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# The effect on net present value of cut-off grades applied to various Reef types using different mining methods

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## ABSTRACT

Cut-off grade is influenced by economic factors including costs. Different mining methods have different costs associated with them. Most operations would only employ one mining method in the extraction of ore. In this research, several mining methods are used in the extraction process and by optimising these, the net present value is increased. The formulation and recording of costs lay the foundation for reliable cost information associated with each mining method. Without reliable cost information, the real cost of each mining method cannot be ascertained. The traditional approach to cut-off grade calculation used by the operation was compared with the new approach of a cut-off grade per mining method, and in so doing, there was a 3% improvement in cut-off grade leading to improved reserve tonnages and gold content. The results of the calculation were modelled per mining method in the comparison showing a 2% improvement in the net present value. The improved results were then simulated through the Monte Carlo simulator, @Risk and these were further enhanced. From the study, it was concluded that by the use of Activity-Based Costing and the analysing of costs per mining method, the cut-off grade could be reduced, and the net present value increased.