

BDEC Presentation to the Fingerboards Mineral Sands Mine EES 16th July 2021.

Submitter 429 supported by Tabled Documents 203, 248 & 523

PREFACE

The IAC had essentially four tasks before it.

1. Require the proponent to place a reasonable description of the project, as defined in the scoping document, before the IAC. This description to be based within the knowledge bank of engineering and science, that is the assessments placed by the proponent are fit for purpose.
2. That the IAC exercise the opportunity to enquire of the proponent as to if the assessments placed were complete and valid.
3. That the IAC allow the wider community to place before the IAC any views they hold on any matters that relate to the environmental (including social, economic and cultural) consideration of the project. The interaction with the community is transparent and that the community had the opportunity to directly seek information from the proponent.
4. That the IAC inform the Minister for Planning of the merits of the proposal,

“The (EES) process under this Act is not an approval process itself, rather it enables statutory decision-makers (Ministers, local government and statutory authorities) to make decisions about whether a project with potentially significant environmental effects should proceed.”¹

¹ <https://www.planning.vic.gov.au/environment-assessment/what-is-the-ees-process-in-victoria>

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1 - PLANNING, REGULATION and CONSIDERATION OF SOCIAL LICENCE

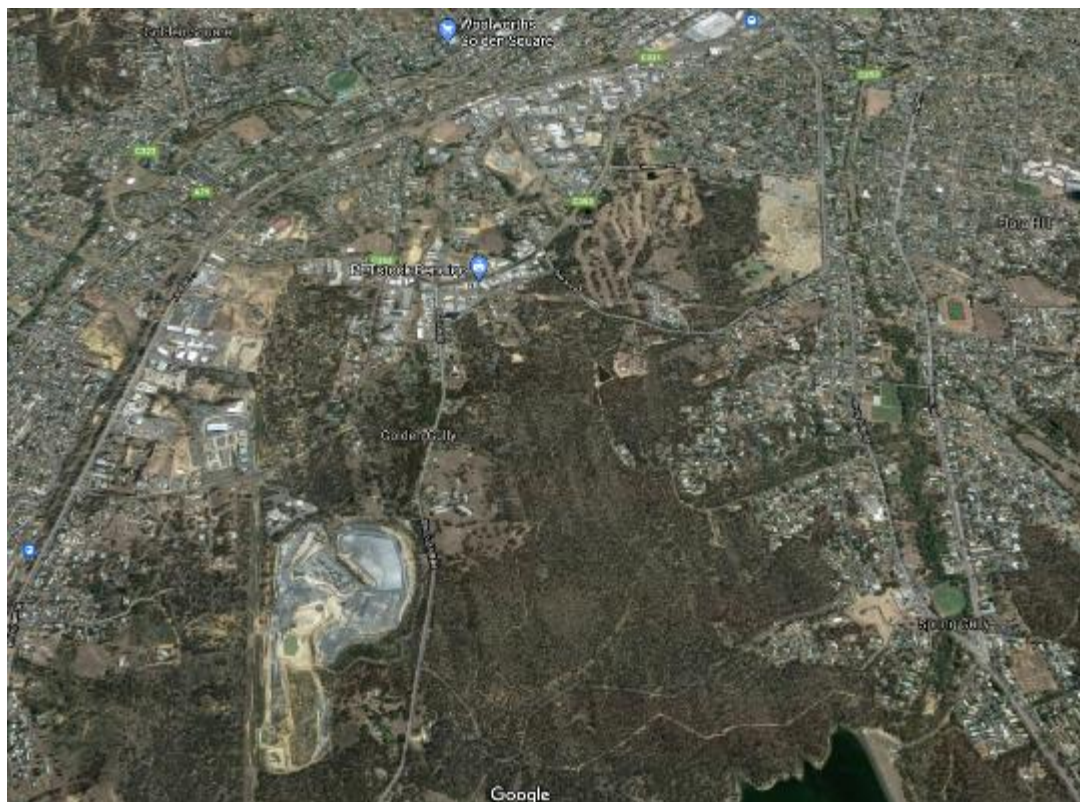
1.1 Why is the BDEC so far from home?

To caution communities of the jeopardy they face if they invite a mining company into their community. Our experience in Central Victoria is that mining companies have demonstrated to be the neighbours from hell.

Mining companies torture the landscape, cause negative health outcomes which include cancer, respiratory disease², mental health and suicide,³ leave their toxic mine sites for local government to clean up at ratepayer expense, leave intergenerational negative environmental legacies and commonly depart in the darkness of night without paying their debts

EVIDENCE

Satellite image of GBM/Kralcopic mine



² *Journal of Australasian Mining History*, Vol. 6, September 2008 ‘A social disease with medical aspects’:1 Miners’ phthisis and the politics of occupational health in Bendigo, 1880s – 1910 By YOLANDE COLLINS and SANDRA KIPPEN

La Trobe University, Bendigo

³ *Journal of Australasian Mining History*, Vol. 7, September 2009 Suicide on the Bendigo Goldfields 1860-1880 By JAMES LERK and SANDRA KIPPEN



Figure 1: Kangaroo Flat mine site

Image - Bendigo Benevolent home and asylum.

Candles in the Dark: A history of the Bendigo Home and Hospital for the Aged

<https://www.worldcat.org/title/candles-in-the-dark-a-history-of-the-bendigo-home-and-hospital-for-the-aged/oclc/1004184600?referer=di&ht=edition>



Figure 2: Bendigo Benevolent Home

Epidemiology Report “Cancer incidence and soil arsenic exposure in a historical gold mining area in Victoria” from Dr Dora Pearce and others.⁴

<https://www.nature.com/articles/jes201215>

1.2 Has Kalbar support within their industry?

Why have the Resources Minister, the Minerals Council of Australia, ERR, Appian Capital Advisory, the Kalbar CEO, local partner companies, the Mayor and Councillors not appeared before the IAC to promote the project or sought to promote the project in the local media ?

1.3 A lawyer, Mr Morris, has offered “the vision splendid” on behalf of the company.

My apologies to Banjo Paterson, he was a larrikin but he respected his community and the environment.

Mr Morris described the Stone Age, the Bronze Age and the Iron Age.

Does the age of Mineral sands logically follow?

Dr Vanessa Guthrie, the retiring Director of the Minerals Council describes Nickel, Copper and Lithium as the “ future facing minerals “ and the metals to decarbonise Australia.” If the MCA recognises the Age of Climate Change did Kalbar not read the song sheet?

EVIDENCE –

ABC audio the Business. [Monday 14 6 2021 ABC iview - Google Chrome 2021-06-15 20-16-03.mp3](#)

Inconel sample.

Lithium sample.

1.4. Who is supporting Kalbar?-

The Resources Minister, Minerals Council of Australia, ERR, Appian Capital Advisory, a submission from the CEO of Kalbar, local partner companies, Mayor and Council?

⁴ Pearce, D. C., Dowling, K., & Sim, M. R. (2012). Cancer incidence and soil arsenic exposure in a historical gold mining area in Victoria, Australia: a geospatial analysis. *Journal of Exposure Science and Environmental Epidemiology*, 22(3), 248 - 257. <https://doi.org/10.1038/jes.2012.15>

1.5. Does the legal team for Kalbar have any obligations ?

Empathy to the community, governance to investors or the State, probity?
Is there a “ Right to mine “ or the “ Right to water “ as claimed by Mr Morris.
The example of the River Red Gum National Parks and the recent establishment of the Central West National parks by the VEAC. The MDBA and water trading.

EVIDENCE

Victorian Water Act 1989. Declared Act for Water Trading Rules.

Victorian Water Act purposes include:

- (c) to promote the orderly, equitable and efficient use of water resources;*
- (d) to make sure that water resources are conserved and properly managed for sustainable use for the benefit of present and future Victorians;*
- (e) to maximise community involvement in the making and implementation of arrangements relating to the use, conservation or management of water resources;*
- (ea) to ensure that Victoria's water resources and waterways are managed in a way that considers—*
 - (i) Aboriginal cultural values and uses of waterways; and*
 - (ii) the social and recreational uses and values of waterways;*
- (f) to eliminate inconsistencies in the treatment of surface and groundwater resources and waterways*
- (i) to provide recourse for persons affected by administrative decisions;*
- (j) to provide formal means for the protection and enhancement of the environmental qualities of waterways and their in-stream uses;*
- (k) to provide for the protection of catchment conditions;*
- (m) to continue in existence and to protect all public and private rights to water existing before the commencement of the relevant provisions of this Act*

1.6. The MRSD Act (1990). has a 260Ha limit on the area of mining licences. (one square mile rule).

Why would the Minister provide written advice to vary this?

