Submission Cover Sheet

Fingerboards Mineral Sands Project Inquiry and Advisory Committee - EES

484

Request to be heard?: Yes

Full Name: Joanne Eastman

Organisation:

Affected property:

Attachment 1: J_Eastman_Submi

Attachment 2:

Attachment 3:

Comments: See attached submission

SUBMISSION TO THE FINGERBOARDS EES

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Dear Inquiry and Advisory Committee Members.

My interest in the Fingerboards proposal

I submit the following on the basis of both my long family connection with Glenaladale and the experience I have gained across many years of working in a variety of fields of endeavour.

On a personal note, I married in to a multi-generational Glenaladale family farming partnership and lived in the area for more than 35 years. We raised four children at Glenaladale – all of whom attended the local primary school before going on to secondary school in Bairnsdale and then to University and successful professional careers. The family home is central to my children's lives and is now one my grandchildren's favourite place to visit. The oldest grandchild, though living in Melbourne and only 7, is already planning his adult life on the farm. When my children were growing

up, the farm was a sanctuary for a great many of their friends who would come out to stay on weekends and holidays to 'their' farm: learning to ride horses and farm bikes, moving stock, helping in the shearing shed, feeding poddy lambs and bobby calves, burning off rubbish, playing with farm dogs, swimming down the river, and exploring creeks and gullies at every opportunity. Those children are now parents themselves and they all say what a wonderful time they had at the farm and how much they hope their own children get those sort of opportunities.

Unfortunately the family property is directly adjacent the mine, and the family home is within 300m of the mine's boundaries. With 24 hour noise, year round dust, road diversions that make it impossible to drove stock between paddocks and the mine damming gullies to capture water for its own purposes, it is difficult to see a future for anyone on the farm – let alone two of my family members who suffer from extreme sensitivity to noise. It is difficult to imagine how animals can be tended to properly when the noise of the mine will interfere with the sounds farmers rely on to manage their herds and flocks. 15 plus years of contamination of pastures, contamination ofstock and domestic water, 15 plus years of abrasive and intrusive noise, no more moving stock on horseback between paddocks, no more being able to share the joys of the farm with new generations. The thought fills me with dread and fear for what will be left behind.

In my professional life I have tertiary qualifications in Accounting, Legal Studies and Education and am an ICF accredited and practicing coach and mentor. I also have a strong interest in science and technology having completed two of years of a science degree before changing direction towards Business Management. I have taught many subjects at year 12 level including law, accounting, business management, information technology and psychology. I have also developed and successfully managed multi-million dollar training and employment programs and have worked extensively in stakeholder management and community engagement.

I work full time, am an active member of the community, continue to support my family wherever possible and am a life-long learner still gaining skills and qualifications that support my professional and private interests.

Experience of the EES process

I am a busy person and I am exhausted. For more than 6 years we have had the spectre of a mining company wanting to destroy Glenaladale. A company that knows nothing and cares less about the community or the environment, that has no concern or consideration for the people who have lived there for generations. No respect for people who understand the fragility of the environment, and who feel a deep sense of stewardship for the land.

I have attended almost every community meeting the company has held and have invariably left feeling dissatisfied with the condescending attitudes of many of the representatives and 'consultants' towards the community, with the constant refusal to answer legitimate queries and with the invariable response to those questions of 'it will be in the EES'. Well, we've just had 8 weeks to go through 11,163 pages. It has been like going in blind and completing a PhD in 8 weeks. However the EES has raised more questions than it answered.

Problems with EES documentation

The length of the documentation would be bad enough without the additional challenges dished out by Kalbar – who it is difficult to decide – are either incompetent or cruel, or perhaps a bit of both.

Two of the most important volumes (Volumes 9 and 10) – relating to water and water testing - had pages upside down and back to front making it impossible to work out what they were about. I

asked for copies with pages in the right order and was told I would have to work it out myself. Those volumes contained 2,892 pages!

The USB provided was only searchable by individual file and even then several files were locked and couldn't be searched. It was only thanks to a friend with good IT skills that I was able to get a useful electronic copy.

Unreadable documents

Perhaps some of the most important part of the documentation – the risk tables - were deliberately presented so as to be unreadable. Size 5 font on some and apparently less on others. Finding the Risk Report was my first heart sinking moment. Then to find The Risk Management Plan included in the Work Plan – one of the most critical documents for determining if the company is treating risk seriously and is suggesting appropriate mitigations - could not be read on less than 400% magnificaton. In fact the only way you would be able to read it would be with an 80cm screen. It was an impossible task with a laptop. I attach two of those at the back of this submission to illustrate the point.

And for those interested in understanding the unique chemistry of the Fingerboards, the tables presented in the Geochemistry and Mineralogy reports could not have been harder to read with most requiring 400% to 600% magnification.

After years of dealing with Kalbar, it is very difficult to believe the decision to make these type of important documents as difficult to read as possible was not deliberate. It is disturbing to think that they were considered adequate for release to the public by the Technical Reference Group. What type of checks were done before release?

Delays in getting information

Attempts to get useable copies or clarification from Kalbar took anything up to 5 days for response. And with every request the deadline loomed forebodingly. The process has been a nightmare - not made any better by the fear that the community has been put through hell for no reason and that a foregone decision has been made.

