

# 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.

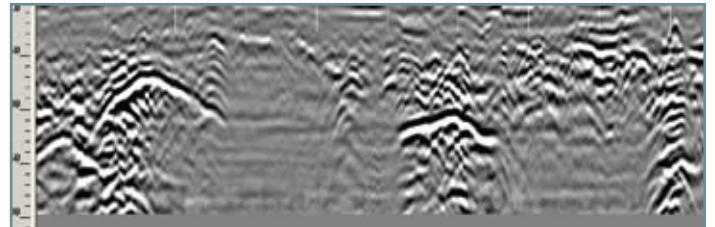
## Applications include:

- Underground Infrastructure (Utilities) Mapping
- Structural Imaging - Concrete Inspection
- Forensic Investigations
- Void Mapping
- Archaeological Studies
- Geological Mapping
- Highway Inspection
- Railway Ballast Evaluation
- Hydrographic Survey



## Buried Structure Mapping

GPR is commonly utilised to map buried structures for engineering, environmental and archaeological purposes. This may be for definition of historic foundations or delineation of possible contamination sources e.g. underground storage tanks.



## Void Mapping

LandScope Engineering has utilised radar to detect and map voids in a wide variety of situations including:

- Pipeline Back-fill washout
- Honeycomb voids within Spray Cast Concrete
- Harbour Walls & Sea Defences
- Subterranean Bunkers / Basements
- Brownfield Sites
- Carriageway & Pathways

Given the variation in void size and depth the selection of the correct radar antennae frequency / frequencies is of paramount importance.



## Carriageway Pavement Mapping

Surface distress in roads is a reasonable indicator of poor structural integrity however by utilising our carriageway mapping service we can provide a cost effective, non-destructive, safe and reliable evaluation for the preservation, planning and regeneration of roads. Ground penetrating radar provides the ideal tool for mapping roads and carriageways. With deployment of the GSSI RoadScan system LandScope is able to provide:

- Road thickness measurements
- Base and sub-base evaluations
- Pre-planning clearance
- Pre-planning volume estimates
- Utility and service mapping
- Void mapping

Surveys may be designed to tie in to existing coring programmes – dramatically reducing the number of cores or even removing the need for such.

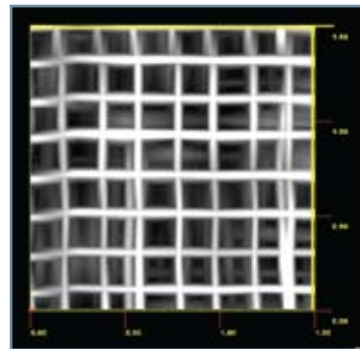


## Structural Imaging - Concrete Inspection

Radar provides an exceptionally effective method of mapping elements of interest within cast concrete structures. High frequency antennae are used to provide high resolution images and measurements both within and beyond the concrete structure, including:

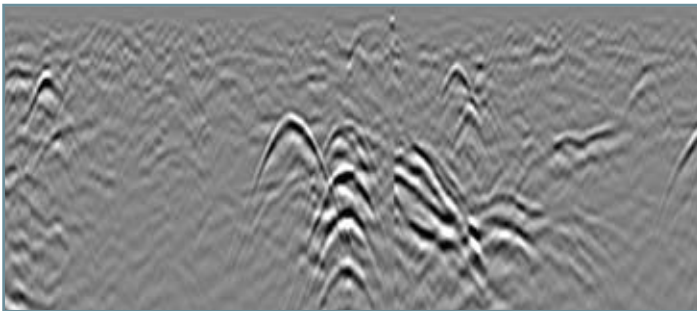
- Reinforcing elements, eg. rebar density
- Stitch bars and tie rods
- Slab thickness and reinforcing cover
- Voiding & honey-combing within spray cast concrete
- Ground beams & pile caps
- Voiding beneath slabs

Survey campaigns are designed to ensure the best resolution and penetration balance and an appropriate acquisition density. Reporting may be illustrated with a variety of formats including 2D & 3D Radar visualisations and 3D CAD models. The survey campaign will be custom designed to meet each customer's specification.



## Underground Infrastructure Utilities Mapping

Ground Penetrating Radar is an invaluable tool in LandScope Engineering's underground infrastructure mapping service. Augmented with radio-location and other traditional techniques GPR coverage of a survey area will not only provide verification to positions of metallic/conducting service lines but also provide route data on services comprising PE, PVC vitreous clay, asbestos cement and other non conducting materials.



## Hydrographic Survey

Ground Radar may provide a useful complementary subsurface imaging tool to more established geophysical acoustic sensors particularly in shallow water environments.



### Related Inserts Available

Geophysical Survey



Hydrographic Survey



Underground Services & Utility Mapping



Structural Imaging - Radar

