Douglas PARTNERS

GROUNDED EXPERTISE

Geophysics

Our 60 years of experience gained over 175,000 completed projects, combined with our highly skilled and hands-on team of consultants, delivers clients innovative advice and solutions across a wide range of industries.

Grounded Expertise

We are down-to-earth, practical ground experts who have been getting the job done with integrity since 1963. Our specialist disciplines encompass geotechnical engineering, rock mechanics, contaminated land, groundwater, geophysics and materials testing.

With over 60 years of experience, using local knowledge to collect high-quality ground data, Douglas Partners are uniquely positioned to deliver practical solutions for projects where the built environment interacts with the ground.

Quality is central to our operations. Our Quality Assurance system certified for conformance to ISO9001, ISO 45001 and ISO 14001 standards, underscores our commitment to excellence. Our culture embodies our guiding mantra: “Keep it Simple, Get it Right, Do it Well.”

With 600+ dedicated professionals across 19 branches in Australia, including 14 NATA registered laboratories, our expert advice helps manage and mitigate risk and our solutions are tailored to enhance outcomes for our clients, community and environment.

Services Across Sectors

Douglas Partners consulting services provide clients with a range of integrated and specialist skills with the aim of delivering practical solutions across a large number of business sectors including:

DEFENCE

WATER

TRANSPORT

RESOURCES

