

From: [REDACTED]
To: [REDACTED]
Cc: [REDACTED]
Subject: Kalbar Operations Fingerboards - EPA Request for Further Information to support Development Licence Application (APP002973)
Date: Monday, 19 July 2021 1:25:00 AM
Attachments: [image002.png](#)
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Dear [REDACTED]

Following the commencement of the EP Act 2017 on 1 July 2021 and in line with my email of 7 June 2021 containing a draft request for further information made under s 50(3), please find below the formal request. It is noted that this request now supercedes the outstanding request of 22 December 2020 (EPA Ref: SO1003454/L02) made under s 22 of the EP Act 1970.

To support the transition from the Works Approval Application (Ref. SO1003454), which due to the commencement of the Environment Protection Act 2017 on 01 July 2021 has under Part 16.3 become an application for a Development Licence (Ref. APP002973), EPA has determined that further information is required to inform the assessment of your application in accordance with the requirements of the new legislative framework now in effect.

The statutory clock is now paused from today, 19 July 2021, until the Authority receives an acceptably complete response from Kalbar containing the required information listed below.

KALBAR OPERATIONS PTY LTD must provide responses to the following requests:

Information to Support the Transition to the New EP Act

1. Further information to support the transition of Works Approval Application (No. 10003534) to a Development Licence Application (Ref. APP002973) as specified below:
 - a. *Demonstration of compliance with the General Environmental Duty.* Please provide information to demonstrate how the proposed activities will meet the requirements of the General Environmental Duty as per section 25 of the *Environment Protection Act 2017 (EP Act 2017)* and that the activities will be undertaken and operated so far as reasonably practicable to minimise risks of harm to human health or the environment from pollution and waste with particular reference to section 25(4) of the EP Act 2017, how the proposed activities:
 - i. use and maintain plant, equipment, processes and systems in a manner that minimises risks of harm to human health and the environment from pollution and waste;
 - ii. use and maintain systems for identification, assessment and control of risks of harm to human health and the environment from pollution and waste that may arise in connection with the activity, and for the evaluation of the effectiveness of controls;
 - iii. use and maintain adequate systems to ensure that if a risk of harm to human health or the environment from pollution or waste were to eventuate, its harmful effects would be minimised;
 - iv. ensure that all substances are handled, stored, used or transported in a manner that minimises risks of harm to human health and the environment from pollution and waste;
 - v. provide information, instruction, supervision and training to any person engaging in the activity to enable those persons to comply with the duty.
 - b. provide information to demonstrate how the proposed activities respond to the matters specified at section 69 of the EP Act 2017, with particular reference to subsection 3

including:

- i. the impact upon the specific environmental values of the *Environment Reference Standard* and requirements of any retained State Environment Protection Policies after commencement of the EP Act 2017;
 - ii. how the proposed activities can be considered to use *Best Available Techniques or Technologies*.
- c. provide information that allows EPA to assess Kalbar Operations against the requirements of section 66 and section 88 of the *EP Act 2017* and complete a signed *Fit and Proper Person form and Prohibited Person form*; and
- d. a detailed *Commissioning Plan* for the proposed activities setting out:
- i. how the DAF plant will be brought on-line and that it is operating as designed as determined by detailed monitoring; and
 - ii. the actual quality of discharges into the Mitchell River and any potential environmental effects at the point of discharge and immediately downstream of the discharge point.; and
 - iii. the actual quality, and volume of the seepage from the tailings returned to (and any other materials (i.e. solid wastes from the DAF plant) placed in the) mine voids following dewatering by the centrifuges and any potential environmental effects to the groundwater resources underneath the site.

Form of the Application

2. To assist EPA and all stakeholders in understanding the Development Licence Application Kalbar are seeking approval, an updated Application document (including relevant supporting appendices) should be provided in one consolidated document. This should clearly describe the development licence application being sought and Kalbar's assessment of the application. All relevant information forming the Application and being relied upon, should be provided in an integrated and clearly cross-referenced document (noting cross-referencing to evidence provided to the Independent Advisory Committee (IAC) Hearing is not considered appropriate and/or answers to Request for Further Information from the IAC).

Centrifuges

Following a design change the proposed mine project now includes the installation and operation of centrifuges within the on-site processing of the mineral sands ore which will change the water balance of the mine and could affect groundwater. Accordingly, the application should be updated to include the centrifuges with further information and clarification provided.

