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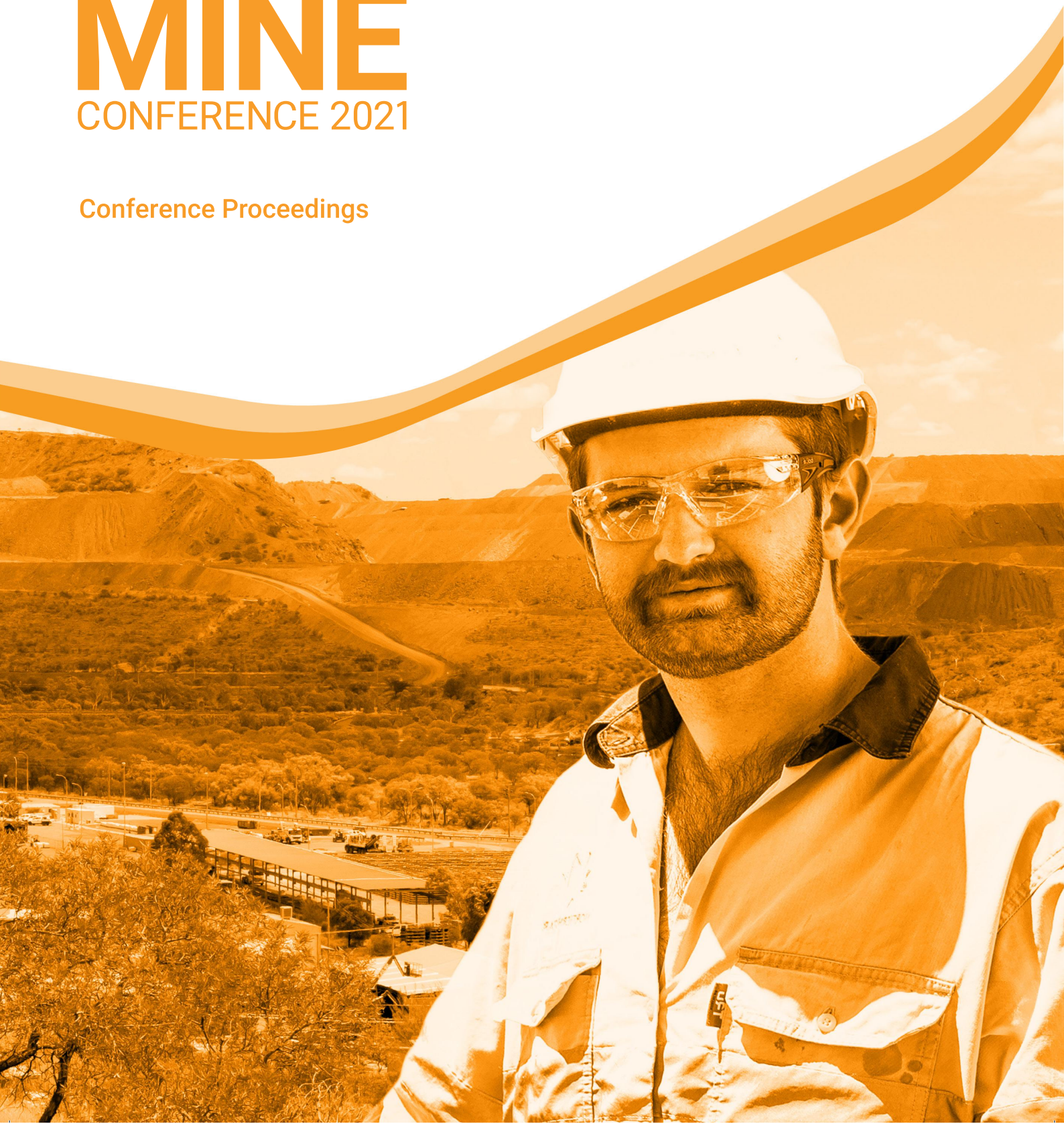
LIFE OF MINE CONFERENCE 2021

Conference Proceedings



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NO ASSUMPTIONS, NO SURPRISES

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ABSTRACT

OZ Minerals' Carrapateena mine is one of Australia's newest 'greenfield' mining deposits. It will be a 4.25 Mtpa sub level cave underground operation, with an estimated mine life of 20 years.

The integration of stakeholder values to inform project development influenced the social and environmental outcomes. A Native Title Mining agreement was developed in 12 months. Project primary approval was obtained 12 months from submission, with achievable licence conditions and one public comment. The project moved from a Pre-feasibility Study in 2016 to construction in 2018.

