

## **Maximising asset value through optimal block by block decisions on marginal material**

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### **ABSTRACT**

It is challenging to determine the optimal mining strategy to maximise value when a mine plan includes mineralised material which does not meet the full cost of mining but has value exceeding the variable cost of mining ('marginal material'). Mining too much marginal material dilutes the operation's head grade and undermines profitability. Conversely, leaving too much metal behind fails to achieve the full value of the endowment. Finding the balance between the two will maximise value delivered from the asset.

This dilemma has traditionally been approached by calculating a suite of cut-off grades to define the grade of material that meets economic targets for an orebody (or zone within) and should therefore be included in the mine plan. A problem with this approach is that individual mining blocks within the zone have different costs, value and confidence levels, with each having economic co-dependencies between them. Blocks of identical grade but different mining contexts will have distinctly different economic outcomes.

For example:

- a block may be a low-grade increment or shell around a higher-grade stope;
- a block may be available to be mined when there is spare mining capacity; or
- a block may defer access to significantly higher cash flow material.

Each of these circumstances would result in different value from the blocks if included as part of the mine plan. Cut-off grades calculated as averages over zones of material, or in isolation from schedule-based information, are missing the mining context that determines the ultimate economic outcome of making a mining decision.