Cashflow Bonded Mining

This submission proposes changes to the basis of security for mine rehabilitation in NSW. This creates different fundamental drivers for mining companies operating in NSW that are more aligned with the goals stated for mine rehabilitation.

Definitions:

FBM

NSW currently operates under **Finance Bonded Mining (FBM).** This is a blanket term defined as the use of financial instruments to cover the cost of rehabilitation, which increases during mining as land is disturbed and pollutants are concentrated on mine leases. FBM has been in common use in global mining since the 1970's but varies in the implementation across different mining jurisdictions.

Financial instruments are used to cover the situation of a mining company not having sufficient means to pay for the full cost of mine closure, and may include:

- Letter of credit
- Bank guarantee
- Certificate of deposit
- First-lien interest in real estate
- Corporate or government bonds
- Self-bonding
- Mining rehabilitation funds

NPV

Net Present Value (NPV) is summarized as the practise of discounting future cashflows using a compound discount rate, then using the total to represent the value of the investment above the 'do nothing' benchmark case. The effect of NPV metrics is to mute the influence of future revenues and costs; the further into the future, the more muted the impact due to the compounding effects of the discount rate.

Highest NPV is achieved by bringing forward revenues and deferring costs. Maximizing NPV is the default decision making metric for most decisions made by mining companies, making the impacts of NPV calculation methods one of the most widespread influences on mine closure and rehabilitation decision making.

Behaviours Observed Under FBM Schemes in Mining Jurisdictions

- Absence of detailed, properly engineered and scheduled closure planning during mining operations leading to spiralling rehabilitation costs as operators make decisions without reference to the ultimate cost of closure
- Deferral of rehabilitation as late as legally possible in mine life
- Divestment as a preferred strategy rather than take on risk of actual mine closure, once mines cease to generate large amounts of free cashflow
- Bankruptcy of the final owner of a mining operation (sometimes after changing hands multiple times) leading to handback of the leases and assumption of rehabilitation and closure costs by the government
- Operating with bare minimums of orebody knowledge to minimise exploration and investigation costs

- Regulators unwilling to commit to relinquishment conditions, leaving miners uncertain of ultimate requirements to achieve closure
- Regulation by approvals creep rather than being seen to be impacting on jobs, leaving existing operations untouched by newer standards required of proposed developments or extensions

CBM

A change to the basis of security is proposed:

The cash cost of rehabilitation of mining disturbance shall be secured by the value of undiscounted cashflows generated by mining the deposit itself, net of all modifying factors and costs. This is referred to as ***Cashflow Bonded Mining (CBM)****. Reporting against this standard shall be supported by engineered and scheduled costings integrated within the overall mine operations plan.*

Mining companies will no longer be required to hold a financial instrument for security.

CBM Metrics

The key metric that regulators and mining companies will use under CBM is the ratio of the sum of future cashflows to be generated by the deposit (referred to here as Value In Ground or VIG) to the sum of cashflows required to complete mine closure (referred to here as CC).

These cashflows are undiscounted, as recent events have illustrated that when economic conditions deteriorate suddenly, and a mine life reduces from 10+ years to 2 years, the mine closure costs are incurred in today's dollars.

Deposits with high VIG:CC ratios will comfortably generate sufficient cashflows during mining to cover any required closure costs. Deposits with low VIG:CC ratios have reached the end of their economic life.

Regulators can use the key metric of VIG:CC as a non-proscriptive way of managing mine closure risks. Notionally, when VIG:CC = 1, the cashflows remaining from mining will exactly cover the remaining costs of closure. At this point, 'mining for closure (MFC)' and execution of the final stages of the closure plan need to commence. Mining for closure implies that extractive operations are still ongoing and producing cash, however rehabilitation activities are also happening, supported by mining cashflows, for example dumping or reshaping to a final landform

Regulators could choose to mandate a higher ratio, e.g. 1.5 or 2, to manage risk around fluctuating commodity prices, cost estimate blowouts, and so forth. This results in an earlier transition to MFC.

