Risk and Value in Exploration and Mining

SAIMM International Mineral Asset Valuation Conference
Session Theme: Application of Best Practice when Uncertain

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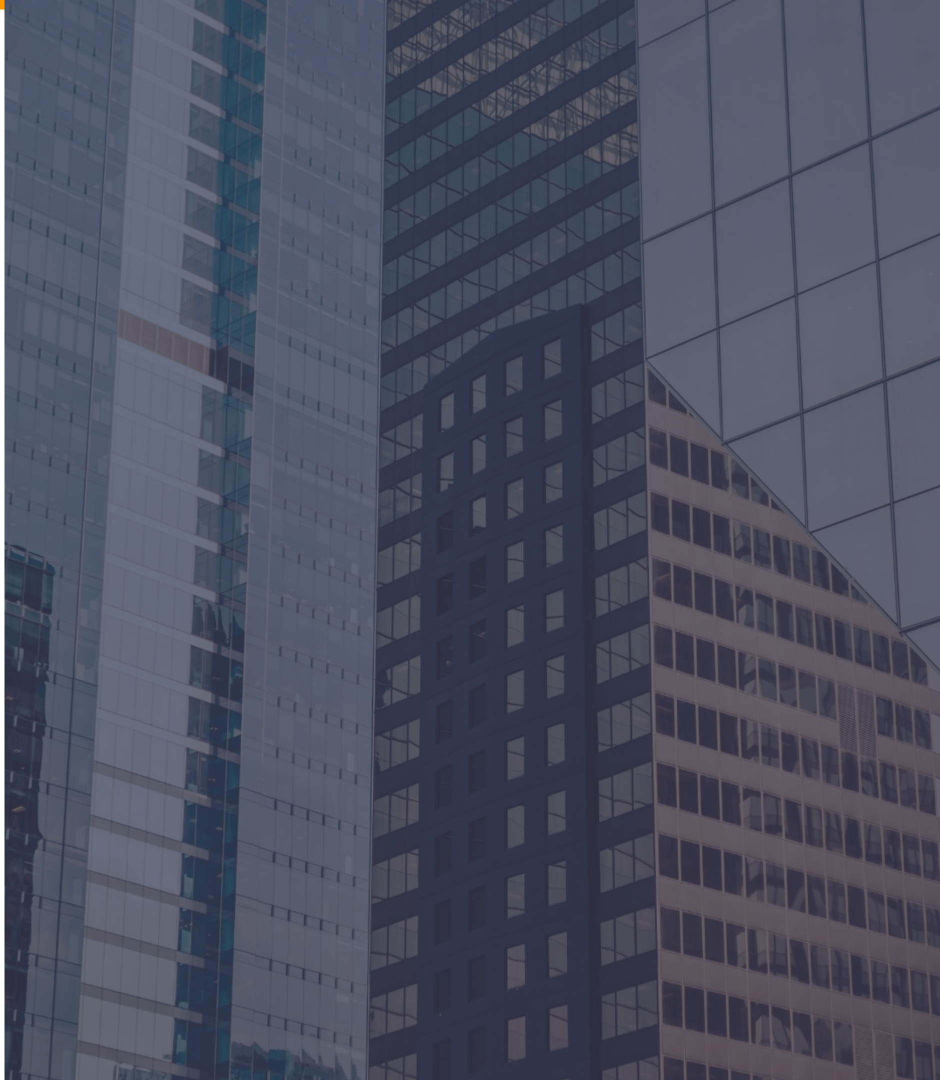


Talk Outline

Is minerals exploration now more important than ever?

Do investors, governments and society understand the risks associated with discovering and developing new deposits?

How as valuers can we try and quantify this risk and uncertainty applying best practice?

