

Geophysical Survey of Glasgow Necropolis

Summary of Report prepared by Carmen Cuenca-Garcia and Heather James of Northlight Heritage

Introduction

There have been around 50,000 burials in Glasgow Necropolis, but only 3,500 tombs. Documentary evidence suggests that within the Necropolis there are a number of large vaults lined with brick and iron plates, which could contain some of the 40,000 people known to have been buried in unmarked graves. Some of these vaults, known as 'single graves', could date to the First World War. As part of the Friends Heritage Map project, Northlight Heritage carried out four days of geophysical survey of selected areas of the Necropolis in June 2015. The survey also offered an opportunity for some of the Friends, along with archaeology students, to act as volunteer assistants. In addition, the wider community were involved when children from Haghill Primary School visited on one of the days; as well as using the geophysical survey equipment, the pupils learnt how to record the WW1 graves like an archaeologist.

Survey Methods

Geophysics – popularised as “geophys” by the television series “Time Team” - is a group of techniques that can be used to find out about what might be buried under the ground, without disturbing the surface. For example, foundations of a building, or ditches, could be revealed. As the name suggests, techniques are based on the interface between the sciences of geology and physics. There are many applications of geophysics, including geological research, engineering and, of course, archaeology. A number of different methods are used, which record different physical properties of the soil. The technique(s) chosen will depend on the nature of the site and the questions that are to be answered.

For the Necropolis survey, the two methods chosen were magnetometry and resistivity. These are frequently used together and complement each other well. Magnetometry involves mapping small magnetic variations in the soil. All soil contains a small amount of iron, so it is local changes to the background magnetic properties which are identified using magnetometry. For example, ditches that have been filled in with a different material, features containing a high proportion of burnt material (burning alters magnetic properties), or stone walls, could all be identified by magnetometry.

In contrast to magnetometry, resistivity measures the resistance to the flow of an electrical current through the soil. For example, current flows more easily through damp soil than through a buried brick wall. Ditches, pits and walls could all potentially be identified by resistivity.

Both magnetometry and resistivity surveys are carried out systematically, setting up grids over the survey area. Resistivity survey is relatively slow, as the measuring probes must make contact with the soil at regular intervals. Magnetometry is faster, but the surveyor must

ensure they have no metal on their person – for example on clothing or jewellery, as this would interfere with measurements.



Figure 1: Volunteers performing resistivity survey – note grid-line marked by blue string. Source: Northlight Heritage

Data from the surveys are uploaded to a computer for analysis. The archaeologist must perform several processing steps using the software, and a high level of expertise in the techniques used and understanding of the science behind them is very important both for these steps and for the interpretation of the results. When reporting geophysical surveys, archaeologists use the term “anomaly” to report changes in readings from the background. Anomalies are interpreted in the context of what is known about the site, to give an opinion on whether this could have been due to archaeological features, or whether it is more likely to be underlying geology.

Survey Areas

Five open areas of the Necropolis were identified as having potential for ‘single graves’. The locations of these areas are shown in figure 2.

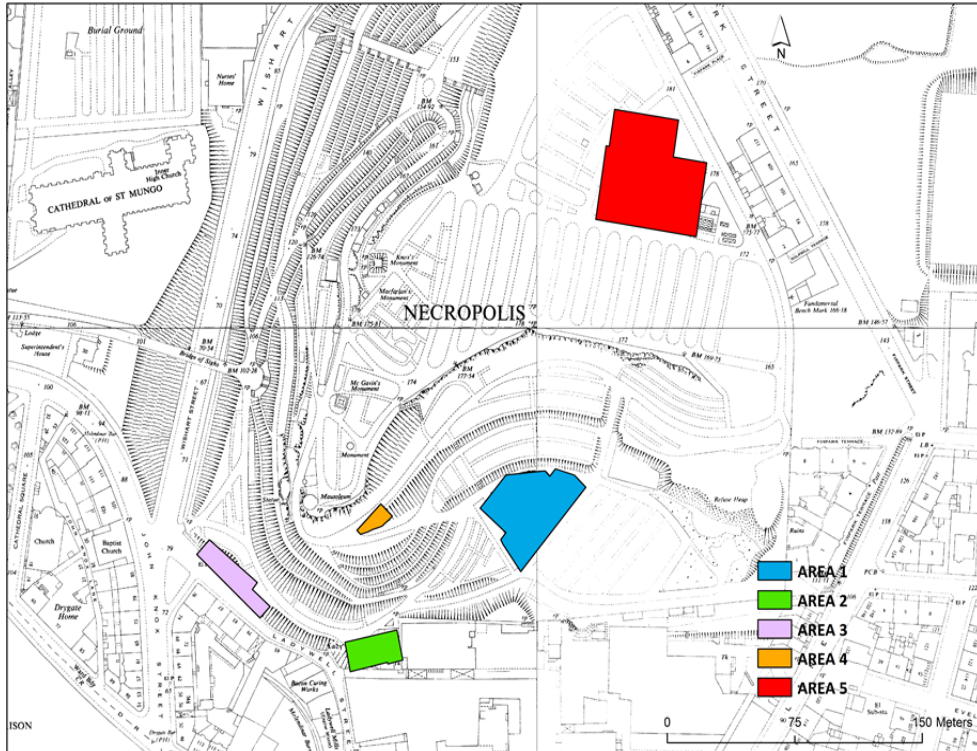


Figure 2: Location of the Survey Areas. Source: Northlight Heritage

Results:

