



Foundations of Change: supporting mining economies facing transition

The Cooperative Research Centre for Transformations in Mining Economies (CRC TiME) is working to enable mining regions and communities transition to prosperous and sustainable post mining futures. CRC TiME is a unique ten year, multi-million dollar partnership between the Commonwealth Government, regional communities, the mining sector, state and local governments and Australia’s innovation system.

There are very few examples globally of successfully closed and relinquished mines. More typically, there are mines still under active management and abandoned mines – some of which have creative post mining uses and some of which present ongoing legacy issues, which require ongoing management.

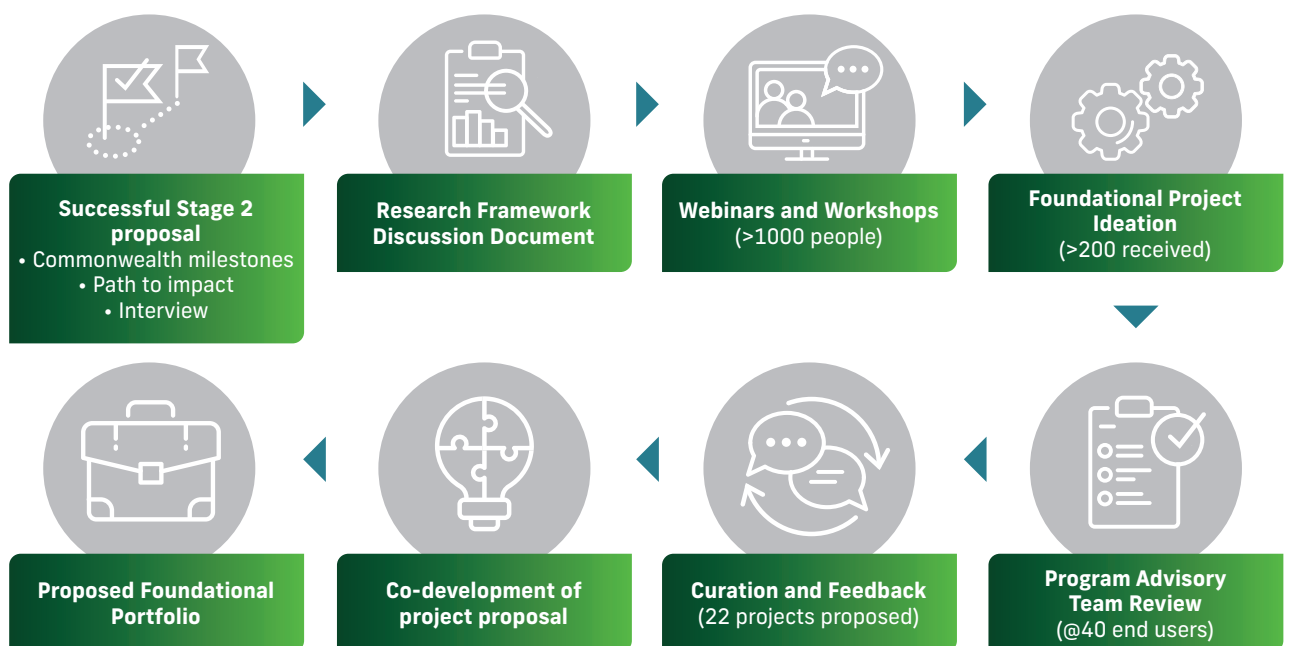
CRC TiME has initiated a portfolio of foundational projects designed to identify the disconnects in knowledge, behaviour and institutions that inhibit the opportunities for orderly mine closure and relinquishment that catalyses ongoing regional development.

CRC TiME Foundational Project Portfolio

From the outset CRC TiME identified the value of, and need for early research projects to bring partners together.¹ The projects would inform and contribute to the planning of longer term CRC TiME investment by working within limitations associated with COVID-19.

