

**To: Productivity Commission, Australian Government**

**Re: Inquiry on Circular Economy Opportunities**

**1 November 2024**

## **Introduction**

AMEC appreciates the opportunity to provide feedback to the Productivity Commission Inquiry on Circular Economy opportunities.

## **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 over 274,000 people. In 2022-23 Industry generated a record high \$466 billion in resources exports, invested \$4.27 billion (2023) in exploration expenditure to discover the mines of the future, and collectively paid over \$63 billion in royalties and taxes.

## **General Comments**

The demand for minerals is escalating to keep up with the global pace of development and to meet net-zero Government mandates. While metals and other minerals are almost infinitely recyclable, this can only provide a small fraction of supply. Mining of new minerals is critical to supplying the large volumes of raw materials needed for building and construction, clean energy, electronics, medical purposes, industrial and domestic products that society needs.

The management of environmental and social impacts associated with mining is critical for social licence for operations. The mining industry is highly regulated and is applying the principles of a circular economy to mitigate these impacts. Many companies are rapidly evolving business models and the necessary technologies to extract more value from our finite mineral resources while better managing water, energy and other resources critical to their recovery. This is creating new supply and economic avenues through a range of mineral recovery, waste management and recycling programs.

AMEC's submission provides feedback on the opportunities, challenges and recommendations for growing the circular economy in the mining industry and references several success stories and programs underway to demonstrate what is possible. There is more to be done, 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.

## **Key challenges and recommendations**

### **Develop coherent circular economy objectives and an action plan**

Australia's circular economy objectives and actions are not coherent and exist under the banner of several other Government strategies, legislation and policies. These are not industry specific and often focused on urban waste. AMEC and industry would welcome an action plan that includes circular economy opportunities for the mining industry to grow business value. Plans should consider ESG objectives, align with global circular economy best practice and complement State Government plans to prevent duplication and 'reporting' fatigue.

### **Simplify participation in industry grant programs for circular economy projects**

Governments provides several grants and funding opportunities for industry, however industry can find these difficult to navigate. AMEC would welcome a one-stop shop, including case managers, that provide a clear path to maximise industry participation in these programs. Government should also consult with the mining industry on fit-for-purpose programs to achieve circular economy objectives.

### **Support targeted research and development across the industry value-chain**

Innovative novel solutions to unlock circular economy opportunities require collaborative partnerships. Industry welcomes further Government support to work with researchers and innovators to advance circular economy technologies and solutions that can deliver economic value and ESG objectives. Examples of industry programs underway include:

- Mine Waste Transformation through Characterisations – MiWatch Qld
- Alternative Use of Tailings and Waste – Minerals Research Institute of WA
- Critical Minerals and Circular Economy Research Alliance – Qld Government/UoQ
- Critical Minerals Strategy, METS Collaborative Project Fund – Qld Government
- Critical Minerals and mine waste program – SA Geological Survey

### **Use existing regulatory frameworks for new avenues of mineral recovery**

Implementing circular economy principles should not impose additional approvals, compliance or onerous reporting on the mining industry. Rigorous mining legislation such as State Mining Act and the Commonwealth EPBC Act, already comprehensively address environmental and social impacts and other relevant legislation. Existing legislative frameworks should be used where possible with risk-based policy development practices to support new activities for circular economy outcomes.

### **Deliver policies and incentives that support decarbonised mining operations**

Emissions waste is a circular economy challenge that fits with several Government programs including the Commonwealth's Net Zero Industry plans and the Safeguard mechanism. Access to low cost 24/7 decarbonised electricity remains a challenge and needs to be addressed. Government planning and support for more mining operations to connect to decarbonised grid electricity would be appreciated by industry together with clean energy solutions for remote off-grid mining operations.

### **Sustainable water supply for mining projects and technology to reduce water demand**

In the mining industry, water is critical for mineral processing circuits, grinding, flotation, slurry transportation and hydrometallurgical operations. The draw down of primary water resources can be managed with water recycling initiatives and advancing technologies that enable dry mineral processing, but there is still a way to go before these technologies are cost competitive and widely available to industry. Government support to further develop technologies could substantially increase

more efficient use of Australia's limited water supplies. Moving away from using stressed water systems to sustainable sources such as desalination requires significant investment and should be supported by Government. The Northern Water project in South Australia is an excellent example.

