolar anomalies **[m3.42]**. However to the east of this a significant scatter of anomalies **[m3.43]** measuring some 22m across, indicates ferrous material and the footprint of a possible structure. This continues to the south **[m3.44]** with a roughly rectangular pattern of dipolar anomalies suggesting a further structure.

A large and contiguous series of linear and dipolar anomalies mark the central portion of the magnetometer survey area. In the north a series of linear anomalies **[m3.45]** measuring some 43m in length, marks the northern edge of an area of discrete dipolar anomalies **[m3.46]** spreading south and east **[m3.47]** and **[m3.48]** all of which mark an area of ephemeral structures associated with the camp. Immediately to the south a number of linear anomalies **[m3.49]** and **[m3.50]** mark remains of possible structural foundations in the area.

A series of linear dipolar anomalies **[m3.51]**, **[m3.52]** and **[m3.53]** mark structural remains. **[m3.53]** indicates a rectangular area some 40m across indicating camp structures close to the modern farm buildings running off the edge of the survey area. The southern edge of the area is marked by parallel lines of dipolar anomalies **[m3.54]** and **[m3.55]** measuring some 62m in length, and indicating possible foundations of buildings from the camp. Overall these anomalies indicate an area of camp structures measuring some 70m across from east to west and 100m from north to south.

A further area of concentrated dipolar anomalies and linear anomalies is located to the east, including large dipolar anomalies to the north **[m3.56]** and a significant area of dipolar anomalies sandwiched between two parallel linear anomalies **[m3.57]** and **[m3.58]** both running from north to south. These seem to indicate a structure measuring some 25m across. The concentration of dipolar anomalies continues to the south **[3.59]**, **[m3.60]**, **[m3.61]** and **[m3.62]** and in total the anomalies demarcate an area of some 100m from north to south and 25m from east to west.

To the east a number of large dipolar discrete anomalies indicate infrastructure from the camp. Close to the line of the modern pipeline in the north **[m3.63]** several large anomalies are visible. A line of similar anomalies extends to the south **[m3.64]** and **[m3.65]** for a distance of 45m. A spread of discrete dipolar anomalies **[m3.66]** is located immediately to the west, but the area to the east is much clearer in terms of anomalies **[m3.67]**. The distribution of discrete dipolar anomalies continues to the south **[m3.68]** and **[m3.69]** culminating in a scatter of anomalies **[m3.70]** measuring some 35m by 15m. The eastern edge of the survey results **[m3.71]** and **[m3.72]** shows a continuation of anomalies to the edge of the survey.

There is a change in the nature of the magnetometer results in the southernmost portion of the survey area. A large area measuring 145m by 45m has a moderate number of discrete dipolar anomalies located across it **[m3.73]** and **[m3.74]** but no linear anomalies, marking a possible square or gathering area. A series of substantial dipolar linear anomalies running from north to south delineate some major features in the southern part of the survey area. One **[m3.75]** runs for a distance of 35m, with the second and third **[m3.76]** and **[m3.77]** running for a distance of 16m and 31m respectively. Three further narrower linear anomalies **[m3.78]**, **[m3.79]** and **[m3.80]** mark similar features, all possibly indicating practice trenches in the area. In addition to these linear anomalies, a series of discrete dipolar anomalies marks ferrous material **[m3.81]**, **[m3.82]**, **[m3.83]** and **[m3.84]**. A further line of discrete anomalies **[m3.85]** marks another possible trench and a linear anomaly **[m3.86]** and **[m3.87]** running from east to west indicates a further possible practice trench. A scatter of large dipolar anomalies **[m3.88]**, **[m3.89]** and **[m3.90]** mark ferrous material. A scatter of smaller dipolar anomalies along the southern edge of the survey area **[m3.91]** and **[m3.92]** suggest similar material.

3.2.4.2 The Magnetic Susceptibility

The results of the magnetic susceptibility survey (Figs 42 and 43) correlate well with the magnetometry, although a larger survey area of some 17 hectares was covered using this technique. In the western part of the survey area the corner of the field shows relatively low readings **[MS1]**. This changes, however, along the edge of the road to Fovant **[MS2]** and across the western part of the area **[MS3]**, **[MS4]** and **[MS5]** corresponding with the building remains from the WWI camp. These high readings continue in the southern part of the survey in the vicinity of the modern farm buildings **[MS6]**, **[MS7]**, relating to further structures and large quantities of ferrous material in the ploughsoil. An area of high magnetic susceptibility readings **[MS8]** in the centre of the area, and measuring some 60m across, marks the area of a further building, with a larger spread of high readings to the south **[MS9]** and **[MS10]** indicating further structures to the south. The northern part of the central area, close to the current road to Fovant **[MS11]** and **[MS12]** shows relatively low magnetic susceptibility readings.

An area of high readings **[MS13]** – **[MS16]** measuring some 110m by 110m marks the central part of the survey area, corresponding to ferrous anomalies and possible structural remains associated with the camp. In the northern part of the field a series of high magnetic susceptibility readings run across the field from the Fovant road **[MS17]**, **[MS18]** and **[MS19]** measuring 160m from east to west and 80m from north to south. These seem to correspond to the area of the railway and station for the WWI camp. A narrow band of high readings **[MS20]** continues to the east, showing a continuation of these features, most probably under the modern buildings adjacent to the Fovant road. A series of moderate readings extend southwards **[MS21]** suggesting further ferrous material. However, the remaining area **[MS22]** and **[MS23]** in the field indicates low readings, with the exception of a concentration of material **[MS24]**.

