

## CLOSURE PLANNING PRACTITIONERS ASSOCIATION

### CONFIDENTIAL SUBMISSION TO THE SENATE INQUIRY INTO *REHABILITATION OF MINING AND RESOURCES PROJECTS AS IT RELATES TO COMMONWEALTH RESPONSIBILITIES*

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#### BACKGROUND ON THE AUTHORS

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The Closure Planning Practitioners Association (CPPA) is a newly formed group of technical professionals engaged in managing and delivering closure outcomes for the mining industry. Based in Western Australia, CPPA was established in 2016 and includes members who work for multi-national and local mining companies, consultancies and independent contractors. The primary function of the group is to build professional capacity in the specialist field of mine closure planning, whereby practitioners develop strategies, engage with stakeholders and estimate the costs associated with closing, decommissioning and rehabilitating mines. The CPPA believes mine closure planning is a process that should start before mining commences and continue throughout the life of the mine until the land has transitioned to its next land use.

*Disclaimer: This submission represents the personal views of the participating members from the Closure Planning Practitioners Association, and does not, and is not, intended to represent the views of the employers of the members.*

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#### SUMMARY

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CPPA has elected to respond to aspects of the Senate inquiry that align with the goals and aspirations of the CPPA, to build professional capacity in the specialist field of mine closure planning, namely:

- a) The cost of outstanding rehabilitation obligations of currently operating projects;
- b) The adequacy of existing regulatory, policy and institutional arrangements to ensure adequate and timely rehabilitation; and
- h) The potential social, economic and environmental benefits of adequate rehabilitation, including job opportunities in communities affected by job losses in the mining and resources sectors.

CPPA would also like the opportunity to raise issues of Australia's competency to regulate and to implement rehabilitation of mining and resources projects:

- k) Other - Competency to regulate and implement rehabilitation, considerations relevant to all aspects of the terms of reference.

CPPA believes that many of the mine rehabilitation issues that form the basis for this inquiry into the *rehabilitation of mining and resources projects as it relates to Commonwealth responsibilities* stem from a shortage of experienced professional personnel in both the mining, consulting/advisory and regulatory sectors.

CPPA members are concerned that the lack of policy and regulation around closure cost estimation process and qualifications required to generate closure cost estimates, has led to industry confusion and regular underestimation of closure liability.

CPPA would also like to bring attention to the gaps in social and economic considerations in the existing legislation. With only the environmental aspects of mine closure and rehabilitation being routinely considered during mining approval processes, a bias towards environmental rehabilitation outcomes has emerged which has the potential to limit economic development of the land post-closure, to the detriment of local communities.

In response, CPPA proposes the following recommendations:

1. A specific cost estimating standard be produced at the Commonwealth level that establishes the fundamental requirements for developing, reviewing and approving mine closure cost estimates.
2. The Commonwealth develops a mine closure policy that:
  - a. Aligns regulation of rehabilitation with economic development objectives to optimise the environmental, social and economic benefit from mining assets.
  - b. Recognises the complexities associated with progressive rehabilitation and seeks to optimise the social, environmental and economic outcomes of rehabilitation. Providing there is no wider environmental impact, this may include limiting requirements for rehabilitation until:
    - appropriate studies and field trials have been conducted that demonstrate the efficacy of rehabilitation techniques
    - there is a firm and agreed post-closure land use or set of options that require similar rehabilitation responses
3. The Commonwealth investigates and enables the establishment of commercial liability transfer models, to facilitate the transition of a mine to an alternate commercial use.
4. The Commonwealth establishes a policy framework that aligns the objectives of government agencies responsible for economic development, land use planning and mine closure regulation to facilitate the transition of closed mines to an alternate commercial use.
5. The Commonwealth develops a competency framework for mine closure planning practitioners, to ensure that standards are consistent across all States / Territories.
6. The Commonwealth assesses current and required capability and capacity within Australia to address mine closure planning and regulation needs, and facilitates education and training to address skills gaps.

CPPA Response to: A) the cost of outstanding rehabilitation obligations of currently operating projects

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Cost estimates for mine closure are prepared to support a variety of business and statutory decisions. These include estimates for assignment of bonds or funds for statutory financial mechanisms, determination of liability provisions for financial reporting, and application for internal capital and investment funding. Such estimates have different bases for costs with respect to scope and financial procedures, and therefore will vary from each other, even for the same site. Furthermore cost estimates are prepared against varying criteria for accuracy and confidence that reflect the maturity of closure scope development<sup>1</sup>. Costs reported within the public domain seldom provide reference to the purpose for, and basis on, which the estimate was prepared and are, therefore, often misrepresented and misinterpreted.