### **Planning and sustainable future fit infrastructure**

Government led planning for mining and processing hubs with integrated services, recycle facilities, power and water located near ports can provide resource and economic efficiencies to meet circular economy outcomes. Connected infrastructure corridors that consider future mining industry needs for decarbonised electricity and sustainable water supplies, and decarbonised pit to port transport of mineral products, would be appreciated by the mining industry. Government should also consider support to leverage better third-party agreements to ensure ports utilise capacity. Suitable local mine waste rocks should also be considered for construction of roads, ports and other local infrastructure.

### **Social licence for mining and materials stewardship recycling opportunities**

Large volumes of new minerals are needed, and recycled metals and mineral materials cannot meet all society's needs. Government can lead messaging and reinforce the importance of the minerals industry and mining that is necessary to meet net zero targets. There is concern around growing wastelands of renewable energy infrastructure and Government must apply circular economy principles full across the full mining life-cycle, including mechanisms to encourage recycling of downstream mineral products. This will create opportunities for mineral processors to accept a broader range of raw feed and scrap material.

Government messaging around the high regulatory bar for mining operations and support for solutions that lower environmental and social impacts can create community confidence in the industry and help create social licence. Well planned industry hubs that encourage communities to study, work and live locally can save on transport emissions, offer multi-generational jobs and contribute to better social outcomes.

### **De-risk Australia's expensive capital investment in mining projects.**

Achieving circular economy and ESG commitments along with the high-bar set through Australian mining industry laws comes at a price. Australian producers need to remain competitive in domestic and global markets and Government should work to promote mineral products made in Australia over other jurisdictions with less favourable environmental and social impacts. The Australian Government is working on a Guarantee of Origin which can also help with offtake agreements and secure long-term supply from Australian miners and mineral processors.

Other nations are attracting global capital away from Australia through incentive programs such as the US Inflation Reduction Act. Government programs that signal confidence and investment in minerals projects can attract additional private sector investment. More incentives are required to attract global capital to Australia. The Critical minerals production tax incentive, Tasmania's royalty rebate scheme incentivising reprocessing of tailings, and NSW critical minerals royalty deferment are a good start.

### **Opportunities for the circular economy and mining**

The mining industry is progressing a range of circular economy initiatives. Many of these are already part of meeting regulatory requirements, while others are voluntary and in line with company ESG principles to deliver best practice environmental and social outcomes. There are many more circular economy opportunities that can be accelerated with pro-active Government policy to support industry and stakeholder objectives. The CSIRO report, 'Australia's comparative and competitive advantages

in transitioning to a circular economy<sup>1</sup> outlines several opportunities in the mining sector. AMEC and industry have included these and other opportunities in the list below.

1. Metal recovery from mine tailings
2. Re-processing mine waste and smelter waste to extract metals
3. Re-purposing waste rock in construction and infrastructure
4. Re-using mines for pumped hydro energy and second-life mining operations
5. Designing mining operations and downstream products for reuse and recycling
6. Sustainable water sources and recycling water
7. Clean energy and decarbonisation in mining operations to reduce emissions waste
8. Supply chain commitment to sustainable and recyclable materials
9. Waste management

### **1. Metal recovery from mine tailings**

“Many mining operations have traditionally focused on one or two primary commodities, ignoring the co-occurring metals that may have had low economic value until recently. Driven by the modern energy transition, those co-occurring metals are more valuable and can be found accumulated in mine waste. Around 10 billion tonnes of tailings material is produced annually around the world. Most of this material is from metalliferous sulphide mines, particularly copper mines. Cobalt and other critical minerals commonly occur in association with these primary metals but are not always extracted. Decades of traditional mining have resulted in significant accumulations of cobalt and other metals at surface, already crushed, in tailings dams and waste stockpiles all over the globe.”

#### ***Success story – Cobalt Blue Holdings / ReMine+, Broken Hill***<sup>2</sup>

Cobalt Blue is transforming mine waste into a valuable resource through a process pioneered at its Technology Development Centre in Broken Hill. This project is setting an example in reprocessing and recycling mine waste by using innovative mineral processing technology to extract cobalt from pyrite - a critical component in batteries for electric vehicles (EVs) and other sustainable technologies. Cobalt Blue’s patented processing technology breaks down pyrite and other sulphides to produce metals such as cobalt, copper and nickel, as well as elemental sulphur and iron oxide. The generation of elemental sulphur means that the remaining material has significantly lower potential to form sulphuric acid, reducing the likelihood of environmental harm through acid mine drainage. The technology is being successfully applied to multiple sites across Australia and North America and has consistently achieved encouraging results of >90% pyrite conversion to pyrrhotite and sulphur.