3. With specific regards to 1(b) above, please demonstrate how you consider that the proposed treatment of fine and coarse tailings will minimise risks of harm to human health or the environment so far as reasonably practicable.
4. Please provide detailed design information (including design plans, locations, and descriptions) on the centrifuges and operational procedures to dewater tailings and their placement in the mine voids.
5. Please provide details (including Safety Data Sheets) of any flocculants proposed to be used in the dewatering process and identify any by-products and their concentrations (in particular any total nitrogen, ammonia and or any potential toxicants formed by their breakdown) from their use that may contaminate seepage from the centrate and tailings.
6. Additionally, please clarify how the flocculants will be stored.
7. Please provide details of how collected centrate will be stored and disposed of. If the collected centrate is returned and reused as process water, please include this in considerations of the long-term average process water quality for total and dissolved metals, as well as other water quality parameters such as total dissolved solids, nutrients and other solutes that may concentrate over time and what effect will this have on management and disposal options for

the centrate. Please provide Kalbar's detailed consideration of the potential impact this may have on the quality of water entrained with, and leaching from, tailings.

8. Please clarify how the fine tailings cake will be stockpiled (prior to and after the establishment of the mine voids) after being produced in the centrifuge and how runoff from these stockpiles will be managed, including details of any measures to prevent ultra-fines being recirculated in the centrifugal process.
9. Please clarify the proposed measures to prevent process water, including centrate and any tailings filter cake run-off or seepage from materials placed in the mine voids entering and mixing with mine contact water being treated in the DAF plant and/or being collected and stored in the Freshwater Dam.
10. Please ensure that the relevant Energy and Greenhouse Gas Emission (GHGE) sections of the application document is updated to include energy demand and GHGE generated by the now included centrifuges.
11. Please ensure that the relevant noise sections of the application document are updated to include noise generated by the now included centrifuges.

Water Balance Management & Rainfall data sets

EPA is still unclear of the operational arrangements and circumstances for active management of Water Management Dams, and Freshwater Dam. Further EPA considers explanation is required for changes in the proposed mine's water balance.

EPA notes that one of Kalbar's Expert Witness Reports [Hearing Tabled Document 85] advocates the use of SILO <https://www.longpaddock.qld.gov.au/silo/rainfall> data rather than Bureau of Metrology (BoM) data which has otherwise been widely used in the application and by other expert witnesses. The SILO data indicates that the annual rainfall could be significantly less than that suggested by using just the BoM data, which has been used in the water balance studies, modelling and assessments. Clarification, further information, and updates to the application are required.

12. Please provide further information confirming the relationship between the Water Management Dams and Freshwater Dam, and whether there is any proposed transfer of waters between these Dams. If yes, please set out the operational circumstances and triggers under which such active management activities would occur.
13. Please set out how volumes in the Water Management Dams will be managed to prevent exceedance of dam capacities and over spilling.
14. Clarify and justify the rainfall data set (that is BoM or SILO) used in the water balance calculations and subsequent hydraulic modelling, and any implications of this on the design of the mine features, especially the functioning of the water management dams.
15. EPA notes that SILO data and modelling are a legitimate tool to use and can provide a better estimate for a location than simply using the nearest BoM station. However, the time period used in McAllister's expert witness statement is only 2000-2020, roughly half of which corresponds to the Millennium Drought. As such, this period may not give a fair indication of the rainfall conditions at the site in the forthcoming years. If the SILO data is to be used, EPA requests that the time period is amended to ensure it is not so influenced by drought. EPA notes that (Department of Environment Land Water and Planning (DELWP), in their recent publication (*DELWP 2020 Long-Term Water Resource Assessment for Southern Victoria. Melbourne, Victoria. Department of Environment, Land, Water and Planning. ISBN 978-1-76077-924-5*) when dealing with river flows, recommends using the period 1975 – present.
16. To note, if the SILO data is now considered to be more reliable all water management balance studies, modelling and assessment work should be updated to reflect this new data.
17. Given the uncertainty in rainfall rates and potential implications to the project, water management balances and discharges, please present a matrix with different scenarios (ranging from for example severe prolonged drought under El Nino to consecutive wet years under El Nina patterns) outlining the effects on the water balance, design and operation of the

water balance management strategy and discharges.

18. EPA notes that the proposed mine's water balance has been updated since submission of the Works Approval Application (WAA) and prior to the IAC Hearing. Given the importance of the water balance to predicting water demand and subsequent surface and groundwater discharges, a detailed explanation of the changes and justification for the figures used is required – with reference to relevant field data/experience.

Surface water discharges & Environmental Reference Standard (ERS)

The EPA is currently unable to determine the potential effects that the proposed surface water discharges to the Mitchell River may have and its consequential impact upon the specific environmental values of the ERS as it is unclear on the circumstances under which surface water discharges will occur, where and how the water will be discharged, and the quality of the water proposed to be discharged. Further detailed information is required.

