

Supplementary Expert Witness Statement of James Weidmann

In the matter of the Fingerboards Mineral
Sand Project EES – Centrifuge and Flooding
Considerations

Kalbar Operations Pty Ltd

February 2021





1 INTRODUCTION

I, James Weidmann, was engaged by Kalbar Operations Pty Ltd (Kalbar) to provide expert evidence in respect to flooding and hydraulic modelling for the proposed Fingerboards Mineral Sands Mine. I have previously provided an Expert Witness Statement on these matters based on work undertaken by Water Technology and myself.

This Supplementary Expert Witness Statement addresses the implications on my earlier advice and professional opinion on Kalbar's decision to now include centrifuges in their site operations.

2 OVERALL TAILINGS CENTRIFUGE CONSIDERATIONS

Since preparation of the EES, Kalbar intends to include centrifuges as a component of project operations. I have been provided with a technical note dated 18/1/2021 detailing the rationale behind, and method of, implementation of centrifuges for water recovery and tailings management. I have considered this information and have concluded that the centrifuges will affect elements of the hydraulic assessment previously undertaken, however, the decision does not affect the overall outcomes or my recommendations. From a flooding perspective, I am supportive of the proposed centrifuge operation. My comments/justifications for this support are outlined below:

- With the adoption of the centrifuges, there will no longer be a need for fine tailings storage facilities (TSFs). TSFs were included in the design surfaces provided by Kalbar and were included in the hydraulic modelling that was undertaken by Water Technology as part of the EES assessment and the additional hydraulic modelling I undertook as detailed in my Expert Witness Statement. By virtue of the “rain-on-grid” approach adopted for the hydraulic modelling, the flood storage capacity of the TSFs have been explicitly included in the modelling. Flood level reductions noted downstream of the site are partly attributable to the rain capture capabilities of the TSFs. Note that the water management dams responsible for capturing mine contact and undisturbed runoff prior to discharge from the site were assumed to be full at the start of the hydraulic simulations, however, the TSFs were not. This is an appropriate assumption given that the storage within the TSF cells is real, and the TSFs would have been operated separately to the water management dams so that the chance of both the dams and TSFs being full at the same time would be extremely unlikely. Removing the TSFs from the design surfaces would reduce the storage available for rain capture, however, this would likely not adversely affect flooding compared to the existing case given removal of the TSFs will significantly reduce the disturbance footprint of the mining activities at any point in time (though not necessarily the overall project in the long term since these areas may at some stage be mined) such that the existing landforms can be more readily maintained as mining progresses.
- As previously noted in my Expert Witness Statement, maintaining the existing landforms and catchment boundaries as much as practicable is a key tenet of flood mitigation practices for the mine. The inclusion of centrifuges significantly reduces the disturbance footprint as mining progresses and allow for this to be more readily achieved. The centrifuges will also see the mine voids effectively continuously backfilled, meaning that the disturbed mining area is far smaller, and rehabilitation works can occur much sooner after mining works are completed in any particular portion of the site. This gives the mine operators more flexibility and control of the internal landform and catchment boundaries which therefore aids in minimising flood risk.
- Inclusion of the centrifuges will not impact the operation of the water management dams which, when drawn down, provide freeboard and act as a buffer to attenuate flood impacts (water extracted from the tailings will be returned to the Process Water Dam).



- From a dam safety perspective, not requiring large TSFs eliminates the risk of a tailings dam failure which is a notable benefit to the project.

I have not been provided with revised design surfaces for the project without TSFs, and due to time constraints, I have not been able to undertake any additional detailed remodelling of the proposed revised mine operations. However, it is my informed opinion, and for the reasons specified above, that the inclusion of the centrifuges will not have adverse impacts on flooding. Including the centrifuges will reduce the disturbance footprint of the project at any point in time which will provide greater flexibility for maintaining the existing landform as mining activities progress. Excluding the TSFs from the modelling would not result in adverse flooding impacts because these areas would be undisturbed.

The centrifuge proposal does not have any impact on my responses to submissions, therefore I do not have any specific commentary to add in this respect.

4 CONCLUDING REMARKS

The assessments undertaken by Water Technology and me for this project have drawn on detailed background data sets and used contemporary analysis and latest industry standard modelling tools to evaluate the of impacts of the mine on flooding conditions. These works have shown minimal and manageable potential for flooding impacts associated with the proposed Fingerboards mineral sands project.

Kalbar’s decision to include centrifuges in the design provides me with further confidence that flooding impacts will be minor and manageable.

To further quantify or justify this, I recommend the following further work to inform detailed design and the preparation of appropriate management and mitigation plans:

- Kalbar should redesign their earthworks and land use models taking into account the centrifuge operations and excluding TSFs.
- Water Technology can undertake additional detailed hydraulic modelling and reassess potential flooding impacts based on the revised designs.

5 DECLARATION

I have made all the inquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have to my knowledge been withheld from the Inquiry and Advisory Committee.

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James Weidmann

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