### **2. Re-processing stockpiles and smelter waste to extract metals**

#### ***Success story – Mount Carbine, EQ Resources***<sup>3</sup>

EQ Resources has a circular economy approach to producing tungsten concentrate and quarrying products from its Mt Carbine operations in far north Queensland. The company uses advanced sensor-based sorting technology, specifically x-ray transmission, to process historical stockpiles with

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<sup>1</sup> CSIRO. 2024. [https://research.csiro.au/circulareconomy/wp-content/uploads/sites/303/2024/04/23-00596\\_ENV\\_REPORT\\_AustraliasComparativeAndCompetitiveAdvantages\\_WEB\\_240404.pdf](https://research.csiro.au/circulareconomy/wp-content/uploads/sites/303/2024/04/23-00596_ENV_REPORT_AustraliasComparativeAndCompetitiveAdvantages_WEB_240404.pdf)

<sup>2</sup> Cobalt Blue Holdings. 2024. <https://cobaltblueholdings.com/projects/remine-plus/#>

<sup>3</sup> EQ Resources. 2024. Circular Economy. <https://www.eqresources.com.au/site/sustainability/circular-economy>

low tungsten content. This ground-breaking technology enables the company to economically extract valuable tungsten while recycling clean waste material, thereby reducing the environmental footprint. The technology also enables a larger size fraction of the feed material to be maintained, resulting in significant reductions in energy and water consumption during downstream processes.

#### ***Success story – IGO Ltd<sup>4</sup>***

At IGO's Forresteria Operation (in care and maintenance), a significant stockpile of acid-forming nickel-containing scats was reprocessed using a novel process that improved the physical characteristics of the material, while upgrading the nickel content, allowing for nickel recovery. This significantly reduced the size of the scat stockpile, turning a previously unused material with potential adverse environmental impacts into a valuable resource.

IGO also re-used a proportion of tailings material as a replacement for paste backfill, a material that is used to fill mined voids underground to provide stability to surrounding rock. Reusing tailings reduces the related expense and GHG emissions associated with the purchase and transport of alternative backfill materials and reduces the volume of tailings disposed of in their TSFs.

#### ***Success Story – ABx ALCORE technology<sup>5</sup>***

ABx ALCORE is developing the ALCORE process to produce hydrogen fluoride and then aluminium fluoride from a waste product created during the aluminium smelting process. The technology's potential to create the product from waste makes for circular production, lowers the cost of creating aluminium fluoride because pricy fluorspar is no longer required, and lowers reliance on imports for Australian aluminium producers. The project is supported by a \$7.5 million grant funding under the Australian Government Modern Manufacturing Initiative. This supports the company's aluminium bath recycling pilot plant and planned commercial plant at Bell Bay, Tasmania.

### **3. Re-purposing waste rock in construction and infrastructure**

In the process of extracting valuable mineral ores, there is often considerable volumes of overburden and waste rock extracted from mining operations that can be a valuable resource and given a second life as a construction material. Using mine waste rock in this way can narrow the loop by reducing demand and disturbance on dedicated quarries.

#### ***Success story – Mount Carbine, EQ Resources<sup>6</sup>***

The Mount Carbine operation embodies a circular economy approach, driving the production of critical minerals like tungsten from historic stockpiles while simultaneously producing sustainable and responsibly sourced quarry products for the development of the Far North Queensland region. Aggregates are produced as an additional revenue stream, turning clean waste rock into vital construction materials used for ports, boat ramps and roads. The project has been supported by several Government funding and grants programs. EQ Resources won the AMEC 2022 Environment Award for their commitment to sustainable development and environmental excellence.

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<sup>4</sup> IGO Ltd. Sustainability Report 2024. <https://www.igo.com.au/site/pdf/d09d7021-630c-4e25-bd35-2c06b2b748ec/IGO-Sustainability-Report-2024-Interactive.pdf>

<sup>5</sup> ABx Group. 2023 Annual Report. <https://abxgroup.com.au/announcements/6308776>

<sup>6</sup> EQ Resources. 2024. Circular Economy. <https://www.eqresources.com.au/site/sustainability/circular-economy>

### **Success story – Ravenswood Gold <sup>7</sup>**

In 2020, Ravenswood Gold supplied around 140,000 tonnes of waste rock for the construction of the Port of Townsville's channel upgrade, a key regional infrastructure project. By redirecting waste rock to support construction needs, Ravenswood Gold has reduced the environmental footprint of both mining and construction operations. This collaboration exemplifies how mining byproducts can support regional infrastructure development, reducing the demand for virgin materials and aligning with broader sustainability goals.