Notwithstanding the above, costs may be underestimated by some companies and regulators as a result of the following:

- Focus on direct costs, such as bulk earth moving quantities and revegetation, to the exclusion of indirect costs (e.g. project management, facility management, regulatory approvals, stakeholder involvement, etc.), growth, escalation and contingency.
- Insufficient allocation of costs to address critical knowledge gaps to confirm the effectiveness of closure options, and enable the most appropriate option to be selected and progressed to detailed design.

Cost estimates for closure of mining assets are generally prepared either by company personnel or consultants. As there are no competency criteria or formal qualifications required, historically these estimates have often been prepared by personnel not specifically trained in cost estimation. It is not uncommon for such cost estimates to be prepared using spreadsheets or cost models that were established for a single purpose (e.g. calculation of bonds) and which do not provide a realistic site-specific estimate of cost relevant to the purpose for which the estimate is being prepared. Few cost estimates are prepared against recognised industry standards or procedures for cost estimating. These standards include, but are not necessarily limited to:

- International Accounting Standard 37 – Measurement of liabilities
- AACE International Recommended Practice No.47-11, Cost Estimate Classification System as Applied in the Mining and Mineral Processing Industries

To cover this gap a number of mining companies have developed their own standards and procedures for closure cost estimating. These standards may have been developed to suit different purposes and company requirements, and consequently estimates produced by different companies may not be comparable.

Further to company prepared cost estimates, rehabilitation cost models used by regulatory agencies to establish statutory bonds have been developed to apply a consistent standard across sites for the purpose of establishing a bond. These models are seldom prepared against defined cost estimating standards or procedures, and tend to over simplify the cost associated with the closure of more complex sites. This may be appropriate in the context of a bond calculation, but as mentioned above, these models may be used by industry for a purpose for which they are not designed.

## Recommendation

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A SPECIFIC COST ESTIMATING STANDARD BE PRODUCED AT THE COMMONWEALTH LEVEL THAT ESTABLISHES THE FUNDAMENTAL REQUIREMENTS FOR DEVELOPING, REVIEWING AND APPROVING MINE CLOSURE COST ESTIMATES.

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<sup>1</sup> As with any project design process, early phases of closure design require a number of information gaps to be addressed to enable a more accurate cost estimate to be developed. These gaps are addressed through studies conducted throughout the life of mine. In some instances, it may take years to gather data (e.g. in the case of groundwater monitoring gathered to calibrate groundwater models until model predictions reflect observations).

CPPA Response to: B) the adequacy of existing regulatory, policy and institutional arrangements to ensure adequate and timely rehabilitation

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Most regulatory agencies, mining companies and local communities agree that rehabilitation should be undertaken to a standard that enables the land to transition to its next land use. Historically, rehabilitation policy and legislation has been focused on the environmental impacts of the mining industry, using rehabilitation as a driver to restore lost environmental value(s). The more complex social and economic issues associated with mine closure, such as decommissioning / demolition or repurposing of mine assets and establishing economically productive post-closure land uses, have had less regulatory support at State, Territory and Commonwealth levels.

The issue of timing of rehabilitation and the end land use for which rehabilitation should be designed is a complex one, and requires further review and analysis to develop a policy framework that provides the best outcomes for future generations taking into account social, environmental and economic factors. Some of the complexities include:

- As commodity prices and technology change the economics of extracting ore change. If additional ore can be economically extracted, rehabilitated areas may require re-disturbance (e.g. waste rock landforms may be required to receive additional waste rock). Disturbance of rehabilitated areas will inevitably mean some loss of materials available for rehabilitation of the final landform, even if efforts are made to recover those resources. In addition to this, re-disturbance of an area may compromise a post closure land use that has been established on, or adjacent to, the area to be disturbed.
- Our knowledge of successful rehabilitation techniques specific to particular areas improves with the implementation of trials. Requiring mining companies to meet rehabilitation targets prior to the completion of trials may result in sub-optimal rehabilitation outcomes, and additional (unnecessary) costs to mining companies for re-working large areas of unsuccessful rehabilitation.
- In long lived operations, community expectations of an appropriate post-mining land use will change over time. Without clear post-mining land uses, closure outcomes, objectives and completion criteria are challenging to define.

Current regulatory frameworks for rehabilitation focus on re-establishing the pre-mining land use (usually one with low job intensity), or an ecosystem that, where possible, approximates that of the pre-mining condition. There is no incentive for mining regulators to facilitate a productive post closure land use that provides socio-economic value to the community post closure. This focus is in conflict with that of some government agencies that are seeking alternate forms of employment to replace those lost when mine sites close. Currently potential uses of mined land post closure are generally not factored into land use or economic development plans. As a result, there is no post closure land use planning framework that mining companies can reference when planning for rehabilitation and closure. This uncertainty discourages mining companies from investing in rehabilitation activities that provide socio-economic benefit post closure.