Fears that the decision has already been made

It seems the EES was rushed to meet some sort of deadline as the documentation and process was shoddy and Kalbar still hasn't done the drilling they need to define the resource. In fact after reading the reports I start to wonder what on earth they think is there that is going to make enough money to justify the devastation they will cause. Is there yet something else going on behind closed doors that the community is unaware of? None of the reports indicate anything like an economically viable mine and the dread is that this is some insane job creation scheme and will leave the community like so many others across the state – with nothing more than a lot of broken hearts, scars on the landscape and ongoing contamination from polluted groundwater and untendered tailings dumps and unrehabilitated pits.

I hope that the government has learnt something from the recent VAGO report into rehabilitation of mines in Victoria. I also hope there is enough corporate memory to consider all the other mines in Victoria that have been heralded with much fanfare, the promises of hundreds of jobs for decades and streets paved with gold, only to find the economic realities of the operations have been grossly exaggerated, people who moved for employment left without a job, local businesses going bust after

overcapitalizing in the hope of an economic boom and local councils left with the bill to repair and rebuild local roads.

Response to the EES

Air Quality

With the family farm so close to the mine and with the mainstay of the East Gippsland economy – the Lindenow Flats horticultural industry – not much further, I have been particularly interested in Kalbar's claims about the potential effects on our beautiful fresh air.

Incorrect meteorological information

The consultant presented a very brief report to the community at one of the information nights I attended but did not give satisfactory answers to a lot of questions posed. The air quality report has been eye-opening. It appears that a year of data, from a known wind-shelter, where 22.3% equipment failure rate was experienced, was enough to conclude that the maximum windspeeds are 40km per hour. That is patently wrong and a simple check of data at Bairnsdale, Sale and Moornapa weather stations – with a few very basic calculations -shows that there are very many days when the wind speeds are well over 40kph and can reach up to 95k or more. Speeds above 50, 60kph and 70kph come primarily from westerly directions and happen all year round. Not only will my family's farm suffer hugely from the dust that will come from the mine, but the vegetable farms will suffer year-round effects on crops, with spring crops being hit the worst.

Because of the incorrect assertion about maximum windspeed and wind directions, every other assertion the company has made about the potential for air contamination is wrong. This has incredibly serious implications for the rest of the EES and there is no excuse for professional histrionics or ignorance. People's well-being and livelihoods are at risk.

At its most recent webinar, the mining company, when asked about the potential for contamination, said that people will have to collect the dust, get it analysed to show it comes from the mine and then take them to court to seek compensation.

We should not be in that situation in the first place. While different sections of the Flats have times throughout the year when the land is ploughed for new plantings the land is not left bare for long. The trenches are only a few inches deep - not up to 50metres. Seeds and seedlings are watered regularly to encourage growth and dust only blows on the worst of days. That dust is from topsoil and very different to what is being dug up by the mine which will expose a number of heavy metals and radionuclides that are quite safe when sequestered in the ground but begin to change form as soon as they are exposed to oxygen and carbon dioxide.

The company needs to present a far more credible meteorological report than they have. It does not reflect reality and no amount of deft manipulation of data on a computer will make that happen. There may not be any attention to deceive, but people have tried to tell the company that the figures were wrong and they have been ignored. This is not good enough.

What is the real likelihood of dust?

The worrying thing is that even with such patently incorrect information that significantly downplays the impacts, there are many days when the consultant predicts 'sensitive receptors' will be affected by dust. We know there will be far more than stated.

The miner has already admitted that it won't be able to control all the dust, and unfortunately its water modelling make this even more apparent, in that it appears to have only factored in watering haul roads and has not made enough allowances for keeping the ore face or overburden stockpiles damp.

The AERMOD modelling undertaken by the consultant has been shown to underestimate contamination from more complex topography such as that at the Fingerboards so can expect even further problems with the mine.

What will the effects be on pastures, on stock, on water suppliers (both tank and dam)? What will be the economic impacts on the horticultural industry? The inane comment that the growers will irrigate to remove dust shows just how out little idea the people who did the horticulture report have of the industry. There are only a couple of growers who produce 'baby leaf' that is washed for market. If the other growers tried doing that on any of their crops they would end up with slushy mouldy produce that would be immediately rejected by buyers.

What about the health effects on residents and others within around 7km of the mine? How many more asthma attacks might we expect. How much more respiratory illness? Is the health department going to do baseline studies to show what the current health situation is? Which of the regulators are going to support or protect the community in the face of increased ill health?
What insurance is available for people exposed to constant dust from a mine?

What insurance does Kalbar have to cover potential court cases?

How do you ensure monitors are in the right place? How do you guarantee they allow proactive and responsive actions when emissions are or are expected to be, too high. How do we avoid being in the position of a farmer at Douglas who was guaranteed that the miner there would stop production on windy days to avoid contamination of his pastures, only to be told when he needed that to happen that he would have to pay $70,000 a day to cover the costs?

Noise

Noise is one of the biggest problems with any mine, let along an open-cut one that will subject people to both constant and intermittent noise. Sleep deprivation leads to all manner of illness and has significant effects on mental health. The noise from a 24 hour mine with massive diesel machines will be relentless. Experience in other areas shows noise to be one of the primary causes for complaints against mining companies. Those complaints often arise because of the frequent but intermittent loud noises as machines come surface from pits even though absolute sound levels may not 'exceed' the upper limits.

