Submission Cover Sheet

Fingerboards Mineral Sands Project Inquiry and Advisory Committee - EES

575

Request to be heard?: No

Full Name: June McKenzie

Organisation:

Affected property:

Attachment 1: [redacted]

Attachment 2:

Attachment 3:

Comments: See attached submission by Expendable Residents

10/26/2020

Rivers Lakes Dolphins & an EES

East Gippsland

Expendable Residents

Contents

Appendix

'Environment protection is fundamental to our economy, our lifestyle and our health. Many of our key industries, including tourism, education and agriculture, rely on a healthy and productive environment.
Our health, quality of life and our world-recognised liveability also depend on clean air, water and land.'[1]

The Hon. Daniel Andrews MP
Premier of Victoria

The Hon. Lily D'Ambrosio MP
Minister for Energy, Environment and Climate Change

[1] Andrews Labor Government Response to the Independent Inquiry into the Environment Protection Authority. 2017. The State of Victoria Department of Environment, Land, Water and Planning https://s3.ap-southeast-2 amazonaws.com/hdp au.prod.app.vicengage.files/4314/8547/6632/Andrews_Labor_Government_Response_to_the_Independent_Inquiry_into_the_Environment_Protection_Authority.pdf

Rivers Lakes & an EES

Executive Summary

Victorians expect that the EES process is robust and would protect the water and environment. But the Victorian Auditor General found this was not so.

Shockingly, the Auditor General Victoria found that an EES is still not mandatory in Victoria, and that few mining operatives have submitted an EES. And *'concluded that the current legislative framework does not ensure the effectiveness of the EES process'*.

There is no protection of the increasingly scarce quality water resources. The options for an alternative supply diminish as each river is polluted, and threatens biodiversity in the entire Gippsland Lakes system. Victoria cannot afford to pollute the last rivers '*in the best condition in Victoria'*.

There is no objective appraisal or independent review of the social, economic, or environmental pollution impacts while mining companies commission their own reports that serve their own best interests.

The recommendations of the inquiries into the EPA 2011 and 2016, or of the Auditor General, have not been enacted to date. The EES process is not robust as voters assume.

The Victorian 'State of Discovery' policy prioritise land and vital water resources to mining companies, while the residents and their environment are regarded as expendable.

Rivers Lakes & the Dolphins

Gippsland Lakes are home to the unique Burrunan dolphins, which have adapted to the fresh/brackish waters. However, there are currently only 55 to 65 endangered dolphins remaining.[2]

The dolphins are exposed to contaminants from current and past mining operations, which continue to wash downriver into the Gippsland Lakes.

This submission considers the dolphins and the impacts of upstream mining and concludes that the dolphins and the lakes ecology are not protected from the increased contaminants and silt load from Kalbar Resources Ltd proposed open-cut mine.

[2] Marine Mammal Foundation https://marinemammal.org.au/burrunan-dolphin-health/

Shockingly, the EES is not mandatory, robust, nor legally binding in Victoria. Auditor General reported… *'outcomes of Victoria's EES process are not legally binding, whereas the outcomes of environmental impact assessments in Western Australia and the Commonwealth have legal force'.*[3]

Without an objective appraisal, the EES and licence process cannot deliver a safe outcome for the rivers and the Gippsland lakes.

Research from the Marine Mammal Foundation has found:

'*The levels of toxicants which may have accumulated in these resident dolphins is a direct bioaccumulation of the toxicants in these ecosystems and can give us an indication of the overall health of these water ways … The Burrunan dolphin has been found to contain some of the highest recorded mercury levels among all cetaceans worldwide, with beach-cast deceased individuals recording levels three times higher than those in the live population*.'

Rising mercury levels were identified by the United Nation Environmental Program representative and reported to the Victorian authorities to no avail. [4]

The rising levels of contaminants in the lakes remain permanently trapped because there is only one outlet at Lakes Entrance to flush the entire lakes network – the largest in Australia.

The lakes are protected by Vic Parks and national conservation, international agreements – the Ramsar Convention on Wetlands and the Convention on Migratory Species (Bonn Convention) – and are an Important Bird Area (IBA).[5] Yet their protection is nominal.

Tourism in Gippsland

Tourism is a major contributor to the East Gippsland economy. Its diversity of marine, alpine, and attractive rural landscapes and its scope for outdoor recreational activities gives it huge potential.

Statistics include: - domestic nights of 2,535,000 in 2018, an increase by 14.3% from previous year, and an overall change of 24%.

[3] Greaves, A. Auditor-General 22 March 2017, Effectiveness of the Environmental Effects Statement Process VICTORIAN GOVERNMENT PRINTER Page 12. https://www.audit.vic.gov au/sites/default/files/20170322-EES.pdf

[4] Helps, A. UNEP Global Mercury Partnership .31/10/2015 http://epa-inquiry.vic gov.au/ data/assets/pdf_file/0005/329513/Hg-Recoveries-Pty-Ltd.pdf

[5] Gippsland Lakes Ramsar Site Management Plan, 2015. East Gippsland Catchment Management Authority, Bairnsdale https://www.ramsar.org/ search: Ramsar site no. 269 Gippsland Lakes: https://rsis.ramsar.org/ris/269 Gippsland Lakes Ramsar Site Management Plan: https://egcma.com.au/wp-content/uploads/2019/06/Gippsland-Lakes-Ramsar-Site-Management-Plan-Full.pdf page 12, 15.

With 1.455 million visitors (day, and overnight) in the year ended 31 December 2018, the health of the lakes is significant to the highly valued precinct and regional economy. [6]

At Glenaladale, The Heritage listed Mitchell river is an accessible, wild river and its forest wilderness attracts exciting adventure and eco-tourism; on foot, bike and kayak.[7]

Fishing

The Gippsland Lakes system is the largest navigable inshore system in Australia and has been of significant value to both professional and recreational fishers, with commercial fishing established in the late 1800's.

2014 Victorian state committed $46 million towards recreational fishing, in the hope to grow participation to one million anglers by 2020. In 2018 it committed a further $35 million.[8] In Gippsland, these commitments are predicated on the continued preservation of the environment and waterways of the Gippsland Lakes System.

Lakes to Mountains - Migratory Birds & Wildlife

The rivers and natural State forest are corridors for the seasonal migration of birds from the lakes to mountains. The forest wilderness ranges from Glenaladale through Stockdale neighbouring Kalbar on the western boundary, and can be viewed by satellite.[9]

Biodiversity

The forest wilderness on the western boundary neighbouring Kalbar is a significant extension for the national park's wildlife. The ecologists and botanists have been excited by their findings of endangered, rare and protected species on the proposed mine site in Glenaladale so far.

The Atlas of Living Australia. (ALA)[10] indicates some of the species registered in Glenaladale.

948 (all species). Site - Mitchell River Walking Track, Iguana Creek.

504 (all Species) Site - Friday Creek Rd, Glenaladale.

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[6] International Visitor Survey and National Visitor Survey, YE Dec 18, Tourism Research Australia https://www.eastgippsland.vic.gov au/files/assets/public/documents/development_directorate/economic_development/travel-to-greater-gippsland-ye-dec-18.pdfSources: International Visitor Survey and National Visitor Survey, YE Dec

[7] Parks Victoria. Mitchell River. https://www.gippslandinfo.com au/images/gipps/Mitchell-River-National-Park.pdf

[8] Victorian Fisheries Authority (VFA) The State of Victoria, 2020 Authority https://vfa.vic gov.au/ https://vfa.vic.gov.au/ https://vfa.vic.gov au/recreational-fishing/targetonemillion2/target-one-million

[9] Google Earth Fingerboards, Glenaladale. 3864 https://satellites.pro/Glenaladale_map#-37.786487 147 354512 14 https://satellites.pro/Glenaladale_map#-37.793530 147 328663 13

[10] The Atlas of Living Australia (ALA) Search: Mitchell River Walking Track, Iguana Creek. Accessed 27/10/2020 https://www.ala.org au/ Australian Wildlife Protection Council https://awpc.org.au/

448 (all Species) Site - Woorara Rd, Glenaladale VIC 3864

671 (all Species) Site - Providence Ponds, Perry river.

EES. 5.33. Ecology

Kalbar commissioned their wildlife survey, with a result that does not reflect the full extent of the biota in the area.

178 flora species, comprising 132 native, 8 noxious weeds. EES 5 3 2. page 53. 76

117 terrestrial species comprising 108 natives, 9 introduced.

8 aquatic fauna. Page 55

The survey did not count the wombats, now a protected species in Victoria. On 4 February 2020, the Governor in Executive Council revoked a May 1997 declaration under Sec 7A of the Wildlife Act 1975 which provided for wombats to be declared unprotected in certain areas of the state.

This Order in Council took effect on 6 February 2020 but Kalbar's proposal takes no account of it. The multitudes of wombat communities not survive excavation nor relocation.

The numerous stag trees and hollow logs provide important habitat. They require a long time to develop, so their removal is recognised as a threatening action under the Flora and Fauna Guarantee Act (1988) to safeguard these native residence.

Wildlife Management Wildlife relocation issues

Each species would be problematic to relocate. A relocated animal will most likely be killed by others in protecting their territory, or by predators' such as the multitude of wild dogs in East Gippsland.[11]

Bushfires

The catastrophic bush fires that engulfed substantial areas of East Gippsland seriously depleted wildlife populations. Areas around Glenaladale that were spared now have even greater importance for wildlife harbour, recolonization and as a corridor for the migratory birds. [12]

Question to Kalbar

By the Australian Gov't Department of Environment and Energy; Re Kalbar Submission #2198, **Is the proposed action likely to impact on the members of any listed migratory species, or their habitat?**

[11] The Australian Wildlife Protection Council (AWPC): wildlife relocation. https://awpc.org.au/

[12] Satellite Sentinel Hotspot Hotspots https://sentinel.ga gov.au/#/

Kalbar: '*These species have the potential to use the project area as a migratory route. Potential impacts to these species include: • Habitat loss from vegetation clearance and earthworks and subsequent smothering of vegetation by eroded material, altered hydrology and altered land uses. • Habitat degradation associated with the establishment of invasive species or the introduction of pathogens, edge effects, deposition of eroded sediments, or from contamination caused by accidental spills of hazardous materials*. By Kalbar.[13]

Water Diversion and Algal Blooms

Algal blooms that occur in times of drought have been caused by the stagnation from depleted rivers and reduced inflow. The massive (and permanent) water extraction by multiple mining projects is an area of growing concern that will cause the same effect. To gauge the impacts by Kalbar as a single project is inadequate.[14]

'*The cumulative impact of site activities on regional water resources and the ecosystems they support is an area of growing concern and regulation. Cumulative effects of water management from multiple projects can affect social assets, as well as other water users.*' [15] noted a working group on water stewardship for the mining industry.

An overview of the Gippsland rivers show that water allocations have been fully committed. However, Southern Rural Water SRW has indicated 6 Gl are to be released for allocation in late 2020. That is a further 6 Gl that would be diverted from the lakes.

