Rockbourne Roman Villa, Hampshire
Interim Geophysical Report

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Prepared for

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We would like to thank Rockbourne Roman Villa staff and volunteers for being the host for the Festival of Archaeology Geophysical Survey weekend and catering for visitors and volunteers. The site managers Hampshire Cultural Trust for agreeing to waive entrance fees during the event and supporting the survey. Avon Valley Archaeological Society for their support of the event; undertaking the magnetometry survey with their volunteers and manning some display stands. Bournemouth University for their continuing support of the LoCATE project through which the equipment was made available, training the volunteers and making a different resistivity meter available when the usual one was out of action. Jack Brown from Bournemouth University for running the resistivity survey and engaging with the children interested in studying archaeology at university. The New Forest National Park volunteers who along with the Avon Valley volunteers undertook all the survey and processing of results as well as engaged with the public. A big thank you to Lucius Julius Hipponicus (John Smith) for joining us over the weekend and sharing his expertise. Finally thank you to the members of the public who visited and supported the event over the long weekend.

Figure 1: Volunteers from NFNPA & AVAS show Optio Lucius Julius Hipponicus how to operate the geophysical survey equipment at Rockbourne Roman Villa

4 Summary

Magnetometer and resistivity surveys were conducted at Rockbourne Roman Villa, Rockbourne, Hampshire on Saturday 20th and Sunday 21st July 2019. The project was a joint venture between Avon Valley Archaeological Society (AVAS), Hampshire Cultural Trust (HCT) and the New Forest National Park Authority (NFNPA) as part of the Council for British Archaeology (CBA) Festival of Archaeology 2019. The aim of the survey was to investigate the buried archaeology at Rockbourne and give the public a chance to get hands on with geophysical survey. The survey was undertaken by AVAS and NFNPA volunteers.

The survey revealed clearly defined extents of two of the previously excavated buildings, and a wide area of strong magnetic disturbance, which broadly correlated with the areas of the original excavation. The survey also revealed a number of possible pits as well as linear positive anomalies to the west of the villa outside the excavated area which could represent ditches or traces of additional structures. A group of strong linear negative responses were also returned to the north east of the excavated villa buildings, which are currently unexplained and would benefit from coverage with other geophysical techniques.

The success of the survey as a public participation event for Festival of Archaeology was demonstrated by the number of the visitors to the site who stayed for most of the day to take part and see the results downloaded throughout the day. The level of detailed engagement with the public led to people joining AVAS. A number of school children took the opportunity to explore their interest in archaeology, which they are considering studying at university. The results achieved have shown the benefit of undertaking geophysical survey, even in previously excavated areas. All of the partners are interested in returning to site to try and deploy additional survey techniques to help answer outstanding questions as well as extend the survey to cover the site's grass car park.

5 Introduction

5.1 Project Background

A geophysical survey of Rockbourne Roman Villa was proposed as a joint research, training and publicity project between Avon Valley Archaeological Society (AVAS), Hampshire Cultural Trust and the New Forest National Park Authority (NFNPA). Aside from excavations at the villa and walk over survey within the adjoining landscape, there has been no known or reported geophysical work on the site.

The survey was thus planned to meet the following objectives:

- To potentially locate any sub-surface associated archaeological remains that were not previously known.
- To be used as a training and engagement activity with the general public and local history and archaeology groups.
- Provide an opportunity for volunteers and visitors to undertake geophysical survey of a Roman villa site during the Festival of Archaeology with the support and guidance of experts.
- Undertaken with the support of LoCATE (Local Community Archaeological Training and Equipment); a partnership between archaeologists at Bournemouth University and the NFNPA providing access, training, and support for advanced survey equipment that would otherwise be hard to obtain for local groups.
- The site along with the Festival of Archaeology event will be used to inspire local groups and encourage them to make use of the LoCATE equipment, train them and demonstrate good practice
- Provide an opportunity to promote the Roman Villa to new and old visitors and promote the work of the HCT in managing such sites
- Provide visitors with an opportunity to discover more about the work of AVAS in the area and encourage people to join as members and support the local community group.
- Work to meet some of the aims and objectives of the Research Strategy for the Later Iron Age and Roman periods in the New Forest National Park and surrounding areas.[1]
- Provide a starting point or benchmark for further geophysical survey projects across the New Forest based around potential Roman sites from industry such as kilns in the north of the New Forest to potential settlement sites.
- Provide a tool to engage with adjacent land owners to look for opportunities to expand the survey area. The survey and its results will be used to demonstrate archaeological potential and the non-intrusive process to the surrounding landowners.

5.2 Site Location and Topography

Rockbourne Roman Villa is located at West Park 1km south of the village of Rockbourne and five kilometres North West of Fordingbridge. The site is centred on grid reference SU 12010 17035.

The villa is located at the head of a valley through which the winterbourne flows south east to meet the River Avon; this valley head is reflected in the strong linear form of Rockbourne village to the North.

[1] https://nfknowledge.org/wp-content/uploads/2018/06/LIA-and-Roman-research-Strategy-Final.pdf

5.3 Soils and Geology

The solid geology is Chalk Formation - Chalk. Sedimentary Bedrock formed approximately 72 to 84 million years ago in the Cretaceous Period. Local environment dominated by warm chalk seas.

The drift geology is Head - Clay and Silt. Superficial Deposits formed up to 3 million years ago in the Quaternary Period. Local environment dominated by subaerial slopes. (BGS 2019)

The geology of this gravel valley through the chalk downs supported the development of a prosperous agricultural economy in the area with settlement evidence from the prehistoric period onwards to the present day.

5.4 Archaeological and Historical Background

The surrounding area of the villa has high archaeological potential owing to the long occupation of this locality; containing evidence of settlement from the earliest prehistoric periods through to the present day. The majority of the prehistoric evidence comes in the form of findspots found during fieldwalking by AVAS between 1988 and 1992 with a range of flints including scrappers, knives, axes adzes and arrowheads[2].

The earliest evidence for structures on the site of the villa is a recorded Iron Age hut circle discovered beneath early Roman stone building remains in the centre of the later courtyard by Morley Hewitt during his excavations. The hut circle was c.8m in diameter and had a chalk floor. It has been suggested that the occupation of the hut may have spanned the conquest period. The villa site is 2.5km south east of the scheduled Knoll Camp hillfort[3] and 2.5km south west of the scheduled Whitsbury hillfort[4].

During the Roman period Rockbourne developed into a substantial villa site standing at the centre of a large farming estate. The villa was discovered in 1942 by a farmer and, recognising the significance of the finds, the land was bought by A. T. Morley Hewitt who conducted excavations every summer from 1956 to 1978. These revealed a Roman courtyard villa covering an area of c95m by c95m. It consisted of at least 40 rooms and associated outbuildings set around 3 sides of a courtyard with a western entrance. Few records were kept so interpretation of the site is difficult. The site's development was an initial timber building which was replaced by a stone structure in late C1st AD. The full courtyard style villa developed from C2nd to C4th and appears to have been finally abandoned in the C5th AD. Additional re-excavations were undertaken in 1978 and 1982 by I. P. Horsey following the site's purchase by Hampshire County Council, which provided further understanding of the site's history and use (**Figure 2**).