EVIDENCE

S14(4) of the Mineral Resources and Sustainable Development Act states
“The area of the land described in a licence must not exceed 260 hectares, unless the Minister decides a greater area may be required to mine a mineral resource.”

1.7. Minister D'Ambrosio provided a “Letter of Expectations “ to ERR in 2016 after repeated failures to manage regulation of mine sites. Did this letter cause a change in the culture of ERR?

EVIDENCE –

[D2015/35469 Statement of Expectations for the Regulation of the Earth Resources Sector.](#)

The statement notes that the Government is focused on safeguarding the health and wellbeing of local communities and ensuring that resource developments do not pose environmental and public health risks to the community.’ Minister D’Ambrosia said ‘It is critical that Earth Resources Regulation listens to affected communities and has open, transparent and inclusive processes for earth resources projects.’

1.8 Kalbar refuse to provide a business case for the Fingerboards project. The Oresome Report describes the likely value of Kalbar’s minerals. What are the commercial and strategic value of rare earths, titanium and zirconium? How can a company invest less than \$200 million to create a project with a \$6billion turnover? What is the risk the project will be on-sold? Further, Kalbar has not addressed the risks identified by RioTinto/Oresome in earlier reports – including the inability to access adequate water and the effect of product contamination on marketability.

EVIDENCE –

Extract from the Oresome Report.⁵

Page 13:

“Cr2O3 levels for the Glenaladale Main material are high at 0.8% and would require further work to ascertain its solubility in sulphuric acid (solubility of <0.1% required for Titanium Dioxide production) and if it is liberated or part of the ilmenite grain. Product sizing data confirmed the relatively fine nature of the material and is enclosed as Appendix 7.2 in Appendix 3 of this report.”

”Overall projected recoveries for zircon are within expected range of 65-75%. Projected Ilmenite and rutile recoveries are within the expected range of 60-75% for ilmenite and 50-65% for rutile. Leucoxene recovery is low calculated at 6.7% and predicted at 9.9% and is associated with the loss to the wet concentration plant tailings and is as a direct result of alteration and fine grained nature. Further metallurgical work will be required to optimise these recoveries and evaluate the impact thereof of product production, particularly zircon and HiTi products.”

Page 14 “One of the key issues (risks) associated with the project is the need for a sustainable water supply with Oresome having initially indicated a potential requirement of 6.2 gigalitres per annum.”

Page 14 “A review of relevant publicly available geological and hydrogeological information undertaken by AECOM recommended additional preliminary field investigations to further assess the groundwater resource potential. AECOM (2012) developed a field investigation Even if the targeted aquifer could sustainably produce 5 L/sec, a borefield comprising 40 bores would be required to meet Oresome’s initially indicated supply requirements. As the

⁵ [Annual Report for EL4662 et al for Period Ending 30 September 2012 AUTHOR: BH DUCK FOR ORESOME AUSTRALIA PTY LTD](#)

capital and operational cost associated with such a borefield could outweigh the cost of other potential water source options or combinations of options, Oresome should continue to assess

the likelihood and cost of other potential sources including (but not necessarily limited to):

1. other known groundwater systems located further to the south and west of Oresome's deposit.
2. potential new winterfill entitlements in the Mitchell River
3. supply from East Gippsland Water
4. transfer (purchase) of entitlements from existing licence holders.
5. treated waste water
6. discharge of mine water from the coal operators in the Latrobe Valley via The Saline Water Outfall Pipeline
7. Surface water flows in nearby tributaries that are not part of the Mitchell River catchment.

The above list of options should not be considered exhaustive and/or necessarily feasible. Considerations associated with required quality, reliability of supply, available volumes, cost feasibility and regulatory (and potentially community) acceptability will be important when considering water source options for this project. Combinations of sources should also be considered.”

Page 16 “A risk-based evaluation and documentation of supply and infrastructure options to meet water consumption requirements is considered an important next step in working towards a resolution of water sourcing for this project.”

<https://www.mining.com/web/the-real-cost-of-mining-gold/>

Titanium sample

The Rare Metals Wars – a book by Guillaume Pitron

1.9. Is the proponents claim of the JORC assessment of the ore body accurate? Kalbar's own geologist – a major shareholder - was a contributor to this JORC assessment. But Kalbar have failed to describe that zirconium will not be mined from the blocks between or within mine pits, and that the slimes are too fine to process so the zircon they hold will be lost. What is the actual thickness of the Marker layer ? The latest test bores did not intercept slimes in all drill holes – an indication that the orebody may be discontinuous.

EVIDENCE Cross section of mine

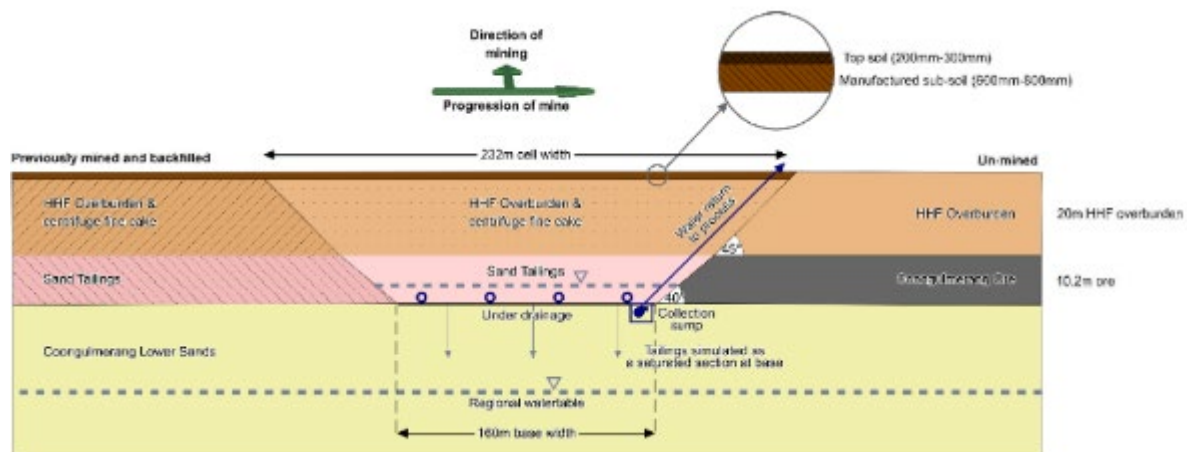


Figure 3: Schematic rehabilitation cross section of the mine void from Page 9.1 of Document 215 - Updated Draft Mine Rehabilitation Plan

“The project will be mined by progressive open-cut mining methods, with progressive mining, backfilling, and rehabilitation as shown in the cross section pictorial representation in (Figure 9-4: Schematic rehabilitation cross section of the mine void). The mining operations area is approximately 9 km across, with maximum mining depth of 50 m. The mine void will average 30.2 m deep. The greatest depth of mining will be along the southern part of the deposit as the deposit dips to the south. All mining will occur above the regional water table and no dewatering is required. The wall angle of the mine void will be approximately 40 - 45 degrees.”⁶

Bore log

1.10 Mr Morris has made an incorrect and misleading claim regarding compensation for dust and referred to Section 84 of MDRS Act.

No direct engineering or scientific relationship exists between the mine site dust monitors and dust deposition observed on the horticultural area.

EVIDENCE:

Explanation on white board.

Wine bottle dust collection from Costerfield mine site.⁷

⁶ Tabled Document 215a_updated Draft Mine Rehabilitation Plan- 24 March 2021 Appendix C to revised Work Plan Page 9-1

⁷ <http://costerfieldantimonyissues.blogspot.com/p/dust.html>



Figure 4: All too typical dust monitoring station

EVIDENCE –

Section 84 of mining Act.

<p>Section 84 (1) Compensation is payable by the licensee to the owner or occupier of private land that is land affected for any loss or damage that has been or will be sustained as a direct, natural and reasonable consequence of the approval of the work plan or the doing of work under the licence including—</p>	<p>Section 84 (1A) Compensation is payable by the licensee to the owner or occupier of private land that is not land affected for any loss or damage that has been or will be sustained as a direct, natural and reasonable consequence of the approval of the work plan or the doing of work under the licence including—</p>
<p>(a) deprivation of possession of the whole or any part of the surface of the land; and (b) damage to the surface of the land; and (c) damage to any improvements on the land; and (d) severance of the land from other land of the owner or occupier; and (e) loss of amenity, including recreation and conservation values; and (f) loss of opportunity to make any planned improvement on the land; and (g) any decrease in the market value of the owner or occupier's interest in the land; and h) loss of opportunity to use tailings disposed of with the consent of the Minister under section 14(2).</p>	<p>(a) damage to the surface of the land; and (b) damage to any improvements on the land; and (c) severance of the land from other land of the owner or occupier; and (d) loss of amenity, including recreation and conservation values; and (e) loss of opportunity to make any planned improvement on the land; and (f) any decrease in the market value of the owner or occupier's interest in the land.</p>

86 When a claim can be made

A claim for compensation for any loss or damage under section 85 which is not the subject of a registered compensation agreement may be made at any time until the end of the period of three years—

(a) after the loss or damage occurred; or

(b) after the licence expires—

whichever is the earlier.

