

Geophysical characterization of graveyards and cemeteries using electrical and GPR methods

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Abstract

Three graveyards with contrasting soil types and burial styles have been investigated in order to determine the optimum geophysical detection technique(s) and configurations. These include St. James', Newchapel, Stoke-on-Trent, St. Luke's, Endon, Stoke-on-Trent and St. John of Jerusalem's in Hackney, North London.

GPR results determined that 250-450 MHz dominant frequency antennae were optimal to detect isolated graves and vaults. 2D GPR profile interpretation was generally preferred to horizontal time-slices, the latter being generally variable in quality due to the surprisingly made-ground nature of the site. Fixed-offset resistivity surveys using 0.5 m and 1 m spaced probe configurations found that 0.5m spaced probes were generally optimal, using 0.25 m point spacings on 0.5m-spaced survey lines (Figure 1 for example).

Archaeological investigations of selected graveyard areas found surprising variation in both style (from vaults with eight vertically stacked individuals to isolated graves), orientation and grave contents (with missing and extra individuals respectively). This study showed existing parish records to be surprisingly incomplete when compared to geophysical anomalies and archaeological excavations, indicating a number of incorrectly marked and possibly unmarked burials. Graves and vault markers finally do not always indicate the character of vault or burial style.

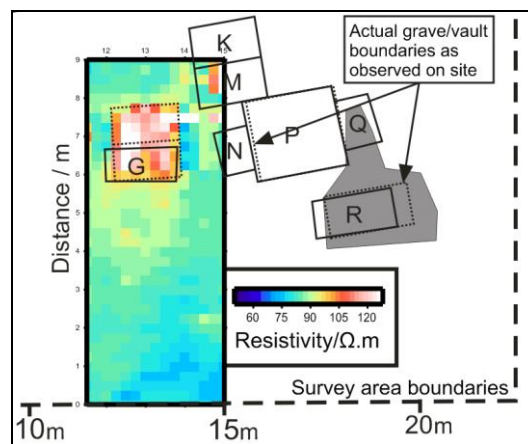


Figure 1. Map view of the processed bulk ground resistivity data).