An iterative consultation process was undertaken to identify a portfolio of projects that would:

- build networks within and between researcher and end user partners
- capture the state of the art in different areas – from multiple perspectives
- identify research gaps where innovation is required to deliver solutions that enable relinquishment & deliver positive post mine legacies



¹ CRC TiME's research strategy framework discussion document published in May 2020

The process identified the need for an integrated portfolio of 22 foundational projects that will advance our thinking on key challenges such as:

- How can mine closure decisions optimise environmental, economic and social benefits from site to regional scale?
- What opportunities or barriers exist in the regulation of mine closure, relinquishment and re-purposing?
- How do we integrate long term value into short term decision making?
- Where are the key uncertainties in mine closure risk planning and how can we address these?
- What new technologies and design mechanisms will ensure we can create post mine landscapes that minimise risk and deliver new re-purposed opportunity?

This portfolio of projects has a cash value of \$1.8 million and will largely be completed in the 2021 calendar year. Projects will be delivered through a uniquely integrated model and provide opportunity for partners and key stakeholders to collaborate through regional hub and sector based focus groups. The total value of the portfolio is \$4.9m, recognising the invaluable in-kind contributions our 74 partners will make to advancing our shared knowledge.

The portfolio of CRC TiME Foundational Projects

Program	Rationale	ID	Research Project
Regional Economic Development	Over the next 25 years 50% of Australia's mines are expected to close and a stream of post mine land use transitions are proposed. These mine closures and potential transitions will have major environmental, economic, and social impacts, particularly in regional and indigenous communities where mining activities have been dominant. This research program seeks to optimise the regional economic development potential of the relinquished mining assets through prescient planning and the harnessing of local knowledge.	1.1	Towards a framework for cumulative regional impact assessment
		1.2	Post mining land use
		1.3	Mapping the regulation of mine closure
Risk, Evaluation and Planning	The risk, evaluation and planning program is to carefully examine the assumption that mine closure planning is not sufficiently well connected to operational activity to promote effective mine closure and relinquishment. This requires understanding how decisions are made in the face of uncertainties that can be spread over long timelines. The post mine land use options and the necessary steps to achieve a shared understanding of how the transition from mining to other uses can be achieved and implemented will be interrogated.	2.1	Understanding stakeholder values in post-mining economies
		2.2	Exploring the issues in mine closure planning
		2.3	Current tools, techniques and gaps in evaluating mine closure
		2.4	Quantifying risks and opportunities from mine closure
Operational Solutions	The foundation projects in the Operational Solutions program are enabling CRC TiME to move beyond 'business as usual' research on individual topics. There is an extensive knowledge base and leading practice in issues such as tailings, landform stability and water management. CRC TiME is aiming to transform practice by looking at operations, closure and post closure as an integrated system.	3.1	Integration of biophysical aspects of mine closure planning
		3.2	Transforming disparate approaches to remote sensing and monitoring to industry best practice
		3.3	Mine site water: options for extracting value from open pits
		3.4	Returning ecosystem resilience
		3.5	Mined landform stability for regional benefit
		3.6	Barriers to reducing acid and metalliferous drainage (AMD) risk
		3.7	Comparative Closure: assessing the biophysical closure challenges of different mining methods
Collaborative Infrastructure	The projects within the Collaborative Infrastructure program are developing the platforms for CRC TiME as it develops research over ten years. The focus is on establishing systems for capturing and networking the knowledge, data and site assets available to CRC partners including: a network of demonstration sites (both operational and abandoned); a knowledge and data hub; and a one stop shop portal into available material on different aspects of the post-closure transition.	4.1	Dynamically transforming environmental assessment through a shared analytics framework
		4.2	Mine Rehabilitation Trials Online (MRTO)
		4.3	Network of demonstration and testing sites
		4.4	CRC TiME Knowledge Hub (e-library)
		4.5	Abandoned mines in Australia
Strategy Solutions	Some challenge areas are critical right across the CRC TiME portfolio. These strategic themes are explored through strategy solution projects, ensuring programs are connecting with whole of industry challenges and opportunities, and informing development of the CRCs long term strategy.	5.1	Defining our path to impact
		5.2	Foundations for indigenous inclusion
		5.3	Transitions and climate change