Fingerboards Mineral Sands Project Inquiry and Advisory Committee Technical note

TN 013 - Response to IAC Request for Information

TN No: TN 013

Date: 12 March 2021

Subject: Response to IAC Request for Information – Part 2.1, question 2

The IAC's request for information dated 11 December 2020 (IAC Document 16) provided:

2.1 Inclusion of expert recommendations – all parts of Project

(i) Reference

Technical appendices contain specific expert recommendations. An example is the recommendations contained in Chapter 10 of the noise report (Appendix A010).

(ii) Request

- 1. The Proponent should detail the format and wording of specific recommendations of technical experts in specialist areas that are accepted, or not, by the Proponent and how these have informed the Environment Management Framework (EMF) and will be reflected in relevant management plans.
- 2. Following the circulation of expert evidence, the same exercise should be undertaken if there are new or additional expert recommendations made.

The Proponent's response to question 1 is provided in TN 002 dated 8 February 2021.

The Proponent's response to question 2 is provided in the table below.

TABLE OF CONTENTS

Page

Ecology	3
Noise	4
Radiation	6
Horticulture	10
Sedimentation and Landscape Stability	10
Rehabilitation	12
Groundwater	14
Flooding and Hydraulics	22
Water Balance	23
Water Quality	25
Water Impacts	26
Land Use and Planning	29
Human Health	30
Traffic and Transport	31
Air Quality	34
Centrifuges	37

No.	New or additional recommendations from expert witness statements	Adopted? Yes/No/ Partially	Mitigation measures and commitments (Source Attachment H of Mitigation Register or otherwise specified).	EMF document
	Ecology			
	Aaron Organ, Ecology and Heritage Partners	s – Ecology –	Expert witness statement dated 2 February 2021	
1.	There is an opportunity for significant species such Dwarf Kerrawang, Purple Diuris and Woolly Waterlily to be reintroduced into this area to expand existing populations.	Yes	Populations of listed or rare native plant species from EVCs within the project area will be increased through targeted recovery programs. (TE51)	Rehabilitation plan Biodiversity risk treatment plan Native vegetation management plan
2.	Measures such as appropriate channel design, revegetation and stock exclusion will be undertaken to ensure that ecological values along Honeysuckle Creek and its tributary are reinstated after the area has been disturbed.	Yes	Riparian vegetation will be established in rehabilitated flow channels to increase effective hydraulic roughness of the channels, reduce flow velocities, increase channel stability to storm flows and minimise erosion. (RH08) High rates of vegetation establishment will be prioritised in rehabilitated flow channels (especially in the first three years of rehabilitation) to maximise surface cover and minimise erosion. (RH09)	Rehabilitation plan Water quality and hydrology risk treatment plan Surface water and groundwater management plan
3.	Continuous recording (via data loggers) of groundwater levels in water supply bores drawing on the Latrobe Group Aquifer in a minimum of five monitoring bores, and in three shallow groundwater monitoring bores surrounding the temporary TSF.	Yes	Continuous (via data loggers) recording of groundwater levels in water supply bores drawing on the Latrobe Group aquifer in a minimum of five monitoring bores; and in three shallow groundwater monitoring bores surrounding the temporary tailing storage facility (I17, I23). (Chapter 12 of Main Report) The temporary TSF is no longer part of the preferred project design.	Environmental management plan Water quality and hydrology risk treatment plan Surface water and groundwater management plan
4.	Analysis of water quality discharged from water storages at least daily during discharge and for a minimum of five days at upstream and downstream sampling locations following cessation of discharge. Monitoring at the point	Yes	Analysis of water quality (including hydrocarbon content) discharged from water storages at least daily during discharge and for a minimum of five days at upstream and downstream sampling locations following cessation of discharge. Monitoring at the point of discharge, the nearest accessible point to receiving waters and (if	Environmental management plan Water quality and hydrology risk treatment plan

	of discharge, the nearest accessible point to receiving waters and (if applicable), upstream of the water storage.		applicable), upstream of the water storage (I1, I20). (Chapter 12 of Main Report)	Surface water and groundwater management plan
5.	There are opportunities to enhance wetland habitat as part of the restoration of existing waterbodies within the project area surrounding areas. The restoration / enhancement and creation of additional wetlands for common waterbirds.	Yes	Riparian vegetation will be established in rehabilitated flow channels to increase effective hydraulic roughness of the channels, reduce flow velocities, increase channel stability to storm flows and minimise erosion. (RH08) Strategies will be implemented during construction and operations to control sediment runoff (and reduce the potential for increased turbidity in downstream aquatic habitats) and reduce the potential for spills. (TE25)	
6.	As a precaution, additional targeted surveys for the species (active searching, installation of song meters over multiple days after significant rainfall) may be undertaken as part of the post-approval conditions placed on the project and outlined in the detailed Biodiversity Sub-plan (including Significant / Threatened Species Conservation Management Plans).	Yes	Pre-clearance searches for fauna will be conducted by a competent environmental professional prior to vegetation removal. (TE54) Pre-clearance surveys will be carried out by a competent environmental professional in all areas of vegetation to be cleared that have large trees (as defined in the Guidelines for the removal, destruction or lopping of native vegetation, 2017) or that are likely to support flora or fauna species listed under the EPBC Act and/or FFG Act. (TE20) Prior to construction, targeted species surveys will be considered as part of the pre-clearance process for fauna	Environmental management plan Construction management plan Biodiversity risk treatment plan Native vegetation management plan Biodiversity management plan
	Aaron Organ, Ecology and Heritage Partners	- Ecology -	Supplementary statement dated 8 February 2021	
7.	None			
	Noise			
	Christophe Delaire, Marshall Day Acoustics -	– Noise – Exp	pert witness statement dated 30 January 2021	

8.	The freight timetable would limit freight movements at the rail siding, and on the rail network east of Rosedale, to the day and evening periods (0700 to 2200 hrs). Based on this timetable, Kalbar propose to limit loading and unloading operations to daylight hours only.	Yes	B-double movements on the private haulage road and rail loading activities at the Fernbank East rail siding will be restricted to the day and evening periods. (NV36)	
9.	If the EPA 1254 guideline criteria for evening and night operations are referenced in the planning permit or work plan, and are required to be adhered to, it is likely that significant managerial restrictions would apply, including significant curtailment of evening and night work, despite comparable activities associated with long term operation being permissible under less stringent evening and night NIRV criteria. These restrictions could therefore potentially extend the overall duration of construction.	Yes	Noisier activities will be scheduled for less sensitive times of day where practicable and works will be limited as much as practicable during the night and at weekends. (NV17)	
	Christophe Delaire, Marshall Day Acoustics	– Noise – Su _l	pplementary statement dated 8 February 2021	
10.	The centrifuge plant has been modelled without the benefit of the noise reduction associated with the proposed enclosure for the plant The design would need to be developed in further detail to provide a reliable basis for modelling the effect of the enclosure (to account for building configuration, material selections, and envelope penetrations). However, a basic lightweight enclosure with acoustically designed penetrations would reduce the noise of the centrifuge plant by at least 5 dB, and alternative material selections including demountable insulation panels would readily enable enclosure reductions of at least 15 dB.	Yes	This will be addressed during detailed design. Detailed design will consider the requirement to reduce noise emissions including cladding and enclosures.	Environmental management plan Environmental noise risk treatment plan Operational noise management plan

11.	Irrespective, if the centrifuge-based option is developed, all aspects of the centrifuge plant, including the building design, associated ancillary equipment and associated haul route changes, would need to be represented in the design stage noise modelling. Consistent with the wider approach to addressing noise from the site, this design stage modelling would inform: The specification and tendering of equipment to meet the noise requirements The development of the noise mitigation and management measures to be documented in the Environmental Noise Management Plan.	Yes	This will be addressed during detailed design. Detailed design will consider the requirement to reduce noise emissions including cladding and enclosures. Will be completed	
	Radiation			
	Darren Billingsley, SGS Radiation Services -	- Radiation -	Expert witness statement dated 29 January 2021	
12.	Grazing cattle - The potential impact on human consumption of grazing farm animals and related produce will need to be considered, in light of any resuspended dusts from the Project that may settle on feedstock. Whilst the radioactive content of airborne dusts is considered low, it is acknowledged volumes of consumption, and radionuclide retention factors in livestock may differ to humans. I recommend that this assessment pathway be modelled using commercially available software that is available for inclusion in the Radiation Environmental Plan (REP) to be developed. The REP requires drafting and approval from the Victorian DHHS prior to issue of a Management Licence.	Yes, in preparation	The project will be operated in accordance with a management licence addressing radiation safety in accordance with the provisions of the Radiation Regulations, including likely conditions such as compliance with the Radiation Protection Series No. 9 and preparation of a radiation sub-plan for all operations. The plan would account for any special conditions or exemptions from specific provisions of the Radiation Regulations that might apply to the project. (RD05). A preliminary assessment has been conducted considering the consumption of livestock using suitable modelling software (RESRAD). Results indicate impact as a result of the project to be a negligible exposure pathway. Full results to be included in the REP.	Environmental management plan Radiation management plan Radiation Environment Plan

