

## **Address to the IPC Hearing on Bowden's Mine Application by Carolyn Barlow**

This is about Acid Mine Drainage because for me, it is the biggest reason that Bowdens Mine must not be approved.

Dr Haydn Washington, esteemed science academic, science writer and long-time resident of Rylstone wrote two submissions on Bowdens mine proposal last year. As a metallurgist with the CSIRO, Haydn had investigated Acid Mine Drainage at both historic and currently operating mines. He said that this mine must not go ahead because Bowdens had not acknowledged the potential risk of Acid Mine Drainage. Nevertheless, it was recommended.

This is not surprising. In Bowdens' Environmental Impact Statement (EIS), there is a mind-boggling amount of technical information to distract the reader, but curiously, there is no specific mention of Acid Mine Drainage.

I am a retired educator, President of the Rylstone District Environment Society and representative of the society on the Central West Environment Council. I also have children and grandchildren living in Mudgee and Rylstone.

In the Conversation on 6<sup>th</sup> September 2017, Acid Mine Drainage was called "the global environmental crisis you've never heard of".

I will be telling you what it is, the environmental problems it causes and the potential danger for Lawson Creek and our community.

Then I will show you how Bowdens' Environmental Impact Statement has failed to acknowledge or address potential risks.

Acid Mine Drainage is a world-wide problem, wherever sulphide bearing rocks are mined. When the rocks are exposed to air and water and naturally occurring bacteria, a strong acid solution is formed and heavy metals dissolve into the groundwater and move into nearby creeks. Creeks become lifeless, often foul smelling, pinkish green or even orange drains. Some heavy metals such as cadmium can easily remain in solution more than 20km from their source. Others settle out sooner but can move in a flood and again dissolve in an acid environment. At Sunny Corner, near Portland, where silver ore was mined, there is still little biodiversity in the creek 22km from where it drains out of the mine. Acid Mine Drainage is still happening there, even though mining ceased 100 years ago. At Captains Flat, near Braidwood, millions of dollars were spent on rehabilitation, yet Acid Mine Drainage is still occurring.

You will find little mention of Acid Mine Drainage in Bowdens' Environmental Impact Statement. Instead, you will find plenty of technical information which leaves you with the impression that "there is nothing to see here".

It would be a miracle if this were true. Bowdens would be the only sulphide mining operation in the world with no significant Acid Mine Drainage.

The sad thing is, the environmental impacts of Acid Mine Drainage usually do not show up for years, even decades after mining ceases. What's more, Acid Mine Drainage continues for tens, hundreds or even thousands of years, as in Spain where silver was mined by the Romans about two thousand years ago.

By the time our community is aware of Acid Mine Drainage, Bowdens will be long gone.

Acid Mine Drainage causes heavy metal contamination of waterways. There is a long list of serious, life-threatening human diseases in which heavy metal contamination is implicated.

If it happens and it is likely that it will, heavy metal contamination will severely impact the Lawson Creek area, affecting native vegetation, irrigation crops and all animal life in the area, including native animals, bees, cattle and humans who eat meat from the cattle. Mudgee's water supply may also be affected as Mudgee is barely 26km downstream of the site.

Bowdens Environmental Impact Statement has shortcomings.

Much of the rock excavated will be waste rock. Of this, 54% will be potentially acid forming (PAF). Bowdens claim that leakage will be prevented because the potentially acid forming (PAF) rock will be encapsulated by non-acid forming rock.

However, over time, water can seep through rock into small underground channels. A 2016 Australian Government publication says that for encapsulation to be successful even in the short term, very skillful and careful management is required. It is unlikely that Bowdens will successfully encapsulate all potentially acid forming waste rock for more than sixteen years. Even if they did, would encapsulation still be effective decades later?

Bowdens' EIS says testing shows that over a thirty-day period, acid water at the site returns to the same pH as soil treated with agricultural lime, implying that because of this, there will not be a problem.

However, a researcher at Waterloo University in Canada states that Acid Mine Drainage does not wait for thirty days. It begins immediately after rock exposure and only gradually decreases. Will Bowdens encapsulate all waste rock immediately? I doubt it.

The EIS says iron, aluminium, zinc, lead and manganese are present. What about cadmium, copper, barium, strontium and selenium? The Environmental Impact Statement does not tell us whether or not these are present.

There is also no mention of bacteria and this is significant because an ancient bacteria present nearly everywhere speeds up the acidification process by around 1,000 times.

The EIS also says that acid water accumulating below ground level will be drained off. How will Bowdens ensure that this water is no longer an "acid" problem?

X Bowdens have avoided using terms like "heavy metals" or "acid mine drainage". I wonder why. Could it be that these words alarm people?

What they have given us is an Environmental Impact Statement with hundreds of pages of technical information.

However, if you look at it carefully, you will see that the risks of Acid Mine Drainage and heavy metal contamination are very high with this mine.

## References

Dr Haydn Washington's **Submissions to the Department of Planning and the Environment on Bowdens Mine Proposal**

**Bowdens Feasibility Study**

**Bowdens Website**

**Bowdens Environmental Impact Statement**

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[www.uwaterloo.ca](http://www.uwaterloo.ca) Wat on Earth, **Acid Mine Drainage: past, present ..... future?** Wed March 11, 2006

The Conversation 6<sup>th</sup> September 2017 **"acid mine drainage: the global environmental crises you've never heard of"**

[www.USGS.gov](http://www.USGS.gov) **"How does mine drainage occur?"** US Geological Survey

[www.dcccew.gov.au](http://www.dcccew.gov.au) Australian Government, Department of the Climate Change, the Environment, Energy and Water 1997 **"Acid mine Drainage in Australia: Its Extent and Future Liability"**

U-tube Dr Rob Benson, Adams University, USA **"Acid Mine Drainage"** January 28, 2016

Mudgee Guardian 20<sup>th</sup> January 2023, Michael Kelly, **Expert warns of mine risks**