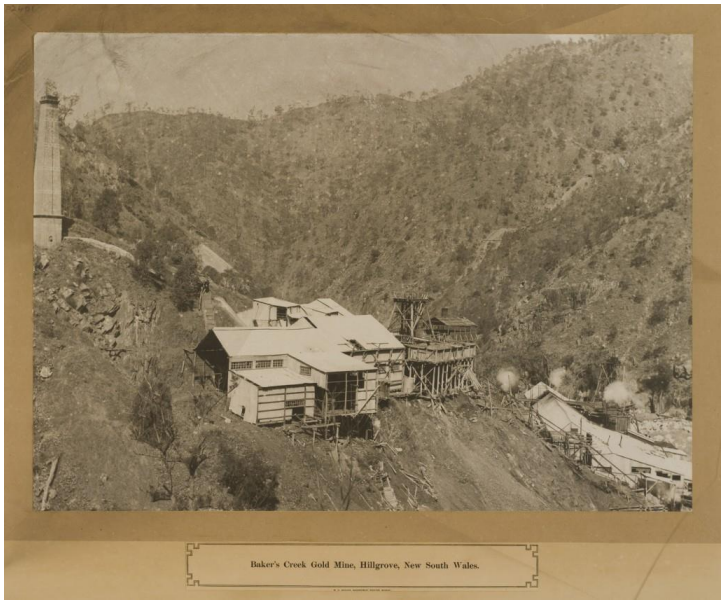
Hillgrove Gold and Antimony Mine

The Hillgrove gold/antimony project is located 25km east of Armidale. The mine is part of the 425 square kilometre tenement package in the historic Hillgrove mineral field. It has a rich history having produced 49,000 tonnes of antimony and 720,000 ounces of gold.

The story so far

The Hillgrove Mineral Field was one of the major goldfields in New South Wales. Gold mining commenced in Bakers Creek Gorge in 1877 and at its peak in 1898, the population of Hillgrove was approximately 4,000. The last decade of the 1800's was the major gold production phase. Antimony was mined in the late 1800′s, declining around 1900. Modern operations commenced in 1969 with the re-opening of several old workings and construction of antimony concentrate production facilities.



Enlarged photographic print, 'W. A. Gullick, Government Printer, Sydney', 1906. No known copyright restrictions

Production from nine separate deposits provided mill feed to the concentrator over the ensuing 30 years with the principal operator being New England Antimony Mines NL (NEAM). The last recorded production of gold and antimony concentrate by NEAM in 2001 sourced mill feed from the Metz and Brackens Spur underground mines. The Project was acquired by Straits from Antimony Resources Australia in April 2004.

Straits embarked on an extensive exploration and resource drilling program and metallurgical investigations culminating with an extensive mine establishment phase during 2007-2008, based on the Metz orebodies. Mining operations commenced in early 2008. High quality metal production followed but was significantly below design capacity due to various processing issues associated with metal production. In August 2009, Straits announced a temporary suspension of processing activities to investigate a number of the technical issues. In 2010, Straits announced that it intended to divest of the Project while

the operation effectively remained in care and maintenance. After an unsuccessful attempt by Emu Nickel to purchase the Hillgrove Mine in 2012, the sale to Bracken Resources Ltd was finalised in February 2013. (see http://lockthemidnorthcoast.com.au/hillgrove-antimony-mine/)

New Ownership

Early in March 2013, Bracken Resources CEO Roger Jackson announced the completion of the $30 million purchase. He promised a comprehensive clean up of the mine site and employment for up to 140 people.

Mr Jackson said they will "spend up to $12 million making modifications to the Hillgrove plant, $5 million on new mining equipment, and half a million dollars on a microfiltration system to clean waste water." He foreshadowed the recommencement of operations in early 2014 to mine gold only. (see *Guyra Argus* 21 March 2013, *Armidale Express*, 8 Feb, 13 Feb, 15 March and 12 June 2013)

Operations

In 2012, the potential buyer Emu Nickel described Hillgrove Mine.

"The mineralisation at Hillgrove lies within narrow sub-vertical structures. The antimony mineralisation is present as stibnite in narrow veins within a broader arsenopyrite mineralised zone. Free gold and refractory gold are associated with the stibnite and arsenopyrite. The Hillgrove project has resources of 6.3 million tonnes grading 1.6 per cent antimony and 4.3 grams per tonne of gold and reserves of 2.2Mt grading 2.1 per cent antimony and 3.8g/t of gold."