Kalbar would be fully aware of the impacts of noise and you can guarantee none of the executives would expose their families to having to live near it. And yet the company appears to have only considered the noise from trucks along the road and paid little attention to the effects of heavy machinery working the pits, processing plants or screening equipment. In the western district people

7 km away from the mine said when the company was working in some more rocky or stony ground the noise was 'like a machine gun going off in your backyard'.

The company's noise monitoring results were questioned at community meetings as they were very limited in extent and location and varied so much with people's experience of the area. Suspicions were high that monitoring occurred at select times to capture unusual levels of noise. For example, one very quiet place on the Fernbank - Glenaladale Road was claimed to have higher noise levels than the township of Lindenow. The only possible way those levels might have arisen was if machinery was being operated when the monitor was working. It certainly wouldn't be a regular occurrence.

Breaches WHO guidelines

To make matters worse in the noise report Kalbar claims the local community should be able to tolerate night-time noise levels that the World Health Organisation claim are harmful to health. Kalbar glibly state that "*One or two noise events per night, with maximum internal noise levels of 65-70 dB L_{Amax} are not likely to affect health and wellbeing significantly.*"

As Table 1 below shows, adverse effects start being experienced when night-time noise levels start to increase above 40dB. It must be remembered that for every increase in 10 decibels the noise level is 10 times more powerful. Kalbar is wanting to get away with exposing the community to 100 times the amount claimed by WHO to start affecting health and try to minimise the effects.

What a disgrace to use such a throwaway line when they are going to be subjecting residents to noise 24 hours a day, 365 days a year. It will be relentless - and it is not just the decibel rating that affects people. The tonal changes wear people down. For people with sensitivity to loud noises, myself included, it will be an absolute nightmare.

Table 1: Effects of night noise on human health (WHO)

Average night noise level over a year $L_{night,outside}$	Health effects observed in the population
Up to 30 dB	Although individual sensitivities and circumstances may differ, it appears that up to this level no substantial biological effects are observed. $L_{night,outside}$ of 30 dB is equivalent to the no observed effect level (NOEL) for night noise.
30 to 40 dB	A number of effects on sleep are observed from this range: body movements, awakening, self-reported sleep disturbance, arousals. The intensity of the effect depends on the nature of the source and the number of events. Vulnerable groups (for example children, the chronically ill and the elderly) are more susceptible. However, even in the worst cases the effects seem modest. $L_{night,outside}$ of 40 dB is equivalent to the lowest observed adverse effect level (LOAEL) for night noise.
40 to 55 dB	Adverse health effects are observed among the exposed population. Many people have to adapt their lives to cope with the noise at night. Vulnerable groups are more severely affected.
Above 55 dB	The situation is considered increasingly dangerous for public health. Adverse health effects occur frequently, a sizeable proportion of the population is highly annoyed and sleep-disturbed. There is evidence that the risk of cardiovascular disease increases.

Table 3
Effects of different levels of night noise on the population's health

People value the quietness of rural life – both day and night. To farmers it is a critical part of being able to manage your flocks and herds well. You need to be able to hear if an animal's in trouble, if a cow is having trouble calving so you can go out and help, if it sounds like foxes might be stalking newborn lambs or something has 'spooked' the horses. How can you hear those things when your environment has become industrialised and the sounds of heavy machinery drown out everything else?

Biodiversity

Although the landscape at the Fingerboards has been changed by farming, the ecological services provided are not fragmented. The many gullies and treed roadways provide interconnectivity across the landscape and protection for small animals and birds from predators. I myself have seen a spotted quoll in the project area and there have been recent sightings of two more a couple of kilometres north of the project area. The dams across the project area play an important part in the migratory story of eels.

Interconnectivity

There are many other species that rely on the interconnectivity and protection provided by the landscape. What will perform that function when more than 1300 ha has been turned into a barren sandy landscape. The 'promise' of 'progressive rehabilitation' is purely a marketing ploy – it hasn't happened elsewhere in Victoria so why would anyone expect it to be done at the Fingerboards. (Even the 'rehabilitation trials' reported in the EES were poorly done and laughably inadequate – what a surprise that 'pasture' in a pot plant in a hot house far away dies on an extremely hot day when it hasn't been watered!)

Effects of 2014 bushfires not considered

It is odd that in a statement about the environmental effects of a project that will destroy so much important habitat so many species have been missed. Field surveys were extremely limited and spasmodic and took no account of the fact that in 2014 fires swept through the whole area. Many in the community are still recovering and rebuilding from the devastating effects of the fire. The financial cost for individuals was extreme. Homes, sheds and fences were burnt. It destroyed pastures and native vegetation and killed livestock and native animals. Many of us were lucky to escape with our lives. People were faced with the immediate and heartbreaking task of having to euthanase suffering animals. They were faced with trying to help stunned, shocked and grieving neighbours and community members who had lost everything. They were faced with having to sell at ridiculously low prices, stock whose bloodlines had been built up over many decades because there was little pasture left and costs to buy fodder were excessive. They had to replace many kilometres of fencing and begin the long task of rehabilitating pastures to reasonable carrying standards.

The cost of fire to biodiversity was likewise extreme. However the ecological function of the area has not changed. The soils were left intact and most of the trees on the roadways and shrubs in many gullies were spared and continue to play an important role enabling connectivity and biolinks for countless species.