ENERGY

HEALTHCARE

PROPERTY & BUILDINGS

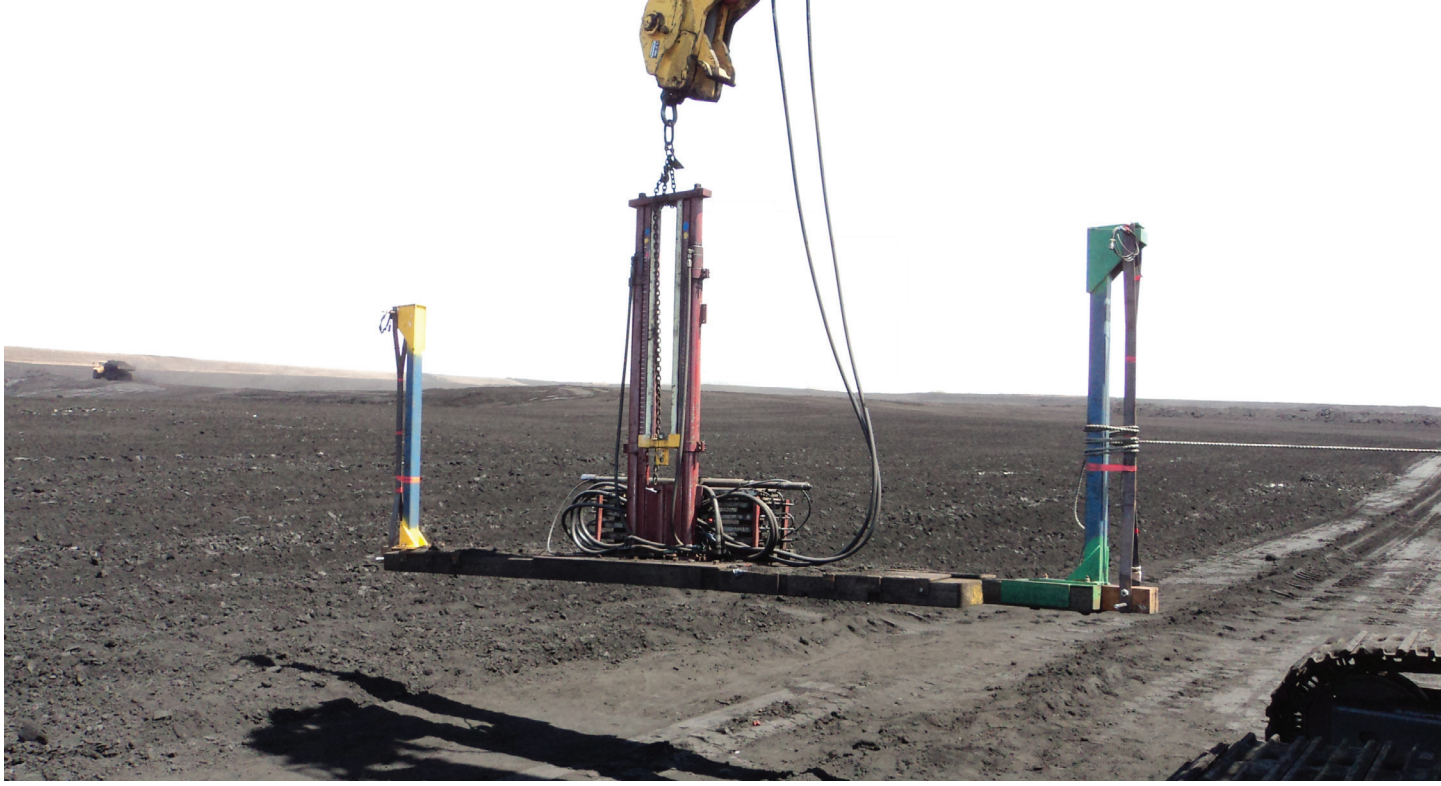
MARINE

LAND DEVELOPMENT

SPORT & RECREATION

WASTE MANAGEMENT

TELE-COMMMUNICATIONS



Geophysical Methods

Utilising the expert skills of our in-house Geophysicists, Douglas Partners has a proven track record of providing innovative geophysical solutions, particularly where conventional intrusive methods are impractical or costly.

Our team of highly experienced Geophysicists, in collaboration with our preferred delivery partners, offer a broad range of techniques for geotechnical, environmental and groundwater investigations.

We employ a variety of geophysical methods to investigate the subsurface. Commonly utilised techniques include:

- Seismic refraction profiling and tomography
- Electrical resistivity imaging and sounding
- Ground Penetrating Radar
- Multi-channel analysis of surface waves
- Downhole p- and s- wave and CPT seismic profiling
- Cross-hole 2D seismic imaging
- Marine Geophysics - seismic reflection and refraction, sonar and magnetics
- Geophysical borehole logging
- Ground conductivity mapping
- Electromagnetics and Induced Polarisation
- Gravity and Magnetics

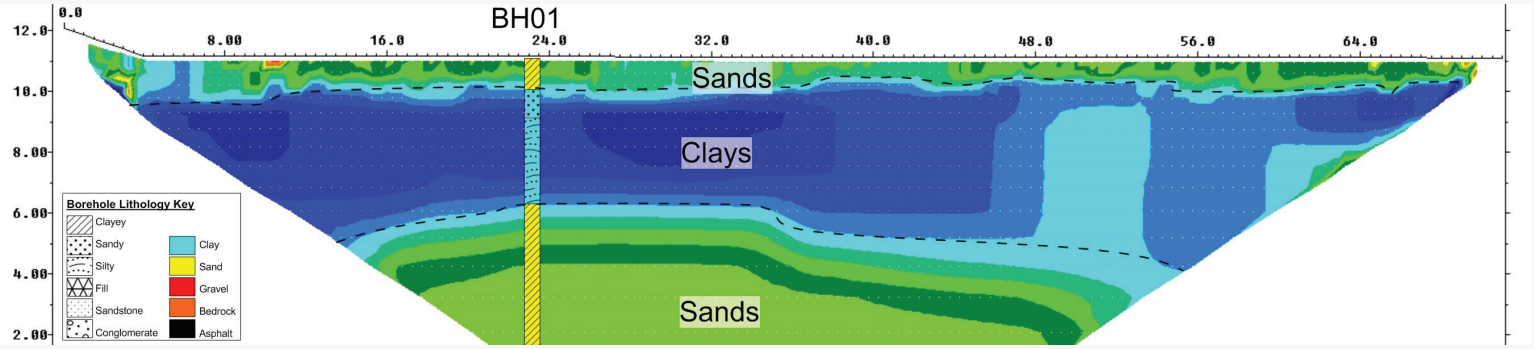
Electrical Resistivity Imaging & Sounding

Resistivity Imaging can provide cost effective, high resolution subsurface imaging, where sufficient contrast exists between the electrical properties of subsurface materials. The technique has been successfully applied by Douglas Partners in a wide variety of environments. Typical applications include:

- Layer mapping
- Depth to bedrock
- Landfill Investigations
- Void mapping
- Groundwater and contamination investigations

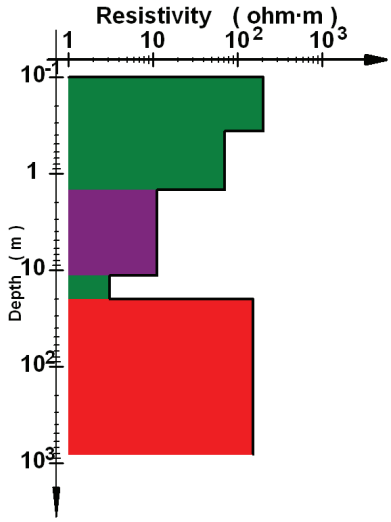
Example 1:

Mapping the continuity and thickness of a clay layer along a proposed highway route was considered necessary to help assess the likelihood of future subsidence. The models showed a strong correlation with nearby boreholes.



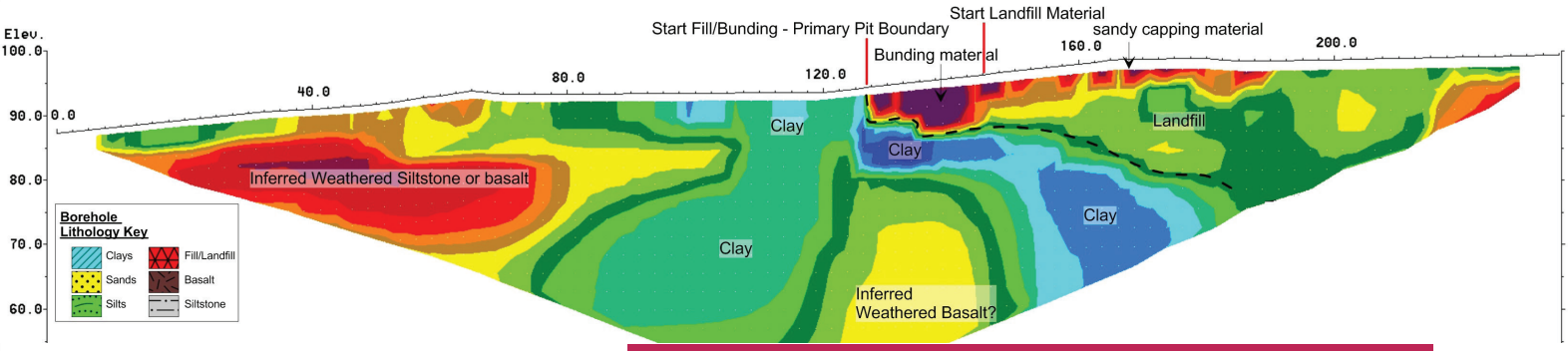
Vertical Electrical Soundings:

Vertical Electrical Soundings provide a 1D electrical profile of the subsurface, commonly used in earthing design for lightning protection, electrical substations, power lines and pipelines.



Example 2:

Mapping a landfill pit boundary was required for a proposed development. Resistivity contrasts between the landfill material and the underlying geology made delineation of the landfill boundary and thickness possible.



