

**Submission
No 183**

**INQUIRY INTO CURRENT AND POTENTIAL IMPACTS OF
GOLD, SILVER, LEAD AND ZINC MINING ON HUMAN
HEALTH, LAND, AIR AND WATER QUALITY IN NEW
SOUTH WALES**

Organisation: Broula King Enterprises Pty Ltd

Date Received: 24 October 2023



Submission to NSW Upper House Committee into current and potential impacts of gold, silver, lead and zinc mining on human health, land, air and water quality in New South Wales.

Introduction

Broula King Enterprises and Sunshine Reclamation Group of companies, was founded in 2019 with the intent of disrupting the traditional mining model around base, precious and critical mineral recovery by taking a Circular Economy approach – ‘green mining.’

It was our **Vision**: “to create a cleaner, greener world through the remediation of abandoned mines and recycling the waste that adds to the supply chain of a sustainable future.” To achieve this, we would apply our **Mission** of:

Reclaim abandoned mines currently polluting our waterways and environments.

Recycle the waste into precious, base and critical minerals that are crucial in building a sustainable future.

Remediate these sites into the most natural environment possible.

This submission addresses some but not all of the Inquiry’s Terms of Reference. It is, in part, to respond to certain claims submitted to the inquiry neighbouring landowners as to the situation with our tenement at Bumbaldry, NSW – ML1617 (Broula King Processing Facility and gold mine). The submission will also conclude with some of our own recommendations to the inquiry.

BKE consent to the submission being made public in full.

Broula King Enterprises: Executive Summary

BKE’s business:

- will recommission and upgrade a centralised processing hub for polymetallic and critical mineral recovery in NSW - the first of its kind
- work with two Australian Universities - University of Newcastle (Newcastle Institute for Energy & Resources) and Deakin University (Institute of Frontier Materials) on innovative technologies for critical mineral recovery of mine waste
- develop new technology for recovery of gold, silver, copper, zinc, nickel, lead, antimony and rare earth elements, as well as construction products
- rehabilitate abandoned legacy mines currently polluting our ecosystems
- partners with two Australian universities, University of Newcastle (Newcastle Institute for Energy & Resources) and Deakin University (Institute of Frontier Materials) to develop critical mineral recovery technology to deliver a home-grown manufacturing supply chain, and academic centre of excellence for central NSW in circular-economy approach to mining and rehabilitation. Current grant funding through the NSW Government’s Critical Minerals Fund.
- Remove a cost to the taxpayer for remediation of abandoned mine sites currently posing contaminant risk to our ecosystems
- Create jobs in Regional NSW
- Provide income to small businesses in Regional NSW
- Provide a royalty stream to NSW government
- Create an academic centre of excellence in NSW Central West



We have:

- properties and tenements
- experienced personnel
- ground-breaking IP to extract base and precious metals, critical minerals and rare earth elements, including antimony.

Key Points

- Broula King Enterprises and Sunshine Reclamation Group of companies are a mine reclamation company not a major Mining corporation.
- The Broula King Joint Venture (BKJV) mine site contamination and regulatory issues where all pre-existing to Sunshine Reclamation Group takeover 16 December 2020
- BKE/Sunshine group have continually attempted to negotiate a commercially acceptable agreement for positive environmental outcomes on ML1617 with neighbouring landowners, however, talks have unfortunately broken down due to the emotion surrounding issues with ML1617
- Without 2landowner consent it is highly unlikely that the site, ML1617, will be cleaned up and rehabilitated
- All extensions to current NSW regulatory notices have been approved due to legitimate extenuating circumstances involving lack of neighbour consent and co-operation
- It has been verified by a certified consultant that the Tailings Storage Facility itself does not leak
- There has never been a discharge from the tailing storage facility on ML 1617
- There have been a number of site water discharges in high rainfall events in accordance with our EPA licence (EPL # 12845)
- Recorded water Quality and testing on a monthly & quarterly regime since 2014 does not confirm the reported contamination levels publicised by media

Background/history

In 2019, the company acquired Sunny Corner mine, an abandoned mine site two hours from Sydney, almost halfway between Lithgow and Bathurst. A Federal Senate Committee submission into the effect of abandoned mines in Australia in 2017 listed Sunny Corner mine in the top 7 most hazardous legacy mines in NSW that sit on Crown Land – the most deleterious effects being through Acid Mine Drainage. One of the problems we identified was that any mine abandoned prior to the NSW Mining Act (1992) was the responsibility of the state, and therefore the cost of rehabilitation rested with the taxpayer. This meant that the effects of Acid Mine Drainage at Sunny Corner were being contained via the NSW Legacy Mines program, but not necessarily being rehabilitated.