One wonders how different the outcomes of the surveys, and the resulting biodiversity report, would have been if the 'scope' of the consultants' contract was different. Would we have seen surveys, mapping and write up that reflects the true biodiversity and ecological function of the area?

Inadequate allowance of offsets

A pathetically low financial amount is allowed for offsets in the 'economics' report. How could $4 million be anywhere near enough for the destruction of more than 1,000 General Habitat Units and 1,000 Species Habitat Units. It is just not possible for the number and type of offsets required to be obtained and managed into the future for that amount of money. In fact that figure does not even reflect the annual gross revenue from agriculture that could be obtained in the area if farmers chose to stock to the 20 DSE (dry sheep equivalent) carrying capacity per hectare put forward by Kalbar's agricultural consultant. Surely permanent destruction of such an ecologically important area is worth more to East Gippsland and Victoria than one year's agricultural production?

The costings bring to mind Kalbar's justification for digging up a most critical component of the 'biolink' – the beautifully treed Bairnsdale-Dargo road that hosts copious native species of grasses, orchards and other plants. Kalbar claim they need to dig it up to get a 'cash flow' of just over $216 million. That works out to just over $6 tonne of ore dug up – not even enough to cover the cost of the dozer operator. It will cost a lot more than that to process the ore and transport it to the buyer.

They are proposing to dig up an established and important road and permanently destroy the lovely vista it provides as well as permanently remove the contribution it makes to biodiversity and the ecosystem for what is effectively a loss making exercise. It is an insane idea with absolutely no economic justification.

Changing microclimate

What effects will the changes to the landscape have on the microclimate? We know loss of vegetation will have a significant effect on ground temperatures over summer. Will any modelling be done to determine how that will affect neighbouring properties and farming practices?

Water

Water is one of the most contentious issues with the mine – not just the amount they need for operations but also the damage they intent to do to local groundwater by digging up the fingerboards site, and the damage that is unavoidable for local creeks and rivers.

Kalbar have used dated figures in their reports and models, have failed to acknowledge the impact of climate change and have completely ignored the long term water figures put out by DEWLP last year that show a 10-15% decline in flows in the Mitchell since 1975. Why has that been allowed?

It appears that their water conceptualisation proposal has not allowed sufficient water to even keep the dust down from their (inadequate) modelling, let alone what is to be the more likely amount they need. If Oresome predicted it needed more than 4GL water why does Kalbar think it can get by with less? The plans are very unconvincing. However they are very concerning. The prospect of treating mine water with flocculants that are ecotoxic to aquatic life and ultimately releasing it into the Mitchell River is scandalous.

The Fingerboards area is a known recharge area for the Mitchell River and farmers and landholders downstream rely on the increased flows from the gravel aquifer to provide extended supply during the dry summer months. When the area is dug up the Fingerboards will lose that function. The mine is planning to build more than 19 dams to grasping every bit of water that would have previously gone to the Mitchell for its own processing needs. There has been NO consultation with those downstream and no consultation with farmers in the project area whose own dams will be interfered with.

Kalbar consistently deny the presence of groundwater in the project area to try to give the impression that they won't be interfering with it. They have studiously avoided acknowledging the presence of perched aquifers. Even the selection of locations for their bulk samples was very cleverly designed to avoid those. However there are many spring fed (i.e. groundwater fed) dams across the project area that persist through the worst droughts – including one at the back of the tailings dam. And in their most recent webinar the water expert admitted that the ore will be damp when dug up due to groundwater. What are we to believe?

What modelling have they done on dam failure? The impacts could be extreme – including if that occurs when there is an extensive weather event like an east coast low. Designing the dams for 1/30 year floods on the Mitchell is hopelessly inadequate and foolhardy – especially with the expected increase in extreme weather events due to climate change.

Inadequate testing regime

The EES is both enlightening and disturbing to the extent that it indicates the dearth of testing and analysis that has been considered acceptable for such a damaging 'experiment' in a complex and fragile environment.

It appears that the vast majority of the information in the EES is based on a very limited, and unscientifically determined, database.

Kalbar recognized in their 2015 Financial Report that the levels of Chromium and Thorium in the ore are at high and potentially problematic levels, they have downplayed issues from these and every other heavy metal or potentially toxic substances throughout the documentation – unless it suits their interests, in which case they seem to suddenly find problems, e.g. with some of the 'baseline' water samples.

Furthermore in their 'analysis' of potential pollutants they referred only to 'topsoil' samples. The pollutants of concern are sequestered in the overburden (Upper sands) and the orebody and will become a problem when those are exposed and manipulated. And yet there is no sound analysis of what those contain. All the geochemistry reports are based on one '10 tonne sample' that they state has been taken from several locations across the project area, over different years and it would appear without even a proper 'Chain of Custody' in place.

In addition there are inconsistencies in the information Kalbar has provided about the testing. I wrote to them about a particular sample (SD14) which was referred to extensively in the Soils report and was told they *"did not sample or analyse the basic soil properties of core SD14 because we couldn't assign depth accurately enough due to the condition of the core."*

How is that they could not analyse SD14's soil properties due to inability to assess depth accurately on the one hand, and yet in the Geochemistry report there is very specific information about the depth with other analysis?

Table 1. Description of samples taken for geochemical analysis.