The Multiple Land Use Framework (MLUF) has started to address this gap. The MLUF was established under the COAG Standing Council on Energy and Resources (SCER) and aims to deliver a consistent approach to resolve land use tensions and conflicts. Such conflicts are certain to arise with respect to environmental legislation and associated approval conditions when post-closure land uses other than the return to pre-mining conditions are considered. Thus, further work is required to support social and economic decision making processes, especially in regards to the transfer of liability under law and to establish if, when and where, management of liability in perpetuity could provide a better outcome for the community rather than ecosystem restoration.

With the existing environmental legislative bias, rehabilitation progress is usually measured in terms of area of land restored to the pre-mining ecosystem. This leads mining companies, when pressured to demonstrate rehabilitation progress, to undertake landform shaping and revegetation activities often without the proper community consultation, basis of design or technical knowledge required to ensure that the outcomes support a productive post-closure land use. Once mining companies have invested funds towards establishing a particular ecosystem, e.g. in alignment with environmental approval commitments made before mining commenced, there is little appetite to

investigate alternative post-closure land uses. As a consequence, progressive rehabilitation driven towards environmental restoration can constrain or limit post-mining social and economic benefits.

Currently there is limited incentive or legislative ability for regulators to promote social and economic benefits from closed or abandoned mines due to the constraints of the legislation under which they operate. Economic development and land use planning are generally the domains of other government agencies. Mine closure policy needs to be developed at the Commonwealth level to encourage State and Territory governments to maximise the environmental, social and economic benefit from mining assets. The policy needs to encourage legislative change to accommodate the management of long term legacies and latent impacts, for example through commercial transfer of liabilities, to facilitate land use transition and to resolve conflicts arising from existing environmental legislation processes as well as to align outcomes with regional development strategies and land use planning.

### **Recommendation**

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#### DEVELOP A COMMONWEALTH MINE CLOSURE POLICY THAT:

- 1) ALIGNS REGULATION OF REHABILITATION WITH ECONOMIC DEVELOPMENT OBJECTIVES TO OPTIMISE THE ENVIRONMENTAL, SOCIAL AND ECONOMIC BENEFIT FROM MINING ASSETS.
  
  - 2) RECOGNISES THE COMPLEXITIES ASSOCIATED WITH PROGRESSIVE REHABILITATION AND SEEKS TO OPTIMISE THE SOCIAL, ENVIRONMENTAL AND ECONOMIC OUTCOMES OF REHABILITATION. PROVIDING THERE IS NO WIDER ENVIRONMENTAL IMPACT, THIS MAY INCLUDE LIMITING REQUIREMENTS FOR REHABILITATION UNTIL:
    - A) APPROPRIATE STUDIES AND FIELD TRIALS HAVE BEEN CONDUCTED THAT DEMONSTRATE THE EFFICACY OF REHABILITATION TECHNIQUES
  
    - B) THERE IS A FIRM AND AGREED POST-CLOSURE LAND USE OR SET OF OPTIONS THAT REQUIRE SIMILAR REHABILITATION RESPONSES
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CPPA Response to: H) the potential social, economic and environmental benefits of adequate rehabilitation, including job opportunities in communities affected by job losses in the mining and resources sectors

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Primary earthworks and revegetation activities account for the bulk of closure costs, and associated employment opportunities. Regulators strongly encourage mining companies to implement these activities progressively during the life of the mine. This leaves the final rehabilitation and decommissioning works to be completed within a brief period at the end of the mine life. These end of mine life activities usually require specialised, industry specific competencies. The associated work programs generally run for short periods of time (i.e. 2-3 years) with long periods of planning and inactivity. Post closure monitoring and maintenance occurs for longer periods, but different types of monitoring may require different specialist skills, and work is conducted by a small number of people in campaigns. Thus, opportunities for rehabilitation employment may be limited and unsustainable at a local level. Opportunities for rehabilitation employment may be sustainable at a regional or State level, however the volume of employment is unlikely to be sufficient to offset the economic impact of mine closure on communities.

It is also worth noting that pre-mining land uses are often native vegetation, or some form of pastoral or agricultural use. These pre-mining conditions only provided employment for a small number of people.

Greater opportunity to achieve economic benefit exists through redevelopment of closed and abandoned sites to a productive post-mining land use; that is repurposing the land for uses other than to sustain native vegetation. Examples of successful and sustainable commercial approaches to mine closure that take advantage of ongoing human and economic occupation are presented in the publication *"101 things to do with a hole in the ground"*<sup>2</sup>. The transition of Genex's Kidston Power Generation Projects in Queensland to a hydro and solar power generation facility is a current prime example of a productive post-closure land use.

However, there are a number of factors that currently limit and / or discourage mining companies and regulators from exploring productive post-closure land uses. As previously discussed in this submission, existing environmental legislation, limitations associated with regulator areas of authority and commercial challenges associated with transferring residual and latent liabilities need to be overcome. These limitations will only be overcome through inter-governmental and inter-agency agreement.