19. Please provide further information on the quality of surface water (including levels of nitrogen and other contaminants, noting that it is unclear from the application and Kalbar Expert Witness Statements whether aluminium, copper, or flocculant by-products are of concern) to be discharged to the Mitchell River from the Freshwater Dam. Information has been provided as to theoretical dilutions under certain scenarios – while this is informative, we request information on the anticipated volume of flocculants used, and statements as to the predicted concentrations of the compounds noted above and any other compound likely to be in the water discharged to the Mitchell River.
20. Please provide detailed information on the proposed location of the discharge to the Mitchell River. This should include:
 - a. characteristics and profile of the Mitchell River at the proposed discharge point and downstream (within any mixing zone (if one is required)); and
 - b. information on the beneficial uses of Mitchell River at the proposed discharge point and downstream (within any mixing zone (if one is required)).
21. Please provide detailed engineering design information (with appropriate plans) for the discharge point on the Mitchell River. Please note that it is expected that the design of the structure has been discussed and agreed with the East Gippsland (Catchment Management Authority (CMA).
22. Given it is understood the discharge point is due to be via the intake pipe, please additionally clarify how this bidirectional intake and discharge point will be designed to maximise efficiency, minimise potential environmental impacts at the location and downstream.
23. It is currently unclear the circumstances and details under which water (including DAF treated water) from the Freshwater Dam would be released to the Mitchell River. A discrete *Surface Water Discharge Management Plan* is required. This should provide further information and outline the proposed operational procedures under which surface water discharges would occur, particularly:
 - a. the triggers for when releases would occur, and any circumstances when releases would not be permitted;
 - b. the proposed frequency and duration of any discharges;
 - c. sampling/testing methodology for the water prior to discharge to ensure water quality of the discharge meets the required parameters;
 - d. the volume of any discharges;
 - e. whether discharges will be prevented or targeted for release dependent on flows within the Mitchell River and if there is to be such a dependency, what the flow in the Mitchell River will be to trigger the discharge; and
 - f. the proposed notification procedures of stakeholders in advance of discharges.

Groundwater discharges & Environmental Reference Standard

Under the EP Act 2017, a person who is engaging in an activity is required to minimise the risk of harm

to human health and the environment from pollution and waste. To minimise the risk of harm, first the risks must be understood. EPA is concerned that the assessment undertaken to understand potential risk to groundwater quality from the rehabilitated mine pit is not adequately representative of processes likely to be occurring at the site.

24. Further information should be provided on the seepage rates used in the groundwater modelling for water leaching out of the tailings, which has then been used in the water balance calculations for the proposed mine. It is understood that the initial modelling of seepage to groundwater from tailings assumed that no seepage would occur from the fine portion. It is noted that the introduction of centrifuges is expected to reduce seepage from tailings from 53 L/s (in the EES) to 35 L/s (in *Tabled Documents 355 Groundwater Expert Meeting Report & 133 Supplementary Expert Witness Statement – Joel Georgiou Groundwater*). Please provide quantitative justification and evidence to support this expectation.
25. Further work should be undertaken/presented in the application, and should include:
 - a. assessment of the potential quality of process water entrained within tailings at the point of deposition. This should include leachability testing using ore material, with Mitchell River water and/or groundwater as the leaching fluid (as appropriate for the proposed mining processes). This should also consider the potential for cumulative effects on contaminant concentrations due to reusing/recycling of process water and discussion of the implications of this on groundwater quality;
 - b. assessment of potential quality of rainfall infiltration through the remediated mine pit. This should include leachability testing using the various materials to be used to backfill the mine void (e.g., tailings, overburden, topsoil etc), with neutral pH potable water as the leaching fluid. This should also consider cumulative effects of leaching fluid traversing the proposed vertical profile of emplaced mine void backfill material (e.g., through topsoil, overburden, and tailings) and discussion of the implications of this on groundwater quality;
 - c. justification for the use of dissolved analyte concentrations (i.e., filtered prior to analysis) to represent the risk posed to groundwater from tailings seepage in accordance with *EPA Publication 669*.
26. Further details should be provided to demonstrate how potential risks of harm from seepage of materials placed in mine voids (including tailings and any DAF solid wastes) will be minimised and should include:
 - a. a conceptual outline (if not a draft design) of the in-pit drainage capture system likely to be required given the site-specific circumstances of this project. This should include a discussion regarding the maximum recovery efficiencies likely to be able to be achieved, and where relevant, justification why the recovery design deviates away from achieving the maximum recovery.
 - b. further assessment of the potential extent and magnitude of mounding, which should be informed by a critical assessment of the maximum collection efficiency likely to be achieved and unsaturated zone groundwater flow modelling.
27. Currently it is understood that the “solids” generated by the DAF plant will be blended with the fine tailings and disposed of in the mine voids. It is unclear what the water content of the solids will be, and whether the potential leachability of any potential contaminants in the DAF solids poses a risk to groundwater. Further information should be provided. Additionally, detailed consideration should be undertaken and subsequently provided as to whether the DAF plant solids should be dewatered in the centrifuges.