87 Compensation agreement

(1) The licensee and the owner or occupier of land to which this section applies may enter into a written agreement as to the amount or kind of compensation payable by the licensee for any loss or damage that has been or will be sustained as a direct, natural and reasonable consequence of the approval of the work plan or the doing of work under the licensee's licence.

(2) The licensee must lodge an agreement under subsection (1) with the mining registrar for registration.

The structure of the Act makes it impossible to recognise all forms of loss that can/will be experienced by other landholders, and limits time for claim to three year post event, when many events could take a far longer period to become evident. Further, although the act allows for compensation agreements, they rely on the landholder being able to anticipate the type of 'damage' or 'impacts' from the mine. It is unlikely that any landholder who has never experienced a mine before would be aware of the potential impacts – let alone what they must do to seek redress even if a compensation agreement is in place.

1.11 What capacity does the Mining Warden have to settle claims ?

There have been many tens of claims for blasting damage - to BDEC's knowledge none were settled.

EVIDENCE – Elda Poletta described the role and powers of the mining warden in the Australian Resources and Energy Law Journal.⁸

1.12. Mr. Morris has claimed the ERC will offer influence to community.

That has not been BDEC's experience. Companies close meetings to the public and only permit screened members to enter meetings. ERR terminated the Bendigo ERC, despite EES's stipulated a role for ERC's in rehabilitation.

1.13. There is no provision for ' Care and maintenance ' in the MDRS Act (1990). How can it then be written into an EES or Work Plans?

⁸ <http://www.austlii.edu.au/au/journals/AURELawJl/2007/61.pdf>

1.14. The proponent has placed significant reliance on a 10 tonne sample for almost all technical Assessments - Where are the documents to demonstrate provenance and chain of custody for this sample?

1.16 Kalbar technical resources. Does Kalbar have an suitably experienced Mining Engineer or Geologist?

1.17 Katestone's dust calculations are flawed and the published format has been prepared to mislead. Kalbar has directed the consultant to use an irrelevant model, the NPI manual for dust generated at coal mines and Katestone have used the empirical formulas within that manual. There is no provision for PM10 dust from the mine pits. A quantum allowance (reduction) has been made for dust suppression with water when the source of this water is not defined. Katestone avoided recognition of the HMC stockpiles at the loading dock and the strategic marketing storage of 500,000 tonnes of HMC, which has caused a failure in the assessment of airborne dust and a failure in the assessment by SGS of airborne radionuclides. There has been a further underestimation of dust on the minesite as the number of machines (<20) used by Katestone in its calculations⁹ (on the basis of information provided by Kalbar) is substantially lower than the number (>50) Kalbar are actually going to use¹⁰ (according to their Work Plan).

1.18. It is not practical to use silos (around 200 silos 15 metres high would be required at an estimated cost of \$40million) until the HMC is reduced to 5-7% water content for storage and handling.

1.19. The human Health Risk Assessment does not contain an assessment for toxicity from the occurrence of a combination of heavy metals in the ore body.

1.20. Mr. Morris says the IAC is not to make comment on the viability of the ore body but that this task must be left to ERR. Why should the IAC leave this task to ERR, when ERR have made an incorrect assessment in more than 90% of cases since 1980?

Furthermore the viability of the ore body is a critical consideration in determining the 'socio-economic effects, at local and regional' and indeed state scales¹¹ in particular

⁹ Air Quality and Greenhouse Gas Report Table H2 Utilisation rates for equipment and machinery page 212

¹⁰ Workplan Tabled Document 197a Table 4.3 page 4-19

¹¹ Fingerboards EES Final Scoping Requirements page 2

when considering the 'predicted economic costs and benefits'¹² which should include the cost of abandonment of the mine.

¹² Ibid p15

2 - SITE DEVELOPMENT - SITE MONITORING.

2.1. The fragile geology of the Fingerboards site. The Haunted Hills formation. Map of Fingerboards project area with Haunted Hills formation as an overlay.

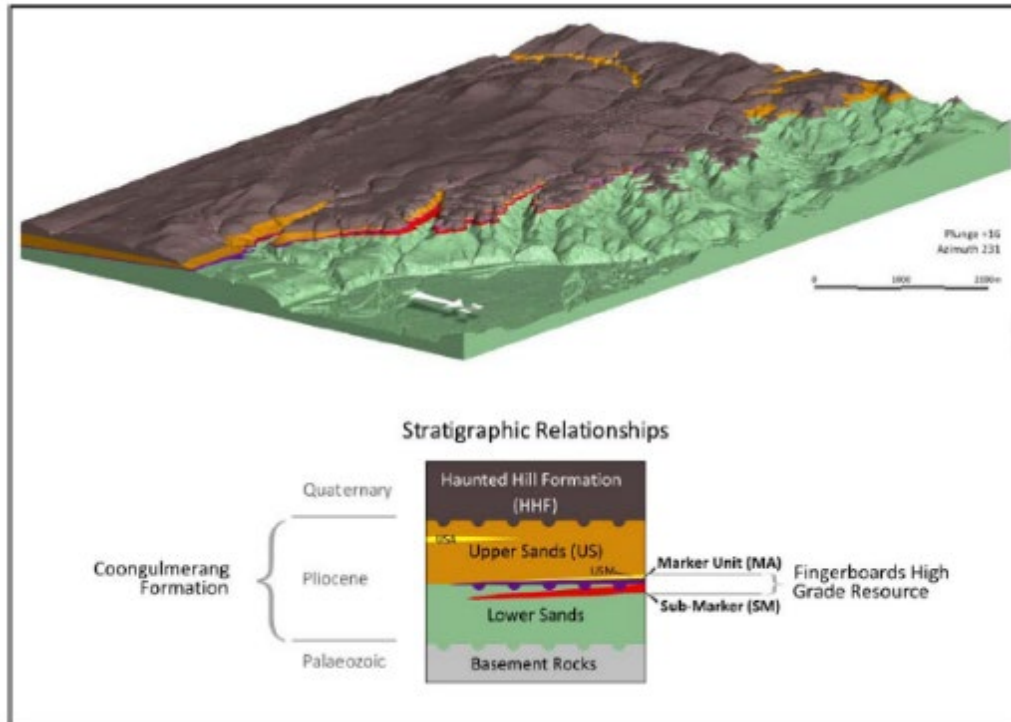
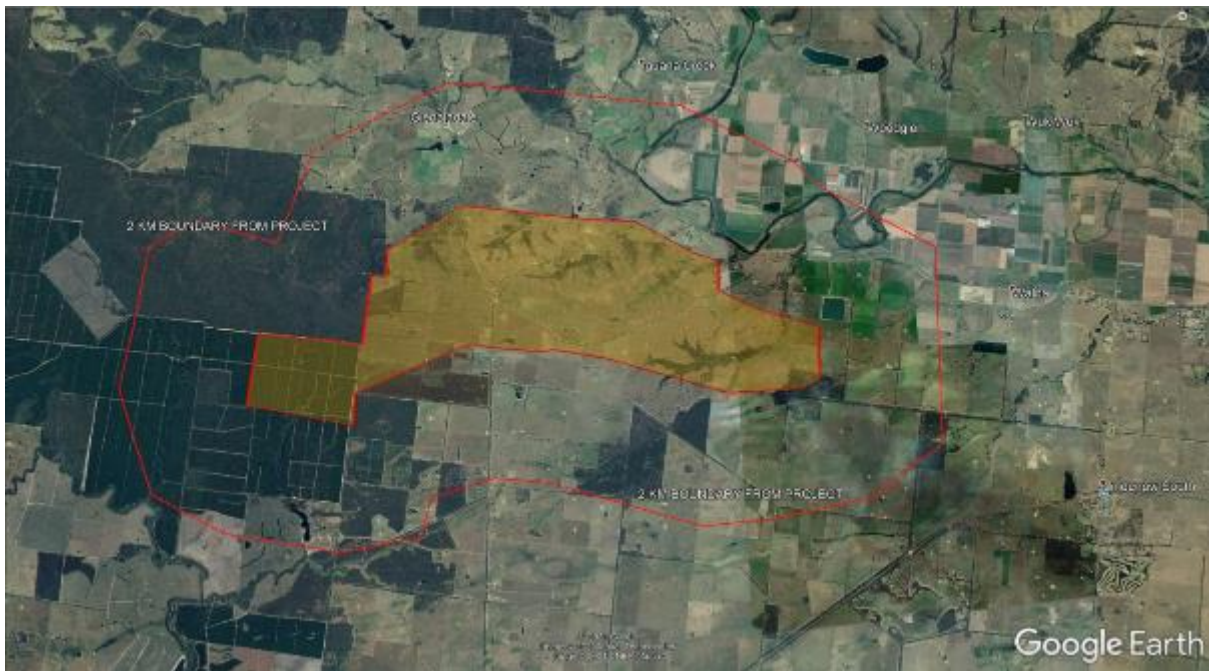


