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Investigation of a Waste Fill

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Summary

Geophysical investigations were carried out across a sports field created in the sand dunes close to the coast in Perth, Western Australia. It is understood that the site was previously used as a dump for rubbish. Undulations have developed on the surface of the oval, which are believed to be due to differential compaction of the rubbish underneath a cover of sand. The purpose of the investigations was to determine the sites contamination, subsurface materials, stability and costs associated with rehabilitating the site to be used as playing fields.

A series of geophysical surveys were carried out using frequency domain EM, radiometrics, GPR, magnetics and resistivity. The site was then used as a test area for a new profiling TEM system called "Loupe".

The new results are compared against previous results and the superior resolution in depth and better positional accuracy discussed.

This is work still in progress at the time of submission but the Loupe System is a new generation instrument incorporating RTK GPS, fast sampling, high bandwidth and easy portability. The ability to resolve conductivity in 3D in the near surface using a rapid acquisition system will change how many geotechnical surveys are conducted.

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A series of geophysical surveys were carried out using frequency domain EM, radiometrics, GPR, magnetics and resistivity. None of these methods was completely diagnostic of the extent and thickness of the buried material. The site was then used as a test area for a new profiling TEM system called "Loupe".

Loupe is a two man carried time-domain electromagnetic system specifically designed for measurement of conductivity in the near surface. The full analysis of the results were still in progress at the time of submission but the Loupe System is a new generation instrument incorporating RTK GPS, fast sampling, high bandwidth and easy portability. The ability to resolve conductivity in 3D in the near surface using a rapid acquisition system will change how many geotechnical surveys are conducted.

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