



# Post-mining Land Uses

The repurposing of mining assets can create distinctive opportunities for mining communities and the broader regions. How, therefore, can we best advance the re-use of mining assets to achieve positive economic, social, and environmental outcomes? Plus, what can we learn from national and international experience about mine repurposing? What are the adverse impacts of current closure planning processes? And how can repurposing better incorporate long-term community priorities?



## KEY FINDINGS

- A 2020 study indicated that 89 per cent of Australia's 95,320 mine sites (including shafts) were inactive. While the majority of these sites are legacy or neglected mines, there is potential economic, social and environmental benefit for Australia in repurposing suitable sites.
- There are risks associated with mine asset re-use, including risks associated with water quality and constructed landforms. With few mines in Australia having been completely repurposed and challenges such as changing government priorities, re-use outcomes remain uncertain. However, interest in how to repurpose mine sites is gathering momentum.
- Regulatory frameworks help determine what is possible and by whom regarding repurposing of mining assets. To date, mining assets have been repurposed for many different purposes across industries including tourism, waste, energy, and environment including wetlands. Plenty of transition opportunities seem to exist.
- Industry engagement suggests many mine operators seek to repurpose mine sites and routinely consider the opportunities. However, there should be an audit of the uptake of this practice and the impediments experienced by firms to its realisation.

This foundation project found that mine repurposing has not been considered in a systematic fashion – meaning that the benefits and risks associated with this process are not yet understood. It also means missed opportunities for communities.

### THE CHALLENGE

Over the next 25 years, 50 per cent of Australia's mines are expected to close. The proposed post-mined land use transitions will have major environmental, economic, and social impacts, particularly for host regional and First Nations communities.



Image: Sandy Horne

Current regulatory conditions usually require return to prior date, meaning that mining asset reuse may not be possible. Potential options for reuse of mine assets have not been considered in a systematic fashion. Other hurdles include volatility in mineral prices creating uncertainty in closure timeframes, and in staff turnover, making the continuity of knowledge challenging.

### THE OPPORTUNITY

Repurposing mine assets can create distinctive opportunities and benefits, as well as risks, for mining communities and broader regions. Opportunities vary across jurisdictions, and complex and individual circumstances influencing decision-making means that different solutions are required for each site. Despite this, there are commonalities across sites and value in seeking new and productive future uses for assets post closure.

This project's investigation of successful mine repurposing, how this has been achieved, and what hurdles need to be conquered, can all help. In addition, exploring how change has previously been achieved – touching on issues of governance, risk management, the impacts of incumbency of mine operations and ownership, and broader attitudinal factors including expectations – has brought with it opportunity to start developing a platform to consider regional changes in land use.

## OUTCOMES

The project found there is considerable potential to improve community and regional wellbeing post-mining through the repurposing of mine sites.

- Enablers of repurposing include: leaders of change from the community, the mining industry, other parts of the private sector, or one of the tiers of government; recognising existing infrastructure that may make developments possible; auditing the mine repurpose practice and the impediments experienced in the process; timing the transition so it commences before the mine closes and continues to evolve in a timely fashion; and collaboration across tiers of government, the private sector and the community, including any regional planning processes.
- Key hurdles include: the impacts of government regulatory frameworks that prescribe outcomes not compatible with re-use; the nature and structure of the mining industry, with volatility in mineral prices adding uncertainty to mine closure decisions and timeframes; the isolated nature of many mine sites that are often distant from infrastructure and markets; and a limited understanding of the economic and social potential embedded in former mines.

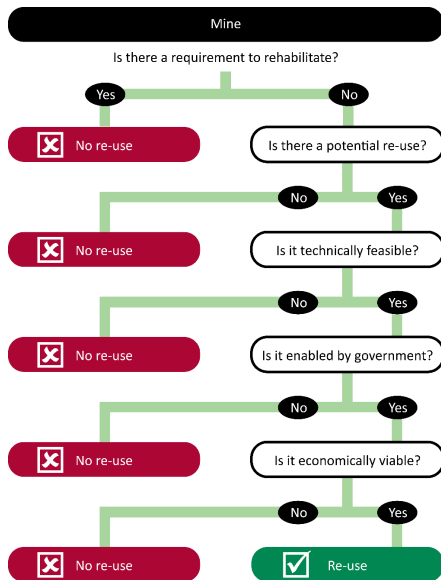


Figure 1: A stylised set of gateways for mine site repurposing<sup>1</sup>

## NEXT STEPS

The mine repurposing process needs expediting. A more comprehensive, systematic perspective on mine re-use should be developed, taking full advantage of the opportunities many of these sites present.

Further work could be undertaken on the following major themes:

- Regulatory frameworks: Develop and implement frameworks that are more open to mine repurposing.
- End-of-mine life: Understand current practices to enable individuals and organisations to make better future decisions.
- Change leadership: Promote and support leadership to drive change at the end of a mine’s life.
- Develop assets: Develop more directive, informative materials on how to repurpose mines, and make them available in diverse formats for various audiences.

## PROJECT PARTNERS

The University of Western Australia; University of South Australia Business School; The University of Queensland; CSIRO; Hanson Heidelberg Cement Group; Curtin University; MMG; Agrow Group; Shire of Murray; Golder; Regional Development Australia (South West); Minerals Research Institute of Western Australia

## PROJECT PUBLICATIONS

[REVIEW FULL REPORT](#)

Beer, A, Haslam McKenzie, F, Weller, S, Davies, A, Côte, C, Ziemski, M, Holmes, K and Keenan, J (2021). *CRC TiME Post Mining Land Use - Practice Mapping Options: Implementation Plan*. CRC TiME Limited., Perth, Australia, 1 March.

Beer, A, Haslam McKenzie, F, Weller, S, Davies, A, Côte, C, Ziemski, M, Holmes, K and Keenan, J (2021). *Post-mining land uses – a literature review*. CRC TiME Limited., Perth, Australia.

Beer, A. (2021). CRC TiME: Project F1.2: *Post Mining Land Use- Practice Mapping Options*, presentation to the Steering Committee, April.

Beer, A (2021). *Post Mining Land Use: Insights from the literature*, presentation at the 2021 Forum: Creating Connections 29 November.

Beer, A, Haslam McKenzie, F, Weller, S, Davies, A, Côte, C, Ziemski, M, Holmes, K and Keenan, J (2022). *Post-mining land use – final report*. CRC TiME Limited., Perth, Australia.

Gutierrez, M (2020). Sustainable use of abandoned mines, Editorial for special issue, *Minerals*, 10, 1015, doi: 10.3390/min10111015.

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## ABOUT US

The Cooperative Research Centre for Transformations in Mining Economies is part of Australia’s national innovation ecosystem. Our diverse partnership brings scale, collaboration and coordinated investment to tackle the most complex mine closure and post-mine transition challenges. Together we’re rethinking what’s possible to improve outcomes for people, communities, the environment and industry.

We acknowledge the traditional custodians across all the lands on which we live and work, and we pay our respects to Elders both past and present.