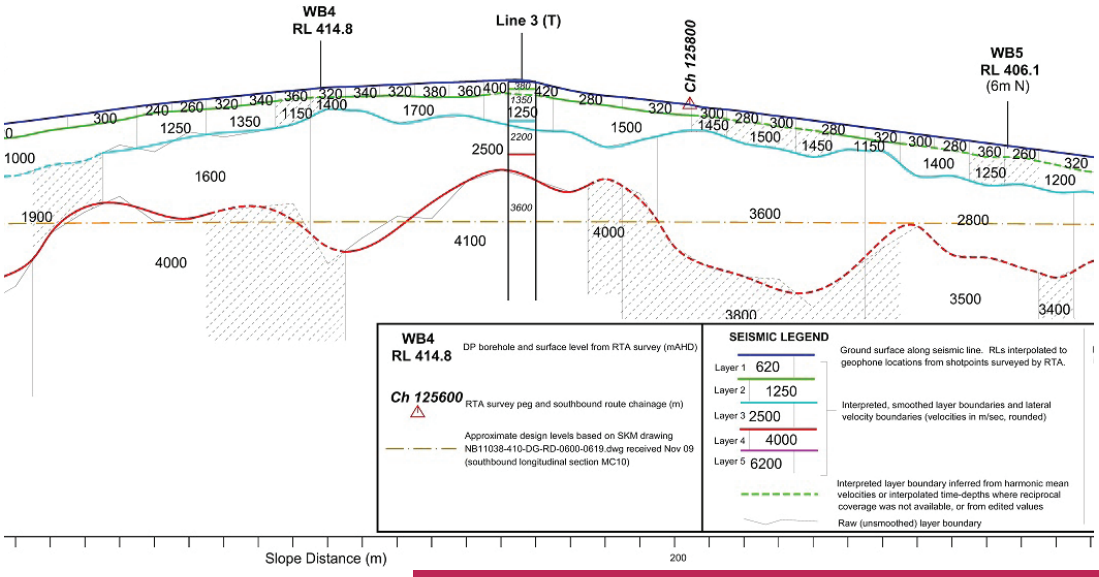
"At all times we have found that Douglas Partners has provided a high level of service to us. Their advice has been reliable and they have been very timely in their service delivery. Based on our experience to date, we wouldn't hesitate to engage them in the future."

Stephen Parkin
Director, Armstrong Parkin Architects

Seismic Refraction

Douglas Partners has been conducting seismic surveys across Australia and abroad for over 30 years. Seismic refraction is commonly used in geotechnical investigations to characterise rock strength for excavation planning.

Example:
Seismic Refraction Profiling along a proposed section of highway. Seismic velocities from the profile can be used to estimate excavatability.



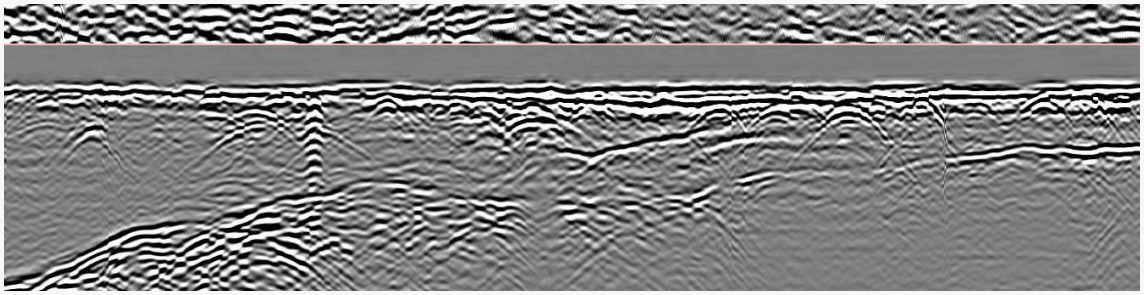
"Without exception Douglas Partners have been able to add value to the project work we have been jointly involved in. We have found their staff to be knowledgeable, experienced, flexible, and a pleasure to work with."

John Eggleston
Senior Project Manager,
Robert Luxmoore Pty Ltd

Ground Penetrating Radar

Ground Penetrating Radar (GPR) has gained widespread acceptance across a number of industries, in part due to the broad uptake by service locators and concrete scanners. Nonetheless, implementation of GPR for more complex and detailed investigations requires specialist geophysical expertise. A good understanding of how soil conditions, survey design and data processing affect survey outcomes is vital for its successful implementation. Douglas Partners' Geophysicists have successfully implemented 2D and 3D GPR for a wide variety of applications, such as:

- Void mapping
- Pavement thickness assessment
- Depth to bedrock
- Coastal geology investigations
- Groundwater
- Structural engineering investigations
- Grave site detection and mapping
- Archaeology

