Mine Closure 2024 – AB Fourie, M Tibbett & G Boggs (eds)
© 2024 Australian Centre for Geomechanics, Perth, ISBN 978-1-7636842-0-1
doi:10.36487/ACG_repo/2415_19

Social outcomes following mine closure: an abundance of good intentions undermined by a lack of leverage

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Abstract

As expectations around environmental and safety considerations of mine closure have solidified, focus is increasingly shifting towards the goals of and delivery against social aspects of mine closure. Many companies and practitioners cite the goal of achieving a 'positive legacy', however, the next level of definition of what this should comprise on an asset-by-asset basis is frequently absent, and questions of how a positive legacy is to be assessed, by whom, and over what time period remain. This paper reports on the results of a business survey developed to understand the drivers for performance in social aspects of closure from an industry perspective. The survey results note the high-level commitments/good intentions stated by companies at both corporate and asset levels, while also highlighting the relative lack of leverage of all parties to influence social aspects of closure. With regulators largely silent on the social outcomes to be achieved through a mine closure process, and communities holding limited leverage to influence decisions at the time of closure, the primary decision makers remain to be companies themselves. In this context, the goal of a 'positive legacy' remains largely undefined, provides insufficient clarity for asset level managers, leaving social closure planning vulnerable to budget cuts and shifting goal posts. This paper will argue improved performance in the social outcomes post mine closure requires not more good intentions, but the creation of greater leverage through definition of social closure criteria at an asset level, through enhanced focus on social outcomes in regulation and critically, greater community involvement in the design, implementation and assessment of social outcomes.

Keywords: *positive legacy, mine closure, social considerations of mine closure, mine closure outcomes*

1 Introduction

When asked 'what are the basic environmental goals to be met at the time of mine closure?', most practitioners will respond with a variation of 'safe, stable and non-polluting'. If the same question is asked of practitioners but to define the social goals to be met at the time of mine closure, the answer is generally met with a caveat of 'it is site-specific' but with the general intent to deliver a positive legacy. These goals, both in the environmental and social spheres, are high-level and as noted, how they are applied is indeed 'site-specific'. A well-designed goal for mine closure should hopefully act as a kind of 'northern star' (Shetach 2014), helping companies, communities and regulators alike define and agree on what they are seeking to achieve, prioritising where effort is allocated and guiding the multitude of short-term objectives and decisions which are taken in a closure process. This paper will argue that irrespective of a general consensus that the social goal to be achieved through mine closure is that of a positive legacy, the ambiguity of how a positive legacy is defined and what it should comprise makes this goal largely ineffective in its role as a 'northern star'. The paper will also review the leverage held by different parties at the time of closure and offer recommendations for how the leverage of each might be increased to improve the social outcomes of mine closure.

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2 The ambiguities of a 'positive legacy'

Research on the social aspects of mine closure remains a relatively new field of study, with a correspondingly limited body of literature (Bainton & Holcombe 2018a). The area with the largest deficit of research relates to the social aspiration or goal which should inform the closure planning and implementation processes and the extent to which the goal has been achieved in cases where mine closure has been completed. The existence of a gap in relation to the assessment of outcomes is perhaps unsurprising given the relatively small number of mines which have completed a planned closure, with the majority being sold prior to closure, entering extended periods of care and maintenance or abandoned (Lèbre et al. 2021), however, this doesn't diminish the size of the gap in defining social goals in the first place.

A number of authors have tackled components of this challenge, with Sommerville & Ferguson (2022) highlighting the importance of stakeholder engagement in identifying and designing post-mining land uses, and Reeves et al. (2022) and Darko & Halseth (2023) raising the need to build community capacity and local agency to support engagement in these discussions. Fordham et al. (2017) identify 'enduring community value' as the primary goal, while Zvarivadza (2018) sets the objective of a lasting positive legacy, to be achieved through productive partnerships between large-scale mining and communities. Thought leadership around the vision for social closure has to date predominantly sat with companies and industry associations (International Council on Mining and Metals [ICMM] 2019), in part due to a lack of regulation in this space.

To the extent that industry has aligned behind a single social goal, it is that of leaving a 'positive legacy' as captured by Tom Butler in the forward to the ICMM's *Integrated Mine Closure, Good Practice Guide* (ICMM 2019) which notes that 'the guide is intended to support the goal of delivering a positive legacy while balancing environmental protection and social wellbeing with financial performance'. The importance of a leaving a 'positive legacy is further supported by Hodge & Brehaut (2023). For a concept which is frequently referenced by industry and increasingly by academia, it remains largely undefined and presents a number of key ambiguities, each of which is addressed in the following.