Sample	Type	Depth (m)	Description	Sizings (µm)
SD14	Sonic Core	0 – 0.2	Topsoil	+ 212, 105-212, 38-105, 20-38, - 20
SD14	Sonic Core	0.2 – 0.5	Subsoil	+ 212, 105-212, 38-105, 20-38, - 20
SD14	Sonic Core	0.5 – 3.4	Sandy Clays	+ 212, 105-212, 38-105, 20-38, - 20
SD14	Sonic Core	3.4 – 8.6	Sandy Gravels	+ 212, 105-212, 38-105, 20-38, - 20
SD14	Sonic Core	8.6 - 9	Sandy	+ 212, 105-212, 38-105, 20-38, - 20
SD14	Sonic Core	14.7 – 23.8	Upper Sand	+ 212, 105-212, 38-105, 20-38, - 20

Figure 1: Geochemistry report page 14

Further if the condition of the core was so bad why use this particular sample for such extensive testing and why base so much other information on the results.

Table 4. Project area topsoil sonic drill hole average assays (calculated from assay-by-size data).

Hole ID (Depth (m))	SO_3 (%)	As (ppm)	Bi (ppm)	Cd (ppm)	Co (ppm)	Cr (ppm)	Cu (ppm)	Hg (ppm)	K (ppm)	Ni (ppm)	Pb (ppm)	Se (ppm)	Th (ppm)	Tl (ppm)	U (ppm)	V (ppm)	W (ppm)	Zn (ppm)
SD01 (0.0-0.1m)	0.05	1.0	0.2	ND	1.5	ND	15	BD	1660	6	5.4	ND	7.1	ND	2.3	18.6	3.2	275
SD08 (0.0-0.5m)	0.04	3.5	0.2	ND	4.7	97	6	BD	4151	62	8.2	ND	18.5	ND	4.1	62.1	3.0	10
SD10 (0.0-0.2m)	0.07	1.1	0.1	ND	1.6	ND	15	BD	1660	10	4.4	ND	18.3	ND	4.4	24.6	3.0	30
SD14 (0.0-0.2m)	0.05	3.6	0.1	ND	2.0	24	11	BD	14196	8	5.0	ND	5.3	ND	1.4	28.3	1.9	19
SD25 (0.0-0.3m)	0.07	4.7	0.2	ND	7.7	7	8.	BD	3321	15	9.4	ND	12.3	ND	2.9	44.6	3.1	15
SD27 (0.0-0.3m)	0.08	5.2	0.3	ND	25.2	24	13	BD	7604	23	9.7	ND	12.0	ND	2.6	59.6	10.0	26
Average	**0.06**	**3.2**	**0.2**		**7.1**	**38.0**	**11.3**		**5432**	**20.7**	**7.0**		**12.3**		**3.0**	**39.6**	**4.0**	**62.5**
Maximum	**0.08**	**5.2**	**0.3**		**25.2**	**97**	**15**		**14196**	**62**	**9.7**		**18.5**		**4.4**	**62.1**	**10**	**275**

Air contaminants

I make no claims to be a scientist but I am very concerned about the levels of hazardous substances the community will be exposed to. For example, Kalbar's assay results show high levels of vanadium at all depths of the SD14 sample, reaching as high as 328 in the uneconomic upper sands. Vanadium is a known hazardous substance and workplace exposure limits in other jurisdictions are set at 0.05mg/m^3 with the warning that those limits are not to be exceeded at any time. Yet Kalbar's own modelling shows the <20µm size fraction of the upper sands has a level equivalent to 683.39 mg/m^3 – many thousands of times higher than the recommended limit. [1]

Is there anyone in the EPA, Earth Resources or the Health Department who can guarantee that my family's health will not be affected by such massive levels of **vanadium**?

What sort of exclusions would a health insurance company introduce to our policies if they were made aware of the levels?

What about **Chromium**, with a ppm of 172 in the upper sands that translates to 365.78mg/m^3. What about Lanthanum? What other potentially toxic elements have we not been told about?

Why did Kalbar choose to exclude the most obvious element of concern – **Silica** – from the geochemistry report in Table 2? What other things have been excluded?

How is it that Kalbar can claim on the one hand that arsenic levels seeping from the tailings dam don't create a risk but then claim that arsenic and other toxic substances are already high in other areas where mine overflow or process water might be released? One wonders where on earth they took some of their samples from and the methods used. After seeing them attempting to use

[1] Vanadium levels in Upper sands dust

ppm value	mg/m^3 value	based on the molecular mass of
328	683.39	50.9415

Traralgon as a basis for ambient air quality at the Glen, one starts to become suspicious of everything that is put forward.

What risks are they knowingly putting my family and community to that they wouldn't expose their own families to?

Would a health insurance company, knowing what is in the dust, continue to provide cover for those living near the project area? Would anyone from the Technical Reference Group or the Panel be happy to subject themselves and their loved ones to the risks?

My family and the broader community will be exposed to vanadium and other toxic elements for 365 days a year for more than 15 years. The claims of progressive rehabilitation and good dust control have not been honoured in any other mineral sands mine. Why is it so easy for a 'new kid on the block' to make such absurd claims when even the most experienced mineral sands miners have not been able to meet those standards? Have there been any changes to the regulatory processes, including rehabilitation that will make this mine any different?

