To: Productivity Commission, Australian Government

Re: Interim Report: Inquiry on Circular Economy Opportunities

11 April 2025

Introduction

AMEC appreciates the opportunity to provide feedback to the Productivity Commission on the Interim report for the Inquiry on "Australia's circular economy: Unlocking the opportunities".

AMEC provided a submission in response to the PC's initial call for information to support the Inquiry in November 2024[1]. Our submission included extensive information on circular economy opportunities in the mining industry, including several examples provided by AMEC members outlining successful programs and productive operations that align with the aims of the circular economy. We are pleased to note that the PC has used AMEC's industry feedback to further refine the direction of the Inquiry and note several mining industry comments are referenced in the interim report.

About AMEC

The Association of Mining and Exploration Companies (AMEC) is a national industry association representing over 550 member companies across Australia. Our members are mineral explorers, emerging miners, producers, and a wide range of businesses working in and for the industry. Collectively, AMEC's member companies account for over $100 billion of the mineral exploration and mining sector's capital value.

Mineral exploration and mining make a critical contribution to Australia's economy, directly employing 315,000 people. In 2023-24 Industry generated $415 billion in resources exports, invested $3.95 billion (2024) in exploration expenditure to discover the mines of the future, and collectively paid over $74 billion in royalties and taxes.

General Comments

AMEC and Industry are pleased that the Productivity Commission (PC) has included Mining as one of six priority areas selected as a national focus for circular economy opportunities. The scope of the PC's inquiry includes investigating the potential to lift Australia's materials productivity and efficiency. The interim report provides information that the mining industry is responsible for 86% of domestic materials extraction. This makes it a key opportunity for using circular economy principals to create more value from mining resources traditionally regarded as waste.

[1]AMEC. 2024. Submission to the Productivity Commission. Inquiry on Circular Economy Opportunities. https://amec.org.au/wp-content/uploads/2024/11/20241101-AMEC-Submission-Productivity-Commission-Circular-Economy-1.pdf#new_tab

Priority Opportunities for the Mining Industry

The PC indicates that the priority circular opportunities for mining relate to mining waste and post-mining land uses. Further stating that, “The adoption of circular economy opportunities in the exploration, extraction and processing phases of the mining life cycle is already relatively widespread in Australia.”

AMEC supports opportunities for mining waste and post-mining land uses recognising they offer economic gains for more productive materials usage. We would also like to ensure that the circular economy opportunities across the full mining life cycle are not discounted in this Interim report.

Many mineral exploration and mining companies are taking steps to adopt circular economy opportunities beyond mine waste and post-mining land use. However, this may not be as widespread as the PC report indicates and there remain a range of opportunities for further circularity gains.

Other opportunities for mining circularity

As well as targeted priorities for six key sectors, the PC report also considers a systemic approach to improve circularity across mining and other sectors. We appreciate that these also apply to the mining industry and would like to ensure that this expands opportunities for mining sector circularity that goes beyond mine waste and repurposing mine sites.

Many exploration companies are relatively small businesses with limited expertise and funds to commit to adopting circular economy practices. Cross cutting themes in Chapter 10 that support industry to navigate circular economy opportunities and innovation are welcome recommendations.

The Productivity Commission’s Interim report has refined the direction of the Inquiry across five key points for progressing circular economy opportunities in Australia. These key points form the basis of the PC’s further information seeking to support the Inquiry.

- Aims of a circular economy, to use materials and products more sustainably and efficiently, with economic, environmental and social benefits.
- Slow progress to uptake circular economy opportunities
- A key role for regulations to support circular activities
- A role for Government’s to facilitate and coordinate innovation diffusion through several mechanism.
- Need for more information to enable better decisions about circular opportunities.

AMEC’s submission on the Interim report includes feedback on these key points against the relevant reform directions and information requests. We firmly agree with the point made by the PC that “co-ordination between industry and governments could be improved”. Industry has a number of programs underway, and Government plays a leading role in supporting companies as they work to narrow and close the loop toward a circular economy that creates more value.

