

Berrima Colliery Fact Sheet

About the Berrima Colliery Mine Closure

Berrima Colliery is a small underground coal mine that operated continuously since 1924 for over 90 years. The primary focus of the mine was the supply of coal to the Berrima Cement Works kiln.

In 2013, Boral announced the transition of the mine site into care and maintenance, before seeking approval from the NSW Government in 2014 to permanently close the site.

In closing the mine Boral is required to put forward a Final Closure Plan (FCP) which outlines the process of closure to make the site safe, stable and environmentally safe. This includes sealing up mine entries, removing any surface mine equipment and rehabilitation of disturbed areas. Some buildings and structures may be retained for another future use in keeping with the land zoning.

Mine closure is an ongoing process in collaboration with relevant NSW government authorities such as the Department of Planning & Environment (Resources & Geosciences), Environment Protection Authority, WaterNSW and DPI-Water.

While mining is a key part of the Australian economy, not many underground coal mines in NSW have undergone a formal mine closure. Boral recognises the rare nature of this process and continues to undertake significant work to ensure the Berrima mine closure reflects a 'best practice model' approach, informed by scientific data and a panel of leading experts.

What happens when a mine closes?

Most mine sites will have their infrastructure removed as part of the decommissioning process and then undergo some level of environmental remediation work. The site will then be secured, the mining lease and other approvals relinquished and freehold land may then be divested.

When the mine was operating, groundwater that entered the underground workings was collected, pumped and then discharged to the Wingecarribee River via an old hand dug mine entry (known as an 'adit').

The groundwater that enters the mine workings comes from the overlying sandstone strata, and contains a range of minerals such as iron, manganese and nickel.

During operations, the pumping of water provided aeration and settling, which reduces levels of some of these minerals.

Since the mine has been in care and maintenance and working toward closure, the pumping of water in the underground workings has ceased. This has allowed the groundwater to flood a section of the workings and flow by gravity through the adit into the Wingecarribee River.

Boral is committed to maintaining good water quality and mitigating any impact on the local environment. This includes a process of passive treatment and monitoring the water discharged into the Wingecarribee River.

Is there any impact on the environment?

The water discharge from the mine is not contaminated or mine waste. It is natural groundwater that enters the underground mine workings and flows to the Wingecarribee River via an old adit (mine entry). As with the local groundwater, the discharged water contains levels of iron, manganese, and nickel.

Boral is not adding anything to the water. There are however other factors such as low levels of rainfall in the area, upstream licensed discharges from other sources which impact the concentration of minerals and overall water quality.

What does an increase in naturally-occurring mineral levels mean?

Boral's water testing over many years both upstream and downstream of the adit discharge indicates that mineral levels in the river fluctuate due to many factors including, sewerage treatment, urban and agricultural runoff, local geology, natural groundwater seepage and the mine discharge itself.

In late 2016, Boral notified Government authorities of elevated mineral levels and have been working with experts to identify solutions. The impact of the recent elevation in mineral levels from the adit discharge is unknown at this stage. Additional water quality and aquatic ecology monitoring is being undertaken closer to the discharge to understand the extent and impact of the mineral levels. The most recent studies undertaken located around 5.5 kilometres downstream indicate a

neutral or beneficial effect compared to the baseline study from 2013.

The most obvious change immediately downstream of the discharge is a visual one, caused by iron as it reacts to oxygen in the environment. This reaction can cause a reddish stain to the water and on the river bed surface.

The mine discharge is approximately 90kms from drinking water stores and it does not pose a risk to the drinking water catchment or people's health.

Boral will continue to work with the local community to ensure regular updates are provided.

Is sealing the mine an option?

Boral has explored many closure methods, including fully sealing the underground sections of the mine to eliminate the adit discharge. The fully sealed option was not progressed due to potential geotechnical constraints and the proximity of some historic mine workings to the river escarpment.

However, due to the elevated mineral levels in the adit discharge, Boral is reviewing the technical feasibility and risks associated with a variation to the fully sealed option, in order to eliminate or greatly reduce the discharge to the river. This review is being conducted by technical experts and in consultation with relevant government authorities.

Can the water be treated before it is discharged?

Installing a water treatment plant isn't always the solution to all water quality issues. Other than elevated levels of certain minerals, the water discharged from the mine is of benefit to the river, and often dilutes levels of nutrients like phosphorus and nitrogen which are introduced by agriculture, urban runoff and sewerage treatment plants. Boral is seeking to target the removal of these minerals and allow the other beneficial aspects to continue.

Boral is in the process of implementing a type of treatment, known as 'passive treatment', which has been widely used in the United Kingdom to treat water discharges from old coal mines. It involves exposure of the mine water to oxygen (via pumping) and limestone (via long beds) to slightly raise pH and allowing sufficient time for the minerals to 'drop out' before discharging via the adit. This passive treatment will be undertaken while Boral investigates the feasibility of sealing the underground workings.

What is Boral doing about the situation?

Boral takes its responsibilities to the local community and to the environment seriously and will take all steps necessary to ensure we comply with all the relevant State and local guidelines and regulations.

Given the recent water quality changes, Boral has increased the frequency of water quality monitoring and testing along the relevant sections of the Wingecarribee River. These results will continue to be published on the Boral website.

Boral, together with our panel of highly respected experts, has drafted a series of recommendations for consideration by the NSW Environment Protection Authority (EPA), and other State authorities for both, short term and long term water management solutions.

Where do I get more information?

This factsheet is interim advice by Boral and will be updated as further investigations are undertaken.

For any further queries or concerns, please call us on 4860 2222, 4677 2946 or 0401 894 097. Alternatively you can email feedback@boral.com.au or visit www.boral.com.au/berrimacement