

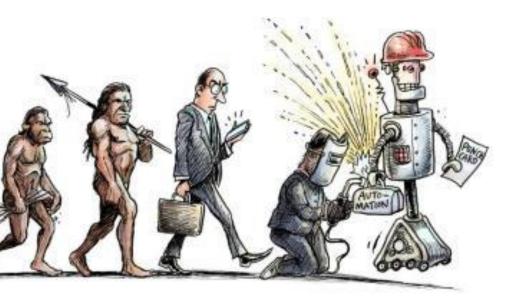
Navigating the Changing Landscape

Ethics in ESG 'Can you dig it - Modifying factors and multi-factor risk'

Bruce Harvey FAusIMM (CP) Geoff Deans FAusIMM (CP)

24 October, 2024 – Perth, Australia

ADAN THEBUTEALMENS





Ability is nothing without opportunity

No licenses – no leases – no mining

Wherever project proponents seek to explore, develop or maintain resource projects there will be people, communities and populations with rights and interests pertaining to the asset area throughout the life of the asset.



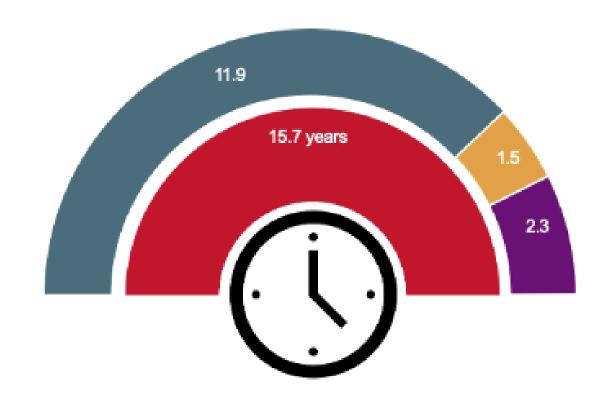
Setting the Scene: What's the risk?

Pathways to development: Only three US mines have been developed since 2002

Eagle (which came online in 2014), Ruby Hill (2007), and Pogo (2006). Notably, none of these are on federal lands, which impacts the complexity of the permitting process.

Average lead times of mines for discovery to production: 2002-2023

- Discovery, exploration, studies
- Construction decision
- Construction to startup





Geography	Number of mines included in initial analysis
Australia	11
Canada	11
Peru	9
Burkina Faso	9
Chile	8
Russia	7
Mexico	6
Indonesia	5
China	5
DRC	5
United States	3



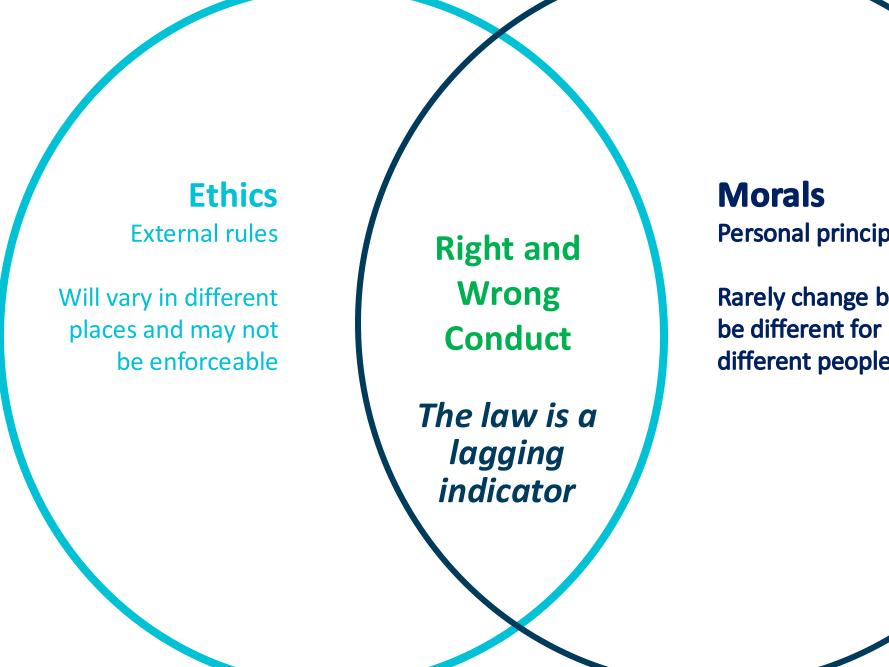
JORC Code Update Discussion Draft

- Discussion Draft period closes on 31 October
- Disclosure, not prescription
- Transparency, Materiality, Competence
- Contemporary ESG-related expectations
- Risk (uncertainty) assessment and disclosure
- In effect, a comprehensive minerals project disclosure guide
- Aligns with AusIMM Study Processes Handbook Monograph 35