The records from these later excavations are summarised here as highlights to help understand some of the geophysical results. Mosaic or Tessellated pavements were uncovered in ten separate locations; though in most cases they were fragmentary or damaged. All the surviving decipherable designs are geometric of varying degrees of complexity and are executed in red, white and brown tesserae. Three of the villa rooms within the north range were heated by hypocausts and the associated furnaces were recorded. Two bath suites were identified at the villa, one on the eastern side and one on the west; the east baths include a frigidarium with an octagonal plunge pool. Two wells were found during the excavation of the villa. The well to the west is probably C4 and cuts 5.5m into the chalk. The base of the well was lined with oak timbers up to a height of 0.9m above which was a circular lining of stone. The other well, to the east, was built entirely of sandstone

[2] Data from Hampshire HER (accessed August 2019)
[3] https://historicengland.org.uk/listing/the-list/list-entry/1010764
[4] https://historicengland.org.uk/listing/the-list/list-entry/1020316

blocks and was 2.3m deep and 0.9m wide, narrowing to 0.6m at the base. Two T-shaped corn driers, of C3 type, were discovered during the excavation of the south range of a set of buildings that probably had an agricultural function. One drier was inside one of the buildings, the other was positioned between two buildings. Two probable smithies were found, one at the eastern end of the north range and the other towards the west of the southern range. The first consisted of much iron slag, an open hearth and a pit, none of which provided dating evidence. Two crucibles with copper deposits and a lump of tin slag also suggest bronze smelting. Three ovens were found within room 26 which has been interpreted as a kitchen. One was raised with a central flue lined with tiles and limestone slabs and rebuilt three times of sandstone and mortared flints. The other two were bowl shaped with one set on a square plinth. More substantial information on the villa finds can be found on the Hampshire HER page[5]. One main interpretation about the duplication of rooms in the two wings of the main residential area suggests that at some stage they were separate residences (Allen, 2012).

In 1988, AVAS undertook a fieldwalking survey of the arable fields adjoining the Roman villa site (Light 1988). Beyond the boundary fence to the south of the site there was a 20m wide scatter of pottery, brick tile and Purbeck stone roof tile. To the west of the site, there was a substantial pottery scatter with some brick tile fragments but no other building material. The main concentration was contained in a slight natural depression running north east to south west away from the villa. The text and plan from the report are included in **Figure 3** and **Figure 4** respectively. This fieldwalking survey is of interest as it suggests the Roman activity extended outside the area investigated by excavation, activity which provides a potential target for geophysical survey. Excavations approximately 1.5 km to the southeast of Rockbourne at Allen's Farm show that pottery was being produced in kilns during the late 3rd century. Such a close proximity to the villa at Rockbourne suggests that the pottery kilns may have been part of the villa estate. (Hampshire HER #54618[6])

Hampshire HER records that during the excavations at Rockbourne Roman Villa a quantity of Medieval pottery sherds and a variety of Medieval coins were found; including included coins of Philip II of France (1180-1223), Henry III (1216-1272), Edward I (1272-1307), Richard II (1307-1339), Henry VIII (1509-1547) and Elizabeth I (1558-1603). These potentially relate to a phase of stone robbing or cultivation that took place during the period. By the time of the Domesday survey there were about 31 families living in the Rockbourne area in the two manors of Rockbourne and Rockstead[7]. These eventually merged and formed the village of Rockbourne as it is known today.

During the C19th from around 1810 through to 1924 the undiscovered villa site was part of West Park; the seat of the Eyre-Coote family. Historic maps show the villa would have sat under open park land that extended east from the house to meet what is now Rockbourne road (**Figure 5**). Historic Ordnance Survey maps show the estate up until 1924. This would leave the period between 1924 and discovery of the villa in 1942 for the land to be either sold off or converted from park land into farmland.

The Roman Villa which is the focus of the geophysical survey is a scheduled monument SAM#1003454 (https://historicengland.org.uk/listing/the-list/list-entry/1003454)

[5] https://maps.hants.gov.uk/historicenvironment/herResults.aspx?monuid=27779
[6] https://maps.hants.gov.uk/historicenvironment/herResults.aspx?monuid=54618
[7] Data obtained from Open Domesday: https://opendomesday.org/place/SU1118/rockbourne/

Its Hampshire Historic Environment Record number is #27779 (https://maps.hants.gov.uk/historicenvironment/herResults.aspx?monuid=27779)

6 Methodology

6.1 Method

The site comprised a grass area containing the extant remains of the excavated villa. This area was divided into a grid of 20m squares, laid out using traditional tape survey methods. The geographical location of the grid was established using a Leica Flexline TS06+ 5" R500 Total Station to tie the grid into fixed points with known positions. The survey grid is shown in **Figure 8**.

The data was downloaded and processed using the Snuffler software package[8]. Processing applied to the data is described in detail in Sections 7.1 & 8.3.

6.1.1 Magnetometer Survey

The magnetometer survey was undertaken using a Geoscan FM36 gradiometer. The grid was traversed in a parallel fashion, with a traverse separation of 1 metre. Readings were taken at an interval of 0.25 metres along a traverse. The gradiometer was operated by three different survey personnel from Avon Valley Archaeological Society supervised by Mike Gill from AVAS. All had previous experience in undertaking magnetometer surveys.

6.1.2 Resistivity Survey

The resistivity survey was undertaken using a Geoscan RM85 Resistivity Meter. Survey grids were traversed in a zig-zag fashion, with a traverse separation of 1metre. The Range settings were current 1ma, frequency was 137.5Hz and the gain was x10. Readings were undertaken at an interval of 1 metre along the traverse. The resistivity meter was operated by a large number of personnel including visitors to the villa during the festival. The survey was supervised by James Brown from NFNPA and Jack Brown from Bournemouth University from whom the kit was borrowed. The RM85 was used instead of the planned RM15, which was broken. Unfortunately, this led to a number of challenges with operation and only 6 grids were completely surveyed. Due to the reliance on soil moisture the resistance survey was also impacted by the heavy rain following several weeks of hot weather on the day before the survey and the first day of the survey.

[8] Snuffler: http://www.sussexarch.org.uk/geophys/snuffler.html

7 Geophysical Survey Results and Interpretation

7.1 Magnetometry

Figure 9 (a) shows the raw results without any processing or filtering, and **Figure 9 (b)** shows the data following interpolation in the x-direction to adjust for the difference in sampling and traverse intervals.

Post-acquisition, the Snuffler 'Grid per Sensor Direction' de-stripe filter was applied to the data to correct instrument drift. This filter collects average values across each grid before applying the de-stripe filter. This filter was chosen over the more standard single pass and multi-pass zero mean line filters as it was noticed that a number of anomalies parallel with the traverse direction were being completely filtered out with the latter filters.

Figure 9 (c) shows the results following the application of the de-stripe filter followed by interpolation in the x-direction. The greyscale is from -2.0nT (white) to +2.0nT (black). These greyscale values were chosen to optimise the display of the areas away from previous excavation and disturbance. The excavation areas exhibit a significant number of extreme magnetic values, and so detail is lost in these areas due to all values below -2.0nt or above +2.0nT being displayed as white or black respectively. As a result, a second visualisation is provided, **Figure 9 (d)** where the greyscale is from -10.0nT (white) to +10.0nT (black). This plot provides more visual variation in the greyscale where there are strong negative or positive readings. These latter two plots in Figure 9 illustrate the difficulty in choosing one greyscale that is appropriate for a survey which includes contrasting areas of strong and weak magnetic responses.

Figure 10 shows the de-striped and interpolated results with a -2.0nT / +2.0 greyscale draped over an aerial photograph of the site. A plot is also provided in Figure 10 showing the RCHM(E) plan of excavated areas draped over the results. **Figure 11** provides similar depictions for the de-striped and interpolated results with a -10.0nT / +10.0 greyscale.

Figure 12 shows a graphical summary of the significant magnetic anomalies. Two areas of excavated buildings were clearly defined in the survey; the south range, and the first masonry building on the site, in the North West corner of the courtyard. The regular outlines of these buildings are clearly depicted in **Figure 11** and are perfectly aligned with building foundations on the georeferenced plan. These buildings are represented by strong positive and negative magnetic readings shown as a mottled pattern in the results. The regular outline is more sharply defined when using a grey scale mapped to a wider range of values (**Figure 11**).