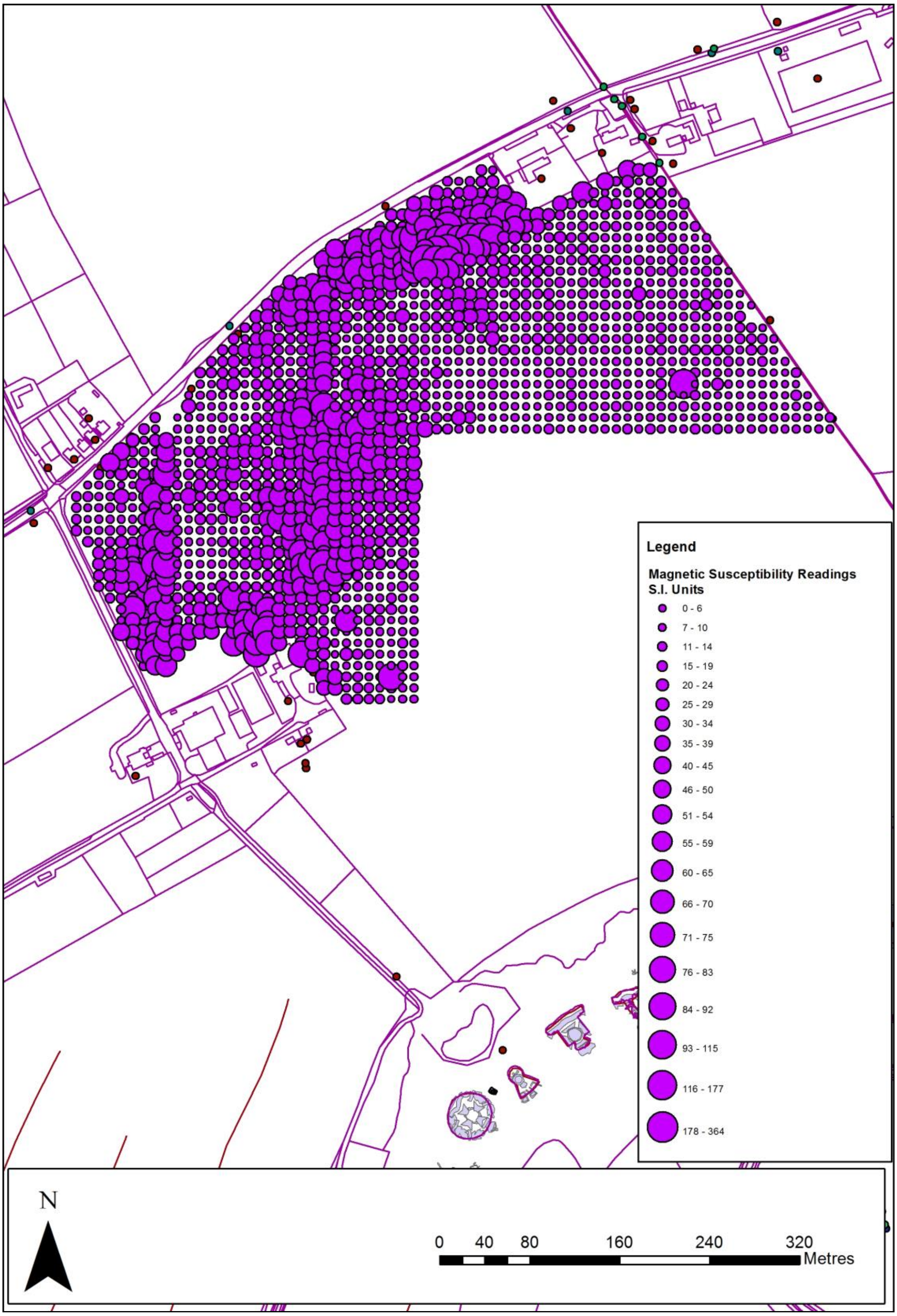


Figure 42 Results of the magnetic susceptibility survey

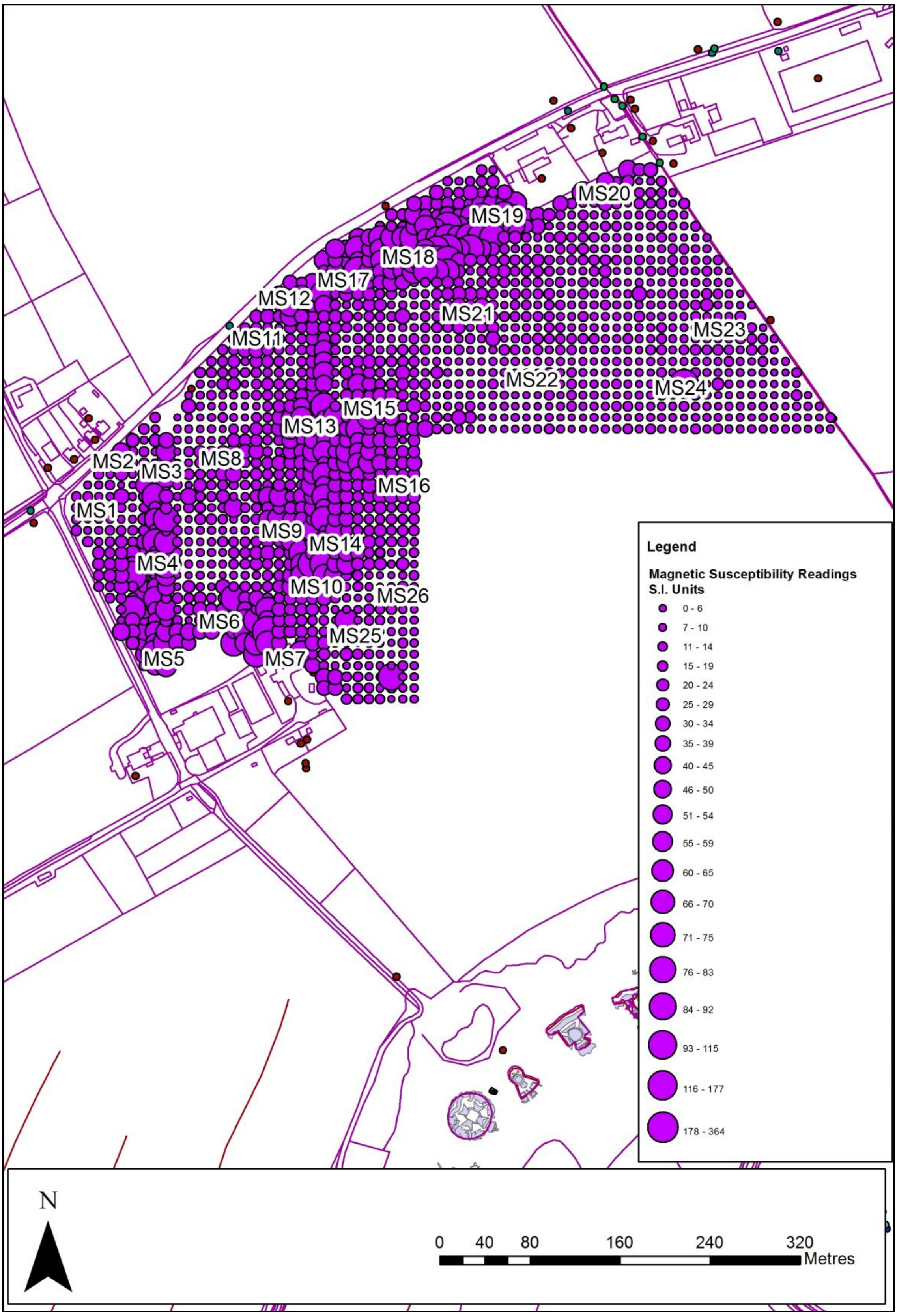


Figure 43 Results of the magnetic susceptibility survey with labels overlaid

3.3 The Fieldwalking

In total 50 grids measuring 30m by 30m each were systematically walked as part of the 2017 field season. The magnetometer survey grids were utilised as the basic unit for fieldwalking, ensuring that the data from fieldwalking and the geophysics could be easily compared for correlations. Each grid was then sub-divided into smaller units measuring 10m by 5m (see survey methodology). A number of material types were mapped using the larger grid units, including brick, tile, slag, metal and other materials. In addition all ceramic and glass was collected, counted and weighed using the grid sub-divisions, to allow the distribution of these materials to be plotted by density across the area.

In total over 4kg of glass (719 fragments) was collected during the fieldwalking, with 2.8kg (508 sherds) of ceramic material. In addition the presence and absence of other material was recorded using the geophysical survey grid. A large quantity of metal was located over the survey area, much of it represented by nails and recent farm debris. However, munitions were also located, including a mills bomb (Fig 44), and a mixture of other metalwork, plus pottery, glass and other finds (Figs 45-49).

The results of mapping of the distribution of pottery by weight (Figs 50 and 51) indicate a strong correlation between the densities of material and the results of the magnetometer survey. Densities fit most closely to the range of structural anomalies located in the northern part of the area, and with the possible structural remains in the centre and eastern part of the survey area. Some correlation is also visible in terms of the possible remains alongside the modern farm complex in the south-west part of the survey area. Most of the areas where open space or potential practice areas are located are devoid of high densities of pottery, although it is of interest to note some pottery densities overlying the possible practice trench area in the south of the survey area.

Figure 44 Mills bomb located in the fieldwalking area (photo: K. Strutt)

Figure 45 **Sherds of pottery, glass and stoneware from across the field below the Fovant Badges, including glass stoppers, a penny inkwell and War Department stamped white ceramic, dated from 1913-1917**

Figure 46 Metal finds from the field, including an iron tent peg, the ferrule from an entrenching tool, part of a .303 bullet, and a brass button

Figure 47 **Two further metal finds, these from Grid 4; an inert and cut away mills bomb, with detonator removed, possibly for use in demonstrations, and the heel iron from an army boot**

Figure 48 Finds from Grid 5 including a heel iron from a boot

Figure 49 Finds from Grid 40, including a glass medicine bottle

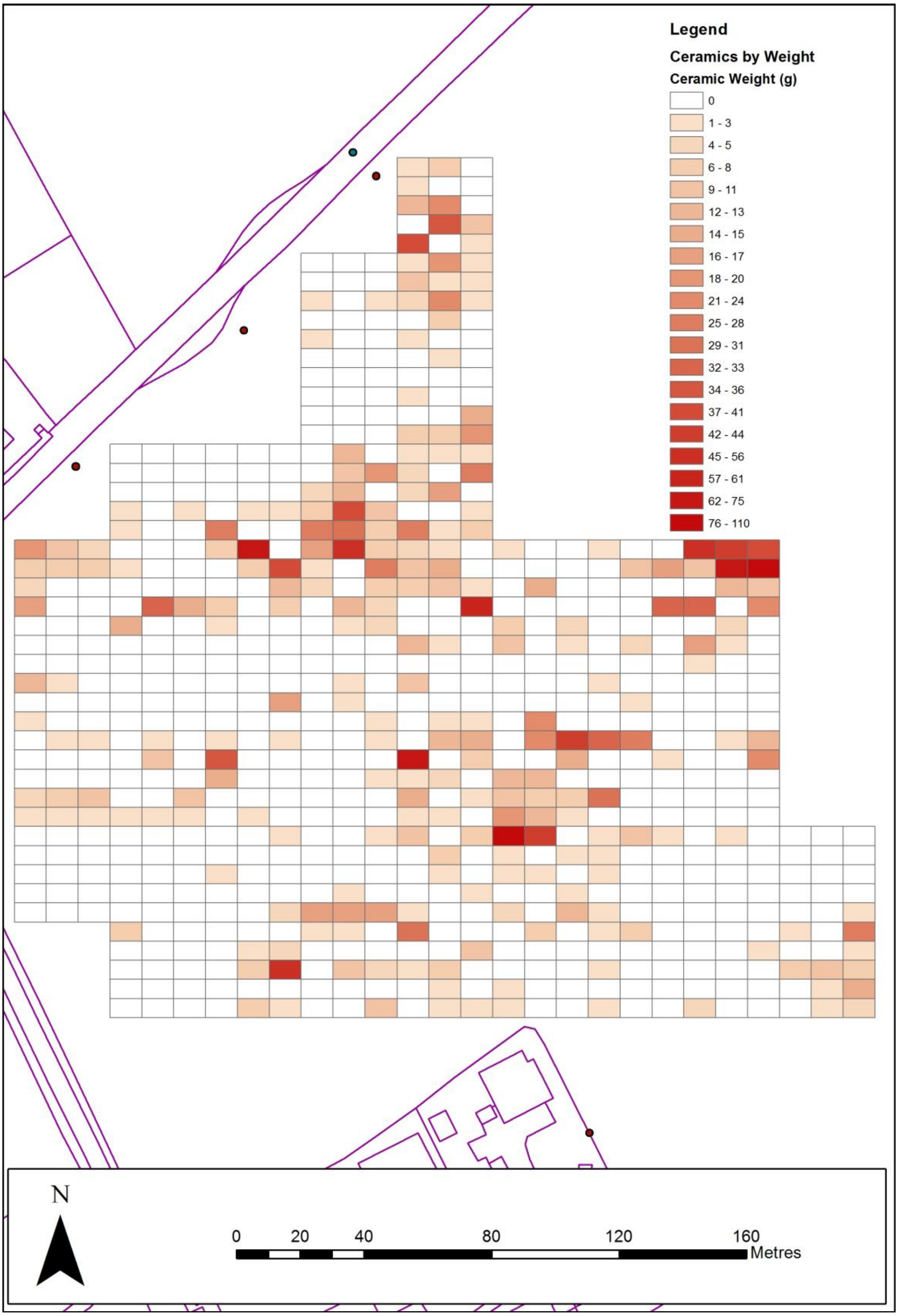


Figure 50 **Distribution by weight of pottery in the fieldwalking area**

Figure 51 **Distribution by weight of pottery in the fieldwalking area with the interpretation plot from the magnetometry superimposed**

The distribution of glass fragments by weight follows a similar pattern to that of the pottery (Figs 52 and 53) although a greater general density of fragments can be noted in the central area of the survey. The distribution does, however, seem to highlight the northern part of the camp in this area, corresponding to the strong anomalies in the magnetometry running from east to west in the northern part of the survey area.

Distribution of other material is also indicative of the camp structures (Figs 54 and 55). While less open to interpretation than the detailed pottery and glass distributions, it is interesting to note the distribution of non-local stone along the northern edge of the survey area, and the general smattering of brick and tile across the site in general. This may reflect the few pieces of brick and tile found in the area perhaps indicating either the robbing out of masonry for reuse or the use of wood and corrugated iron for the construction of buildings.