### **4. Re-using mines for pumped hydro energy and second-life mining operations**

Re-using mines for pumped hydro energy projects reduces construction and development costs and new materials for infrastructure such as roads and transmission infrastructure. There is one pumped hydro energy storage project being built in Australia that utilises a former mine – the Kidston former gold mine in Queensland. The feasibility of Mount Rawdon, Qld and Muswellbrook in New South Wales are being assessed. There are several other sites around Australia that are under consideration also.

### **Success story – K2-Hydro, Genex (former Kidston Gold mine)<sup>8</sup>**

Genex is constructing the Kidston 250 MW pumped storage is the first pumped hydro project in Australia for over 40 years, the first to be developed by the private sector and the first to utilise an abandoned gold mine. It is expected to be the third largest electricity storage device in the country. After being a mining community for a century, Kidston is undergoing a monumental transformation with a new lease on life.

The two large disused pits that made up the old gold mine are being converted into a world-first pumped storage hydro project, utilising an abandoned gold mine. The Project has a low capex due to the unique reuse of existing mining pits as the upper and lower reservoirs for the project, and other infrastructure such as accommodation camp, airstrip and water supply – minimising construction time and cost. The project is sponsored by ARENA and lessons learned are reported and made publicly available. Knowledge sharing is key to the success of similar future projects across Australia.

### **Success story – EnviroCopper, Kapunda Copper ISR Projects<sup>9</sup>**

EnviroCopper in JV with tenement holder Terramin are developing a Copper ISR demonstration site at Kapunda – the first established profitably operating copper mine in South Australia and now an abandoned mine owned by the Light Regional Council. The project aims to use In-Situ Recovery (ISR) mining, an environmentally low impact alternative to recover copper and gold deposits that are not able to be mined conventionally, due to hydrogeology, economics and social factors. This will preserve the social amenity of the historic site, which is an economic drawcard to the region, while providing additional economic benefits through ISR copper mining below the surface.

Key research outcomes have led to advancement in ISR knowledge in resource estimation, environmental risk mitigation, economic modelling, fracture/flow modelling and community engagement. EnviroCopper works with several collaborative partners to commercialise the project, BHP Think & Act Differently, CSIRO and University of Adelaide.

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<sup>7</sup>Industry Queensland. 2020. <https://industryqld.com.au/rocks-roll-in-from-gold-mine-for-port-upgrade/>

<sup>8</sup> Genex. 2024. <https://genexpower.com.au/250mw-kidston-pumped-storage-hydro-project/>

<sup>9</sup> EnviroCopper. 2024. <https://www.envirocopper.com.au/kapunda-isr-project>

## 5. Designing mining operations and downstream products for reuse and recycling

The chain of custody from the in-ground mineral resource to a manufactured product that reaches its end of life, involves many companies and owners. What happens to minerals after they leave the mine gate is not within the remit of the mining company and materials used for renewable energy such as solar panels, wind turbines and batteries are increasingly ending up on scrap heaps. This is an environmental concern and retrofitting solutions to recycle products already in circulation is difficult. A systems approach is required, and Governments need to be involved with policies that bridge the gaps for circular economy responsibility across supply chains.

Company strategies and regulatory requirements that ensure consideration of circular economy can play a part in ensuring sustainable operations and re-using, re-purposing and recycling of materials. Mine development that applies circular economy design principles can include possibilities for the design and maintenance of assets and infrastructure, materials produced and the mine landscape and potential re-use. For example, progressive rehabilitation can ensure an economic, environmental or social return is accelerated.

### ***Success story – Canada, Towards a Circular Economy Approach for Mining<sup>10</sup>***

Jurisdictions such as Canada have released specific in-depth analysis of the circular economy opportunities for mining operations with several recommendations for mining design principles. 'Towards a Circular Economy approach to Mining Operations', is a must read for Australian Government policy makers. <sup>11</sup>

## 6. Sustainable water sources and recycling

Water is a critical resource that is essential to the operation of mineral exploration and mining operations and for achieving the economic and broader benefits the industry delivers to communities.