There is a large spread of strong positive and negative magnetic disturbance which roughly corresponds with areas containing the rest of the buildings, and adjacent excavated areas. Outside the excavated areas there are a number of interesting anomalies. To the East of the courtyard of the villa, there are very strong negative linear anomalies. Their regular nature is most clearly defined in the +/-10nT greyscale visualisation (**Figure 11**). These anomalies appear to close off the courtyard of the villa and could be interpreted as another range of buildings. However, the northern part of the anomaly appears to extend into the previously excavated area, where no trace of such a structure was found.

One of the original excavators at the site, Tony Light (personal communication), recollects the spoil heap from the excavation being piled up along that edge of the site. This could be a cause of the anomalies, although an aerial photograph taken at the time of the excavation (**Figure 19**) suggests the spoil heap was further to the east, closer to the road. The use of other geophysical techniques in this area could help to elucidate the cause of these anomalies.

To the West of the disturbed excavated area, there is a scatter of strong negative anomalies. The cause of these anomalies is unexplained but could have a modern explanation given the site has been used as a tourist attraction since the excavations were completed.

At this point in time, these anomalies are unexplained, and it is recommended that other techniques, for example resistivity and ground penetrating radar, are used to complement the magnetometer survey in this area.

To the West of the disturbed and excavated area, there are a number of linear positive anomalies. Most of these are roughly aligned with the survey traverses, which might suggest they are an artefact of the survey, perhaps through inconsistent survey technique, rather than true sub-surface anomalies. However, some of these anomalies cut across more than one grid square, and some have a width of greater than one traverse, suggesting they may be true anomalies. They may represent ditches, although they bear no clear relationship with the excavated villa remains. They are also not in line with short sections of ditch uncovered during the excavations which appeared to extend outside the excavated area (**Figure 7**). In addition, they do not appear to be consistent with a ditch shown in cropmarks to the South in the adjacent arable field (**Figure 6**). In order to rule out any of these linear features being survey artefacts, the area could be resurveyed using a different grid orientation.

In the area of the villa courtyard, one group of positive anomalies has a linear arrangement. Although this is at an oblique angle to the villa buildings, it may represent the traces of an archaeological feature.

The survey has revealed a group of discrete positive anomalies to the immediate South West of the disturbed excavated area. These are consistent with possible pits. One of these oval shaped anomalies is particularly large, with a maximum diameter of approximately 6 metres. Apart from this group of pit-like features, there is a scatter of similar anomalies across the undisturbed part of the survey area, some within the courtyard area.

Figure 12 also shows a small number of strong dipolar anomalies. These could represent ferrous targets, although the given their size, they could represent areas of burning.

7.2 Resistivity

Figure 13 (a) shows the raw results without any processing or filtering for the six grids surveyed, **Figure 13 (b)** & **(C)** shows the unprocessed data split into two for the two different days surveys to try and balance any tiled appearance.

Figure 14 (a) shows the results processed using a despike with threshold =56 and then Interpolation along X & Y. Greyscale ranges from 50 Ohms (white) to 150 Ohms (black).

Figure 14 (b) shows the results processed using a despike with threshold =56, Geology removed (sample radius =2) and then Interpolation along X & Y. Greyscale ranges from 50 Ohms (white) to 120 Ohms (black).

The six survey grids completed covered the western area of the site outside of the main excavated areas. **Figure 15** shows the resistivity results overlain on the Rockbourne aerial photo and grid map and **Figure 16** shows the resistivity results alongside the magnetometry results overlain on the excavation plan. The survey area covered the area west of the known villa structures outside the area excavated or marked as excavated on the villa plans. This was an area that had a number of anomalies identified in the magnetometry results. Though there were challenges undertaking the survey due to weather, a change of equipment and user error the results do suggest some potential

features. Most of the potential features identified in the survey results are high resistance suggesting a distinct possibility of buried foundations.

Figure 17 and **Figure 18** map the potential anomalies interpreted from the resistivity survey. There are two large areas of disturbance one running along the line of the fence at the south west edge of the area surveyed and the other in the north eastern area of the survey which is immediately to the west of the uncovered areas of hypocaust under the main villa building and correspond with previously recorded excavated areas on the villa complex. Three very clear round areas of high resistance are visible in the eastern area of the survey close to the modern garden. Potentially most interesting are the two possible high resistance parallel linear features running parallel to the line of excavated villa buildings running roughly north-west south-east.

Though the resistivity survey wasn't undertaken over the entire villa area making it difficult to compare known buried structures results to any anomalies in the survey, it does further support some of the results from the magnetometry. However, at the same time it is worth noting that some of the strong magnetometry anomalies are not picked up in the resistivity survey results. This may be the result of weather or user error, but the small area of results for the resistivity demonstrate a very strong argument for returning to the site to re do the previously surveyed area and completely survey the whole villa area.

8 Conclusion

The magnetometer survey clearly picked out the extents of two of the excavated linear rows of buildings, and a wide area of strong magnetic disturbance broadly correlated with the area of the original excavations. Outside this area, a group of strong linear negative responses are currently unexplained and would benefit from coverage with other geophysical techniques. To the West of the disturbed area, the survey revealed a number of possible pits as well as linear positive anomalies which could represent ditches or traces of structures. Features in this area were picked up in both the magnetometry and resistivity surveys. Some of the ditch like features were aligned to the grid squares, and a follow up survey at a different traverse direction would help to rule out some of the anomalies being artefacts of the survey technique.

In addition to the potential new information gleaned from the survey results, the weekend of survey served as a very successful education event for the general public, as part of the Festival of Archaeology. The site experienced a significant number of visitors over the two days, with a large number of questions about and interest in the techniques being used. Visitors were able to participate in the resistivity survey, and it was noticed that some attendees stayed for a most of the day in order to view results as they were downloaded and track the progress of the survey.

Three school children attended who were considering archaeology as a degree subject, and they were able to assist with survey tasks and measurement of the grid squares as well as actual geophysics survey. We received very positive feedback from these students and their families. In summary, the event served as a tremendous advert for geophysics and archaeology, stimulated the interest of local attendees and has hopefully encouraged further involvement in local archaeology. This was reflected in a number of attendees wishing to join AVAS at the event, with a particular desire to get involved in more geophysics survey.

The Festival of Archaeology survey at Rockbourne can be considered a successful project in that it met the original objectives of the partnership project and has returned some results that show more can be learnt from undertaking geophysical surveys even on sites that have been previously excavated.

9 Recommendations

Following both the successful parts of the survey and the lessons learnt we would suggest the following actions:

- Repeat the magnetometer survey of the area to the West of the disturbed excavated area, to confirm that linear anomalies aligned with the grid were not survey artefacts.
- Repeat and extend the resistivity survey across the entire site to allow more detailed comparison with the magnetometry
- Explore the use other geophysics techniques over the strong linear negative responses to the East of the villa courtyard.
- Undertake a magnetometer survey of the car parking area when the site is closed to the public

10 References

Allen, 2012. Hampshire Historic Environment website. Accessed September 2019: https://maps.hants.gov.uk/historicenvironment/herResults.aspx?monuid=27779

British Geological Society. Website: https://www.bgs.ac.uk/data/mapViewers/home.html Accessed September 2019.

Hampshire Historic Environment Record. Online database accessed July 2019: https://www.hants.gov.uk/landplanningandenvironment/environment/historicenvironment/historicenvironmentrecordc

Historic England, Scheduled Ancient Monument listings database. Accessed July 2019: https://historicengland.org.uk/listing/the-list/

Light, A. 1988 Fieldwalking 1987-88. Unpublished report.