13.	Groundwater - It is important that Kalbar and regulators have a solid understanding of the pre-mining radionuclide content of the local groundwater system - specifically Ra-226 and Ra-228 concentrations. Currently sampling is received by SGS annually for a few wells which has occurred end of 2017, 2018 and 2019. It is acknowledged samples have been collected by other parties and reported by Coffey, but	Yes	Quarterly radionuclide analysis of groundwater bores and surface water monitoring for 12-months prior to operations (I41). Quarterly sampling (for water quality) in six designated shallow groundwater monitoring bores, including bores at the contractor's work area and processing plant and three bores at the temporary tailings storage facility; and analysis for pH, salinity, dissolved metals, radionuclides, major cations and anions, nutrients, and hydrocarbons (I20).	Radioactive waste management plan Risk management plan Environmental management plan												
	laboratory assessment has been limited to alpha/beta screening. Radium is of particular interest due to its greater mobility in water compared with U and Th, and is more radiotoxic when ingested, delivering a greater dose than other U and Th chain radionuclides. (For this reason, it is this radionuclide singled out in the ADWG for supplementary assessment as required).		Monthly monitoring of water discharge from the borefield (bores drawing on the Latrobe Group aquifer) into the contingency water dam. Monitoring to include pH, salinity, dissolved metals, radionuclides, and major cations and anions (I1, I20). (Chapter 12 of Main Report).	Surface water and groundwater management plan Water quality and hydrology risk treatment plan												
	To ascertain existing conditions, I recommend a minimum of 12 months data be collected, to allow for possible seasonal variations. A specialist with an understanding of the local groundwater flows and activities should be consulted to establish a suitable monitoring program.					Vaa	V		· · · · · ·	N.	· ·					Questarly radiopudide englysis of groundwater harse and surface
14.	Surface water - there is a reasonable subset of samples analysed from dams and creeks to date. However, it is noted only two samples have been collected (by SGS in May 2017) from the Mitchell River. I acknowledge that other Mitchell River samples were collected and reported by Coffey, however none of the samples were analysed for Ra-226 and Ra-228 content. Being the main local water source feeding into the Woodglen WTP, there needs to be substantial baseline data in this area to gain a full understanding of existing conditions. I recommend regular monitoring and analysis	Yes	 Quarterly radionuclide analysis of groundwater bores and surface water monitoring for 12-months prior to operations (I41). Analysis of water quality during construction, operations and active rehabilitation: Every two months initially, then quarterly thereafter with agreement from the regulator at five established monitoring sites on Mitchell River (I20). Every two months initially, then quarterly thereafter with agreement from the regulator at two locations on Perry River to be agreed with regulators (one location upstream and one downstream of the confluence of Honeysuckle Creek and Perry River) (I20). 	plan Radiation management plan Radioactive waste management plan Risk management plan Surface water and groundwater management plan Water quality and hydrology												

	for a minimum 12 months period to capture any seasonal variations. Additional water samples collected from rainwater tanks should be similarly collected and analysed for Ra-226 and Ra-228.		 Every two months (if water is present) at two locations within each impacted drainage line inside the project area (locations to be agreed with regulators) (I20). Following significant rainfall events (when rainfall received at the mine site exceeds 60 mm within a 24 hour period, which corresponds approximately to a 100% AEP) and when water is available to sample at six established monitoring locations within the project area in undisturbed catchments (I20). Analysis of water quality (including hydrocarbon content) discharged from water storages at least daily during discharge and for a minimum of five days at upstream and downstream sampling locations following cessation of discharge. Monitoring at the point of discharge, the nearest accessible point to receiving waters and (if applicable), upstream of the water storage (I1, I20). Quarterly sampling of water in rainwater tanks at a minimum of 13 locations (assuming landholders grant access) prior to construction and during operations (I1, I31, I33). Analysis of water quality (including hydrocarbon content) in mine contact water dams twice yearly and no less than 72 hrs before each discharge event (I1). (Chapter 12 of Main Report) 	
15.	Long-lived radionuclides. A subset of samples including surface waters and ground water should be analysed for the full suite of naturally occurring long-lived radionuclides, including U-238 and U-235. Whilst Ra-226 and Ra-228 are the principle radionuclides of interest from a mobility perspective, it is important to have an indication of radioactive concentration of baseline head of chain radionuclides likely to be present.	Yes	 Quarterly radionuclide analysis of groundwater bores and surface water monitoring for 12-months prior to operations (I41). Analysis of water quality during construction, operations and active rehabilitation: Every two months initially, then quarterly thereafter with agreement from the regulator at five established monitoring sites on Mitchell River (I20). Every two months initially, then quarterly thereafter with agreement from the regulator at two locations on Perry River to be agreed with regulators (one location upstream and one downstream of the confluence of Honeysuckle Creek and Perry River) (I20). 	Environmental management plan Surface water and groundwater management plan Water quality and hydrology risk treatment plan Radiation management plan Radioactive waste management plan Risk management plan

			 Every two months (if water is present) at two locations within each impacted drainage line inside the project area (locations to be agreed with regulators) (I20). Following significant rainfall events (when rainfall received at the mine site exceeds 60 mm within a 24 hour period, which corresponds approximately to a 100% AEP) and when water is available to sample at six established monitoring locations within the project area in undisturbed catchments (I20). Monthly monitoring of water discharge from the borefield (bores drawing on the Latrobe Group aquifer) into the contingency water dam. Monitoring to include pH, salinity, dissolved metals, radionuclides, and major cations and anions (I1, I20). (Chapter 12 of Main Report). 	
16.	Air sampling - Particulate monitoring for gross alpha/beta analysis needs to occur for at least 12 months. This will need to be HiVol with a TSP head sampling a minimum 5000 m³ air volume. This sampling volume will provide sufficient sensitivity for the gross radioactivity analysis in the laboratory. (Analysis to date has been limited to PM ₁₀ filters collected during the air quality study). HiVol sampler positions should reflect where monitoring will occur for the duration of the project, as part of the radiation monitoring program. Careful consideration of the monitoring location will be required based on the sensitive receptors for the Project. Characterisation of the radionuclide content of the collected dust will be conducted by gamma ray spectrometry where sufficient dust loadings are collected.	Yes	Particulate monitoring for gross alpha/beta analysis will be undertaken for at least 12 months. This will be HiVol with a TSP head sampling a minimum 5000 m³ air volume. This sampling volume will provide sufficient sensitivity for the gross radioactivity analysis in the laboratory. At a minimum sampling for TSP will be monthly, or though Kalbar will strive for weekly or fortnightly sampling. HiVol sampler positions should reflect where monitoring will occur for the duration of the project, as part of the radiation monitoring program. Careful consideration of the monitoring location will be required based on the sensitive receptors for the Project. Characterisation of the radionuclide content of the collected dust will be conducted by gamma ray spectrometry where sufficient dust loadings are collected. A network of no fewer than five particulate monitoring stations is likely to be required (I1, I31, I33). (Chapter 12 of Main Report)	
17.	In-pit Radon monitoring during test pit operations should be conducted. Whilst radon doses to members of the public is likely to be negligible, upcoming test pit operations will	Yes	Quarterly monitoring of passive radon and thoron gas onsite during the initial stages of operations to confirm the ambient airborne radioactive gas concentrations used as part of the EES assessment.	

	provide an opportunity to identify levels once the ore body is exposed. Monitoring should include passive detectors, but also real-time monitoring can be conducted. Workplace monitoring for radon will be an integral part of the radiation monitoring program during operations.		Continue for 12-months at both outdoor and indoor locations within the project area (I42). (Chapter 12 of Main Report)	Community engagement plan Airborne and deposited dust risk treatment plan Radiation management plan Radioactive waste management plan
18.	Crops - Analysis of radionuclides present in locally grown crops as outlined in the Future Work Plan will be required. Based on the genuine concerns expressed by local landowners, it will be important for Kalbar to have a good understanding of baseline concentrations present in a range of crops from local producers. Irrespective of any dust deposition, the radionuclide concentrations can vary substantially based on vegetable type, fertiliser and cultivation methods.	Yes	Investigate the variability of radionuclides present in soils in an area of high-value irrigated vegetables in the Lindenow Valley for baseline purposes. Consider locations in relation to the project area, crop type, cultivation methods, fertiliser use and gamma survey field measurements (I1). (Chapter 12 of Main Report)	
	Darren Billingsley, SGS Radiation Services -	- Radiation -	Supplementary statement dated 8 February 2021	
19.	None			
	Horticulture			
	Dr Doris Blaesing, RMCG – Horticulture – Ex	pert witness	statement dated 2 February 2021	
20.	None			
	Dr Doris Blaesing, RMCG - Horticulture - Su	ıpplementary	statement dated 8 February 2021	
21.	None			
	Sedimentation and Landscape Stability			
	Michael Cheetham, Water Technology - Sed	imentation ar	nd Landscape Stability – Expert witness statement dated 29 Janu	ary 2021

