

Submission Cover Sheet

Fingerboards Mineral Sands Project Inquiry and Advisory
Committee - EES

752

Request to be heard?: Yes

Full Name: Dr Joanna McCubbin

Organisation:

Affected property:

Attachment 1: Fingersboards_Mi

Attachment 2:

Attachment 3:

Comments: See attached submission

INTRODUCTION

The Fingerboards mineral sands project seeks to dig an enormous open-cut hole in the ground, through the water table, in the middle of an agricultural and residential area with patches of plantation and residual natural vegetation.

My main concern is about human and environmental health results of such a project.

Most people have an interest in their own and their family's health.

The perception that this project may compromise health, is the biggest issue facing this company in maintaining a social licence to operate.

People, livestock and crops (and of course native flora and fauna) may be directly exposed to radiation, dust and noise as well as suffering the mental health effects, of the long drawn out process, of potential interruptions to their lives and livelihoods. Furthermore, windblown dust may impact vegetable growing areas immediately downwind, damaging their reputation as clean and green foods, to feed to your family. The project also lies directly upstream of the Gippsland Lakes, home to Ramsar listed wetlands and a favourite fishing and tourist destination.

Key Health Aspects:

The health risks can be:

To the workers

To local people

To the broader community through contamination of the food chain

Mineral sands mining is known to release fine particulates, of respirable crystalline silica, heavy metals, and radioactive isotopes.

Fine particulates are hazardous because they are so small that they may reach the gas exchange parts of the lungs and enter the bloodstream, travelling to not only lungs and heart but also kidneys brain and reproductive organs, for example. Very small particles less than 2.5 microns in diameter are being linked to Parkinsons Disease and Alzheimers. During pregnancy and early childhood, they may cause abnormal child development. They enter the body by the inhalation path. More breaths mean a higher dose so that heavy exertion may put people at greater risk if working in dusty, smoky or otherwise toxic air. Similarly, children breathe faster and so are at more risk.

Respirable Silica in very low doses may set up inflammatory pathways that lead to permanent lung damage and are also linked to lung cancer. This risk is exacerbated by smoking, which should be actively discouraged in the workforce.

It is hard to imagine how sand which is mainly silica can be managed in a truly low dust way.

The dust management will need to be treated with extreme attention to detail.

Unfortunately, little information is provided as to how this will be achieved. Apart from promising to be really good, there is not much substantive method provided. "There will be a plan" does not strike me as sufficient reassurance for Gippslanders who will be impacted.

For local people, land disturbance related to mining will inevitably increase their exposure. How will they be protected? Monitored? Compensated? Will they have to close all their windows on hot

nights, to prevent noise and dust affecting them? This would be extremely dangerous to vulnerable age groups during heatwaves, where more people die when they cannot cool their homes overnight. **There should be mandatory shut down of nighttime operations when the ambient daytime temperatures are expected to be over a predetermined temperature for three consecutive days.**

Dust will also fall on their rooftops and wash into their tanks. This means heavy metals and radioactivity may be a threat to their wellbeing, via ingestion as well as by inhalation.

In windy conditions, dust will end up travelling towards the Lindenow flats where vegetables are grown. This will potentially expose vast numbers of people to toxic elements, particularly as thorium concentrates in leafy green vegetables!

The EPA independent Air Quality (AQ) consultant was less than complimentary about the Kate Stone EES AQ assessment. The understanding of and compliance with Victorian Legislation seemed poor and actual baseline AQ monitoring compliance, is flawed by large gaps in data. Most egregious is the Jan to April gap when local weather is driest and also windy, making widespread dust dispersion arguably, at a maximum.

Surely, at a minimum, this data should be collected for the Summer period in 2021, and no further disturbance of the surface should be allowed until this data set has been rectified.

Ideally, the AQ study should be re-done by a person with a better appreciation of local Victorian conditions. It is also inappropriate to equate Hunter Valley coal mining with mineral sand mining.

Air Quality is a key component of this project and it is so important for the health of local people. It seems impossible to put in place sufficient community protection if the whole house of cards is built on faulty foundations. It will potentially lead to court action if they are allowed to proceed based on a poorly done Air Quality studies.

Radioactive materials.

There will be significant radiation risks from this project. Radioactive isotopes tend to be incorporated into small particles such as in fine mineral sands. There will be Alpha, beta and gamma radiation exposure caused during this project.

Some of the accessory minerals that often contain thorium are apatite, sphene, zircon, allanite, monazite, pyrochlore, thorite, and xenotime. Thorium is an Alpha and Beta emitter which will primarily be a hazard for the workers on-site, as it is high energy but has little potential to penetrate the skin but may be inhaled or ingested. It is clearly associated with a higher risk of lung cancer than in the general population. This has been quantitated and written up in the medical literature across several continents where mineral sand mining is undertaken.

The Radon decay pathway also contributes radon gas and radium (gamma emitter) which may be inhaled and is also water-soluble.

The other key radiation risk is to the lens of the eye, where cataracts may be generated.

ARPANSA (August 2020) has recommended that all states provide dose records for Individual workers, to a National Dose Register which would maintain the record for at least 30 years or until the exposed worker turns 75.

This is important, particularly as this mine is only expected to produce for 15 years, but the health effects for workers are not over when the mine closes.

Currently, the limit is *not more than 1 mSievert annually averaged over 5 years*, for the general population. For occupationally exposed workers this is 20 mSievert (but no more than 6 mSievert for 16-18 yo workers)

If this project were to go ahead, there will need to be a mandated, strong management plan that details responsibility for radiation training and work protocols, reporting mishaps, worker dosages monitoring, transmission of results to ARPANSA and response to high dosage readings.

The risk is that the actual on-site works will be subcontracted out to employers who may not be aware of the radiation risks and management. As the Hotel Quarantine system has demonstrated, subcontracted workers may not fully understand or implement the rules they are supposed to be working under.

The supporting information from Kalbar does not mention dosage monitoring of workers, but rather monitoring at various places on site. This will not adequately monitor the actual dosage of radiation received by each person. Radiology department staff in hospitals wear monitor badges. Surely something similar could be provided for staff members? This should also include truck drivers, transporting concentrate.

Outsourcing the training and risk management for health and radiation monitoring for workers and those involved in transport, is a dangerous way to proceed, for these workers.

The company must at all times be accountable for long term health effects on workers. They have recently changed their company structure which now appears to be largely foreign-owned. There will need to be a way to prevent a James Hardys type, shift to a foreign jurisdiction, to avoid compensating injured workers.

It will be imperative that there is well-coordinated oversight of Occupational Health and Safety, by a Public Health expert, not just the shift manager.

Kalbar's reporting structure suggests that mishaps should not be reported unless approved by more senior company representatives. This is problematic. This kind of thing should be mandatory, rather than discretionary.

Finally, since there are very significant health risks associated with this project, **it is essential that significant public health expertise is directly involved in regular oversight of the project. At all stages!**