AMEC recommends that reform directions cover Government policies and functions across the full mining life cycle. The full mining life cycle begins with pre-competitive data and completes with mine site closure, rehabilitation and/or re-purpose. South Australia published a value-chain diagram with the Government functions to support each stage and this provides an excellent example of where policies can focus to make a difference (see Diagram 1 – below). Notably absent however, is the mining supply chain which services each step across the value-chain. These service and supply companies impact the value-chain footprint and should be considered in circular economy initiatives.

Diagram 1 - South Australia Minerals Value Chain and Government Functions[2]

There is still much more to be achieved together, and AMEC recommends:

- **Further data is captured to identify gaps in circular economy practices across the full mining value chain. This includes pre-competitive data, mineral exploration, development, mining, processing, exporting, mine closure, rehabilitation and re-purposing. This also includes the supply chain, employees and synergies with community requirements.**
- **The PC make recommendations for policy reforms that include circular economy opportunities for the full mining value chain.**
- **The Commonwealth Government undertake a national assessment of state-based and Commonwealth regulations. This should include understanding barriers to reprocessing mine waste and repurposing mine sites.**

Reform direction / Information request 7.1 – Reducing regulatory barriers to circular economy opportunities for mining waste and alternative post-mining land uses

The PC is considering whether there is scope to reduce regulatory barriers related to circular economy opportunities in mining waste and repurposing land post-mining. An assessment of these barriers across state, territory and Australian government policies could consider:

- *processes and permissions required to re-mine or re-purpose mining tailings*
- *regulations and practices that make it difficult for multiple operators to co-exist on a mine site*
- *restrictions on transporting mining waste*

[2] 2017. SA Department for Energy and Mining. Mineral Exploration in South Australia 2017: Commodity report. https://demstedpprodaue12.blob.core.windows.net/mesac-public/resources/files/4358073/RB201700047.pdf

- *regulation and practices that maximise net environmental, economic and social benefits from mine transitions, including repurposing infrastructure associated with mine sites*
- *regulations limiting the ability of new operators to take on mine sites for alternative higher-value uses, such as liabilities for legacy environmental impacts.*

AMEC supports this reform direction including a national assessment of regulations to identify and reduce barriers to reprocessing mining waste and repurposing mine sites. The PC Interim report specifically states that it will not undertake this work as part of this Inquiry. The PC should recommend this work is undertaken by the Commonwealth Government as part of a broader recommendation that the Commonwealth provide overarching direction for productive circular economy gains in Australia.

Regulatory Barriers

Example - Regulatory restrictions on transporting mining waste

In Queensland benign waste rock is unable to be used off site as it is considered 'quarry material'. Companies that operate a mine are regulated differently to those operating a quarry, resulting in this issue. There are instances where large rocks are imported from overseas for various uses in dam and port construction when local materials from mines could easily provide resources. Regulatory changes to allow waste rock from mines to be used offsite would result in waste reduction on mine sites and reduce the environmental impact of quarrying the same material somewhere else.

Example – Regulatory restrictions on alternative post-mining land uses

It is not always appropriate that a mine need to go back to its previous land use. There are many other commercial uses that could be beneficial, that are not able to be considered under the current regulatory regimes. To plan for post-mining land use options, social and environmental impacts must be considered up-front in assessment and approvals process. That is – begin planning with the end in mind. Legislation that includes flexible post-mining land use options should be encouraged at all levels of Government.

Example – Critical Minerals Production Tax Incentive does not incentivise recycling

The Critical Minerals Production Tax Incentive (CMPTI) is a signature piece of legislation underpinning the Government's Future Made in Australia platform. It is designed to facilitate greater downstream processing of critical minerals in Australia by offering a tax incentive. It explicitly excludes recycling of minerals a feedstock. Consequentially this reduces the circular economic advantages which may have occurred as a corollary to the critical minerals downstream processing.