	A		TP I was a first of the second	But at agency and
22.	A recommendation for 10 years monitoring post closure is made in the Report. In making this recommendation, I had assumed that this was based on a large amount of vegetation being established within the gullies that, by mine closure should be 15-20 years old. However, other areas where vegetation is less than 5 years old by closure and is relied upon for an erosion stabilisation function, should be monitored for 20 years post closure. The frequency of monitoring of these areas can be greatly reduced after 10 years.	Yes	High rates of vegetation establishment will be prioritised in rehabilitated flow channels (especially in the first three years of rehabilitation) to maximise surface cover and minimise erosion. (RH09) Kalbar has assumed that the monitoring program will be conducted until closure criteria have been met and land is ready for relinquishment, unless otherwise agreed with Earth Resources Regulation. The cost estimate has considered the full extent of proposed disturbance and activities for the planned 20-year mine life, including: • Post-closure monitoring, maintenance and reporting for 10 years, or until closure criteria have been achieved. (Chapter 11 of Main Report)	Rehabilitation plan Native vegetation management plan Community engagement plan
23.	measured such as appropriate channel design, revegetation and stock exclusion will be vital to ensure stability of the water courses, particularly those that are unconfined such as the tributary of Honeysuckle Creek. This design process should begin as soon as the exact final landscape is established.	Yes	Riparian vegetation will be established in rehabilitated flow channels to increase effective hydraulic roughness of the channels, reduce flow velocities, increase channel stability to storm flows and minimise erosion. (RH08) High rates of vegetation establishment will be prioritised in rehabilitated flow channels (especially in the first three years of rehabilitation) to maximise surface cover and minimise erosion. (RH09)	
24.	In relation to the first concern (regarding the intersected portion of the unnamed tributary of Honeysuckle Creek), several possibilities exist to mitigate impacts at this location. Grading the area to an appropriate slope combined with an appropriate planform layout of the channel, may be enough to mitigate these impacts. This issue should be used to inform the morphology of the final landscape. Ideally this would result in a grade and planform of a watercourse that is stable once vegetated. It may be necessary to augment such a design with other	Yes	Rocks will be included in rehabilitated channel beds to increase critical shear of the bed, resist initiation of scour and increase channel stability to storm flows and minimise erosion. (RH06) Tree densities in areas planned for grazing land use, particularly in swale areas, will be increased to reduce deep drainage and seepage flows, and to maximise erosion stability. (RH27) Riparian vegetation will be established in rehabilitated flow channels to increase effective hydraulic roughness of the channels, reduce flow velocities, increase channel stability to storm flows and minimise erosion. (RH08)	Environmental management plan Water quality and hydrology risk treatment plan Rehabilitation plan Native vegetation management plan Surface water and groundwater management plan

	 engineered features, however, these would require maintenance. Such options include: The water course could be combined with grade control structures to ensure stability, although such structures would require ongoing maintenance (likely associated with storm events). A dam is proposed at this location (dam 20) to control flows entering the mine sites (Figure 3-1) during operations. The dam could be incorporated into the final landform as a permanent lake feature, which would potentially also require some level of maintenance. If appropriately designed, such a feature would act as a stilling basin for flows entering the area. The design of such a feature would have to account for flows entering the lake when the water level is down. 		High rates of vegetation establishment will be prioritised in rehabilitated flow channels (especially in the first three years of rehabilitation) to maximise surface cover and minimise erosion. (RH09) Design and construction of post-mining landforms such that post-closure hydrological patterns resemble the pre-mining environment. (Closure criteria from Chapter 11 of Main Report) Runoff controls including water management dams downstream of rehabilitation areas will be decommissioned once post-rehabilitation monitoring demonstrates that water quality controls are no longer required, and vegetation has stabilised the landform. Dams are expected to be in place for approximately two years following final shaping, seeding and mulching of rehabilitated areas. (Chapter 11 of Main Report)	
	Michael Cheetham, Water Technology – Sed	imentation a	nd Landscape Stability – Supplementary statement dated 8 Febru	ary 2021
25.	None			
	Rehabilitation			L
	Dr Rob Loch, Landloch – Rehabilitation – Ex	pert witness	statement dated 29 January 2021	
26.	Landloch's rehabilitation report (Appendix 20 to the EES) is not a list of prescribed, detailed actions. It recognises that there will be – over time – a range of unexpected circumstances (weather, staff and equipment issues, seed supply, etc.) that may require adaptation of plans. Equally, there should be allowance and encouragement for continuing improvement.	Yes	A key component of the Environmental Management System for the Fingerboards Mine is continuous improvement. Addresses commitments in the EES and conditions of approval for the project including risks, mitigation and roles and responsibilities. Provides:	Environmental management plan Rehabilitation plan Native vegetation management plan

			 Procedures to avoid, minimise, mitigate and manage potential environmental and social impacts, including human health. Basis for continuous improvement of environmental management during the life of the project. 	
27.	Actions to reduce weed seed burden in stripped topsoil could be very helpful. I am not sure whether access to appropriate areas would be possible once mining commences, but I would recommend its consideration.	Yes	Kalbar will undertake to monitor and to initiate weed control actions if weeds proliferate in the areas awaiting soil stripping, and the soil seed bank of weeds is found to be a problem. As required we will then modify our on ground actions accordingly through managing biomass by slashing at appropriate times to prevent seeding and using active (mechanical) or passive (natural breakdown) techniques to let that material go back into the profile to improve carbon content and structure.	Environmental management plan Rehabilitation plan Native vegetation management plan Biodiversity risk treatment plan
28.	I agree that it would be helpful to ensure that runoff/sediment from stockpiles is directed away from drainage lines.	Yes	A surface water and groundwater sub-plan will be developed and implemented to minimise discharge of stormwater from construction areas. The sub-plan will include measures such as: • Directing surface runoff around or away from areas of land disturbance, stockpiles, embankments or nearby sensitive areas, where practicable. (SW04) Sediment-laden runoff (runoff from topsoil stockpiles and minor disturbance areas where the water quality may be characterised by increased suspended solid concentrations). Water from these areas will be managed by sedimentation dams designed in accordance with the International Erosion Control Association Australasia's Best Practice Erosion and Sediment Control (BPESC) (IECA, 2008). Type D sedimentation dam design guidelines are adopted and dams sized to achieve an average annual overflow frequency of 2 to 4 spills/year, with a settling zone sized for the 90th percentile, 5-day rainfall depth (DECC, 2008) (EMM, 2020). Sedimentation dams will be dewatered following storm events with sediment-laden water to	

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			be transferred to the process water system using pumps fitted with flow meters.	
	Dr Rob Loch, Landloch – Rehabilitation – Su	pplementary	statement dated 6 February 2021	
29.	I have not been advised by Kalbar Operations whether preparation of a manufactured subsoil using a mixture of fine and coarse tailings will use fine tailings from the centrifuges or not. If it does, then a procedure of breaking the dried lumps of fine tailings to a finer particle size distribution suitable for mixing with the sand tailings will need to be developed. (That would be required only for the small proportion of fine tailings used in manufacturing subsoil for rehabilitation works.) It is likely that the mixing of dry fine tailings of suitable particle size (probably in the order of <5 mm) with sand tailings could achieve good (thorough and even) mixing.	Yes	This work is commencing with trials using centrifuge fines tailings. Kalbar are currently undertaking these trials at lab scales with various rations. We will do further works as the demo pit comes on line.	Environmental management plan Water quality and hydrology risk treatment plan Rehabilitation plan Native vegetation management plan Surface water and groundwater management plan
	Groundwater			
	Joel Georgiou, EMM – Groundwater – Expert	witness stat	ement dated 2 February 2021	
30.	Actions and mitigation examples may include: a) For groundwater levels which are heading	Yes	Record groundwater levels at designated monitoring bores and locations as agreed with regulators (I17, I23).	Environmental management plan
	towards or are in the 'Amber' zone, determine whether these levels are caused by any other local phenomenon or others not related to Kalbar.		Analyse groundwater (including for pH, salinity, dissolved metals, radionuclides, major cations and anions, and nutrients) from designated monitoring bores and locations as agreed with regulators (I1, I20, I23).	Water quality and hydrology risk treatment plan Surface water and groundwater management plan
	b) Undertake monitoring to confirm results and review the water balance, the latest available groundwater modelling results/particle tracking and local tailing monitoring bores to ascertain		Analyse process water and effluent (including for biological oxygen demand, suspended solids, E. coli and other parameters) in accordance with the EPA works approvals or licence (I1). (Chapter 12 of Main Report)	Risk treatment plan
	the likely source of seepage.		In the event of an incident, or if inspections or monitoring results indicate that performance requirements are not being achieved,	