General distribution of metal and slag covers most of the central part of the survey area, from north to south. This is perhaps indicative of the overall pervasive nature of metal finds from the camp across the field, also the presence of both potential buildings and barracks in the centre of the survey area, and the camp railway in the vicinity of the modern road (see the magnetic susceptibility). Animal bone distribution is nothing more than a few pieces over the northern part of the survey area, thus not suggesting any particular concentration. However, of note is the distribution of flint and chert in the survey area. All of the indicated grids included substantial quantities of Neolithic and Bronze Age flint flakes, blades and some cores. The focus of the project was the WWI camp, and therefore these finds were not collected. However, the central small ridge in the field in particular may represent a focus of Neolithic and Bronze Age activity, possibly in the form of a flint working site, and would benefit from a future field project to investigate the area.

Non-local stone and slag may have been used as scalpings or for the roads and paths in the camp (stone scalping road seen in excavations of one the camps at Sutton Mandeville, Barker pers. Comm) or as ballast for the railway.

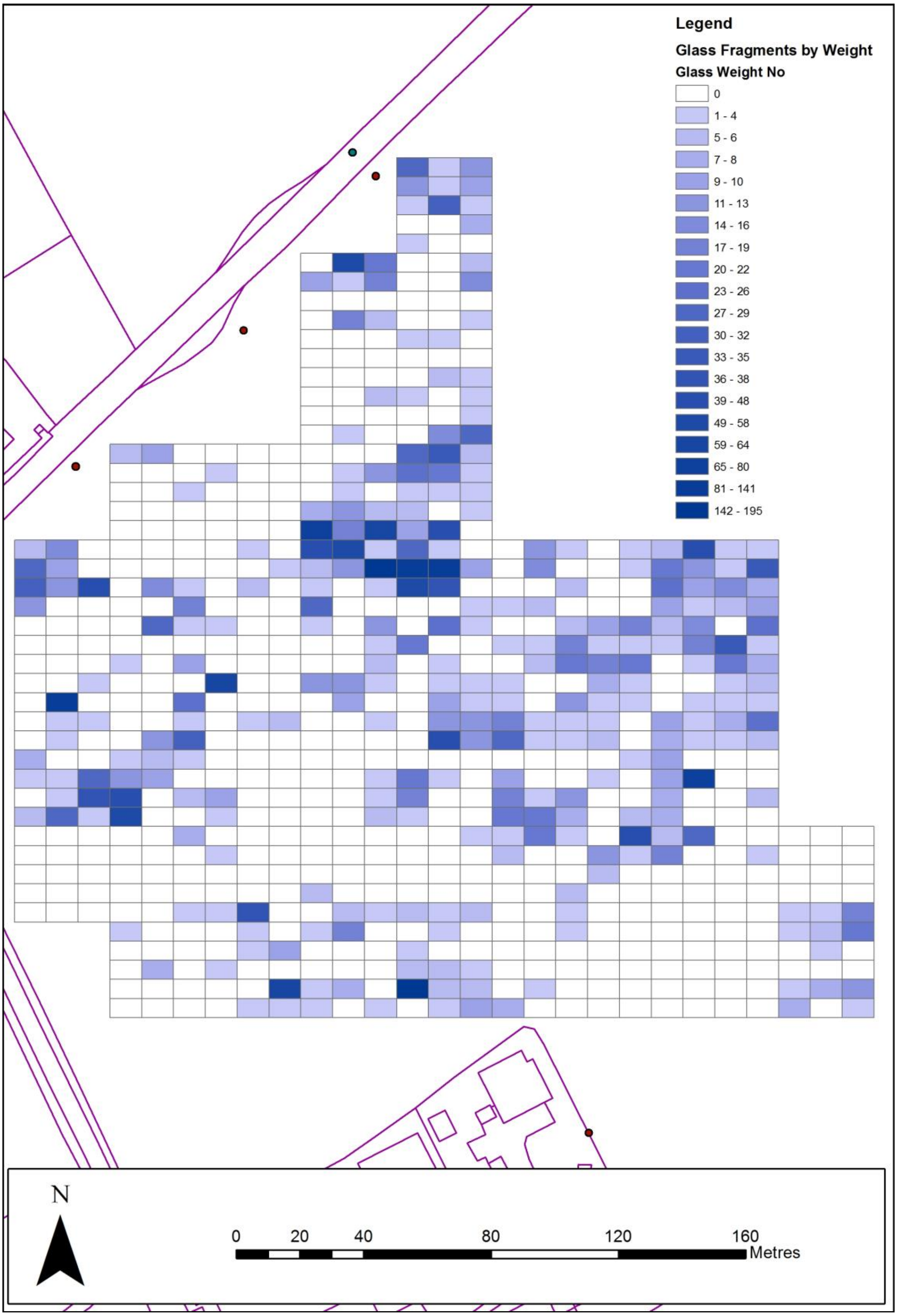


Figure 52 **Distribution by weight of glass in the fieldwalking area**

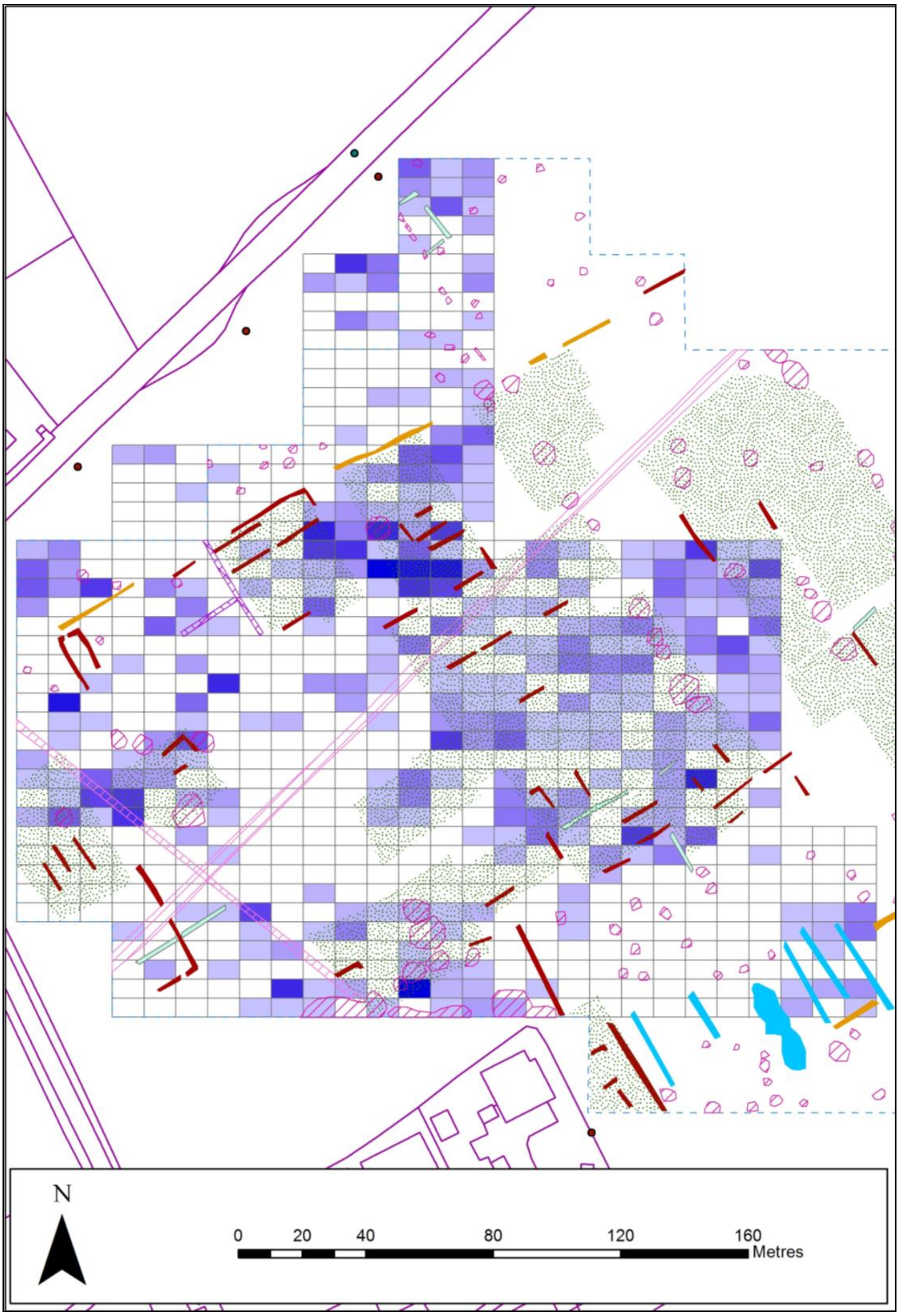


Figure 53 Distribution by weight of glass in the fieldwalking area with the interpretation plot from the magnetometry superimposed