Information request 7.2 – Ways Governments could facilitate circular economy opportunities for mining waste and alternative post-mining land uses

Legislation and regulations that govern options to re-mine or re-purpose mining waste and post-mining land uses are different in each State or Territory. Remediation is the process of repairing the impacts of mining activity on the environment. It is a normal part of mining and is the final stage in a mining operation when a mine closes. It is required to be completed by the company and most States now enforce the requirements of bonds and levies to ensure costs to remediate are covered including if a company defaults on the project.

The long-term objectives of remediation can vary from simply making the site safe and stable, to creating a landscape that can support future uses of the land. These include returning it to agricultural land or identifying new beneficial uses. Mining that occurred many years ago may not have been remediated to the high environmental standards we expect today.

This is a major issue and Governments are having to manage abandoned mines as these have become the responsibility of the Crown. Most States and Territories have Abandoned Mines Programs. However, while some States treat former mines as liabilities others treat them as an asset and have developed supporting policies aligned with circular economy principles. These are aimed at further productive outcomes such as recreational and commercial outcomes.

Western Australia – Abandoned Mines Policy and Mining Rehabilitation Fund [3]

Western Australia has had a Mining Rehabilitation Fund since 2012. The Department of Energy, Mines, Industry Regulation and Safety's (DEMIRS) Mining Rehabilitation Fund (MRF) is a pooled fund to which Western Australian mining operators contribute. This is underpinned by an abandoned mines policy and supported by a database with extensive features and supporting information. This includes descriptions of any remaining low-grade ore, stockpiles, tailings and residue storage. While this is aimed at understanding the liability, there are options to utilise the data to inform potential commercial production from these materials.

Example – Black Diamond

Black Diamond is an abandoned mine site located in the town of Allanson 5km west of Collie. It was mined for coal between the late 1940s and early 1950s. The discontinuation of mining resulted in the pit filling with water, creating a pit lake around 700m in length. Black Diamond was the first pilot project under the Abandoned Mines Program. It was selected in response to community concerns regarding safety at the site, which had become a popular, unmanaged recreation area.

The focus of the project was to address the safety risks. Following stakeholder consultation with landowners and the Black Diamond Working Group, earthworks and site management of heavily eroded areas were followed by revegetation works in 2017. The primary safety risks associated with the site have now been mitigated and the Black Diamond Lake is a picturesque swimming hole promoted on social media which has led to a tourism boom for the region.

Queensland Government Abandoned Mines Management Policy

There are over 100 larger scale complex abandoned mines in Queensland, and in excess of 15 000 small scale historic mining disturbances. Queensland's Abandoned Mines Management Policy defines the objective to make sites safe, secure, durable and productive.

A Risk and Prioritisation Framework applies a transparent, robust, repeatable and risk-based approach to address hazards of abandoned mines. Re-commercialisation and repurposing criteria inform site assessment and management options, identifying priority sites for remediation, re-commercialisation or re-purposing[4].

Queensland's Financial Provisioning Scheme, introduced in 2019, helps manage financial risks associated with the environmental and rehabilitation obligations of current resource activities and provide funding for remediation of abandoned mines.

[3] https://www.wa.gov.au/organisation/resource-and-environmental-regulation/about-the-mining-rehabilitation-fund

[4] Grabski, A., Hall, T., Stones, A. 2023. QUEENSLAND'S ABANDONED MINE LANDS PROGRAM. https://www.resources.qld.gov.au/__data/assets/pdf_file/0010/1726048/andrew-grabski-WMC-poster.pdf

Example – Wolfram Camp Mine pilot program to release an abandoned mine site for re-commercialisation

Wolfram Camp Mine, Bamford Hill mine and surrounding exploration areas are part of a Queensland Government pilot program to re-introduce resource activities on an abandoned site. The area was released as a call for tenders for an exploration permit in 2023.