31.	c) If seepage is causing a mound to rise to unacceptable levels, review tailings dewatering works. Engineering actions might be to intensify dewatering, adjust flocculant, tail to a different location, and review subdrainage design and spacing. d) If mounding starts to subside then no further action is required. However, if mounding were to continue or actions within the 'Amber' zone were not successful, more drastic actions would be required, especially if groundwater levels are trending towards or are in the 'Red' zone. This might include the installation of a groundwater curtain using either trenches or groundwater interception bores. It is recommended that additional studies are conducted post EES approval including: • ASLP-derived 1:20 tailings: Mitchell River water; and • ASLP-derived 1:20 tailings: Latrobe Formation groundwater.	Yes	corrective actions would be enacted and may include any or all of the following: • Immediately stop work where required. • Complete incident report and investigations. • Report to regulatory authorities as required (with notice of proposed corrective actions where relevant). • Investigate cause of exceedance or issue, including review of relevant monitoring data and effectiveness of implemented corrective actions (if any). • Implement corrective actions as appropriate to prevent recurrence. • Undertake maintenance as required. • Notify regulatory authorities of corrective actions implemented and outcome as applicable. (Chapter 12 of Main Report) These studies are currently being scoped and will be commenced either prior to during the panel.	Water quality and hydrology risk treatment plan Surface water and groundwater management plan
32.	I recommend that additional studies are conducted post EES approval including:	Yes	This work has been conducted as demonstrated from the following excerpts from expert witness statements.	Environmental management plan
	undertake a survey to identify chain of pond areas as outlined by West Gippsland CMA (submission 358). Survey should be extended to include a health/condition assessment, whether water within the ponds is observed and GDE likelihood.		John Sweeney - However, I believe the necessary level of confidence has been achieved to support the EES and I do not agree with the suggestion that further investigation of the chain of pond system is warranted for the purpose of assessing potential impacts in the GSWIA. (Expert witness statement) Aaron Organ - A detailed assessment of the aquatic values were undertaken along Honeysuckle Creek and its tributary that occur with the project area (i.e. Sites 23, 24, 25, 30 and 31) (Ecology and Heritage Partners 2020a). Although quite degraded due to past land	Native vegetation management plan Biodiversity risk treatment plan Water quality and hydrology risk treatment plan Surface water and groundwater management plan

		V	use practices (i.e. previous clearing and pine plantations), and currently subject to ongoing threatening processes such as erosion, weed invasion and presence of introduction herbivores such (e.g. European Rabbit and Sambar Deer), all of the aquatic habitats (waterbodies or ponds) along these chain of ponds were assessed as being of moderate to good habitat quality. However, compared with other chain of ponds to the west and south of the project area, this area is of lower quality and would not typically be subject to restoration and habitat enhancement activities (i.e. not a priority area). (Expert witness statement)	Out to a section and a section to a
33.	Kalbar continues to log for water cuts during any future resource drilling program.	Yes	Logging for water cuts is part of Kalbar's standard operating procedure for drilling where the chosen drilling techniques allows for it. (KAL-GEO-SOP-02 Aircore Logging)	Surface water and groundwater management plan Standard Operating Procedures for Drilling
34.	undertake a further GDE identification study to assess level of groundwater dependence and develop conceptual models using the IESC guidelines (Steps 1 to 3); undertake a sensitive receiver field census (including third party bores) with local landowners and government agencies; and develop preliminary framework groundwater and GDE management plans, with these plans finalised as part of the post approval works. At this stage, the preliminary GDE plans will likely cover off on steps 1 to 3 as outlined by the GDE IESC guidelines (see Section v for more detail)	Yes	Groundwater Dependent Ecosystem (GDE) modelling and risk assessment (largely desktop assessment and a brief field assessment of potential GDEs along Moilun Creek) has been conducted. There was also previous investigations that documented the terrestrial and aquatic flora and fauna values [including Groundwater Dependent Ecosystems (GDEs)] within the broader 'project locality' (i.e. within a 10-kilometre radius of the project area) and the project area (i.e. areas potentially disturbed by the project activities), and identified direct and indirect impacts on these values associated with the project. (Aaron Organ, Expert Witness Statement)	
35.	Before mining commences, I recommend that additional works are conducted to establish the baseline and inform the development of	Yes	Analyse groundwater (including for pH, salinity, dissolved metals, radionuclides, major cations and anions, and nutrients) from	

36.	appropriate management plans to mitigate the effects of the Project, if any, on GDEs: • installation of a groundwater monitoring bore network at regional locations which target key risk areas, including groundwater users and GDEs. Bores at locations between the water affecting activity and the sensitive receiver may also be required to allow for advance warning of potential impacts, although these can be installed at a later date. This recommendation supports the development of conceptual models as outlined in Step 3 of the IESC guidelines and supports Step 4 moving forward; • installation of in situ groundwater level data loggers at key monitoring bore sites; • development of preliminary framework groundwater, GDE and tailings management plans, with these plans finalised as part of the post approval works. At this stage, the preliminary GDE plan will likely cover off on steps 1 to 3 as outlined by the GDE IESC guidelines (Doody et al 2019); and • undertake several groundwater and GDE monitoring events before mining commences to inform baseline conditions and setting of water quality objectives and trigger levels. It is recommended that the following additional	Yes	designated monitoring bores and locations as agreed with regulators (I1, I20, I23). (Chapter 12 of Main Report) Additional groundwater monitoring bores will be installed prior to construction in locations agreed by regulators including SRW. Continuous (via data loggers) recording of groundwater levels in water supply bores drawing on the Latrobe Group aquifer in a minimum of five monitoring bores; and in three shallow groundwater monitoring bores surrounding the temporary tailing storage facility (I17, I23). (Chapter 12 of Main Report) Development of a GDE management plan will be prepared prior to construction as part of the biodiversity risk treatment plan and environmental management plan. The framework for groundwater and tailings management will be addressed in the water quality and hydrology risk treatment plan and the surface water and groundwater management plan. Quarterly sampling (for water quality) prior to construction at designated monitoring bores installed in the Coongulmerang Formation aquifer (seven bores), Balook Formation aquifer (two bores), Seaspray Group aquifer (one bore) and Latrobe Group aquifer (two bores) (I20). (Chapter 12 of Main Report)	Native vegetation management plan Biodiversity risk treatment plan Water quality and hydrology risk treatment plan Surface water and groundwater management plan Groundwater dependent ecosystem management plan
	works be undertaken post EES approval:	. 33	construction in locations agreed by regulators including SRW.	plan

	Kalbar install two additional monitoring sites to the west and north of the project site, as recommended by Council, and incorporate the new monitoring bores into the overall baseline monitoring program.			Water quality and hydrology risk treatment plan Surface water and groundwater management plan
37.	It is recommended that the following are conducted for future model upgrades post EES approval: If thought desirable, implementation of the latest MODFLOW-USG modelling code. Alter model boundary conditions at the coast to give a hydraulic separation between static ocean cells and depressurising Latrobe Group cells. Include additional scenarios in predictive uncertainty analyses (supported by additional tailings and soil data), including numerical separation of the influence of minerelated tailings seepage and groundwater extraction. This will help further constrain impacts by approximating actual seepage potential rather than assume all seepage reaches the water table. Separation modelling would be used to unpack different mine affecting activities from one another and provide more detail as to whether the simulated mounding and drawdown impacts act as mutually negating stresses.	Partially	Kalbar will consider model upgrade post EES approval	Environmental management plan Water quality and hydrology risk treatment plan Surface water and groundwater management plan

38.	It is recommended that the following are conducted to support a future water licencing application: Installation of one or two production bores and associated shallow and deep monitoring bores at the	Yes	To support a licence application to SRW, Kalbar will install test production bores and associated monitoring bores and conduct pumping tests. These results will then be used to update the groundwater flow model to determine predicted drawdown.	Water quality and hydrology risk treatment plan Surface water and groundwater
	 Pumping tests of new production bores to confirm target supply rate of 15 L/s, with associated minimal drawdown impacts; and 			management plan
	 Update the groundwater flow model for the site and borefield, including calibration to the pumping test and simulation of pumping scenarios and assessment of predicted drawdown. 			
39.	It is recommended: • Kalbar update their numerical models and impact assessment using updated datasets to support a licence application to SRW.	Yes	Kalbar will revise and update numerical groundwater models in the licence application process for Southern Rural Water.	Water quality and hydrology risk treatment plan Surface water and groundwater management plan
40.	It is recommended: • Update the list of current registered groundwater bores (to 2021), and source this information from the Victorian WMIS, with cross-checking to be done between WMIS and VVG.	Yes	Kalbar will update the list of current registered groundwater bores sourced from Victorian WMIS and cross checked with VVG.	Water quality and hydrology risk treatment plan Surface water and groundwater management plan
41.	It is recommended that the following are conducted: • Additional leach testing using representative fine tailings and sand tailings and the anticipated process water candidates (eg Mitchell River	Yes	 Further test work is being conducted in light of the use of centrifuges including leach testing. Revisions of the relevant management plans including the environmental management plan, water quality and hydrology risk treatment plan and the surface water and groundwater 	Water quality and hydrology risk treatment plan Surface water and groundwater management plan