Figure 5: Figure 3.4 Draft Work Plan

2.2 Proponents typically require immediate total clearing of the site to demonstrate occupancy to investors. At Bendigo 12 km of chain mesh and razor wire was used to exclude the public and regulators. Creating a moonscape removes the seedbank and root stock and denies the opportunity for natural regeneration of native vegetation. The first and successive mine pits will be sited for the most immediate financial gain rather than the sequential development of mine pits described in the marketing literature. Overburden is likely to be stored on private property which borders the project area to avoid double handling.

EVIDENCE –

The orange/brown shading indicates the clearing/desecration of the farming area which would occur within weeks of a mining licence being issued. The 2 km halo around the project area indicates those properties most at risk of legal placement of overburden under local government. (excepting of course that it may not be permitted by the MDRS Act or the Work Plan).



Photos of natural revegetation





The information below is from the Oresome 2012 report. Table 4.3 shows the mining blocks Oresome produced and the % of resource in each. There is marked variability across the project area. The percentage of slimes accounted for in each year in Table 4.4 indicates which block is being mined.

Table 4.3: Mineral Resource Above a Cut-Off of 1% HM

Item	Unit	Mining Block									Total
		2	3	4	1	8	6	5	9	7	
Whittle	Shell	65	65	65	70	65	65	65	65	65	
Total	Mt	53.1	24.2	10.5	22.6	38.4	22.2	147.6	41.1	94.2	453.9
Ore	Mt	20.5	13.7	4.9	11.6	8.3	16.1	104.0	14.9	69.3	263.4
Slimes	%	21.8	20.4	25.0	22.1	20.8	24.5	27.0	22.6	24.8	24.8
HM	%	4.5	3.2	3.6	3.1	4.0	2.2	2.5	2.8	2.2	2.7
Zircon	% of HM	21.8	19.4	20.3	18.7	21.3	15.9	13.0	19.3	13.2	16.0
Rutile	% of HM	6.3	5.8	5.9	5.5	6.2	4.9	3.7	5.6	3.7	4.6
Leucoxene	% of HM	11.5	12.9	12.2	13.1	11.9	14.6	15.5	13.0	14.5	14.0
Ilmenite	% of HM	37.4	36.2	36.5	35.5	37.2	34.1	31.5	35.9	31.9	33.6
HMCn.	kt	675	326	130	263	248	262	1,923	302	1,109	5,237
Zircon	kt	146.2	63.1	26.2	49.0	52.5	41.5	249.3	58.2	146.1	832.1
Ilmenite	kt	184.3	86.1	34.5	68.1	67.2	65.0	442.4	79.2	257.8	1,284.6
HyTi70	kt	19.7	9.2	3.7	7.2	7.2	6.9	43.9	8.4	25.0	131.1
HyTi80	kt	74.1	36.7	14.2	29.2	27.4	29.8	209.8	33.7	116.1	571.0

Table 4.4 from Oresome Report shows mining schedule over 20 years. Mining starts in Block 2. Note the first five years focus on getting maximum return as soon as possible to repay capital. Also note the rapid drop off in zircon (the most valuable component after year 4 (comparative to total material mined. Also note that early years have highest dust burden yet in their model Kalbar has not done any modelling for the years prior to year 5.

Mining Schedule

Year	Total Mt	Ore Mt	Slimes %	HM %	Zircon % of HM	Rutile % of HM	Leucoxene % of HM	Ilmenite % of HM	HM Con. kt	Zircon kt	Ilmenite kt	HyTi70 kt	HyTi80 kt
1	20.0	7.7	21.8	4.5	21.76	6.33	11.50	37.44	254	55.0	69.3	7.4	27.9
2	20.0	7.7	21.8	4.5	21.76	6.33	11.50	37.44	254	55.0	69.3	7.4	27.9
3	24.3	11.4	21.0	3.8	20.67	6.08	12.17	36.86	317	65.2	85.2	9.1	35.2
4	21.5	11.4	22.0	3.4	19.76	5.83	12.65	36.31	280	55.2	74.3	7.9	31.3
5	29.8	13.7	22.2	3.2	19.13	5.59	12.88	35.78	321	61.2	83.9	8.9	35.7
6	42.1	13.7	22.6	3.2	19.51	5.76	12.77	36.14	319	62.0	84.2	9.0	35.7
7	19.0	13.7	25.2	2.3	14.97	4.48	14.88	33.24	231	34.5	56.1	5.8	26.0
8	19.4	13.7	27.0	2.5	13.01	3.66	15.49	31.53	253	32.8	58.2	5.8	27.6
9	19.4	13.7	27.0	2.5	13.01	3.66	15.49	31.53	253	32.8	58.2	5.8	27.6
10	19.4	13.7	27.0	2.5	13.01	3.66	15.49	31.53	253	32.8	58.2	5.8	27.6
11	19.4	13.7	27.0	2.5	13.01	3.66	15.49	31.53	253	32.8	58.2	5.8	27.6
12	19.4	13.7	27.0	2.5	13.01	3.66	15.49	31.53	253	32.8	58.2	5.8	27.6
13	19.4	13.7	27.0	2.5	13.01	3.66	15.49	31.53	253	32.8	58.2	5.8	27.6
14	19.4	13.7	27.0	2.5	13.01	3.66	15.49	31.53	253	32.8	58.2	5.8	27.6
15	32.2	13.7	23.9	2.7	17.50	5.05	13.69	34.63	270	47.1	68.3	7.1	30.0
16	26.2	13.7	23.9	2.4	15.99	4.59	13.78	33.69	242	38.6	59.5	6.0	26.1
17	18.6	13.7	24.8	2.2	13.23	3.73	14.46	31.88	219	28.8	50.9	4.9	22.9
18	18.6	13.7	24.8	2.2	13.23	3.73	14.46	31.88	219	28.8	50.9	4.9	22.9
19	18.6	13.7	24.8	2.2	13.23	3.73	14.46	31.88	219	28.8	50.9	4.9	22.9
20	18.6	13.7	24.8	2.2	13.23	3.73	14.46	31.88	219	28.8	50.9	4.9	22.9
21	8.6	6.3	24.8	2.2	13.23	3.73	14.46	31.88	101	13.3	23.5	2.3	10.6

2.3 Adjacent agriculture will be negatively affected by the change in microclimate resulting from the increase in windspeed by the removal of tree lines on roads and the higher soil surface temperature on denuded surfaces.

EVIDENCE –

[CSIRO document.](#)

Characterisation of a windbreak system on the south coast of Western Australia. 1. Microclimate and wind erosion

R. A. Sudmeyer and P. R. Scott

Australian Journal of Experimental Agriculture 42(6) 703 - 715

Published: 15 October 2002

Abstract

The lack of data relating changes in microclimate and wind erosion to crop growth in shelter is a constraint to the adoption of windbreak systems in Australia. In this experiment microclimate and soil movement were measured in a 450 m wide bay between 2 *Pinus pinaster* windbreaks in south-western Australia over 4 years. Changes in wind speed and microclimate as a result of wind shelter varied spatially and temporally. When the wind direction was perpendicular to the windbreaks, wind-run reductions greater than 20% extended 18 times the height of the windbreak (H) downwind. However, over the whole growing season wind-run reductions greater than 20% only extended 3–6 H from the windbreaks, and were confined to within 4 H over the whole year. Over the growing season, atmospheric vapour pressure and average daily temperature and potential evaporation in the most sheltered part of the windbreak bay were generally within ± 5 –10% of unsheltered values. While growing conditions were generally improved, there were periods at the end of the growing season when sheltered crops experienced increased air temperatures and vapour pressure deficit.

