

**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,
Portfolio Committee no. 2 – Health, 4 October 2023**

**Post-hearing response to the following question taken on notice from Fiona Sim,
Vice-president, Running Stream Water Users Association**

Question from The Hon. SUSAN CARTER: Thank you both for being here today. I have one follow-up and just one more question in relation to the tailings dam. I note in your submission you identified “faulty tailings dam specifications”. Are there any particular reasons why you believe the specifications for the tailings dam are faulty?

FIONA SIM: I’m going to have to take that question on notice, I’m sorry. I guess we were just following the advice that we had heard from the Mudgee District Environment Group and other people about that tailings dam.

The Hon. SUSAN CARTER: If you could take it on notice and get back to the Committee, I’d be very grateful.

FIONA SIM: Yes, sure.

As I said in response to this question, the information in the Running Stream Water Users submission was partly based on information published by the Mudgee District Environment Group, which I actually mis-named. I should have stated that it was the Mudgee Region Action Group (formerly the Lue Action Group).

The Mudgee Region Action Group states on its website (<https://www.lueactiongroup.org/tailings-dam>) that the tailings storage dam will be:

On a major geological fault line above the water table at the headwaters of the Lawson Creek, which flows into the Cudgegong River at Mudgee.

Further, they state that:

[In the dam there will be] 30 million tonnes of potentially acid forming tailings, including most of the 43,700 tonnes of chemical used in ore processing. Many of these are highly toxic, including sodium cyanide, arsenic, caustic soda, copper sulphate, zinc sulphate, lead and zinc collector.

and that

The dam has a footprint of 112.5 hectares, across uneven ground. Bowdens is proposing to construct a continuous geosynthetic impermeable liner base over this large area, in the hope that it will provide full impermeability for centuries to come. This seems unlikely, and of real concern is what happens once mining is finished? Whose responsibility will it be to maintain the liner and ensure the dam isn’t leaking toxic chemicals into the environment? There is no track record to provide proof that containment designs like this work across this scale or timeframe. In other words, it’s never been done before. Bowdens’ own proposal acknowledges a leakage rate of 1.6mL per day, at best. The dam is designed to leak, and if this mine goes ahead that will be something the community has to live with.

...There is no plan to drain or remove the tailings dam, meaning it will remain in situ forever. Bowdens has acknowledged leakage from the dam will continue after mining stops, but there is no plan in place to fix this or manage it. What does this mean? It means permitting Bowdens to build and operate this dam will sentence our region to a toxic intergenerational legacy. The dam will be there forever, and generations to come will have to live with the consequences of leakage of toxic chemicals into a currently pristine environment.

The following information about the leakage risk from the proposed tailings dam also comes from the Mudjee Region Action Group website ([https://www.lueactiongroup.org/tailings-dam-links;link under the heading “Risk of leakage”: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://static1.squarespace.com/static/634e0e19427e747fa68763d4/t/636302121bcd9e60ffdef1f6/1667432979783/4.11.+TSF+leakage+risk+%281%29.pdf](https://www.lueactiongroup.org/tailings-dam-links;link+under+the+heading+\))

As the foundation clay liner will be subject to wetting and drying cycles which may cause clay cracking when the TSF is commissioned, as well as upward groundwater pressures, detail around maintaining the design hydraulic conductivity estimate of 5×10^{-10} m/sec would help justify the liner proposed.

Faults have the potential to readily transmit large quantities of groundwater. The only reference to the faults mapped beneath the planned TSF is on page 2 of ATC Williams (2020). ATC Williams (2020 p.2) suggest leakage through faults (Figure 3) is considered in ‘Section 7’. Transmissive faults can form a highly transmissive underground flow conduit in a preferred direction, potentially to a significant receptor. No reference to faults can be seen in Section 7 and the TSF design and monitoring plan in ATC Williams (2020) does not appear to consider the leakage risk posed by faulting (ATC Williams, 2020).

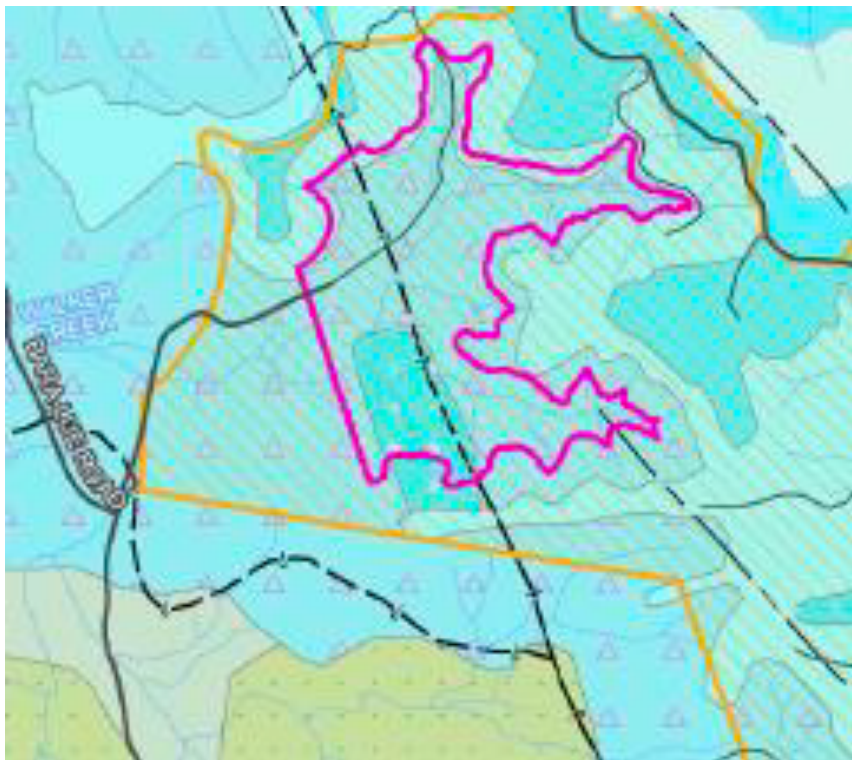


Figure 3: Structural geology – adapted from Figure 11 of (Jacobs (Australia), 2020, pp. 5-57)