The community meetings demonstrated how little 'on-ground' time most of the consultants spent in the area and how much they relied on Kalbar to provide data or information on which to base their reports. The old adage 'garbage in - garbage out' has seldom had a better exemplar than the Fingerboards project. None of them questioned the data or information provided by Kalbar, but all have used the fact that they are relying on it as a disclaimer.

It is bewildering that it could have got this far in to the process without the proponent being sent back to collect more information and to give rigorous justification for its contentions, risk assessments and the conclusions drawn about the merits of the project and the unlikelihood of harm to the country, the environment, the people or the economy.

A marginal mine

There have been 'red flags' about the project from day one – not least because two companies have previously walked away. If both Rio and Oresome (Metallica Minerals) examined the prospect and decided on balance it was too marginal to invest in, why on earth would Kalbar, a company that was conceived as a $2 finance and investment company, and one with no experience of mining, think it could make a go of such a marginal proposition in such a complex environment. Where were the checks and balances on its claims? Who was checking on 'how' increased mineral reserves were determined? Why have people gone to so much trouble to get what is, on the face of it, a very marginal prospect over the line. The probability is very high that the community will be left impoverished, the environment permanently destroyed and the government to meet the costs of stabilization and rehabilitation.

Changes to the project have been rife throughout but the one that is most distressing is the transition from a supposed mineral sands mine to a rare earths mine. That was done after the final scoping requirements were released and without any opportunity for public comment. It is obvious from the investor presentations on Kalbar's website and other documentation that the mine has no hope of making the money they are claiming without the rare earths' component. The zircon and titanium products are too marginal and even after allowing for the processing in China, according to their presentations, there is next to no margin in their titanium products and the zircon mix does make enough to cover costs. The only hope is for further processing to rare earths, a fraught idea given the business risks of competing with so many more favourable sites across Australia and

around the world. It seems strange that, given the current international situation, alliances with Chinese rare earths producers would be even considered.

The costs to produce are just too high as shown by their change from the progressive mining approach they have been touting throughout to now their stated intention of picking the eyes out of the ore body to get the sites with least overburden first in the hope of covering (grossly underestimated) capital costs. It will be only a couple of years before the overburden becomes too deep to for the mine to be profitable. What then? Is the government going to be constantly approached for grants and other support to keep what is effectively a 'job creation scheme' going?

There is almost an insanity to their determination to push the project through and a complete callousness about the harm they cause. For what end? The project should never have got this far and it seems now we, the community are paying the price for a very bad investment decision by a few people who are adept at influencing decision-makers.

The company performs some very fancy footwork throughout its economic report – carefully avoiding revealing the true costs, taking care not to compare like with like (e.g. GHG emissions costed on global basis but net jobs on a local one and many other examples), apportioning pitiful amounts for monitoring, not budgeting for the full amount or costs of water, seriously undervaluing the benefits of other industries such as local agriculture, using dated information to paint a misleading picture (e.g. 2016 unemployment figures), claiming there is plentiful accommodation for construction and other workers when local families are already having to move further west due to the increased pressures resulting from recent bushfires on an already very tight market.
The list goes on.

What we do know from experience across the country is that the community that has the dubious honour of 'hosting' a mine, sees very few benefits. PAYG taxes go to the Commonwealth government, any (tax deductible) royalties go to the state (assuming the company hasn't been granted a royalty holiday) and the LGA picks up the cost waste disposal and of repairing roads and other local infrastructure. Even Kalbar's business model with the Chinese rare earths partnership appears to be set up to avoid paying any company tax – should the mine ever cover its costs.

Is this just a job creation scheme?

The only real advantage the company puts forward about the mine is the 'creation' of jobs – 200 temporary in construction (to be provided by external contractors) and supposedly 200 (mix of Kalbar and contractors) when the mine starts. The number of jobs on mining is always greatly exaggerated in the EES stage but unfortunately no checks seem to be ever done to see if what was promised was actually delivered. Regardless those jobs are all temporary. They will destroy many sustainable farms and take away the options for future generations who would love to follow in their parents and grandparents' footsteps in caring for the land. It is also highly likely that many jobs will be destroyed in the horticulture industry in the process due to competition for water, guaranteed contamination of crops for kilometres around and reputational damage when key buyers feel they can no longer rely on the product.

What a poor strategy for job creation if that is what it is about. There are far better investments for the government that would make a long term and sustainable difference to our region if that is what it's about. Jobs that support our natural resources, not that destroy them.

Conclusion

I have read as much of the EES as possible given the time available. There are so many other issues with this proposal.

It is an unnecessary mine, in an inappropriate location. It will destroy far too much for the sake of a few investors who have no affiliation for the area and see it as something to be exploited and tossed aside.

