

Whittle Consulting

Melbourne based Whittle Consulting has experienced significant growth due to the mining boom and to increased recognition of the relevance of its optimisation techniques. “We have been developing our techniques over the last 8 years or so through the planning projects we have undertaken, and now have a significant suite of methodologies to cover a range of minerals and types of planning challenges. By spanning the whole resource company value chain from geology, through mining and mineral processing to market, we are achieving ‘business’ optimisation, not just mining optimisation.” explains Managing Director Gerald Whittle.

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“High commodity prices have created many opportunities in this industry. However, the old rules of thumb for cut-off grades like 1% for Nickel Laterites, 1 g/t for Gold, or set views on maximum stripping ratios for coal are out the window as far as I am concerned. Although these guidelines are often used in initial Resource Estimation, the real quantification of economic potential depends on how the resource might be developed. We have had recent cases where the optimisation analysis has shown potential economic resources to be between 30% less or 50% more than originally thought, depending on what process flow is considered and how it is configured and scaled. Furthermore, the development option that gives the largest potential tonnage of mineral reserve is generally not the one that maximises financial value!

“Although our capability is underpinned by our proprietary Global Optimisation life-of-mine scheduling software, which is under constant ongoing development by founder Jeff Whittle, almost half our consulting work involves advanced pit and phase optimisation using Gemcom-Whittle software. The detailed models we develop for mining, mineral processing, and markets for Global Optimisation

(schedule) are just as relevant to Pit Optimisation. An integrated approach to pit/phase/cut-off/stockpile/processing/blending/production optimisation is required so that a clear understanding of the value drivers can be developed.

“A topic that is not well understood or not applied is that of cut-off grades during scheduling. Although high metal prices result in lower “marginal” cut-off grade overall, they actually lead to higher “optimal” cut-off grades early in the life of the mine. This is counter-intuitive for many geologist and engineers but it can be demonstrated quite easily. Elevated cut-off grades will lead to wasting or stockpiling of lower value material, but the financial benefits of maximising the dollar value of the material flow through the plant can be significant. Apart from accepting the conceptual aspects of elevated cut-off grade strategies, the actual mathematics involved in calculating the optimal cut-off grade can be very complicated. This is where the optimisation software helps us out.

“Maximising the size of the resource, the life-of the mine, or the recovery are not in themselves valid objectives. I often get blank looks when I make statements like that, but I maintain that it is the economics of a project, subject to social, environmental and safety considerations, that provide security and robustness. No economics – no project, and then all the stakeholders miss out. It is a competitive world, and you can’t afford to operate at anything less than your economic optimal or you won’t attract the capital or you risk being the first one out of business during a downturn.

“Often smaller-scaled and more clever exploitation of a resources gives a much better result, from both a risk and return viewpoint. My message is to do the optimisation analysis of options early, before too much energy and capital is committed to what might be the wrong direction.”



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