Emu Nickel further described the mine and the company's intentions:

"Ore would be accessed by the existing decline from Bakers Creek Gorge and mined by underground methods. The broken ore would be hauled to the processing plant by truck where it would be crushed and ground. Two flotation concentrates – an antimony-gold concentrate and an arsenopyrite-gold concentrate – would be produced. These concentrates would be shipped to processors offshore for recovery of metal.

Base case metrics have been based on an annual ore production of 250,000t producing 4,500t of antimony and 25,000oz of gold in concentrate with average metal recoveries of 85 per cent for antimony and 80 per cent for gold."

There would be *"immediate access to sufficient underground ore for the first 18 months or more of production. About 50,000t of ore was already present on the run-of-mine pad ready for commissioning."* (source http://www.emunickel.com.au/Projects_Hillgrove.asp)

One can assume that the new owner, Bracken Resources, could proceed in a similar fashion. Gold and antimony prices will influence the production at Hillgrove.

Spillages and Discharges:

- April 2009: An uncontrolled escape of contaminated mine waste material from Hillgrove Mine holding dams the Upper Macleay River system, causing contamination.
- July 2010: Straits Resources fined $50,000 by NSW Land & Environment Court, being found guilty of polluting waters
- October 2011: Environmental Protection Authority (EPA) investigates three separate discharges from storm water dams after heavy rain.
- November 2011: Another controlled release from storm water dam occurs. High to extreme contamination for 50km downstream from spill site with 300km Antimony and Arsenic dispersion along Macleay River system.

The Hillgrove Mine holding dam at the edge of the escarpment above Bakers Creek

The spillage in April 2009 was in addition to ***controlled*** releases of contaminated water for which mines are granted a license by the EPA. This license is called an Environmental Protection License (EPL). Hillgrove has EPL number 921 which ***"***authorises ***the pollution of waters from 12 discharge points at the premises subject to conditions"***-(Land & Environment Court NSW 2010 File No 50017 EPA vs Hillgrove)

At the time, the 2009 spill received much publicity and appeared to explain the high levels of antimony and arsenic in the Macleay River.

However from the transcripts of the court case it appears as though the mine acted responsibly in notifying the EPA, containing the spill and cleaning it up. And more incredulously it appears as though none or very little of this "uncontrolled" waste entered Bakers Creek and the Macleay catchment.

Status of the Macleay River

The Hillgrove mineral field has been the site of 130 years of bad mining practices with polluted water being released into the catchment area. This is another reason for high arsenic levels in the Macleay River resulting in the need for Bellbrook to get a water treatment plant to filter out arsenic and antimony.

At one time the Bakers Creek gorge was like a rabbit warren with hundreds of individual miners and larger mines sinking shafts and digging out material that is now exposed and leaching heavy metals into the river system.

This has resulted in a plume of contaminated material that is slowly working its way down this river with each flood event.

There are already elevated levels of arsenic and antimony in the top 60 cm of the Macleay floodplain that is consistent with the last 100 years of mining activity.

Each year 8.2 tonnes of antimony and 11 Tonnes of arsenic are washed out of the Macleay River and this is a conservative estimate. **(***Antimony & Arsenic Dispersion In The Macleay River Catchment. Ashley et al UNE 2007*)

Considering the record, numerous questions arise.

- While Bellbrook has a new water treatment plant, what about the people upstream and downstream who draw water from the river for drinking, watering gardens, animals and stock?
- Should we be eating fish from the Macleay?
- What will be the long term impact on our floodplain?
- What is the consequence of these metals to our food, meat and milk?
- Why aren't we measuring our water frequently for Arsenic and Antimony as well as other heavy metals?
- Why aren't more studies done despite recommendations for this to happen?
- Who is remediating the old mines in the Upper Macleay gorges?
- Why can mining companies get equipment into remote areas when there is a profit to be made by digging up gold or other minerals, then say its impossible to get in to clean up their mess and pollution?
- Why are even more antimony as well gold, copper and silver mines being planned in the Macleay catchment at Jeogla and Halls Peak when previous pollution hasn't or can't be cleaned up?

What is the cost of clean water?

Take action, join the community group
SAVE OUR MACLEAY RIVER

www.saveourmacleayriver.com