

Submission Cover Sheet

Fingerboards Mineral Sands Project Inquiry and Advisory
Committee - EES

563

Request to be heard?: No

Full Name: Grace Burt

Organisation:

Affected property:

Attachment 1: Outrageous__Proj

Attachment 2:

Attachment 3:

Comments: See attached submission by 'Shocked'

Dear Inquiry and Advisory Committee members,

Re: Kalbar Resources Ltd. The Fingerboards mineral sand mine,

I am horrified to learn toxic minerals are about to be mined and released into water systems and surrounding fertile land in Gippsland.

With increasing global warming water is an increasingly rare commodity; it is essential to maintain and protect every last drop.

Gippsland lakes will become impossible to promote as a pristine tourist attraction, while the rare and endangered Burrunan Dolphin will be trapped in a toxic soup.

Unbelievably, this is also where essential horticulture is taking place. This established industry will be forced out, and it is all to happen without any creditable accountability.

These contaminants will poison and pollute not only water and land for generations to come but also people, animals, birds and plants dependent upon these essential resources.

To imperil water and food resources knowingly is to commit to a path of generational and future suicide.

I find the whole situation astounding, contrary to common sense.

I wish to add my protest to the voice of others. Please listen.

Appendix

Heavy Minerals and GHS

Quick reference guides to the heavy minerals identified by Kalbar at The Fingerboards site.

GHS Hazardous Chemicals Poster is available at Safe Work Australia.¹

ICSC - The International Chemical Safety Cards

<https://www.ilo.org/dyn/icsc/showcard.home>

ToxGuides™ ATDSR. - <https://www.atsdr.cdc.gov/toxguides/index.asp>

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

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

2. 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. Applying GHS pictograms and Hazard Statements.¹⁹

3. Kalbar’s Mineral Formula converted to Identity




In 2017, Kalbar presented a list of formula with their percentage, but omitted the mineral identity by the ‘Analyst for Kalbar’ in their marketing presentation.⁶

So, the team elected to identify the minerals by applying the quick-guides from global agencies for reader’s convenience.

The mineral products with GHS hazard statements and pictograms are indicative only of the general mineral traits that are enhanced with separation / concentration, and may not apply to the natural and undisturbed minerals.


Note: Digging for the Facts Team (DFT) advises that the information contained in this submission is sourced from general references. Do not rely or act upon this information without seeking prior expert professional, scientific and technical advice. DFT does not take any liability for any consequences to any person arising directly or indirectly from using this information or material, including but not limited to losses, damages, costs, expenses or any other compensation.





Product list by Kalbar Resources Ltd












Premium Zircon	Rare Earth Concentrate	Primary Ilmenite Rutile 92
		
Radio- active Harmful Irritant Environmental Hazard Health Hazard Life of Mine Product Quantities ZrO ₂ Zircon –1,234,000 tons Kalbar: Analyst Pre-Feasibility Study. 2017	Harmful Irritant Health Hazard Environmental Hazard Life of Mine Product Quantities ReO - 187,000 tons Kalbar: Analyst Pre-Feasibility Study. 2017	Harmful Irritant Health Hazard Environmental Hazard Corrosive Life of Mine Product Quantities TiO ₂ - 1,664,000 tons Kalbar: Analyst Pre-Feasibility Study. 2017
ZrO ₂ - Zirconium dioxide – 66% SiO ₂ - Silicon dioxide --32.5%	Y ₂ O ₃ . - Yttrium oxide,	TiO ₂ -Titanium dioxide Fe ₂ O ₃ – Iron (III) oxide (calc)









<p>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.</p> <p>Monazite – 0.6% - 60,000 tons Metallica Minerals Ltd. Report to ASX. (MLM) 26 April 2012.</p>	<p>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</p>	<p>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</p>
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5. Exposure Levels








For mula	<p>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.</p>	
TiO ₂	<p>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</p>	 Health







	The New Jersey Department of Health Hazardous Substances List https://nj.gov/health/eoh/rtkweb/documents/fs/1861.pdf	Hazard
FeTiO ₃	Ilmenite – CAS 12168-52-4 Titanium-iron oxide metal with manganese and magnesium.	
Fe ₂ O ₃ ·TiO ₂	Leucoxene - is not regarded as being a mineral, a term for products containing a TiO ₂ 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(PO ₄) ₃	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, and respiratory irritation. 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	 Irritant
	Zircon ZrO ₂ . Life of Mine Product Quantities–1,234,000 tons.	
ZrO ₂	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
ZrSiO ₂ SiO ₂	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  Irritant  Health Hazard