osure guide Monograph 35

Ethics and Morality





Personal principles

Rarely change but may different people

Warren Buffet Test of Acceptability

"I ask managers to judge every action they take — not just by legal standards, though obviously that's the first test — but also by what I call the 'newspaper test.""

"Let's start with what is legal, but always go on to what we feel comfortable about being printed on the front page of the local paper ..."

But the risk of capricious political intervention is ever present

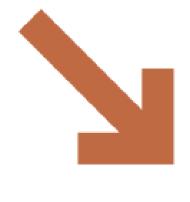




Changing Landscapes

First Principles considerations





Decreasing Risk Appetites

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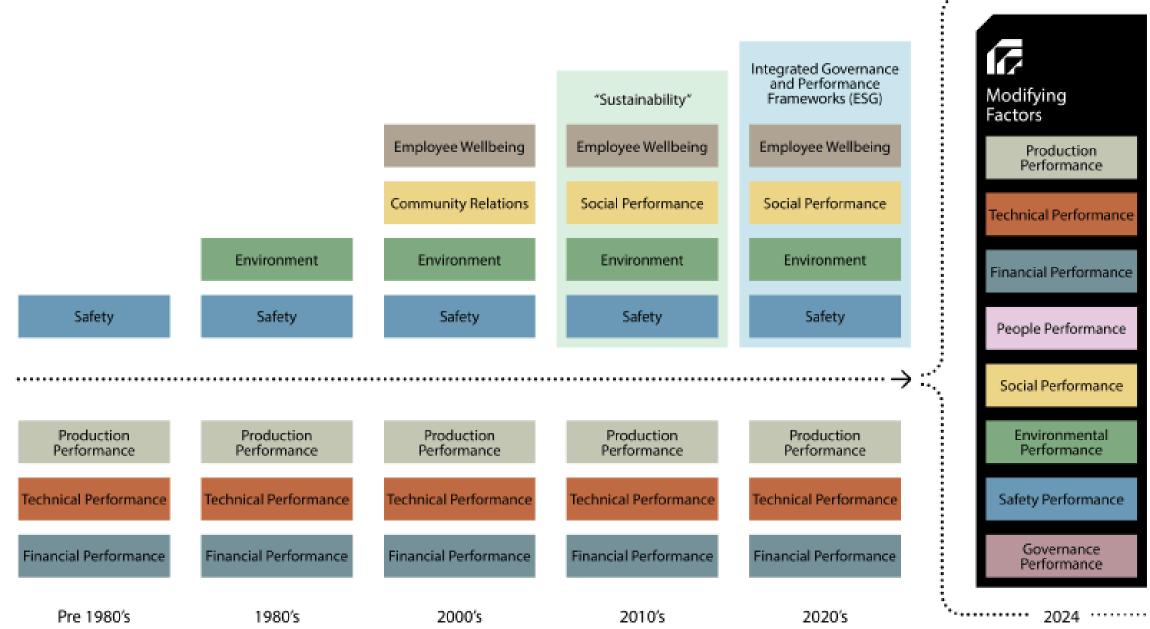




Increasing Stakeholder Expectations

Evolution of Performance

What was once an 'or' is now an 'and'