### ***Success Story – Image Resources<sup>12</sup>***

Image has actively sought methods to decrease water usage achieving success through enhancements in water recapture and recycling techniques. These include:

- In-pit floor drains and sumps capture water, directing it away from active mining areas to minimise dewatering and therefore freshwater withdrawal.
- Water-use systems designed to minimise consumption, with control and monitoring systems in place throughout the Wet Concentration Plant (WCP) and Field Preparation Plant (FPP).
- Process Water Dam (PWD) lined with high-density polyethylene (HDPE) for containment.
- Optimising reduced volumes of water reaching solar drying ponds, while a thickener and flocculent system maximise water recovery when managing sand and clay fines.
- Water abstraction is measured using suitable flow meters to monitor usage accurately.
- Clay fines are repurposed for dust suppression, reducing reliance on process water.
- Daily inspections of water and slurry pipelines to detect and address leaks promptly.

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<sup>10</sup>Fortescue. 2024. FY24 Sustainability Report. <https://investors.fortescue.com/en/announcements-and-reports>

<sup>11</sup>Natural Resources Canada. 2024. <https://circulareconomyleaders.ca/wp-content/uploads/2024/04/Towards-a-Circular-Economy-Approach-to-Mining-Operations.pdf>

<sup>12</sup> Image Resources. 2023 CY Sustainability Report.

<https://app.sharelinktechnologies.com/announcement/asx/ce87345a70bbbb2ad6af918729a56966>

- Co-disposal of clay and sand into void reduces overall evaporation in solar drying cells, enhancing water recirculation through processing and reduces land disturbance.

## 7. Clean energy and decarbonisation in mining operations to reduce emissions waste

### **Success story – Fortescue<sup>13</sup>**

Fortescue is the fourth largest producer of iron ore in the world and has committed US\$6.2 billion towards its decarbonisation plan to achieve Real Zero Scope 1 and 2 emissions across its terrestrial operations by 2030. Plans include the deployment of an additional 2-3 gigawatt (GW) of renewable energy generation and battery storage, in addition to the deployment of a green mining fleet and locomotives. Fortescue is developing the technologies to decarbonise hard-to-abate sectors through the adaptation and adoption of new technologies, including a US\$2.8 billion green equipment partnership with Liebherr for zero emission mining solutions.

Work is already underway in their efforts to reduce Scope 3 emissions. The Christmas Creek Green Metal Project is a significant step forward in Fortescue's ambition to produce green metal at a commercial scale in the Pilbara, with first production anticipated in 2025. It will use renewable energy and green hydrogen reduction technology together with an electric smelting furnace to produce high purity green iron metal suitable for use in steel plants globally.

### **Success story Liontown Resources – Kathleen Valley lithium mine<sup>14</sup>**

Liontown's Kathleen Valley produces lithium, a critical input in batteries for global decarbonisation efforts. The operation is powered by a 95MW hybrid power station (wind, solar and battery) achieving minimum 60% (many cases higher) renewable penetration to the site. Committed to producing critical minerals with the lowest possible carbon footprint Liontown does this implementing sustainable practices throughout its operations. This includes prioritising the use of energy-efficient technologies, implementing measures to minimise waste through efficient water use, waste management, and using underground mining to minimise land disturbance. Liontown conducts active monitoring of its activities to ensure transparency. As part of its commitment to responsible resource development, Liontown works with local communities to ensure that operations are sustainable and beneficial to all stakeholders. The company prioritises engagement and consultation with the Traditional Owners and strives to incorporate their traditional knowledge and practices into its operations.

### **Success story – Image Resources, Boonanarring mineral sands mine<sup>15</sup>**

Image Resources constructed a solar farm to offset 25% of electricity requirements for the life of operations at the Boonanarring Mineral Sands mine (mining is now complete). Image also supported local landowners working with Murdoch University to improve soil moisture retention and productivity of the soil, with the aim of accelerating and enhancing carbon dioxide sequestration capacity of the soils. Image provided access to clay rich materials from the overburden mined at Boonanarring.

The company is also investigating the viability of a lower carbon dioxide emissions, pyrometallurgical processing technology to convert mined ilmenite to high-value synthetic rutile. The novel technology utilises hydrogen instead of coking coal currently used in existing commercial processing in WA. Planning for a demonstrate-scale plant has commenced to de-risk the technical and economics.

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<sup>13</sup> Fortescue. 2024. <https://metals.fortescue.com/en>

<sup>14</sup> Liontown Resources. FY2024 ESG Report. <https://www.ltresources.com.au/wp-content/uploads/2024/10/61229132.pdf>

<sup>15</sup> Image Resources. 2024. Decarbonisation. <https://imageres.com.au/sustainability/decarbonisation/>



## 8. Sustainable supply chain materials, recycled material and waste management

Mining companies are designing out waste with a range of initiatives across their operations. A challenge that many mining operations face is that their regional locations are remote from recycling facilities and transporting materials for recycling comes at significant cost and transport emissions.