2.1 Metrics of assessment

The first question when determining how to achieve a positive legacy, or indeed, whether one has been achieved, is one of metrics: how should a positive legacy be measured? Historically, the social legacy of a mining project has tended to be framed in the number of local jobs created, the value of contracts awarded locally, training delivered, the quantity and output of social investment programmes and the value of taxes and royalties paid. Metrics such as these would generally be considered to focus on utilitarian concepts (income and possession of commodities), which were the primary measures against which development outcomes were judged prior to Amartya Sen's capability approach (CA) in the 1970s (Wall & Haslam McKenzie 2023). With CA came a shift in focus towards an individual's freedom to achieve wellbeing, moving away from an analysis of what an individual has but rather what they are able to do with what they have. In the intervening decades, there has been a recognised need to 'shift [the] emphasis from measuring economic production to measuring people's wellbeing' (Stiglitz et al. 2009). In addition to national and multi-national efforts to develop indicators to assess wellbeing (Caria & Domínguez 2016; Dalziel 2019; Thinley & Hartz-Karp 2019), the Millenium Development Goals and subsequent Sustainable Development Goals specifically sought to expand the understanding of wellbeing beyond indicators of economic growth alone. The concept of wellbeing and how it is defined in different communities has continued to evolve with an increasing number of wellbeing models being developed and defined by Indigenous communities (Kruse et al. 2008; Prout 2012; Taylor 2008).

2.2 Positive as defined by whom?

Closely linked to the question of metrics is the question of who gets to make the determination of what a positive legacy should look like and, at the appropriate time, whether it has been achieved. Approaches to this range from company-led tabulations of benefits delivered over the mine life, through to multi-stakeholder forums where a collective vision of what mining is hoped to deliver is agreed and the extent to which it delivers is assessed at the conclusion of the project.

2.3 Timing

The concept of a positive legacy generally assumes that an assessment is being made against some prior condition. The question then becomes one of timing: which prior condition should be used as the basis of assessment? Figure 1 has been developed to illustrate a range of options which could be argued to meet the definition of achieving a positive impact. For simplicity, all three of cases share a common exploration–construction–operation trajectory with variances in the cases only evident from the commencement of closure implementation.

- Positive as compared to **pre-mining conditions** – under this interpretation, a community's wellbeing would be compared to the pre-mining condition in the community. This case assumes that a reduction in community wellbeing as compared to the conditions during operations would be experienced after the cessation of production. If the reduction in community wellbeing were to plateau at a level higher than the pre-mining condition, this case could still, arguably, be deemed to achieve a 'positive legacy'.
- Positive as compared to a **median experience during mining** – under this case, referred to as the 'sustained improvement' case, the level of community wellbeing is assumed to find a post-closure balance at a level consistent with the median level of wellbeing associated with the mining period (i.e. not the wellbeing peak during peak operations) representing a sustained improvement over pre-mining conditions and a continuation of median wellbeing conditions.
- Positive as compared to **the operational condition** – under this case, also known as the 'successful transition' case, community wellbeing is assumed to decline shortly after closure and subsequently rise again through the success of social and economic transition measures in the community.