Our solution was to apply advanced processing technologies to recycle the waste and recover gold, silver, copper, zinc and lead from the slag heaps causing Acid Mine Drainage, in turn, driving a profitable business that not only added base and precious metals (particularly copper, silver and zinc that are critical for a sustainable future) into the supply chain, but also have the added benefit that we would remediate the site on completion.

Our problem statement read: ***There are over 52,000 abandoned mines in Australia causing varying degrees of environmental contamination and pollution to our waterways and ecosystems.***^{*1}

However, “a transition to a low carbon society is a change that will require vast amounts of metals and minerals. Mineral resourcing and climate change are inextricably linked, because the world

¹ The Dark Side of the Boom” Australia Institute <https://australiainstitute.org.au/report/dark-side-of-the-boom/>

cannot tackle climate change without adequate supply of raw materials to manufacture clean technologies. Peak copper may pose a significant global shock within the next 20 years. In the next 20 years, we will need to produce more copper than the world has produced in the past 5000 years, due in part to electric vehicles.”²

So how do we reclaim necessary resources of base metals and critical minerals that are crucial to clean technologies without leaving a detrimental impact on the environment?

BKE provides an ESG solution that recovers & recycles high-demand critical minerals and base metals back into society using advanced technologies, with the added long-term benefit of remediating abandoned mine sites. A circular economy approach to mining.

We saw benefits to regional communities and offset to Government including:

- Removing the cost burden of derelict mine site clean-up and rehabilitation from the taxpayers
- Providing a royalty stream to state government
- Restoration and clean-up of potentially thousands of derelict mines
- Job creation in regional areas (around 20 jobs per project)
- Boosting regional small business – via contracting to local small businesses
- Supply of base and critical resources through a circular economy process

In order to progress Sunny Corner to a Mining Lease, we needed DA approval from Bathurst Council and we needed a processing facility or approval from MEG.

In 2020, the Directors of BKE were made there was an opportunity to purchase a processing facility in Bumbaldry, between Cowra and Grenfell; the Broula King mine plant on ML1617. BKE conducted a due diligence and a report was written identifying a number of issues with the plant. The previous owners of ML1617 had been issued notifications, particularly pertaining to requirements to remediate the dam wall. It was also identified that there was a lot of concern from the immediate neighbours, and that negotiations may be difficult.

We discussed this with the Mines Regulator, who confirmed all of the above. We pointed out that our mission was to clean up Sunny Corner by processing at Broula King, but the ultimate benefit would be the eventual rehabilitation and remediation of both sites. In December 2020, Director Daryl Young, investor Richard Grainger and another former Director of BKE visited Broula King ML 1617 to inspect, as the date for settling on the purchase option was pending within a fortnight. Two phone calls were made with two Regulators, who encouraged BKE to proceed with the purchase as they would absolve BKE of any liabilities pertaining to the previous company, and that they would help us to move forward on getting the processing facility running again. However, the Regulator told us we needed to make a decision within three days, and a new Mines Operation Plan needed to be submitted within that timeframe and we needed to settle on the purchase by close of business on Friday. On that basis, we decided to proceed with the purchase if it could be bought at a heavily discounted price.

*Attachment 1 - A 'set of events' statement from Young, Gray and Grainger is submitted as an appendix to this submission – for access see link at end of submission

The Tailings Storage Facility (TSF) on ML1617 was identified as not being built to the specifications of the original development application submitted in 2008, and the previous owners had utilised unsuitable material to rock armour the wall face. There were also concerns raised by neighbours as to the integrity of the wall but no third party supporting information was supplied. BKE

² Nature 2017, 543(7645), 367-372

commissioned Dr Alan Robertson to conduct a geochemical study of the dam wall. The viability of BKE undertaking any remedial work that was the responsibility of the past owners rested on the ability to access and remediate “historic” gold tailings that were within the ML. Without access to those tailings for processing and recovery of gold, the project was unviable.

