



MINERALS INDUSTRY CAREERS. RICH IN DISCOVERY.

Geotechnical/Geological Engineering

WHAT DOES A GEOTECHNICAL/ GEOLOGICAL ENGINEER DO?

Geological engineers identify and try to solve problems involving soil, rock and groundwater, and design structures in and below the ground, using the principles of earth science and engineering. Geological engineering includes a number of ground engineering specialities such as geotechnical engineering, land remediation, rock mechanics, groundwater hydrology and engineering geology.

Geological engineers may perform the following tasks:

- investigate the engineering feasibility of planned new developments involving soil, rock and groundwater
- plan and undertake site investigations for proposed major engineering works such as bridges, dams and tunnels
- design measures to correct land contamination and salination
- design major structures in rock such as tunnels, basements and shafts
- supervise construction and performance of major engineering works involving the ground
- work out strategies to control landslides and areas of potential instability
- act as consultants or researchers act in managerial positions and be responsible for coordination of multi-disciplinary study teams, staff recruitment and matters of work organisation
- perform computer analyses, use computer databases and generate computer-aided designs.

Geological engineers may work with other professionals pooling their expertise to solve particular problems. For example, they may work with environmental scientists, geologists and hydrologists on solving land degradation, groundwater and salination problems; with civil engineers in the design and construction of better transportation links; or with mining engineers in designing open-cut and underground mines, and on rehabilitation works on completion of mining. Outdoor work is an essential aspect of geological engineering investigations. Geological engineers typically spend up to half of their working hours on field investigations and supervising construction of their designs. →

GEOTECHNICAL AND GEOLOGICAL CAREERS

- Geotechnical Engineer – Open Pit
- Geotechnical Engineer - Underground
- Geotechnical Engineer - Civil
- Geotechnical Engineer - Consulting
- Geotechnical Engineer - Computing/modelling
- Geotechnical Engineer - Academic/research



→ Responsibilities of the role typically include ensuring geotechnical activities are conducted safely in order to provide a safe working environment for employees and contractors in accordance with company standards and government legislation.

WHAT ARE THE CAREER OPPORTUNITIES?

Most geological/geotechnical engineers are based in coastal capital cities, and are employed by a range of companies, from large multinationals to small, local consultants, as well as by all levels of government.

Geologists and Engineers (usually civil or mining) can do postgraduate study to specialise and work as geological/geotechnical engineers. Postgraduate study is often more flexible than undergraduate study to fit in with full time work.

MARNIE PASCOE

BSc Geology (Hons) Completing MEngSc Workplace Trainer / Assessor MAusIMM (CP)

Why did you choose your particular career?

At the time WMC Kambalda were looking for a geologist with a structural geology background who wanted to learn new things. I worked with an experienced rock mechanics engineer and did a lot of learning on the job. Since then I've found the job very interesting and rewarding with good advancement opportunities and diversity.

What have you done so far in your career?

I worked for 3 years at Kambalda providing a geotechnical service to the 15 or so Nickel and Gold Mines in the region.

I then joined BHP Minerals' Cannington Project as part of the feasibility team and helped set up the Cannington Mine. I moved to AMC Consultants in Melbourne and worked there for

5 years doing all sorts of project work on existing mines and working on scoping and feasibility studies as well as training courses for miners and technical staff. I rejoined WMC at Olympic Dam as the Geotechnical Superintendent and was there for 3 years as part of the team that stabilised mine production and improved mine design and technical practices. Following the BHPBilliton takeover of WMC I now work for Exploration and Mining Technology as a technical expert providing support to mining operations and identifying and implementing new technologies to mining operations.

What have you enjoyed most about your profession(s)?

Working with a wide variety of people across the operation. Being involved in more than one discipline. The job requires that you have a sound working knowledge of all aspects of the mining operation to be able to contribute effectively. Being part of the group that often leads change in the workplace.