

Supplementary submission to the Fingerboards IAC in response to Kalbar's 'centrifuge' proposal [Original submission # 705 dated 29 October 2020]

1. Point #3 in my original submission sought to remind the Inquiry & Advisory Committee (IAC) that consultants engaged by the proponent are not independent and that their views should be considered as being potentially biased in favour of the proponent.

An example of such bias is illustrated in Kalbar's Technical note #14, appendix #3 – the 12<sup>th</sup> March 2021 memorandum from Water Technology – in response to IAC question C6 concerning 'Information on the likely impacts on waterways and streams from the introduction of flocculants into the Project area'. Section 3 of this memorandum uses phrases [my underlining for emphasis] such as :

- "...if applied in an appropriate and controlled manner (as will be the case) ..."
- "...will be carefully controlled, ..."
- "...will be carefully controlled and managed ..."
- "...overseen by rigorous internal and external water quality and environmental monitoring programs ..."
- "These programs will ensure ..."

How can the consultant ensure that the proponent will, in fact, always be careful and rigorous ? Use of such phraseology is designed to give the impression that everything will always be fine & dandy, whereas, in practice, human error often results in lack of care & rigour, which can lead to poor (or even disastrous) environmental outcomes.

2. A further example of unnecessary hyperbole by one of the proponent's consultant is given in Document #130 - Expert Witness Statement in commentary on Technical Note 01 :  
- "...it is therefore with absolute confidence that I say if the product is safe to be added to the Bairnsdale drinking water, it must be safe too to add to the centrifuge circuit on the Project...."

Such a sweeping statement, without qualification as to a comparison of absolute quantity, concentration, seasonal timing, duration of dosing etc. is not justified in any circumstance, and would seem to be designed to create a favourable impression for the proponent's centrifuge proposal.

3. Points # 11 & 12 in my original submission (#705) sought to bring to the IAC's attention aspects of the project relating to the generation of greenhouse gas (GHG) emissions. The significant predicted additional power consumption (increase of more than 50%) inherent in the proposed use of centrifuges (however well justified on a process or economic outcome) is cause for considerable concern.

As far as I can determine, the revised proposal for the use of centrifuges gives no consideration at all to the scientifically recognised need to reduce global emissions of GHG as soon as practical, and to target zero emissions by at least 2050. There is no mention of any requirement, or indeed willingness, to mitigate and/or minimise the project's significant additional GHG emissions over the life-time of the project.

The additional electrical power requirement inherent in the centrifuge proposal now makes it imperative that, as part of the project, the proponent should be required to purchase 'green' electricity off-take from a large-scale solar/wind/battery electricity generating operation, preferably located in the Gippsland region.

4. Document #193 – Kalbar's assessment of the impacts of the use of centrifuges on EES study areas – states that, while a complete GHG inventory for the Project with centrifuges has not yet been prepared, it is expected that total GHG emissions with centrifuges will not be significantly different from the estimates in the EES and will therefore be a neutral to slightly negative change. This assessment is disputed until such time as Kalbar can substantiate the claim.

5. The Technical Reference Group (TRG) should be requested to review the environmental impacts from proponent's proposed use of centrifuges to determine if there are any additional issues that the proponent should address.
6. Significant emphasis has been placed on the Alfa Laval Australia Pty Ltd., Laboratory Spin Test Report "Mineral sands slimes tailings dewatering test for Decanter Centrifuge" carried out in October 2018, purportedly using a sample of slimes from the proposed Fingerboards mineral sands mine-site.

According to the Alfa Laval report, laboratory scale testing for its suitability for dewatering in large scale Alfa Laval P3 mining decanter centrifuges indicated that the slurry can be dewatered in a decanter centrifuge to form a firm, spadeable, transportable cake of around 70% wt. total solids (suspended + any dissolved solids). However, the report also notes that, in full scale operation the moisture level may be lower or higher depending on machine settings, differential speeds, throughput and G forces used, and that further work on the optimisation for flocculent dose should be undertaken, testing the type of flocculent, dilution of floc and feed and the impact of water chemistry.

Significant importance has been placed on this single test report carried out on a single sample, even although the results "... may be lower or higher ..." depending on a number of stated factors. Given the many uncertainties associated with the proponent's previous proposal for a Tailings Storage Facility (TSF), as recognised in Document #130 - Expert Witness Statement in commentary on Technical Note 01 – and in Document #42 - it is suggested that, to date, insufficient firm evidence has been provided to support the current proposal's estimates (using centrifuges) in various respects, and in particular on overall water consumption. Given the basis of current estimates, an error range of plus or minus 15% would seem to be the best that could be hoped for. So, instead of 2.9 Gl annual water requirement, it could easily be more than 3.3 Gl.

The proponent's statement (Document #42) that the use of centrifuges will "... provide certainty about water recovery from the fine tailings that is independent of climatic and soil conditions." should be challenged.

7. It is hoped that consideration of the issues raised will further encourage the Inquiry and Advisory Committee to recommend that the project not proceed despite the revised Kalbar proposal for the use of centrifuges.

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