



WHITTLE CONSULTING
BUSINESS OPTIMISATION FOR THE MINING INDUSTRY

Whittle Consulting Embraces Sustainability

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Gerald Whittle: *“For many years now, Whittle Consulting has been hammering the message that mining companies should be focussed on generating cash. Our approach of Enterprise Optimisation (EO) is the ultimate integration of the techniques to do just that.*

“It is all about the cash – BUT there are other benefits and consequences from having a mining operation, although these will be precluded if the mine does not make money as it won't exist! In theory, economically successful operations will have the financial flexibility to deal with social, political and environmental considerations. We know it is not that simple.

“The integration of Enterprise Optimisation (EO) and Sustainable Operations (SUSOP) we believe becomes the ‘holy grail’ in strategic and operational planning, by linking hard technical options through economic optimisation to include the social, political and environmental consequences of the decision we make. To be branded ‘Green Line Mining’ – this is the way of the future.”

SUSOP, short for Sustainable Operations, was developed through a multi-year collaborative research effort between industry and research organisations led by at Qld University's Sustainable Minerals Institute (SMI). It is a well-developed framework that can be applied to an existing or planned mining operation to establish quantitatively and qualitatively the status of an operation and its impact on the “Five Capitals” of the Sustainable Development (SD) Balance Sheet: Economic, Manufactured, Social, Human and Natural. It also taps into the SMI's wealth of knowledge on environmental and community issues, and technical expertise, to develop strategies that improve a mining company's performance and its relationships with its external stakeholders – reducing risk and improving its “Licence to Operate”. SUSOP is a subsidiary of JKTech, the SMI's commercialisation arm, which has an alliance with Whittle Consulting.

The EO/SUSOP approach: EO models have always focussed on operational decisions and the revenue and cost (i.e. net cash flow) implications of these. What the EO/SUSOP combination means in practice is that EO models are filled out with more explicit variables, like employment levels, water, power, taxes, royalties, carbon, dust, noise, vibration, area disturbed by the mine/waste/tailings, chemistry of the dumps and tailings, etc, etc, whatever is interesting. These variables can be reported, constrained, or influenced (by the use of attenuators in the EO model) to achieve plans that excel in terms of economic performance AND embody a wide range of other characteristics that will improve the appeal and support from a wider range of stakeholders. The SUSOP approach handles the assessment and management of this long list of criteria. At last boards have an integrated framework, with sophisticated optimisation, to link their operational and technical decisions to a



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wide range of company making/breaking considerations.

Optimising a mining operation for economics already generally means good news for the SD Balance Sheet. Whilst the NPV improves say 35%, energy efficiency increases by 20%, water efficiency by 10%, employment increases, taxes and royalties go up, pits and tailings dams are generally smaller. "I am not sure anyone has a problem with this – but with EO/SUSOP we can go even further, and boards can design the SD profile of the operation they want to run."

The strength of Whittle Consulting's "Enterprise Optimisation" approach is that it integrates decisions involving geology, mining, processing, logistics, marketing and finance to develop long-term plans that maximise economic value as defined by cash flow and Net Present Value. It brings together a mining company's organisational silos under a single framework, with a focussed objective of accelerating cash flow through the bottlenecks in the system. Results are invariably increases in NPV of 5% - 35% or considerably more, with increase in early year cash flows of 35, 50% or even 100% – without requiring capital expenditure. The integration with SUSOP means the EO approach can consider the concerns of internal and external organisational silos as well, **maximising the economic performance of a mining company within the social, political and environmental context within which they operate.**