The site includes a former tungsten mine. Demand is growing globally for critical minerals like tungsten, which is used in many renewable technologies. To help inform the tender release, the Government conducted a market sounding to gain industry feedback on the commercial viability for the area. Queensland Minerals completed a release of high-quality information on the area.

EQ Resources Ltd was awarded the tender for resource exploration across the area. This is a critical next step in the pilot program to re-commercialise the former Wolfram Camp mine. EQ Resources must now meet any environmental, native title and other approval requirements before the exploration permit for minerals can be considered for grant under the Minerals Resources Act 1989. Re-commercialisation of abandoned mines is a focus of Queensland's Critical Minerals Strategy[5].

Northern Territory – Legacy Mines and the Mining Remediation Fund [6]

In the Northern Territory (NT), all mining operators must pay a security and an annual levy to fund projects that address the legacy mines liability. The levy is 1% of the security and is non-refundable. It is used to support the Mining Remediation Fund (MRF).

The long-term objectives of remediation can vary from simply making the site safe and stable, to creating a landscape that can support future uses of the land. These include returning it to agricultural land or identifying new beneficial uses.

Example – Sandy Flat Mine (former Redbank Mine)

Copper oxide was first discovered in the area in 1916. Since then, the Redbank copper deposits have been worked intermittently[7]*. This included; mining from the Sandy Flat Pit and processing to produce copper concentrate. Mining activities at the site (between 1994 and 1996) led to environmental impacts primarily caused by acid and metalliferous drainage (AMD). Following the cessation of mining activities, an estimated 54,000 tonnes of partially treated and potentially acid forming material remained stockpiled on the surface at site. Attempts to re-commercialise the site occurred between 2004-2009 with heap leaching of stockpiles with limited success. Although this was not entirely successful, this does demonstrate the willingness of Government and industry to work together to make productive use of mining waste.*

Several studies have since been completed to inform the remediation planning, including; waste characterisation and a conceptual hydrogeological model and water load balance model. Remediation of this site is complex and extensive planning and consultation is required to identify the most appropriate remediation model.

---

[5] 2023. Queensland Government. Department of Resources. Queensland Critical Minerals Strategy www.nrmmrrd.qld.gov.au/__data/assets/pdf_file/0005/1726430/critical-minerals-strategy.pdf

[6] https://nt.gov.au/industry/mining/legacy-mines-remediation/legacy-mines

[7] https://nt.gov.au/industry/mining/legacy-mines-remediation/remediation-projects/mining-remediation-fund/sandy-flat-mine-former-redbank-mine/redbank-history

Example – Stawell underground physics laboratory (SUPL) in disused area of active mine

The previous examples demonstrate opportunities where Government has stepped in to remediate and attempt to re-commercialise an abandoned mine that is the responsibility of the Crown. Unlike these, the Stawell SUPL occurs on the site of a currently active mine and is making the most of an area where mining is now complete.

In July 2019, a formal agreement between Stawell Gold Mines, the Northern Grampians Shire Council and the University of Melbourne was signed to build and operate the laboratory with funding from the Federal and Victorian Governments as well as the Australian Research Council.

The SUPL is located 1km below ground in a disused area of the Stawell Gold mine which continues to operate. The SUPL provides an ultra-low background environment for extreme precision measurement. It is a national research facility for experiments that require, or would benefit from, its unique low background environment, such as quantum technology, dark matter detection, nuclear and background radiation detection, as well as those that benefit from the isolated, controlled, and stable underground environment, both within the laboratory and potentially through the mine's tunnels.

Incentives to reuse existing mining operation plants, equipment and camps

There is an increasing focus on reusing mining waste rock, tailings and repurposing open cut mining pits, aka 'the hole in the ground' and the PC has made this the focus for the recommended mining sector priority. Alongside these there is an opportunity to consider mining infrastructure.

