**Incorporating materials supply in strategic mine planning**

D K Walker1, E Y Baafi2 and S Kiridena3

1.Principal Underground Mine Planning, BMA Technical Services, Brisbane, QLD 4000. Email: [david.walker5@bhp.com](mailto:david.walker5@bhp.com)

2.Assoc. Professor, University of Wollongong, Wollongong, NSW 2500. Email: ebaafi@uow.edu.au

3.Senior Lecturer, University of Wollongong, Wollongong, NSW 2500. Email: skiriden@uow.edu.au

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# ABSTRACT

As an underground coal mine continues to expand away from its surface infrastructure bases, the criticality of good supply chain management increases. The simplest way to slacken the logistical supply chain and to lessen strain on the supply system is to move the surface infrastructure closer to the productive faces.

There is currently no mechanism for underground coal mine strategic mine planners to identify potential future logistical supply chain bottlenecks within a mine plan and address them proactively. By identifying any logistics constraints as early as possible, the best opportunity to rectify the problem at the least expense is realised.

Circumstances will prevent sufficient relief to logistics strain by locating portals closer to productive activities as the mine expands over time. Logistics strain will continue to increase with the mine expansion until there is a point where the productive activities are heavily influenced mainly by bottlenecks and the rate of production begins to deteriorate due to either materials supply not being able to keep up with the desired rate of expansion or personnel not being able to arrive quickly enough to operate the machinery at its utilisation rate.

The paper discusses an approach to strategically identify logistics bottlenecks and the impacts that coal mine planning parameters might have on these at any point in time throughout a life-of-a mine plan. The developed system uses a suite of unique algorithms that are designed to “bolt onto” existing mine plans with the XPAC mine scheduling software package developed by RPM Global (<https://rpmglobal.com/product/xpac/>). The developed system identifies at a strategic level the number of material delivery loads required to maintain planned productivity for a mining operation. It also strategically identifies logistics bottlenecks and the impacts that mine planning parameters might have on these at any point in time throughout the life-of-mine plan.