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Studying the water supply system of the Roman villa of Pisões (Beja, Portugal) using ground-penetrating radar and geospatial methods

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The Roman villa of Pisões (Beja, Portugal), was part of the Lusitanian colony of Pax Iulia. This place stands out for the predominance of the water element in several structures of the villa, highlighting the *balneum* and the large *natatio*, one of the largest known in Roman Hispania. The records of the initial excavations that took place since 1967 do not allow the establishment of clear functionalities of the villa. The University of Évora, owner of the site, conceived an action plan for the requalification and enhancement of the archaeological site. One of the tasks aims to investigate using Applied Geophysics. This work analyses the landscape directly related to the villa, given that it is in the flooded area of a river, with a Roman containment dam. It is uncertain whether the water supply comes from this structure or other nearby springs. The use of ground-penetrating radar, combined with unnamed aerial vehicles, all integrated in a geographic information system, allows us to know the location of underground water connections and create a topographic model with high resolution. Considering all the information, we propose a model for the water transport inside the villa and estimate the location of the water supply.

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