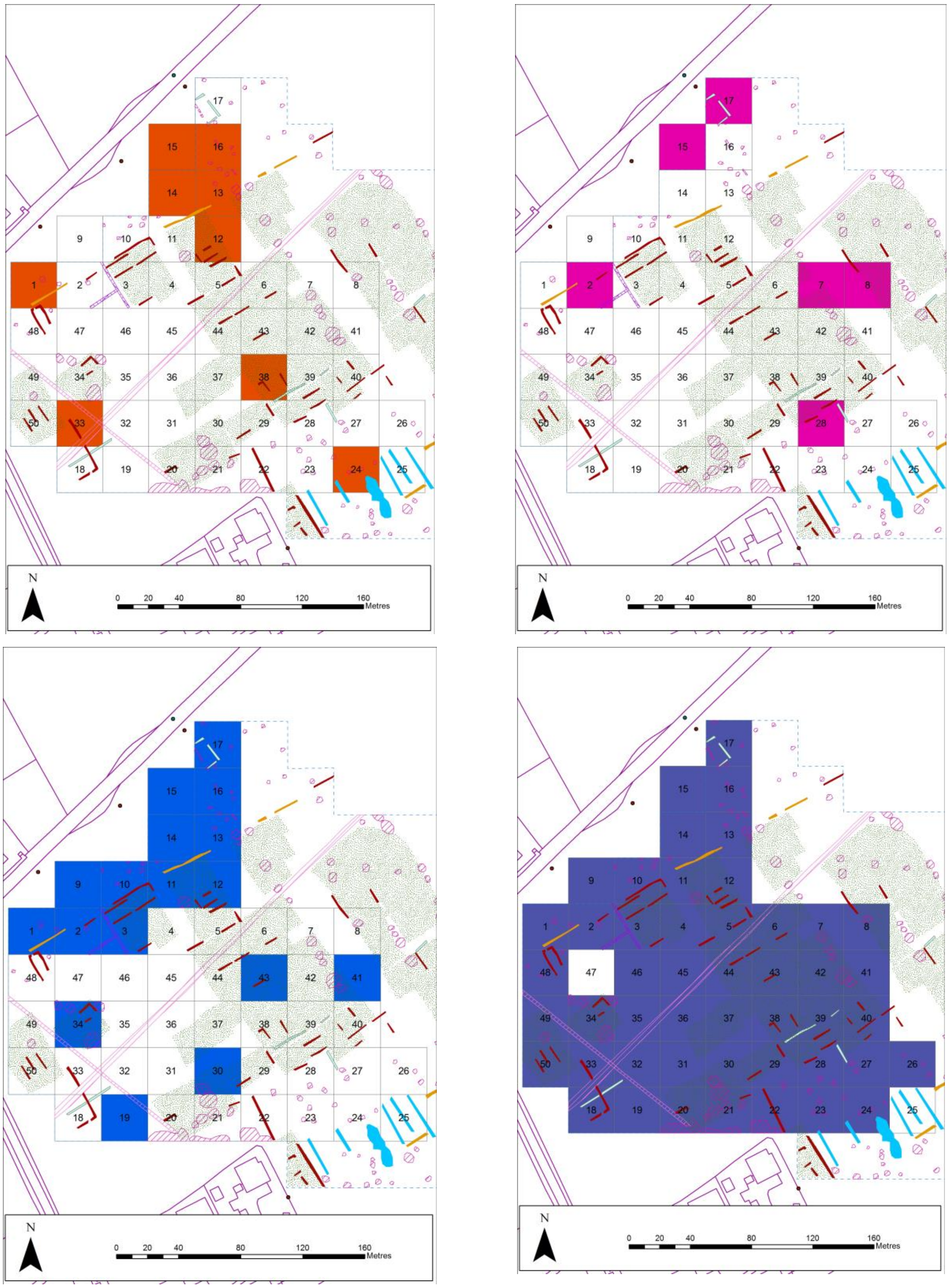


Figure 54 Distribution by presence/absence of brick (orange), tile (red), non-local stone (blue) and generic building rubble (dark blue) with the interpretation plot of the magnetometry superimposed

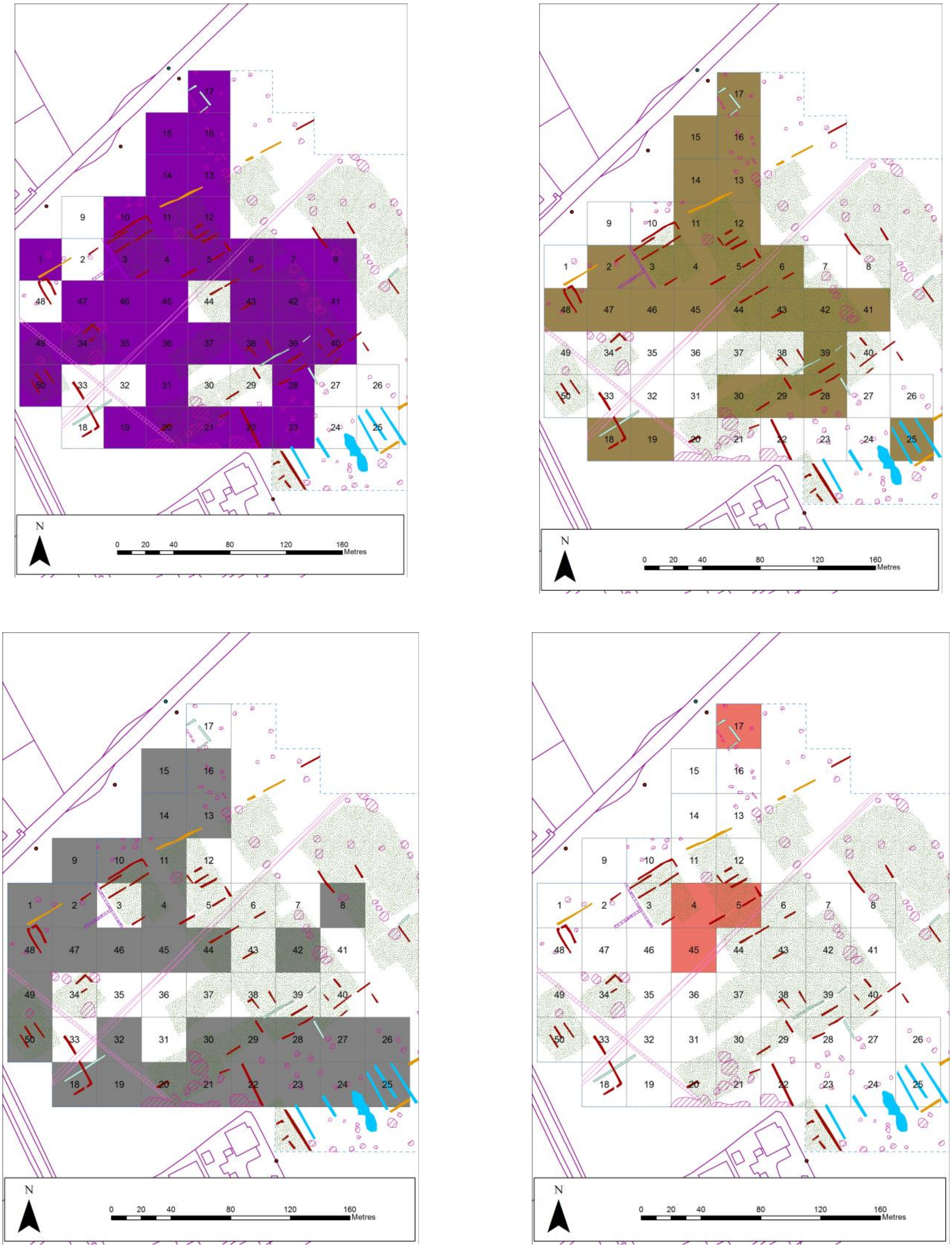


Figure 55 **Distribution by presence/absence of metal (purple), slag (brown), flint (grey) and animal bone (red) with the interpretation plot of the magnetometry superimposed**

3.4 The Excavations

3.4.1 The Cutting of the New Badge

The fortnight of work on the cutting of the new badge revealed no archaeological features across the area, with scant small finds associated with WWI activity on the camp in the valley and on the badges. The finished badge avoided the location of the 'Drums' badge (Figs 56 and 57), and the colluvium revealed no features cut into the soil. During the course of the excavation eight 0.303 round bullets were recovered from the topsoil (Fig. 58) with no cartridges, suggesting that these finds originated from the firing ranges at the bottom of the slope. The cutting for the badge was then refilled with chalk rubble to make the badge stand out against the surrounding hillside.

Figure 56 Location of the excavated new poppy badge in relation to the extant Devonshire Regiment and Wiltshire Regiment badges, and the lost 35th Battalion 'Drums' badge

Figure 57 Detailed view of the excavated new poppy badge

Figure 58 **The finds from the cutting of the badge turf and colluvium. Eight 0.303 bullets presumably from the firing ranges below the badges (photo: K. Strutt)**

Excavation of the Borrow Pit

Excavation of the borrow pit (Fig. 59) focused on one of the pit quadrants, to ascertain the shape of the cut and to see if any finds could be retrieved from the excavation. The excavation (Figs 60 to 62) Indicated the edge of the borrow pit cut into the natural chalk. The sides of the cut were apparent, although the excavation did not reach the bottom of the cut. The pit itself, where chalk had been removed during WWI for the chalking of the badges on the downland, was infilled with a mixture of colluvium and chalk rubble. A 0.303 bullet cartridge was found, together with two iron rebars and canvas netting, possibly from post-war refilling and neatening of the borrow pits as part of maintenance work.

Figure 59 Location of the borrow pit excavation in relation to the London Rifle Brigade and Wiltshire Regiment badges