Exploration Importance…

- Governments such as in Australia and the US are supporting emerging projects in volatile markets
  - Critical minerals for energy transition
  - Strategic minerals for geopolitics
  - National reserves to secure supply chains
- In Australia many new listings in 2021, but fewer since then
- Competition for capital and projects is high, exploration spend has dropped significantly
- Licence to operate increasingly difficult in western countries, yet the need for mineral discovery is increasing

Some Examples from Australia

Nickel industry in hibernation, concentrators and smelters closed, competition from producers in Indonesia

Lithium prices collapsed, projects on hold, exploration companies have pivoted to other minerals

4th largest producer of Rare Earths, complex metallurgy, high capital, lack of down-stream processing

Uranium exploration ongoing but permitting mines is political, uncertain, societal challenges

Exploration Risk…

Stage	Number of prospects	Expenditure A$	Spend per prospect A$	Probability
Generative	290	$2.7M	$10K	
Reconnaissance	156	$11.4M	$70K	0.54: 1 in 2
Systematic drill testing	26	$6.0M	$230K	0.17: 1 in 6
Resource delineation	15	$6.9M	$460K	0.58: 1 in 2
Feasibility	13	$27.6M	$2.1M	0.87: 5 in 6
Mine	12			0.90: 9 in 10

Source: Measuring Exploration Success: An Alternative to the Discovery-Cost-Per-Ounce Method of Quantifying Exploration Effectiveness. Deborah Lord, Mike Etheridge, Marcus Willson, Greg Hall and Phillip Uttley, Society of Economic Geologists Newsletter, Number 45, April 2001

For Exploration Valuation

- Risk is high, probabilities low even in well mineralised terranes
- On top of this:
  - Metal prices are volatile and can change very quickly, forecasts are difficult
  - Deposits more marginal, under cover
  - Technology changes will continue to introduce new commodities of interest
- These present both risk and opportunity for explorers

Exploration Valuation

- Market approach (Yes)
  - Can adjust for pricing environments, but sentiment not so easy
  - Sometimes area based for tenure can be meaningless
- Income approach (No)
  - Not applicable as considered potentially misleading due to high uncertainty, low probability
- Cost approach (Yes)
  - Previous expenditure might work in some cases, but difficult in volatile markets
  - Geoscientific method often useful, but can result in wide range of values

For Pre-Development Valuation

- Risk may have lessened, depending on Mineral Resource confidence, commodity
- Even so:
  - Metal prices are volatile and can change quickly due to events or geopolitics
  - Forecasts are difficult, changes in sentiment
  - Complex metallurgy for some commodities
- There may be both risk and opportunity for pre-development stage projects

Pre-Development Valuation

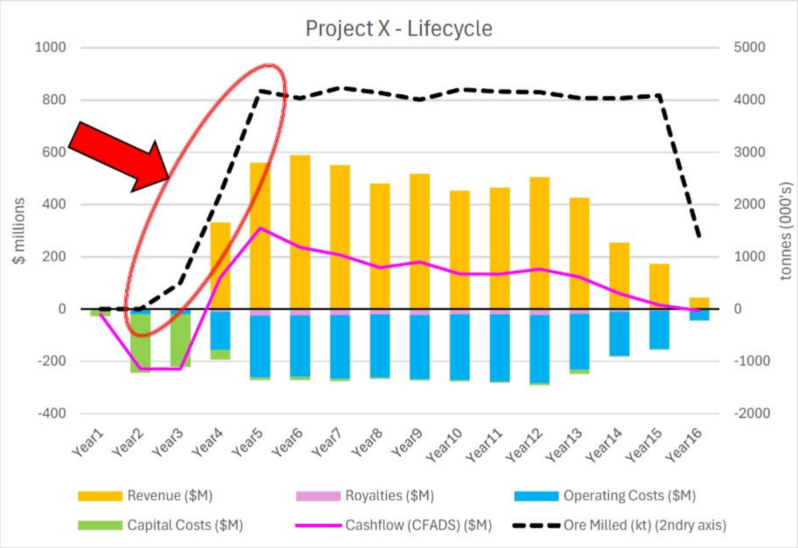
- Market approach (Yes)
  - Can adjust for pricing environments, but sentiment not so easy
  - Useful for Mineral Resources, but need to consider classification, basket pricing etc
- Income approach (In some cases)
  - Depending on Mineral Resource classification and status of technical studies
- Cost approach (In some cases)
  - Previous expenditure might work in some cases, but difficult in volatile markets
  - Geoscientific method often useful, but can result in wide range of values