Victoria is littered with mines that have promised much, delivered little and been left in permanent ‘care and maintenance’ as a perpetual reminder to the community of what was sacrificed on the altar of greed. We cannot afford to have the same happen at the Fingerboards

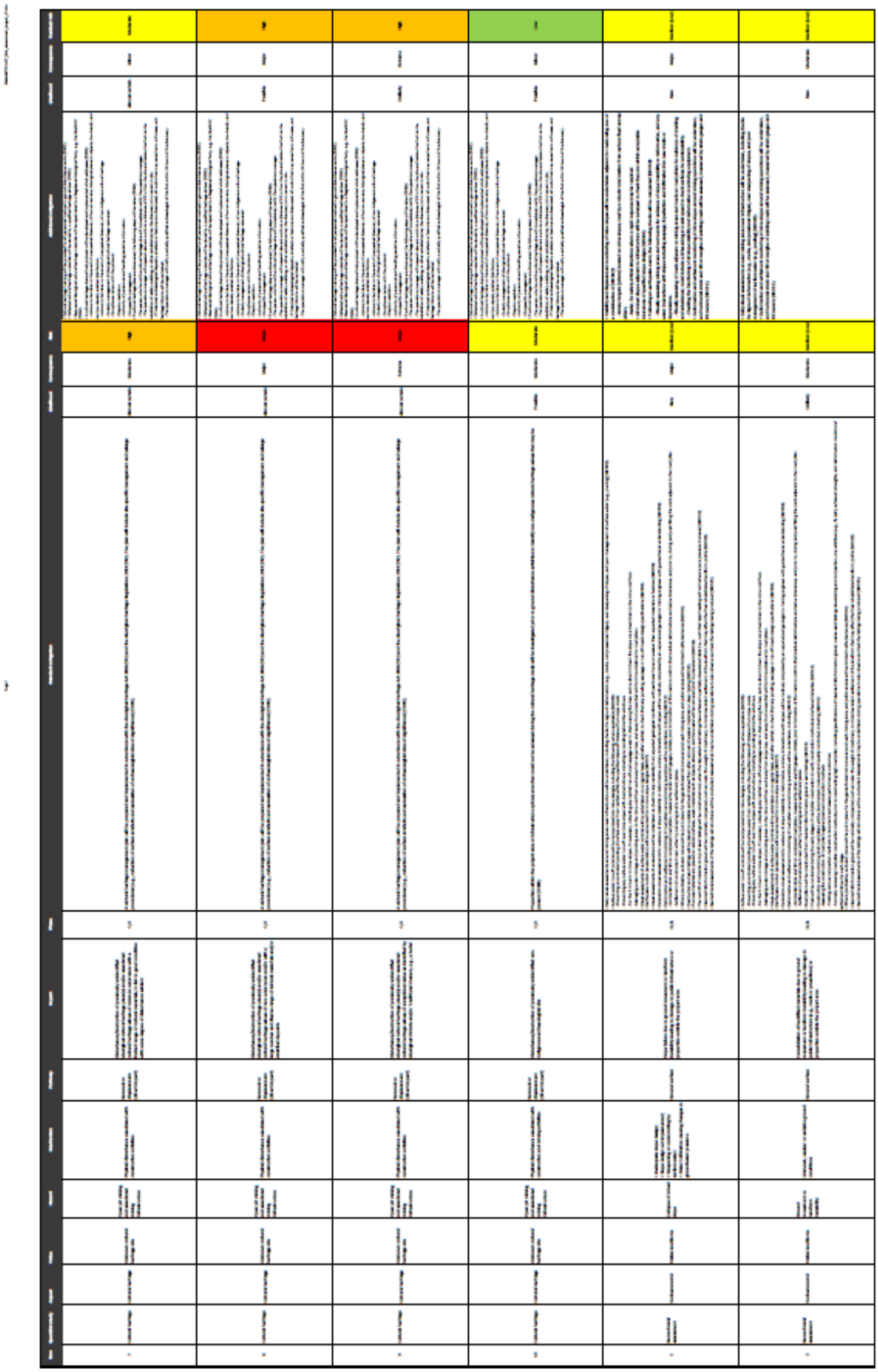

Figure 2: Volume 4 Risk Report

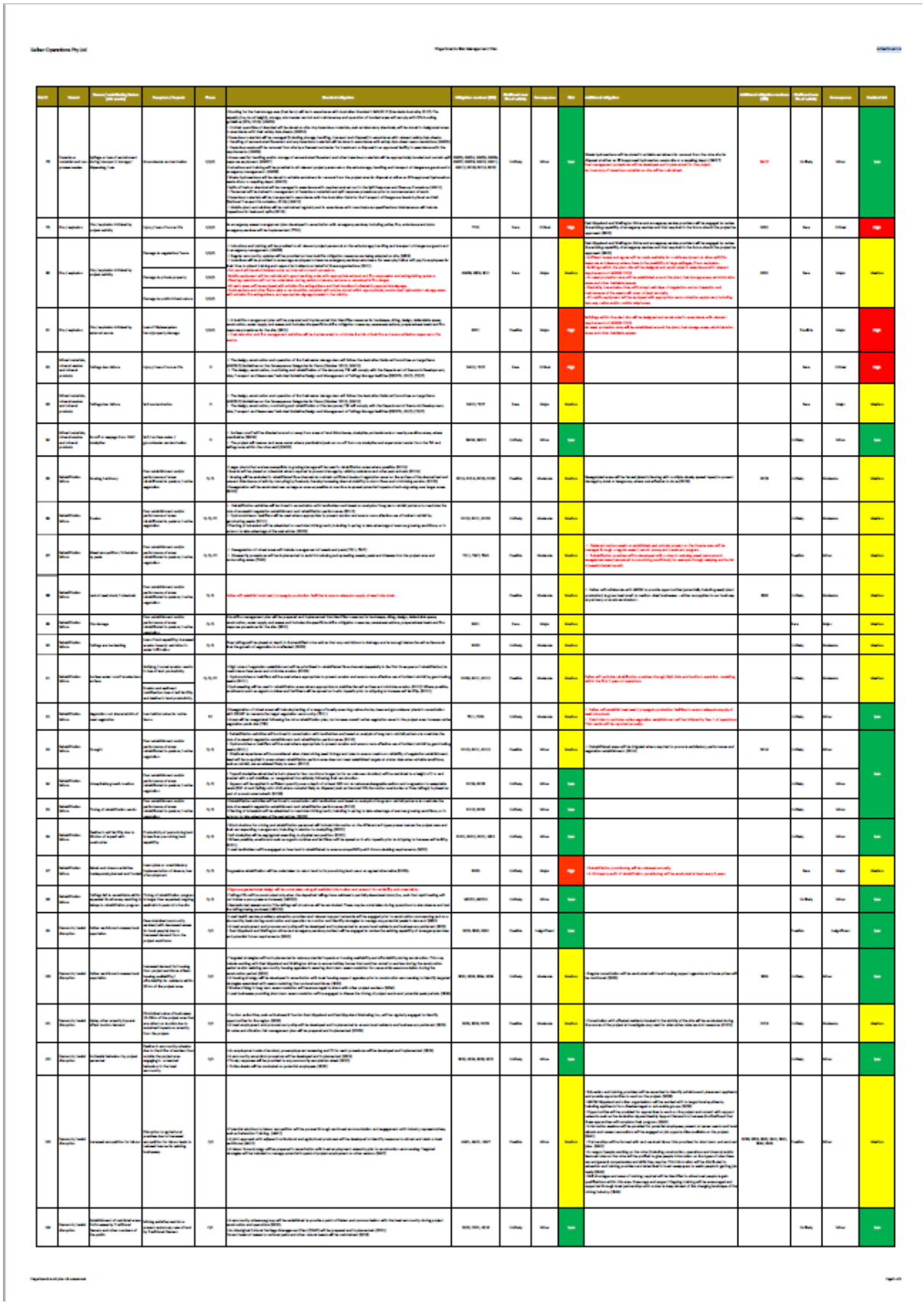

Figure 3: Work Plan Appendix A - Risk Management Plan

Bureau Veritas documents

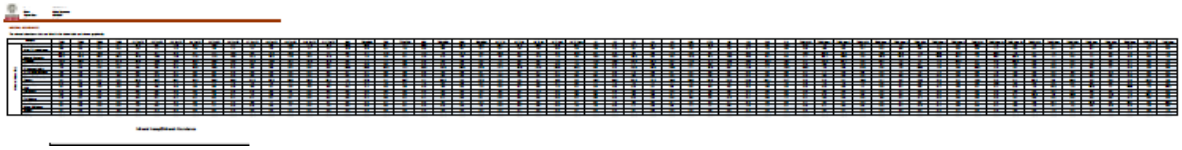

Figure 4: 100% magnification of Bureau Veritas analysis in Geochemistry report

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MINERAL ABUNDANCE

The mineral abundance data are listed in the below table and shown graphically.

Sample		T150	T250	T350	T450	C1 T4+T5	C2 T4+T5	C3 T4+T5	C4 T4+T5	C5 T4+T5
Mineral Mass (%)	Rutile/Anatase	0.7	0.1	0.1	0.1	12.4	9.9	11.9	15.3	13.8
	High Ti Leucoxene	0.6	0.2	0.2	0.2	1.4	1.1	1.2	1.4	1.6