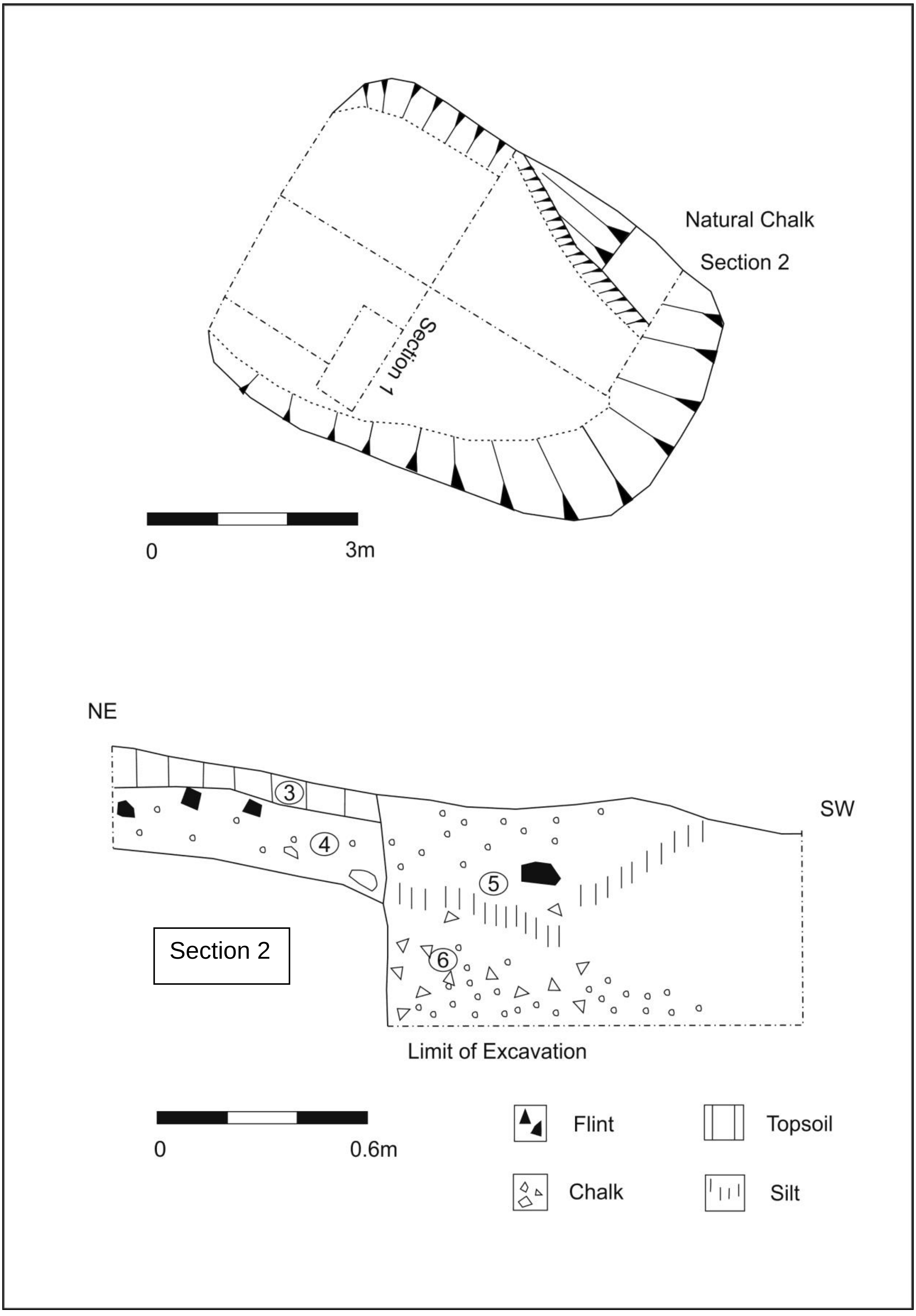


Figure 60 **Plan and section of the borrow pit excavation**

Figure 61 The borrow pit excavation from the south (photo: D. Barker)

Figure 62 The borrow pit excavation from the west (photo: D. Barker)

Figure 63 0.303 bullet cartridge from the borrow pit (photo: K. Strutt)

4. Discussion and Conclusions

Results of the badge cutting, excavation and the geophysics at the Fovant Badges and Chiselbury Camp were generally successful in addressing the specification for providing an archaeologist for the creation of the new badge, and the investigation of the archaeology in the area.

The geophysical survey over the area of the new badge, and the cutting of the insignia, indicated that few traces of archaeological remains were present in the area, with deep colluvium covering natural chalk. A number of small finds were recovered from the soil, all 0.303 bullets from the firing ranges below the badges. In addition no evidence of buried archaeological features was found in the geophysics and the badge cutting in the area of the design, with only some high resistance anomalies in the earth resistance indicating possible remains of lettering from the adjacent 'Drums' badge directly to the south.

The partial excavation of the borrow pit provided evidence for the form of the pit cut near the surface, and evidence of post-WWI and post-WWII backfilling of the feature. The partial nature of the excavation meant that the cut of the pit was not bottomed. However, it is apparent that the depression in the hillside marks one of the borrow pits surrounding the badges that were used to provide chalk for the original insignia.

The geophysical survey at Chiselbury Camp indicated a number of different buried archaeological features in the centre of the hillfort. The most prominent features seem to represent four dewponds of medieval or post-medieval date, shedding some light on the nature of these large features that were also visible in the air photographic images of the site. Several long ditch features, the largest running from north to south, seem to indicate either ditches of a settlement or land divisions that either pre-date the establishing of the hillfort, or mark internal divisions. These are matched by pit features and curvilinear features that may indicate the remains of settlement. Although the presence of settlement may be indicated, some of the sub-divisions demarcated by ditches seem to suggest the enclosure of livestock, and there is a possibility that the early and later phases of use of the site high on the downland, at a pinch point of the ridge, may have marked a territorial boundary and was possibly used for containing livestock. Future investigation of the annexe of the site and the field outside of the hillfort may reveal further important feature associated with the site.

Apart from the possible prehistoric features, much of the northern part of the fort interior was marked by narrow rig, evidence of ploughing probably from the 19th century. Many of the anomalies in the data seem to be near surface and shallow, and have probably been substantially eroded by arable activity.

The geophysics in the cricket ground field revealed a number of anomalies associated with the farm, but also some features on the fringe that might be linked to the WWI camp. The north-south band of high resistance for instance is aligned on the camp layout and may indicate hard standing for a road for the camp. In addition possible evidence of structural remains could be seen along the western edge of the field, meaning that structures from the camp may have covered part of the field. The coverage of crop in July 2016 meant that none of the fields surrounding the cricket ground could be investigated using geophysics or fieldwalking.

The more extensive survey work in the field to the east of East Farm clearly demonstrates part of the footprint of the WWI military camp. A series of structures run from east to west across the field, comprising remains of foundations and debris from the camp. The possible buildings along the western edge of the field also seems to include remnants of possible drainage systems. While components in the results suggest brick-built construction, most of the features in the results of the magnetometry indicate more ephemeral construction. A large distribution of ferrous material in the centre of the area marks the principle area of the barracks, and the pattern of anomalies seems broadly to fit archive maps and photos of the camp. What is particularly interesting in the results is the presence of features that do not appear in any records, principally the open area to the south of the structures, and the potential practice trenches also located to the south. These features clearly indicate that practice trenches formed part of the activities undertaken on the site during the use of the camp. The area of these features also reinforces the notion of the camp buildings being located upslope in the field with the practice trenches and ranges at the base of the Downs.

Magnetic susceptibility results reinforce the overall footprint of the camp buildings, and indicate that, while the area covered by magnetometry shows the main area of the camp, the area of the field to the east shows less evidence of any remains. The exception to this is the area close to the Fovant road in the north of the field. The high magnetic susceptibility readings indicate the line of the camp railway and associated buildings, located along the edge of the field and, quite probably, underlying modern houses adjacent to the road.

Results of the fieldwalking also indicate the quantity of material in the field. This includes metalwork relating to the business of the army, in the form of .303 bullets, a ferrule from an entrenching tool, mills bombs, including one that has been used as a training device. Much of the material also relates to the provisioning of the camp, most characteristically the quantity of fragments of white porcelain and glass. The former includes diagnostic sherds marked with a 'W' symbol in a diamond and the date, normally between 1913 and 1917. The latter material consists mainly of bottle stoppers, suggesting the use of local refreshments at the camp, and some finds of possible medicine bottles, possibly associated with provisions for the camp hospital. A number of finds also indicate use of locally produced preserves and other produce. Finally the penny inkwells found in the area indicate finds relating to administrative work at the camp. Overall the results give an insight into one part of the vast encampment located below the downs at Fovant.

6. Recommendations

- The results of both the excavation and geophysical surveys show that there is scope in these techniques for investigating the period sites that were the focus of the work in the 2016 and 2017 seasons, particularly the geophysics on the hillfort and the work in the field to the east of East Farm.
- Future work would be beneficial applying these techniques to map other parts of the camp, particularly in the fields to the north of the Fovant road.
- It is worth noting the substantial quantity of prehistoric flint finds in the survey area from 2017, and a future project mapping and recording the distribution of these finds in relation to the prehistoric use of the landscape would be of benefit to evaluate prehistoric activity in the area.

7. Statement of Indemnity

Whilst every effort has been made to ensure that interpretation of the survey presents an accurate indication of the nature of sub-surface remains, any conclusions derived from the results form an entirely subjective assessment of the data. Geophysical survey facilitates the collection of data relating to variations in the form and nature of the soil. This may only reveal certain archaeological features, and may not record all the material present. It must be stressed that accurate interpretation of responses within small areas can prove difficult.

Acknowledgments

Considerable advice and assistance was received from a number of sources in the completion of this survey. Primarily, thanks go to Historic England and the inspector of ancient monuments, Mr Phil McMahon, together with Mr Hugh Beamish for support in the drafting of the project document and application for the Section 42 licences and scheduled monument consent. Warm thanks are also extended to Clare King at the Wiltshire County Council Archaeological Services for her advice and support.

The direction and hard work of all of the members of the Fovant Badges Society was essential to the organisation and smooth running of the project. Thanks are therefore extended to Richard Bullard, Rupert Williamson, Steve Harris, Terry Lister and Don McLaren.

Finally the fieldwork would have been impossible without the dedication of the team of staff, students and volunteers. Richard Bullard and Steve Harris, Dominic Barker Tim Sly, Scott Chaussee and Peter Wheeler all worked hard to supervise the teams. Thanks also go to the volunteers; Chloe Collis, Alex Cullen, Emily Dee, Harry Devall, Don Dovey, Michelle Dunford, David Edwards, Anna Fleming, Rupert Fleming, David James, Jack Kenny, Sarah Kenny, Becky Maynard, Margaret McKenzie, Karen Miller, Ethan Murphy, Kelsey O'Donnell, Stephen Postlethwaite, Vicky Postlethwaite, David Priestley, Sarah Roberts, Alison Smith, Alix Smith, Hector Smith, Henry Smith, John Smith, Phoebe Smith, Hayley Thornton, William Turner, Sarah Vigors, Lucy Wall, Rupert Williamson, John Leach, Charlie Peschardt, Lucy Reynolds, Fran Reed, Chris Lyon and Dan Cooke all made an enormous contribution.

