SUSTAINABLE MINING FOR A HEALTHIER AND WEALTHIER AUSTRALIA

CRC-RSEM

RESOURCE SECTOR
ENVIRONMENTAL
MANAGEMENT

THE INDUSTRY CHALLENGE

The resources sector urgently needs new, community-endorsed and economically viable solutions to mine site environmental management, rehabilitation and closure.

The community's expectations of the sector are evolving rapidly and it is becoming a very complex issue for industry and governments across Australia and around the world. Recent decisions, protest action and moratoriums show that the sector is at risk of falling behind community expectations on these issues and losing the enduring social contract that has made mining the backbone of the Australian economy.

The CRC for Resource Sector Environmental Management (CRC-RSEM) is an initiative to put the sector onto the front foot and rebuild its relationship with the community. This will ensure that mining and its supplying mining equipment, technology and services (METS) companies can thrive and grow as attractive industries in Australia.

NEED FOR NEW SOLUTIONS

Communities are becoming less inclined to provide mining companies with a social licence to operate. It is no longer sufficient to point to the economic benefits of a project to win over a community.

The stakeholders that need to support a project in order for it to obtain a social licence have broadened from the local or regional community to people from across Australia. This is making the approval processes more difficult, risky and expensive.

In addition, the Commonwealth Government has identified the METS sector as a priority sector. It has created a Growth Centre (METS Ignited) to focus on growing the sector's positive impact and international competitiveness. Mine site environmental management, rehabilitation and closure is an important part of the sector.

The CRC Bid team has been consulting with industry for more than three years. Several recurring challenges have been identified and will be addressed by the CRC, including:

- High cost and policy uncertainty relating to mine site closure
- Inconsistent definition of appropriate final land form and completion criteria
- Post-closure land-use conflicts and net benefit assessments
- Limited range of options for dealing with pit lakes and voids
- Potential high costs and risks of treating legacy mine sites
- Lack of rapidly deployable solutions to effectively deal with accidents and unforeseen events
- Incomplete evidence base for quality policy formulation
- Fragmented regulations and approval processes
- Limited and fragmented engagement with the community over issues of concern
- Growth in innovation and competitiveness of Australian METS companies to provide a new wave of products and services to meet global mining environmental challenges.

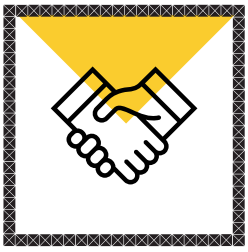
BENEFITS OF PARTICIPATION

The Australian resources sector can transition from reactive responses – which are invariably a step behind community expectations – to a more proactive and engaged approach.

CRC partners – known as Participants – will share in a number of benefits, including:

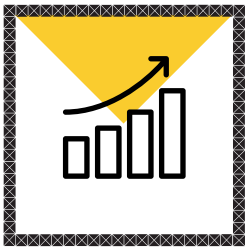
MINING AND METS INDUSTRY BENEFITS

- Tangible and achievable end points for mine site closure
- Lower cost of closure of mine sites
- Improved relationship with regulators and the broader community
- Stronger social licence to operate
- Better, more transparent and consistent policy
- Lower regulation risk
- Lower cost of capital
- Better protection of reputation
- Creation of new solutions and products for global markets
- Leveraged funding for technology development
- Eligibility for R&D Tax Credits (seek independent advice on your organisation's eligibility)
- Creating future leaders and talent.



REGULATOR BENEFITS

- Better environmental outcomes
- Higher levels of community engagement
- Regulation underpinned by robust scientific and engineering evidence
- Stronger and more trusted relationships with miners and communities.



RESEARCHER BENEFITS

- Higher collaboration and stronger relationships
- Long-term research funding
- High-impact research
- Provision of a path to market for research outcomes
- Industry-relevant Higher Degrees by Research
- Greater employment opportunities for graduates.

WHY A CRC?

Most of the opposition to mining is focused on the long-term impacts of mining activity on the local environment. Yet mining companies tend to focus on economic benefits or good practice.

Unfortunately, faced with limited trust between the parties, these efforts have lost their impact.

CRC-RSEM builds on the experience of other CRCs in demonstrating that trust can be re-established through an engaged, long-term and science-based approach to the issues. CRC-RSEM will help miners, METS companies, regulators and communities to collaborate and develop mutually agreeable solutions to some of the most pressing challenges.