The geophysical surveys did not yield any results suggestive of the single rock cut vaults. In areas 1, 2, 3 and 5 there were some anomalies identified. In area 1, the surveys identified the possibility of some unmarked graves, along with what is most likely to have been previous landscaping activity (Figure 3). In area 2, the site of a building shown on first and second edition Ordnance Survey maps was identified. In area three, a curvilinear anomaly, most likely to be an old path, was seen. Area 5 revealed a number of anomalies, in part most likely related to the nature of the bedrock in the area. Other Area 5 anomalies seemed to relate to a tank structure that was shown on the second edition Ordnance Survey map. Whilst in Area 5, it was noted that there was some ground subsidence in the South East corner, where some weak anomalies were also seen, possibly resulting from work carried out to stabilise the ground.

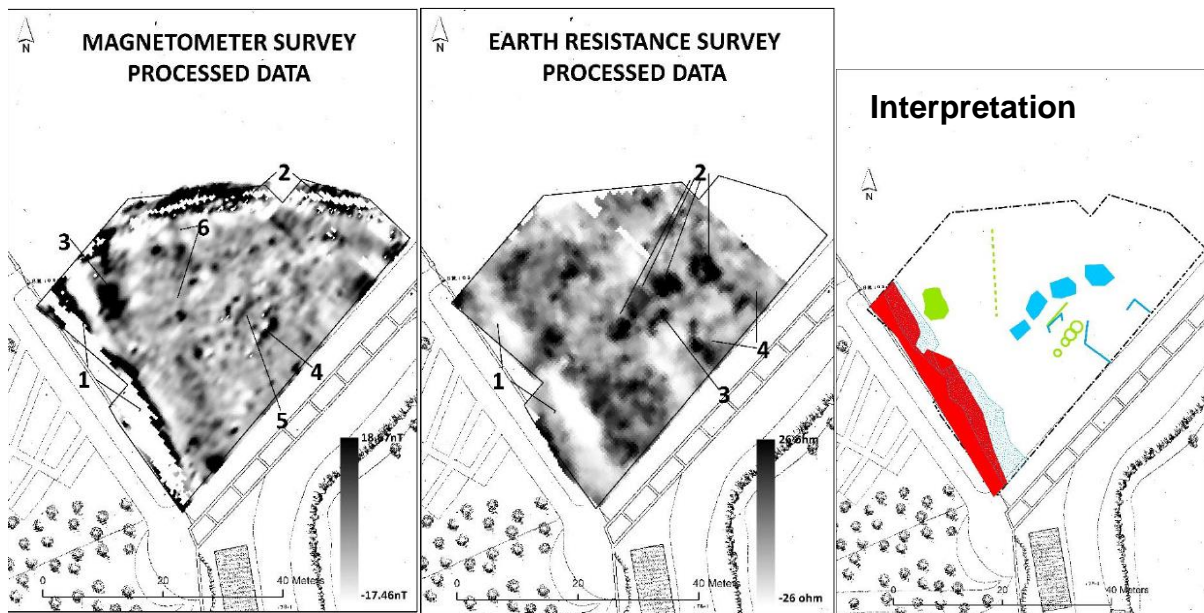


Figure 3: Geophysics Processed Data and Interpretation for Area 1. Interpretation is shown on the right. The large red stripe probably reflects an old path (corresponds to (1) on data); the blue blobs are possible unmarked graves (2) and the other features (3,4,5 and 6) are probably the result of landscaping activity. Source: Northlight Heritage

Conclusion

This geophysical survey did not show any evidence of single rock-cut vaults. However it is important to understand that “absence of evidence is not evidence of absence”. In area 1 the partially square anomalies could relate to unmarked graves, although other activities such as landscaping features could equally be the cause. In Area 5 there is the possibility of ground-reinforcing work. Northlight Heritage have suggested that further survey work in these areas using alternative techniques, plus investigating additional areas of the Necropolis, could be considered in the future.

Bibliography

PastPerfect <http://www.pastperfect.org.uk/archaeology/geophys.html>

World War 1 Heritage Map Geophysical Survey Glasgow Necropolis.

Acknowledgements

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