The principal benefit of the windbreaks appeared to be reducing wind speed during periods with short duration erosive winds. More than 1 H from the windbreaks, wind erosion was reduced for 36 H downwind of the windbreak that provided most shelter during the period of maximum soil movement. Browsing stock increased the porosity of the lower 1.5 m of the windbreaks, which allowed wind to funnel under the windbreaks. This study highlights the difficulty of maintaining constant shelter in an environment where the prevailing wind direction changes throughout the year and the need to orient windbreaks to provide shelter during those times when strong winds are most damaging to soils or crops.

2.4 The selection of the monitoring equipment, the conduct of the monitoring activity, the chain of custody of samples and the selection of laboratories are activities by the proponent. The BDEC's observation is this often leads to corruption of samples.

2.5 The definition of coarse and fine sand, silt and clay by particle size. Can Kalbar source spirals with the capacity to differentiate Fingerboards ore to 38 micron. The WIM EES and several other mineral sands projects in the Wimmera have stalled in their development. There is speculation the design of a processing plant to handle the abundance of fine material in the ore has restricted progress.

EVIDENCE –

Figure 5 is from <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/spiral-concentrators>

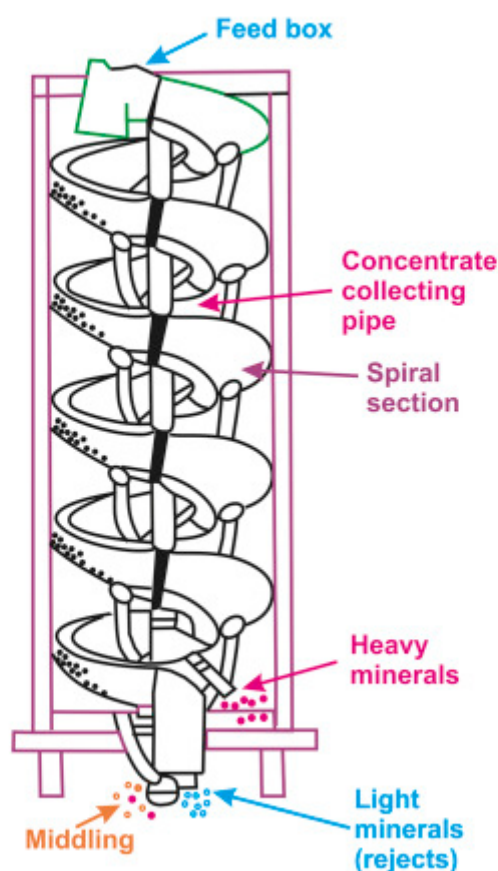


Figure 6: Sketch of standard spiral concentrator¹³

2.6. The ecological risks to RAMSAR wetlands at Corner Inlet and the Gippsland Lakes as required to make an EPBC determination have not been specified. Catastrophic failure of the water dam or mine voids at Fingerboards have not been adequately described so that the disturbing actions on the Gippsland Lakes can be considered.

¹³ <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/spiral-concentrators>

2.7 There is no bulk handling facility at Corner inlet. Corner Inlet with a vessel limit of around 10,000 tonnes would require a 3 to 5 day ship turnaround and cannot be accessed in certain tide conditions.

2.8 The Ecology Assessment by Aaron Organ is not fit for purpose. His company has a conflict of interest in seeking offsets for commercial transactions. He has not provided due diligence to the range of ecological services e.g. bio-links provided by the Fingerboards landscape.

EVIDENCE –

His internet business website. <https://www.ehpartners.com.au/services/native-vegetation-and-biodiversity-offsets/>

“Our team facilitate smooth navigation through the regulatory environment, provide advice to minimise offset obligations, and manage all stages of the offset process “

Platypus pump inlet protection. platypus.asn.au Section 13. 5% of platypus known mortality from pump inlets.¹⁴



Figure 7: Short finned eel¹⁵

¹⁴ Conserving Platypus and Water-Rats Information and Guidelines. M.Serena and G.A. Williams August 2010 f

¹⁵ <https://www.inaturalist.org/observations/22228846>



Figure 8: White-bellied Sea Eagle¹⁶



Figure 9 There is a platypus colony just close to the proposed pump station¹⁷

¹⁶ From <https://australian.museum/learn/animals/birds/white-bellied-sea-eagle/>

¹⁷ Photo from <https://www.britannica.com/animal/platypus>. Information about colony from interviews with local farmers

2.9. The local road network from Fingerboards to Bairnsdale has not been constructed to a standard where it can service the constant loading of B double road transports. Contractors normally operate at maximum permitted speeds and in cross winds on narrow seal widths this invariably leads to shoulder damage.

Evidence

Parliamentary Road Safety Committee of Victoria: Inquiry into Rural Road Safety and Infrastructure ¹⁸

Local governments often find it is cost effective to recover pavement from sealed roads and convert these roads to gravel surface for the period of a mine operation.

Local Councils generally underestimate the true additional costs of 'hosting' a mine. These include miners not paying rates to cover the costs of damage to local roads and overuse of tips.

EVIDENCE – Wentworth Shire suing Cristal Mining for reimbursement of costs
<https://www.abc.net.au/news/2013-06-28/wentworth-shire-suing-miner-for-millions/4787782>

2.10. Kalbar's water requirement, as defined by their own documentation, will be greater than 7Gigalitres/annum as described in our submission 429. Approximately 40 Gigalitres per annum will be pumped with the ore from mine voids. As this water is returned to the mine voids with coarse sand and centrifuge "cake" more than 90 % of this water will need to be recovered from spirals and the base of pit drainage if a water balance of 3 Gigalitres make up was to be attained.

This is delusional.

EVIDENCE - Sketch will be prepared on whiteboard.

2.11. Dustex is not compatible with dump truck movement over unconsolidated dispersive soils.

EVIDENCE –

[Dustex catalog](#)
[Dustex applications presentation](#) ¹⁹

¹⁸ https://www.parliament.vic.gov.au/archive/rsc/rural/report/RSC%20REPORT-07.htm#P1766_183248

¹⁹ Dustex: The Australian Experience from http://www.dustex.com.au/wp-content/uploads/2016/09/Dustex_The_Australian_Experience.pdf

3 - WORK PLAN

3.1 An explanation of dry mining. Wet mining may use water jets.

3.2. The energy requirement to lift ore from a 40m pit and transport to the processing plant and return to the mine voids by a de-watering process such as centrifuges or cyclones is not compatible with an ore value of \$27.

3.3 A sketch of the mine pit adapted from Appendix C. Page 119. Schematic 9-3. This describes the mine pit with inclusion of HDPE membrane, drain pipes and geotextile socks. Recharge of aquifers will not occur with this model. Mine voids will not dry for timely placement of overburden.

EVIDENCE – Sketch of mine pit

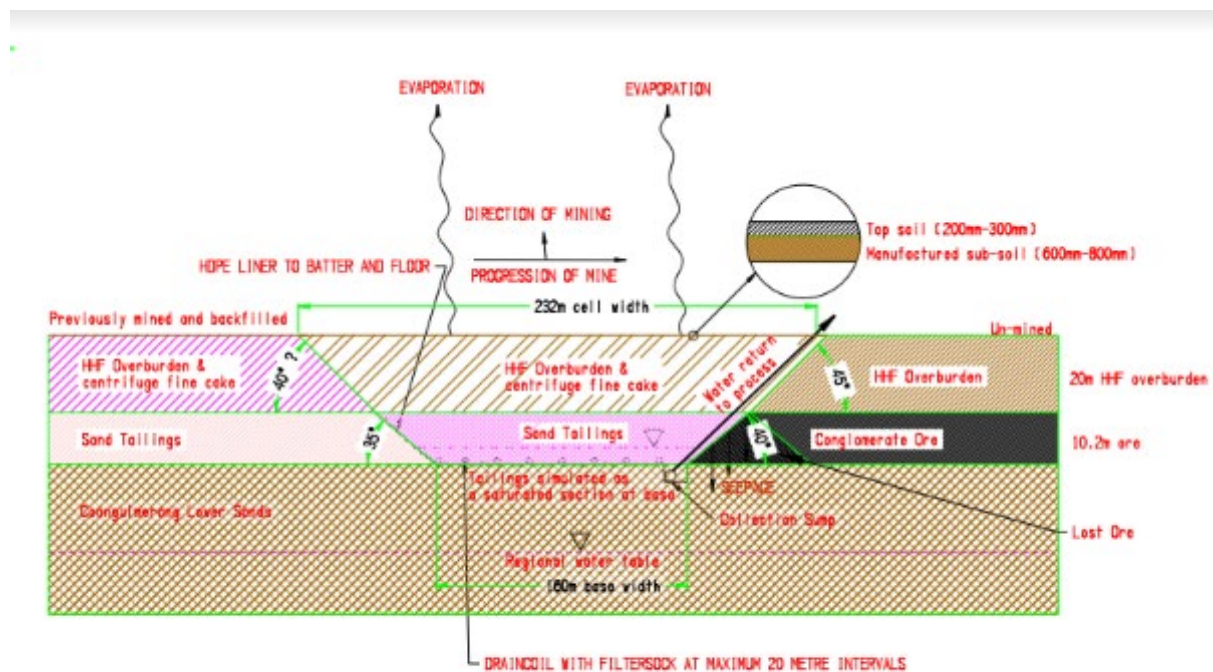




Figure 10: D10 Caterpillar Dozer

Katestone have not allowed for dust generation from fracture the of ground structure under the track loading of dozer on the pit walls and the fracture of access ramps under dump truck tyre load.



