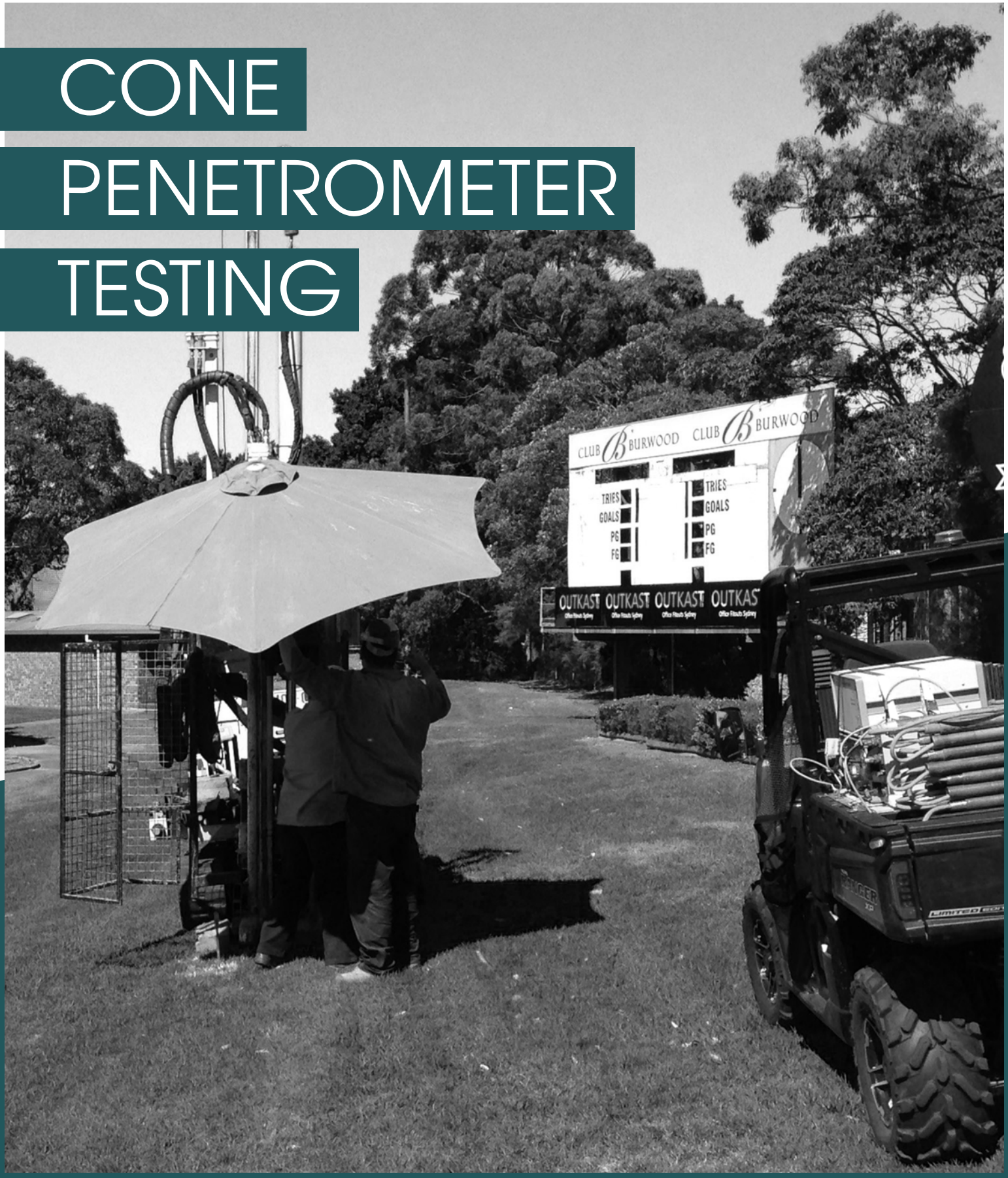
TERRATEST

CONE PENETROMETER TESTING



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CONE PENETROMETER TESTING

Terratest has expanded its suite of geotechnical and geo/enviro services to include high quality and cost effective Cone Pentetrometer Testing (CPTu).

Utilising reliable and accurate Swedish manufactured AB Geotech CPT Nova system, Terratest is able to offer the standard CPT parameters of Tip Resistance, Sleeve Friction, Pore Pressure (u2) and Cone inclination.

Data is recorded via a digital interface unit and viewed in real time by the operator who can monitor loads and cone tilt along with pausing the operation for dissipation tests as required.

The CPT is operated from a tracked Geoprobe platform with the use of adjustable ground anchor augers and a foot bridge at the base of the rig. This method enables access to soft, difficult and remote locations with only 6psi ground pressure at four tonne mass, but with an anchored reaction force of 200kN.

Operating CPT from a Geoprobe has the added security of being able to pre drill problematic conditions that stand alone CPT units can struggle with. The Geoprobe can advance casing through overburden or gravel layers along with all standard drilling methods such as continuous push tube and dual tube sampling, undisturbed and SPT sampling, solid and hollow auger, mud drilling and air drilling. A variety of piezometers can also be installed as required with ease.

This unit can be deployed standalone wherever it is required or as a valuable component of larger investigation projects in conjunction with and supported by Terratest’s comprehensive fleet of rigs and industry experience.

The CPT /HPT system provides in the one single drive the following data:

- Tip Resistance
- Sleeve Friction
- Pore Pressure
- Cone Inclination
- Electrical Conductivity (dipole)
- HPT pressure into the formation
- HPT flow rate into the formation
- Hydrostatic pressure under zero flow conditions.
- Estimated Hydraulic Conductivity – K (ft/day)

The combined Cone Penetrometer and Hydraulic Profiling tool is versatile and provides valuable, cost effective and reliable real time data using a multi discipline drive platform such as the tracked Geoprobe.

DATA

HYDRAULIC PROFILING TOOL

In a worldwide commercial first, Terratest is providing a Geoprobe Hydraulic Profiling Tool (HPT) complementary in conjunction with CPTu . This unique and intuitive system provides a several additional data parameters which not only significantly expand its applications, but also help provide more accurate information on sub surface conditions and hydrostratigraphy for engineering design.

The HPT system is a data logging tool that measures the pressure required to inject a flow of water into the soil profile as it advances. A pressure transducer situated directly behind the injection tool screen accurately records the associated pressure response in the formation – downhole. The use of this downhole transducer excludes friction losses through the flow tubing and allows for measurement of the hydrostatic pressure under zero flow conditions. By conducting multiple HPT dissipation tests it can accurately indicate the water table and estimate hydraulic conductivity (estimated K). A dipole electrical conductivity sensor is also mounted in the HPT probe and records EC as the tool advances. Zero and calibration checks before and after each test help ensure accurate and viable data is recorded.

The HPT system has many additional benefits and uses. The soil electrical conductivity log is of assistance with lithological interpretation along with identifying salt or brine conditions and contamination. HPT injection pressure correlates well with formation permeability and can help determine permeable zones, potential contaminant pathways, confining zones and seepage areas in dams and levees. HPT has also been used as a surrogate for U2 pore pressure measurements, especially in unsaturated soil profiles.