Relocating mining infrastructure is expensive and there are likely numerous abandoned infrastructure at mines that could have a productive next life and that is currently underutilised. The market for selling, purchasing and relocating this infrastructure should be further investigated. Companies about to start or upgrade mining infrastructure may not be aware of second had options and may not have funds for relocation. The second-hand mining infrastructure market could be supported by circular economy policies including incentives to reuse otherwise abandoned equipment.

A cursory literature study by AMEC has found several references on repurposing infrastructure, including;

- *Finucane et al* discuss key success factors, imitations and decision-making for post-mining use of infrastructure including long-term vision and a business case. They also note that in some instances, legislative change and marketing plans are critical to allow appropriately timed and cost-effective custodial transfer of infrastructure assets. [8]
- *Ostrega et al* attempt to characterise the actions that led to abandoning plans to demolish post-mining buildings. This shift was due to recognising resources in obsolete buildings and non-functional equipment.[9]

[8] Finucane, SJ & Tarnowy, K 2019, 'New uses for old infrastructure: 101 things to do with the 'stuff' next to the hole in the ground', in AB Fourie & M Tibbett (eds), *Mine Closure 2019: Proceedings of the 13th International Conference on Mine Closure*, Australian Centre for Geomechanics, Perth, pp. 479-496, https://doi.org/10.36487/ACG_rep/1915_40_Finucane

[9] Ostrega, A.; Szewczyk-Swi ¸atek, A.; Cała, M.; ´ Dybeł, P. Obsolete Mining Buildings and the Circular Economy on the Example of a Coal Mine from Poland—Adaptation or Demolition and Building Anew? Sustainability 2024, 16, 7493. https://doi.org/ 10.3390/su16177493

Reform direction / Information request 10.1 – Governance arrangements to harmonise regulations that pose barriers to circularity

Environment and Economic portfolios working on Circular Economy opportunities

Achieving circular economy objectives requires a multidisciplinary approach. The PC outlines in the introduction to the Interim report that circulatory has economic and productivity benefits that reduce harm to the environment, and these contribute to social benefits. Responsibility should be a dedicated forum and not solely assigned to Environment portfolios. Economic portfolios have greater experience with industry project delivery, and it is important that State Development and Green Industry portfolios are also involved in progressing circular opportunities. AMEC notes that there would be benefit in a dedicated, but lean, intergovernmental co-ordination office.

State and Territory Circular Economy and Waste Strategies

Most States and Territories have a Government led Circular Economy Strategy. It is noted that these are largely focused on waste related to consumables. Mining is not referred to at all in some of these strategies. Where it is included it is in relation to onsite waste disposal only. There is an opportunity for the PC to reflect that these State based strategies should give more regard across the sectors and included strategies beyond opportunities related to consumable waste.

Harmonisation of regulations - Environmental Regulations example

The PC proposes that the Australian Government facilitates coordination between State and Territory government to harmonise inconsistent regulations across jurisdictions. While this sounds ideal, there are issues and unintended consequences to be considered. These include:

- Layering of Commonwealth and State regulations creates potential for duplicative regulations and a complicated pathway for project proponents to achieve approvals and compliance for projects.
- Legislation that provides procedural certainty, streamlines project approvals and minimises duplication with a single assessment process is imperative.
- Harmonisation with one size fits all regulations would be difficult to operate and must consider the nuances of individual State or Territory input variables for projects. This includes water, energy, natural resources, land access, human resources and capital - including social capital.

Example – Regulatory Harmonisation for project environmental approvals

The requirement for mining projects to obtain both Commonwealth EPBC Act and State environmental approvals is an example of duplicative legislation that should be avoided for the following reasons:

- The timing of the EPBC Act assessment does not match the timing of the State assessment timeframes. It is simpler to submit separate assessments to the Commonwealth and State Governments. This is counter to the aims of the State EPBC Act Bilateral Agreements and needs to be addressed as it delays project approval and delivery timeframes.
- The information required and timing for EPBC Act referrals doesn’t align with State approvals processes. This results in project delays and increased costs, with similar information being provided twice.
- Compliance reporting is required under both the EPBC Act and State Mining Acts and companies are providing two reports. A single report should suffice for projects assessed under both the single assessment (through the Agreement) or dual assessment process.

