

# Mining Geomechanical Risk 2019

Proceedings of the First International Conference  
on Mining Geomechanical Risk

9–11 April 2019, Perth, Australia

*Editor*

**Johan Wesseloo**

Australian Centre for Geomechanics, The University of Western Australia, Australia



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### **Australian Centre for Geomechanics**

The University of Western Australia  
35 Stirling Highway (M600)  
CRAWLEY, WESTERN AUSTRALIA  
AUSTRALIA 6009  
Telephone: +61 8 6488 3300  
info-acg@uwa.edu.au  
www.acg.uwa.edu.au

ABN 37 882 817 280

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The Australian Centre for Geomechanics (ACG) was formally established in 1992 as a University of Western Australia research centre in order to promote research excellence and continuing education in geomechanics, with particular emphasis on its application to the mineral and energy extraction sections of Australia's resources industry.

The Australian Centre for Geomechanics is an unincorporated Joint Venture involving:

- CSIRO Mineral Resources
- The University of Western Australia — Civil, Environmental and Mining Engineering

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The First International Conference on Mining Geomechanical Risk papers are available on the repository.

Setting a high standard for technology transfer and accessibility, this valuable online resource will continue to develop and grow with future ACG geomechanical mining events.

**[papers.acg.uwa.edu.au](http://papers.acg.uwa.edu.au)**



# Technical Reviewers

The dedicated efforts of the peer reviewers have resulted in the high quality of the technical programme and the papers compiled for this publication. The editor thanks the following people who contributed their time and expertise as reviewers of manuscripts for the proceedings of the First International Conference on Mining Geomechanical Risk held in Perth, Australia. A technical and critical review of each paper was undertaken by a minimum of two reviewers for the production of this volume.

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# Preface

On 25 January 2019, a tailings dam failure occurred in Brazil with devastating consequences. The terrible loss of life, over 300 fatalities to date ([reut.rs/2TPmurt](http://reut.rs/2TPmurt)), is a stark reminder of how important the careful management of geomechanical risks are. For underground and open pit rock mechanics, the exposure to the public is comparatively limited and the risk to life contained to the workforce, and the management of workforce exposure is effective in managing safety risk. The management of financial risk, however, requires different approaches. It is my opinion that within the broader mining community, geotechnical risk is often underappreciated and not always properly quantified.

One of the challenges faced by the industry is the fact that, at the highest levels, the management of mining geomechanical risk is the responsibility of managers from non-scientific or engineering backgrounds with little or no appreciation of the uncertainty and variability intrinsic to geomechanics. In many mining companies, mining engineers and geomechanical engineers are under-represented or completely absent from higher management levels.

In all areas of geomechanics, the uncertainty and variability that engineers need to deal with necessitates a rigorous process of quantification or, in the very least, the mandate to robustly qualify likelihoods and consequences. There appears also to be a large gap between the state-of-the-art and the state of general practice when it comes to the qualification and quantification of geotechnical risk.

For this reason, the Australian Centre for Geomechanics (ACG) is hosting the First International Conference on Mining Geomechanical Risk (MGR 2019). The aim of the conference is to provide a forum to discuss the methods used to design for geotechnical risk and those used to manage these risks; to identify shortcomings; and to close the gap between the state-of-the-art and the state-of-practice. With this conference, we are bringing together underground rock engineers, rock slope engineers and tailings engineers with the aim of learning from each other on the common theme of geomechanical risk.

These proceedings comprise of 36 papers written by authors from nine countries. We are grateful to these authors for collectively writing this important body of work. The review process is extremely important to ensure the quality of such proceedings – we are thankful to each of the reviewers for their efforts. My personal thanks to the ACG team who has organised this event, managed the paper submission and review process and produced the proceedings. I also acknowledge the important contribution of the event sponsors.

There is no doubt in our minds that this conference topic is an important one, and we plan to organise future conferences on this theme.

These proceedings are also freely available from the ACG Online Repository of Conference Proceedings, courtesy of Open Access Sponsor, SRK Consulting. The papers can be accessed by scanning the QR code or from [papers.acg.uwa.edu.au/mgr2019](http://papers.acg.uwa.edu.au/mgr2019)

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