The CRC Program provides the funding, governance and structures to bring competing interests together. It is also one of the few programs that provides long-term resources at a scale that can create a step-change in the industry. Unlike the clear majority of funding opportunities, the CRC Program can build project by project toward an integrated solution to very big problems.

Most importantly, CRCs are established to be industry-led. Their research is conducted to create solutions to real problems; not just to deliver academic papers.

RESEARCH FOCUS

CRC-RSEM will focus on its Participants' priority environmental issues. Industry consultation indicates that the CRC should conduct research and deliver solutions over four themes:

THEME 1 – MINE CLOSURE

Industry, governments and communities are seeking a better approach to mine closure – one that is certain, safe, stable, non-polluting, self-sustaining and economically viable. To achieve this, industry has identified the need to develop:

- Community-endorsed closure criteria with short to medium and long-term trajectories
- New technologies and approaches that can be applied to existing mining operations to reduce the risk of contamination, improve rehabilitation outcomes and lower the cost of closure
- New tools to better design new mine sites to optimise closure in terms of environmental, social and economic considerations
- New tools and assessment methods to identify long-term risks and costs for mine sites.

THEME 2 – DEALING WITH LEGACY MINES

While the current regulatory environment has effectively stopped the creation of new legacy mines, Australian governments are estimated to be holding over $10 billion in unfunded mine environmental liabilities from past practices. Governments and industry are seeking better and more cost-effective solutions to deal with this liability, including:

- Developing indicators of potential risk
- Developing new cost-effective approaches and technologies for remediation
- Exploring alternative uses for sites (e.g. pit lakes for tourism)
- New technologies to recover valuable minerals from old workings.

THEME 3 – TECHNOLOGIES FOR CATASTROPHIC EVENTS

Several recent events have demonstrated the environmental and economic costs associated with catastrophic accidents. Industry is seeking better ways to predict and deal with such events to minimise the damage to people, infrastructure and reputation. This theme could deliver:

- Better knowledge of possible failure points
- New prediction tools to alert for risks
- A suite of innovative and rapidly deployable technologies and approaches to minimise impact
- Better knowledge of how to respond to communities affected by such events.

THEME 4 – BETTER POLICY AND COMMUNITY ENGAGEMENT

The policy environment surrounding mining is very fragmented and is formulated on a limited base of evidence. It is costly to navigate and likely delivers sub-optimal outcomes. In addition, the resources sector is currently experiencing a trust deficit with the broader community, making it difficult to obtain a social licence to operate. This theme could help to simplify policy and address the trust deficit by delivering:

- A framework for harmonising Australia's regulatory environment
- New, trust-based ways to communicate with the broader community
- A better understanding of socioeconomic factors influencing community attitudes
- New and accessible knowledge and data to better inform policy and social narrative.

AWARENESS, EDUCATION & TRAINING

The Awareness, Education and Training program is a core element of the success of CRC-RSEM.

It will identify and develop the necessary human resources to create, implement, maintain and further improve environmental practice. It will also make an essential contribution to establishing environmental management as a global competitive advantage for Australian mining and METS companies.

The CRC-RSEM awareness, education and training activities will target a wide range of recipients including postgraduate and undergraduate students, industry professionals, regulators and the public.

CRC-RSEM education and training activities may include:

- Training PhD and research Masters degree students, with the majority embedded to a large extent in industry projects
- Operating an industry project program for final year undergraduates
- Developing courses for upskilling employees of Participant organisations
- Conducting conferences, seminars and public education events involving all stakeholders
- Facilitating engagement with international organisations, projects and researchers.

IMPACT

CRC-RSEM will allow companies to better secure a social licence to operate and improve their bottom line.

In addition, the technologies and methods developed by the CRC-RSEM will help drive the development and growth of Australia's mining environmental management services industry within the METS sector.

The Australian METS sector is our nation's new driver for growth. The METS sector contributed $86 billion Gross Value added to the Australian economy in 2014-15 and employs approximately 500,000 people. Exports in 2012-13 were estimated at $15 billion per annum. This represents a significant area of economic opportunity for the CRC-RSEM to add value to the Australian economy.

BID MANAGEMENT

The bid is being jointly facilitated by the NSW Department of Planning and Environment, the CRC for Contamination Assessment and Remediation of the Environment (CRC CARE), and the University of Newcastle.