Royal Commission on Historical Monuments (England) (1983) West Park Roman Villa, Rockbourne, Hampshire, Archaeological Journal, 140:1, 129-150, DOI: 10.1080/00665983.1983.11077689

11 Figures

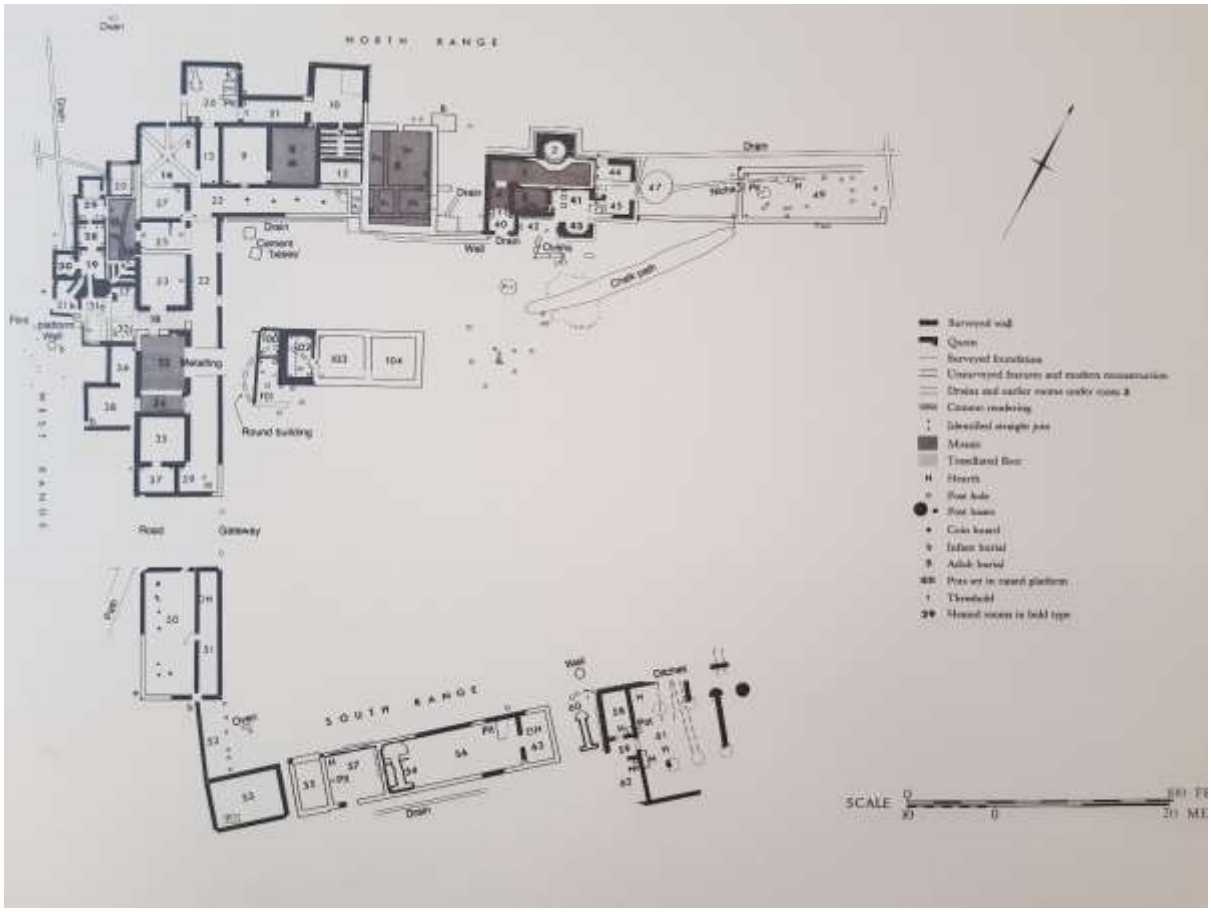


Figure 2: Villa plan of excavated area displayed in Villa museum. Credit: Hampshire Cultural Trust

FIELDWALKING 1987 - 88.

A further two days walking at West Park, Rockbourne, in February, by kind permission of Mr. Bouskill, produced interesting evidence of contemporary occupation in the areas adjacent to the Roman Villa. Beyond the boundary fence on the south side of the site is a 20m. wide scatter of pottery with fragments of brick tile and Purbeck stone roof tile. This material is within the area enclosed between the already excavated buildings and the main boundary ditch which was partially investigated along a short stretch to the west of the buildings in about 1970.

Further to the west, beyond the boundary ditch, is a substantial pottery scatter containing some brick tile fragments but no other building material. The main concentration is contained within a slight natural depression some 75m. wide, running NE - SW away from the villa, and must indicate some form of outer enclosure of similar dimensions to the villa block itself.

The pottery ranges in date from the 2nd. to 4th. centuries AD and is probably largely contemporary with the main villa phases of the 3rd. and 4th. centuries. About 4% of the sherds were New Forest fine wares with an occasional contemporary Oxfordshire fragment but no Samian or other early Roman wares. Coarse grey wares in a variety of forms and fabrics predominated, with a considerable proportion probably originating from the New Forest kilns.

No pre-Roman sherds were recovered from the main scatters although two early Iron Age fragments were found a few hundred yards to the north-west. There was also a notable absence of 5th. century chaff -tempered wares.

Further work on the probable Bronze Age occupation site some 700m. to the south-west produced seventy more, mostly small, sherds, none of which were rim fragments. The precise date of this site, discovered in 1987, is therefore still uncertain as the fabric alone is difficult to identify.

A small excavation at Outwick(SUI45177) in the Autumn of 1987 produced evidence of late Iron Age occupation underneath the pottery scatter found the previous year. A ditch and adjacent gullies contained pottery which must date between the 1st. century BC and the 1st. century AD, although a relatively early date seems likely as the site clearly did not continue into the Roman period. In other parts of the same field, however, occupation lasted into the late 3rd. or 4th. centuries AD.

TONY LIGHT.

Figure 3: Text from report on fieldwalking survey around Rockbourne Roman Villa (Light 1988)