Appendix 1 Details of Survey Strategy

Dates of Survey: 15th June to 28th July 2016; 31st July to 18th August 2018

Sites: Chiselbury Camp and the Fovant Badges, Wiltshire

Surveyors: University of Southampton

Personnel: Richard Bullard, Steve Harris, Dominic Barker Tim Sly, Peter Wheeler, Kristian Strutt, Kasandra Boguslawska, Chloe Collis, Alex Cullen, Ethan Day, Emily Dee, Harry Devall, Don Dovey, Michelle Dunford, David Edwards, Joe Ellis, Anna Fleming, Rupert Fleming, David James, Jack Kenny, Sarah Kenny, Esther Lodge, Sian-Eve Mason, Becky Maynard, Margaret McKenzie, Karen Miller, Ethan Murphy, Kelsey O'Donnell, Stephen Postlethwaite, Vicky Postlethwaite, David Priestley, Sophie Renken, Sarah Roberts, Alison Smith, Alix Smith, Hector Smith, Henry Smith, John Smith, Phoebe Smith, Hayley Thornton, William Turner, Sarah Vigors, Lucy Wall, Rupert Williamson, John Leach, Charlie Peschardt, Lucy Reynolds, Fran Reed, Chris Lyon, Dan Cooke

Geology: Chalk

Survey Type 1: Magnetometer

Approximate area: 12.5 hectares

Grid size: 30m

Traverse Interval: 0.5m

Reading Interval: 0.25m

Instrument: Bartington Instruments *Grad601-2* Dual Array Twin Fluxgate Gradiometer

Resolution: 0.1 nT

Trigger: *Grad-01* Data Logger

Survey Type 2: Earth resistance

Approximate area: 2.2 hectares

Grid size: 30m

Traverse Interval: 1m (0.5m on badge)

Reading Interval: 1m (0.5m on badge)

Instrument: Geoscan Research Resistance Meter RM15

Survey Type 3: Ground Penetrating Radar 1

Approximate area: 0.1 hectares

Grid size: 30m

Traverse Interval: 0.5m

Trace Interval: 0.05m

Instrument: Sensors and Software Noggin Plus Smartcart with 500 MHz antenna

Depth (ns): 60ns

Survey Type 4: Magnetic Susceptibility

Approximate Area: 15 hectares

Reading Spacing: 10m by 10m

Instrument: Bartington Instruments MS-2

Appendix 2: Fieldwalking Finds by Grid

Unstratified General surface finds from the survey area including glass stoppers and white pottery with War Dept markings (photo: K. Strutt)

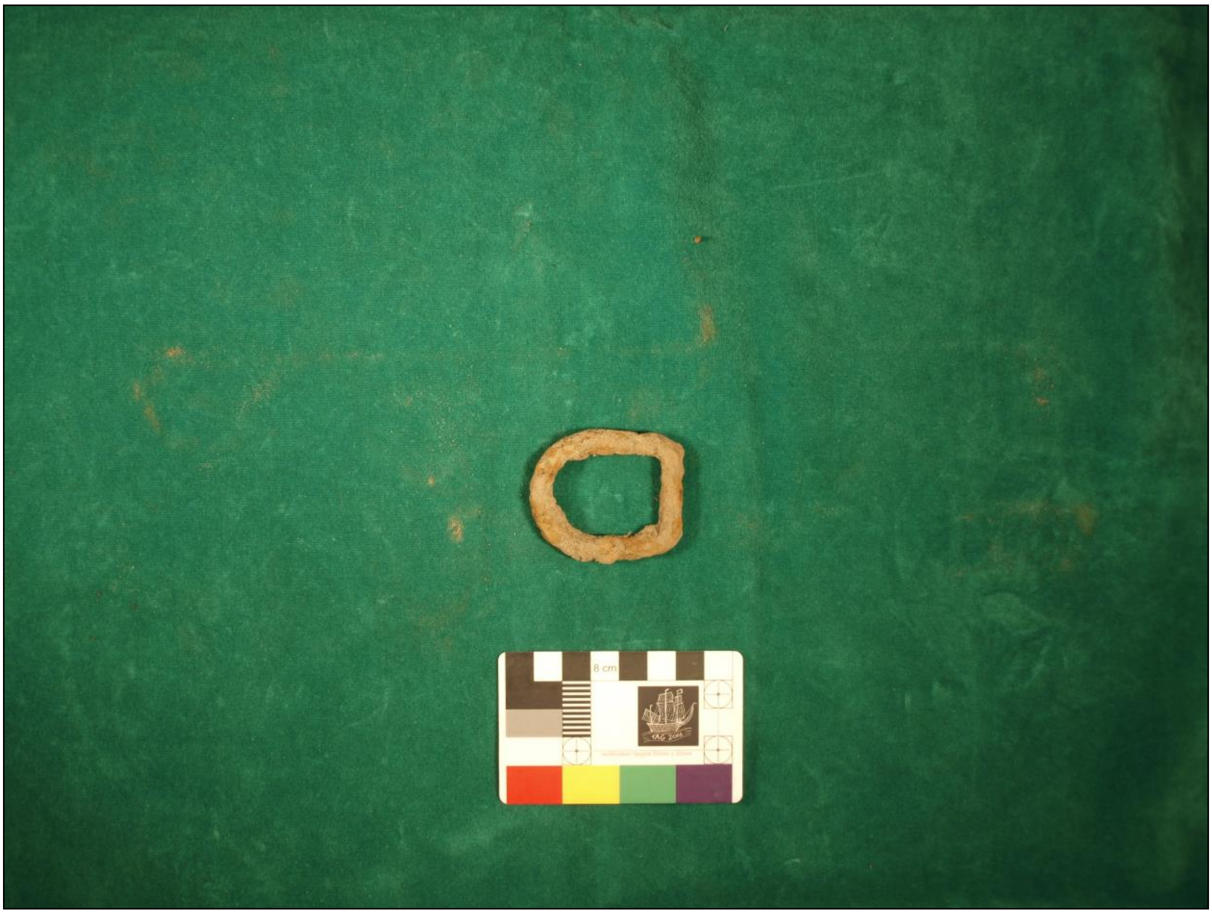
Unstratified Metal finds from the survey area including tent peg, trenching tool ferrule and brass button (photo: K. Strutt)

Diagnostic Finds from Grid 2 (photo: K. Strutt)

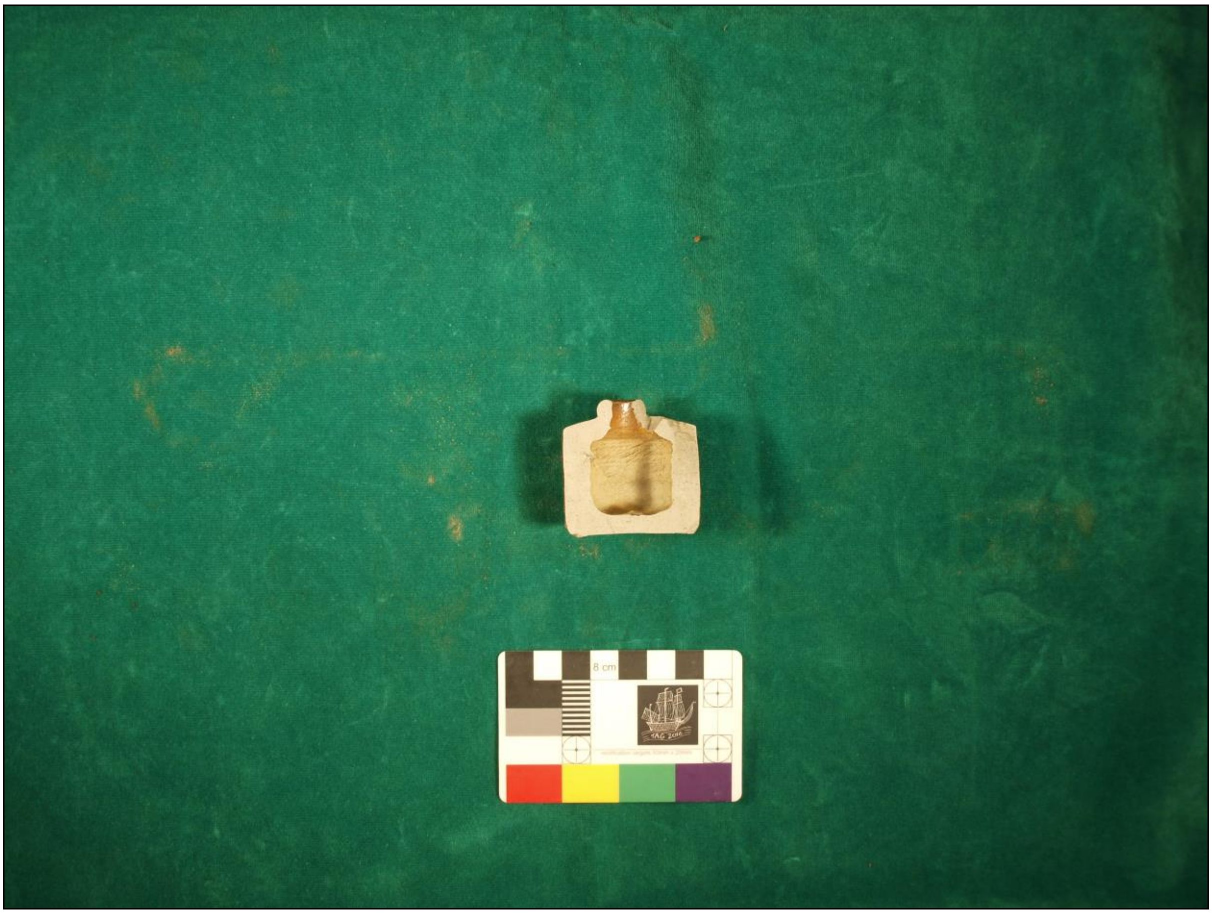
Diagnostic Finds from Grid 3 (photo: K. Strutt)

Diagnostic Finds from Grid 4 (photo: K. Strutt)

Diagnostic Finds from Grid 5 (photo: K. Strutt)