Figure 11: Komatsu Dump Truck

3.4. The GHD Starter pit report describes a slope of 1:2 rather than 1:1 in Kalbar's Work Plan. A 1:1 slope would be considered unachievable for most machines and operators and dangerous.

EVIDENCE –

According to the Caterpillar Performance Handbook Edition 29 ²⁰operator manual, "Extreme slope operation is anytime the slope exceeds 25° (47%)."

3.5. Mr. Morris claimed that the Kalbar test pit would be "about 30 metres deep." The document lodged with ERR specifies 12 metres. This will not be adequate to assess pit wall slopes or stability in various weather and will not provide guidance on the likely strata to be encountered. i.e. silt or gravel.

3.5 Mounding beneath a mine pit can rise to intercept pit base. Mounding occurred at the Woodvale tailings dam site and caused dam 6 to be abandoned. A toxic plume from dam 6 is now within 200m of Myers Creek, a source of irrigation water.

Mounding is also predicted to happen beneath the 'in-pit' tailings storage facilities. No assessments have been made of the hazards associated with this type of tailings storage (including with the addition of unprecedented quantities of flocculants that break down in anaerobic conditions). Neither the EPA, nor Earth Resources appear willing to take responsibility for regulating in-pit TSFs.

3.6. The Air Quality and Greenhouse Gas Assessment by Katestone is not fit for purpose. It uses a totally inappropriate model from the NPI manual with an empirical formula derived from observations at an underground long wall coal mine. At coal mines the overburden stockpiles are primarily rock. The assessed dust loadings are further reduced by a 50% or 75% factor for dust suppression by water when Kalbar cannot source water at the volumes that would be required. A more suitable model would come from the observation of the cultivation of broad acre cereal crops in the Mallee before weed sprays and minimum till cropping.

EVIDENCE –

NPI Manual Section 5-2 equations 1 & 2 for PM10 emissions to air.

²⁰ Caterpillar Performance Handbook Edition 29

5.2 General equations for estimation emissions to air

Emission factors can be used to estimate emissions of TSP and PM₁₀ to the air from various sources. Emission factors relate the quantity of a substance emitted from a source to some measure of activity associated with the source. Common measures of activity include distance travelled, quantity of material handled, or the duration of the activity.

Emission factors are used to estimate a facility's emissions by the general equation:

$$E_i(\text{kg/yr}) = [A_{(t/h)} \times OP_{(h/yr)}] \times EF_{i(\text{kg/t})} \times \left[1 - \frac{CE_i}{100} \right] \quad \text{Equation 1}$$

where:

- $E_i(\text{kg/yr})$ = emission rate of pollutant i, kg/yr
- $A_{(t/h)}$ = activity rate, t/h
- $OP_{(h/yr)}$ = operating hours, h/yr
- $EF_{i(\text{kg/t})}$ = uncontrolled emission factor of pollutant i, kg/t
- CE_i = overall control efficiency for pollutant i, kg/t

If no emission controls are used, Equation 1 reduces to

$$E_i(\text{kg/yr}) = [A_{(t/h)} \times OP_{(h/yr)}] \times EF_{i(\text{kg/t})} \quad \text{Equation 2}$$

For fugitive emissions of particulate matter and metals, uncontrolled emission factors are provided in Sections 5.3.1 and 5.3.2 of this manual. Emission reduction efficiencies for a range of dust control measures are provided in Section 5.4. Controls are multiplicative when more than one control is applied to a specific operation or activity.

For example, using controls from Table 4, water sprays used in conjunction with wind breaks give an emission that is $(1 - 0.5) \times (1 - 0.7) = 0.15$ of the uncontrolled emission.

Table 4: Estimated control factors for various mining operations

Operation / Activity	Control method and emission reduction†
Coal Mines	
Scrapers on topsoil	50% control when soil is naturally or artificially moist
Dozers on coal or other material	No control
Drilling	99% for fabric filters
	70% for water sprays
Blasting coal or overburden	No control
Loading trucks	No control
	50% for level 1 watering (2 litres/m ² /h)
	75% for level 2 watering (> 2 litres/m ² /h)
Hauling	100% for sealed or salt-encrusted roads
	70% for water sprays
Draglines	Control dust by minimising drop height
Loading stockpiles	50% for water sprays
	25% for variable height stacker
	75% for telescopic chute with water sprays
	99% for total enclosure
Unloading from stockpiles	50% for water sprays (unless underground recovery then, no controls needed)
	50% for water sprays
Wind erosion from stockpiles	30% for wind breaks
	99% for total enclosure
	30% for primary earthworks (reshaping/profiling, drainage structures installed)
	30% for rock armour and/or topsoil applied
Loading to trains	70% for enclosure
	99% for enclosure and use of fabric filters
Miscellaneous transfer and conveying	90% control allowed for water sprays with chemicals
	70% for enclosure
	99% for enclosure and use of fabric filters
Wind erosion	30% for primary rehabilitation
	40% for vegetation established but not demonstrated to be self-sustaining. Weed control and grazing control.

Figure 12: NPI Emissions Manual Section 5-3 Table 4 - Estimated control factors for various mining operations

2009 dust storm in Sydney https://en.wikipedia.org/wiki/2009_Australian_dust_storm
 In 2009 dust from a massive dust storm originating in central Australia reached, within 3 days, as far away as New Zealand.

The [CSIRO](#) estimated that the storm carried some 16 million tonnes of dust from the deserts of Central Australia,^[14] and during the peak of the storm, the Australian continent was estimated to be losing 75,000 tonnes of dust per hour off the NSW coast north of Sydney.

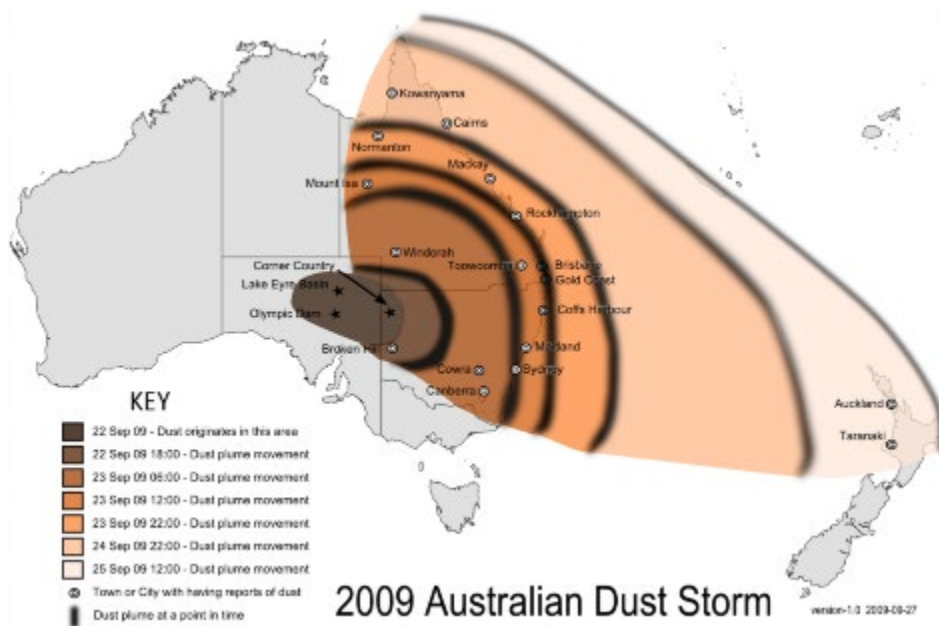


Figure 13 Map of Australia and New Zealand showing the progress of the dust affected area and dust plume at various intervals²¹

Costerfield mine - images of dust in inversion layer above mine site



3.7. Katestone did not include the data required in the NPI Manual for Volatile Organic Compounds - VOC's or unburnt fuel.