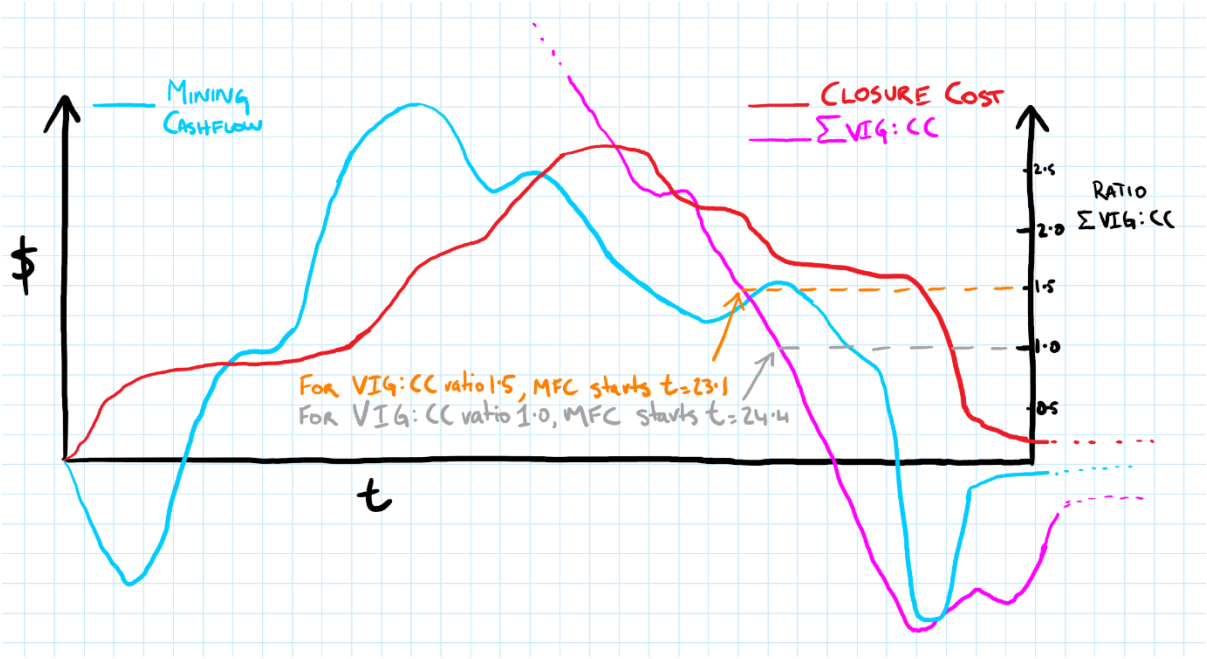

Figure – Effect of MFC Cut-off

Regulators could also choose to mandate that mines with a VIG:CC ratio less than a certain amount may not be divested. Likewise, companies and financiers can use the same metric to understand the remaining economic life in a deposit, and judge investment and transaction risks accordingly.

Reporting

To effectively report VIG:CC, simplistic one-size-fits-all calculators currently in use will be discarded, replaced by engineered and scheduled costs integrated within the overall mine plan. Reporting against metrics will need to be yearly at least.

Operating Mines Under CBM

Miners will have a different operational decision-making process under CBM. The best performers under CBM will be those who make operational decisions that ensure VIG:CC stays above critical thresholds for as long as possible.

To improve VIG:CC miners must reduce mining and / or closure costs or increase revenue.

Some examples are:

- Reconfiguring excavation and dumping plans to most efficiently deliver a final landform, rather than making short term decisions to dump in locations that need rehandle or reshaping later for closure, which incurs further costs
- Research and implement ideas for secondary revenue streams e.g. reprocessing tailings, that normally would be left for junior companies to undertake after a divestment
- Prioritise brownfields exploration to further ‘prove up’ resource into Reserves, or to make further discoveries that increase the overall revenue base of the deposit

- Strive to minimize the amount of legacy rehabilitation required, so that at any point in time, the mine has the largest possible VIG:CC ratio, which in turn insures the mine against fluctuations in mineral prices and input costs
- Increase orebody knowledge e.g. characterization of waste chemistry, to ensure no cost-blowouts in closure cost estimations put existing operations at risk.
- Improved decisions to mine: miners will in some cases choose not to mine areas or whole deposits that will not be able to self-fund the total cost of closure
    - Likewise, VIG:CC will influence capital allocation decisions

Implications

- Costs of rehabilitation and closure are secured independent of the capitalization of the company holding the lease
- Divestment to avoid closure risks will only be possible when there is comfortably enough value remaining to meet closure obligations
- Miners will actively strive to maximize the VIG:CC ratio, leading to different operational behaviours
    - Under FBM, rehabilitation is deferred during tough times, under CBM miners will strive to minimize the remaining closure costs so as not to trigger the MFC phase
- Having to defend cost and revenue estimates for both mining and closure will create an implicit demand for higher standards of planning and cost estimation, and require miners to build capability to deliver integrated mining and closure plans year in year out
- Investment in mines that can support the costs of their own closure will continue.
    - The concept of a Tier 1 or Tier 2, Tier 3 asset will be redefined. Tier 1 assets will have large VIG:CC ratios and will comfortably support closure costs as well as shareholder returns
- Likewise, investment will cease in deposits that cannot be profitably mined AND cover the cost of their rehabilitation

Implementation

A 5-8 year implementation period is recommended. For a typical surface mine it can take 5 years to transition from existing operational methods to ones that minimize VIG:CC. Development of detailed closure plans also can take 1-2 years if further drilling and sampling campaigns are required to increase orebody knowledge. Finally, a longer implementation period will ensure finance and capital allocation decision makers have time to adjust and position for the new regulatory system.