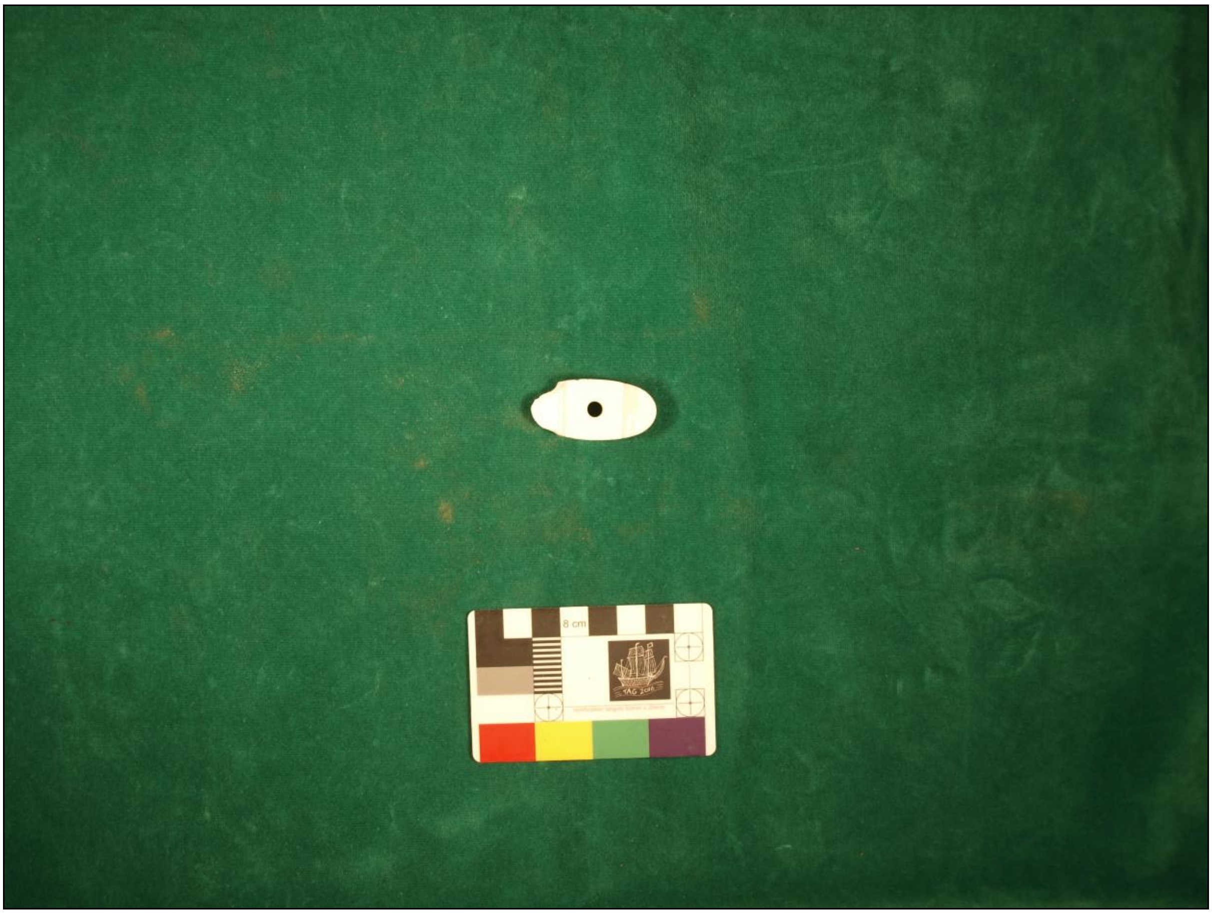
Diagnostic Finds from Grid 6 (photo: K. Strutt)



Diagnostic Finds from Grid 8 (photo: K. Strutt)

Diagnostic Finds from Grid 10 (photo: K. Strutt)

Diagnostic Finds from Grid 12 (photo: K. Strutt)



Diagnostic Finds from Grid 13 (photo: K. Strutt)

Diagnostic Finds from Grid 16 (photo: K. Strutt)

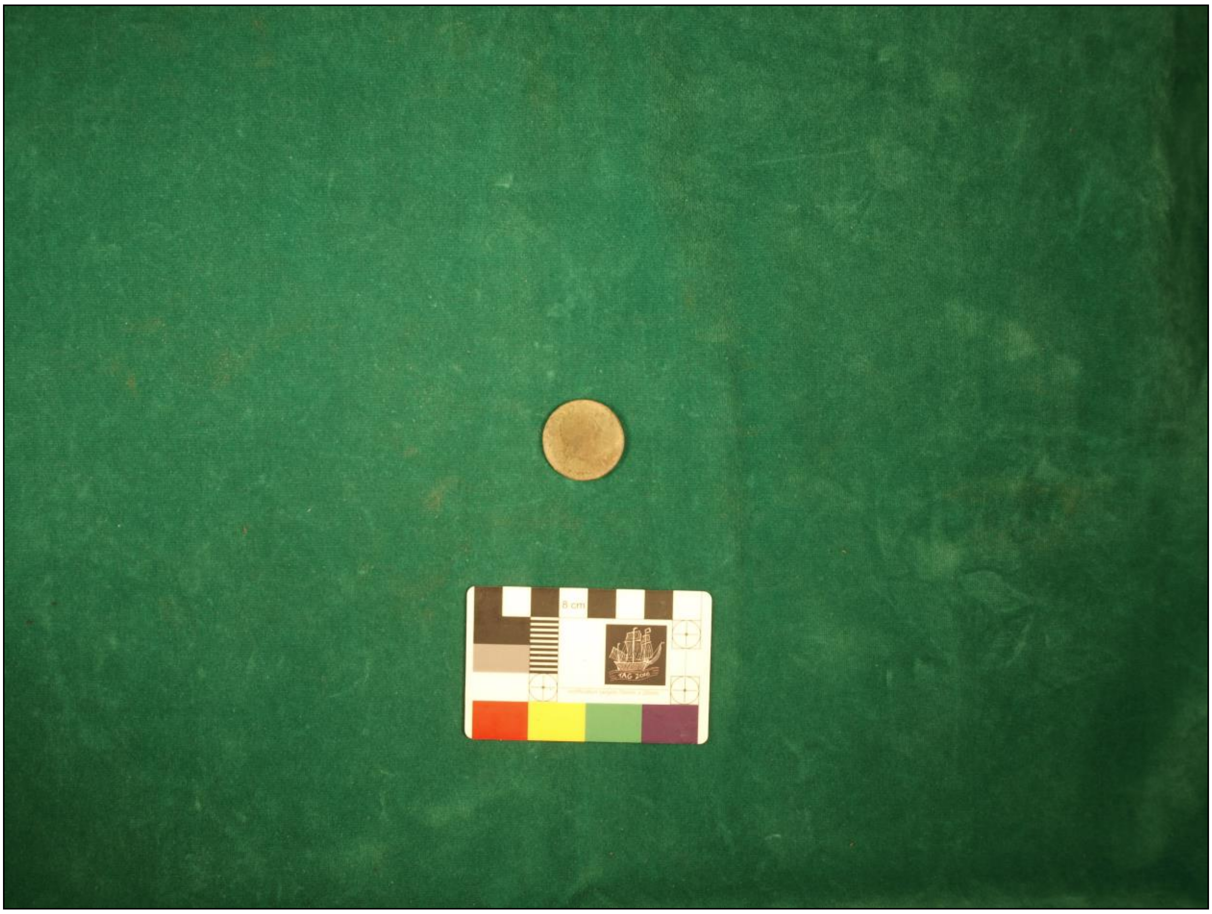
Diagnostic Finds from Grid 17 (photo: K. Strutt)

Diagnostic Finds from Grid 19 (photo: K. Strutt)

Diagnostic Finds from Grid 20 (photo: K. Strutt)

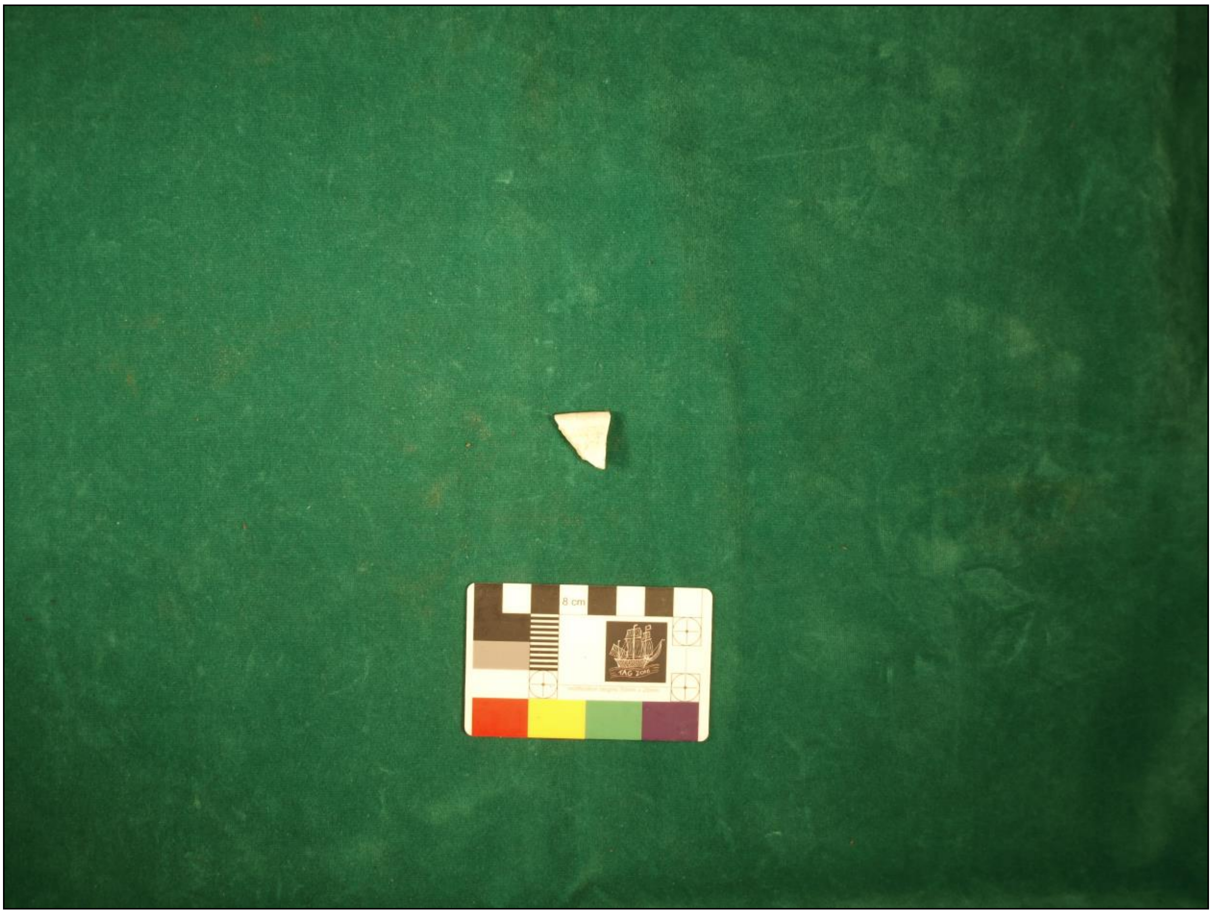
Diagnostic Finds from Grid 21 (photo: K. Strutt)