	water and Latrobe Formation groundwater) should be considered. Development of preliminary framework groundwater and tailings management plans, with these plans finalised prior to mine commencement. Prior to any licence applications to SRW, update seepage estimates and related impact assessment using the latest available field and tailings data. Unsaturated modelling using such programs as VADOSE (by Geoslope) should be considered in conjunction with MODFLOW based modelling. The inclusion of ongoing groundwater modelling and maintenance of a site-based water balance model to be included as part of the Proposed management measures and Kalbar's Mitigation register. Kalbar to consider groundwater discharge as part of their WAA application.		 management plan are currently in preparation in light of the use of centrifuges and the changes to the water balance. In preparation for groundwater and surface water licence applications to SRW, appropriate revisions of the hydrogeological and hydrological modelling will be conducted to support licence applications. The maintenance of an ongoing site-based water balance is a key mitigation measure for the management of water of the mine. To support this approach, regular groundwater and GoldSim modelling will be required. Kalbar is currently revising their WAA in consultation with EPA, this will include examining the scope of the WAA. 	
42.	Risk Treatment Plan be updated with the preliminary acceptance criteria and water quality objectives for groundwater in accordance with the SEPP (Waters), acknowledging that these are interim objectives only, which will be updated by site-specific groundwater quality objectives.	Yes	The water quality and hydrology risk treatment plan will be revised to include the SEPP (Waters) interim objectives for preliminary acceptance criteria and water quality for groundwater. This will then be further updated with groundwater quality objectives that are site specific.	Risk treatment plan Water quality and hydrology risk treatment plan Surface water and groundwater management plan
43.	Consider updating text within the EES and Appendix A006 related to conceptual	Yes	This work will be reflected in the environmental management plan and Work Plan.	Environmental management plan

	hydrogeology and groundwater quality to ensure accuracy and consistency between			Water quality and hydrology risk treatment plan
	reports.			Surface water and groundwater management plan
	Joel Georgiou, EMM – Groundwater – Suppl	ementary sta	tement dated 7 February 2021	
44.	None			
	Hugh Middlemis, HydroGeoLogic – Ground	vater – Exper	t witness statement dated 28 January 2021	
45.	It is understood that further consultations on the EMF and related documents will be required once the primary approvals process is completed.	Yes	Representation from local horticultural and agricultural producers will be sought for the environment review committee to provide input on concerns during project construction and operations. (AG03) An environmental review committee will be established to involve the community in reviewing the environmental performance of the project throughout its life. (SE19) An annual monitoring report will be prepared, reviewing monitoring results against requirements and identifying the need for corrective action. The annual report would be the responsibility of the operations manager and provided to Kalbar's board. The findings of the report would be published on Kalbar's website and provided to the environmental review committee and community reference group. (Chapter 12 of Main Report)	Environmental management plan Construction management plan Surface water and groundwater management plan Water quality and hydrology risk treatment plan
46.	Groundwater consultants should prepare plots that 'unpack' the incremental borefield drawdown and/or mounding effects for specified scenarios.	Yes	Modelling will take place as per recommendation	Environmental management plan Construction management plan Surface water and groundwater management plan Water quality and hydrology risk treatment plan
	Hugh Middlemis, HydroGeoLogic – Ground	vater – Suppl	ementary statement dated 5 February 2021	
47.	None			

	Flooding and Hydraulics			
	James Weidmann, Water Technology – Floor	ding and Hyd	raulics – Expert witness statement dated 28 January 2021	
48.	In all cases, changes are predominantly due to an adjustment of internal catchment boundaries within the mine, and partially attributable to the change in hydraulic roughness (land use). Changes to water level and velocity can be reduced with refinements to the design surfaces and internal drainage arrangements if practicable. It is typical for these changes and improvements to be made during the design process. Any residual impacts can be mitigated by revegetation and channel stabilisation works.	Yes	 Riparian vegetation will be established in rehabilitated flow channels to increase effective hydraulic roughness of the channels, reduce flow velocities, increase channel stability to storm flows and minimise erosion. (RH08) Rocks will be included in rehabilitated channel beds to increase critical shear of the bed, resist initiation of scour and increase channel stability to storm flows and minimise erosion. (RH06) Kalbar will maintain the existing landforms and catchment boundaries as much as practicable. It will limit significant modification of catchment boundaries and provide internal drainage/diversions to maintain existing points of discharge as much as practicable to minimise offsite impacts. Operational measures will include drawing down dams to ensure freeboard is available to attenuate flood impacts. Kalbar will undertake regular and ongoing inspections of drainage system (during and post mining) to identify emerging issues (e.g. bed instabilities). 	
	James Weidmann, Water Technology – Floor	ding and Hyd	raulics – Supplementary statement dated 7 February 2021	
49.	Kalbar should redesign their earthworks and land use models taking into account the centrifuge operations and excluding TSFs.	Yes	The use of the centrifuges will remove the requirement for the temporary TSF. This will result in a change in the general arrangement layout and therefore the earthworks during construction.	Risk management plan Ground control management plan Rehabilitation plan

50.	Water Technology can undertake additional detailed hydraulic modelling and reassess potential flooding impacts based on the revised designs.	Yes	Additional modelling will take place as per recommendation	Environmental management plan Rehabilitation plan Surface water and groundwater management plan Water quality and hydrology risk treatment plan
	Water Balance			
	Jarrah Muller, EMM – Water Balance – Expe	rt witness sta	tement dated 2 February 2021	
51.	Kalbar has continued to monitor rainfall and runoff, and will collect additional data to calibrate runoff models during the dam design period that was not available during the development of the water balance model.	Yes	Record flow rates in surface watercourses preconstruction and in all project stages (I18, I19). Analyse water quality in surface watercourses preconstruction and in all project stages (I20). Continuous monitoring (via data loggers) of preconstruction flow rates at DELWP gauging stations on Mitchell River and initially at Honeysuckle Creek eastern tributary, Moilun Creek tributary and Perry Gully; and daily monitoring at DELWP gauging station on Mitchell River during construction, operations and active rehabilitation (I18, I19). Visual observations to assess stability of waterways within or immediately adjacent to operational areas, taken at the furthest accessible downstream point within the mining licence area two-yearly and following major rainfall events (when 72-hour rainfall exceeds 136 mm, which corresponds approximately to a one in five year 72-hour event). Observations at Perry Gully, Simpson Gully,	plan Surface water and groundwater management plan Water quality and hydrology
52.	Given the wide wet beach evaporation multipliers (ranging between 0.4 and 1.0) applied by other professionals, the multiplier of 0.7 used in this model appears reasonable, but	Yes	Lucas Creek, Long Marsh Gully, Moilun Creek and an unnamed tributary of Honeysuckle Creek (I25, I43, I44). (Chapter 12 of Main Report) Will be adopted as per recommendation during operational phase	

	should be tested and updated once the mine has been established.			
53.	Releases to the Mitchell River would typically be diluted greater than 100:1 due to river flows. It is recommended that releases not take place when the river has low flows that are	Yes	Further modelling with respect to water balance and site water management. This will also be subject to an EPA Works Approval	Environmental management plan Surface water and groundwater
	insufficient to achieve acceptable dilution ratios.			management plan Water quality and hydrology risk treatment plan
54.	Daily tracking of dam water volumes via depth sensors and telemetry	Yes	Daily records of water level in mine contact water dams daily (I1). (Chapter 12 of Main Report)	Environmental management plan
				Surface water and groundwater management plan
				Water quality and hydrology risk treatment plan
55.	Daily tracking of water volumes on site using a water balance model	Yes	Daily monitoring (when the pump is operating) of water extraction (winterfill) at the water extraction point during construction, operations and active rehabilitation (I1). (Chapter 12 of Main Report)	Environmental management plan
				Rehabilitation plan
				Surface water and groundwater management plan
				Water quality and hydrology risk treatment plan
56.	Modify SW04 to remove reference to 10% AEP retention as current modelling indicates	Yes	We agree to modify SW04 and remove the following dot point: • Retaining water on site from the contributing catchment to	Environmental management plan
	greater retention is possible, and this number is inconsistent with SW11		approximately the 10% annual-exceedance-probability.	Surface water and groundwater management plan
				Water quality and hydrology risk treatment plan
57.	Water quality testing of the freshwater dam to confirm and document that water is suitable for release to the environment	Yes	Analysis of water quality (including hydrocarbon content) discharged from water storages at least daily during discharge and for a minimum of five days at upstream and downstream sampling locations following cessation of discharge. Monitoring at the point of	Environmental management plan