Following recent international dam failures, the Tailings Storage Facility (TSF) was a focus for Government approvals and stakeholder engagement. Significant effort was made into understanding the science around potential effects, impacts and risks. A leading practice Impact Assessment Framework that identified Sources, Pathways and Receptors was applied. A process of failure mode identification and layers of protection analysis was undertaken for robust design controls at each stage, while simultaneously transitioning between downstream and upstream discharge arrangements.

Participatory selection of the TSF site and design layout was critical in managing project costs and environmental constraints, and in incorporating cultural heritage constraints and technical risks.

INTRODUCTION

Resource developers must increasingly demonstrate legitimacy and earn the trust of its stakeholders to receive the metaphoric 'social license', in addition to the statutory legal licenses required.

Broadly, robust engineering and demonstrated science are now *a* precondition for development, not *the* precondition. Two equally important and complementary preconditions for resource developers (especially those developing, operating, maintaining and closing tailings storage facilities and storage dams) are, robust engineering and stakeholder 'consent'.

On February 12, 2002 The United States Secretary of Defence Donald Rumsfeld stated:

> *"there are known knowns; there are things we know we know.*
>
> *We also know there are known unknowns; that is to say we know there are some things we do not know.*
>
> *But there are also unknown unknowns—the ones we don't know we don't know. And if one looks throughout the history of our country and other free countries, it is the latter category that tend to be the difficult ones…"*

This quote strikes at the heart of a 'no assumptions, no surprises' approach.

Evaluating and addressing uncertainty whilst demonstrating the ability to create real and enduring value for stakeholders is the new norm.

Risk is commonly increased when context is not adequately assessed and considered, and a 'decide, announce, defend' development orientation is applied. Often, the professional competence for analysing and understanding socioeconomic and socio-political circumstance required to demonstrate consistent respect and behaviours towards our host communities and earn their trust in the process and project is not demonstrated in parallel with technical competence (Harvey, 2017).

The science is not incorrect, rather, it may not be understood or negatively interacts with stakeholder values in practical application. Davis and Franks (2014) provide a sample of how this decoupling can manifest, citing 50 extractive projects globally in the past decade where 20-30% have been delayed, suspended or curtailed because of one form of social conflict or another.

This paper provides a summary of key learnings and insights from the development of OZ Minerals' Carrapateena mine, one of Australia's newest 'greenfield' mining deposits, a 4.25 Mtpa sub level cave operation with an estimated mine life of 20 years, which is ramping up to full production in 2020.

Macro Context

Mineral and energy developments profoundly transform environments, communities and economies and can often generate social conflict (Davis and Franks 2014). Traditional risk orientations are threat focussed and seek to restrict or contain stakeholders, rather than act as an opportunity to define and develop shared value opportunities to facilitate and expedite development.

The safe, effective and economic storage of tailings, water and waste is now a material issue for stakeholders. Recent events have demonstrated that negative environmental impacts – such as tailings dam spillages – have global ramifications and can generate significant negative social impacts on local community health and livelihoods. Conversely, robust, co-developed and governed TSFs are critical elements of many processing streams that enable broader social value from resource extraction for host communities.

Context – Carrapateena

OZ Minerals' Carrapateena mine is approximately 250 km south east of its Prominent Hill mine in South Australia's Gawler Craton. Carrapateena, whilst having a different production profile, was able to leverage the existing 'social licence' and build on learnings from Prominent Hill's social performance.

By applying previous learnings during Carrapateena's development, OZ Minerals developed an assessment framework that supports the management of environmental and social risks through a project's lifecycle in a procedural, transparent and replicable manner. This procedural orientation enabled the successful integration of approvals and social performance strategies, and facilitated Carrapateena's movement from a Pre-feasibility Study in 2016 to construction in 2018 to achieving first saleable concentrate production in Q4 2019.

A key learning has been that Carrapateena was approved on the back of robust science and engineering (*Precondition One)* but equally as important was the process of working with communities to build the knowledge, awareness and capability to address real and perceived opportunities and threats (*Precondition Two*).

Precondition one – robust science - Government approvals processes

An Impact Assessment Framework that identified *Sources, Pathways and Receptors* (S-P-R) was applied.

Government relations

High frequency and structured meetings with government agencies provided transparency during project development; demonstrating how impacts were being assessed and working through issues as they arose. Assumptions were tested through this process and final submissions provided no surprises to the government assessment teams.