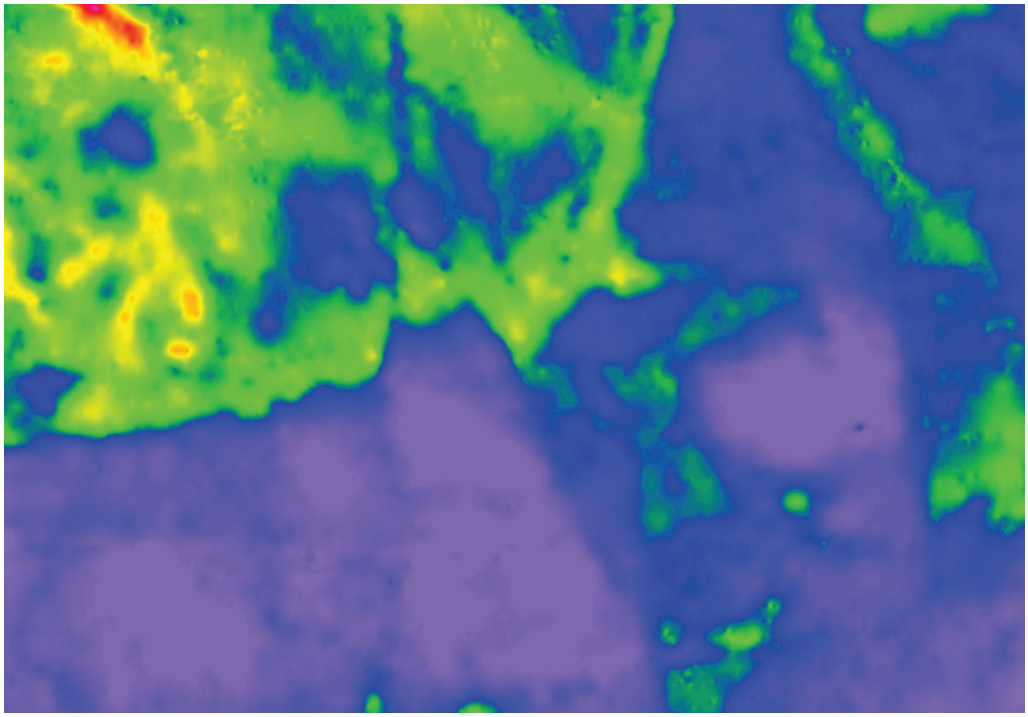


"Sheargold use Douglas Partners for all of its geotechnical and contamination consulting because their services bring a brand of high quality and trusted service that is recognised by all stakeholders in the development industry.

When Sheargold engage Douglas Partners for assistance with challenging geotechnical issues, we are confident that we are getting the industry's best practice solutions with a cost- conscious approach to the project."

Ryan Duff, Development Manager
Sheargold Group

Ground Conductivity Mapping



Ground Conductivity Mapping is one of the most cost effective Geophysical methods available. Rapid acquisition is made possible using custom vehicle setups (using a 4WD or ATV). Ground conductivity and position data are logged continuously in real-time whilst driving, making it possible to cover many hectares in one day.

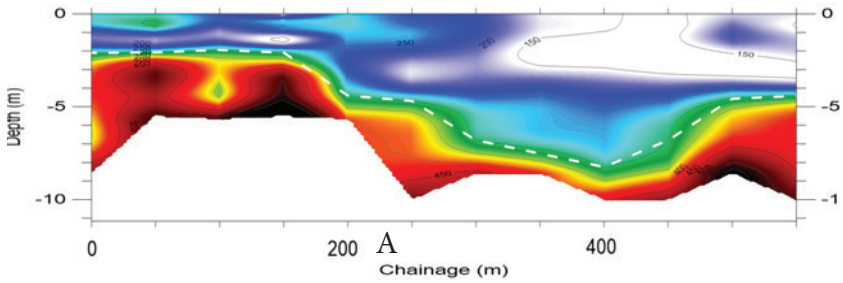
Applications for conductivity mapping include:

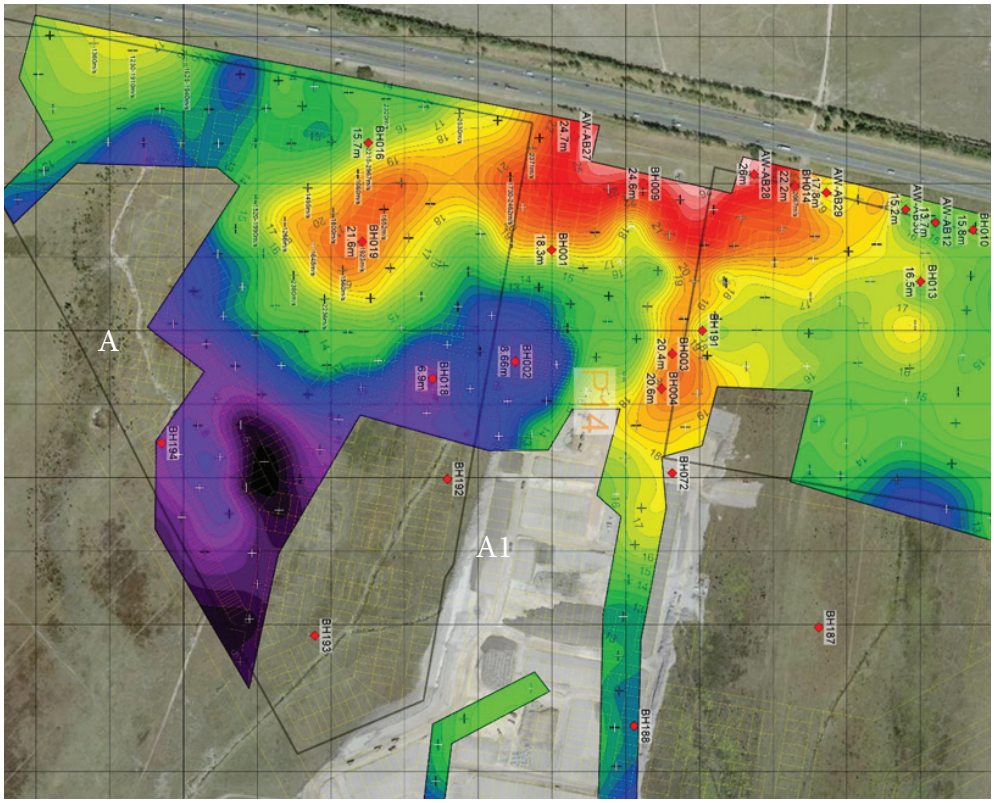
- Salinity Mapping
- Mapping buried foundations
- Soil thickness and depth to bedrock
- Landfill mapping
- Contamination plume mapping

Multi-channel Analysis of Surface Waves

MASW has become a popular method for profiling and mapping of the depth to rock and soil stiffness.

Example:
MASW for mapping depth to bedrock for a housing development. Seismic velocities from the profile can be used to estimate bedrock depth which can then be digitized and interpolated to produce a 2D map of bedrock levels.





Geophysics Specialists

Our Geophysicists can mobilise to anywhere in Australia often at short notice. Our geophysical investigations utilise highly trained local field staff and logistical support from Douglas Partners' many offices nationwide or employ the specialist skills of our preferred delivery partners. This enables projects to be undertaken effectively and at reduced cost to the client, whilst ensuring rapid deployment and a high level of quality control and safety on your project.

Directors and Principals are directly and actively involved in projects ensuring client access to the best available expertise across the Company.