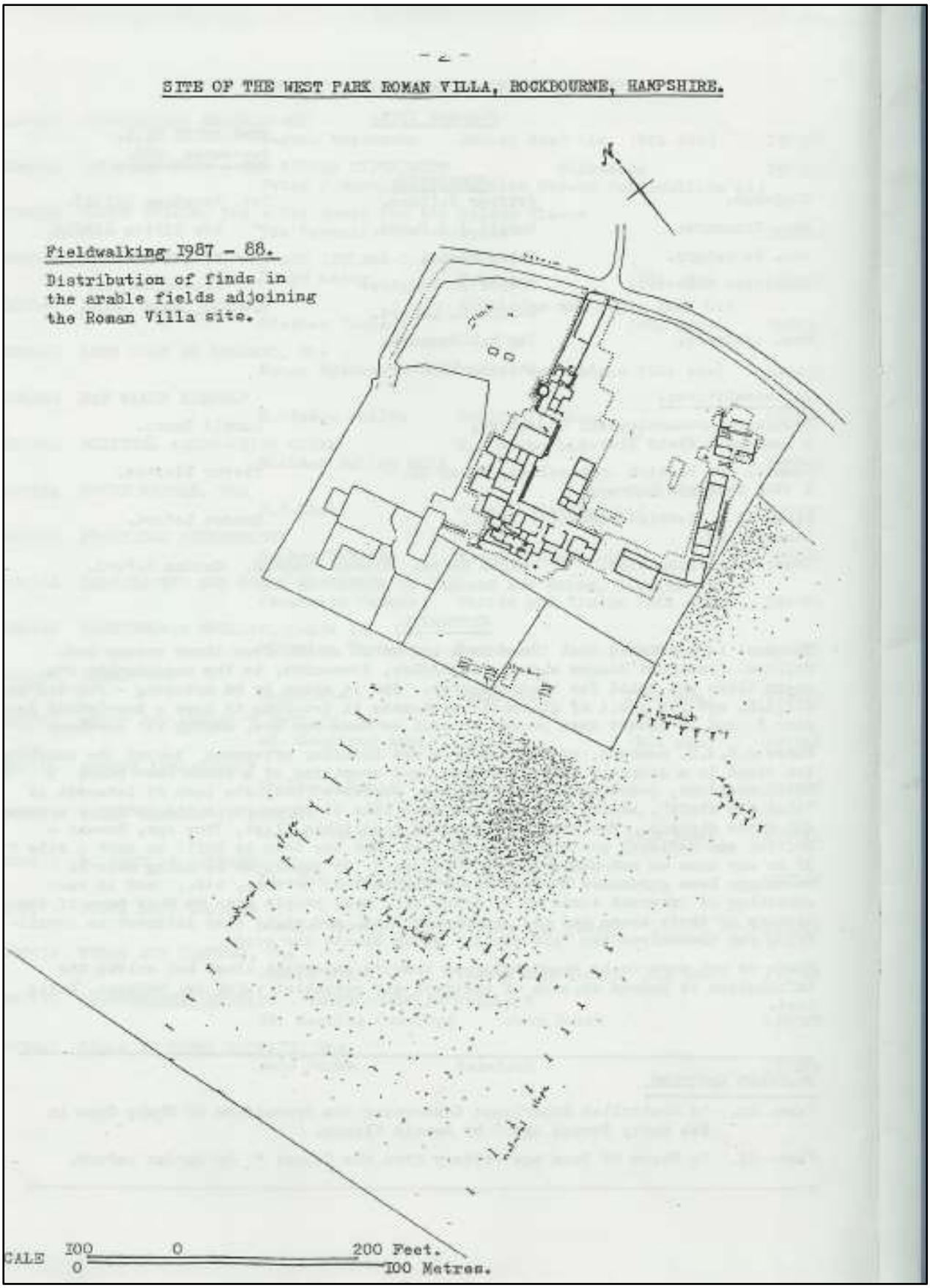


Figure 4: Scan of plan from report on fieldwalking survey around Rockbourne Roman Villa (Light 1988)

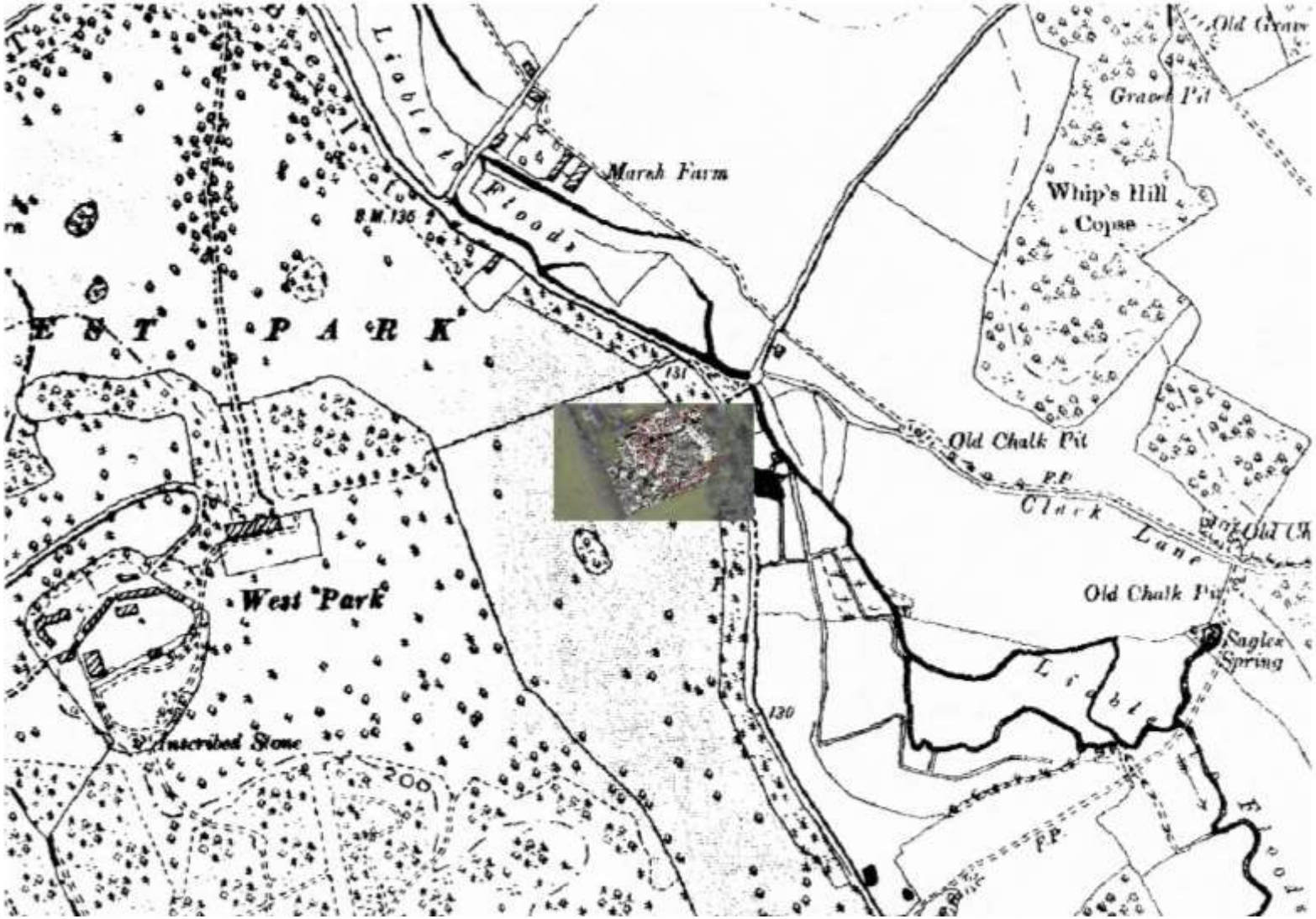


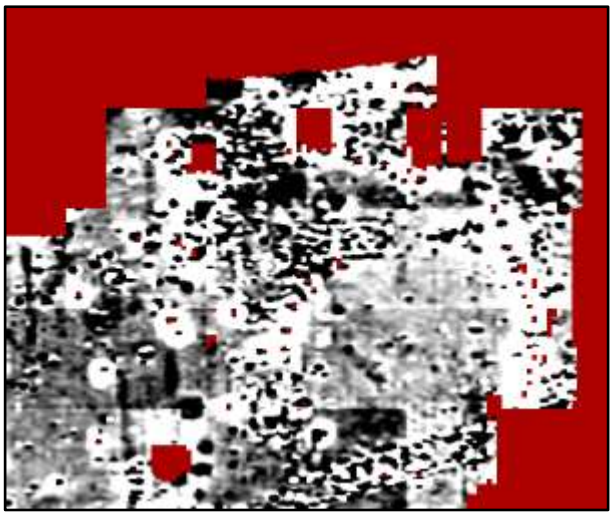
Figure 5: Historic OS Map from 1890 showing the Roman Villa under park land to the east of the estate and close to the river. ©Crown Copyright and Landmark Information Group Limited 2015. All rights reserved. (1890)

Figure 6: Crop marks in the arable field adjacent to the site. Imagery date 2018. Image from Google Earth.

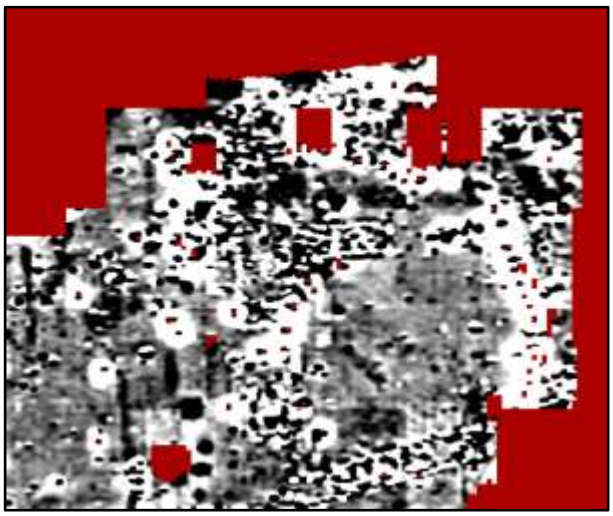
Figure 7: Plan of excavated areas (RCHM(E) 1983) draped on an aerial photograph. Excavated areas shown with a dotted line.