AMEC advises recommendations to Government for regulatory harmonisation that avoids these issues, reduces duplication, increases bureaucratic efficiencies and saves company time and money.

The EPBC Act allows for agreements between governments to assess projects together. Under a bilateral agreement, the Australian Government and state or territory authorities agree to follow processes to assess environmental impacts that reduce duplication. These assessments can be efficient and effective.

Information and Data sharing

There is an opportunity for the Commonwealth to facilitate data capture and sharing by establishing and maintaining single point of truth databases for circular economy projects across all jurisdictions. This includes pre-competitive data capture and an excellent example of this is Geoscience Australia's Atlas of Australia's Re-mining potential [10]. This is an online geospatial database with key project data highlighting identified projects with potential for re-mining according to certain criteria.

The State's also have information relating to abandoned/legacy mines which could be bought up to certain data standards. However this would require investment and may be considered a lower priority for State Governments who are funding exploration discovery incentive programs and critical minerals programs with proven returns on investment.

Standards

AMEC supports standards on waste classification that builds on the strategic direction outlined by the Heads of EPA Australia and New Zealand. We note that ideally if all States are aligned on national guidelines this would be beneficial. It is rarely the case that standards can be applied ahead of a developing sector and there is a window of opportunity to do this now before States and Territories bed down their own standards and terminology.

Planning and zoning

Many mines are located in remote locations with the nearest resource recovery facilities hundreds to thousands of kilometres away. Planning and zoning can play a key role in redirecting onsite waste from mining operations to resource recovery facilities for economic and / or environmental gain.

There is a role for State Development portfolios that administer dedicated State Development and Co-ordination legislation to develop priority plans for location of resource recovery facilities that service mines and communities in regional areas. These should be developed with regional stakeholders and project proponents for commercial gain contributing to a more productive economic outcomes from waste streams.

Example – Western Australia State Waste Infrastructure Plan 2024

Western Australia's State Waste Infrastructure Plan 2024[11] cites numerous opportunities in relation to regional collection and disposal of waste. This includes collaboration, partnership or sharing of transport or infrastructure resources with the mining industry. The Plan also notes:

[10] Geoscience Australia. Atlas of Australia's Re-mining potential. Accessed 2 April 2025. https://portal.ga.gov.au/persona/australian-remining-potential

[11] 2024. WA Government. State waste infrastructure plan. Western Australia. May 2024. www.wa.gov.au/system/files/2024-05/state-waste-infrastructure-plan-2024.pdf

- *"Quantification of waste generation and infrastructure needs for the local mining sector could lead to complementary activities that support local communities.*
- *Location in the Pilbara can also de-risk recovered organic product offtake through access to strong local agricultural markets and mining rehabilitation activities.*
- *Investigate potential synergies between the waste generation and infrastructure needs of mining operations and nearby MSW, C&I and C&D waste generators, to potentially decrease the scope of infrastructure planning and facilitate complementary activities that support local communities."*

The plan also notes regulatory barriers around land use, citing "Land use constraints (including environmental impact, native titles, Indigenous and cultural heritage areas, and mining tenements) in the Karratha area risk limiting new development options."

Reform direction / Information request 10.2 – Supporting coordination, facilitation or brokering services

Many exploration companies are relatively small businesses with limited expertise and funds to commit to adopting circular economy practices. This is also the case for the range of service and supply companies supporting mineral explorers and the broader industry across the full value chain. There are opportunities to tap into regional supplier groups to find out more about circular economy practices and what it will take for small suppliers to embed these practices in their services.

These businesses are largely supported by State Government Mining Departments. There is a role for other agencies to help build business capability in this area through grants and education programs.