The study conducted by Dr Alan Robertson, a leading geochemist and water management expert with over 20 years’ experience, concluded there was no leakage occurring out of the Tailings Storage Facility itself, rather, it was occurring from the breakdown of the PAF (Potentially Acid Forming) rock that was used to amour the dam wall, constructed by the previous owners, as mentioned above. R.W. Corkery & Co, environmental consultants, also identified that there was contamination being emitted from the “historic” tailings which lay outside the responsibility of BKE. These tailings were material that were mined from the late 1800s until World War I and predate the NSW Mining Act (1992) regulatory requirements for being under the responsibility of the mining licence holder.

***Attachment 2 - The Alan Robertson geochemical report – for access see link at end of submission**

***Attachment 3 - The RW Corkery Tailings Storage Facility report – for access see link at end of submission**

Initial talks with our neighbouring landowners on the Shadelands property, Craig Day and Cath Sullivan, were positive, both parties acknowledging we had been left with a mess of the previous owners making. Unfortunately, the relationship broke down as the contents of the Robertson report were not accepted. We have tried to negotiate moving forward for the benefit of our nieghbours and the community in cleaning up, however, continued complaints resulted in several notifications being issued to BKJV by the Resources Regulator. BKE continue to try to work our way through these in order to affect the remediation of ML1617 TSF wall and in meeting the obligations of the notifications. We find ourselves blocked by neighbours’ objections, particularly around access that was contractually agreed to with BKJV by the previous owners of ML1617 and still rests with BKJV under the ownership of BKE.

Broula King Joint Venture Pty Ltd, is a wholly owned subsidiary of BKE, and is the licence holder of ML1617. Since 2014, this site has been on care and maintenance and monthly samples and quarterly reports have been conducted and submitted to EPA on water qualities, water held within the Tailings Storage Facility and any releases of water offsite, according to our EPA licence (EPL) requirements.

In 2021-22 period, excess site runoff release has occurred during unprecedented rain events. Under EPA licence conditions, during a rainfall event of more than 40mm in 48 hours, any excess runoff water that cannot be held onsite may be released as a reportable release. At no stage in Broula King Joint Venture’s tenure of the site has there been a release of contaminated water from the Tailings Storage Facility, it has only been site excess runoff in high rainfall events, in compliance with our licence conditions.

***Attachment 4 – EPA incident report on runoff event (including water qualities) – January 2022 – for access see link at end of submission**

There are four test bore holes downstream from the TSF wall to Tyagong Creek that allow the reporting of underground water quality. There has been no water test at any of these sites that have been outside acceptable water quality standards according to BKJV’s test results. During 2022, there were neighbours’ reports of water seeping from one of the test bores. A third party consultant, Mr James Morrow, Environmental Engineer (Hydrogeologist), of Ground Doctor Pty Ltd, was commissioned to conduct water tests at the bore holes and review historic geological information to ascertain what might be creating the seepage from the groundwater bore (GMP1).

***Attachment 5 - The Morrow report is supplied as an appendix to this submission – for access see link at end of submission**

At all times, BKE have taken action to secure water runoff on the ML1617 site. We are required by the Mines Regulator notification (#0009088) to carry out work to remediate the Tailings Storage

Facility Wall. BKE have always maintained from day one the need for the project at ML1617 to be viable and complete the remediation works necessary under the notification issued that access to and recovery of the historic gold tailings was required. The benefit to NSW government, immediate neighbours and the mine operation of stopping contamination from the historic tailings and remediation of the site seemed an obvious and common-sense outcome. Our immediate neighbours agree that “do nothing” is not an option.

Conclusions from the Robertson report, the Morrow report and our regular water testing show there is existing and ongoing contamination from the historic tailings and the rock wall armour facing on the dam wall.

BKE hold concerns around some of the claims made about the site in submissions already given to this Upper House inquiry as they are not consistent with our findings and documentation.

These are:

1) Water Quality

It is important to look at the Australian and New Zealand Guidelines for Fresh and Marine Water Quality.³ We note that it has been stated that cadmium levels in water samples taken by neighbouring landowners were 50,000 times the “legal level.” We are unsure if this is one sample, progressive samples or samples taken over a period of time. However, they are not consistent with our own results tested regularly dating back to 2014. Test results are available through our website page here: <https://bk-enterprises.com.au/regulatory/>

Thresholds for drinking water are a guideline for drinking water quality. The thresholds are used as a default guide to assess water quality discharge at, say a property boundary, where contamination is expected to have occurred.