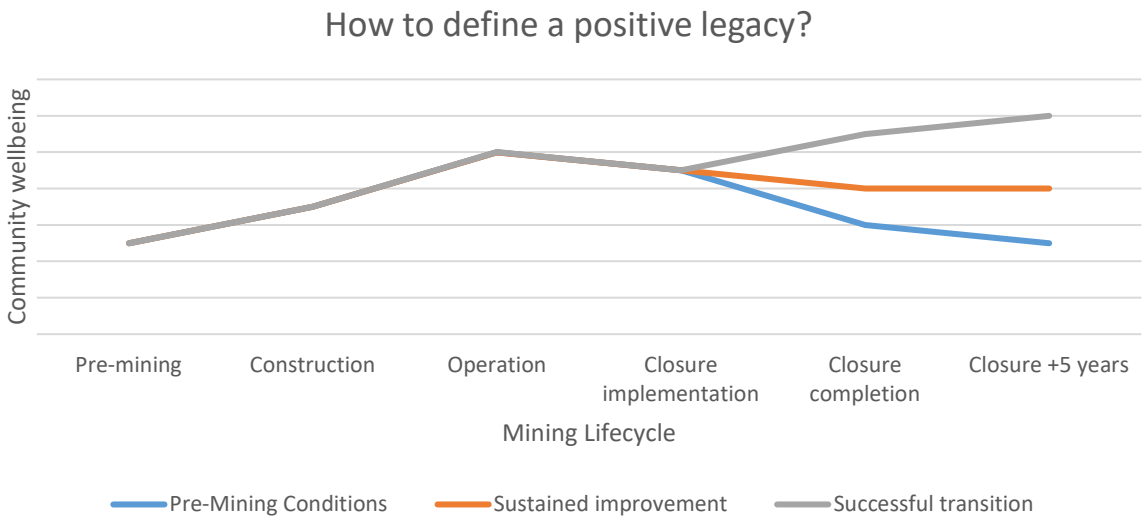

Figure 1 Multiple interpretations of a 'positive legacy'

In addition to definitional questions around the conditions against which a positive legacy is assessed, Figure 1 highlights the importance of when an assessment of the legacy is conducted. Conducting an assessment shortly after closure implementation commences risks capturing community wellbeing associated with participation in implementation works (through contracts and employment) which may be unsustainable, however, conducting an assessment many years after closure can introduce unexpected externalities into the equation making any evaluation challenging. Notwithstanding these challenges, there is a common-sense logic to both aiming to meet, and assessing the condition of, a positive legacy somewhere between 5–10 years post-closure completion. Communities will have had a chance to stabilise post-closure within this period and if a socio-economic transition is occurring, evidence of this should be seen within this window.

3 Asset level approaches to addressing social aspects of mine closure

Given the lack of precision provided by the goal of seeking to deliver a positive legacy, a business survey was administered to understand how companies are currently approaching the social aspects of mine closure.

3.1 Methodology

The survey was conducted between March and October 2023, with responses received for 17 different mining assets located across five countries representing four continents. The mining assets subject to the survey were managed by eight mining companies, headquartered across three continents. Participants were recruited through the professional contacts of the primary author supplemented by additional contacts and introductions made possible through the support of CRC TiME. Survey respondents were targeted on the basis of their experience and knowledge of closure planning for specific mining assets or a range of assets. All respondents worked for, or contracted directly to, the company managing the asset or assets about which they responded and all gave their consent to both participate in the survey and participate in further interviews as necessary for the research. Respondents included closure, social performance and rehabilitation managers, social study leads, corporate affairs and sustainability and external affairs principals and closure executives.

3.2 Results

Close to 90% of respondents indicated that their company had a policy or policy statement which addressed a vision for the social aspirations post-closure. The statements varied from formal commitments referenced on company websites through to internal standards and principles. The visions expressed in these statements included: ‘to maximise opportunities to create a positive legacy for regions where (we) operate’, ‘to leave a positive legacy for local communities, the environment and future land users’, and the ‘protection of human health, community needs, the environment, and a positive legacy for future generations’. In contrast, it is notable that only 52% of the assets had translated these company commitments into asset-specific social closure/transition visions and 47% had taken the next step to define closure criteria for social aspects of closure. While close to two-thirds of the assets responding to the survey expected to continue operating for a further five years or longer, there was not a direct correlation between the likelihood of having developed an asset-specific social closure vision and the proximity of closure. 75% of survey respondents also indicated that their expected closure data had changed over time, highlighting the uncertainty associated with closure planning. Furthermore, all respondents indicated that the time to start planning for the social aspects of closure was in advance of 10 years before anticipated closure.

All bar two of the respondents indicated that they had commenced engaging with affected communities on closure to some level, ranging from information sharing on study options and high-level outcomes through to establishment of multi-stakeholder mine closure steering committees and an engaged co-design process to develop a closure vision. Of the seven respondents who indicated that their asset had a community agreement in place, three noted that the agreement did not specifically reference closure, with the remainder noting that closure was addressed in some aspects of the agreement.

When asked what they considered to be the primary objectives to be achieved through social closure/transition activities, respondents were offered a range of options to prioritise, including closure cost minimisation, reputation management for company post-closure, definition of a 'social exit' for the company from a community, positive legacy for communities post mine closure, minimisation of future liability for company, ability to achieve relinquishment criteria with the regulator, meeting community expectations, and completing all social commitments. Eighty-one per cent of respondents indicated that a positive legacy for communities post mine closure was the primary objective, 12.5% responded that it was the completion of all social commitments, and the remainder considered achieving completion criteria with the regulator as the primary objective. Interestingly, when asked who were considered the strongest drivers for shaping the approach they are taking towards social aspects of closure, close to two-thirds of respondents identified companies themselves, followed by a quarter who felt that affected communities were the strongest drivers. Notably, none of the survey respondents identified the regulator as the strongest driver in this space. Finally, respondents were asked to identify the point in the closure or post-closure process when they felt it was appropriate for a company to seek a 'social exit' from a community. Respondents were invited to select as many of the options as they felt were appropriate and, as illustrated in Figure 2, a range of views existed on this topic.

