

ELECTROMAGNETIC (CONDUCTIVITY) MAPPING

The electromagnetic (EM) technique is based on the response of the ground to the propagation of an electromagnetic field created by the survey instrument. The main components of the EM instrument are a transmitter (for the generation of primary field) and receiver (measurement of the induced secondary field). The EM survey technique has a number of different applications and can be applied to both reconnaissance and detailed ground investigations.

The EM survey method can be used to map the following sub-surface features:

-  Geological & Hydrogeological features
-  Foundations and Services
- Contaminant Plumes
- Archeological Structures and Artifacts



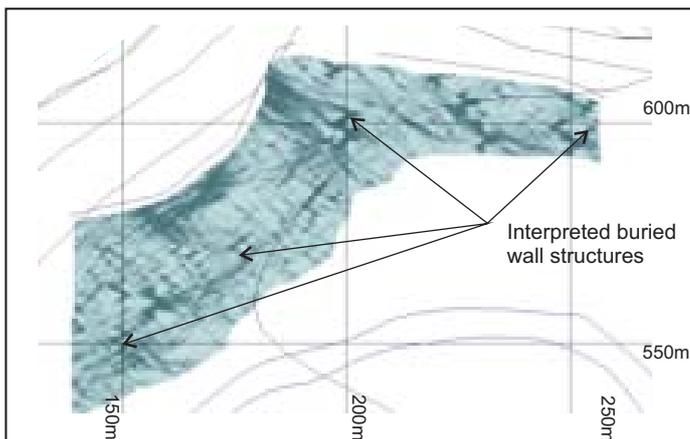
EM-38
(Exploration depth ~1.5m)



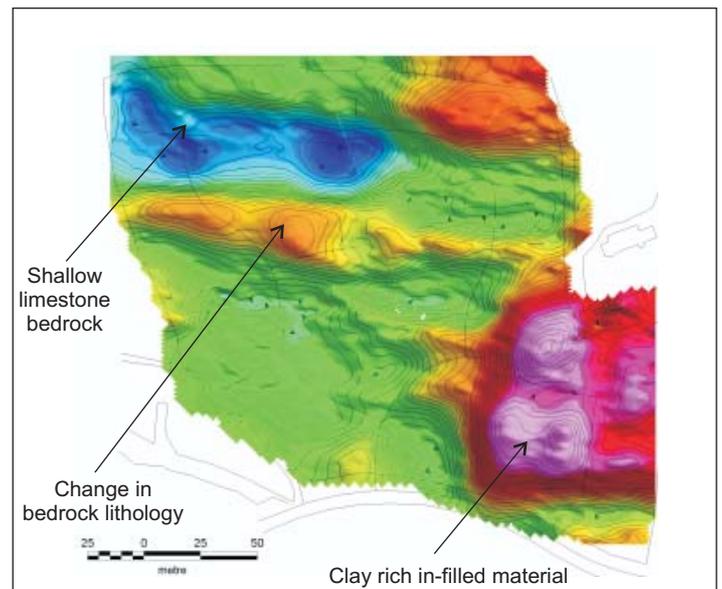
EM-31
(Exploration depth ~3 to 5m)



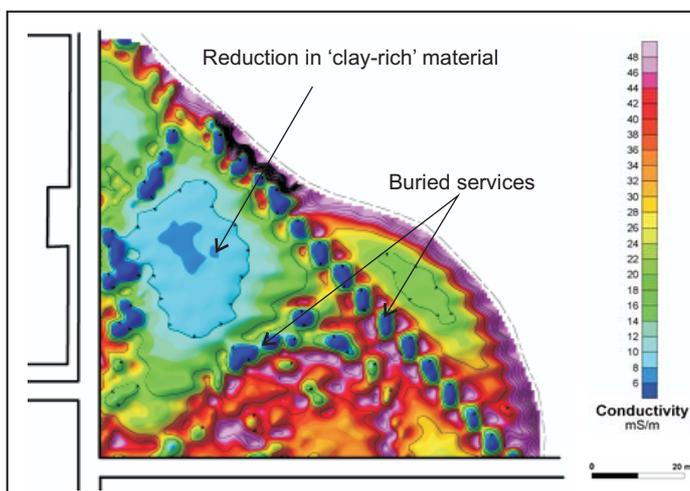
EM-34
(Exploration depth ~7.5 to 60m)



(ABOVE) An EM-38 survey was carried out as part of an archeological investigation of a Bronze Age settlement in Cyprus. The resulting conductivity plan is presented as a mono-colour shaded relief plot. Many subtle lineations are observed which are believed to represent buried wall structures.



(ABOVE) An EM-34 survey was carried out to identify suspected solution features at the bedrock/drift interface. The red and pink coloured contours define 'clay' rich deposits while the blue (low conductivity) contours indicate shallow bedrock. The results from the EM survey formed the basis of an intrusive investigation by allowing the client to optimize a borehole exploration programme.



(LEFT) An EM-31 was used to characterise a former industrial site prior to redevelopment. The buried services are clearly observed on the conductivity plot as narrow zones of extreme high (pinks) and low (dark blue) values. These extreme variations indicate instrument overload due the presence of conductive (metallic) material. In addition, the EM survey has also mapped variation within the fill material.