To unlock the potential value of closed mines and offset economic impact of mine closure on communities, regional development programs need to be encouraged to consider closed mines as locations for alternative and diverse industries. There also needs to be alignment between government agencies responsible for economic development, planning and regulation of mine rehabilitation. This may be achieved through:

- Aligning the objectives of various State, Territory and Federal government agencies responsible for land use planning, economic development and regulation of mine closure to focus on potential economic uses of mine sites post-closure
- Government agency partnerships with venture capital investment organisations and other interest groups.

## Recommendation

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THE COMMONWEALTH INVESTIGATES AND ENABLES THE ESTABLISHMENT OF COMMERCIAL LIABILITY TRANSFER MODELS, TO FACILITATE THE TRANSITION OF A MINE TO AN ALTERNATE COMMERCIAL USE.

THE COMMONWEALTH ESTABLISHES A POLICY FRAMEWORK THAT ALIGNS THE OBJECTIVES OF GOVERNMENT AGENCIES RESPONSIBLE FOR ECONOMIC DEVELOPMENT, LAND USE PLANNING AND MINE CLOSURE REGULATION TO FACILITATE THE TRANSITION OF CLOSED MINES TO AN ALTERNATE COMMERCIAL USE.

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<sup>2</sup> G. Pearman, 101 things to do with a hole in the ground, St Austel, Cornwall: Post Mining Alliance, 2009

CPPA Response to: K) Other - *Competency to regulate and implement rehabilitation, considerations relevant to all aspects of the terms of reference*

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Legacies and liabilities of mining are managed through the multi-disciplinary process of mine closure planning. Mine closure planners develop strategies, engage with stakeholders and estimate the costs associated with closing, decommissioning and rehabilitating mines. Key to the mine closure planning function is the ability to recognise gaps in knowledge, techniques and other issues that may result in an adverse closure outcome.

While most professionals employed in relation to mine closure planning have Tertiary qualifications, there is no recognised qualification in closure planning and management. While there are pockets of excellence in mine closure planning within industry (mining companies and their advisors) and regulation, as a whole, there are relatively few people with the skills and experience necessary to effectively plan and execute mine closure. In addition to this, the discipline of mine closure planning is rapidly evolving as knowledge of effective mine closure techniques improves. In the absence of a mine closure planning qualification and a deep pool of experienced professionals:

- Mining companies may appoint 'closure representatives' who, as part of another role in the company, serve to coordinate the development of mine closure plans to meet regulatory requirements through external consulting groups. As a consequence, many rehabilitation issues and risks are unknown or poorly understood within these companies. Without recognition of the issues and risks, resources are not allocated to resolve the issues, and technical specialists are not afforded the opportunity to develop the multi-disciplinary skills and experience that is required to resolve mine closure problems.
- Regulators responsible for regulation of mine closure / rehabilitation plans and management of abandoned mines may lack the experience to evaluate whether a closure plan is sufficiently mature, to ensure that all closure risks have been adequately identified, and to independently assess whether the proposed risk control is likely to be successful. Only a small number of regulators responsible for the development of regulation, policy and institutional arrangements have demonstrable rehabilitation and mine closure experience. The majority of competent mine closure expertise is employed within industry, rather than in regulation. This is may be partially remuneration and demand-driven.
- Mine closure liabilities may not be well understood during merger and acquisition transactions. Only a small number of professionals have adequate experience to determine whether sufficient due diligence has been conducted by a purchaser to support mining asset divestment; fewer still have the experience to determine whether a purchaser is sufficiently resourced to address the full extent of the liability.
- Closure cost estimates may not reflect the true extent of mine closure liability. As discussed in our response to A), cost estimates for closure are often prepared by environmental or engineering professionals with no experience or qualification in the preparation of cost estimates. The majority of regulators responsible for assessing closure cost estimates are not appropriately qualified or experienced to assess the appropriateness of submitted cost estimates.

The absence of mine closure planning and cost estimation training / qualifications has constrained the mine closure / rehabilitation professional development pipeline, and has led to a capability and capacity deficiency within the mine closure / rehabilitation industry. This in turn is impacting on the quality of mine closure outcomes.

**Recommendation**

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THE COMMONWEALTH DEVELOPS A COMPETENCY FRAMEWORK FOR MINE CLOSURE PLANNING PRACTITIONERS, TO ENSURE THAT STANDARDS ARE CONSISTENT ACROSS ALL STATES / TERRITORIES.

THE COMMONWEALTH ASSESSES CURRENT AND REQUIRED CAPABILITY AND CAPACITY WITHIN AUSTRALIA TO ADDRESS MINING CLOSURE PLANNING AND REGULATION NEEDS, AND FACILITATES EDUCATION AND TRAINING TO ADDRESS SKILLS GAPS.

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