Quality water is scarce. The options for an alternative supply diminish as each river is polluted. Victoria cannot afford to pollute the last rivers '*in the best condition in Victoria'. [27]*

Rivers in East Gippsland Catchment Area

Gippsland rivers are in better condition than western Victorian waterways. While many waterways have been moderately impacted by post-European land use including clearing and agriculture, the Mitchell River, Snowy River and East Gippsland basins rate as having the best condition in Victoria.[27]

However, the Mitchell river deserves to be registered and managed by the Commonwealth Environmental Water Holder (the CEWH) *'…which exist on four of Gippsland's river systems (the Latrobe, Macalister, Thomson, and Snowy rivers) which are used to maintain the*

[13] Australian Gov't, Department of Environment and Energy Submission #2198 - Section 3.2. Page 13. http://epbcnotices.environment.gov.au/_entity/annotation/40e654e4-3e2e-e711-891f-005056ba00a7/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1589328000333

[14] Riverspace, 'Investigating the Gippsland Lakes. http://www.riverspace.com au/item/investigating-the-gippsland-lakes/

Victorian Environmental Water Holder (VEWH) https://www.vewh.vic.gov.au/

[15] Ms Ringwood, K. et al, LEADING PRACTICE SUSTAINABLE DEVELOPMENT PROGRAM FOR THE MINING INDUSTRY, WATER STEWARDSHIP Sept 2016. Australian Government Department of Industry, Innovation and Science. Commonwealth of Australia. https://www.industry.gov.au/sites/default/files/2019-04/lpsdp-water-stewardship-handbook-english.pdf page 9

ecology of the rivers and to water environmental assets including Gippsland Lakes and the Lower Latrobe Wetlands'. Aither 2019.[27]

The quality of water in the Mitchell is predicated on the natural forest wilderness in the catchments. But Kalbar acknowledges … '*The Gippsland Lakes …receive both groundwater and surface water discharge from systems emanating from or passing through the project area. The Gippsland Lakes are located 50 km and 35 km downstream of the project area via the Mitchell River and Perry River respectively'*.[13]

Those discharges will also transport the shocking heavy mineral and radiation pollutants by Kalbar that the Team has unearthed, and detailed in the appendix.

The heritage-listed Mitchell river

- estimated average annual stream flow of 884,500 ML- [16]
- the water supply intake for 21 towns (including the lakes district) is close to Kalbar's site. So, pollution at Glenaladale will directly impact the lake's water supply.
- provides about one-third of the total flow into to the lakes system.[17]
- deposits sediment that form the silt jetties at Lake King, Eagle Point (Ramsar listed for protection).
- the sediment was sourced from between Glenaladale and Bairnsdale in a report by CSIRO. Sediment tracers indicated that it transports downriver to the lakes. [18].

The heavy metal pollution by Kalbar will transport within the silt burden
Kalbar's claims that 'the lakes are at no risk' are not proven by the research of CSIRO.

Avon River forms a delta extending 600 metres into the Ramsar listed Lake Wellington. The delta formation and wetland ecology depend on the undiminished river flows.

The Perry joins the Avon only 1 km upstream to their entry into Lake Wellington.

Perry River forms a rare chain of ponds network that are home to many threatened plant and animal species. An increase in silt load would infill and destroy this rare ecology.[19]

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[16] East Gippsland Catchment Management Authority 2020 https://egcma.com.au/

[17] DELWP (2017) Observations analysis, statistical analysis and interpolation report for the Gippsland bioregion. Page 56: https://www.bioregionalassessments.gov.au/sites/default/files/gip-ba-2.1-2 2-final.pdf

[18] Hancock, G. Wilkinson, S. Read, A. 07 July 2007. Sources of sediment and nutrients to the Gippsland Lakes assessed using catchment modelling and sediment tracers. CSIRO Land and Water Science Report https://publications.csiro.au/rpr/download?pid=procite:07c9be40-4aad-402c-993a-6d253a2c15cb&dsid=DS1

[19] West Gippsland Catchment Management Authority 2020 https://www.wgcma.vic gov.au/our-region/projects/protecting-our-ponds

Victorian Resources Online - GL43 (8321) Avon - Perry Delta
http://vro.agriculture.vic gov.au/dpi/vro/egregn.nsf/pages/eg_lf_sites_significance_gl43

When One Covenant Isn't Enough. https://www.trustfornature.org.au/projects/when-one-covenant-isnt-enough

There are known to be resident platypus in the river and colonies of wombats around the head of the Perry who cannot survive an open-cut mine.

Tambo River. Stockman mine seek 1.5 GL of water per year from this river. In fact, the EES was approved regardless of the toxic leakage from its tailings dam into the Tambo River. Downstream is the water supply to the residents of Swifts Creek township, anecdotally known as a hot spot for serious health impacts and cancer. Stockman mine is owned by pharmaceutical company Washington H. Soul Pattinson and Company Ltd (WHSP). ASX: SOL. [20]

Nicholson river is near Kalbar's proposed mineral sand site at Mossiface.

The river rises in natural state forest and flows to the estuarine reach and wetlands where it enters Lake King, part of the Gippsland Lakes Ramsar site which is listed as internationally important under the Convention on Wetlands (Ramsar, Iran, 1971).[21]

Rivers – Western Gippsland Catchment Area-

The Latrobe, Thomson and Macalister rivers. One-third of the average annual flow is currently diverted to coal mines/electricity, irrigation and consumption.

The lower Thomson and Latrobe catchments are part of the Gippsland Lakes Ramsar site and the nationally listed Lake Wellington Wetlands and Lake Victoria Wetlands.[22]

Further diversion from Latrobe, Thomson and Macalister rivers is being proposed as rehabilitation of the vast coal mine voids.

725 GL (Gigalitres) - Hazelwood mine - 15 to 20 years to fill. Closed in 2017.

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[20] Stockman mine', The Mountain Journal, July 2018: https://themountainjournal.wordpress.com/environment/mining/stockman-mine/; 'Mine approval means short-term gain for long-term pain', National Parks Association: https://vnpa.org.au/mine-approval-means-short-term-gain-for-long-term-pain/ 'Stockman mine tailings dam at Benambra gets green light amid controversial past', ABC Gippsland, 26 July 2018: https://www.abc.net.au/news/2018-07-26/benambra-stockman-mine-approved/10039390; ' one of the key causes of dam failures was the construction of larger dams on top of small older more unreliable structures', from 'New licence to expand old tailings dam threatens Tambo River', Gippsland Environment Group, 1 August 2018: http //geg.org.au/wp-content/uploads/2018/08/GEG-media-re-Stockman-tailings-dam-licence-approval-1 8.20181.pdf

[21] East Gippsland Catchment Management Authority 2020 https://egcma com.au/ https://egcma.com.au/rivers/nicholson-river/

Nicholson River DWSC map http://vro.agriculture.vic gov.au/dpi/vro/egregn.nsf/pages/pwsc_45_nicholson_river_map

[22] West Gippsland Catchment Management Authority 2020 https://www.wgcma.vic.gov au/our-region https://www.wgcma.vic gov.au/our-region/waterways/our-waterways

Victorian Environmental Water Holder (VEWH) – Gippsland Region. The Latrobe, Thomson and Macalister Rivers: http://www.vewh.vic.gov au/ data/assets/pdf_file/0020/384320/2_SeasonalWateringPlan_15_16_Gippsland.pdf VEWH – Latrobe River: www.vewh.vic gov.au/rivers-and-wetlands/gippsland-region/latrobe-river; 'Latrobe River earmarked as water source in plan to turn coal mines into lakes', ABC Gippsland, by Jarrod Whittaker, 8 February 2020: https://www.abc.net.au/news/2020-02-08/plan-to-turn-victorias-coal-mines-into-lakes/11942972

Gippsland Groundwater Model technical Report 2015. Page 45, 46. https://www.parliament.vic.gov au/images/stories/committees/EPC/Other_documents/G3_-_Gippsland_groundwater_model_report_June_2015_2.pdf

725 GL Yallourn mine - 20 to 25 years to fill. Due to close in 2032,

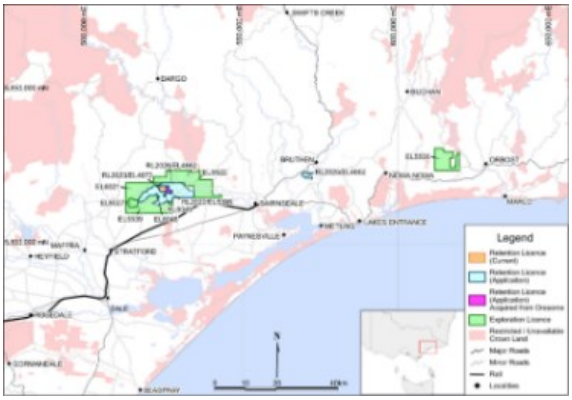
1,420GL Loy Yang mine - 25 to 30 years to fill. Closure due in 2048.

UNEP Global Mercury Partnership reported that six of the seven major river systems flowing into the Gippsland Lakes are mercury polluted from historical gold mining operations, power stations and the ChlorAlkali plant at APM Maryvale.[23]

In conclusion, the advice from the mining industry on water stewardship is pertinent to Kalbar and its adverse impact on the region's rivers and the lakes network, along with increasing mining activities promoted by the State. - *'Cumulative effects of water management from multiple projects can affect social assets, as well as other water users.'* [15]

Measurements - Volumes of Water

1 Ml - Megalitre - One million litres - 1,000,000 litres or 0.001 Gl.
1GL - 1 gigalitre - One billion litres - 1,000,000,000 litres or 1 000 ML
The Bureau of Meteorology's Water Storage dashboard lets you compare water levels and volumes of lakes, reservoirs and weirs. [24]http://www.bom gov.au/water/dashboards/#/water-storages/summary/state



[23] Helps, A. 2015. Fingerboard Project https://www.businesses.com au/Kalbar_Environmental.pdf The submission of the UNEP Global Mercury Partnership to the Australian Senate's 2017 Inquiry into the Rehabilitation of Mining and Resource Projects and Power Station Ash Dams.
file:///C:/Users/User/Desktop/Mine%20Book%202020/UNEP %20Mining%20-%20Submission%20to%20Senate%20Sub72%20(1).pdf

[24] Bureau of Meteorology http://www.bom.gov.au/water/about/publications/document/factsheet_waterstorage.pdf
http://www.bom gov.au/water/dashboards/#/water-storages/summary/state
https://denr.nt.gov.au/__data/assets/pdf_file/0004/589477/WaterResNT_Factsheet-WaterVolumes.pdf

Figure 1 Kalbar locations of the Fingerboard and Mossiface sites. website.

Water Matters – Kalbar's Increasing Needs

Initially 3 -4 Gl uptake is sought by the proponent, but the production volumes are planned to increase, so even more volumes of water could be needed in the future.

Kalbar explains their intentions for water requirements as: - (Copy)

EES. Chap 3. Kalbar's intention: - 'Mining is proposed to be a 24-hour, 365 days-a-year operation, using earthmoving machinery, conveying systems, and a dry strip-mining method' 'An average of 520,000 t of topsoil is expected to be removed annually'

EES. 3-28.- 'Approximately 300,000 litres per hour (L/hour) of water is expected to be lost from the system, bound up with the coarse sand and fines tailings. Only 65% of the water in the tailings stream will be recovered…' EES, Main report, Overview. Chap 3, Page 3-21.

'A gradual increase in production is proposed following commencement of mining and commissioning of the WCP. The plant will initially commence at a rate of 500 t/hr and increase to a design capacity of 1,500 t/hr or 12 Mt/year'. Main report, Overview. Chap 3, Page 3-21

EES - Water Matters – Compliance?

Kalbar clearly states their intention to operate 365 days /year. The potential water supply includes a winter fill licence and groundwater options. (EES. 4.9 page 4)- But the penalties are nominal if Kalbar chooses to disregard agreements with little prospect of enforcement.

Impunity and Infringements

Significantly, *'Under the EE Act, the minister's recommendations* ***are not binding on proponents or other statutory decision-makers, and there are no penalties for proponents who fail to follow them'.***

Monitoring, infringements and enforcement of mining companies are problematic and rarely acted upon by ERR or DWELP. [3]

'It will be observed that an infringement notice may be used for medium risks and interventions. Infringement notices also provide a rapid and certain response for lower level offences appropriate for infringements

In the past five years there has been one prosecution under the Act and three are currently on foot. There have also been five warnings over the past year.