Radiation

Whilst EPA is not the regulator of radiation matters, as stated in EPA's submission to the IAC in considering whether the works the subject of the application are a "*radiation source within the meaning of the Radiation Act 2005*" (s 7(2) the *EP Act 2017*), EPA does need to consider several matters to be able to fulfill its regulatory requirements. Accordingly, the application should be updated to include the

centrifuges with the following further information and clarification provided.

28. Information on radiation and potential presence of radionuclides in sources (i.e., ore, mine contact water) and subsequent wastes (including surface water and groundwater discharges and solids wastes) has been provided in several application documents and expert witness reports. To assist EPA's understanding of where, if at all, any "radiation sources" are present within the works (and discharges) that require approval from the EPA, a matrix should be provided in the updated application clearly identifying sources, process (touchpoints where EPA approval is required) and the discharges and whether they meet the definition of "radiation source" within the Radiation Act 2005. Appropriate evidence should be provided to support this matrix, such as testing results from representative samples and modelling of activity concentrations. The methodology for characterising total activity should be clearly explained.
29. With regards to item 28 above, the expected radioactive concentration of the collected DAF plant solids should be provided, prior to any proposed blending with the fine tailings, along with confirmation of whether such solids would be classified as a "radioactive material" under the *Radiation Act 2005*.
30. Further with regards to item 28 above, with the introduction of centrifuges to the process, clarification is required to confirm the expected radioactive concentration of the tailings cake and the centrate from the centrifuges and if the tailings cake and centrate would be classified as a "radioactive material" under the *Radiation Act 2005*. Confirmation of the expected radioactive concentration of the coarse tailings should also be provided.
31. It is understood that SGS (Kalbar's radiation consultants) have recommended that any water released from the Freshwater Dam to the Mitchell River undergo laboratory testing for radionuclide content prior to release. Practical details of this testing are not presented and is required. Confirmation of the implementation of this recommendation is required, as well as practical details such as when, where and who will undertake this testing, any relevant threshold trigger levels requiring action, as well as what those actions would be.

Waste

Presently it is understood that the categorisation of waste from the DAF plant has been determined with reference to *Industrial Waste Regulation Guidance (IWRG) 621*, rather than 631. Given the addition of flocculants to the mine contact water to produce the settled solids, EPA considers that the material should be considered an (industrial) waste. The EPA notes that the proposal now includes centrifuges which will also generate an industrial waste such that information is also required on that waste stream.

Further EPA highlights that as the application will be determined under the *EP Act 2017*, the consideration of the categorisation and appropriate methods of disposal should be updated in accordance with the provisions of the *EP Act 2017*.

32. Please describe the form and characteristics of the solid waste produced by the DAF plant and update the categorisation of the solid wastes in line with Hazard categories identified in the *Environment Protection Regulations 2021*, and the accompanying *Waste classification assessment protocol (EPA Publication 1827)* and *Waste disposal categories - characteristics and thresholds (EPA Publication 1828)*.
33. Please describe the consideration given to the appropriate disposal of the DAF wastes and confirm how those wastes will be disposed of consistent with the *EP Act 2017*.
34. Please describe the form, characteristics, and categories of the solid waste and centrate produced by the centrifuges in line with Hazard categories identified in the *Environment Protection Regulations 2021*, and the accompanying *Waste classification assessment protocol (EPA Publication 1827)* and *Waste disposal categories - characteristics and thresholds (EPA Publication 1828)*.
35. Please describe the consideration given to the appropriate disposal of centrifuge wastes and confirm how those wastes will be disposed of consistent with the *EP Act 2017*.

In providing the required information, we would respectfully ask that Kalbar submit the information via the EPA Portal at <https://www.epa.vic.gov.au/Portal>.

Kind regards

[Redacted]

[Redacted]

Development Assessments



Environment Protection Authority Victoria

181 William Street, Melbourne



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| M

[Redacted]

| E

[Redacted]



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