P2O5	<p>Phosphorus pentoxide CAS Number - 1314-56-3. EC - 215-236-1 (Seek independent advice on hazards for the natural state).</p> <p>FIRE & EXPLOSION. Many reactions may cause fire or explosion.</p> <p>Gives off irritating or toxic fumes (or gases) in a fire.</p> <p>Reacts violently with water. NO contact with water or combustible substances.</p> <p>Health Hazard: Causes eye damage / Skin corrosion/ severe skin burns.</p> <p>https://www.ilo.org/dyn/icsc/showcard.display?p_version=2&p_card_id=0545 http://hcis.safeworkaustralia.gov.au/HazardousChemical/Details?chemicalID=3532</p>	<p>Danger.</p>  <p>Corrosion</p>
Al2O3	<p>Alumina CAS Number - 1344-28-1. EC Number - 215-691-6</p> <p>Health Hazard Causes serious eye and respiratory irritation.</p> <p>Causes damage to organs through prolonged or repeated exposure.</p> <p>https://pubchem.ncbi.nlm.nih.gov/compound/Alumina#datasheet=LCSS&section=GHS-Classification</p>	 <p>Irritant</p> 
V2O5	<p>Vanadium Pentoxide CAS 1314-62-1</p> <p>Causes serious eye damage, respiratory irritation.</p> <p>Suspected of damaging fertility. Suspected to be Toxic to Reproduction.</p> <p>Suspected of causing genetic defects, and damaging the unborn child.</p> <p>Suspected of causing cancer Suspected to be Mutagenic.</p> <p>Toxic to aquatic life with long lasting effects.</p> <p>Safe Work Australia http://hcis.safeworkaustralia.gov.au/HazardousChemical/Details?chemicalID=1798 https://echa.europa.eu/substance-information/-/substanceinfo/100.013.855</p>	   <p>Corrosive</p>  <p>Environ Hazard</p>
Nb2O5	<p>Niobium(V) oxide CAS – 1313-96-8</p> <p>Niobium Nb is a vanadium group element atom.</p> <p>Serious eye irritation / Skin corrosion / Respiratory tract irritation.</p> <p>https://pubchem.ncbi.nlm.nih.gov/compound/Niobium_V_oxide</p>	 <p>Irritant</p>
Cr2O3	<p>Chromium oxide CAS 1308-38-9</p> <p>Catches fire spontaneously if exposed to air (seek independent advice on natural state).</p> <p>May damage fertility or the unborn child.</p> <p>Causes serious eye irritation, allergic skin reaction.</p> <p>Seed germination and growth was inhibited at 25 -100 ug/mL</p> <p>https://www.cdc.gov/niosh/npg/nengapdx.html https://pubchem.ncbi.nlm.nih.gov/compound/Chromium-oxide#section=GHS-Classification</p>	  

		Flammable
K ₂ O	<p>Potassium Oxide CAS 1310-58-3, 12136-45-7</p> <p>Harmful if swallowed May cause respiratory irritation Causes severe skin burns and eye damage.</p> <p>https://pubchem.ncbi.nlm.nih.gov/compound/Potassium-oxide</p>	<p>Corrosive</p>  <p>Corrosive</p>
CaO	<p>Calcium oxide Quicklime, Burnt lime. CAS 1305-78-8</p> <p>Causes serious eye damage, skin and respiratory irritation.</p> <p>http://hcis.safeworkaustralia.gov.au/HazardousChemical/Details?chemicalID=4835 https://www.cdc.gov/niosh/npg/npgd0093.html</p>	  <p>Corrosive</p>
SnO ₂	<p>Tin dioxide CAS 18282-10-5</p> <p>May cause respiratory irritation.</p> <p>May cause long lasting harmful effects to aquatic life.</p> <p>https://pubchem.ncbi.nlm.nih.gov/compound/Tin-dioxide</p>	
REE REO	<p>Rare Earth Concentrate Life of Mine Product Quantities - 187,000 tons</p> <p>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).</p> <p>https://www.newworldencyclopedia.org/entry/Inner_transition_element</p>	
Actinoids	<p>Actinoids - All the actinoids group are radioactive.</p> <p>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)</p> <p>https://www.newworldencyclopedia.org/entry/Inner_transition_element</p>	
	<p>Monazite – (Ce,La,Nd,Th)(PO₄,SiO₄). CAS 1306-41-8</p> <p>Composite of rare earth metals. (particularly cerium and lanthanum) and 5–12% (typically about 7%) thorium.</p> <p>Radionuclides - Thorium (Th) Uranium (U).</p> <p>OSHA HAZARDS: Highly toxic by inhalation. Highly toxic by ingestion.</p> <p>TARGET ORGANS: Kidney, liver, lungs, brain.</p> <p>Fatal if swallowed or inhaled, Causes skin irritation, May cause cancer, May cause damage to organs through prolonged or repeated exposure.</p>	<p>Danger</p>  <p>Deadly</p>  <p>Health Hazard</p>
		