58.	The DAF plant should be used regularly for short periods to confirm operability	Yes	discharge, the nearest accessible point to receiving waters and (if applicable), upstream of the water storage (I1, I20). (Chapter 12 of Main Report) The treatment plant will operate on days following high rainfall events, treating water to meet water quality objectives relevant to the Mitchell River. The final footprint of the plant, and details of the treatment process, will be determined by a suitably qualified water treatment engineer during detailed design. (Chapter 3 of Main Report) as per manufactures instruction.	Surface water and groundwater management plan Water quality and hydrology risk treatment plan Environmental management plan Surface water and groundwater management plan Water quality and hydrology risk treatment plan
	Jarrah Muller, EMM – Water Balance – Supple	ementary sta	tement dated 8 February 2021	
59.	None			
	Water Quality			
	Tony McAlister, Water Technology – Water Q	uality – Expe	rt witness statement dated 1 February 2021	
60.	The comment that I provide in regard to the use of flocculants within site operations to enhance operation and performance of the water management operations relates to the fact that this may change the pH of waters being managed and/or introduce other sources or compounds of potential concern into these waters (e.g., dissolved aluminium), depending upon the flocculant used. These concerns are highlighted as they are, with careful consideration, readily manageable. Further investigations by the proponent to clarify and address these matters to my satisfaction are recommended.	Yes	Kalbar has conducted additional work to determine the effectiveness of the proposed flocculant - anionic polyacrylamide (PAM). PAM is regularly used across Australia in a range of applications such as municipal water treatment, agriculture and sediment control, including in East Gippsland, and is considered safe to use in freshwater environments. PAM is near neutral and based on the dose rates, no material pH change will be made to the centrate. ASLP tests on sand tails and centrifuge cake are planned to be conducted in Mitchell River water and Bore Water, both with and without the additional of flocculant to demonstrate that no material water quality change is observed. The proposed flocculant does not contain aluminium.	Environmental management plan Risk treatment plan Surface water and groundwater management plan Water quality and hydrology risk treatment plan
	Tony McAlister, Water Technology – Water Q	uality – Supp	plementary statement dated 8 February 2021	
61.	The only comment or caveat that I place in regard to the above opinion relates to the use	Yes	As above.	

	of additional flocculant within site operations to enhance operation and performance of the centrifuges. This may change the pH of the centrate and/or introduce other sources or compounds of potential concern into the centrate (e.g., dissolved aluminium), depending upon the flocculant used. These concerns are highlighted as they are, with careful consideration (see more discussion on this below), readily manageable, especially so given the localised and controlled manner by which the centrate will be produced. Further investigations by the proponent to clarify and address these matters to my satisfaction are recommended.			
62.	EMM/Water Technology should recast our predictions based on the new site water management regime with the inclusion of centrifuges and provide a new suite of water resource and water quality impact modelling and more specific discharge quantity and quality data and updated assessments on the change to the flow regime in the Mitchell River. Such investigations should specifically address in more detail drought conditions.	Yes	To support licence applications with SRW and the Works Approval Application with the EPA, Kalbar will revisit the modelling and predicted impacts on the natural environment, following the proposed introduction of the centrifuges and modified site water management regime.	Environmental management plan Risk treatment plan Surface water and groundwater management plan Water quality and hydrology risk treatment plan
	Water Impacts			
	John Sweeney, Coffey – Water Impacts – Ex	pert witness	statement dated 2 February 2021	
63.	Additional groundwater monitoring wells installed to west of the project area would provide an increased level of confidence in the conceptual hydrogeological model and may be beneficial for the ongoing monitoring of groundwater impacts.	Yes	Additional groundwater monitoring bores will be installed prior to construction in locations agreed by regulators including SRW.	Environmental management plan Risk treatment plan Water quality and hydrology risk treatment plan Surface water and groundwater management plan

64.	I recommend that an updated bore search be undertaken as part of the groundwater licence application.	Yes	Kalbar will update the list of current registered groundwater bores sourced from Victorian WMIS and cross checked with VVG.	Environmental management plan Risk treatment plan Water quality and hydrology risk treatment plan Surface water and groundwater management plan
65.	Submission 716 recommends consideration of unregistered users that may exist within the modelled zone of influence around the groundwater bore field. I believe that this is a reasonable suggestion and agree with a recommendation that Kalbar make enquiries with landowners within the nominated drawdown zone to identify active, potentially unregistered bores, as part of the groundwater licence application.	No	Kalbar will work with SRW to encourage owners of unregistered bores to have their bores licensed and will subsequently incorporate into any modelling undertaken as part of the groundwater licence application	Community engagement plan Environmental management plan Risk treatment plan Water quality and hydrology risk treatment plan Surface water and groundwater management plan
66.	I recommended expansion of the existing groundwater monitoring network prior to construction to include additional monitoring locations in the Balook Formation/Latrobe Valley Group Aquifer between the project boundary and the Woodglen ASR to provide advanced warning of potential impacts that will allow for appropriate remedial actions to be implemented if required.	Yes	Additional groundwater monitoring bores will be installed prior to construction in locations agreed by regulators including SRW.	Environmental management plan Water quality and hydrology risk treatment plan Surface water and groundwater management plan
67.	I would recommend that the Kalbar in consultation with SRW consider including mechanisms to allow offset water to be delivered directly to impacted farm dams, offering improved water quality compared to baseline conditions.	Yes	In preparation of the licence application to SRW and the Works Approval Application, Kalbar in consultation with key stakeholders will consider the options for delivery mechanisms of offset water to impacted farm dams. This will be considered as part of the revised water management regime.	Community engagement plan Environmental management plan Risk treatment plan Water quality and hydrology risk treatment plan

				Surface water and groundwater management plan
68.	The Cultural Heritage Assessment should be consulted for a more holistic assessment of	Yes	Kalbar will continue to consult with GLaWAC on the cultural heritage values of the waterbodies in the region and are doing so as the	Environmental management plan
	Traditional Owner cultural heritage impacts, and it would also be desirable if discussions with GLaWAC could continue, if possible, to		cultural heritage management plan is developed.	Cultural heritage management plan
	discuss water quality objectives to protect Traditional Owner cultural and spiritual values.			Water quality and hydrology risk treatment plan
				Surface water and groundwater management plan
69.	Submission 514 recommends that a monitoring program should be implemented to	Yes	Internal monitoring of underdrainage, bores will be undertaken and triggers onsite will be applied.	Environmental management plan
	monitor the water draining from the tailings to ensure the quality of this water remains within			Risk treatment plan
	risk-based trigger levels designed to ensure that the water seeping from the tailings would			Water quality and hydrology risk treatment plan
	not lead to an unacceptable risk to protected beneficial uses of groundwater.			Surface water and groundwater management plan
	I support this recommendation.			
	John Sweeney, Coffey – Water Impacts – Su	pplementary	statement dated 8 February 2021	
70.	I maintain that further investigation should be undertaken to predict long term average	Yes	The preferred project option if using centrifuges will require Kalbar to revisit the site water balance and water management regime	
	process water quality for total and dissolved metals, as well as other water quality		including groundwater and surface water quality. This work is currently underway.	Risk treatment plan
	parameters such as total dissolved solids, nutrients and other solutes that may			Water quality and hydrology risk treatment plan
	concentrate over time.			Surface water and groundwater management plan
71.	During detailed design, I recommend that further work be undertaken to determine the	Partially	Anionic PAM flocculants are proposed to be used and these are regularly used across Australia in various industries and are	Environmental management plan
	concentrations and flux of total nitrogen and ammonia that might be generated if residual	,	considered safe to use in freshwater environments. Multiple research papers have investigated the potential impacts of PAM's on the environment and have found no conclusive adverse impacts at	Risk treatment plan

	PAM is allowed to degrade in the mine void		the very low concentrations that the residual PAM is expected within	Water quality and hydrology risk
	and seep to groundwater.		the filled mine void.	treatment plan
			Further work is unlikely to improve on the accuracy of research work undertaken.	Surface water and groundwater management plan
			In addition to this Kalbar are will undertake further modelling to understand the seepage of the flocculation residuals that report to the groundwater through seepage. Developing our groundwater modelling further to demonstrate that the time it takes to move from source to receptor.	
72.	It is my expectation that as the location of the centrifuge plants are proposed to be in close proximity to the active mining area, runoff from	Yes	This will be addressed during detailed design. Runoff from stockpiles and site runoff will be captured in a sump and will be pumped to the process plant. This water will not be reporting to the water	
	the stockpiles and the surrounding centrifuge		management dams.	Risk treatment plan
	plant would report to the water management dams. However, I recommend that this be required as part of the detailed design of the			Water quality and hydrology risk treatment plan
	project.			Surface water and groundwater management plan
	Land Use and Planning			
	John Glossop, Glossop Town Planning – Lai	nd Use and P	Planning - Expert witness statement dated 29 January 2021	
73.	With respect to the land proposed to be covered by the SCO1, the Explanatory Report and proposed planning scheme maps set out the extent of the SCO1 in relation to this matter. I note, however, there is a discrepancy between the map contained within the Explanatory Report and Map 30 in terms of the extent of the SCO1. The Explanatory Report indicates a greater area within SCO1 than shown on Map 30. This requires rectification.	Yes	Kalbar will update the Explanatory Report and Map 30 showing the extent of the SCO1 to ensure they are consistent.	Planning Scheme Amendment
74.	'To the south of the project land' provides no indication of where this water pipeline and associated bore pumps are to be located. In	Yes	The next iteration of the Planning Scheme Amendment will include a map showing the location of the groundwater pipeline and bore	Planning Scheme Amendment