Impact Assessment Framework

OZ Minerals' assessment framework is based upon the distinction between impact (planned event) and risk (unplanned event). The key difference between undertaking a risk assessment and completing an impact assessment is the Environmental or Social Impact Assessment.

Risk: The impact of uncertainty on objectives (ISO 31000:2009). It consists of two components – consequence and likelihood.

Impact: Any certain and defined change to a receptor, whether adverse or beneficial, wholly or partially resulting from a source affecting a pathway.

Uncertainty that exists through the impact assessment may relate to several areas and can include:

- inputs associated with the options that remain as a part of the project description
- the breadth and scope of the baseline studies
- the science undertaken in the determination of the magnitude of the effect or the impact.

The Impact Assessment Framework builds on the foundation of an S-P-R model, adjusted to articulate the effect to pathways and impacts on receptors as represented in Figure 1. An S-P-R linkage assessment subsequently identifies when an impact significance assessment is required to be undertaken (i.e. when an S-P-R linkage is confirmed) for a receptor.

- **Source**: A project element that can interact with the environment.
- **Pathway**: The medium by which the effect originating from the source reaches a receptor.
- **Receptor**: A discrete, identifiable attribute or associated entity that can be measurably impacted by an effect to a pathway. OZ Minerals considers its stakeholders (employees, communities, shareholders, government and suppliers) to be receptors in its risk specification.

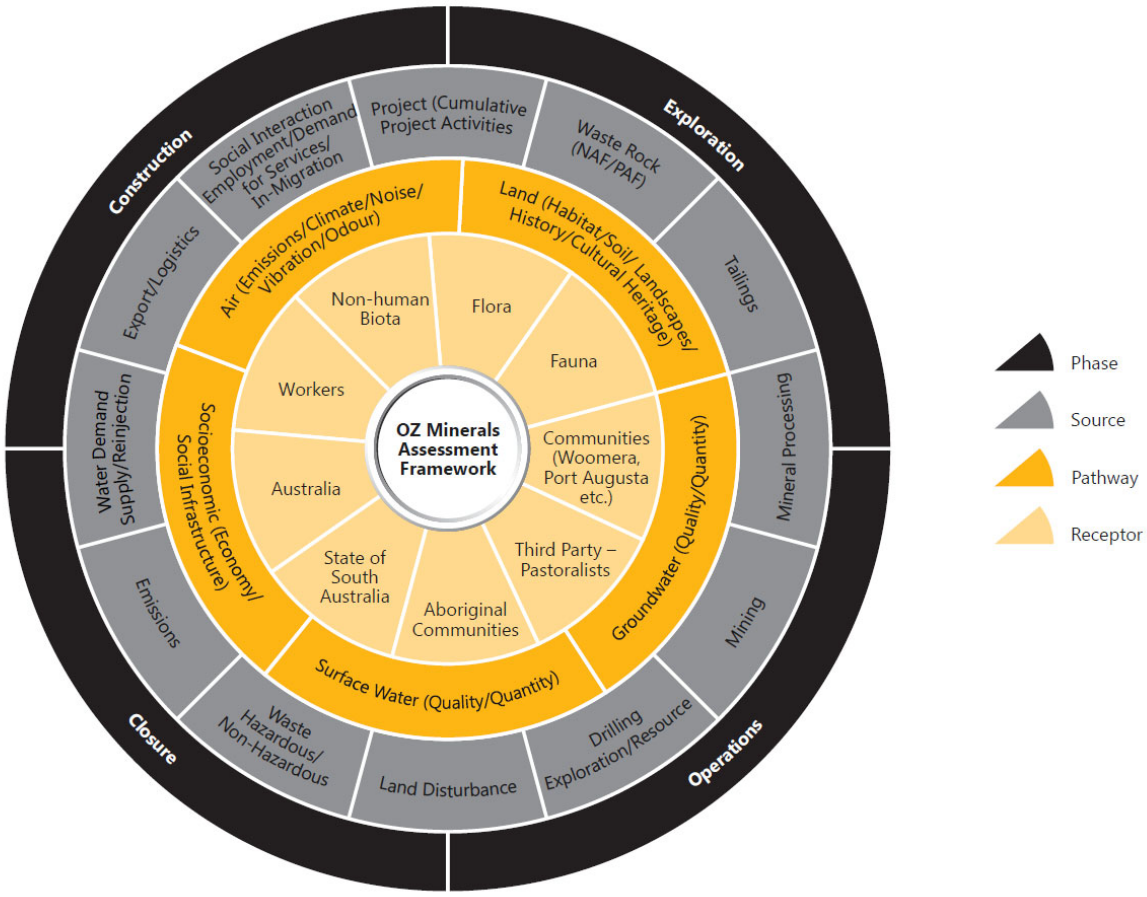

FIG 1. OZ Minerals – Source, Pathway, Receptor

The key outputs of the assessment framework are:

- Identifying credible potential S-P-R linkages (planned events) and providing enough justification behind the statement of impact, including an explanation of any uncertainty.

