

Carrapateena project to date – geotechnical risks and management

G Balog¹, D Cox², T Ormerod³

1. Balog, G., Superintendent Geotechnical Engineering – OZ Minerals, Adelaide SA 5950, Glen.balog@ozminerals.com
2. Cox, D., Senior Geotechnical Engineer – OZ Minerals, Adelaide SA 5950, David.cox@ozminerals.com
3. Ormerod, T., Projects Geotechnical Engineer – OZ Minerals, Adelaide SA 5950, Tessa.Ormerod@ozminerals.com

ABSTRACT

Carrapateena is a copper-gold deposit hosted in a brecciated granite complex, located approximately 460 km north of Adelaide, South Australia. The deposit will be mined using the sub level caving (SLC) mining method at a rate of 4.25 Mtpa (OZ Minerals, 2017).

Development towards the Carrapateena orebody reached the milestone of first ore in April 2019. Mine development (lateral and vertical) towards this milestone enabled a significant increase in the understanding of the key variables relevant to cave management and geotechnical risk management. This has resulted in modifications to the mine design, such as:

- Re-orientation of the SLC footprint (change of known stress field)
- Change of infrastructure locations (rock mass suitability)
- Change to critical span for caveability (rock mass parameters)
- Mud rush management strategy (fines generation and hydrology).

Further to the mine design, the monitoring regime has been adjusted to adequately address the changes of each risk factor. These risk factors primarily relate to mud rush (fines generation and hydrology) and caveability. Testing of fines through slump testing and hydrogeological modelling have resulted in and increased understanding of the mud rush hazard and therefore the required risk management practices.

This paper discusses the methods utilised by the technical team to identify and quantify the SLC risk factors, the modifications to mine design and scheduling, and the changes to the planned risk management practices. The paper also describes the future work currently planned by the OZ Minerals technical team to quantify the various risk factors in terms of space, time and magnitude. This may better inform the future mining practices within not only the Carrapateena province but also the wider Gawler Craton.