ERR uses prosecutions with penalties attached in the order of $100,000. Infringement Notices

The maximum infringement penalty for an individual should generally not exceed 12 penalty units (a penalty unit is currently $161.19, and 12 penalty units is equivalent to $1,934), and for a corporation should not exceed 60 penalty units ($9,671) [25]

Auditor General expressed great concern at the lack of regulations for penalties to drive accountability.[26]

In conclusion, compliance by Kalbar cannot be relied on as the penalties are nominal. Which undermines the security of water supply to all downstream residents and the lakes.

Hydrology Impacts to Water Supply for the Lakes District

The water supply to the towns in the lakes district is piped directly from Glenaladale. The intake is close to Kalbar's site and at risk of radio-active and heavy minerals contamination.

This is East Gippsland Water's[27] largest supply system ($67 million program) and serves the communities of Bairnsdale, Paynesville, Lindenow, Lindenow South, Eagle Point, Newlands Arm, Raymond Island, Banksia Peninsula, Granite Rock, Wy Yung, Bruthen, Sarsfield, Nicholson, Johnsonville, Swan Reach, Metung, Lakes Entrance, Lake Bunga, Lake Tyers, Lake Tyers Beach and Nowa Nowa.

The prevailing winds are westerly, and dust from the proposed earth works will deposit over the watershed of the Mitchell river, and the open-storage of the Treatment Plant.

Pollution from Kalbar's contaminated site will pose immediate or longer-term risks to human health and the environment. It is incompatible with the current or approved use of the site and poses a risk to human health or the environment and in breach of the Environment Protection Act 1970(EPA 2018). [27]

WATER STEWARDSHIP

The report - LEADING PRACTICE SUSTAINABLE DEVELOPMENT PROGRAM FOR THE MINING INDUSTRY WATER STEWARDSHIP. September 2016

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[25] RIS. Regulatory Impact Statement Proposed Mineral Resources (Sustainable Development) (Mineral Industries) Regulations. March 2019. 7.3 Infringement Notices. Department of Jobs, Precincts and Regions page 56. https://earthresources.vic.gov.au/__data/assets/pdf_file/0010/461782/Regulatory_Impact_Statement_2019.pdf

[26] VAGO. Andrew Greaves, A. August 2020. Rehabilitating Mines. Is the state effectively managing its exposure to liabilities from the rehabilitation of mines on private and public land? 5 August 2020, VICTORIAN GOVERNMENT PRINTER https://www.audit.vic.gov au/report/rehabilitating-mines?section=

[27] East Gippsland Water https://www.egwater.vic.gov.au https://www.egwater.vic gov.au/customer-info/water-supply-systems/ https://www egwater.vic.gov au/customer-info/water-supply-systems/woodglen-boosts-the-regions-long-term-water-supplies/

Gippsland Regional Profile. A Report for Infrastructure Victoria. AITHER |. An analysis of regional strengths and challenges. March 2019. Page 82, 86, 87, 93. https://www.infrastructurevictoria.com.au/wp-content/uploads/2019/04/Aither-Gippsland-Regional-Profile-March-2019.pdf Australian Water Resources Assessment 2012. http://www.bom gov.au/water/awra/2012/documents/southeastcoastvic-lr.pdf Page 33, 48,

'Institutional investors increasingly require companies to disclose their water risk, including their social, environmental, operational and supply-chain risks.

For companies, poor water stewardship can result in financial exposure arising from delayed project approvals, constraints on production, property damage and tighter regulation.

A poor reputation for water stewardship can contribute to loss of investment attractiveness, shareholder value, and access to other resources (water, ore and land).

Poor water stewardship can cause concern for local communities and other water users, and that concern can damage business reputation and erode the company's social licence to operate, which may be very expensive to remedy in the long term.

The impacts of substandard water management might not only be felt at the local level but could escalate rapidly to become national and international issues and may be far more financially damaging than impacts at the operational level. Page 6

Increasing social concern: ***Mining operations access water resources that are shared with local communities and other water users.***

Community access to sufficient water resources of the right quality is a recognised human right. '

The pollution and depletion of water supplies by Kalbar is a fundamental denial of this basic human right. [15]

Climate Change

A summary of the impacts on the lakes by the Climate-Ready Victoria: [28]Gippsland Climate Commission Report.

'*The Gippsland region has already become warmer and drier – a climate trend likely to continue into the future'*.

'Very low rainfall in autumn and low rainfall in winter and spring has been linked to changes in the circulation of the atmosphere, which are driven by rising temperatures.

The drying trend is expected to continue. By 2030, runoff to the Thomson-Macalister and Latrobe river systems is expected to have decreased by up to 25% and 20% respectively (DSE 2008a).

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[28] Climate Commission Report by Climate-ready Victoria: Gippsland. The Critical Decade: Impacts for Gippsland, 2015: https://www.climatecouncil org.au/uploads/ca4bc403e48e5d05f77158b0018bc023.pdf

Climate-ready Victoria: Gippsland, November 2015: State of Victoria. Page 5.
https://www.climatechange.vic.gov au/__data/assets/pdf_file/0021/60744/Gippsland.pdf

Climate Council: Climate change impact statement for Gippsland, Victoria
https://www.climatecouncil org.au/resources/climate-change-impacts-for-gippsland/

East Gippsland Shire https://www.eastgippsland.vic gov.au/Community/Our_Environment/Climate_Change

Lower runoff will reduce the flow of water in the river systems, which may reduce water quality within the catchment and increase the potential for algal blooms.
The drying trend and reduced runoff may also have important consequences for urban water supply and agriculture across Gippsland.'
The Gippsland Lakes, Corner Inlet and Western Port are listed as 'Wetlands of International Significance' under the Ramsar Convention, and provide significant tourism and recreation benefits.
With increases in demand for water, there will be a need to focus on protecting the world-class wetlands and surrounding environments.'
Simply, the water depletion by Kalbar will exacerbate the changes forecast, with irrevocable harm to sensitive habitats in the Gippsland lakes network.

Multiple Mining Policy – Licencing

Policy 'STATE OF DISCOVERY', Mineral Resources Strategy 2018–2023.[29]

This State policy aims to attract and to support mining companies with a spend of $220 million over the next five years for Victoria to become an international mining hub.

The Department of Jobs, Precincts and Regions (DJPR) fully endorses the policy, and regulates mining through its Earth Resources Regulation (ERR) unit.

Earth Resources Regulations (ERR), is directed to attract and manage the mining companies' applications for exploration and licensing, and fully supports its mining proponents.

Licencing

ERR Annual statistical reports 2018 – 2019. [30]Page 11 – 15.

Table 3.3.1 Number of current licences by financial year 2019 - 433

Table 3.3.4 Licence applications granted by financial year 2019 – 52

Table 3.3.5 Licences renewed by financial year 2019 – 41

Refused – 0

Placed in 'Care & Maintenance' – 122. - in lieu of rehabilitation [31]

Auditor General: '*according to available ERR data, there are 1,394 mines and quarries across the state'.*

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[29] STATE OF DISCOVERY, Mineral Resources Strategy 2018–2023https://earthresources.vic.gov au/__data/assets/pdf_file/0008/453779/Mineral-Resources-Strategy-2018-2023.pdf

Australian Mining looks over the latest mineral resources strategy. Ewen Hosie September 27 2018 https://www.australianmining.com.au/features/hail-victoria-the-new-five-year-state-plan-for-mining/

[30] Earth Resources Regulations. Annual statistical reports 2018 – 2019 Page 11 – 15. https://earthresources.vic.gov.au/legislation-and-regulations/regulator-performance-reporting/annual-statistical-reports

[31] Australian Institute https://nb.tai org au

'As at 30 September 2019, available ERR data suggests that there were 231 inactive mines and quarries across the state. These are unrehabilitated sites that are no longer operating but still have an operator on record'.

The 2019 Australian Senate Inquiry into the Rehabilitation of Mining and Resources Projects *said that there are an estimated 19 000 locations across the state where evidence of previous mining or quarrying activities, such as a mine shaft, have been identified. DELWP advised us that the actual number is significantly higher'.*[26] August 2020.

No Protection for Environment - by Law.

In Victoria, the Earth Resources Regulation branch of the Department of Jobs, Precincts and Regions (DJPR)is the regulator of exploration, mining, quarrying, including the mining licence applications and renewal process.

Of concern, another business unit of DJPR in the same branch as Earth Resources Regulation, finds opportunities and facilitates investments in resources. The co-existence of promotional and regulatory functions side by side cannot be regarded as objective or unbiased.

Both DJPR and DWELP functions are compromised because the information received is controlled by the mining companies whom they regulate to commission and submit their own reports.

The departments' regulations also result in stifled (and omitted) expertise, information and subjects from the public – that the proponents prefer to avoid.

Environmental Effects Statements EES

Shockingly, an EES is still not mandatory in Victoria, with few mining companies that have applied to submit an EES. The Victorian Auditor-General found these significant matters of concern.[32]

Referrals for EES to the Minister for Planning.

The EE Act and the Ministerial Guidelines place responsibility on proponents to refer their own projects to the EES process. '*There are no penalties for proponents who do not refer projects that meet the referral criteria to the minister for consideration'*. M*any projects do not submit an EES in their application, and on average, only two or three projects are subject to the EES process each year'. Page vii*

- *There is no statutory requirement to refer development projects when they may potentially have a significant effect on the environment.*
- *-Very few projects are referred for an EES—since September 2011, only 31 projects have received a decision from the minister on whether they need an EES. Page 4, 23.*

[32] Victorian Auditor-General's Report Effectiveness of the Environmental Effects Statement Process. Referral, scoping and preparation. March 2017. page vii, 9, 16, 22, 23, 25, 30. https://www.audit.vic.gov.au/sites/default/files/20170322-EES.pdf

Victoria has no legislative criteria for:

- *the type of project that requires an EES*
- *what constitutes a 'significant effect' on the environment*. page 22

Without systems to identify projects that should be referred, the EES process relies on project developers to be ethical in their practices, and on the effectiveness of networks the department has in place.

2.1. Multiple reviews and inquiries have concluded that the current legislative framework does not ensure the effectiveness of the EES process. Page 11.

In practice: Kalbar did not apply to submit an EES in their application. Only after two years of considerable community concern and submissions did the Hon. Minister for Planning request Kalbar to submit an EES in 2016.

Coordinating and administering TRGs

'State of Discovery' policy, and its directive *'to deliver a whole-of-government approach across the mining life cycle'* has been enabled by the Technical Reference Panels that are assigned by the State to each mining company for support throughout the EES.

The EES process is managed by the Impact Assessment Unit - DWELP (the department) who selects and appoints a supportive TRG panel.

The Auditor General outlines the process: -. '*The EE Act states that, if requested, the secretary of the department must give advice and assistance to a proponent to support proper preparation of an EES'. Page 3, 4.*

1.4.3. The department usually establishes a TRG at the start of an EES process to provide advice to the department and the proponent throughout the scoping and preparation of the EES. Page 6

As well as establishing TRGs and appointing members, the department also coordinates and administers them. Page 6.

Members from government agencies, local government and statutory authorities—is appointed for each project subject to the EES process. Page xi.

3.5. The department provides a consistent and high level of support to proponents during EES preparation. Page 30.

TRG panel is appointed for the duration of the EES process. For example, Kalbar was supported from 18/12/2016.

Finally, the proponent submits their EES… to DWELP.

State priority is to support the project, not assess it. Simply, there is no objective review of the project.

Unbalanced – Biased –– Reports - TRG

TRG purpose is <u>not</u> directed to assess the impacts or merits as voters may assume.
There is no objective appraisal by qualified expertise as voters expect.

The EES and licence process is not robust.

- The TRG comprises **predominantly** State and local government members and representatives of the proponent.
- There is no community representation.
- There are no independent technical or disaster management experts.
- There are no specialists in agriculture, horticulture, tourism, or public health.