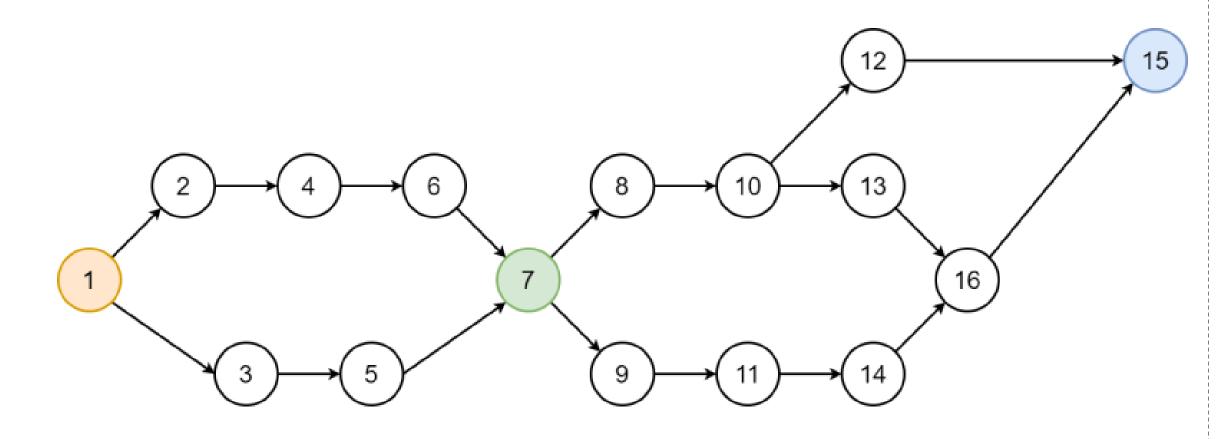




- The expectations from stakeholders is changing what defines success.
- What was optional or additional, is now 'core' representing preconditions for development.
- Sustainability is easy to talk about, but difficult to execute.
- Disclosure metrics are not the same as operational metrics.
- Complexity is created when competing interests often transact in different currencies. e.g. a species of migratory birds or pristine habitat cannot be valued in jobs or investment.
- Threats and opportunities are most commonly embedded during the study phases

What's this all about? Risk

What factors represent 'chokepoints' for your development pathway?





Each resources project is uniquely impacted by a common set of 'Modifying Factors'.

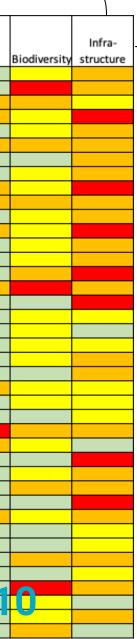
These include, but not limited to Mining, Metallurgical, Processing, Economic, Marketing, Legal, Infrastructure Environmental,, Social, Governance (ESG), Regulatory factors) (JORC, 2024 discussion draft)

What does multi-factor look like?

Complex Orebodies: Global Top 40 Copper deposits by tonnage

					Multi-factor Risk									
										_/				
	Project	Cu Equ. Grade	Contained Reserves and Resources	Grada	Watar	Tailings	Mineralogical	Desmitting	Local	Local	Land	Bauartu	Amonia	
	Project	0.52	(tonnes Cu)	Grade	Water	Tailings	variability	Permitting	Legal	Community	Pressure	Poverty	Arsenic	
Developed	Pebble Kemes Kelula	0.53	36,881,566											
Commenced	Kamoa-Kalula Resolution		35,877,000							_				
Production Q2,	Udokan	1.54 0.97	27,469,100											
2021			24,700,000											
	Reko Diq	0.55	24,351,000							-				
	La Granja Tagui Cluster	0.51	22,055,000											
	Toqui Cluster Los Broces UG	0.43	19,064,000 17,520,000											
	KSM	1.46 0.54	15,814,485											
	Tampakan	0.54	15,250,000											
	El Pachon	0.48	15,100,000											
	NuevaUnion	0.48	13,908,255											
	Los Azules	0.48	13,380,964											
	Quelaveco	0.46	13,054,000											
Developed	Taca Taca	0.46	12,934,000											
First Concentrate	Frieda River	0.48	12,590,000											
12 July, 2022	Cerro Colorado	0.69	11,962,000											
	Oroyek	1.00	11,000,000											
	Aynak	1.56	10,998,000											
	Twin Metals	0.56	10,886,208											
	El Arco	0.40	10,792,000											
	Los Helados	0.40	10,614,053			-								
	Lookout Hill	0.45	10,408,576											
	Qulong	1.04	10,408,578											
	Los Volcanoes	0.50	9,461,000											
	Wafi-Golpu	1.39	8,784,000											
	Sierrita	0.21	8,699,000											
	Clarion-Clipperton Zone	1.14	8,641,000											
	Altar	0.37	8,408,010											
	Limamayo	1.50	7,500,000											
	Namosi	0.42	7,471,000											
	Aqua Rica	0.53	7,419,404											
	West Wall	0.53	7,379,000											
	Los Bronces Sur	0.81	7,290,000											
	Rio Bianco	0.57	7,107,000											
	Cerro Negro	0.70	6,969,600											
	Panantza	0.62	6,596,000											
	Ann Mason	0.32	6,535,829											
	Yulong	1.50	6,500,000											
	Santa Cruz	0.90	6.023,526											
	Junca Cruz	0.50	0.010,020											