JEREMY HILL

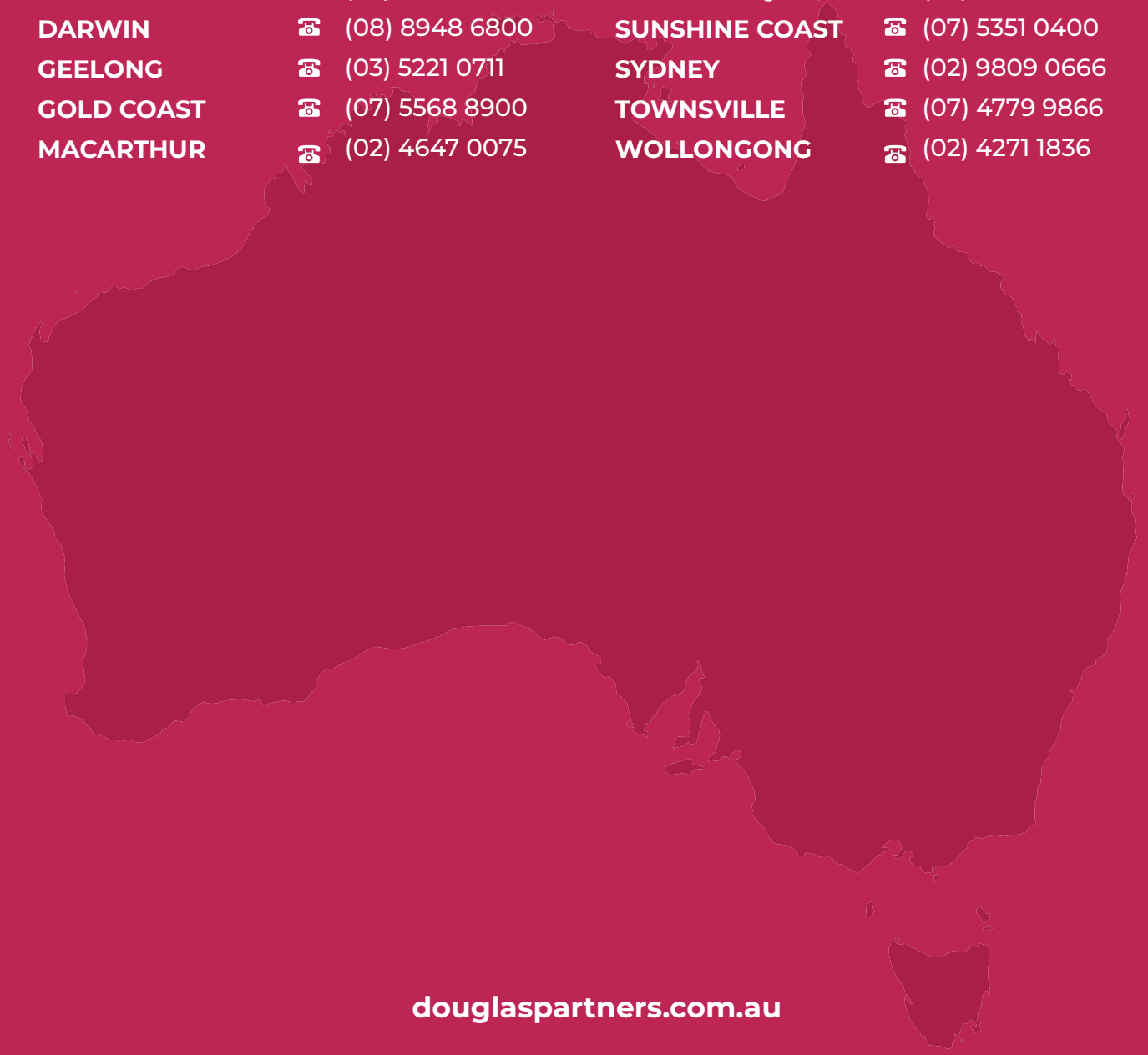
Associate / Senior Geophysicist

With over 15 years' experience in near surface geophysics, Jeremy specialises in the application of a variety of geophysical techniques for geotechnical, environmental and groundwater investigations. Jeremy has worked on numerous projects across Australia as well as the UK, Canada, Fiji, Taiwan, Cambodia, Chile and the Middle East.

Local capability, world-class talent

For information on how Douglas Partners can assist on your project, please contact one of our branches below or email info@douglaspartners.com.au.

BRISBANE	(07) 3237 8900	**MELBOURNE**	(03) 9673 3500
CAIRNS	(07) 4055 1550	**NEWCASTLE**	(02) 4960 9600
CANBERRA	(02) 6260 2788	**NTH WEST SYDNEY**	(02) 4666 0450
CENTRAL COAST	(02) 4351 1422	**PERTH**	(08) 9204 3511
COFFS HARBOUR	(02) 6650 3200	**PORT MACQUARIE**	(02) 6581 5992
DARWIN	(08) 8948 6800	**SUNSHINE COAST**	(07) 5351 0400
GEELONG	(03) 5221 0711	**SYDNEY**	(02) 9809 0666
GOLD COAST	(07) 5568 8900	**TOWNSVILLE**	(07) 4779 9866
MACARTHUR	(02) 4647 0075	**WOLLONGONG**	(02) 4271 1836



douglaspartners.com.au