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Value Based Extraction Decisions under Challenging Market Conditions at Mogalakwena Platinum Complex

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Current ore and waste decisions at Mogalakwena Mine are based on a grade decision of the 4 platinum group elements (4E PGE i.e. Pt+Pd+Rh+Au). Ore categorizations are defined as 4E PGE<1g/t =waste; 4E PGE>1<1.7g/t = Low Grade Material; 4E PGE >1.7g/t = Ore Feed. A deliberate move towards a multi-variable ore control tool was initiated within the production environment to align with the dynamic and challenging market conditions. This ore control development considers a profit based decision incorporating all the metals contained, their recovery potential, metal prices, mining and processing costs.

The potential benefit of the multi-element ore control is shown by the varying profit values for ore material associated with specific 4E PGE grade cut-offs. Costing, pricing, metal recoveries and cost escalation factors were incorporated into the production models to assess profit of the ore material on a mining scale within the short-term production environment. The profit inputs were aligned with the mine planning inputs allowing synchronization between Geology and Mine Planning to obtain optimum ore-feed material with consideration of the medium-term market conditions.

The study shows an assessment of comparative results between the multi-element and 4E PGE grade control systems. Recovery potential of the mineralogical variable ore material was also investigated with its impact on the profit for in-situ ore material.