- TRG provides direct access for Kalbar to build relationships and to lobby the influential decision makers in the departments.
- Proponents full-time work is to prepare and lobby for their EES, with TRG support.

Identity of the TRG panel is not divulged, so accessibility, and accountability is avoided.

- In contrast-
- respondents are not provided assistance or resources to commission reports.
- Respondents are stifled with only two opportunities to submit a response.
- Open-door access in person is required for the duration of the EES process as has Kalbar.
- The residents require the same TRG support, funding and time-frame as proponent

In conclusion, the TRG grossly compromise and disadvantage the public, and all impacted - residents, voters, agribusiness, tourism, water consumers.

Who are now very sceptical and disengaged with Kalbar, the departments, and the pro-mine culture.

The TRG panel members for Kalbar

'**Who is on the Technical Reference group**? Kalbar website FAQ.[33] Accessed Sept 2020.

- Department of Environment, Land, Water and Planning (Melbourne and Gippsland Offices) DWELP
- Department of Economic Development, Jobs, Transport and Resources DEDJTR
- Environment Protection Authority EPA
- East Gippsland Shire Council
- Wellington Shire Council
- East Gippsland and West Gippsland Catchment Management Authorities
- VicRoads
- Department of Health and Human Services
- Aboriginal Victoria

[33] Kalbar FAQ. Accessed Sept 2020. https://www.fingerboardsproject.com.au/community-engagement/faq

- Heritage Victoria
- Parks Victoria
- East Gippsland Water
- Southern Rural Water
- Agriculture Victoria.

Question: is it appropriate for this Panel-With-Influence (TRG) to be exposed to Kalbar's lobby without input from respondents and external expertise?

Conclusion - The TRG panel is a powerful tool for Kalbar to lobby the key departments who are mandated to give full support, and continue to do so.

The public perception that the EES and TRG is to assess the project impartially, is misplaced.

Information Paucity

Accurate information is not produced by the EES process. The public are given only two options for written submissions, with very constricted timeframes.

4.2 *Under the current legislative framework, the public is given the opportunity to provide input into the EES process at two stages: 1. Scoping, and* 2. Public review. page 32

1. Scoping — Once the minister decides to proceed with an EES, *the department relies on proponents to provide additional information on the project and environmental considerations to inform its drafting of the scope of the EES.*

3.3…*'project proponents must provide information including a preliminary list of issues and a draft study program that outlines proposed EES investigations.*

3.3 *The EES Act does not contain penalties for providing misleading or inaccurate information during the EES process'*. Page 25.

4.2. *In the scoping stage of the EES process, public participation occurs solely through written submission, giving the community and other interested parties equal opportunity for participation.*

The draft scope of an EES is released for public comment prior to its finalisation.

In practice: The proponent selects their *preliminary list of issues and a draft study program for EES investigations* while generally omit and minimize adverse subjects.

The respondents do not have opportunity to submit issues of concern for inclusion, so the significant issues are excluded that the proponents avoid.

Written submissions: – *4.2***…** *public participation occurs solely through written submission,*

Written submissions require considerable time to research and prepare.

In practice: the proponent's full-time work is to prepare their EES, including the commission of reports, and utilise their TRG resources.

Respondents are constrained by work, community and family commitments with very limited time (evenings) over the 40 days duration to respond to 8,000-page document.

Respondents do not have the resources to commission reports and cannot utilise TRG. This is not 'equal opportunity.'

In conclusion, Kalbar has priority to State resources that no others can access, why?

Questionable Distribution**:** the delivery of the legal documents to stakeholders by the department is unusual and unethical.

The department forward all ESS Response forms directly to Kalbar and do not forward directly to the stakeholders. Kalbar is then supposed to forward to the stakeholders.

Stakeholder's experience: -The department sent all the EES Draft Scope Response forms directly to Kalbar in a timely manner with a three-month time frame in which to respond.

Kalbar withheld the ESS Response forms, and forwarded to stakeholders with a timeframe of just 3 days to respond. The department granted an extension of three days only after objections were raised.

This effectively gave Kalbar control of the documentation and compromised the stakeholder's response.

Recommendation: all documents should be sent directly, and simultaneously to all stakeholders separately than to the mining company.

In conclusion

Kalbar is not fit and proper person **to hold the licence** in view of the manipulation of the official documents - r**esulting in no confidence by community and residents, nor social licence.**[34]

The serious omission of factual information on radiation and contamination expose investors to adverse events, legal action and publicity.

Referral to The Ethical Investors Advisors, and The Financial Services Council (FSC) 35 and Insurance Council for investigation is warranted, and we urge readers to express concern directly.

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[34] RIS. Regulatory Impact Statement Proposed Mineral Resources (Sustainable Development) (Mineral Industries) Regulations. March 2019. Department of Jobs, Precincts and Regions table 9, page 21. https://earthresources.vic.gov au/__data/assets/pdf_file/0010/461782/Regulatory_Impact_Statement_2019.pdf

[35]Ethical Investors Advisors https //www.ethicalinvestment.com.au/_ Financial Services Council's ("FSC") https://fsc.org.au/about/committees-groups/board-committees/standards-oversight-disciplinary-board-committee

Irregular Reports

Regulations (by ERR) require proponents to commission their own reports under guidance by the TRG; all economic, social / environmental impact reports.

This results in biased reports that support their own best interests and are not a fair and accurate representation.

This problem was identified in the Auditor General Report*, 3.3.-**The EES Act does not contain penalties for providing misleading or inaccurate information during the EES process***. Page 25.[36]

Questions

Question: who is the TRG accountable to?

The State DWELP appointed the 14 plus member panel for Kalbar with public funding since 18/12/2016. At what public cost?

Can the equivalent public funding and 'Panel-With-Influence' (TRG) be provided to the respondents for a balanced outcome?

Could the funding be re- allocated toward the appointment of independent and qualified review panels. To appraise the project with objectivity, and not to solely promote the proponent's interests?

How many TRG panels are being funded in Victoria?

Change in the EES process is predicated on the accountability and cancellation of these extraneous TRG panels.

What Accountability?

*2.3. -Under the EE Act, the minister's recommendations are not binding on proponents or **other statutory decision-makers, and there are no penalties for proponents who fail to follow them**. Page 16*

The outcomes of Victoria's EES process are not legally binding, whereas the outcomes of environmental impact assessments in Western Australia and the Commonwealth have legal force. Auditor EES report. Page 12.[36]

Between 2000 and 2013, successive governments committed to reforming the EES process, yet no significant legislative changes have occurred. This has constrained the department's ability to improve outcomes.[36]

[36] VAGO. Victorian Auditor-General. Effectiveness of the Environmental Effects Statement Process. Referral, scoping and preparation. March 2017. Page5. https://www audit.vic.gov.au/sites/default/files/20170322-EES.pdf

Nil Accountability? Stockman Mine

In practice: the EES for the Stockman mine (Benambra) was passed with a known and serious leaking tailings dam enters the Tambo river and contaminates the downstream water supply to Swifts Creek township. Yet the site had prior legal exemption from further mining activity.

Anecdotally, this area is known as a hot spot for cancer and serious health impacts. That the owners are not prosecuted (by departments) clearly demonstrates the culture of nil accountability by the State departments and mining companies.

Stockman mine at Benambra, is owned by pharmaceutical company WHSP Washington H. Soul Pattinson and Company Limited. (ASX: SOL).[37]

The respondent's experience has resulted in having no confidence in the proponent, the EES process, or State regulators to protect their water resource.

Recommendations

The accumulated evidence presented in this submission makes a compelling case on multiple grounds for this project not to proceed. It is therefore strongly recommended that the Fingerboards Mineral Sands Project not be approved.

If the role of the Inquiry and Advisory Committee (IAC) is not to exercise final decision-making, but to provide a recommendation to the Minister for Planning, then the Committee is urged to have full regard to the grounds for opposition to the Project, and to recommend against its approval.

At the very least, it is essential for all advisers and decision-makers about this project to recognise that it is distinctly unsafe to rely on the formal environmental and other safeguard mechanisms intended to protect the community against detriment from projects of this kind.

This submission has outlined deficiencies in the structure of the Technical Reference Group (TRG) and has highlighted the fact that all of Victoria's EPA monitoring standards for water and air quality are long past their due review dates. They have all been superseded internationally as knowledge has improved.

Should the Project decision take a different path than that strongly recommended by this submission, it is vital that:

- Urgent attention be paid to the introduction of more stringent EPA standards and monitoring systems;
- Rehabilitation obligations on mining companies are much more rigorously spelt out and enforced by continuous independent monitors;
- Government act to eliminate conflict arising from the fact that the Earth Resources Branch of the Department of Jobs, Precincts and Regions holds within it both the

[37] Emma Field, 26/7/2018. ABC Gippsland.https://www.abc.net.au/news/2018-07-26/benambra-stockman-mine-approved/10039390 '…

regulator of mining and resource activities, and a facilitator of investment in resources.

Unless these steps are taken, Victoria communities will continue to be badly served by a poorly regulated mining industry. The Fingerboards proposal should be the catalyst to begin to redress the errors and failings of the past.

Further recommendations include

State policy that prioritise mining companies to be urgently reviewed.

The establishment of an independent review panel that members of the public (voters) can access for the duration of the EES process. - not appointed by DWELP.

Moratorium on all applicants with objective review.

Instigation of the recommendations by the Auditor General Victoria.

A moratorium on Kalbar's application with independent review –

- Cancellation of the TRG's.
- Cancellation of proponent's self-commission of reports for EES.
- Mining companies to comply with the laws of the land as all others abide by, with same penalties for non-compliance.
- False representation is not to be tolerated by departments. Regulate to prescribe penalties to drive disclosure and accountability.
- For an independent organisation to develop a website to give a collective voice to communities who have none. To share their mining impacts to the public and authorities across Australia.

In conclusion

Mining is tenuous but leaves a toxic legacy that contaminates land and water resources for all generations.

But the State policy supersedes the concerns of voters, with an EES process that fails to deliver (and enforce) regulations for transparency and accountability of mining companies.

Experience of Kalbar's application has proven there can be no confidence in the departments, while the communities and ecology are held expendable to the proponent's interests.

Quality water that Kalbar vies for, is also a vital resource for the rare ecology of Gippsland lakes with the international covenants that Australia can ill afford to contravene.

The Hon Lisa Neville, MP Minister for Environment, Climate Change and Water shared these words on instigating an inquiry into the EPA.

‘We need to better protect Victorians from exposure to chemicals and pollution than we unfortunately sometimes have in the past.

And we need to ensure that the principle of environmental justice is adhered to.

We all have the right to participate in making decisions on our shared environment, and share in the benefits it provides.’

Hon Lisa Neville, MP

Minister for Environment, Climate Change and Water. 2016[38]

Appendix

Minerals Identity

The minerals identified by Kalbar are collated below with general GHS data.

GHS - Globally Harmonized System

The warning system of the Globally Harmonized System GHS is for the classification and labelling of substances / chemicals.

The hazard pictograms and statements are used to signal the dangers in substances and for the safety of workers. A Hazardous Chemicals Poster is available at Safe Work Australia.

Heavy Minerals Exposed

A brief and general introduction to the minerals listed by Kalbar with GHS pictograms and hazard statements included as a general guide, with reference links for convenience.

General reference to identify the mineral formula - listed by Kalbar 2017.