	<p>Glenaladale deposit: 60,000 tons monazite- (Metallica Minerals Ltd.) prior owner. Report to ASX - 26 April 2012. http://www.metallicaminerals.com.au/wp-content/uploads/2016/09/Maiden-Gippsland-Mineral-Resource.pdf</p> <p>https://science.osti.gov/-/media/nbl/pdf/price-lists/SDS/SDS-Monazite_Sand.pdf?la=en&hash=2BD57B8A2A9717257915A88DBDE90172040E7BC6</p> <p>https://pubchem.ncbi.nlm.nih.gov/compound/Monazite-CE</p>	 Irritant
<p>Th</p> 	<p>Thorium CAS 7440-29-1.</p> <p>May intensify fire - oxidiser. (Seek independent advice in natural state).</p> <p>Harmful if swallowed, causes serious eye, skin irritation. May cause damage to organs through prolonged or repeated exposure.</p> <p>May cause long lasting harmful effects to aquatic life.</p> <p>https://echa.europa.eu/substance-information/-/substanceinfo/100.028.308</p>	 Oxidiser  Health Hazard
<p>U</p> 	<p>Uranium CAS 7440-61-1</p> <p>May cause damage to organs through prolonged or repeated exposure.</p> <p>May cause long lasting harmful effects to aquatic life.</p> <p>Potential for cancer as a result of alpha-emitting properties & radioactive decay products (e.g., radon). [Potential occupational carcinogen].</p> <p>https://www.cdc.gov/niosh/npg/npgd0650.html</p> <p>https://echa.europa.eu/substance-information/-/substanceinfo/100.028.336</p> <p>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</p> <p>https://www.arpansa.gov.au/sites/default/files/legacy/pubs/technicalreports/tr165.pdf</p> <p>https://science.osti.gov/-/media/nbl/pdf/price-lists/SDS/SDS-Monazite_Sand.pdf?la=en&hash=2BD57B8A2A9717257915A88DBDE90172040E7BC6</p>	 Danger  Irritant
	<p>Yttrium Is a mixture of oxides from which nine elements were separated.— yttrium, scandium (atomic number 21), and the heavy lanthanide metals from terbium (atomic number 65) to lutetium (atomic number 71)—</p> <p>Britannica https://www.britannica.com/science/yttrium</p>	
Y2O3.	<p>Yttrium oxide CAS 1314-36-9</p> <p>Causes serious eye skin and respiratory irritation.</p> <p>Commercially recovered from monazite sand & in almost all rare-earth minerals plus uranium ores.</p> <p>OSHA PEL TWA 1 mg/m3 The PEL also applies to other yttrium compounds (as Y).</p> <p>https://www.newworldencyclopedia.org/entry/Yttrium</p> <p>https://pubchem.ncbi.nlm.nih.gov/compound/Yttrium-oxide#datasheet=LCSS</p>	 Irritant