Figure 8: Survey 20m grid squares overlaid on an aerial photograph of the villa site

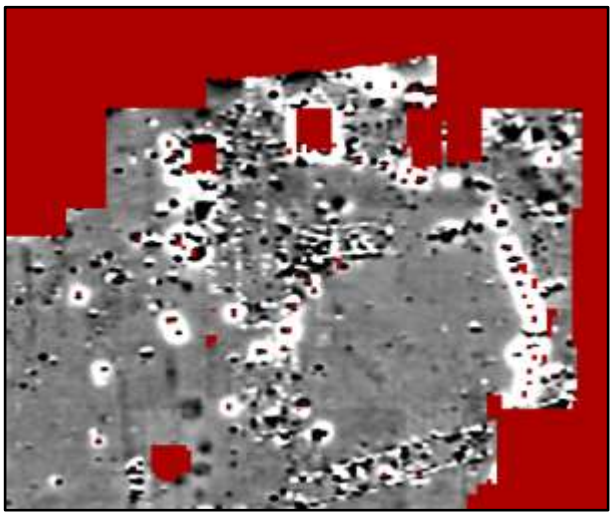
a. The raw results with no processing applied. Greyscale ranges from -2.0nT (white) to +2.0nT (black)



b. Results with interpolation applied twice in the x direction. Greyscale ranges from -2.0nT (white) to +2.0nT (black)



c. Results with the Snuffler 'Grid per Sensor Direction' destriping filter applied, followed by interpolation in the x direction. Greyscale ranges from -2.0nT (white) to +2.0nT (black)



d. Processing as for (c). Greyscale ranges from -10.0nT (white) to +10.0nT (black)

Figure 9: The magnetometer results using different processing and display properties

Figure 10: Destriped and interpolated results, greyscale from -2.0nT (white) to +2.0nT (black)

Figure 11: Destriped and interpolated results, greyscale from -10.0nT (white) to +10.0nT (black)

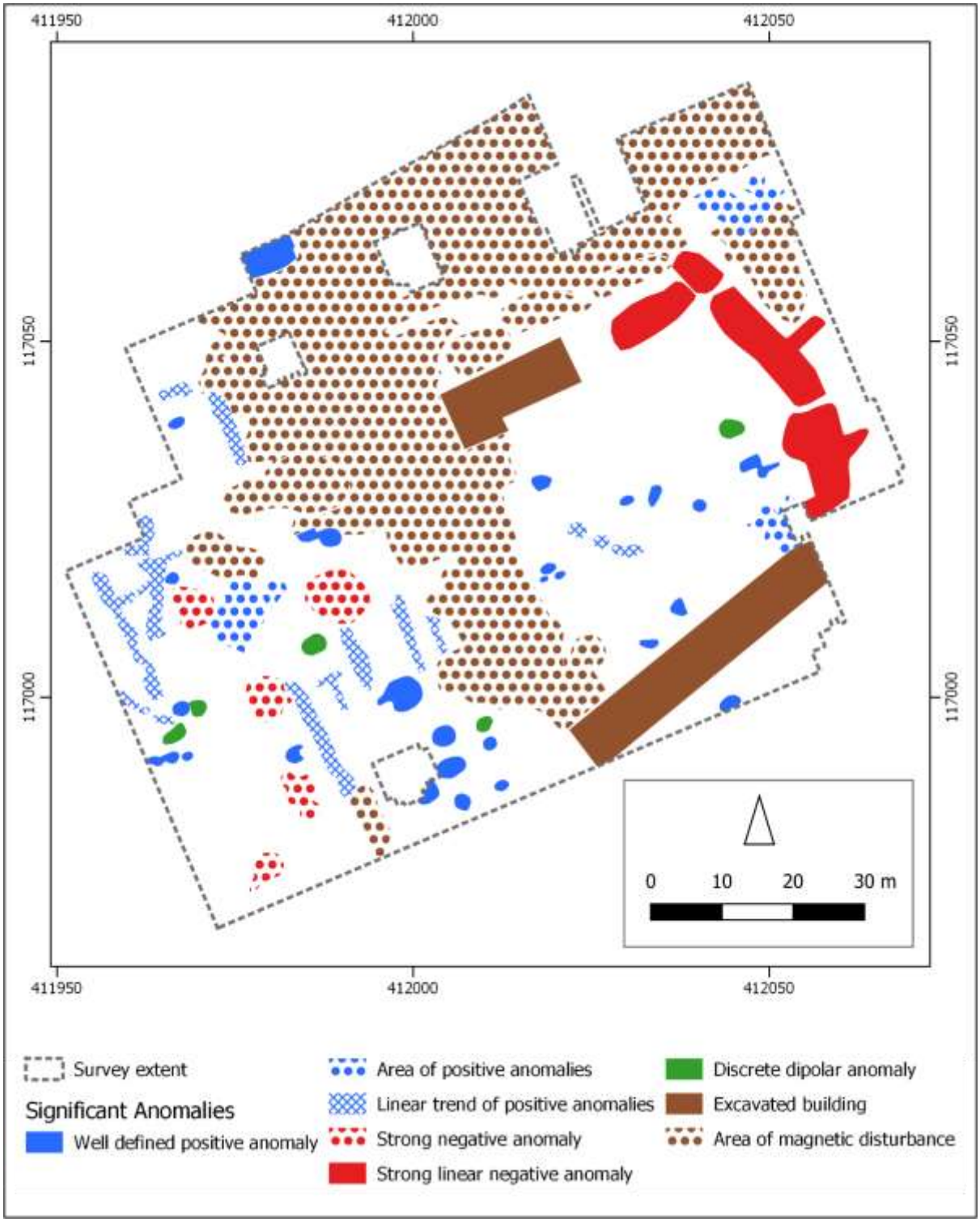
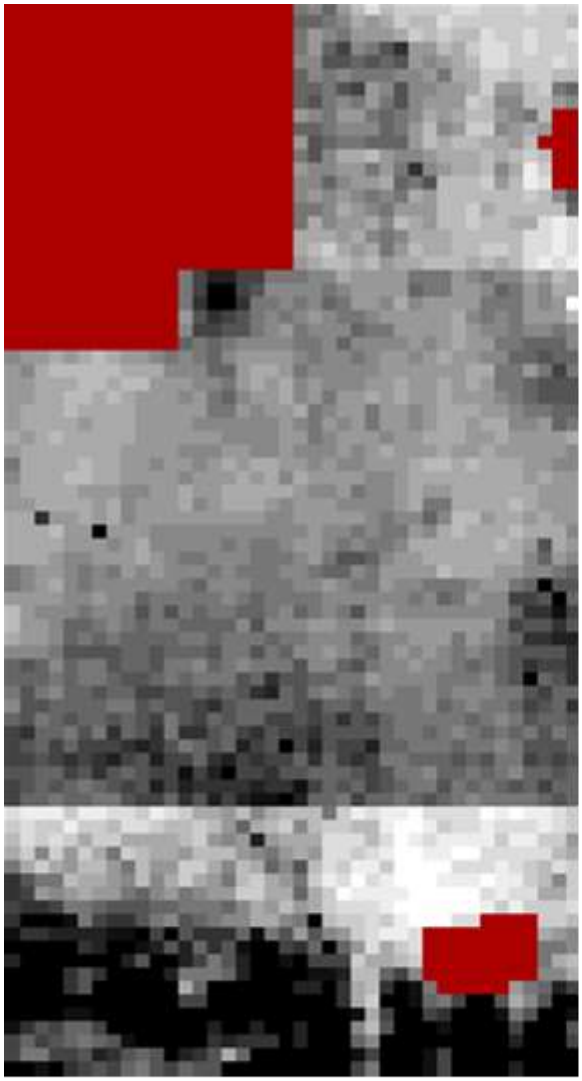
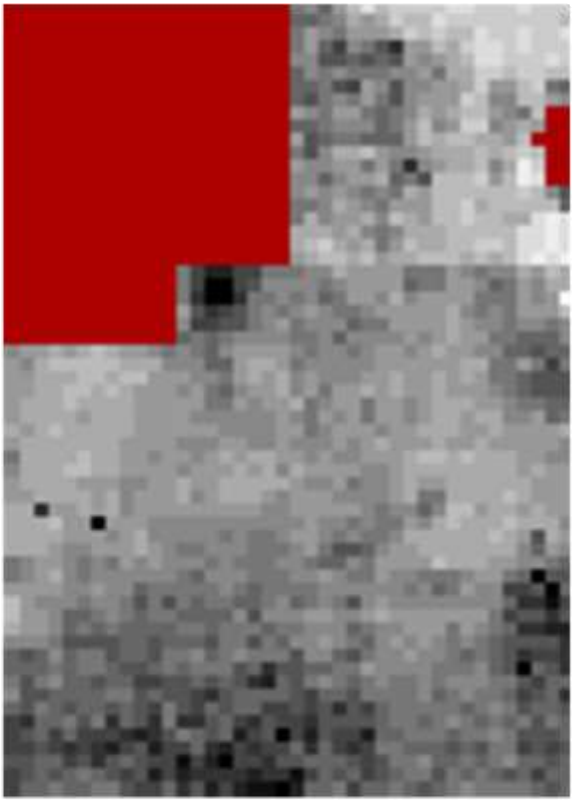


