LandScope Engineering Ltd

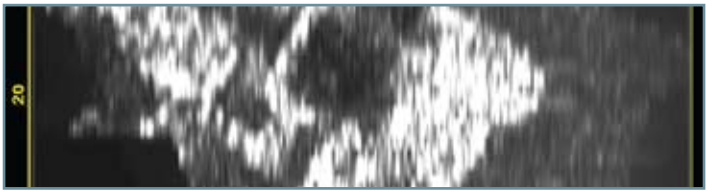
Geophysical Survey

LandScope provides an integrated geophysical survey service with emphasis on campaign design so that your project benefits from an appropriate technical approach. Multi-sensor data sets can be compared, manipulated and 3D visualised during the post-processing stage to ensure that maximum value is derived from your data. We specialise in most aspects of geophysical survey including resistivity, magnetics, Ground Penetrating Radar (GPR) and electro-magnetics.

Whereas traditional geophysical surveys have relied on time consuming gridding and rope alignments our emphasis on the integration of real-time positioning to geophysical acquisition allows LandScope to acquire accurately geo-referenced data within a reduced time frame. In addition to this LandScope has been at the forefront of further increasing efficiency by introducing an integrated navigation and acquisition system. This enables multiple sensors to record coordinated data simultaneously, dramatically reducing time spent in the field.

Ground Penetrating Radar

LandScope Engineering offers a wide range of ground penetrating radar services based on the best available technology from Geophysical Survey Systems Inc (GSSI). Applications range from traditional geophysical deployment to the emerging infrastructure and transportation sectors. Radar technology utilising the full antenna frequency spectrum continues to be at the heart of many innovative and pioneering applications developed by LandScope Engineering.



Applications include:

- Pre-engineering design survey
  - Depth to bedrock profiling
  - Voids
  - Landfill Liner Leak Location
  - Shallow mine-workings
  - Foundations and structures
  - Pile locations
  - Underground river or culvert
- Underground infrastructure mapping
- Environmental programmes
  - Tree root and animal habitat surveys
  - Contamination plumes
  - Landfill profiling
  - Underground storage tanks
- Archaeological investigation

Conductivity

A conductivity (electromagnetic) survey measures a soil's ability to conduct an electric current. Target response is a single, sharply defined peak, facilitating quick and accurate location. A single 200 litre (55 gal.) drum can be detected at depths greater than 3 metres. Modification for increased power, to increase both the sensitivity to smaller targets and depth of exploration is available.

Data from multiple time gates - are recorded to provide a more complete measurement of the response decay rate for improved target characterisation (and discrimination).Conductivity has a range of applications including archaeological, environmental and engineering.

Resistivity

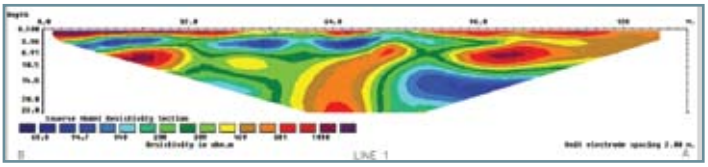
Resistivity is one of the earliest forms of geophysical prospecting. Its base principle makes use of the different electrical conductivities of sub-surface features in order to map-out underground variations and anomalies. Unlike its often used counter-part, magnetometry, resistivity survey is sensitive to geological changes adding another dimension to survey, making imaging of subsurface levels more accurate, though more complex to analyse.

Probes are placed into or above the ground, which is itself used to complete a "circuit". The electrical current passing through the ground travels from one probe to the other and the conductivity of the substances beneath the probes cause a specific resistance to be calculated. For example, high water content resulting from the presence of a clay lens, a loosely back-filled trench or metal will result in a comparatively low resistivity. Accordingly, the presence of a poor conductor such as stone building foundations, well drained sandy soils, or voids will produce high resistance.

Multiple Probe Array (Syscal family):

Multiple probes are placed at equal distances across a transect or over an area. Up to 96 electrodes can be used in a single set up.

Up to 10 readings can be taken simultaneously and an internal switch allows every possible combination of two electrodes to be used to calculate the resistivity at corresponding depths. The result is the rapid collection of data forming a tomographical data set, allowing for the creation of a fully 3D image of the site.



Alongside the ability to choose the specific depths surveyed by appropriately separating the electrodes, the user is also able to adjust the strength of the current entering the ground. This means that the survey can be tailored to the requirements of the customer and to the specifics of the site environment.

Twin Probe Array:

The most basic array comprising a single dipole-dipole arrangement of twin probes; "mobile" and "static".

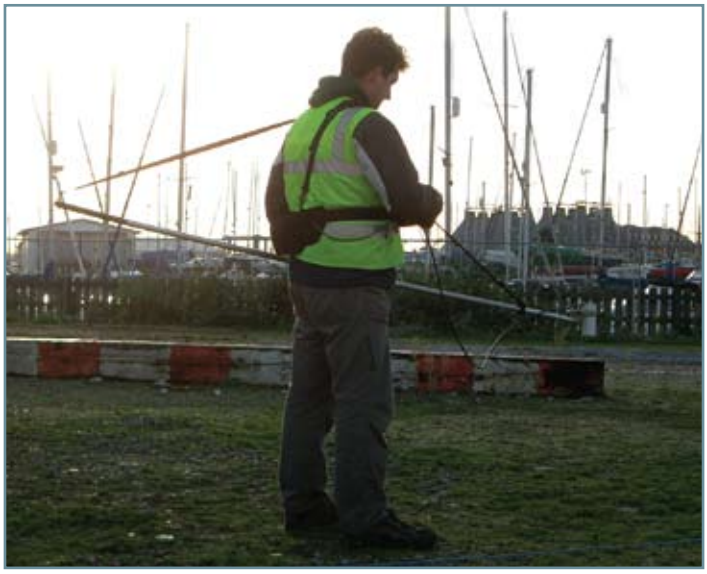
Depth of survey is defined by the distance between mobile probes – 1m separation equates to approx 1m ground penetration of current whilst resolution depends upon spacing between readings, typically 0.5m to 2m.

Magnetometry

The measurement of small variations within the Earth's magnetic field enables the location and mapping of buried features both man made and natural.

Magnetometry has a wide variety of applications including archaeology, environmental investigation and structure location. Features that can be identified include most metallic objects, reinforced concrete, buried mine caps, piles, natural igneous rock formations, archaeological walls and ditches, large pits, kilns, and burnt areas.

We utilise the Geometrics G858 Magmapper Caesium Vapour Gradiometer, which when integrated with real-time RTK GNSS positioning allows us to acquire accurate data efficiently.



Related Inserts Available

Ground Penetrating Radar

Land Survey/ Geomatics

Geophysics for Agronomy & Precision Farming

Underground Services & Utilities Mapping

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