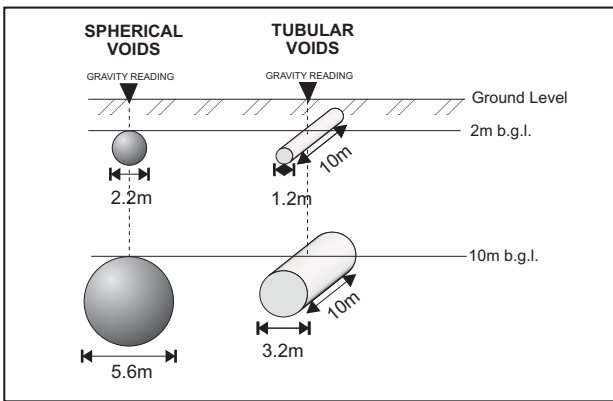




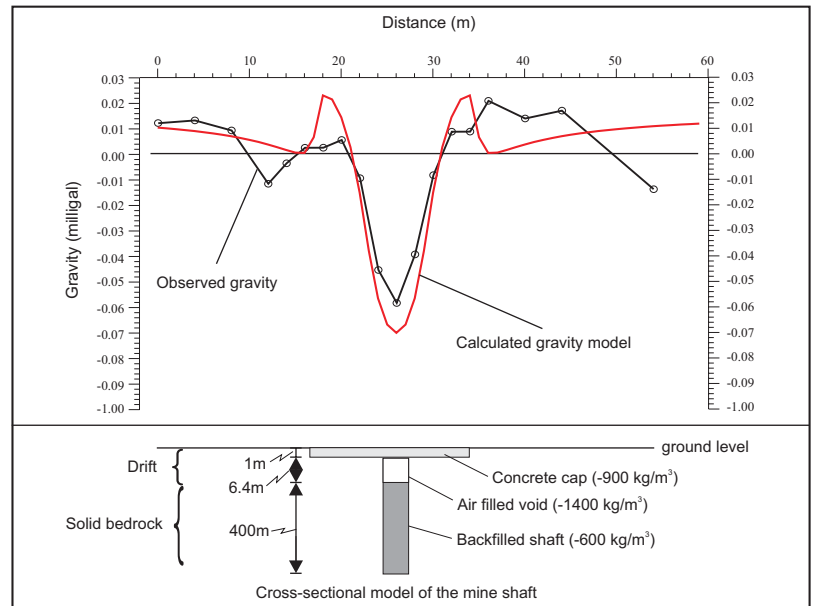
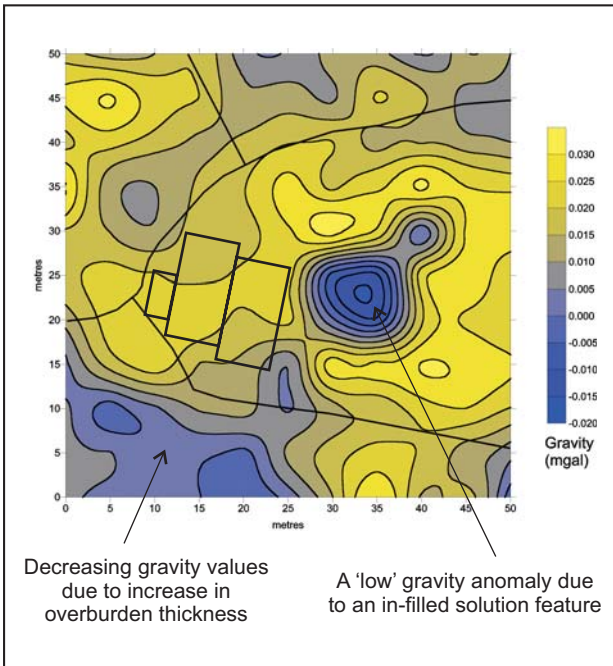
The gravity technique is based on measuring localised variations in the Earth's gravitational field, which are caused by the presence of materials of different densities or voids in the subsurface. The presence of an anomalously high (or low) density body in the subsurface causes a localised high (or low) anomaly in the measured gravitational field. The gravity effects described are extremely small, however, modern instrumentation and exhaustive data processing techniques enable detection of both geological and artificial structures.

TerraDat own and operate a microgal resolution gravity meter (SCINTREX CG3-M), which can be used in the following applications:

- ✎ Detection of sub-surface voids, e.g., caves, mine workings, basements
- ✎ Detection of buried structures, e.g., foundations, storage tanks
- ✎ Mapping bedrock lithology
- ✎ Mineral exploration



(LEFT) The size of a gravity anomaly over a buried feature is dependant on a number of factors; the size & shape of the feature, the vertical & lateral separation and the density contrast. The schematic diagram shown left considers the minimum body size required to produce a measurable gravity anomaly (~10 microgal) at ground surface for both a spherical and tubular air-filled void.



(ABOVE) A microgravity survey was carried out to confirm the position of an abandoned mine shaft and to provide information on the degree of backfill. By carrying out a gravity modelling routine, it was shown that the shaft was backfilled to an approximate depth of 6.0m bgl.

(Left) A microgravity survey was carried out to target solution features beneath a site prior to a housing development. The microgravity data was acquired on a 5 x 5m grid and reduced to a Bouguer anomaly plan.

GM-3D Gravity Modeling Software

GM-3D is a gravity modelling software package that allows full 3D inversion of gravity data at both micro and regional scale. GM-3D was developed as an in-house program but due to its successful application it will soon be released commercially.