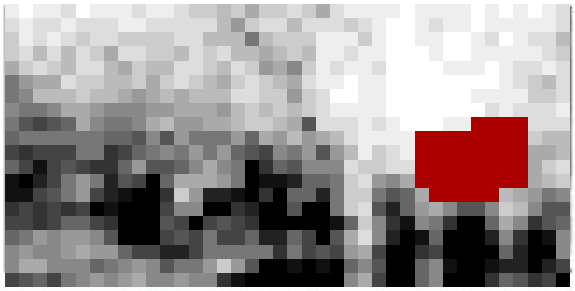
Figure 12: Summary of significant magnetic anomalies



A: The raw resistivity results with no processing applied to 7 grids. Greyscale ranges from 50 Ohms (white) to 150 Ohms (black). This shows the tiling from 3 different days of surveying due to a number of issues with equipment operation and balancing of the remote probes.

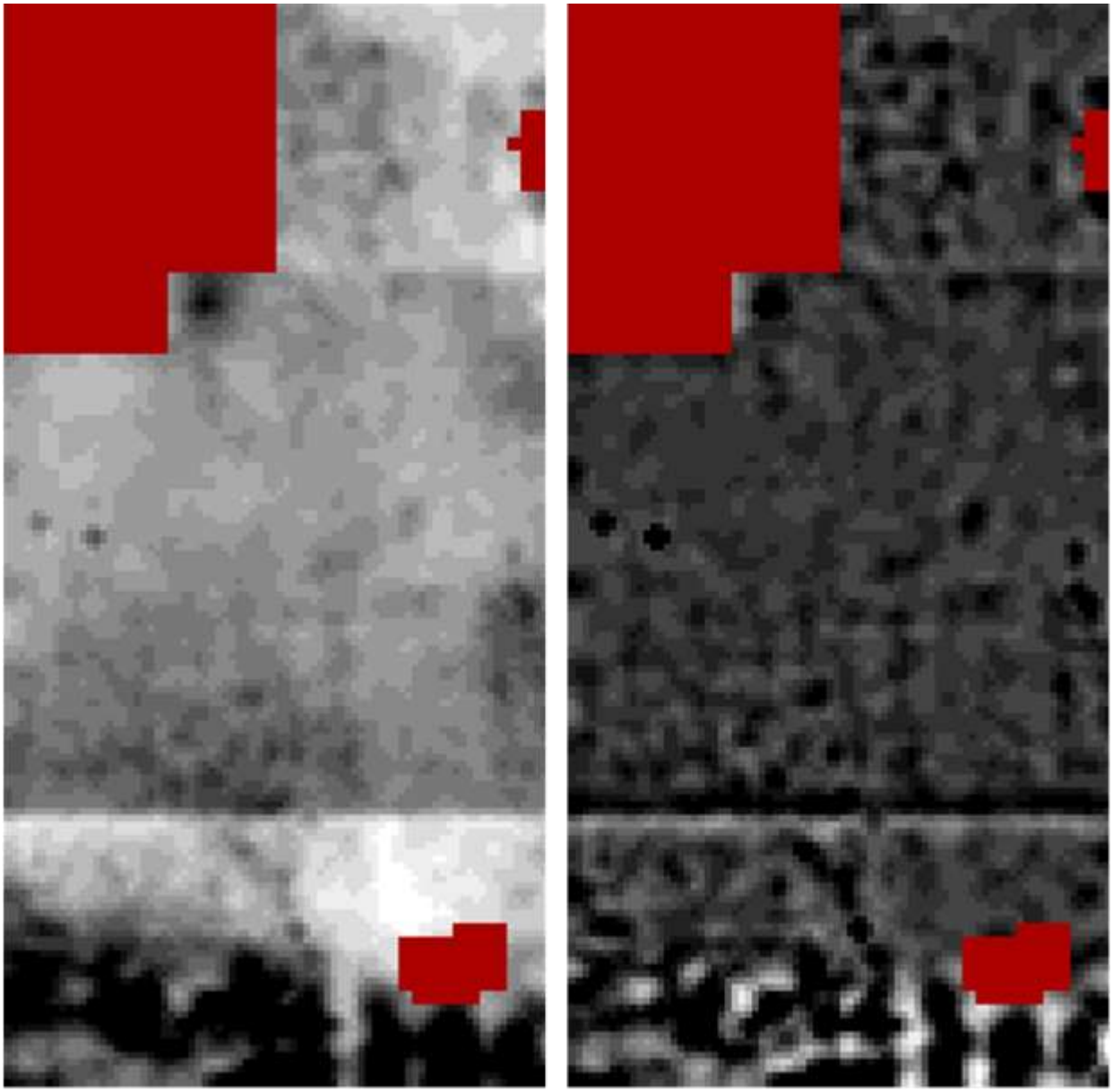


B: The raw resistivity results with no processing applied when splitting the data to 5 northern grids. Greyscale ranges from 50 Ohms (white) to 200 Ohms (black).



C: The raw resistivity results with no processing applied when splitting the data to 2 southern grids. Greyscale ranges from 50 Ohms (white) to 150 Ohms (black).

Figure 13: Resistivity raw data



A: Resistivity results with following processes. Despike with threshold =56and Interpolation along X & Y. . Greyscale ranges from 50Ohms (white) to 150Ohms (black).

B: Resistivity results with following processes. Despike with threshold =56. Geology removed (sample radius =2) and Interpolation along X & Y. Greyscale ranges from 50Ohms (white) to 120Ohms (black).

Figure 14: Resistivity processed data

Figure 15: Resistivity results overlain on the Rockbourne Survey grid.

Figure 16: Resistivity results overlain on the Rockbourne Magnetometry Survey and excavation plan.

