



Friends of Bats and Habitat Gippsland

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Supplementary Submission – Centrifuges

To The Inquiry and Advisory Committee in response to Kalbar's Environment Effects Statement (EES)

We have have the following concerns

Centrifuge Safety Concerns

- Accidents have occurred overseas in the use of centrifuges and as centrifuges are untested in mineral sands mining, the risk of an accident causing injury or death to workers is high.
- Information about the potential hazards, likelihood of harm as a result of these hazards, and how harm might manifest as a result of using centrifuges is missing in the EES documents.
- A laboratory centrifuge from Alpha Laval was used to do testing. *“In full scale equipment, there are a number of variables available which are not possible to test in a laboratory.”*
- Centrifuges require massive concrete foundations however they need to be moved several times to be near the mining operations. What will happen with all the concrete foundations and what impact will runoff from the foundations have and their stability on dispersive soils?

Economics

- Tabled Document 194, Technical Note 14 (TN 14) on page 3 states that centrifuges have not previously been used in mineral sands projects due to the higher cost of implementing them when compared to tailings storage facilities - so why would this option now be proposed? Given centrifuges are untested the risks of failure are high when considering the environmentally sensitive location of the mine.
- Using centrifuges doubles the operating costs associated with treatment of fine tailings from \$1.50-\$2.00 per tonne, to \$3.50 - \$4.00/tonne (TN 14; pg 3). No cost benefit has been done.

Environmental Impacts Not Assessed

- In 2018, Kalbar had explored the use of centrifuges according to an expert report (IAC Tabled Document 130 Appendix B) using a sample of slimes from the Fingerboards mine site. If centrifuges were considered the most viable option for tailings waste management, why wasn't the centrifuge option included in the exhibited EES?

- The Technical Reference Group (TRG) did not assess the environmental risks from the use of centrifuges, so the cumulative impact of their use has not been assessed, nor risk mitigation
- strategies presented.

Flocculant Use Increases Massively

- A massive increase in flocculant use will be required (370g/tonne of tailings). The impact on the environment hasn't been assessed, nor the potential for leaching into waterways.
- Expert evidence raises concerns about their use given the huge amount and the lack of scientific evidence about their performance and use on this scale. They are also toxic to fish.
- In Tabled Document 30, Appendix C page 3 from the flocculant supplier (Nalco) it states *"the characteristics of Glenaladale slimes create a narrow band of conditions for effective flocculation such that feedwell design factors become critical to ensuring that design throughput can be maintained without excessive flocculant dosing."*

Human Health

- Hundreds of people live within a few kilometres of the Project boundary. The full impact of noise has not been stated. There are human health risks because of night-time operations.
- Stockpiling of the processed tailings poses human health risks if it becomes dry and airborne.

Impacts on Horticulture Industry

- Leaching from flocculants and wastewater entering the Mitchell River pose risks of contaminating the river and the vegetable crops that are irrigated from that river water.
- More direct and indirect jobs would be created if the water the mine requires was redirected to growing vegetables. If 5 GL of water is required by the mine, there are water security risks.

Increased Power Use

- Electricity use will increase from 9,000 kVA to 14,000 kVA which will greatly increase the electricity and greenhouse gas emissions of the Project. No impact assessment has been made.
- Will the electricity grid be able to be upgraded, can it cope with the surges of power during centrifuge operation, will this have an impact on household and business users of electricity?

Noise Impacts

- The full specifications from the manufacturer of the centrifuges (Alpha Laval) have not been provided by Kalbar so it is not clear what the full impact of noise will be from operating 6 centrifuges.
- The full noise impacts have not been disclosed as there was no product in the centrifuge and the outlets were sealed so the noise test results do not reflect the expected real noise levels.

Rehabilitation

- The technical reports don't include additional or revised information of the risks and mitigation strategies for centrifuged tailings, soils, overburden or coarse tailings as part of rehabilitation and closure planning. If the Project is abandoned rehabilitation won't happen.

Soils Prone to Erosion

- What will be the impact of vibration from operating multiple centrifuges on soils that are known to be prone to erosion?
- Soil erosion potential in relation to centrifuged tailings needs to be included in the EES.
- Depositing the tailings cake in the mine void means the soil structure has changed so how will that material perform in filtering water that will eventually find its way into the rivers.

Water Impacts

- The amount of water required for the centrifuge option (2.9 GL) is close to what was required in the EES (3 GL) so the centrifuge option does not reduce the environmental impacts of the Project, although if the centrifuge option is not pursued, 5 GL would now be required for the tailings dam option. This amount of water poses unacceptable concerns for environmental flows for the Gippsland Lakes Ramsar wetlands; and with climate change this will worsen.