	my opinion, either existing mapping undertaken should be co-opted or new mapping prepared and included in the Incorporated Document which indicates the general location of the facilities and infrastructure to be allowed.		locations. There is currently a groundwater drilling program defining the location of the proposed bores.	
75.	In terms of the conditions proposed to be applied to those facilities and infrastructure allowed through the Incorporated Document, I consider there should be greater consistency in the conditions and the language made tighter. I also consider there is a need to better reflect the existing planning scheme overlays applicable to the SCO1 proposed land.	Yes	These amendments will be made to the documentation associated with the Planning Scheme Amendment.	Planning Scheme Amendment
76.	Where Council has indicated that the mapping sheets associated with the SCO1 do not accurately identify all infrastructure and services located outside the project mining area, I agree that this requires rectification. Indeed, I made a similar comment previously with respect to the Explanatory Report and the SCO1 mapping.	Yes	This work is in progress. The next iteration of the Planning Scheme Amendment will include a map showing the location of infrastructure and services located outside of the mining area.	Planning Scheme Amendment
77.	The Incorporated Document requires updating with respect to: a) Providing guidance in the form of mapping as to the general location of the facilities and infrastructure to be allowed; and b) Amending the conditions proposed in the form shown at Appendix D.	Yes	Kalbar will update the Incorporated Document and conditions as recommended by John Glossop.	Planning Scheme Amendment
	John Glossop, Glossop Town Planning – La	nd Use and P	Planning - Supplementary statement dated 8 February 2021	
78.	None			
	Human Health			

	Karen Teague, Coffey - Human Health - Exper	rt witness sta	atement dated 2 February 2021	
79.	Additional work is proposed in response to concerns in a number of the public submissions in relation to the potential indirect ingestion of substances of concern associated with animal products and edible plants, as a result of dust deposition related to Project activities.	Yes	Refer to item 12.	
	The information needed to address these pathways was not available at the time this statement was being prepared. The outcomes will be presented to the IAC during the planning panel session.			
80.	Kalbar has committed to undertaking a baseline investigation of metals and radiation	Yes	The Radiation Assessment Report (EES, Appendix A011) includes the results of soil sampling from the local farming area and	
	in soil and crops from the Lindenow horticultural region. While I endorse this approach, I also suggest ongoing monitoring of crops and co-located soils during project		discussion of radionuclide uptake in crops. Kalbar as part of the ongoing monitoring program will conduct a baseline investigation and periodic monitoring of crops and soils in three locations in the neighbouring Lindenow Valley horticulture area.	Risk treatment plan
				Airborne and deposited dust risk treatment plan
	construction and operations to confirm the health outcomes noted in the Assessment and			Radiation management plan
	ensure trigger levels are set where further mitigation would be instigated.			Radioactive waste management plan
				Radiation environment plan
	Karen Teague, Coffey - Human Health - Suppl	lementary st	atement dated 8 February 2021	
81.	None			
	Traffic and Transport			
	Paul Carter, Arup – Traffic and Transport - Ex	pert witness	statement dated 2 February 2021	
82.	It is recommended that prior to movement of	Yes	Prior to the movement of oversize and overmass vehicles, an audit	Environment management plan
	over-dimensional loads, a route audit is undertaken with guidance from VicRoads and		will be completed to assess route options, safety, and clearance between the vehicle and potential obstructions such as wires, trees,	Community engagement plan
	the National Heavy Vehicle Regulator. This audit would assess route options, safety and		zemeen me remote and potential executions caust do whoo , troop,	Traffic management plan

	clearances to potential obstructions such as wires, structures, trees and rail crossing infrastructure. These loads should also seek to avoid travelling in peak traffic hours and during school bus operation hours.		structures and rail crossing infrastructure, and then plan the route accordingly. (TT05)	Construction management plan
83.	Post-Avon River Bridge Option 2 – Bairnsdale Siding and Pre-Avon River Bridge: A monitoring and asset protection plan to be developed and agreed between the project and relevant road authorities. This includes maintenance of shoulders (clearing of overgrowth) to improve drainage in addition to pavement treatments.	Yes	The monitoring and asset protection plan will be prepared under the traffic management plan.	Environment management plan Community engagement plan Traffic management plan Construction management plan
84.	A survey of the existing conditions for the final product transport route should be undertaken prior to construction commencing so that deterioration resulting from the project can be monitored. This includes a structural integrity assessment to understand the pavement comparison.	Yes	Prior to construction, survey of pavement condition along Lindenow-Glenaladale Road and Bairnsdale-Dargo Road west of Lindenow-Glenaladale Road to provide a baseline to assess any deterioration resulting from the project (I1). (Chapter 12 of Main Report) Regular (e.g., annual, subject to existing pavement condition and agreement with the responsible authority) monitoring of pavement condition along Lindenow-Glenaladale Road, Bairnsdale-Dargo Road west of Lindenow-Glenaladale Road and other roads as required and agreed in accordance with the relevant authority (I1, I3, I36, I37). (Chapter 12 of Main Report)	Environment management plan Community engagement plan Traffic management plan Construction management plan
85.	Upgrade of the Fernbank-Glenaladale Road / Private Haulage Road intersection to a signalised control with advanced warning signs upstream of the intersection location and consideration of appropriate spacing between intersections to reduce the risk of high-speed vehicle collisions and providing awareness of the hazard (Post Avon River Bridge Upgrade Option 1 – Fernbank East Rail Siding only).	Partially	As a part of the detailed design and approval process Kalbar will engage with the relevant authorities to ensure compliance with all required safety and geometric design criteria for the proposed intersections on the Fernbank-Glenaladale Road. Options to be considered could include lowering of posted speed limits, signal control or grade separation. The ultimate intersection design and control will be agreed with the relevant agency.	Environment management plan Community engagement plan Traffic management plan Construction management plan
86.	Post-Avon River Bridge Option 2 – Bairnsdale Rail Siding only: resealing and strengthening of pavement for B-double use to be developed	No	If the Post Avon Bridge 2 scenario is adopted, a pavement condition assessment will be undertaken in cooperation with the local government to determine the additional impact of the traffic on the	Environment management plan Community engagement plan

	<u>'</u>			
	and agreed between the project and relevant road authorities, particularly around Bosworth		pavement and any resulting additional pavement strengthening or compensation arrangements that may be required.	Traffic management plan
	Road / Forge Creek Road roundabout and Bosworth Road / Bairnsdale Siding access.		componential arrangements that may be required.	Construction management plan
87.	Public road sealing of a small section (~20-	Yes	Kalbar will seal areas (~20- 30 m) either side of the private haulage	Environment management plan
	30m) either side of the Private Haulage Road crossing of Chettles Road and Cowells Lane		road where it intersects Chettles Road and Cowells Lane to reduce dust and improve road safety.	Community engagement plan
	(Post Avon River Bridge Upgrade Option 1 - Fernbank East Rail Siding only).			Traffic management plan
	Fernbank East Rail Siding only).			Construction management plan
				Airborne and deposited dust risk treatment plan
88.	Seal the Bairnsdale Rail Siding access road	No	If the Post Avon Bridge 2 scenario is adopted, the siding access road	Environment management plan
	(Post-Avon River Bridge Option 2 – Bairnsdale Rail Siding option only).		will be sealed to a standard appropriate for the duration and scale of trucking operations.	Community engagement plan
				Traffic management plan
				Construction management plan
89.	Incorrect project options were specified for the	Yes	This information will be reviewed and rectified in the detailed design	Environment management plan
	locations where standard road lighting should be provided.		stage of the project with engagement with relevant authorities.	Community engagement plan
	Standard road lighting should be provided at			Traffic management plan
	the following intersections (relevant product transport options in brackets):			Construction management plan
	 Fernbank-Glenaladale Road and Bairnsdale-Dargo Road (for all product transport route options); 			
	 Lindenow-Glenaladale Road and Princes Highway (Pre-Avon River Bridge and the Post-Avon River Bridge Option 2 – Bairnsdale Siding); 			
	 Fernbank-Glenaladale Road and Private Haulage Road (Post-Avon River Bridge Option 1 – Fernbank East Siding only); and 			