- Evaluating the role of controls in the design, their position in the hierarchy, and assessment of those design controls that are fundamental to achieving the Outcomes.
- Identifying other legislative requirements.
- Determining materiality of any potential impact as a result of stakeholder consultation.
- Assessing the impact significance and justifying why if deemed 'not significant' that this is correct, and if 'significant' why this is acceptable.
- Assessing impact uncertainty by stating any uncertainty, in any element of the assessment, to develop a statement of impact.
- Assessing the relevant risks (unplanned events) that may occur that mean an Outcome may not be achieved.
- Developing proposed lease conditions and providing any consultation that occurred on these conditions.

Precondition two – Social Licence to Operate

'Social licence' is defined as the level of acceptance or approval of an organisation's activities (Boutilier and Thompson, 2019) and there has been a rapid rise in stakeholder-related risks in the extractive sector over the last two decades (Davis and Franks, 2016). The Equator Principles and Sustainable Development Goals are indicators of the increased assessment from shareholders, host communities and lenders, who are exercising their interest in where, when and how projects are developed. Local communities' reactions to these impacts can quickly escalate from complaints to protests and road blockades, resulting in risks to the company or its security providers that can lead to even more serious impacts, such as injury or even deaths (Davis and Franks, 2016, p 6). 'Complex Orebodies' (Valenta et al, 2018) is now a term in the resources sector synonymous with economically valuable resource deposits constrained by stakeholder and social risks.

Threat-based, unassessed, transactional or misunderstood social risk can constrain the legitimacy and effectiveness of management strategies. The intuitive knowledge is that alienating local communities can result in the risk of project delay or suspension through community conflict, and there is increasing quantifiable verification of this (Harvey, 2017).

Fundamentally, risk and loss aversion (the preference of avoiding losses rather than acquiring equivalent gains) are common decision making traits; the inclination to oppose something that is not understood. This disconnect can be seen when there is a divergence between resource developer and stakeholder values, and may be precipitated through conflict. 'Contingent consent' further demonstrates this – communities may be willing to accept negative social impacts on the basis that these are outweighed by the positive consequences (Owen and Kemp, 2016). Managing this interaction procedurally provides an opportunity, as 'consultation' if left to the latter part of the project development cycle (decide, announce, defend methodology), may result in surprises that translate to impacts on cost, schedule and trust.

Opportunity based orientation to development

Legitimacy, trust and acceptance – partnering for Shared Value, Mutual Obligation outcomes

As highlighted in the recent EY report 'Top 10 business risks facing mining and metals 2019-2020', 'Social licence to operate' is the number one risk to businesses.

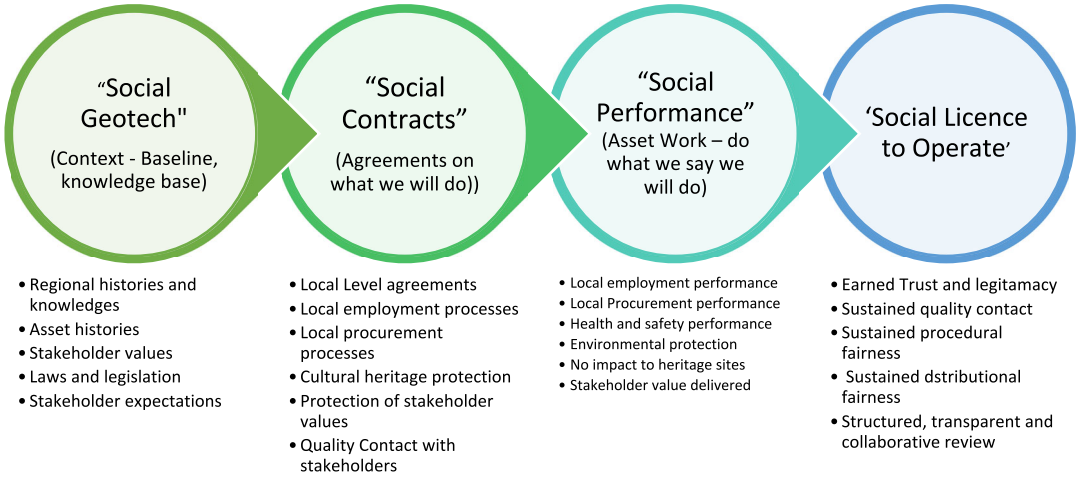

FIG 2 – Social Licence Development Process

Stakeholder Values

Traditional risk processes assess stakeholders in terms of threats. This has often been reciprocated by communities and land connected indigenous peoples. How the Kokatha people, traditional owners of the land Carrapateena operates on, and OZ Minerals have worked together demonstrates that there are opportunities for value creation with stakeholders.