	Leucoxene	29.5	11.1	10.3	7.9	8.7	9.1	8.4	9.7	11.7
	Altered Ilmenite	46.5	31.6	30.7	29.1	14.5	13.8	11.9	11.8	11.4
	Ilmenite	14.8	55.5	57.1	61.3	14.8	15.6	15.2	13.3	10.6
	Titano Fe Oxide	0.3	0.1	0.1	0.1	1.1	0.4	0.7	0.3	0.3
	Ti Intergrowths	1.0	0.4	0.5	0.5	8.9	4.9	9.3	10.8	10.9
	Ti Fe Intergrowths	0.6	0.3	0.3	0.3	0.8	0.4	0.7	0.5	0.5
	Other Ti Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Zircon	0.1	0.1	0.0	0.0	25.0	34.7	28.1	23.3	23.6
	Chromite	3.2	0.5	0.6	0.4	1.8	1.7	1.1	1.7	1.1
	REE	0.1	0.0	0.0	0.0	2.9	4.8	3.9	2.6	3.6
	Xenotime	0.0	0.0	0.0	0.0	0.6	0.9	0.6	0.5	0.6
	Quartz	0.4	0.0	0.0	0.0	1.3	0.5	1.3	1.4	1.6
	Fe Oxides	1.8	0.1	0.0	0.0	0.4	0.1	0.1	0.1	0.2
	Fe Silicates	0.1	0.0	0.0	0.0	4.0	1.5	4.2	5.6	6.1
	Other Silicates	0.1	0.0	0.0	0.0	1.0	0.3	1.0	1.3	1.7
	Others	0.1	0.0	0.1	0.0	0.4	0.2	0.5	0.4	0.5
	TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Mineral Assay/Mineral Abundance

Figure 5: 600% magnification to see Bureau Veritas table