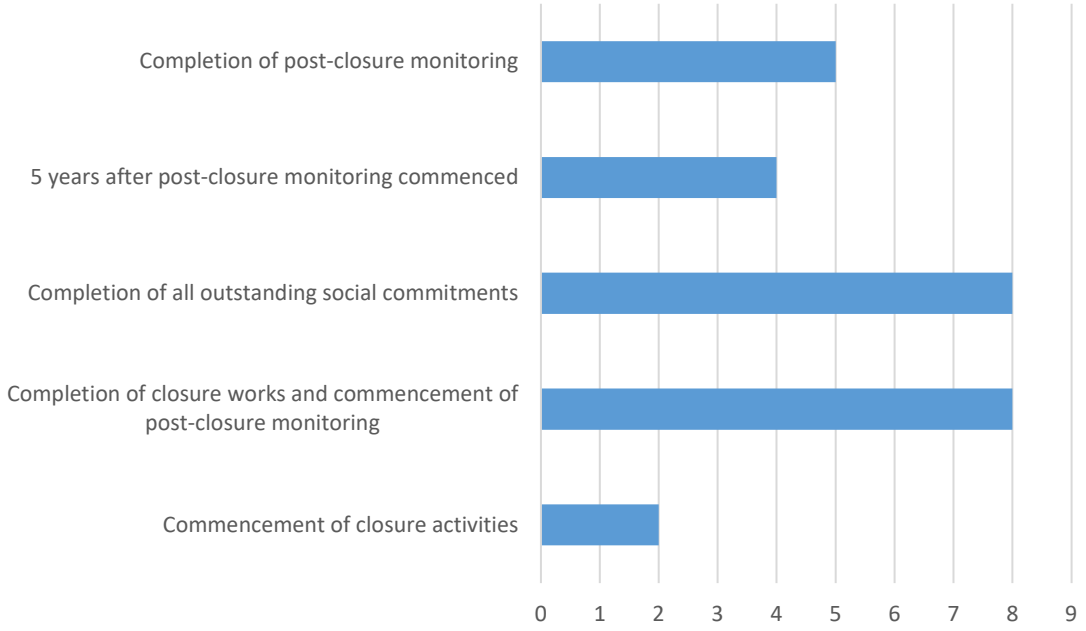

Figure 2 Survey responses on the point in time at which a company could seek a 'social exit' from a community

3.3 Discussion

With almost all of the surveyed assets indicating that they have some form of policy or policy statement addressing a vision for social closure, it would appear that there is no shortage of good intent to address and manage the social aspects of mine closure. The translation of company-wide policies to site-specific asset level policies or closure visions was more variable, which may be a symptom of some of the ambiguities associated with positive legacy ambitions discussed in the previous section, but is also likely a consequence of a number of other factors including, but not limited to, the length of time until closure for some assets who participated in the survey, relatively early stages of engagement with communities on what a post-mining vision might look like, and an absence of regulatory requirements to do so in many jurisdictions.

Noting the diversity of the roles of individuals who participated in the survey and of the assets they provided responses for, the comprehensive alignment behind the identification of a positive legacy for communities post-mine closure as the primary objective to be achieved was surprising. Given that the survey was directed towards company representatives, it would not have been surprising to see issues of closure cost

minimisation and company reputation also register as primary objectives, however, this was not the case. It is also clear that the primary driver shaping the approach to social aspects of closure is the company itself. The results reinforce the findings made by Kung et al. (2020) that social aspects of closure are not generally well-regulated. The diversity of views on the point at time at which a company might seek a 'social exit' also highlights the lack of regulatory guidance in this space and the extent to which companies and their assets are making their own determinations on what is appropriate.

4 A question of leverage

There are broadly three parties who have the ability to influence the standard of social outcomes expected post-closure: regulators and other government agencies, affected communities, and companies themselves. This section of the paper considers the leverage available to each of these parties at the time of mine closure, potentially offering an insight into why the social outcomes achieved post-closure in many mine closure projects have performed poorly against the expectations of a positive legacy, in all its definitions.