Diagnostic Finds from Grid 22 (photo: K. Strutt)



Diagnostic Finds from Grid 23 (photo: K. Strutt)

Diagnostic Finds from Grid 25 (photo: K. Strutt)



Diagnostic Finds from Grid 26 (photo: K. Strutt)

Diagnostic Finds from Grid 29 (photo: K. Strutt)

Diagnostic Finds from Grid 30 (photo: K. Strutt)

Diagnostic Finds from Grid 31 (photo: K. Strutt)

Diagnostic Finds from Grid 32 (photo: K. Strutt)

Diagnostic Finds from Grid 34 (photo: K. Strutt)

Diagnostic Finds from Grid 35 (photo: K. Strutt)

Diagnostic Finds from Grid 36 (photo: K. Strutt)

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Diagnostic Finds from Grid 38 (photo: K. Strutt)

Diagnostic Finds from Grid 39 (photo: K. Strutt)

Diagnostic Finds from Grid 40 (photo: K. Strutt)

Diagnostic Finds from Grid 41 (photo: K. Strutt)

Diagnostic Finds from Grid 42 (photo: K. Strutt)

Diagnostic Finds from Grid 43 (photo: K. Strutt)


8 cm


8 cm

Appendix 3: Archaeological prospection techniques utilised by Archaeological Prospection Services of Southampton (APSS)

The following appendix presents a summary of prospection methods, implemented by the the APSS to determine the extent and nature of sub-surface archaeological structures, remains and features. The methodology usually applied by APSS places an emphasis on the integration of geophysical, geochemical and topographic survey to facilitate a deeper understanding of a particular site or landscape.

Geophysical Prospection

A number of different geophysical survey techniques can be applied by archaeologists to record the remains of sub-surface archaeological structures. Magnetometer survey is generally chosen as a relatively time-saving and efficient survey technique (Gaffney *et al*. 1991: 6), suitable for detecting kilns, hearths, ovens and ditches, but also walls, especially when ceramic material has been used in construction. In areas of modern disturbance, however, the technique is limited by distribution of modern ferrous material. Resistivity survey, while more time consuming is generally successful at locating walls, ditches, paved areas and banks, and the application of resistance tomography allows such features to be recorded at various depths. APSS also implement topographic surveys over areas of prospection, to record important information concerning the location of the site. A summary of the survey techniques is provided below.

Resistivity Survey

Resistivity survey is based on the ability of sub-surface materials to conduct an electrical current passed through them. All materials will allow the passing of an electrical current through them to a greater or lesser extent. There are extreme cases of conductive and non-conductive material (Scollar *et al*. 1990: 307), but differences in the structural and chemical make-up of soils mean that there are varying degrees of resistance to an electrical current (Clark 1996: 27).

The technique is based on the passing of an electrical current from probes into the earth to measure variations in resistance over a survey area. Resistance is measured in ohms (Ω), whereas resistivity, the resistance in a given volume of earth, is measured in ohm-metres (Ω/m).

Four probes are generally utilised for electrical profiling (Gaffney *et al*. 1991: 2), two current and two potential probes. Survey can be undertaken using a number of different probe arrays; twin probe, Wenner, Double-Dipole, Schlumberger and Square arrays.

The array used by APSS utilises a Geoscan Research RM15 Resistance Meter in twin electrode probe formation. This array represents the most popular configuration used in British archaeology (Clark 1996; Gaffney *et al*. 1991: 2), usually undertaken with a 0.5m separation between mobile probes. Details of survey methodology are dealt with elsewhere (Geoscan Research 1996).

A number of factors may affect interpretation of twin probe survey results, including the nature and depth of structures, soil type, terrain and localised climatic conditions. Response to non-archaeological features may lead to misinterpretation of results, or the masking of archaeological anomalies. A twin probe array of 0.5m will rarely recognise features below a depth of 0.75m (Gaffney *et al*. 1991). More substantial features may register up to a depth of 1m. With twin probe arrays of between 0.25m and 2m, procedures are similar to those for the 0.5m twin probe array.

Although changes in the moisture content of the soil, as well as variations in temperature, can affect the form of anomalies present in resistivity survey results, in general, higher resistance features are interpreted as structures which have a limited moisture content, for example walls, mounds, voids, rubble filled pits, and paved or cobbled areas. Lower resistance anomalies usually represent buried ditches, foundation trenches, pits and gullies. In addition to the normal twin electrode method of survey, a Geoscan Research MPX15 multiplexer can be utilised with the Resistance Meter, allowing multiple profiles of resistivity to be recorded simultaneously, or resistance tomography to be carried out up to a depth of 1.5m. APSS generally survey, as with the twin electrode configuration, to a resolution of 1 or 0.1Ω, with readings every metre or half metre.

Magnetic Survey

Magnetic prospection of soils is based on the measurement of differences in magnitudes of the earth's magnetic field at points over a specific area. Principally the iron content of a soil provides the basis for its magnetic properties. Presence of magnetite, maghaemite and haematite iron oxides all affect the magnetic properties of soils. Although variations in the earth's magnetic field which are associated with archaeological features are weak, especially considering the overall strength of the magnetic field of around 48,000 nanoTesla (nT), they can be detected using specific instruments (Gaffney *et al*. 1991).

Three basic types of magnetometer are available to the archaeologist; proton magnetometers, fluxgate gradiometers, and alkali vapour magnetometers (also known as caesium magnetometers, or optically pumped magnetometers). Fluxgate instruments are based around a highly permeable nickel iron alloy core (Scollar *et al*. 1990: 456), which is magnetised by the earth's magnetic field, together with an alternating field applied via a primary winding. Due to the fluxgate's directional method of functioning, a single fluxgate cannot be utilised on its own, as it cannot be held at a constant angle to the earth's magnetic field. Gradiometers therefore have two fluxgates positioned vertically to one another on a rigid staff. This reduces the effects of instrument orientation on readings.

Archaeological features such as brick walls, hearths, kilns and disturbed building material will be represented in the results, as well as more ephemeral changes in soil, allowing location of foundation trenches, pits and ditches. Results are however extremely dependent on the geology of the particular area, and whether the archaeological remains are derived from the same materials. For fluxgate gradiometer survey, the Bartington Grad601-2 is used. This is a twin array probe, so carries two fluxgate gradiometers which work simultaneously to increase the speed of a survey. Survey is carried out at 0.1nT resolution, with readings taken every 0.5m by 0.25m. In flat and open territory around 1 hectare per day can be surveyed by each instrument.

Ground Penetrating Radar Survey

Ground Penetrating Radar (GPR) survey is based on the use of an electromagnetic radar wave propagated through the soil to search for changes in soil composition and the presence of structures, measuring the time in nanoseconds (ns) taken for the radar wave to be sent and the reflected wave to return. The propagation of the signal is dependent on the Relative Dielectric Permittivity of the buried material.

This technique has been applied successfully on a range of archaeological sites, in particular over substantial urban archaeological remains. GPR has been used by APSS at the Domus Aurea in Rome, at Forum Novum, and at Italica in Spain. Use of GPR is more time consuming than using magnetometry. It is more appropriate to apply this method to target particular areas of interest at an archaeological site where magnetometry or resistivity have already been applied, or where there is a potential for deeper archaeological deposits.

APSS operates a Sensors and Software radar system, configured for use with a Smartcart frame and console. This utilises a 500 Mhz antenna, which allows propagation of radar waves down to a depth of approximately 3-4m depending on the nature of the sub-surface materials.

Topographic Survey

The modern ground surface or topography often contains important information on the conditions and nature of an archaeological site, and the potential existence of structures buried beneath the soil (Bowden 1999). The changes in topography can also have a great influence on determining the nature of features in a geophysical survey. Therefore it is vital to produce a detailed and complete topographic survey as part of the field survey of any given site. This generally entails the recording of elevations across a grid of certain resolution, for instance 5 or 10m intervals, but also the recording of points on known breaks of slope, to emphasis archaeological features in the landscape.

Survey is usually undertaken by APSS using a total station or electronic theodolite, although Global Positioning Satellite systems (GPS) are also utilised, to record the survey points. Computer software is then used to produce Digital Elevation Models of the results. Normally, survey is carried out using a Leica total station (BSR – TC805), with readings taken every 4 metres, and also on the breaks of slope of important topographical features. The resolution can be increased where necessary. Up to 5 hectares per day can be covered.

Integrated Survey Methodology

The survey work carried out by the BSR/APSS is always produced as part of an integrated survey strategy, designed to affiliate all of the geophysical survey techniques to the same grid system, which would be used for geochemical soil sampling and surface collection. Surveys are normally based on an arbitrary grid coordinate system, tied into a national system or to a series of hard points on the ground corresponding to points on a map. A set of 30m grids are then set out to provide the background for the magnetometry, resistivity, and other survey techniques which will complement the results, for instance fieldwalking and geochemical sampling

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