



## WA's mining boom: where does it leave the environment?

Western Australia is in the grip of its biggest-ever mining boom. The economy is buoyant and unemployment is at a record low; however, all this activity is occurring amongst internationally unique landscapes and biodiversity – which leads to the question, when commodity prices inevitably fall, what will be the legacy of the boom on WA's famous natural environment?

Western Australia (WA) is one of the 34 most biodiverse regions in the world. Despite extensive clearing, the south-west's plant species outnumber those of the UK and North America combined. There are also five separate national biodiversity hotspots around the state; the diverse ancient landscape has created a high level of endemism (native speciation), where individual hills or salt lakes may be host to species found nowhere else on earth.

Mining in this landscape inevitably produces an impact on the environment. In some cases, this can be mitigated, managed or even turned around, and there are opportunities for the mining industry to participate in projects that actually

improve the broader environment in which they operate.

Unfortunately, history does not give us much optimism about the extent to which overall impacts can be mitigated. Despite corporate and government promises, past resource booms have left mining and exploration damage scattered across the WA landscape, creating ongoing environmental effects and a liability to the state.

As Philip Jennings, President of the Conservation Council of Western Australia, said, 'Previous mining booms often left major problems behind. In the case of the mineral sands industry, radioactive tailings were left at several sites and these had to be decontaminated subsequently by the state. Similarly, in the gold mining industry, a

series of booms and busts put many small companies out of business, leaving behind disused pits and equipment – much of this was unsafe and had to be cleaned up at state expense many years later.'

Mr Jennings was speaking at a forum in August, organised by the Conservation Council of Western Australia to raise awareness about the current resource boom's potential impacts. Attended by around 100 conservationists, government regulators, industry representatives and members of the general public, guest speakers included representatives from mining company BHP Billiton, academia and the WA Wildflower Society.

While acknowledging that the mining industry and the Environment Protection Authority (EPA) in Western Australia have worked on better practices and assessments, Philip Jennings however warned that significant impacts still happen.

'Despite improved standards, the now abandoned mineral sands mine at Beenup, near Augusta, has turned out to be an environmental disaster – the mining activated acid sulphate soils, a major long-term problem that was not foreseen by the EPA in their assessment. This demonstrates that even current best practice is not entirely



**Digitally altered image. Left: Banded Ironstone Formation outcrops in the Windarling Range, WA. Merged right: The W3 pit at Windarling Range, two years after the commencement of mining. Waste dumps and mine pits from local mining will surround these outcrops.** Brian Moyle

satisfactory in all situations today.'

So in the context of the current mega-boom, thorough consideration of the environmental legacies of the mining industry – and genuine efforts to mitigate them – is more important than ever.

Guest speaker Brian Moyle, from the Wildflower Society of WA, highlighted the potential risks to biodiversity and landscape presented by mining through a case study of the pending expansion of the iron ore industry into the Banded Ironstone Formation ranges of the Midwest and Yilgarn regions of WA. In the flat WA outback these ranges – many with impressive razor-back ridges, outcrops and stunning weathered monoliths – represent a significant landscape feature. Their isolation has also had a profound impact on the plants and animals that grow and live on these hills, with many providing homes to unique species.

An example was at Windarling Range,

where the WA EPA made a rare recommendation against mining, due to the presence of a number of rare plants and animals, but in particular an endemic species of low native shrub from the genus *Tetratheca*. Government later overturned the decision and the range is currently being mined.

Efforts to protect these islands of biodiversity have been stalled by the mining lobby. Moyle described the situation at the Mt Manning Reserve: 'Mt Manning-Bungalbin Hill has 51 species of reptiles and 67 significant plant species including four declared rare flora and 20 priority and undescribed species. It was declared an A-Class reserve, WA's highest level of protection – that lasted for two weeks. Now it is a conservation park set aside for conservation and mining. There are currently no Banded Ironstone Formation hills secured in the conservation estate.'

Moyle finished his presentation echoing a sentiment reflected by many: 'The Wildflower Society is not against mining, but want to see proper consideration given to the environment.'

Thankfully, not all mining so seriously threatens the environment. Clint McCullough of Western Australia's multi-disciplinary Centre of Excellence for Sustainable Mine Lakes claims that, in these situations, if the mine life is managed with sustainability in mind, the impacts of mining can be minimised – and sometimes new opportunities can even be created on the abandoned mine site.

The concept was explored with a focus on pit lakes – the water-filled craters left behind after open pit mining. If unmanaged or poorly planned, pit lakes may be turned acidic or otherwise toxic by chemicals within the surrounding rocks. Water may also become hyper-saline due to high evaporation rates. Low water quality can then affect groundwater, potentially poisoning native and stock animals and flooding into adjacent lands during rains.

However, says McCullough, with approximately 1800 pits across WA, these bodies of water are also a potential opportunity. Possible beneficial end uses include aquaculture, water storage, recreation and wildlife habitat. Nevertheless, to realise these potentials, pit closure needs to be considered before mining is even assessed by the government.

'Pit lakes create the biggest off-site impact, and yet they are typically the least considered. Mining needs to be approved with consideration of long-lasting effects to the environment and not short-term,

passing benefits. The social licence to mine should incorporate planning pre-dig to identify the liabilities, the benefits, what is going to be left behind and how this will be managed,' he says.

The application of sustainability to mining also extends beyond intelligent closure. Whilst mining can never be a truly sustainable enterprise, some companies are now starting to apply sustainability principles to their operations, recognising that the wealth and expertise generated by a mine can be used to benefit the area in which the mine sits – thereby leaving a benefit in exchange for the extraction of mineral wealth and environmental damage.

Gavin Price, Manager of Environment and Sustainable Development at BHP Billiton (BHPB), spoke about one way in which BHPB is working towards this possibility.

Poor management of pastoral lands in the vast WA rangelands (about one-third of the state) is a major threat to biodiversity. A handful of companies, including BHPB, are attempting to reverse this process on company owned pastoral leases. Working in partnership with pastoral managers, companies are able to help rehabilitate degraded land, create buffers and fences around conservation areas and develop scientifically based pastoral environmental management plans. Success in these programs should continue to provide environmental and social benefits into the future.

Mining is currently a major contributor to WA's economy, providing financial security and jobs, but it also poses a threat to the biodiversity and landscapes that define Western Australia. It is essential that the public and government remain well informed, and push industry to embrace a new role in the transition to a sustainable society whilst also protecting important environments from mining. Achieving this will require sacrificing some profits, potential resources and traditional ways of thinking; but in the end, is there any other acceptable way forward?

● **Tim Nicol**

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**More information:**

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 BHP Billiton: [www.bhpbilliton.com](http://www.bhpbilliton.com)