GHS Hazardous Chemicals Poster is available at Safe Work Australia.[39]

ICSC - The International Chemical Safety Cards https://www.ilo.org/dyn/icsc/showcard.home

ToxGuides™ - are quick reference guides https://www.atsdr.cdc.gov/toxguides/index.asp

Lenntech https://www.lenntech.com/periodic/elements/index.htm

[38]Armytage, P., Brockinton, J. & van Reyk, J. 2017. The Independent Inquiry into Victoria’s Environment Protection Authority (EPA) June 2015 to March 2016. Ministerial Advisory Committee for The State of Victoria Department of Environment, Land, Water & Planning. Inquiry Into The Environment Protection Authority http://epa-inquiry.vic.gov.au/__data/assets/word_doc/0011/336647/11370-DELWP-InquiryReport_Word-Version_zAPPENDICES.docx

[39] Safe Work Australia https://www.safeworkaustralia.gov.au/system/files/documents/1702/classification_and_labelling_workplace_hazardous_chemicals_poster.pdf

Pubchem.(NIH). https://pubchem.ncbi.nlm.nih.gov/.

Product list proposed by Kalbar Resources Ltd

Applying GHS pictograms and Hazard Statements

Digging for the Facts Team advises that the information contained in this material is sourced from general references. The reader is advised that such information may be incomplete or unable to be used in any specific situation. No reliance or actions must be made on that information without seeking prior expert professional, scientific and technical advice.

Premium Zircon	Rare Earth Concentrate	Primary Ilmenite Rutile 92
 Radio- active Harmful Irritant Environmental Hazard Health Hazard **Life of Mine Product Quantities** ZrO2 Zircon –1,234,000 tons Kalbar: Analyst Pre-Feasibility Study. May 2017	 Harmful Irritant Health Hazard Environmental Hazard **Life of Mine Product** Quantities ReO - 187,000 tons Kalbar: Analyst Pre-Feasibility Study. May 2017	 Harmful Irritant Health Hazard Environmental Hazard Corrosive **Life of Mine Product Quantities** TiO2 - 1,664,000 tons Kalbar: Analyst Pre-Feasibility Study. May 2017
ZrO2 - Zirconium dioxide – 66% SiO2 - Silicon dioxide --32.5% Al2O3 - Aluminium oxide Fe2O3 - Iron (III) oxide TiO2 - Titanium dioxide MnO – Manganese (II) oxide MgO - Magnesium oxide or magnesia CeO2 - Cerium (IV) oxide P2O5 - P4O10 Phosphorus pentoxide Th – Thorium - 300 ppm U – Uranium – 420 ppm. **Monazite** – 0.6% - 60,000 tons Metallica Minerals Ltd. Report to ASX. (MLM) 26 April 2012.	Y2O3. - Yttrium oxide, Xenotime -YPO4- Yttrium Phosphate Lanthanoids La2O3 - Lanthanum oxide CeO2 - Cerium (IV) oxide – 19.36% Pr6O11 - Praseodymium oxide Nd2O3 - Neodymium (III) oxide Sm2O3 – Samarium (III) oxide Eu2O3 - Europium (III) oxide Gd2O3 - Gadolinium (III) oxide Tb4O7 - Terbium (III, IV) oxide Dy2O3 - Dysprosium Oxide Ho2O3 - Holmium (III) oxide Er2O3 - Erbium (III) oxide Tm2O3 - Thulium (III) oxide Yb2O3 – Ytterbium (III) oxide Lu2O3 – Lutetium (III) oxide	TiO2 -Titanium dioxide Fe2O3 – Iron (III) oxide (calc) FeO – iron Oxide SiO2 - Silicon dioxide Al2O3 - Aluminium oxide Cr2O3 – Chromium (III) MgO - Magnesium oxide or magnesia MnO - Manganese (II) oxide ZrO2 - Zirconium dioxide P2O5 - Phosphorus oxide U XRF – Uranium – 41 ppm Th XRF – Thorium – 75 ppm V2O5 - Vanadium Pentoxide – Nb2O5 - Niobium pentoxide CaO - Calcium oxide, Quick lime K2O - Potassium oxide CeO2 – Cerium (IV) oxide SnO2 – Tin oxide

Reference to formula: 'Analyst for Kalbar' 2017 https://www.businesses.com au/Analysts-Presentation-May-2017-for-website.pdf Page 18 – 22.

Formula	**Titanium Feedstock** consist of: - TiO2 - Life of Mine Product Quantities - 1,664,000 tons rutile (TiO2 with up to 10% iron). ilmenite (FeTiO3 with manganese and magnesium). leucoxene (Fe2O3·TiO2), with uranium and thorium.	
TiO2	**Rutile 92** Titanium dioxide. CAS 13463-67-7. ICSC CARD: 0338 Is the purest, highest-grade natural form of titanium dioxide and the preferred feedstock in manufacturing titanium. Exposure can irritate the eyes, nose and throat Lung fibrosis; potential occupational carcinogen. suspected of causing cancer https://www.cdc.gov/niosh/npg/npgd0617.html https://pubchem.ncbi.nlm.nih.gov/compound/26042#section=Safety-and-Hazards https://www.cdc.gov/niosh/docs/2011-160/pdfs/2011-160.pdf The New Jersey Department of Health Hazardous Substances List https://nj.gov/health/eoh/rtkweb/documents/fs/1861.pdf	 **Health Hazard**
FeTiO3	**Ilmenite** – CAS 12168-52-4 Titanium-iron oxide metal with manganese and magnesium.	
Fe2O3·TiO2	**Leucoxene** - is not regarded as being a mineral, a term for products containing a TiO2 titanium content of 70 to 93 percent. Leucoxene can contain crystalline silica which may cause silicosis. Can contain low levels of uranium and thorium, making it slightly radio-active. If inhaled constantly that can result in shortness of breath and coughing. MiningLink: http://mininglink.com.au/natural-resource/leucoxene	
Y(PO4)	**Xenotime Yttrium phosphate** CAS 13990-54-0 Yttrium phosphate, Phosphoric acid. Similar to monazite except enriched in the heavy lanthanides and yttrium. phosphate mineral Britannica. Monazite and xenotime ores are treated the same way, being phosphate minerals. Causes serious eye irritation, skin, respiratory irritation.	 **Irritant**

	https://echa.europa.eu/substance-information/-/substanceinfo/100.034.341 https://www.britannica.com/science/rare-earth-element/Minerals-and-ores https://www.industry.gov.au/sites/default/files/2019-04/lpsdp-hazardous-materials-management-handbook-english.pdf https://www.world-nuclear.org/information-library/safety-and-security/radiation-and-health/naturally-occurring-radioactive-materials-norm.aspx	
	Zircon ZrO2. Life of Mine Product Quantities–1,234,000 tons	
ZrO2	ZIRCONIUM OXIDE, - Zirconium dioxide - CAS 1314-23-4 May cause an allergic skin reaction https://pubchem.ncbi.nlm.nih.gov/compound/62395#datasheet=LCSS&section=GHS-Classification	 **Irritant**
ZrSiO2 SiO2	**Zirconium silicate** CAS 233-252-7 Causes serious eye irritation, is harmful if inhaled, causes skin irritation and may cause respiratory irritation. **Silicon dioxide, - Respirable crystalline silica** CAS 14808-60-7. Kalbar levels – 32.5% - in Premium Zircon Product. Immunological (Immune System), Renal (Urinary System or Kidneys), Respiratory (From the Nose to the Lungs) May cause cancer - Danger Carcinogenicity Causes damage to organs through prolonged or repeated exposure https://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=290 https://pubchem.ncbi.nlm.nih.gov/compound/24261#section=GHS-Classification https://echa.europa.eu/substance-information/-/substanceinfo/100.035.329	 **Danger**  **Health Hazard**
P2O5	**Phosphorus pentoxide** CAS Number - 1314-56-3. EC - 215-236-1 FIRE & EXPLOSION. Many reactions may cause fire or explosion. Gives off irritating or toxic fumes (or gases) in a fire. Reacts violently with water. NO contact with water or combustible substances Health Hazard: Causes eye damage / Skin corrosion/ severe skin burns. https://www.ilo.org/dyn/icsc/showcard.display?p_version=2&p_card_id=0545 http://hcis.safeworkaustralia.gov.au/HazardousChemical/Details?chemicalID=3532	**Danger.**  **Corrosion**
Al2O3	**Alumina** CAS Number - 1344-28-1. EC Number - 215-691-6 Health Hazard Causes serious eye, respiratory irritation Causes damage to organs through prolonged or repeated exposure https://pubchem.ncbi.nlm.nih.gov/compound/Alumina#datasheet=LCSS&section=GHS-Classification	 

V_2O_5	**Vanadium Pentoxide** CAS 1314-62-1 Causes serious eye damage, respiratory irritation Suspected of damaging fertility. Suspected to be Toxic to Reproduction Suspected of causing genetic defects, and damaging the unborn child. Suspected of causing cancer Suspected to be Mutagenic Toxic to aquatic life with long lasting effects. Safe Work Australia http://hcis.safeworkaustralia.gov.au/HazardousChemical/Details?chemicalID=1798 https://echa.europa.eu/substance-information/-/substanceinfo/100.013.855	
Nb_2O_5	**Niobium(V) oxide** CAS – 1313-96-8 Niobium Nb is a vanadium group element atom. Serious eye irritation / Skin corrosion / Respiratory tract irritation. https://pubchem.ncbi.nlm.nih.gov/compound/Niobium_V_-oxide	
Cr_2O_3	**Chromium oxide** CAS 1308-38-9 Catches fire spontaneously if exposed to air May damage fertility or the unborn child. Causes serious eye irritation, allergic skin reaction Seed germination and growth was inhibited at 25 -100 ug/mL https://www.cdc.gov/niosh/npg/nengapdxc.html https://pubchem.ncbi.nlm.nih.gov/compound/Chromium-oxide#section=GHS-Classification	
K_2O	**Potassium Oxide** CAS 1310-58-3, 12136-45-7 Harmful if swallowed May cause respiratory irritation Causes severe skin burns and eye damage https://pubchem.ncbi.nlm.nih.gov/compound/Potassium-oxide	
CaO	**Calcium oxide** Quicklime, Burnt lime. CAS 1305-78-8 Causes serious eye damage, skin irritation, respiratory irritation http://hcis.safeworkaustralia.gov.au/HazardousChemical/Details?chemicalID=4835 https://www.cdc.gov/niosh/npg/npgd0093.html	
SnO_2	**Tin dioxide** CAS 18282-10-5 May cause respiratory irritation May cause long lasting harmful effects to aquatic life	

	https://pubchem.ncbi.nlm.nih.gov/compound/Tin-dioxide	
REE **REO**	**Rare Earth Concentrate** Life of Mine Product Quantities - 187,000 tons Rare Earth Oxides are formed in two groups: - - Actinoids (includes thorium, Uranium) - Lanthanoids - cerium (Ce), praseodymium (Pr), neodymium (Nd), promethium (Pm), samarium (Sm), europium (Eu), gadolinium (Gd), terbium (Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb), and lutetium (Lu). https://www.newworldencyclopedia.org/entry/Inner_transition_element	
Actinoids 	**Actinoids** All the actinoids group are radioactive. The actinoid series, is named after the element actinium. The 14 elements in the actinoid series are: **thorium (Th),** protactinium (Pa), **uranium (U),** neptunium (Np), plutonium (Pu), americium (Am), curium (Cm), berkelium (Bk), californium (Cf), einsteinium (Es), fermium (Fm), mendelevium (Md), nobelium (No), and lawrencium (Lr) https://www.newworldencyclopedia.org/entry/Inner_transition_element	
	**Monazite** –(Ce,La,Nd,Th)(PO4,SiO4). CAS 1306-41-8 Composite of rare earth metals. (particularly cerium and lanthanum) and 5–12% (typically about 7%) thorium Radionuclides - Thorium (Th) Uranium (U). OSHA HAZARDS: Highly toxic by inhalation. Highly toxic by ingestion. TARGET ORGANS: Kidney, liver, lungs, brain. Fatal if swallowed or inhaled, Causes skin irritation, May cause cancer, May cause damage to organs through prolonged or repeated exposure Glenaladale deposit: 60,000 tons monazite- (Metallica Minerals Ltd.) Metallica Minerals Ltd (MLM), report to ASX - 26 April 2012, prior owner. http://www.metallicaminerals.com.au/wp-content/uploads/2016/09/Maiden-Gippsland-Mineral-Resource.pdf https://science.osti.gov/-/media/nbl/pdf/price-lists/SDS/SDS-Monazite_Sand.pdf?la=en&hash=2BD57B8A2A9717257915A88DBDE90172040E7BC6 https://pubchem.ncbi.nlm.nih.gov/compound/Monazite-CE	   **Danger**
Th 	**Thorium** CAS 7440-29-1. May intensify fire (oxidiser), Harmful if swallowed, causes serious eye, skin irritation. May cause damage to organs through prolonged or repeated exposure. May cause long lasting harmful effects to aquatic life. https://echa.europa.eu/substance-information/-/substanceinfo/100.028.308	 **Oxidiser**  **Health Hazard**