Example - TACTIC

Tactic is an independent member-driven organisation that fast tracks the linking of local supplier capability to major project proponents, supporting their success through supply chain integrity. They are experts in connectivity and have extensive industry links and are a trusted source of regional intelligence to all levels of government and business. Tactic promotes the value and capability of using local suppliers within the Upper Spencer Gulf region to provide products and services for a range of industries.

Example – Green Industries SA (GISA) – Assess Implement Monitor grants

GISA's Business Sustainability Program aims to expand South Australia's green industry sector by supporting businesses, organisations, and industries to apply sustainability and circular economy principles in the commercial production of goods and delivery of services. Program staff offer advice and assistance to help accelerate sustainable change and transition to a more circular economy.

As part of the program, GISA's Assess Implement Monitor grants[12] offer businesses and not-for-profits funding to improve environmental sustainability. Grants provide up to $20,000 to help organisations assess their current practices, implement improvements, and monitor progress towards a more circular economy. Funding supports assessments of materials efficiency, waste management, circular economy principles, and scope 3 emissions strategies. Additional implementation funding is available to act on assessment recommendations. The program contributes to the delivery of South Australia's Waste Strategy 2020-25, Valuing our Food Waste - South Australia's strategy to reduce and divert household and business food waste, and South Australia's Net Zero Strategy 2024-2030.

[12] 2025. Green Industries South Australia. https://www.greenindustries.sa.gov.au/funding/aim-grants

Reform direction / Information request 10.3 – Supporting greater adoption and diffusion of circular innovations

Challenge-based funding for innovation

The mining industry has several successful examples of challenge-based competitions to accelerate innovation. These have been offered by industry, Government and partnerships. Similar competitions could accelerate circular economy innovation.

Example – Unearthed Challenges [13]

Running global challenges for over a decade, accelerating open innovation in the resources sector and connecting mining partners with capabilities to solve their hardest challenges. Unearthed present significant opportunities to drive global transition to sustainable resource extraction.

Example - Think & Act Differently (TAD), Powered by BHP [14]

BHP find people with the best technology solutions to support BHP's ambitions in delivering resources the world needs in innovative ways. They help innovators develop their technology and ideas, accelerating the creation of new options. Using a systems approach, TAD ensures a continuous flow of new technologies and capabilities to meet today's needs and build a roadmap for future value.

Example - Thinking Critical South Australia[15]

Thinking Critical South Australia was an initiative of the Government of South Australia in partnership with Unearthed. They delivered a global online crowdsourcing challenge aimed at fostering the growth and development of a world class, leading, critical minerals sector. It was an open innovation challenge with a prize pool of $250,000 for innovators to propose how their business and ideas could deliver value to the critical minerals sector.

Connecting industry and entrepreneurs

Example - CORE Innovation

CORE Innovation builds ecosystems and innovation infrastructure for the resources and energy sector. CORE has established Australia's largest national ecosystem for suppliers, researchers, entrepreneurs and industry to connect and collaborate on innovative solutions across mining, resources, energy, defence and space sectors. They have physical spaces in Perth, Newman, Adelaide and more than 5,500 members and offer a range of programs, events and networking opportunities. They Government of South Australia was a foundation partner.

Review Fiscal Policy Incentives and broaden the R&D Tax Incentive

The Institute for Sustainable Futures prepared a Rapid Review for the New South Wales Government[16]. They note that, "*The current use of fiscal policy in Australia to drive a circular economy (CE) is extremely limited and warrants exploration for its potential to drive both businesses and consumers towards CE activities.*"

---

[13] Unearthed. Accessed 2 April 2025. https://unearthed.solutions/

[14] Think & Act Differently. BHP. Accessed 2 April 2025. https://www.thinkactdifferently.com/about

[15] Thinking Critical. Government of South Australia. Accessed 2 April 2025. https://unearthed.solutions/u/challenges/thinking-critical-south-australia-round-2

[16] 2022. Rapid Review: Taxation and Fiscal Policy for a Circular Economy. Prepared for NSW Circular by the University of Technology Sydney, University of Sydney, University of New South Wales. https://circularaustralia.com.au/wp-content/uploads/2022/03/NSW-Circular-Industry-Rapid-Review-2022.pdf

The review consolidates international literature regarding fiscal policy to drive a CE, both in terms of proposals and experiences with implementation. The report also identifies current best practice and identify opportunities for fiscal policy reform including recommendations across all levels of Federal, State and Local Government in Australia.