²¹ https://en.wikipedia.org/wiki/2009_Australian_dust_storm#/media/File:2009_Dust_Storm_-_Australia_and_New_Zealand_Map.png

3.8. The use of centrifuges. Most centrifuge knowledge is based on fixed bowl rather than continuous flow machines. The Alfa Laval centrifuge model P3-10070 is not cable of handling Kalbar slimes with particles sizes up to 38 um. P3-10070 is designed for tar sands with silt and kaolin with particle sizes primarily below 20um. Kalbar slimes contain the abrasive zircon. When mine tailing sand has been processed in a P3-10070 this sand is from a crusher and uniform in size. A minimum of 10 centrifuges would be required. The energy requirement of the centrifuge increases with the particle size so capacity with Kalbar slimes would be less than 40 tonnes/hour/centrifuge. P3-10070 has 150 hp motor for the core drive and a 150-450hp variable speed motor for the outer screw drive. With a naturally varying product such as Kalbar slimes there would be inherent risk in managing the feed streams to centrifuges and the consequent risk of a lock up. The switch gear and the algorithms in individual motor controls would not be able to handle starting currents at two or more centrifuge plant installations with a consequent risk to the integrity of the power grid.

Noise test sheets indicate that the noise test was done with the centrifuge empty and the inlet and outlet sealed. In operation 5 centrifuges would produce 110-120 dB.

EVIDENCE –

Measurement Condition:			
Manufacturing no:	<u>5026624</u>	Spec. Number:	<u>9630605235</u>
Design code:	<u>-</u>		
Bowl Speed:	<u>1875</u> RPM	Flow Rate:	<u>20</u> m ³ /h.
Solids discharge outlet and liquid outlet closed.		Closed connection to the water tank system.	
Test location:			
Test cell	<u>P15</u>		
Length:	<u>12.2</u> m.	Floor Area:	<u>88</u> m ² .
Height:	<u>6.9</u> m.	Room Volume:	<u>606</u> m ³ .
Width:	<u>7.2</u> m.		

[Alfa Laval catalog.](#)

Whiteboard.

3.9. Pile foundations would be required at each centrifuge location and for most tanks at the processing plant at considerable cost.

3.10. There is insufficient volume in Perry Gully for 4 months storage of coarse sand and slimes. This storage could only be achieved with an upstream lift dam. As there is no base of pit drain for water recovery most of one years allocation of water would be sacrificed at Perry Gully in the first 4 months.

3.12 An image from the Sydney Morning Herald of an upstream tailings dam failure at Cadia. The failure was attributed to the existence of a low density foundation layer in the vicinity of the slump.



Figure 14: Upstream failure - Cadia dam Sydney Morning Herald March 2018

EVIDENCE

Australian Mining recently published a guide to the 57 major tailings dam failures that have occurred between 2000 and 2020.²² Failures have caused deaths of both mine workers, destruction of properties and infrastructure - including roads – loss of homes and livelihoods, contamination of crops and polluting slurry flowing for many kilometres (sometimes hundreds) downstream.

The guide mentions:

- the use of inappropriate foundation material,
- and the effects of heavy rain on tailings storage facilities - particularly when subjected to heavy rain, and
- the ban on use of and decommissioning of upstream tailings lift dams.

BHP/Minerals Council publication.

²² Decipher A chronology of major tailings dam failures 2000-2020 accessed from <https://www.australianmining.com.au/whitepaper/57-major-tailings-disasters-since-2000-free-guide/>

Drone image of Stawell TSF



EPA S20 notices Stawell.

Stawell Newspaper report failure TSF 1.

Drone image TSF2 with supplementary dam.

Jeremy Buckingham video about the Cadia tailings dam failure
(<https://www.youtube.com/watch?v=dDU1tS5zUwI>)

3.13. The clay depth to line significant dams is described in the GHD Starter Pit Report. This would require the import of clay.

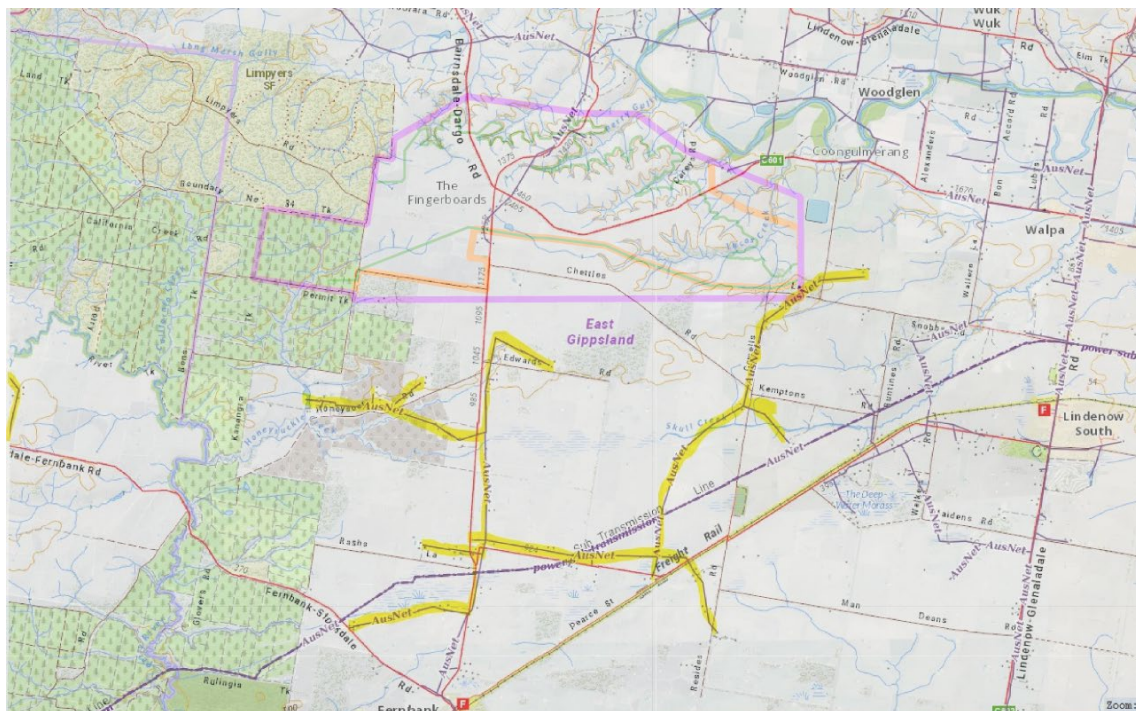
EVIDENCE - GHD Starter Pit Report.

3.14. The diversion of Honeysuckle Creek is not practical. The upstream catchment is too significant to be diverted in to a channel or pipe.

3.15. There is no gain in the area to mine from constructing road deviations. The settlement risk of road formations constructed on mine voids would require any new road construction to be on an undisturbed pillar.

3.16. Kalbar have not provided due diligence in their estimate of electrical power requirement. There will be a significant cost in the construction of a new 66kv route from Fingerboards to Bairnsdale. There will be a security risk to the grid from start up and close down of centrifuges and a lock up event.

EVIDENCE - Map of Ausnet grid - 12.7kV Single Wire Earth Return (SWER) lines have been marked with a yellow highlighter. 22kV lines are thin purple. There are only two 66kV lines into Bairnsdale. The 66kV line from Maffra is a thicker dotted line. The second 66kV line (from Sale) is well on the other side (South Side) of the Princes Highway.



3.17. Tunnel erosion can be generated on clay or gravel layer at depth.

4 - HUMAN HEALTH RISK

4.1. The SGS Radiation Assessment A00x is not fit for purpose.

It is unclear how SGS developed the Bq level for the Fingerboards HMC.

SGS were either not aware of the draft Work Plan or chose to ignore the presence of HMC at the loading dock and the HMC held in the 500,000 tonne stockpile waiting market opportunities. The proponent is now suggesting that the 500,000 tonne stockpile would be stored in bins. Approximately 200 storage bins each of 1250 cubic metres would be required as a permanent installation and with associated conveyor systems this would be a capital investment of about \$40 million.