	Racecourse Road and Princes					
	Highway (Post-Avon River Bridge Option 2 – Bairnsdale Siding only).					
90.	Flag lighting provision at the Fernbank-	Yes	This is understood.	Environment management plan		
	Glenaladale and Private Haulage Road intersection is relevant for the Post-Avon River			Community engagement plan		
	Bridge Option 1 – Fernbank East Rail Siding			Traffic management plan		
	only.			Construction management plan		
91.	An emergency management plan is also	Yes, in	A fire and emergency management sub-plan will be prepared and	Environment management plan		
	required as part of this as recommended in the Assessment.	preparation	implemented that includes site-specific bushfire mitigation measures, awareness actions, preparedness levels and fire	Community engagement plan		
			response procedures for the site. The plan will be prepared in	Traffic management plan		
			consultation with East Gippsland and Wellington shire councils and emergency service providers. (BF01)	Construction management plan		
92.	A dedicated travel plan should be prepared	Yes	This option will be reviewed and considered as part of the traffic	Environment management plan		
	that encourages the workforce to travel by bus or car pool.		operational management plan and project execution.	Community engagement plan		
	·			Traffic management plan		
				Construction management plan		
93.	The assessment identifies B-double	N/A	Heavy mineral concentrate haulage via Lindenow South will be	Environment management plan		
	movements should avoid travelling during school pick-up and drop-off times, i.e. 8:00am		scheduled to avoid travelling through school zones during school pick-up and drop-off times , i.e. 8:00am - 9:30am and 2:30pm - 4:00pm on school days.	Community engagement plan		
	- 9:30am and 2:30pm - 4:00pm on school			Traffic management plan		
	days.			Construction management plan		
	Paul Carter, Arup – Traffic and Transport - S	Supplementar	y statement dated 8 February 2021			
94.	None					
	Air Quality					
	Simon Welchman, Katestone – Air Quality -	Expert witnes	ss statement dated 2 February 2021			

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95.	The Project's Airborne and Deposited Dust Risk Treatment Plan (Table 6-1) 'Acceptance Criteria' should be amended to include the SEPP AAQ environmental quality objectives for 24-hour average concentrations of $PM_{2.5}$ and PM_{10} of 25 $\mu g/m^3$ and 50 $\mu g/m^3$, respectively.	Yes	The Airborne and Deposited Dust Risk Treatment Plan is currently being updated to include the SEPP AAQ environmental quality objectives for 24-hour average concentrations of $PM_{2.5}$ and PM_{10} of 25 $\mu g/m^3$ and 50 $\mu g/m^3$, respectively.	Airborne and Deposited Dust Risk Treatment Plan Air Quality Management Plan Environmental Management Plan
96.	The Project's Airborne and Deposited Dust Risk Treatment Plan (Table 7-1) should be amended to include the mitigation measures detailed above under Scenarios 1, 2 and 3.	Yes	The Airborne and Deposited Dust Risk Treatment Plan (Table 7-1) is currently being updated to include the mitigation measures detailed above under Scenarios 1, 2 and 3.	Airborne and Deposited Risk Treatment Plan Air Quality Management Plan Environmental Management Plan
97.	The Project's Airborne and Deposited Dust Risk Treatment Plan (Table 9-1) and the EMF (Table 12.9) should be amended to include a trigger level for 1-hour average concentrations of PM_{10} of 80 $\mu g/m^3$. These plans should also be amended to include the following: "EPA will be consulted on the development of the Project's air quality management and monitoring sub-plans." Recommended trigger levels are provided in Section 4.3.	Yes	The Airborne and Deposited Dust Risk Treatment Plan (Table 9-1) and the EMF (Table 12.9) are currently being updated to include a trigger level for 1-hour average concentrations of PM_{10} of $80~\mu g/m^3$. These plans should also be amended to include the following: "EPA will be consulted on the development of the Project's air quality management and monitoring sub-plans.	Airborne and Deposited Risk Treatment Plan Air Quality Management Plan Environmental Management Plan
98.	The Project's Airborne and Deposited Dust Risk Treatment Plan (Tables 7-1 and 9-1) and the EMF (Table 12.9 Monitoring Programs Air Quality) should be amended to include a wind speed trigger level of > 25 km/hr instead of > 40 km/hr.	Yes	The Airborne and Deposited Dust Risk Treatment Plan (Table 7-1 and 9-1) and the EMF (Table 12.9 Monitoring Programs Air Quality are currently being amended to include a wind speed trigger level of > 25 km/hr instead of > 40 km/hr.	Airborne and Deposited Risk Treatment Plan Air Quality Management Plan Environmental Management Plan
99.	The Project's Airborne and Deposited Dust Risk Treatment Plan (Table 7-1) should be amended to include a tiered vehicle speed limit of 20 km/hr on unsealed project roads in the event of dusty conditions and 50 km/hr under normal conditions. This is to EPA Victoria's submission.	Yes	To address the concerns of the EPA, the Airborne and Deposited Dust Risk Treatment Plan (Table 7-1) and the EMF are currently being updated to include a tiered vehicle speed limit of 20 km/hr on unsealed project roads in the event of dusty conditions and 50 km/hr under normal conditions.	Airborne and Deposited Risk Treatment Plan Air Quality Management Plan Environmental Management Plan

100.	The Project's Airborne and Deposited Dust Risk Treatment Plan (Table 9-1) and the EMF (Table 12.9 Monitoring Programs Air Quality) should be amended to include a commitment to conduct continuous visual observation monitoring (e.g. video monitoring) of high dust generation activities if such technology is found to be economically viable.	Yes	and the EMF (Table 12.9) are currently being updated to include a commitment to conduct continuous visual observation monitoring (e.g. video monitoring) of high dust generation activities if such technology is found to be economically viable.	Airborne and Deposited Risk Treatment Plan Air Quality Management Plan Environmental Management Plan
101.	The Project's Rehabilitation Plan (Table 7-1) under 'Rehabilitation amenity and environmental quality' should be amended to include the SEPP AAQ environmental quality objectives for 24-hour average concentrations of PM $_{2.5}$ and PM $_{10}$ of 25 µg/m³ and 50 µg/m³, respectively.	Yes	The Airborne and Deposited Dust Risk Treatment Plan (Table 9-1) and the EMF (Table 12.9) are currently being updated to include the SEPP AAQ environmental quality objectives for 24-hour average concentrations of $PM_{2.5}$ and PM_{10} of 25 $\mu g/m^3$ and 50 $\mu g/m^3$.	Environmental management plan Rehabilitation plan
102.	The Project's Airborne and Deposited Dust Risk Treatment Plan (Table 9-1) and the EMF (Table 12.9 Monitoring Programs Air Quality) should be amended to include a commitment to the monitoring of rainwater tanks and dams for a minimum of twelve months prior to commencement of site works to establish baseline data, and continue during construction and operation of the mine. These plans should include details of corrective actions that should be implemented if monitoring results exceed recommended health-based Australian Drinking Water Guideline limits.	Yes	Quarterly sampling of water in rainwater tanks at a minimum of 13 locations (assuming landholders grant access) prior to construction and during operations (I1, I31, I33). (Chapter 12 of Main Report) In the event of an incident, or if inspections or monitoring results indicate that performance requirements are not being achieved, corrective actions would be enacted and may include any or all of the following: Immediately stop work where required. Complete incident report and investigations. Report to regulatory authorities as required (with notice of proposed corrective actions where relevant). Investigate cause of exceedance or issue, including review of relevant monitoring data and effectiveness of implemented corrective actions (if any). Implement corrective actions as appropriate to prevent recurrence. Undertake maintenance as required.	Airborne and Deposited Risk Treatment Plan Air Quality Management Plan Environmental Management Plan

103.	The Project's Airborne and Deposited Dust Risk Treatment Plan (Tables 7-1 and 9-1) and the EMF (Table 12.9 Monitoring Programs Air Quality) should be amended to include a commitment to periodic monitoring of deposited dust on nearby crops to validate the assumptions of dust assessments described in the Human Health Risk Assessment. The frequency and period of this monitoring should be agreed to with the local farmers and Community Reference Group. In the event that monitoring results show a likely risk to crop integrity and/or human health, Kalbar should carry out required remedial action in consultation with local farmers and the Community Reference Group.	Yes	Notify regulatory authorities of corrective actions implemented and outcome as applicable. (Chapter 12 of Main Report) The Project's Airborne and Deposited Dust Risk Treatment Plan (Tables 7-1 and 9-1) and the EMF (Table 12.9 Monitoring Programs Air Quality) are currently being updated to include a commitment to periodic monitoring of deposited dust on nearby crops to validate the assumptions of dust assessments described in the Human Health Risk Assessment. Local horticultural and agricultural producers and the Environmental Review Committee will be consulted to determine the frequency of this monitoring and the duration of the monitoring program.	Airborne and Deposited Risk Treatment Plan Air Quality Management Plan Environmental Management Plan Community engagement plan
	Simon Welchman, Katestone – Air Quality -	Supplementa	ry statement dated 9 February 2021	
104.	None			
	Centrifuges			
	Ivan Saracik, Epac - Centrifuges - Expert wi	tness statem	ent dated 8 February 2021	
105.	None			