



## **The Use of Ground Penetrating Radar to extend the Results of Archaeological Excavation**

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The condition of the Romano-British archaeological site in Wortley, Gloucestershire, UK is typical of sites of the period in that it has been heavily robbed out since it first fell into disuse. Building materials taken from the site have been re-used over the centuries to construct other local buildings. This makes both preservation of the extant remains and interpretation of the excavation problematic.

Following the accidental discovery of the site in the 1980s, a programme of excavation was set in place. This excavation was run as a practical archaeological training school and, as a result, a wide range of archaeological and geophysical techniques were applied to the site. This included the introduction of Ground Penetrating Radar (GPR).

The preliminary results of the first GPR used on site were not entirely satisfactory which led to the development of a new radar in the early 1990s, specifically developed for use on archaeological sites. The excavation and GPR results were published in a series of excavation reports [1] [2].

It was not possible to excavate fully for two reasons. Firstly the site crossed present day ownership boundaries and secondly the ownership of the excavation area changed. At this point the excavation was summarily terminated. In 2007, permission was given by the owner of an adjacent property to carry out a GPR survey over their land in order to derive additional information, if possible.

An area survey was carried out in May 2007 with reduced transect spacing [3]. The radar data showed similar patterning to that of the original investigation i.e. substantial remains which had been subject to a high degree of post-occupational attrition. Time slices from the radar survey were matched to the principal excavation plans. It proved possible to deduce the full extent of certain partially excavated features, notably the courtyard and bath house. It was also possible to demonstrate that one part of the adjacent property did not contain similar archaeological material.

The GPR survey has added significantly to the excavation results and hence to the potential interpretation of the site. Since it will not be possible either to continue the former excavation or to investigate the adjacent land, the information provided by the radar provides a unique insight.

[1] Utsi, V (1988) "Ground Radar" in 'Excavation of a Romano-British Villa at Wortley, Gloucs.' University of Keele Department of Adult & Continuing Education, Keele, 4th interim report.

[2] Utsi, V & Utsi, E (1989) "Ground radar survey" in 'Excavation of a Romano-British Villa at Wortley, Gloucs.' University of Keele, Department of Adult & Continuing Education, Keele, 5th interim report.

[3] Utsi Electronics Ltd (2007) "Ground Penetrating Radar Survey of Part of Wortley Romano-British Villa" report to David Wilson, Director, Archaeological Excavation Training School, Cambridge UK.