

# Geophysics at Market Lavington

**An  
Archaeological  
dissertation  
research  
project**

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**A**s part of my BSc(Hons) Degree in Archaeology at Plymouth University, I was tasked with preparing an original piece of research work for my second year dissertation.

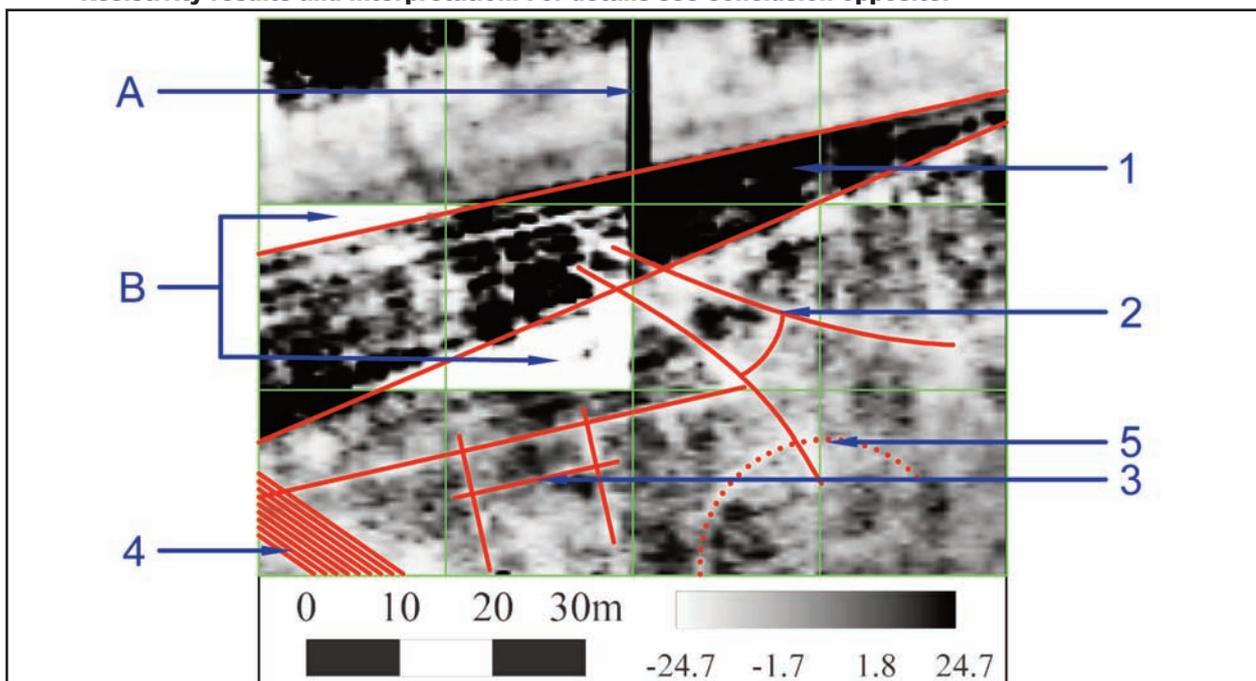
Having attended the BACAS training excavation in the summer of 2009, I had been introduced to geophysics by John Oswin and Owen Dicker. I was inspired by this experience and decided that I would like to learn more about geophysics. As a result, I decided to conduct my own survey under the title "Planning & Conducting a Geophysical Survey". All I needed to do was locate a suitable site, get permission from the owner and set a date. A quick search of the Wiltshire SMR provided me with ample targets for survey and I was spoilt for choice.

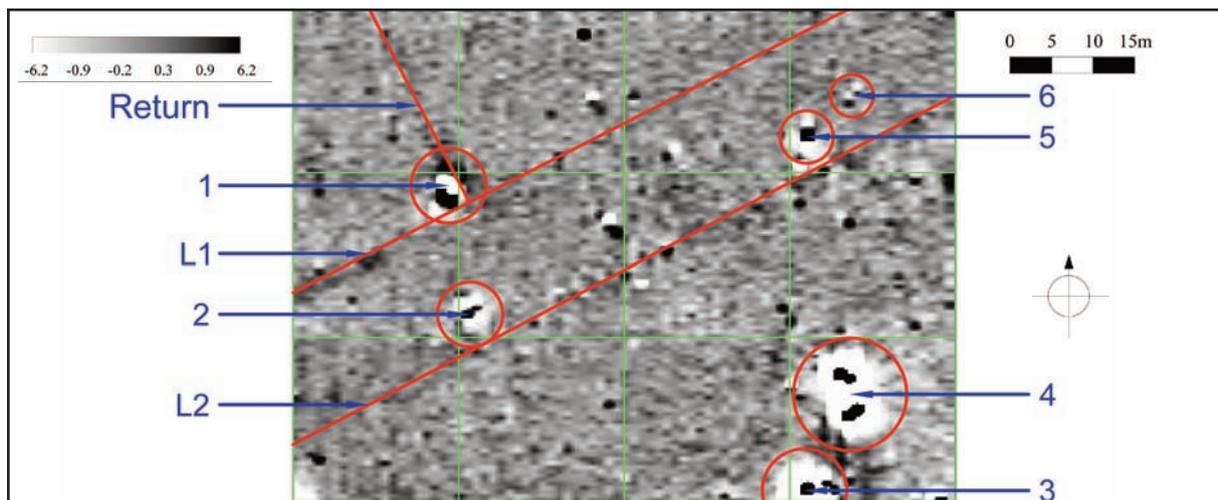
In order to meet the criteria and needs of my survey I eventually selected a site in my home village of Market Lavington, near Devizes in Wiltshire. The site is listed on the SMR as "*undated linear features, probably associated with medieval settlement*" and can be found under what is now a sports field next to my old school. I chose this site as it would allow me to conduct a straightforward survey for my report, as well as hopefully improving the understanding of this rather vaguely described feature.