U 	**Uranium** CAS 7440-61-1 May cause damage to organs through prolonged or repeated exposure. May cause long lasting harmful effects to aquatic life. Potential for cancer as a result of alpha-emitting properties & radioactive decay products (e.g., radon). [potential occupational carcinogen] https://www.cdc.gov/niosh/npg/npgd0650.html https://echa.europa.eu/substance-information/-/substanceinfo/100.028.336 The Department of Mines, Industry Regulation and Safety. Guidance about radiation safety on mining operations http://www.dmp.wa.gov.au/Safety/Guidance-about-radiation-safety-6950 aspx https://www.arpansa.gov.au/sites/default/files/legacy/pubs/technicalreports/tr165.pdf https://science.osti.gov/-/media/nbl/pdf/price-lists/SDS/SDS-Monazite_Sand.pdf?la=en&hash=2BD57B8A2A9717257915A88DBDE90172040E7BC6	 **Danger**  **Irritant**
Yttrium	A new earth or metallic oxide, found at Ytterby, Sweden. Yttria, the first rare earth to be discovered, is a mixture of oxides from which, nine elements—yttrium, scandium (atomic number 21), and the heavy lanthanide metals from terbium (atomic number 65) to lutetium (atomic number 71)—were separated. Britannica https://www.britannica.com/science/yttrium	
Y2O3.	**Yttrium oxide** CAS 1314-36-9 Causes skin irritation, serious eye irritation, respiratory irritation Commercially recovered from monazite sand & in almost all rare-earth minerals plus uranium ores. OSHA PEL TWA 1 mg/m3 The PEL also applies to other yttrium compounds (as Y). https://www.newworldencyclopedia.org/entry/Yttrium https://pubchem.ncbi.nlm.nih.gov/compound/Yttrium-oxide#datasheet=LCSS https://www.world-nuclear.org/information-library/safety-and-security/radiation-and-health/naturally-occurring-radioactive-materials-norm.aspx	 **Irritant**
	Lanthanoides The term lanthanoids indicates that the elements in this series follow lanthanum in the periodic table. The 14 elements in the lanthanoid series are: cerium (Ce), praseodymium (Pr), neodymium (Nd), promethium (Pm), samarium (Sm), europium (Eu), gadolinium (Gd), terbium (Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb), and lutetium (Lu). It is one of the most reactive of the rare earth metals. Chemistry: The lanthanoids react with water to liberate hydrogen. New World Encyclopaedia https://www.newworldencyclopedia.org/entry/Lanthanum https://www.newworldencyclopedia.org/entry/Inner_transition_element	
La2O3	**Lanthanum Oxide** CAS 1312-81-8 Causes serious eye, skin, respiratory irritation. Very toxic to aquatic life with long lasting effects	 

	https://pubchem.ncbi.nlm.nih.gov/compound/Lanthanum-oxide#datasheet=LCSS&section=GHS-Classification https://www.newworldencyclopedia.org/entry/Inner_transition_element	
CeO2	**Cerium dioxide** CAS 1306-38-3 Harmful if swallowed Causes damage to organs through prolonged or repeated exposure May cause long lasting harmful effects to aquatic life Corrosive to metals, Skin corrosion, Serious eye damage. Chemical Book Cerium can be a threat to the liver when it accumulates in the human body. Lenntech https://www.lenntech.com/periodic/elements/ce.htm#ixzz6YoGJsHq1 https://pubchem.ncbi.nlm.nih.gov/compound/Cerium-dioxide#section=GHS-Classification https://www.chemicalbook.com/ChemicalProductProperty_EN_CB4666451.htm https://cfpub.epa.gov/ncea/iris/iris_documents/documents/toxreviews/1018tr.pdf	 **Health Hazard**  **Irritant**  **Corrosive**
Pr6O11	**Praseodymium oxide** CAS 12037-29-5 Causes serious eye irritation, skin, respiratory. With water animals causes damage to cell membranes, which affect reproduction and the nervous systems. https://www.lenntech.com/periodic/elements/pr.htm#ixzz6YoNcAbD0	 **Irritant**
Nd2O3	**Neodymium oxide** CAS 1313-97-9 Hazardous to the aquatic environment, acute / long-term hazard Neodymium can be a threat to the liver when it accumulates. https://www.lenntech.com/periodic/elements/nd.htm#ixzz6YoPRrJIU https://pubchem.ncbi.nlm.nih.gov/compound/Neodymium-oxide	 **Environ Hazard**
Sm2O3	**Samarium (III) oxide** CAS 12060-58-1	
Eu2O3	**Europium (III) oxide** CAS 1308-96-9 Causes serious eye, skin irritation, respiratory. https://pubchem.ncbi.nlm.nih.gov/compound/159371#datasheet=LCSS&section=GHS-Classification https://echa.europa.eu/substance-information/-/substanceinfo/100 013.787	 **Irritant**
Gd2 O3.	**Gadolinium (III) oxide** CAS 11129-31-0 Causes serious eye irritation Very toxic to aquatic life with long lasting effects	 **Irritant**

	https://pubchem.ncbi.nlm.nih.gov/compound/Gadolinium-oxide	 Environ Hazard
Yb2O3	**Ytterbium (III) oxide** CAS 1314-37-0 Causes serious eye, skin, respiratory, irritation. All compounds of ytterbium known to cause irritation to the skin and eye, and some might be teratogenic. http://www.eurare.org/docs/internalGuidanceReport.pdf page 16 https://pubchem.ncbi.nlm.nih.gov/compound/Ytterbium-oxide-_Yb2O3	 Irritant
Tb4O7	**Terbium oxide** CAS 12037-01-3	
Dy2O3	**Dysprosium Oxide** CAS 1308-87-8	
Ho2O3	**Holmium (III) oxide** CAS 12055-62-8	
Er2O3	**Erbium (III) oxide** CAS 1206-16-4 Causes serious eye, skin respiratory, irritation	 Irritant
Tm2O3.	**Thulium (III) oxide** CAS 12036-44-1 Causes serious eye, skin irritation, respiratory irritation https://echa.europa.eu/substance-information/-/substanceinfo/100 031.670	 Irritant
Lu2O3	**Lutetium (III) oxide** CAS 12032-20-1	
	Exposure levels: Raw material for production of rare earth compounds. Safety Data sheet by Iluka - SDS Date: 26 Jun 2020 Revision No: 5. Hazard Statement: Harmful if swallowed. Harmful if inhaled mg/m³ Milligrams per Cubic Metre OEL Occupational Exposure Limit http://sds.chemalert.com/company/10002061/download/3225200_030_001.pdf	

EES Table 8.3. Heavy Metals - GHS Statements and Pictograms

As	**Arsenic** Toxic if swallowed. May cause cancer Suspected of damaging fertility or the unborn child Causes damage to the gastrointestinal tract if swallowed Causes damage to organs through prolonged or repeated exposure Toxic to aquatic life with long lasting effects It is strongly advised not to let the chemical enter into the environment. Combustible. Gives off irritating or toxic fumes (or gases) in a fire.	 DANGER 

	https://www.ilo.org/dyn/icsc/showcard.display?p_lang=en&p_card_id=0013&p_version=2 According to UN GHS Criteria UN #: 1558(See ICSC 0222).	
Bi	**Bismuth** Flammable solid. May cause long lasting harmful effects to aquatic life. https://pubchem.ncbi.nlm.nih.gov/compound/Bismuth#datasheet=LCSS&section=GHS-Classification	 **Flammable**
Cd	**Cadmium** Catches fire spontaneously if exposed to air. Fatal if inhaled, suspected of causing genetic defects, May cause cancer. Suspected of damaging fertility; Suspected of damaging the unborn child. Causes damage to organs through prolonged or repeated exposure Very toxic to aquatic life with long lasting effects. https://pubchem.ncbi.nlm.nih.gov/compound/Cadmium#datasheet=LCSS&section=GHS-Classification	   
Cb	**Cobalt** May cause an allergic skin reaction May cause allergy or asthma symptoms or breathing difficulties if inhaled May cause long lasting harmful effects to aquatic life https://pubchem.ncbi.nlm.nih.gov/compound/Cobalt#datasheet=LCSS&section=GHS-Classification	 
	Chromium 111.	
Cu	**Copper** Harmful if swallowed, Toxic if inhaled Very toxic to aquatic life with long lasting effects https://pubchem.ncbi.nlm.nih.gov/compound/Copper#section=GHS-Classification	  
Hg	**Mercury (inorganic)** Fatal if inhaled May damage the unborn child Causes damage to organs through prolonged or repeated exposure Very toxic to aquatic life with long lasting effects https://pubchem.ncbi.nlm.nih.gov/compound/Mercury#section=GHS-Classification	  
Ni	**Nickel** May cause an allergic skin reaction	

	Suspected of causing cancer Causes damage to organs through prolonged or repeated exposure https://pubchem.ncbi.nlm.nih.gov/compound/Nickel#datasheet=LCSS&section=GHS-Classification	 
Pb	**Lead. CAS 7439-92-1** Harmful if swallowed, inhaled. May cause cancer May damage fertility or the unborn child May cause damage to organs through prolonged or repeated exposure https://beta-static.fishersci.com/content/dam/fishersci/en_US/documents/programs/education/regulatory-documents/sds/gsc-lead-safety-data-sheet.pdf	 
Se	**Selenium** Toxic if swallowed, inhaled Causes damage to organs through prolonged or repeated exposure. May cause long lasting harmful effects to aquatic life https://pubchem.ncbi.nlm.nih.gov/compound/Selenium#datasheet=LCSS&section=GHS-Classification	 
Tl	**Thallium** Fatal if swallowed, Fatal if inhaled. Causes damage to organs through prolonged or repeated exposure. May cause long lasting harmful effects to aquatic life. https://pubchem.ncbi.nlm.nih.gov/compound/Thallium#datasheet=LCSS&section=GHS-Classification	 
W	**Tungsten** Flammable solid, Self-heating in large quantities. Self-heating substances and mixtures https://pubchem.ncbi.nlm.nih.gov/compound/Tungsten#datasheet=LCSS&section=GHS-Classification	

No bonanza

Sir,- Response to Bob Kastelyn (*Advertiser*, August 22), part two.

From our experience it is simple; the system of mine regulation is broken. The EES and first work plan were sound and endorsed but were not followed. As regulators DEDJTR and DHHS have failed in their 'duty of care' to our community.

We have formally complained to the Mining Warden who requested an independent audit of the mine's operations. Instead of undergoing an independent audited, DEDJTR appointed personnel to audit their own work and – surprise, surprise – reported there was no issue.

The benefits to the local area are very limited with sand mining. There is short-term employment while the resource lasts and extra economy while the mine is in operation.

