Civil Geotechnics & Mine Infrastructure

- Shallow and deep foundation investigations, design parameters and advice.
- Soft soil engineering solutions.
- Settlement analysis (immediate and long-term settlement).
- Pavement investigation and design.
- Landslide risk assessment and management.
- Slope stability investigations and analysis.
- Slope stabilisation (soil nails, rock bolts, mesh and shotcrete).
- Rock fall analysis and risk management solutions.
- Retaining wall design (MSE, anchored and gravity walls).
- Soil mechanics.
- Site classification & onsite sewage assessment and design.
- Acid sulfate soil investigations and management.
- Pavement investigation and design.
- Crane pad analysis and design.
- Construction supervision and quality assurance.

Geotechnical Investigations, Data & Models

- Data management and development of useable geotechnical data management systems.
- Design and management of geotechnical investigations (e.g. drilling or mapping programs).
- Design of sampling programs and interpretation of laboratory test results.
- Data validation and training (perform check logging or mapping and provide feedback to engineers).
- Rock mass characterisation and domain modelling.
- Rock mass and defect shear strength estimates.
- Structural analysis.
- Development & validation of geotechnical models.

Tailings and Water Storage Facilities

- Geotechnical investigations.
- Stability assessments.
- Embankment design.
- Seepage and failure investigations.
- Risk assessments and compliance audits.

Providing practical, cost effective and innovative geotechnical engineering solutions for the mining and civil construction industries

Gecko Geotechnics Pty Ltd
PO BOX 14226, Mt Sheridan QLD 4868, Australia • ABN 29 603 788 567
T: +61 4 9737 7228 • E: info@geckogeotech.com • W: www.geckogeotech.com
Surface Mining (Open Pit)
Providing optimised pit slope design solutions (maximise ore recovery & minimise excavation costs) through:
- Understanding the mining method and operational constraints.
- Rigorous understanding of site geology and hydrogeology.
- Ground characterisation through statistical means.
- Identification and stability analysis of structural, mass and complex slope failure modes.
- Kinematic and limit equilibrium analysis using deterministic and probabilistic data inputs. Finite element analysis to identify & assess complex failure modes.
- Groundwater models, assessment & control for slope stability.
- Catchment hydrology and surface water management.
- Design of reinforcement or artificial support.
- Design of monitoring programs for groundwater and excavation performance, and slope deformation (long-term & real-time monitoring with alarms and response plans).
- Risk analysis and development of risk management strategies
- Blastability and diggability assessments.
- Investigation and remedial solutions for failed or failing slopes.
- Underground void interaction – evaluation & risk management.

Underground Mining
- Stability assessments, excavation and support design using empirical and analytical methods for tunnels, stopes & shafts.
- Ground support performance assessment.
- Instrumentation design.
- Risk assessments & ground control management plans.

Waste Dumps
Optimised waste dump design (minimized operating cost) through:
- Understanding regulatory requirements (height limits, post-mining land use, etc), operating environment & mine schedule.
- Assessment and classification of waste material types.
- Dump design considering waste rock shear strength, acid rock drainage potential, foundation conditions, hydrology and haulage profiles.
- Waste dump, tiphead and stockpile stability assessments.
- Risk assessment and closure planning.