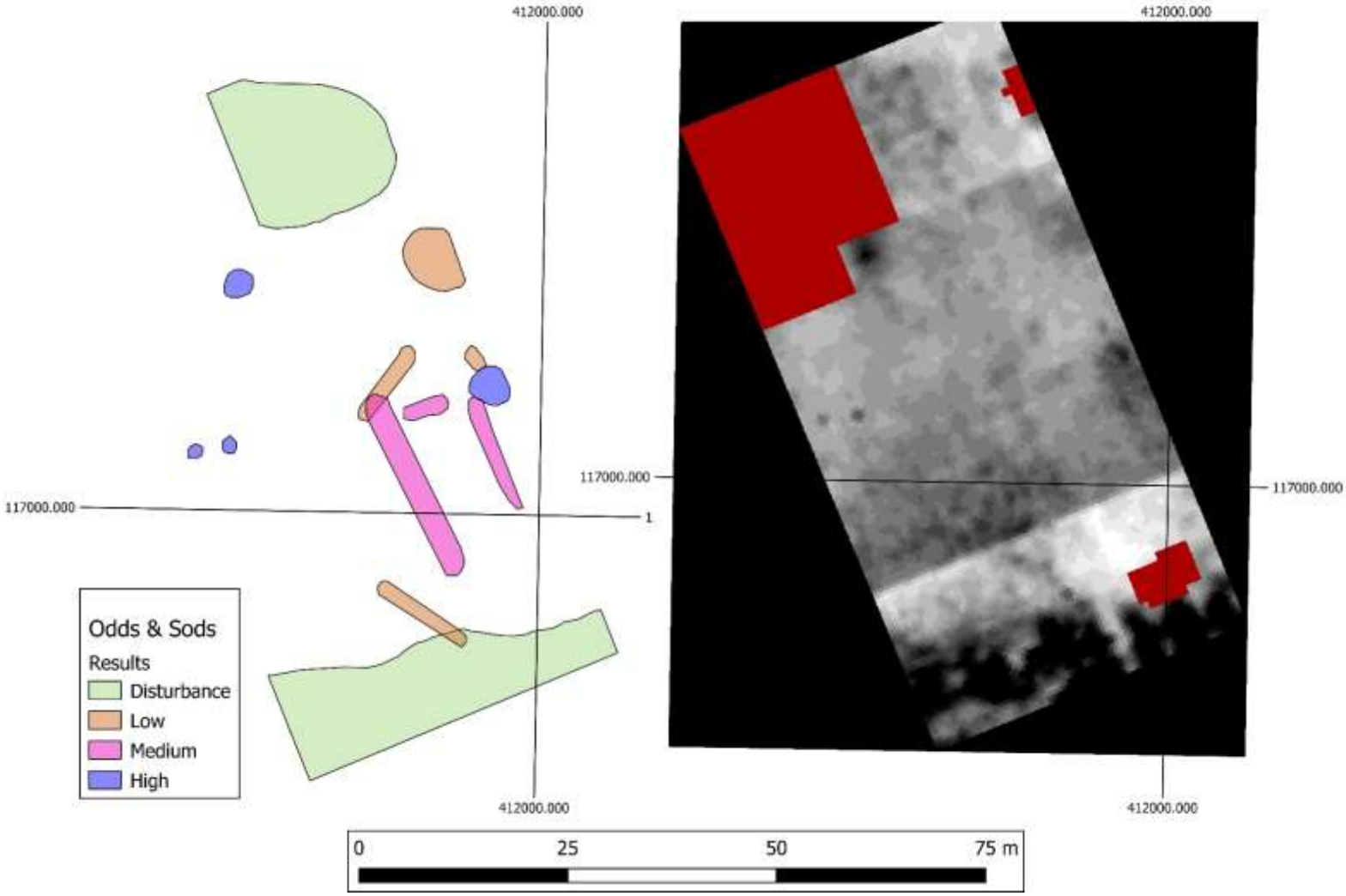


Figure 17: Resistivity results interpretation

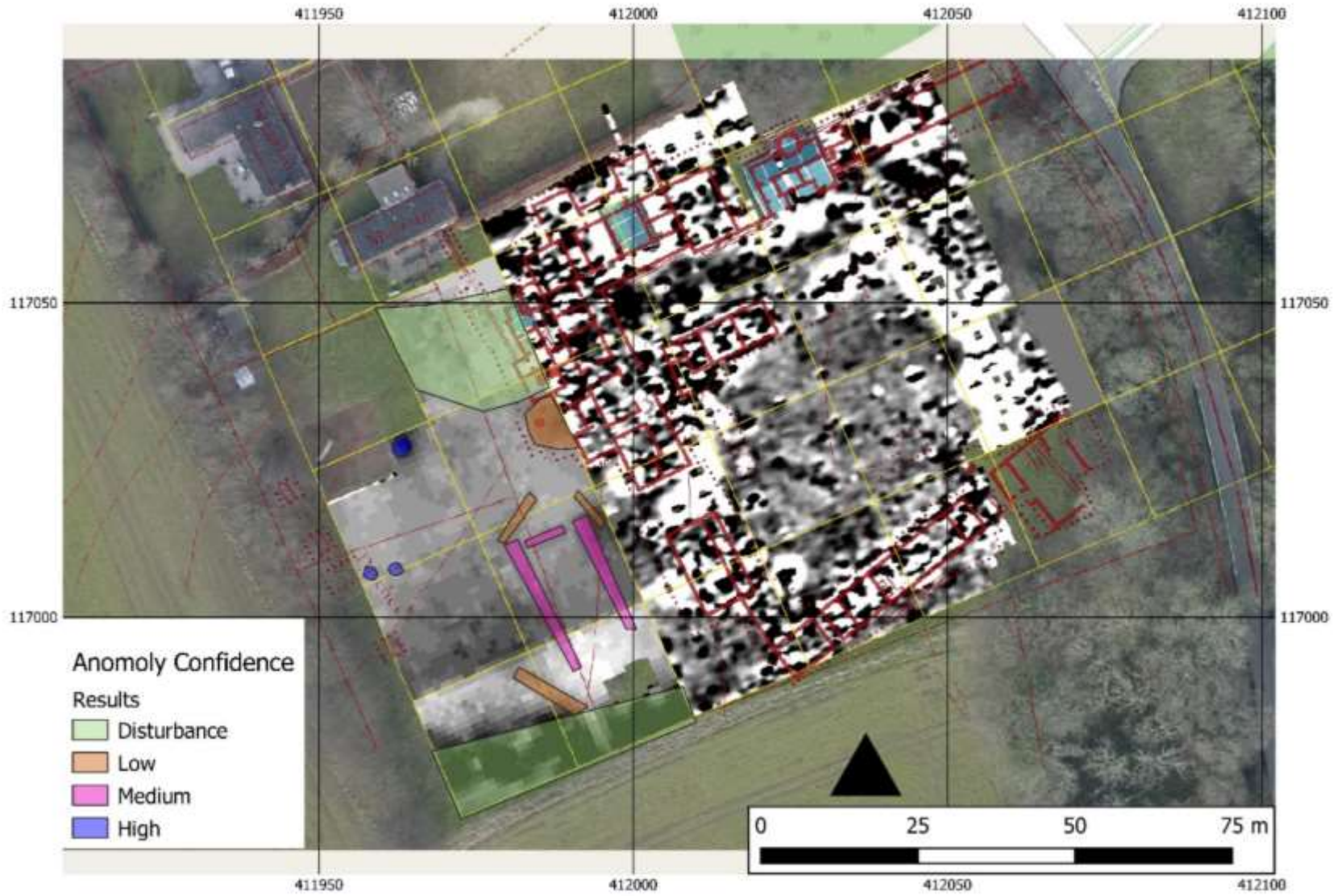


Figure 18: Potential anomalies identified in the Resistivity overlain with the resistivity and magnetometry data on aerial imagery

Figure 19: An aerial photograph of the excavations at Rockbourne, showing the position of the spoil heap.