However, farmland that has been purchased by the mining company is left depleted and unproductive. Once mining companies have stripped the asset and moved on they are in no hurry to return once productive land to its former state (delay of rehabilitation is euphemistically referred to as 'cost deferral' in the industry.)

Communities are destroyed by compulsory acquisition, people leaving because they cannot tolerate living near a mine and remaining residents left have to put up with the loss of and quality of life, including the elevated risk of cancers from radioactive material.

On this point, our Landcare group purchased its own radon gas monitors from the Australian Protection and Nuclear Safety Agency. They recorded over three months effectively measuring and calculated with only 50 per cent exposure over one-and-a-half times the allowable public dose rate for radiation. Farming people who live and work on site would be at least 80 per cent exposure.

The wealth created evaporates away from the community at the mine. Over a billion dollars of profit was taken out of the Douglas mine, yet our community remains as one of the poorer socioeconomic regions in Australia.

The wealth goes to the shareholders, in capital cities, superannuation companies, investment funds etc. Do not expect a local bonanza.

Mr Kastelyn's recollection is very much at odds with the lived experience of our community. Sand mining does not create sustainable communities or sustainable agriculture.

Dust is only one of the many problems associated with it, and it does create a significant health risk when inappropriate management occurs.

Yours etc.,
Ian Ross,
President, Kanagulk Landcare Group.

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Mine risks

Sir,- I was concerned when I read Mr Kastelyn's limited level of understanding of the risks of open cut mineral sand mining (*Advertiser*, August 22).

Initially I supported Iluka Resources' Douglas Mineral Sand Mine in our community.

Be alarmed! Be aware! We were promised 'world's best practice' mining with a moving footprint between one-and-a-half to three kilometres long. The radioactive mining waste was to be buried deeper and dispersed as it naturally occurred, reducing risk to our community from radiation, especially radon gas and radium pollution through leachate. Dust was to be controlled through the use of water and resins to stablise bare surfaces.

The EES process appeared sound and the first WorkPlan supported and was consistent with what we were promised. However, it proved not to be worth the paper it was written on. What has occurred, without appropriate consultation, consecutive WorkPlans were presented directly opposing what the EES stated:

1. There was no moving footprint. Mining ceased four-and-a-half years ago and the whole site of 14.5km was open and with no rehabilitation.
2. The radioactive wastes were concentrated in pits near the separation plant, to the extent of hills being formed where there was once a drainage line.
3. Monazite was being dumped in Pit 23 without meeting the 140:1 co-disposal criteria to alleviate the radioactivity.
4. One farmer had monazite blow over his residence and sheds; this forced the Health Department to have a 'clean-up' with roofs, tanks etc., having to be industrially cleaned. We know the Geiger counter got very excited, but were never given hard figures of how radioactive the material was. The farmer was concerned and kept a sample of the material in a bag in his machinery shed. The only other person he informed of its presence was an individual from the Health Department. The bag disappeared.
5. In wind events, the area would become blanketed in red dust. On several occasions the local fire tower mistook the dust as a fire. This dust deposited all over our community for up to 5-6km.
6. High volume dust monitors only operated one in seven days. Not surprisingly they missed these events as there was only about a 15 per cent chance of monitoring them. However, the 24/7 dust deposition monitors did pick up large volumes of dust that contained elevated levels of radiation, this indicates there would an increase in risk of cancer to our community.
7. Residents were forced to clean out tanks and spouting about twice a year. The Health Department on one occasion tested the water; it measured up to one-third the allowable level for radiation in drinking water. The roof that had twice the surface area had twice the radiation. Had the tanks not been so regularly cleaned and or stirred up, I am sure they would have exceeded the limit as radium attaches strongly to dust.

Our experience is opposite to Mr Kastelyn's. Sand mining has disadvantaged our community. More in a future edition.

Yours etc.,
Ian Ross,
Kanagulk Landcare Group president.

Environment Protection Authority Victoria (EPA) has assessed a works approval application from mining company Iluka Resources to continue disposing of radioactive materials in Pit 23 at its Douglas Mine in western Victoria. EPA has found that neither pollution nor environmental hazard has occurred or is likely to occur in the future as a result of current or proposed disposal activities. As a result, EPA has determined the company does not require a works approval or licence for these

activities but will still require a planning permit and the radiation management licence currently in place at the site. This publication summarises the key aspects of EPA's assessment and decision-making process around the proposal.

https://www.epa.vic.gov.au/about-epa/publications/1626

Inquiry into the Environment Effects Statement Process in Victoria.

Parliamentary Paper No.59. 2010–11.
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Yet the recommendations have not been instigated.

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https://satellites.pro/Glenaladale_map#-37.786487,147.354512,14

https://satellites.pro/Glenaladale_map#-37.793530 147.328663 13

Earth Resources: http://earthresources.vic.gov.au

http://earthresources.vic.gov.au/earth-resources/maps-reports-and-data/mining-licences-near-me

Fingerboards: http://earthresources.vic.gov.au/earth-resources/maps-reports-and-data/mining-licences-near-me/mining-licences-near-me#lat=-37.7510906&lng=147.32669550000003

Mine-free Glenaladale (MFG): https://www.facebook.com/minefreeglenaladale/; http://minefreeglenaladale.org/about/; minefreeglenaladale@gmail.com #StopKalbar.

Quick Reference to Mineral Exposure levels

ICSC - The International Chemical Safety Cards https://www.ilo.org/dyn/icsc/showcard.home

The ICSC project is a joint effort of the World Health Organization (WHO) and the International Labour Organization (ILO), with the cooperation of the European Commission.

European Chemicals agency (ECHA)

http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances

ATDSR ToxGuides™ - are quick reference guides https://www.atsdr.cdc.gov/toxguides/index.asp

Tox Profiles - toxicological information on a given hazardous substance
https://www.atsdr.cdc.gov/toxprofiledocs/index.html

PubChem - is an open chemistry database at the National Institutes of Health (NIH For chemical, health, safety, toxicity data. https://pubchem.ncbi.nlm.nih.gov/.

Lenntech - https://www.lenntech.com/periodic/elements/index.htm

GHS Hazardous Chemicals Poster is available at Safe Work Australia.
https://www.safeworkaustralia.gov.au/system/files/documents/1702/classification_and_labelling_workplace_hazardous_chemicals_poster.pdf PubChem GHS:
https://pubchem.ncbi.nlm.nih.gov/ghs/

Victorian Auditor General's Office (VAGO)

Commented [OTT1]: I deleted these two headings. The first one was unnecessary. The second one didn't seem to make sense given what follows (which are a list of sites/links to maps).

VAGO. The Victorian Auditor General. Report. Effectiveness of the Environmental Effects Statement Process. -. https://www.audit.vic.gov.au/sites/default/files/20170322-EES.pdf

VAGO. Rehabilitating Mines Report; Is the state effectively managing its exposure to liabilities from the rehabilitation of mines on private and public land? 5 August 2020. https://www.audit.vic.gov.au/report/rehabilitating-mines?section=

VEAC. Victorian Environmental Assessment Council. Victorian Environmental Assessment Council (2019) Assessment of Victoria's Coastal Reserves – Draft Report. Victorian Environmental Assessment Council. http://www.veac.vic.gov.au/documents/VEAC_CoastalRsAssessment_DraftReport2019-LR-.pdf

Water resources in the South East Coast (Victoria) 2011–12. Australian Water Resources Assessment Bureau of Meteorology 2012 http://www.bom.gov.au/water/awra/2012/documents/southeastcoastvic-lr.pdf Page 33 48.

Inquiry into the Environment Effects Statement Process in Victoria. Parliamentary Paper No.59. 2010–11. Environment and Natural Resources Committee. Parliament of Victoria. https://www.parliament.vic.gov.au/images/stories/committees/enrc/FINAL_EES_Report_30_August_2011.pdf

Armytage, P., Brockinton, J. & van Reyk, J. 2017. The Independent Inquiry into Victoria's Environment Protection Authority (EPA) June 2015 to March 2016. Ministerial Advisory Committee for The State of Victoria Department of Environment, Land, Water & Planning. https://www.environment.vic.gov.au/sustainability/independent-inquiry-into-the-epa

RIS. Regulatory Impact Statement Proposed Mineral Resources (Sustainable Development) (Mineral Industries) Regulations. March 2019. by 'the department' – Department of Jobs, Precincts and Regions (prior to 1 January 2019 known as the Department of Economic Development, Jobs, Transport and Resources) https://earthresources.vic.gov.au/__data/assets/pdf_file/0010/461782/Regulatory_Impact_Statement_2019.pdf

Samuel, G. 2020, Independent Review of the EPBC Act—Interim Report, Department of Agriculture, Water and the Environment, Canberra, June. CC BY 4.0. https://epbcactreview.environment.gov.au/sites/default/files/2020-07/EPBC%20Act%20Review_Interim%20Report_June2020.pdf

UNEP - United Nation Environmental Program, Helps A. Global Mercury Partnership. The Fingerboards report. https://www.businesses.com.au/Kalbar_Environmental.pdf

UNEP. Helps A. Global Mercury Partnership. The rehabilitation of mining and resource projects Australia. Commonwealth responsibilities to the Environment and Communications. 23 August2017. Submission 72. file:///C:/Users/User/Desktop/Mine%20Book%202020/UNEP.%20Mining%20-%20Submission%20to%20Senate%20Sub72%20(1).pdf

UNEP. GLOBAL INDUSTRY STANDARD ON TAILINGS MANAGEMENT AUGUST 2020. United Nations Environmental Program. https://globaltailingsreview.org/global-industry-standard/

Environmental Justice: https://www.envirojustice.org.au/projects/gippsland-lakes-community-workshops/

ACF. Charles Roche, Simon Judd and Sangita Bista. GROUND TRUTHS: TAKING RESPONSIBILITY FOR AUSTRALIA'S MINING LEGACIES. 2016. Mineral Policy Institute. Australian Conservation Foundation. http://www.mpi.org.au/wp-content/uploads/2016/06/Ground-Truths-2016-web.pdf

ACF. Submission to Productivity Commission. Resources Sector Regulation Draft Report. The Australian Conservation Foundation. 14 September 2020 https://d3n8a8pro7vhmx.cloudfront.net/auscon/pages/17945/attachments/original/1600396636/140920_ACF_Submission_to_Productivity_Commission_Resources_Sector_Regulation_Draft_Report.pdf?1600396636

Don Rankin Pitcher Partners. The Victorian Chamber of Commerce and Industry Agribusiness Taskforce. Page 22. https://www.victorianchamber.com.au/policy-and-advocacy/taskforces/agribusiness-taskforce#:~:text=The%20Agribusiness%20Taskforce%20report%2C%20Harvesting,job%20growth%2C%20trade%20and%20investment.

Gippsland Regional Profile. A Report for Infrastructure Victoria. AITHER | March 2019 https://www.infrastructurevictoria.com.au/wp-content/uploads/2019/04/Aither-Gippsland-Regional-Profile-March-2019.pdf

WATER STEWARDSHIP. LEADING PRACTICE SUSTAINABLE DEVELOPMENT PROGRAM FOR THE MINING INDUSTRY, INDUSTRY.GOV.AU DFAT.GOV.AU Commonwealth of Australia 2016. Page 9. https://www.industry.gov.au/sites/default/files/2019-04/lpsdp-water-stewardship-handbook-english.pdf

Radiation

ARPANSA - Australian Radiation Protection and Nuclear Safety Agency.

ARPANSA publications are available to download free of charge.

