

Cemetery and Urupā Mapping

New Zealand has a long history of burial sites, with Māori urupā dating back to 1300 AD and European cemeteries dating back over two centuries. Within cemeteries and urupā, the presence of unmarked or incorrectly marked burials can cause significant problems. Southern Geophysical investigations provide up-to-date cemetery maps, identifying unmarked or incorrectly marked graves, locating empty spaces between existing burial plots, and optimising the utilisation of available land. Our experienced team has been surveying cemeteries for over 20 years with more than 25 major cemeteries and urupā sites investigated; in addition to numerous individual burial plots identified during this time.

What's involved in cemetery or urupā investigations?

Once an area of interest has been identified by the client, Southern Geophysical will gather information on the site in question, including a desktop study, analysis of historical imagery and any other relevant historical information.

Southern Geophysical then provides a quote, along with a comprehensive project proposal for a cemetery investigation, including suggested surveying techniques and methodology (see page 2 for the technical brief).

Once we have project approval, the crew and equipment will mobilise to site and complete a preliminary site walkover with the client.

Following the site walkover, the team will undertake the geophysical surveys within a pre-determined area, capturing GPS positions for precise mapping (see page 2 for details).

Following field work, the collected data undergoes processing, analysis, and interpretation by Southern Geophysical's experienced geophysicists.



What output can I expect from the investigation?

The cemetery investigation will provide you with a comprehensive report and accompanying maps, delivered within 10-15 business days, detailing methodology, findings, and figures derived from the cemetery investigation. The results can be integrated into GIS maps (see bottom of page 2).

If you would like to discuss a possible project:

Get in touch with our experienced team:

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Methods & Outputs:

Right - Ground Penetrating Radar (GPR) surveying has the highest resolution of any geophysical method for imaging shallow subsurface features such as burials. A burial will create a subsurface void as the buried body and/or coffin gradually degrades. This void and any wood or metal associated with the grave usually gives a strong radar signature. Depending on the date of burial, GPR will be able to detect reflections and diffractions from the excavated vertical shaft and structures associated with the burial such as concrete slabs, grave markers, coffins, and voids related to the body/coffin degradation.



Left - A Magnetic Gradiometer works by measuring tiny variations in the natural magnetic field gradient of the subsurface. The localised changes in magnetic readings can indicate the presence of a burial. A gradiometer can be used in clay rich soils or saturated soils that would generally hamper GPR surveys. However, this method is often not suitable for surveying newer cemeteries and is best suited for surveying historic burial areas, without significant amounts of grave markers present on the surface. Magnetic gradiometers work particularly well in sand dune areas, where Māori burials are commonly found.

Below – Integrating 2D and 3D GIS Maps, aiding in heritage preservation, development, and restoration planning: Integration of unmarked burial locations at Queenstown Cemetery when planning the cemetery’s restoration following the 2023 storm event.