The S-P-R process considered stakeholders as receptors and allowed for consultation and assessment of potential impacts to the development and design of the project (*no assumptions).* This provided a framework for early and participatory co-development of infrastructure alignments (source) and footprints (pathways) that drew on local knowledge (receptors).

This approach changed the orientation of the project's development by:

- incorporating and protecting stakeholder value
- reducing conflict, schedule, rework
- minimising the likelihood of public submissions against the project by addressing concerns and realising opportunities in the design process (no assumptions), which were reflected in 'social contracts' (no surprises).

A critical determinant of success was having stakeholders inform Carrapateena's development. Kokatha and OZ Minerals commenced the agreement making process prior to the Feasibility Study being completed, concurrent to much of the cultural heritage/land access and project design work. Consequently, stakeholder views, knowledge and histories informed how agreements and regional infrastructure were developed, reducing the likelihood for conflict and enhancing shared value outcomes.

Leading Practice Governance

A leading practice independent auditing and governance framework was implemented in the construction, operational and closure phases for continuous assurance through public reporting of compliance with design criteria. This provided confidence that the design and operational performance of the facility will be a geotechnically stable, non-polluting and safe landform during operations and post-mine completion.

The auditing framework was co-designed with the Government to ensure ongoing confidence in the construction, operation and closure of the mine. This goes above and beyond the minimum relevant standards.

CONCLUSIONS

Stakeholder perceptions or legitimacy and trust in how technical issues are addressed, presented and communicated are material to organisations seeking to develop resource projects. At its core, by addressing projects through a 'no assumptions, no surprises approach', host communities and stakeholders can be enablers for development rather than threats. At Carrapateena, the 'no assumptions, no surprises approach' frontloaded stakeholder involvement, decision making and design, allowing many risks to be eliminated and reducing the time required to reach agreement with stakeholders on management controls that were reflected in local level agreements and the mining lease submission outcomes.

REFERENCES

Boutilier, R. & Thompson, I. 2019. The Social License: The Story of the San Cristobal Mine. Routledge, London.

Davis, Rachel and Daniel M. Franks. 2014. "Costs of Company-Community Conflict in the Extractive Sector." Corporate Social Responsibility Initiative Report No. 66. Cambridge, MA: Harvard Kennedy School.

Deans, Deans, G, Thomas, K. & Dixon, I (2019) Partnering for Shared Value: Carrapateena Native Title Agreement Making Process. AusIMM Bulletin, June, 2019.

Deans, G, Thomas, K. & Dixon, I (2016) Local Level Agreements: Partnering beyond stakeholders, from across the table to around the table. AusIMM Bulletin, December, 2016.

Ernst and Young (2019) Top 10 business risks and opportunities – 2020.

Lacey, J. Carr-Cornisha, S. Zhanga, A. Eglinton, K. & Moffata, K. (2017) The art and science of community relations: Procedural fairness at Newmont's Waihi Gold operations, New Zealand. Commonwealth Scientific & Industrial Research Organisation (CSIRO), Australia.

Harvey, B. (2017) Social Performance – A new professional discipline. AusIMM Bulletin August, 2017.

Harvey, B. (2018) The power of local level agreements. Local level agreements between Aboriginal and Torres Strait Islander peoples and miners have helped create global opportunities. AusIMM Bulletin October, 2018)

Owen, J. and Kemp, D. 2017. Extractive relations: countervailing power and the global mining industry. Routledge, New York.

United Nations, (2008) United Nations Declaration on the Rights of Indigenous Peoples and Free, Prior and Informed Consent, GA Res 61/295, UN Doc A/RES/61/295 (13 September 2007)

Valenta, R.K., Kemp, D., Owen R.J., Corder, G.D. and Lebre, E. (2018). Re-thinking complex orebodies: Consequences for the future world supply of copper. Journal of Cleaner Production 220.