4.1 Governments and regulators

In general, the level of regulation on the social aspects of mine closure is limited. While there is limited research conducted at a global level, the most comprehensive assessment of regulatory frameworks in this was regard was undertaken by Kung et al. (2020) where the legislation of 10 different mining jurisdictions was assessed, and the conclusion was drawn that legislation was generally restricted to expectations around engagement on closure with no examples identified where social considerations influence decisions over relinquishment and release of financial assurance bonds. More research has been conducted in Australia where Hamblin et al. (2022) and Bainton & Holcombe (2018b) have both noted the paucity of law and policy guidance addressing social aspects of mine closure, with the exception of engagement. In the absence of legal frameworks to influence the social outcomes at closure, regulators have limited leverage in this space.

4.2 Affected communities

Much has been written about the concept of social licence to operate (SLO), and the potential leverage this can give affected communities (Boutilier 2014; Prno 2013). Boutilier (2021) noted that the SLO concept implied that 'communities have power over an extractive sector project that rivals the power of government and corporations'. Since the concept was coined by James Cooney in 1997, SLO has come under increasing scrutiny given the variations in how the term is used, questions of political influence associated with those who grant and receive a social licence, and debate on what obtaining and maintaining a social licence to operate might look like (Bice 2014; Brueckner & Eabrasu 2018; Owen & Kemp 2013; Parsons et al. 2014). Notwithstanding the diversity of views on the merits of the SLO concept, it can be agreed that the power held by communities to influence the behaviours of corporations is an important driver for social performance in the extractive sector.

While it is expected that companies need to gain and maintain a SLO throughout the mining lifecycle, arguably the leverage available to a community if they were to withhold or retract the social licence at the time of closure is relatively limited. In the context of national level transitions away from coal mining associated with the European Union Green Deal, Kozłowska-Woszczycka & Pactwa (2022) proposed the concept of a social licence for closure. They envisage that the social licence for closure would provide communities with a voice to influence the transition process in a government directed transition. In a more typical mine closure context, where the decision to close is driven by profitability or the extinction of a resource, it is less clear how such a concept could be applied. While theoretically, the SLO concept applies equally in the closure phase as all other periods of the mining lifecycle, arguably, the leverage held by a community to influence the actions of a company are different at this time. Given the limited regulatory influence on the social aspects of mine closure, the extent to which community voices are called upon and heard in the shaping of a mine closure plan, and its implementation can also be relatively limited. While there are cases where community organisations have built and utilised leverage during the closure phase to

negotiate for better outcomes (Holcombe et al. 2024), often the interventions come too late in the closure process to support a comprehensive re-alignment of actions to define and deliver on the expectations of a positive legacy. In many cases, the opportunities for asset transfers and support to facilitate a transition to a post-mining land use or post-mining economy have passed by the time community interventions occur.

4.3 Companies

Given the remarkable level of alignment amongst the company survey respondents on the primary objectives to be achieved through social closure/transition activities, and the leading role that companies appear to have in driving performance in this space, it would suggest that companies have significant leverage to influence outcomes. However, such a conclusion overlooks the multiple, and often competing, drivers influencing a company's behaviour and the recognition that achievement of a positive legacy is not something that one party alone can champion and achieve. Each issue is addressed in turn.

The drivers of a company's decision-making are likley to include consideration of legislation and regulation, company specific and industry standards, and the expectations of demands of shareholders, financiers, value chain participants, industry, communities, and broader society. Given the low level of regulation in this space and the absence of mandatory industry standards on mine closure (the ICMM's Integrated Mine Closure publication is a good practice guide and therefore voluntary in its use), the weight of influence in decision-making is likley to be derived from a combination of internal company standards and the expectations of the many different stakeholders listed. As a generally non-profit generating aspect of the business, closure teams and closure departments (depending on the structure of the company) can be seen as more akin to support services than central to the identity of the company. In this context, significant pressure is often applied to reduce the scope and cost of closure. Kemp & Owen (2013) assert that 'mining decision-making is motivated by profit maximisation and control of risk'. As noted earlier in this paper, many companies have standards or policy positions which articulate an ambition of achieving a positive legacy (or an equivalent concept of sustained benefit) and arguments can certainly be put forth that achieving a positive legacy will almost certainly reduce risk. However, the level of ambiguity around how a positive legacy can be interpreted, coupled with closure cost and schedule pressures, can mean that generating internal leverage to ask for resources, budget and time to support social closure planning and implementation can be challenging.