Having selected my site, I conducted a desk based assessment of the locality. This revealed the presence of a previously excavated Roman Villa in close proximity. At this point, I made contact with Melanie Pomeroy-Kellinger (Wiltshire County Council's Archaeologist) to ensure my planned survey was acceptable. With her consent, I contacted the head ground keeper (Mr Clive Bee) of Dauntseys School who owns the field. Mr Bee was more than happy for me to conduct my survey and even provided me with some further background information. With all the permissions in place, I arranged to meet with John Oswin at the site on Wednesday 27th October 2010.

John advised me about how much of the field could realistically be surveyed in the time available. An area of 1200m<sup>2</sup>, consisting of 12 20x20m<sup>2</sup> grids was agreed upon. Unfortunately, the Electronic Distance Measuring (EDM) was away for calibration at the time, so we resorted to a spot of old fashioned geometry in order record the exact location of the grids. With the grid established, John set me off with the resistivity meter across the first six grids. The weather was pleasant and each

**Figure 1**  
**Resistivity results and interpretation. For details see conclusion opposite.**





**Figure 2**  
**Magnetometry results and interpretation. For details see conclusion below.**

grid took approximately 30 minutes to survey. My brother was able to assist with moving the guide ropes and baselines. After a short break for lunch, John took me through the process of setting up the magnetometer. I then surveyed the first four grids again using the magnetometer with the manual trigger. As the light was fading we packed up the equipment and left the site.

On the following day, John was unavailable to help so my brother and I completed the resistivity survey in slightly more autumnal weather than the previous day. For the third and final day of my survey, John returned and we were assisted by my dad. All that was left to complete were the outstanding eight grids with the magnetometer. For these boxes, John guided me through using the more advanced methods, from timed readings along each guide rope to the fully automated method used over one entire 20x20m<sup>2</sup> grid. Having completed the fieldwork, we returned to my parent's house to download and process the raw data. John spent time taking me through each process to explain how it worked, and in the end we produced the two greyscale plots (see Figures 1 and 2).

## Conclusions

Thankfully, the main objective of this project was to enable me to get valuable experience in planning and conducting geophysical surveys. This was fortunate because upon studying the results it became apparent that the resistivity survey (see Figure 1), revealed the ghostly outlines of the previous year's 100m athletics track - 1, discus and javelin range - 2 and a hockey pitch - 5. The dark anomaly A, and the light anomaly B, are likely caused by discrepancies in the resistance measured between grids due to an error when setting up. The results of the magnetometry survey, (see Figure 2), looked equally devoid of archaeology, although it did appear to show two linear features, one with a possible right angled return, L1 and L2 and six isolated clusters of intense magnetism 1- 6.

At first, I was quite disappointed with the lack of archaeology in my results, but I did some further research on why the sports field markings were so apparent and was relieved to find I was not the first person to encounter this. Several other surveys had experienced similar problems and I was able to identify the likely culprit as titanium oxide which is a compound added to the white paint used to mark sports fields. The addition of titanium oxide creates a much brighter white, however repeated use may cause a build up in the soil and (given its conductive properties) would certainly explain the lower resistance encountered in these areas. I have discussed this issue with my university lecturers and they have suggested that I could go on to study this issue in greater detail and possibly turn it into a Masters degree project, something which I am keen to pursue.

In every other respect the survey was a success. I had the opportunity to get invaluable firsthand experience and John taught me a great deal. The report that followed gained me a distinction at University which was extremely satisfying and rewarding.

I would like to thank BACAS and particularly Dr John Oswin who make all this work possible.