Development Risk

Ramp-up is a critical component of any mining project

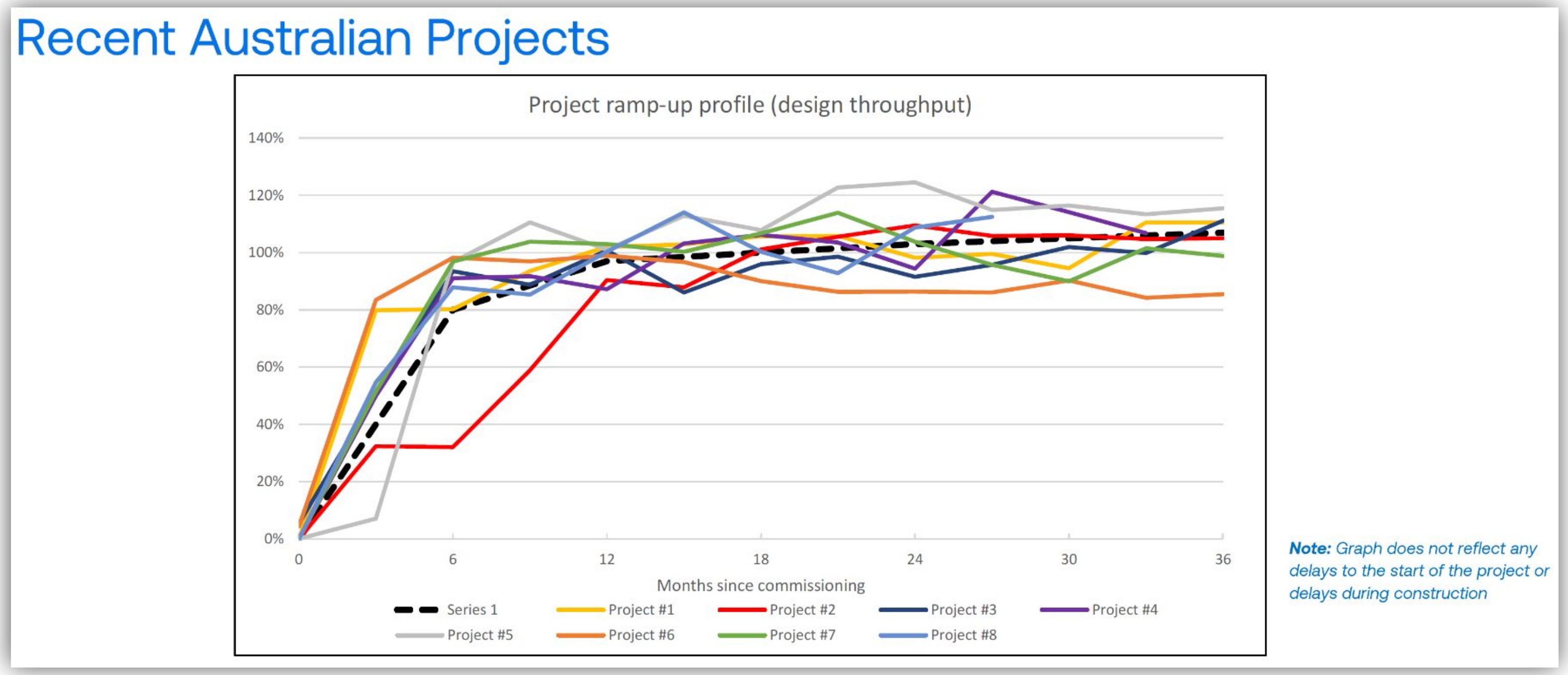
Delays in reaching full production can lead to

- cash flow issues
- increased operational costs
- potential financial instability
- damage of company's reputation
- investors and stakeholders losing confidence
- difficulties in the ability to operate and expand



Source: Still 'Open along strike and at depth' Ongoing observations from a banker. Graham Fairburn, Director Technical Services ANZ, 19 February 2025 RIU Conference, Fremantle WA Australia

Development Risk



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Best Practice when Uncertain

- Exploration Valuations
  - Geoscientific with meaningful range
  - Area-based comparable transactions if sensible
  - Previous exploration spend if appropriate
  - Compare and explain
- Pre-Development Valuations
  - Resource based comparable transactions
  - Yardstick approach as secondary
  - Previous spend only if appropriate
- Development Valuations be mindful of risks

Some Common Issues…

- Comparable market transactions
  - What is comparable? Area based, Resource based, style of deposit, classification, geopolitical environment, number and frequency of transactions, etc, etc
- Accept uncertainty, but known what is reasonable
  - Exploration is uncertain, but as geologists we deal with this and can decide what is within a reasonable range
  - This sometimes means pushing back

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