Moreover, a mining company alone cannot and should not be the architect and implementer of a post-closure vision for a society. Such a vision needs to be shared, and preferably led, by the people who will inhabit this future state. Mining companies can facilitate visioning discussions and support the incubation of ideas through multi-stakeholder processes, but these processes rely upon the active engagement, prioritisation, availability and capabilty of other stakeholders also, such as the affected communities, their representative groups, local and regional governments and their associated agencies, potential new entrants who may be interested in asset transfers or utilising the skills which exist in a host community for another purpose and depending on the setting, and other mining companies or industries who may play a role in the future state also.

4.4 Opportunities for improvement

The previous section highlights some of the challenges each of the principal parties to closure currently face in exerting their leverage on social outcomes at the time of closure, but these challenges also present opportunities for improvement. With the volume of mine closures either in progress or anticipated in the next decade (Boggs et al. 2022), opportunities to improve performance in this space would appear to be highly pertinent.

The first opportunity might be to improve and make more consistent the level of regulation on social aspects of mine closure. This requires a balance to avoid prescriptive dictates which fail to account for the multiple contexts in which the legislation will need to be applied, but also provides enough direction and performance requirement to shift the needle from current practice. Potential areas for regulation could include the introduction (or in some cases, reinforcement) of the use of the multi-stakeholder forums to plan for closure,

with the expectation that they could morph into closure implementation committees and have a role in the post mine closure society also. Regulation could also be expanded in relation to expectations on the coverage of social impacts and mitigations within closure plans, including the potential for requiring companies to commit to social closure criteria in the much the same form as environmental closure criteria are defined and need to be met as a relinquishment criteria. Opportunities also exist for the voice of affected communities to gain greater prominence in the decision-making of the regulatory body, i.e. to move away from a consultation with limited consequence model to one where closure consultation needs to be able to demonstrate how the voices and concerns of other stakeholder have informed the closure plan.

One of the key limitations in communities being able to effectively engage in discussions on closure and what a post-closure vision might look like is the asymmetry of information and experience. For many, if not most, mine-affected communities, the first mine closure they will witness is the one that is going to affect their community. Understanding the change that is coming, knowing what to ask, and seeing how to plan for this transition can be significantly improved by connecting communities who have already had this experience with those who are yet to experience it. The earlier these kinds of experience sharing and relationship building opportunities can take place, the more prepared a community will be to engage in the design, implementation and assessment of closure outcomes. Establishing multi-stakeholder forums early on and using these forums to discuss and vet decisions for closure and identify transition opportunities can build a far greater sense of ownership of both the decisions and a commitment to making a success of the closure outcomes.

Throughout this paper, both the importance of having a northern star towards which all parties can aim, and make decisions based upon, and the frailties of using 'positive legacy' as that northern star have been highlighted. The ambiguity of the positive legacy goal becomes most telling in the extent to which it can undermine the aspiration and commitments internally within a company. In the absence of a multi-stakeholder agreed asset-specific definition of a social closure vision, the leverage available to closure practitioners to argue for budget, resources, and a different way of doing things can be threatened by the lack of clarity around the definition of a positive legacy. If a positive legacy can be defined differently depending on differing perspectives, it risks being watered down to a meaning which is less than was intended; potentially offering neither the social outcomes which were hoped for nor the assumed risk mitigation and liability reduction. This paper would argue that one of the best ways to increase the leverage of those within companies who are aiming for a positive legacy is to work with communities and other stakeholders to define what that will look like, and in effect to create the northern star to guide future decision-making.

5 Conclusion

With the volume of mine closures only expected to accelerate in the coming decade, opportunities to improve the social outcomes achieved at mine closure are critical. The findings presented in this paper suggest that there is not a lack of ambition or good intention to achieve positive social outcomes at mine closure, but rather that the dominant language of positive legacy remains largely undefined leaving it vulnerable to re-interpretation and a lowering of expectations. Gaps also exist between the commitments expressed in corporate policy statements and the actions realised on the ground. The leverage of each of the three primary parties to mine closure – the regulator, the affected communities, and the company – to engage in, design and implement a positive social legacy post-closure is currently limited, but opportunities exist to improve this, to the benefit of all parties.

Acknowledgements

This research was supported by an Australian Government Research Training Program Scholarship, the Minerals Research Institute of Western Australia (MRIWA) Odwyn Jones PhD Scholarship, and a Cooperative Research Centre for Transformations in Mining Economies (CRC TiME) Top-Up PhD Scholarship. The author would also like to thank each of the participants in the business survey for their time and support with this research.

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