The bid team has engaged consultants with an outstanding record of success to assist with the development of the bid.

The Western Australian Biodiversity Science Institute (WABSI) will assist the bid team in securing Participants for the CRC-RSEM in Western Australia.

PARTICIPANT CONTRIBUTIONS TO THE CRC'S RESEARCH

CRC-RSEM will operate for ten years with the contributions determined by the amount of benefit each Participant expects to derive.

Contributions are not standardised and can consist of cash or in-kind resources. The more cash committed by our partners, the more competitive the CRC-RSEM bid will be and the more Commonwealth funding we can secure.

Based on our experience, typical contributions would be:

- Industry partners – from $150,000 to $1,000,000 per annum (p.a.) cash contribution
- Regulators or government agencies – from $100,000 to $200,000 p.a. cash contribution
- Research organisations – from $150,000 to $300,000 p.a. cash contribution.

TIMELINE & CONSULTATION

The R&D funding landscape in Australia is extremely competitive, and moves in cycles.

The CRC-RSEM bid team has extensive experience in this area, collectively securing over $500 million in government funding – matched by nearly $1 billion in partner cash and in-kind support. This success rate has been achieved by pushing hard and bidding when there is an alignment of the right partners, contributions and political conditions.

The bid team has scheduled for the feasibility phase to be complete by early to mid-March 2018. Whilst the Commonwealth Government has not announced the timeline for Round 20 of the program, we anticipate that Stage 1 will be due in July 2018.

CONTRIBUTION TO BID COSTS

The CRC bid process is extremely competitive. The preparation requires dedicated and specialised resources to secure partners, develop a collective research agenda, and prepare the bid documents.

All prospective partners will need to share and contribute to the costs associated with preparing the bid. Each partner will be required to contribute an equal share toward bid costs. To manage risks for partners, the bid will involve three stage-gated phases for the development of the bid, namely:

FEASIBILITY

This phase will involve engaging with industry, government and researchers to outline the primary outputs for a CRC and secure in-principle support.

STAGE 1 APPLICATION

This follows on immediately from the feasibility phase. It involves establishing the core of the bid and preparing an application for Stage 1 of the process.

STAGE 2 APPLICATION

This phase involves submitting a more detailed application (as per Stage 1), an Economic Impact Tool, and an interview by the selection committee.

The level of individual partner contribution is based on budgeted costs and an estimated number of partners. Adjustments may occur based on actual costs and number of partners. Partners that join after each phase will be required to equalise their contributions by paying for past phases.

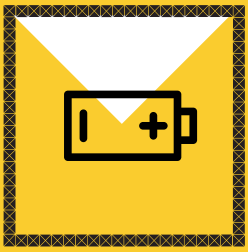
The CRC-RSEM bid team will acquit expenses against the bid budget and report that to the Bid Committee. Any surplus funds at the end of the bid process will be returned to the contributing partners, or at the partner's discretion, be made part of their first year's committed contribution to the CRC.

Partners are required to contribute in-kind resources relating to their individual participation during the bid process, including their own time and travel.

POTENTIAL PARTICIPANTS

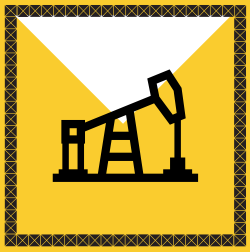
The CRC-RSEM will target the following Participant groups:

MINING COMPANIES



ENERGY COMPANIES

CHEMICAL COMPANIES



MINING EQUIPMENT, TECHNOLOGY AND SERVICES SUPPLIERS

ENVIRONMENTAL MANAGEMENT CONSULTANCIES

ENVIRONMENTAL MANAGEMENT PROTECTION AGENCIES

GOVERNMENTS

LEADING RESEARCH GROUPS

CONTACT

For further information or to participate in consultation events, please contact:

DR DAVID BLACKMORE

T **+61 4931 6605**
E **david.blackmore@industry.nsw.gov.au**

PROF RAVI NAIDU

T **+61 2 4913 8705**
E **ravi.naidu@newcastle.edu.au**

Potential Participants from WA may contact the above or:

ASSOCIATE PROF GUY BOGGS

T **+61 8 9263 9801**
E **guy.boggs@wabsi.org.au (WA contact)**