# Position Description

## Research Scientist/Engineer – CSOF7

The following information is for applicants

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| Advertised Job Title**:** | Technology Leader – Rockmass Engineering |
| Job Reference: | 58240 |
| Relocation Assistance**:** | Will be provided to the successful candidate if required. |
| Applications Are Open To: | Australian residents who have full work-rights for the duration of this contract. No visa sponsorship will be provided. |
| Percentage of Client Focus - Internal: | 80% |
| Percentage of Client Focus - External: | 20% |
| Reports to the: | Research Director |
| Name and Contact Details For Applicant Enquiries  | Dr Ewan Sellersvia email: Ewan.Sellers@csiro.au or phone: +61 7 3327 4162 |
| Contact Details For technical issues | Call 1300 984 220 or email careers.online@csiro.au. |
| How to Apply: | Please apply online at [jobs.csiro.au](https://jobs.csiro.au/) and enter the requisition number**.** Internal applicants please apply via ‘Jobs Central’ through the ‘People Hub’ icon  |

## Role Overview:

The role of Research Scientist Staff in CSIRO is to conduct innovative research leading to scientific achievements that are aligned with CSIRO’s strategies. They may be engaged in scientific activity ranging from fundamental research to the investigation of specific industry or community problems. They will have the opportunity to build and maintain networks, play a lead role in securing project funds, provide scientific leadership and pursue new ideas and approaches that create new concepts.

The role of the Technology Leader for Rock mass engineering will be to research the way that the rock mass can be broken, controlled and tracked. The aim is to enable novel mining methods and improve productivity of current methods. The researcher will apply geomechanics principles and data analytical techniques to understand rock mass flow in mining methods such as open pits and caving operations. The aim is to evaluate and improve the value of mining operations by advancing extraction techniques such as blast preconditioning, mini caves and rock cutting coupled with active technologies such as sensors for tracking material movement and reducing seismicity.

The aim of the research is to predict the response of the rock mass as it is broken by mechanical, drill and blast and caving methods. The work will involve the prediction, monitoring and data analytics of rock mass flow in areas such as blasts, caves, stope draw points, ore passes and stockpiles using numerical and deep learning approaches.

## Duties and Key Result Areas:

* Incorporate novel approaches to scientific investigations by adapting and/or developing original concepts and ideas for new, existing and further research.
* Initiate, lead and manage innovative projects in Mining3’s Research Programs
* Provide technical input to Mining3 projects in the fundamental area of Rockmass engineering
* Engage with external funding partners to find project funding to build a sustainable research team
* Act as a trusted advisor, utilising knowledge of client’s business and understanding of their underlying needs.
* Anticipate industry and/or community needs and market direction through client liaison/networking, and identify and adapt quickly to changes.
* Within broad guidelines, use professional expertise, knowledge of other disciplines and research experience/achievement to formulate, develop and complete an approved research program with general direction as to the aims of their activities.
* Communicate research results to clients and the scientific community through oral and written reports, which may include the preparation of documents for patent applications.
* Communicate openly, effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
* Work collaboratively as part of a multi-disciplinary, often regionally dispersed research team, and business unit to carry out tasks in support of CSIRO’s scientific objectives.
* Adhere to the spirit and practice of CSIRO’s Code of Conduct, Health, Safety and Environment plans and policies, Diversity initiatives and Zero Harm goals.
* Other duties as directed.

## Required Competencies:

* **Teamwork and Collaboration: Creates and fosters an environment in which there is a high level of cooperation within and between teams. Facilitates positive team relationships to build interactions across Business Units and the organisation.**
* **Influence and Communication: Identifies critical stakeholders and influences them via an influential third party, for example through an established network, to gain support for sometimes contentious proposals/ideas.**
* **Resource Management/Leadership: Provides leadership that fosters an environment that encourages new ideas and provides support for the development of emerging skills. Creates trust by displaying consistency, understanding, integrity and patience. Plans, seeks, allocates and monitors resources to achieve outcomes.**
* **Judgement and Problem Solving:** Anticipates and manages problems in ambiguous situations. Develops and selects an appropriate course of action and provides for contingencies. Evaluates, interprets and integrates complex bodies of information and draws logical conclusions, synthesises proposals and defends options with reasoned arguments.
* **Independence: Assesses the risk and opportunity of identified strategies, options and actions. Overcomes problems and setbacks in achieving goals. Invariably includes consideration of value-added future impact on bottom line when determining the optimal and efficient use of resources.**
* **Adaptability:** Demonstrates flexibility in thinking and adapts to, and manages, the increasing rate of organisational change by adjusting strategies, goal and priorities.
* **Behaviours:** A history of professional and respectful behaviours and attitudes in a collaborative environment.

## Essential Selection Criteria:

*Under CSIRO policy only those who meet all selection criteria can be appointed.*

* A doctorate in physics or geomechanics or related discipline.
* Experience in modelling and data analytics of rock flow in cave mine environments.
* Proven ability to develop and lead a team of researchers, PhD students and Post Doc. students
* Ability to use continuum and discrete numerical codes for modelling of rock mass dynamics
* Proven ability to develop project proposals for rock mass engineering research
* Experience with deep learning or neural networks
* Proven experience in financial or economic modelling
* The ability to work effectively as an integral member and leader of a multi-disciplinary, regionally dispersed research team, and foster an environment in which there is a high level of co-operation within and between teams.
* An outstanding record of science innovation and creativity plus the ability to apply well developed research skills to scientific investigations of significant consequence.

## Desirable Selection Criteria:

* A degree in economics or related field.
* A good network of industry research partners.

## Special Requirements:

Appointment to this role may be subject to conditions including security/national police/medical/character clearance requirements.

Applicant must be prepared to travel, including to mine sites, and be fit to work on site if required.

## About CSIRO:

We imagine. We collaborate. We innovate. To find out more visit us [online](http://www.csiro.au/)

Find out more about CSIRO [Mineral Resources](https://www.csiro.au/en/Research/MRF)