ARPANSA. Proposed Expansion of the Australian National Radiation Dose Register to the Mineral Sands Mining and Processing Industry. Technical Report No.165. Sarsha Collett, Robert Guilfoyle, Ben Paritsky and Richard O'Brien. 2014. Page 4, 11, 12. https://www.arpansa.gov.au/sites/default/files/legacy/pubs/technicalreports/tr165.pdf

ARPANSA Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing (2005) Radiation Protection Series Publication No. 9. Chief Executive Officer 2005. Updated January 2015. https://www.arpansa.gov.au/sites/default/files/legacy/pubs/rps/rps9.pdf

ARPANSA. Fundamentals for Protection Against Ionising Radiation (2014). "© Commonwealth of Australia 2014, as represented by the Australian Radiation Protection and Nuclear Safety Agency. © Commonwealth of Australia 2014. https://www.arpansa.gov.au/sites/default/files/legacy/pubs/rps/rpsF-1.pdf page 7_8.

ARPANSA. Guide for Radiation Protection of the Environment 2015, as represented by the Australian Radiation Protection and Nuclear Safety Agency. © Commonwealth of Australia. YALLAMBIE VIC. https://www.arpansa.gov.au/sites/default/files/legacy/pubs/rps/rpsg-1.pdf

US (EPA) Environmental Protection Agency - Superfund Radiation Fact Sheet

This toolkit was developed by the U.S. Environmental Protection Agency (EPA) to help the public understand more about the risk assessment process used at Superfund sites with radioactive contamination. https://epa-sdcc.ornl.gov/RadRiskCommunityGuide.pdf

EURARE. Health and safety issues in REE mining and processing. An internal EURARE guidance report on health and safety issues in the mining and processing of REE ores. P 14 – 21 http://www.eurare.eu/docs/internalGuidanceReport.pdf

International Atomic Energy Agency (IAEA) Publications

IAEA. management of norm residues. –iaea-tecdoc series, 2013. Vienna. https://www-pub.iaea.org/MTCD/Publications/PDF/TE-1712_web.pdf

IAEA.EXTENT OF ENVIRONMENTAL CONTAMINATION BY NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM) AND TECHNOLOGICAL OPTIONS FOR MITIGATION. 2003. STI/DOC/010/419 TECHNICAL REPORTS SERIES No. 419. https://www-pub.iaea.org/MTCD/publications/PDF/TRS419_web.pdf Page 7-11, Table for radionuclides page 86.

IAEA. RADIATION PROTECTION AND NORM RESIDUE MANAGEMENT IN THE TITANIUM DIOXIDE AND RELATED INDUSTRIES. SAFETY REPORTS SERIES No. 76. 2012. Vienna. STI/PUB/1568. https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1568_web.pdf

IAEA. RADIATION PROTECTION AND NORM RESIDUE MANAGEMENT IN THE PRODUCTION OF RARE EARTHS FROM THORIUM CONTAINING MINERALS. SAFETY REPORTS SERIES No. 68. 2011.Vienna. https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1512_web.pdf

RADIATION PROTECTION AND NORM RESIDUE MANAGEMENT IN THE ZIRCON AND ZIRCONIA INDUSTRIES. SAFETY REPORTS SERIES No. 51. 2007. Vienna. https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1289_Web.pdf

World Nuclear Association. Mineral Sands. Naturally-Occurring Radioactive Materials (NORM) (Updated April 2020) https://www.world-nuclear.org/information-library/safety-and-security/radiation-and-health/naturally-occurring-radioactive-materials-norm.aspx

Naturally-Occurring Radioactive Material Appendix 1. (Updated August 2014) https://www.world-nuclear.org/information-library/safety-and-security/radiation-and-health/appendicies/mineral-sands-appendix-to-norm-information-paper.aspx

Safe Work Australia

HCIS - Hazardous Chemical Information System http://hcis.safeworkaustralia.gov.au/

Crystalline silica and silicosis. https://www.safeworkaustralia.gov.au/silica

GUIDANCE ON THE INTERPRETATION OF WORKPLACE EXPOSURE STANDARDS FOR AIRBORNE CONTAMINANTS APRIL 2013. https://www.safeworkaustralia.gov.au/system/files/documents/1705/guidance-interpretation-workplace-exposure-standards-airborne-contaminants-v2.pdf

National code of practice/Guidance material. Working with silica and silica containing products. 2019. https://www.safeworkaustralia.gov.au/system/files/documents/2003/national_guide_for_working_with_silica_and_silica_containing_products_1.pdf

Information about measurements/volumes of Water

1 Ml - Megalitre - One million litres - 1,000,000 litres or 0.001 Gl.

1GL - 1 gigalitre - One billion litres - 1,000,000,000 litres or 1 000 ML.

The Bureau of Meteorology's Water Storage dashboard lets you compare water levels and volumes of lakes, reservoirs and weirs. 2020, Commonwealth of Australia.

http://www.bom.gov.au/water/dashboards/#/water-storages/summary/state

http://www.bom.gov.au/water/about/publications/document/factsheet_waterstorage.pdf

Water volumes - how much water? Water Resources Northern Territory. https://denr.nt.gov.au/__data/assets/pdf_file/0004/589477/WaterResNT_Factsheet-WaterVolumes.pdf

[redacted]

From: Cec McKenzie <cecmck@xtra.co.nz>
Sent: Friday, 30 October 2020 1:04 PM
To: Fingerboards Inquiry and Advisory Committee (DELWP)
Subject: Emailing: 1. Rivers, Lakes and EES Oct 29.
Attachments: 1. Rivers, Lakes and EES Oct 29..pdf; DSC03049.JPG; IMAG0134.JPG; Wombats (003).docx; scan0002.jpg; SYEW0237.JPG

EXTERNAL SENDER: Links and attachments may be unsafe.

Hello [redacted]
Thank you for this opportunity to re-submit my submission.
My background is that I grew up in Glenaladale and enjoyed the close encounters with the wildlife and exploring the State forest beside us. It is a special place, especially an evening in Spring Valley when the wombats and echidna are about. The dawn chorus is magic.
We had a family of emu living on the hill. We called them Jack & Jill. Emu are becoming scarce.

My daughters have fond memories of stalking wild wombats (with camera). They now have degrees with masters, in Environmental Management, Ecology and Botany between them. Their experiences may have piqued their dedication to the environment.
They are very concerned and submitted as well. They know Glenaladale has more wildlife than has been represented.
I have attached a photo of the girls being 3 - 5, and would love to snap them visiting the same wombat families (burrows) as 30 year olds.
The same wombat families are still residing in the same burrows that I grew up with.
'What's The Use of a Wombat' (003) is about growing up among them, aimed to get help for them but with a chuckle or two.
They are not known to the authorities, and there are too many to relocate.
Please advocate for their survival in the scope of your work.
I now reside in Southern NZ, and we have enjoyed annual migration back to home, also visiting the lakes.

Thank you again for this opportunity to re submit as I have spent considerable time in researching the facts and collating it.

Kind regards

June McKenzie

I now reside in southern New Zealand, and grateful to migrate annually to revisit home.
I was dismayed to find that it had not processed.

My details are
June McKenzie
[redacted], Alexandra, New Zealand 9320.
[redacted]

Your message is ready to be sent with the following file or link attachments:

1. Rivers, Lakes and EES Oct 29.

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

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What's the use of a Wombat?

'What's the use of a wombat?!' Many could declare this with good reason. This unique, shy marsupial is seldom seen, but can leave a trail of trouble where they have been. Yet my family still love this smart "digger".

Wombats are the biggest burrowing marsupial mammal on the planet. Known as 'nature's bulldozer', they simply push or dig another hole. and do not bother using their last exit hole.

A tiny baby wombat came to live with us, when I was young. He was rescued from his mother who was hit by a car. So, we lived among wombats - with Sam our enigmatic pet within our home, and the wild wombats outside in burrows scattered around the farm at Glenaladale, in Gippsland, Victoria.

Now that I live in a city, I love to visit this farm with my family. An adventure we enjoy is to walk quietly with cameras, watching and photographing the wombats, kangaroos, echidna and other wildlife going about their business. My daughters (between them) now have degrees in Ecology, Botany and Environmental Management, and love wombats.

When a wombat lives under a house, it can soon develop wonky floors and doors that stick, as we found in our home.

'You can't stay here when you grow big!' I said looking at the hole in the fly-screen door. Our little bull-dozer pet had pushed through, yet again.

Our neighbour's old wooden cottage started to shake early in the morning. Was it a quake? No, the young farmer said to me, preparing to leave for work. It was a wombat with an itch, rubbing on the old wooden piles underneath. He turned up the stereo for a blast of sound. The shaking stopped. The wombat scarpered back to his creek**.** 'There's no room for you here'! he said.

The phone was down. The Telecom Tech came. We gathered by the kitchen and, as we talked, a strange look came over his face. He looked uncomfortable. Sam had disappeared. Without warning, he had scampered up the nearest trouser leg. Telecom Tech adjourned to the bathroom and emerged with our dislodged marsupial pet. He declared; 'Sam can't stay there!'

The phone was down at a friend's remote home in the mountains. The same Telecom Tech came. Beneath the house he found giant tooth marks on his wires - and didn't hang around.

The civil engineer frowned, perplexed, at the holes in the bridge footing and in the dam walls on farms. As did the stock-truck driver, after his wheel dropped down a big hole in the farm road.

They may declare 'what's the use of a wombat?!' as they survey the latest damage.

The medical clinic may ask 'How is the wombat?' - as they bandage your thumb and hand. Generally, the steering-wheel suddenly spins and can fracture the thumb when a tyre drops into a hole. So, the local drivers always hold their thumbs out from the steering-wheel when driving.

These nocturnal wonderers are hard to see, especially on the road at night - as many drivers (and many dead wombats) can attest.

The panel-beaters regard them with glee, when preparing their quote for the damaged front-end of a car that had hit a wombat.

Wombat families share their digs with their next generation. My daughters love to visit the same burrows and wombat families that I did, and hopefully, their children may too.

Wombats are protected in all other States, but in Gippsland, Victoria, they are unprotected. Their numbers have dwindled because of the huge bushfires, vehicles, predators and land clearing. Usually seen dead, alive sightings are rare. Have you ever seen a living wombat? On this farm, they are let be.

However, the mining company Kalbar Resources Ltd plans to open-cut a very deep hole (of 29 - 40 metres deep). at Glenaladale where they live. The mining company's Environmental Effects Statement is due out soon and their licence is pending Hon Minister Wynne's decision

These wombats need help now. They are not protected. There are no plans for their survival or to find new homes.

Please help save our wombats. – Here's How

Petition https://www.change.org/o/mine-free_glenaladale

Environmental Media Foundation Inc https://chuffed.org/project/fingerboardsmine?

Atlas of Living Australia (ALA). https://www.ala.org.au/ The ALA is Australia's national biodiversity database. Many animals are listed as vulnerable due to agriculture land clearing and habitat degradation. To view a list of the bio-diversity involved, refer to satellite maps.
Search 1) Glenaladale 3864: Search 2) Fingerboards: 495 Bairnsdale-Dargo Rd.
These wombats are not registered with the ALA or WomSAT and urgently need assessment.

Wombat Support Organizations
The Wombat Protection Society of Australia Ltd. https://www.wombatprotection.org.au/
A word about the wombat from the Australian Wildlife Society
https://www.aws.org.au/wombat/
Australian Wildlife Protection Council https://awpc.org.au/
WomSAT program. https://www.womsat.org.au
Recent research: https://www.theguardian.com/science/2018/nov/18/scientists-unravel-secret-of-cube-shaped-wombat-faeces

https://www.mnn.com/earth-matters/animals/stories/7-things-you-didnt-know-about-wombats
https://www.smithsonianmag.com/smart-news/why-wombats-make-cube-shaped-poos-180970847/

https://www.inverse.com/article/51854-why-do-wombats-poop-cubes

Wombania https://www.wombania.com/wombats/wombat-facts.htm

Most Australians have never seen a wild wombat.


XTRAIL
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Ltl Acorn
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01/09/2012 23:43:22