Thresholds for protection of freshwater ecosystems are a guide for protecting fresh water (creeks, rivers, lakes etc.).

For cadmium:

Fresh water ecosystems is 0.2ug/L. Drinking water is 2ug/L.

So cadmium at 1mg/L = 1000ug/L is 5000 times the **default** fresh water threshold.

The detail on cadmium toxicity to aquatic ecosystems can be found in the link here: <https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/toxicants/cadmium-2000>

Where identified, a potential issue would use site specific conditions to adjust the default threshold. Therefore, using the guidelines is not a fair means of assessing the background conditions that influence local water conditions.

The factsheet about cadmium in drinking water can found on Page 496 of 1223 of the PDF file link below:

³ <https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/toxicants/cadmium-2000>

<https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines#block-views-block-file-attachments-content-block-1>

2) Measuring contaminant levels

It is important to ensure dissolved cadmium (filtered sample) is being measured as opposed to total cadmium.

3) Tailings Storage Facility water release offsite

Under BKJV ownership since 2014, there has been no water release from the Tailings Storage Facility.

4) Suitable clay for remediation of the Tailings Storage Facility wall

It has been stated that bentonite clay to be sourced from another neighbouring property purchased by BKJV for the purpose of accessing its clay is an inferior clay type for the dam remediation, as opposed to the neighbours' own kaolinite clay to be sourced from their own ML1559 claypit across the road and approximately 3km northwest of ML1617. BKE have not seen any evidence supplied by the neighbours to support this claim, however, the Robertson report in attachment 2 does find that the bentonite clay was appropriate. Bearing in mind that being inferior Quality doesn't mean that the clay was not fit for purpose. In this case the clay used was tested and found to be fit for purpose

5) It is of concern that there is a differentiation between unsupported statements and supported factual evidence. Within the submissions made there don't seem to be any third party independent professional reports to support the assumptive statements made. Also of concern is when information or testing is offered as a result, we have not seen supporting qualification or quantitative evaluation.

Recommendations

- 1) NSW government to look into different ways of viewing innovative companies taking a circular economy approach to legacy mines in NSW
- 2) A "whole-of-government" approach that un-siloes differing regulatory and departmental bodies to be able to clearly communicate with one another on specific cases
- 3) There should be a more proactive approach from government agencies as to the rehabilitation of legacy mine sites. For example: BKJV historic tailings are leaching contaminants into the waterways, and within both EPA and NSW Resource Regulator regulations, there is capacity for the ability to issue orders in conjunction with the licence owner in a planned process to clean up contaminations without landowner and planning approvals. However, such authority is rarely used.

We are grateful for the opportunity to submit our response to the Upper House Inquiry. Through discussions we have had with a number of members of the Bumbaldry/Greenethorpe community, the response has been very positive once they have been given the opportunity to understand what we are trying to achieve. From environmental, government and community perspectives we believe it is important to have a measured response to the long terms benefits and outcomes of BKE's business model.

If we are to achieve a net zero, renewable and sustainable future, critical minerals including copper, zinc, antimony and REEs are going to be crucial. These critical minerals will also be integral to our



national defence and current geopolitical environment, including the AUKUS partnership and the “five eyes” alliance. BKE firmly believe that with our technology and expertise, we provide a model for more sustainable resource recovery that focuses on abandoned, legacy mines. It is important that community responses be received in a balanced way that does not result in more regulatory and legislative restrictions that hamper the progress of such a model.

As earlier highlighted, it is agreed by our neighbours that do nothing is not an option. We present the best prospect of cleaning up identified issues at Broula King ML1617 and Sunny Corner MLA 594. BKE believe timing is of the essence and the company needs support to resolve current roadblocks resulting in a more speedy remediation of issues at Broula King ML1617. The potential negative outcome is abandonment of another mine in NSW that leaves a permanent contamination hazard to the surrounding region.

Daryl Young, BKE Chair – 24 October 2023

***Attachments 1 – 6 can be found in the link below:**

https://drive.google.com/drive/folders/1V2gU7I5cbalhnBbqDVNIgA2BujUGBAG?usp=drive_link