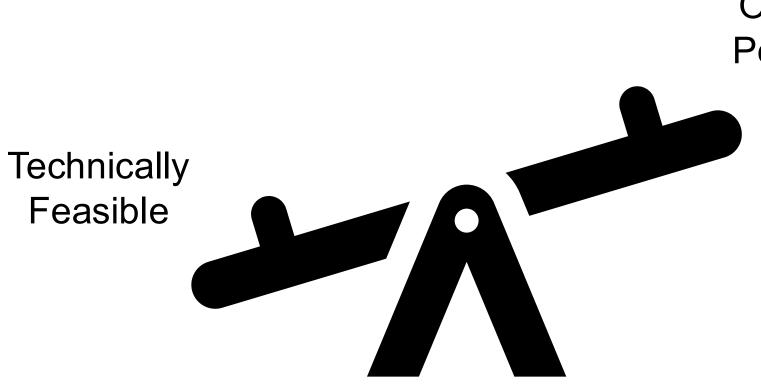
Modifying Factors

High Risk
Moderate Risk
Low Risk

Adapted from R.K. Valenta et al. Rethinking complex orebodies: Consequences for the future world supply of copper Journal of Cleaner Production 220 (2019) 816-826

Minimum Standards vs Minimum Expectations

Stakeholder Acceptance considerations

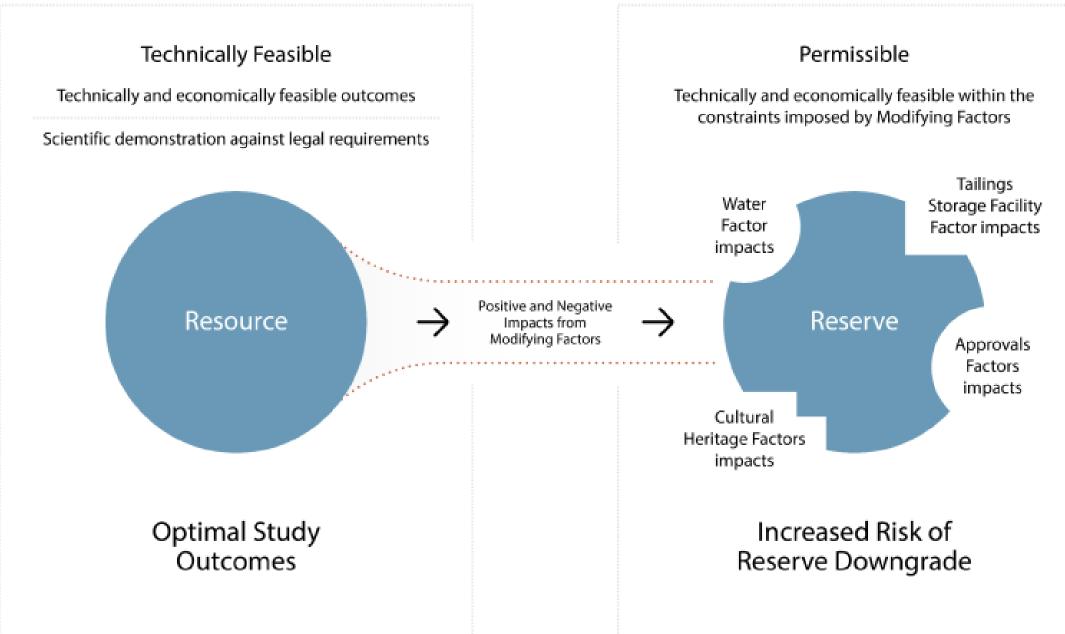




Optimal Possible

Trees don't complain, people do

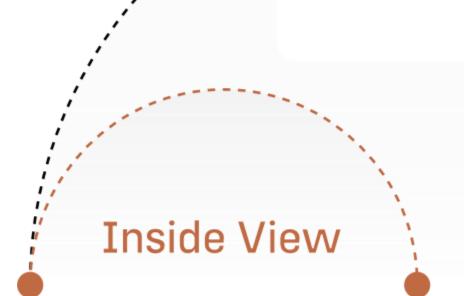
What's the risk? Feasible, permissible, ethical





Context, Perspective and Ethics

What to do?