	https://www.world-nuclear.org/information-library/safety-and-security/radiation-and-health/naturally-occurring-radioactive-materials-norm.aspx	
	<p>Lanthanoides -are the most reactive of the rare earth metals.</p> <p>The 14 elements follow lanthanum in the periodic table - 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).</p> <p>Chemistry: The lanthanoids react with water to liberate hydrogen.</p> <p>New World Encyclopaedia: https://www.newworldencyclopedia.org/entry/Lanthanum https://www.newworldencyclopedia.org/entry/Inner transition element</p>	
La2O 3	<p>Lanthanum Oxide CAS 1312-81-8</p> <p>Causes serious eye skin and respiratory irritation.</p> <p>Very toxic to aquatic life with long lasting effects</p> <p>https://pubchem.ncbi.nlm.nih.gov/compound/Lanthanum-oxide#datasheet=LCSS&section=GHS-Classification https://www.newworldencyclopedia.org/entry/Inner transition element</p>	 
CeO2	<p>Cerium dioxide CAS 1306-38-3</p> <p>Harmful if swallowed.</p> <p>Causes damage to organs through prolonged or repeated exposure.</p> <p>May cause long lasting harmful effects to aquatic life.</p> <p>Corrosive to metals, Skin corrosion, Serious eye damage. (Chemical Book).</p> <p>Cerium can be a threat to the liver when it accumulates in the human body.</p> <p>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</p>	 Health Hazard  Irritant  Corrosive
Pr6O 11	<p>Praseodymium oxide CAS 12037-29-5</p> <p>Causes serious eye skin and respiratory irritation.</p> <p>Causes damage to cell membranes, which affect reproduction and the nervous systems of water animals.</p> <p>https://www.lenntech.com/periodic/elements/pr.htm#ixzz6YoNcAbD0</p>	 Irritant
Nd2O 3	<p>Neodymium oxide CAS 1313-97-9</p> <p>Hazardous to the aquatic environment, acute / long-term hazard.</p> <p>Neodymium can be a threat to the liver when it accumulates.</p> <p>https://www.lenntech.com/periodic/elements/nd.htm#ixzz6YoPRrJIU https://pubchem.ncbi.nlm.nih.gov/compound/Neodymium-oxide</p>	 Environ Hazard
Sm2O 3	Samarium (III) oxide CAS 12060-58-1	

Eu2O 3	<p>Europium (III) oxide CAS 1308-96-9</p> <p>Causes serious eye, skin and respiratory irritation.</p> <p>https://pubchem.ncbi.nlm.nih.gov/compound/159371#datasheet=LCSS&section=GHS-Classification</p> <p>https://echa.europa.eu/substance-information/-/substanceinfo/100.013.787</p>	 Irritant
Gd2 O3.	<p>Gadolinium (III) oxide CAS 11129-31-0</p> <p>Causes serious eye irritation.</p> <p>Very toxic to aquatic life with long lasting effects.</p> <p>https://pubchem.ncbi.nlm.nih.gov/compound/Gadolinium-oxide</p>	 Irritant  Environ Hazard
Yb2O 3	<p>Ytterbium (III) oxide CAS 1314-37-0</p> <p>Causes serious eye, skin and respiratory, irritation.</p> <p>All compounds of ytterbium known to cause irritation to the skin and eye, and some might be teratogenic.</p> <p>http://www.eurare.org/docs/internalGuidanceReport.pdf Page 16.</p> <p>https://pubchem.ncbi.nlm.nih.gov/compound/Ytterbium-oxide- Yb2O3</p>	 Irritant
Tb4O 7	<p>Terbium oxide CAS 12037-01-3</p>	
Dy2O 3	<p>Dysprosium Oxide CAS 1308-87-8</p>	
Ho2O 3	<p>Holmium (III) oxide CAS 12055-62-8</p>	
Er2O 3	<p>Erbium (III) oxide CAS 1206-16-4</p> <p>Causes serious eye, skin and respiratory irritation.</p>	 Irritant
Tm2 O3.	<p>Thulium (III) oxide CAS 12036-44-1</p> <p>Causes serious eye, skin and respiratory irritation</p> <p>https://echa.europa.eu/substance-information/-/substanceinfo/100.031.670</p>	 Irritant
Lu2 O3	<p>Lutetium (III) oxide CAS 12032-20-1</p>	
	<p>Exposure levels: Raw material for production of rare earth compounds.</p> <p>Hazard Statement: Harmful if swallowed. Harmful if inhaled.</p> <p>mg/m³ Milligrams per Cubic Metre OEL Occupational Exposure Limit .</p> <p>Safety Data Sheet - SDS Date: 26 Jun 2020 by Iluka Resources.</p>	

	http://sds.chemicalert.com/company/10002061/download/3225200_030_001.pdf	
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