The Australian Government's R&D tax incentive program is considered the most significant lever for funding innovation and R&D. It plays a pivotal role in shaping the nation's economic future and bolstering Australia's global competitiveness. The program encourages companies of all sizes to undertake R&D activities they might not otherwise. AMEC recommends that the PC recommend a review of the R&D Tax incentive as a mechanism for stimulating circular economy innovation growth.

Reform direction 10.4 – Government support for place-based circular initiatives

There is a role for State Government planning and zoning to remove regulatory barriers and create opportunities for byproducts to be shared between facilities. This industrial symbiosis is challenging given large distances from mining operations and other resource recovery and industrial facilities. Regulations also may rightly prevent transport of potentially contaminated waste offsite. Support is needed for regional or onsite facilities that can generate commercial income streams from waste such as tyres, camp kitchen waste, single use containers, vehicles, equipment, chemical, hydro chemical streams and much more would advance circular economy objectives.

Reduced transport of bulk ore products for offsite smelting also reduces carbon emissions. For example, ammonium sulfate is produced as a by-product at Olympic Dam where ore is processed and smelted onsite. Comparatively, sulfuric acid is recovered as a by-product of ore treatment at Port Pirie from ore sourced around Australia. Options for regional co-operative smelters and third-party use of nearby smelters owned by other companies are potential solutions. Where miners are not investing in processing themselves, options to engage third party on-site smelter operators could be encouraged.

Tyre Recycling

The mining and exploration industry uses a substantial number of off-the-road tyres and is faced with challenges in recycling or disposing of those tyres. It is common practice in the mining and exploration industry to dispose of off-the-road (OTR) tyres on their site through legal means, due to the immense size of these tyres. However, with the increased focus on company ESG credentials due to society, shareholder and investor sentiments, companies are looking for new ways to recycle old OTR tyres.

Currently, the biggest hurdle for companies to transition away from disposal and towards recycling of OTR tyres is purely the cost factor. Recycling old OTR tyres requires extensive transportation and disposal costs. AMEC provided a submission to the WA Department of Water and Environmental Regulation led consultation on the National End-of-Life Tyres Options Project aiming to address these issues[17]. AMEC notes that, as the largest consumers of OTR tyres in Australia, the Government and industry must explore opportunities to better dispose of and/or recycle end-of-life tyres.

[17] 2024. AMEC submission to DWER. National End of Life Tyres Options Project. https://amec.org.au/jurisdiction/wa/

Final comment

AMEC and industry welcome the opportunity for further engagement with the Productivity Commission on the Circular Economy Inquiry. We would like to thank the PC for reaching out to arrange focus group meetings with AMEC industry members to directly engage on Chapter 7: Mining reform directions as well as other opportunities.

The mining industry, backed by research and investment partners, is working together with communities, including traditional owners, to develop and deliver programs that can narrow the loop to deliver circular economy outcomes with local, national and global impact. The range of programs spans much more than waste management opportunities that Government has focussed on to date.

To deliver on mining industry programs, coherent circular economy policies that do not simply duplicate existing regulatory requirements and reporting would be appreciated by industry. There is a leading role for Government to facilitate co-investment in mining industry initiatives and foster a range of collaborative partnerships. A clear pathway for the mining industry to participate in these would be appreciated by industry.

For further information contact:

Peta Abbot
Director, South Australia
Association of Mining and Exploration Companies