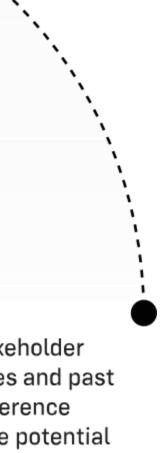


Project centric -A focus on project specific details and circumstances

Outside View

Inclusive of context, stakeholder expectations, externalities and past situations in common reference classes to understand the potential impacts of modifying factors





Final Thought....

We are not alone: Lessons learnt are gifts



A new report has identified assessments under the EPBC Act as the "single biggest challenge for delivering renewable energy projects" in Australia. (Supplied: Todgh Cullen (DP Energy)) "History does not repeat, but it often rhymes" Mark Twain

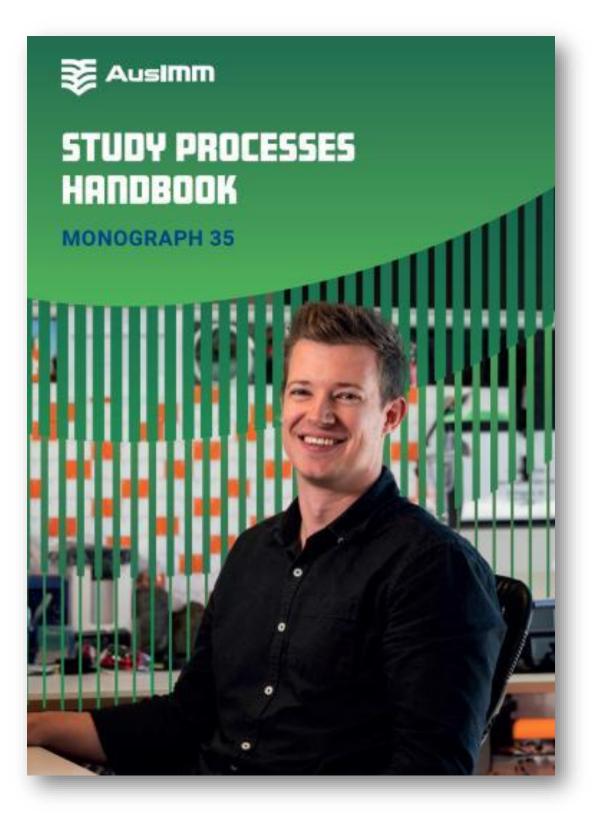


Approval time frames for renewables:

- QLD 190 days*
- VIC 376 days
- NSW 746 days

*Average approval time frame for wind farms only, as QLD data on other projects was not readily available.

Source: Clean Energy Investor Group, Herbert Smith Freehills



JORC Code 2024 - Modifying Factors, including ESG and Risk

Bruce Harvey FAusIMM(CP) and Geoff Deans FAusIMM(CP) 26 Sep 2024 2,300 words, 6 minute read

JORC Code 2024 Update

The long-awaited Joint Ore Preserves Committee (JORC) Code update Exposure Draft (JORC, 2024a) and draft Guidance Notes (JORC. 2024b), the result of prodigious review and discussion by the Committee and many contributors, is available for public comment until 31 October 2024. An evolution on JORC 2012, the updated draft modernises the disclosure requirements for Environment, Social and Governance (ESG) considerations as classes of 'Modifying Factors'. This integration of contemporary 'ESG' expectations is bolstered by the inclusion of risk assessments (analysing the consequences and uncertainty of opportunities and threats). The Exposure Draft Code responds to the greatly increased standards of transparency expected of the minerals industry by the financial sector, regulators and the public. In this light, it is important to revisit and consider the 'why', 'what' and 'how' of the JORC Code, in line with its core principles of Transparency, Materiality, and Competence.



Chapter 2: Permits, Environment, Social

Current AusIMM Bulletin



Thank you

Questions?