### **Success Story - Fortescue** <sup>16</sup>

Fortescue has a range of initiatives aimed at designing out waste and keeping products in use. Primary waste streams from operating mine sites include metal, general waste, wood, rubber, wastewater treatment plant sludge and hydrocarbons. Circularity options have been progressed through various initiatives including:

- sustainable procurement and sourcing due diligence processes
- avoidance of single-use packaging by working directly with high-volume suppliers
- aligning decarbonisation schedule for stationary and mobile assets with existing asset lifespans where possible
- continuation of HDPE recycling processes
- upcycling of used uniforms
- establishing Containers for Change recycling processes
- continuing established recycling processes for metals and hydrocarbons, along with some rubber and wood waste products
- collaboration with Tyre Stewardship Australia, and other independent organisations to identify viable recycling opportunities for used tyres from Fortescue's Pilbara operations.

### **Success Story - IGO Ltd – Recycling workwear** <sup>17</sup>

IGO has collaborated with Fibre Economy, a West Australian social enterprise combating textile waste. Supported by the IGO Decarbonisation fund, this partnership aims to reduce unwanted workwear destined for landfill. Fibre Economy redistributes workwear across their Circular Network, reducing its environmental impact and fostering employment opportunities. Fibre Economy have teamed up with Good Sammy Enterprises, and through their partnership have created employment opportunities for people with disability, including roles in logistics, sorting and the valorisation of branded high-vis workwear. A pilot program undertaken at the Cosmos Project this year diverted 238 kilograms of workwear that would otherwise be destined for landfill. The initiative was extended to the South Perth office, which diverted 69kg of workwear from landfill.

### **Measuring success**

Opportunities for circular economy outcomes vary from project to project across a wide range of ecosystems with different environmental and social impacts to be considered. Site-specific baseline data and information is critical for defining success and measuring progress because what is considered success in one region may be quite different in another.

Mining operations are subject to significant environmental regulation and compliance. The way many companies manage and monitor waste, water and emissions is directly aligned with regulatory requirements. There is a statutory requirement for annual compliance reporting under mining laws

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<sup>16</sup> Fortescue. 2024 Sustainability Report. <https://edge.sitecorecloud.io/fortescue17114-fortescueeb60-productionbbdb-8be5/media/project/fortescueportal/shared/docs/default-source/announcements-and-reports/fy24-sustainability-report.pdf>

<sup>17</sup> IGO. Sustainability Report 2024. Page 81. <https://www.igo.com.au/site/pdf/d09d7021-630c-4e25-bd35-2c06b2b748ec/IGO-Sustainability-Report-2024-Interactive.pdf>

and this is a key driver for measuring and managing impacts. A significant amount of data across a range of measures is captured. Some of these measures relate to the circular economy and could be used to track progress – bearing in mind regional baselines.

Mitigating environmental and social impact is important for community acceptance and social licence for mining operations. Companies are increasingly implementing management strategies such as for waste and water, for more sustainable operations as part of their ESG principles to align with circular economy principles. The industry also voluntarily measures and reports circular economy outcomes on a range of measures such as organic waste to composting, single use drink bottle recycling, textiles recycling and these are often carried out in partnership with benefits for community groups. Transparent reporting of activities and progress is often reported in Annual Sustainability Reports.

### **AMEC supporting members with ESG initiatives**

To support our members in understanding ESG, AMEC has developed a guide for explorers that explains ESG considerations and implementation for exploration companies<sup>18</sup>.

AMEC is committed to action to support our members as they work to achieve net zero emissions. The environmental, financial, regulatory, and transitional consequences of climate change are real and will reshape the Australian mining and mineral exploration sector. The contribution of Australia's mining and mineral exploration extends beyond supplying the minerals and materials that will enable low emissions and abatement technology. Achieving net zero emissions in our sector will require innovation, new technologies and a deep-seated commitment to drive change.

### **Final comment**

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. AMEC and industry would also welcome the opportunity for further engagement with the Productivity Commission on the Circular Economy Inquiry, including the opportunity to be part of roundtables and expert advisory panels.

### **For further information contact:**

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<sup>18</sup> AMEC. ESG Resources. 2023. <https://amec.org.au/environment/>