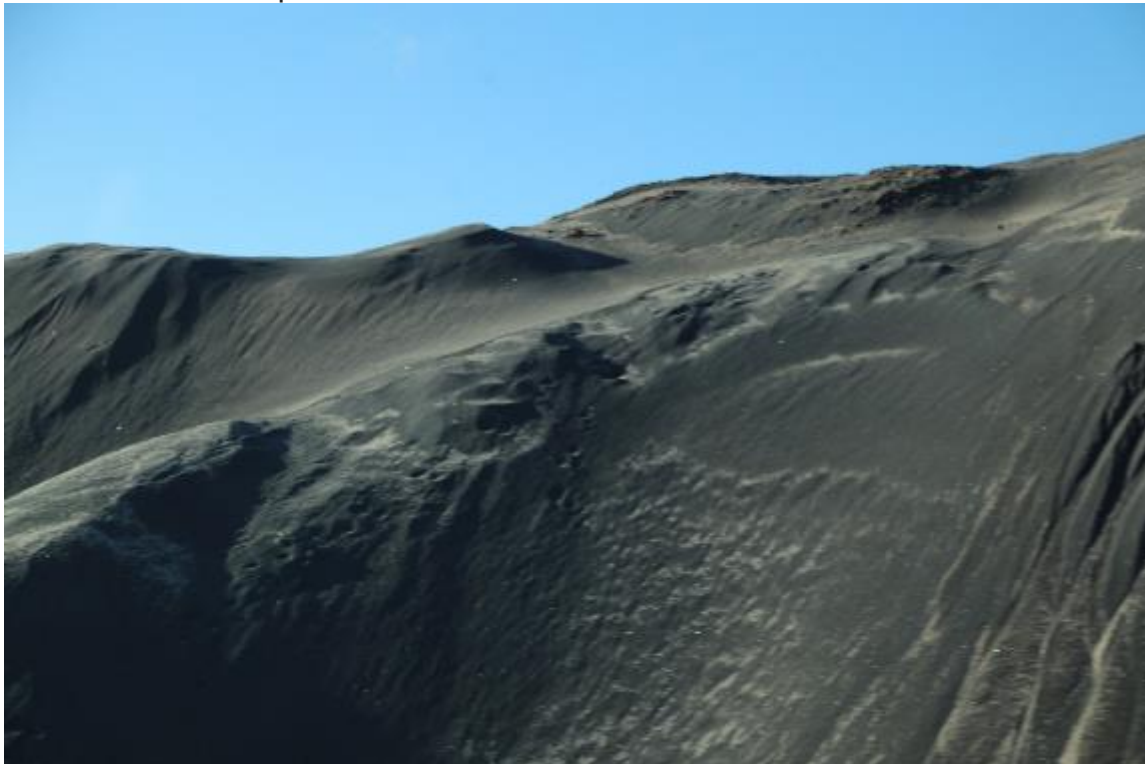
Accumulation of radon gas in the bins would be a safety issue for staff required to enter these bins to free blockages. There is no evidence as to how HMC would be dried to a 7% moisture content for bulk loading in to shipping containers or storage bins. Air drying as per the WA example would create an extreme radiation risk to workers “conditioning” the HMC due to the presence of the monazite.

EVIDENCE –

Table with specific gravity of silica, monazite and zirconium.

Material	Specific Gravity	
Silica	2.2 – 2.3	
Zircon	3.93 - 4.73	
Monazite	4.6 – 5.7	

Photos of HMC stockpile W.A. Tabled document 313.





A CULTURE OF INTEGRITY

SGS PRINCIPLES OF INTEGRITY

- **Trust:** this is our single most valuable asset, the foundation of our brand and reputation. Customers rely on our integrity and this trust needs to be nurtured and safeguarded day after day. It can be jeopardised in an instant.
- **Honesty and transparency:** in everything that we do, we need to be truthful to ourselves, our customers and colleagues. No circumstances justify lies, deceit or a lack of honesty.
- **Accountability:** each of our actions and omissions has consequences. We accept the consequences of our choices and do not blame others for our actions.
- **Principles:** we believe in acting ethically, in fairness and respect for others. Our decisions will be guided by respect for principles and standards of good behaviour, not by arbitrary choices or personal preferences.

ASK YOURSELF THE RIGHT QUESTIONS

- Do I suspect that the particular course of action may be illegal or unethical?
- How would this look if this decision were reported in a newspaper, or if I were to talk about this with my family and friends?
- Does the proposed course of action involve lying or being untruthful?
- Could the proposed course of action endanger the personal safety or health of others?
- Could the proposed course of action damage SGS or its reputation?
- Does the transaction have a legitimate business purpose?

If the proposed course of action fails any of these tests, you should seek advice and re-consider your decision.

NO TOLERANCE FOR VIOLATIONS

Any breach of the Code, however small, can harm SGS's reputation and brand and is not tolerated. Violations of the Code will result in disciplinary action, including termination of employment and criminal prosecution for serious violations.

Figure 15: Excerpt from [SGS Code of Conduct](#)

Certified Air Quality Professional (CAQP)



Code of Ethics and Professional Conduct

Certified Air Quality Professional members have a duty:

1. To adopt high ethical and moral standards and act to ensure the dignity, standing and reputation of his or her profession.
2. To act only in areas in which he or she has competence and maintains a commitment to professional development.
3. To work to high professional standards and not compromise his or her professional integrity.
4. To remain objective and truthful in all professional reports, statements or testimony.
5. To strive for the advancement of professional understanding of air quality matters and contribute to the education of others in the Society, in other professions and associations and in the community.
6. To undertake his or her professional work in a manner that will contribute to the conservation or enhancement of the environment.
7. To uphold the safety and health of the community above private or business interests in the performance of his or her professional duties.

Figure 16: Excerpt from the Clean Air Society of Australia and New Zealand [Code of Ethics](#)

4.2. The fresh water storage dam should be correctly titled as a water storage dam. It is not a fresh water dam as it accepts water from the PAF treatment plant and this plant does not remove all metals. The required capacity for 8 months storage would be approximately 4.4Gigalitres as Kalbar’s required water markup is in excess of 6 Gigalitres. (See BDEC supplementary submission 523).

4.3. Kalbar are attempting to construct a “ turkey nest “ dam design on a “ cut and fill” base using dispersive soil treated with lime as the basic construction material. It is unlikely that an ANCOLD certified engineer would attempt such a design. The flood plume from failure of the water storage dam can report to any of five gullies and then to either of the two river systems. As the four cell TSF has now been removed from the Work Plan there is no longer a barrier to a direct discharge east to the Mitchell River channel and this worst case scenario has not been modelled.

EVIDENCE will be presented on the white board



ANCOLD. DELWP. 2015. Guidance on dam safety

BDEC Supplementary Submission 523 includes a reference by an undisclosed author to catastrophic failure of the main water storage dam.

I note the following:

- 1. The modelling seems to have been done some time ago, that is before the TSF's were removed from the mine model. Therefore why was the dam failure modelling not provided along with other models in the water assessment A00? Did Kalbar have something to hide?*
- 2. The consultant appears to have done the modelling correctly in that they have assumed a sudden breach of the dam wall and the loss of most of the water content along with some material from the dam wall. i.e. the worst case. They have also described that the dam will be a turkey nest type structure mainly constructed above the natural surface, so that upon failure most of the water contents are free to discharge.*
- 3. However the consultant appears not to have modelled the obvious route for discharge towards the Perry, or unnamed gullies, east towards the Mitchell River as the consultant suggest the walls of the TSF's would block discharge in this direction. This of course precludes that the TSF's did not fail in a domino mode and add to the overall volume of the discharge. The route modelled is therefore circuitous and mitigates the flood plume somewhat before it reaches the horticultural area and the Mitchell River.*
- 4. If my reading of the contours is correct, and the TSF's are no longer in play, then the model needs to be redone to consider the more direct and most dangerous route to the Mitchell River via the Perry or the other Gully directly to the east.*
- 5. Although the model shows several metres of water could flow over arterial roads no comment of risk to human health is made.*

6. Although the model shows 2 metres or more of water being added to the Mitchell River it makes no finding of risk to human health. What if the Mitchell River was in flood and 2 metres of water was added to the flow ?

7. The model that has been provided shows a substantial risk to the horticulture area on the western bank of the Mitchell River, before the flood plume reaches the Mitchell River, which depending on the disposition of homes is likely to cause risk to human health.

8. Discharge pathways to the gullies in to the east cannot be discounted

9. The model as it exists shows water depths and volumes across the roads that is concerning. A new model on the more direct route is likely to be alarming.

Map of homes on Mitchell River flats at risk from discharge plume. However it is not just 'homes' that are at risk. Significant numbers of people work in the vegetable fields 365 days a year. There are also the issues of flood waters higher than 2m crossing the Dargo Road.



Figure 17: Dam failure has only been modelled for reaching the Mitchell via Moulin Creek. There are other possible paths too that must be considered.

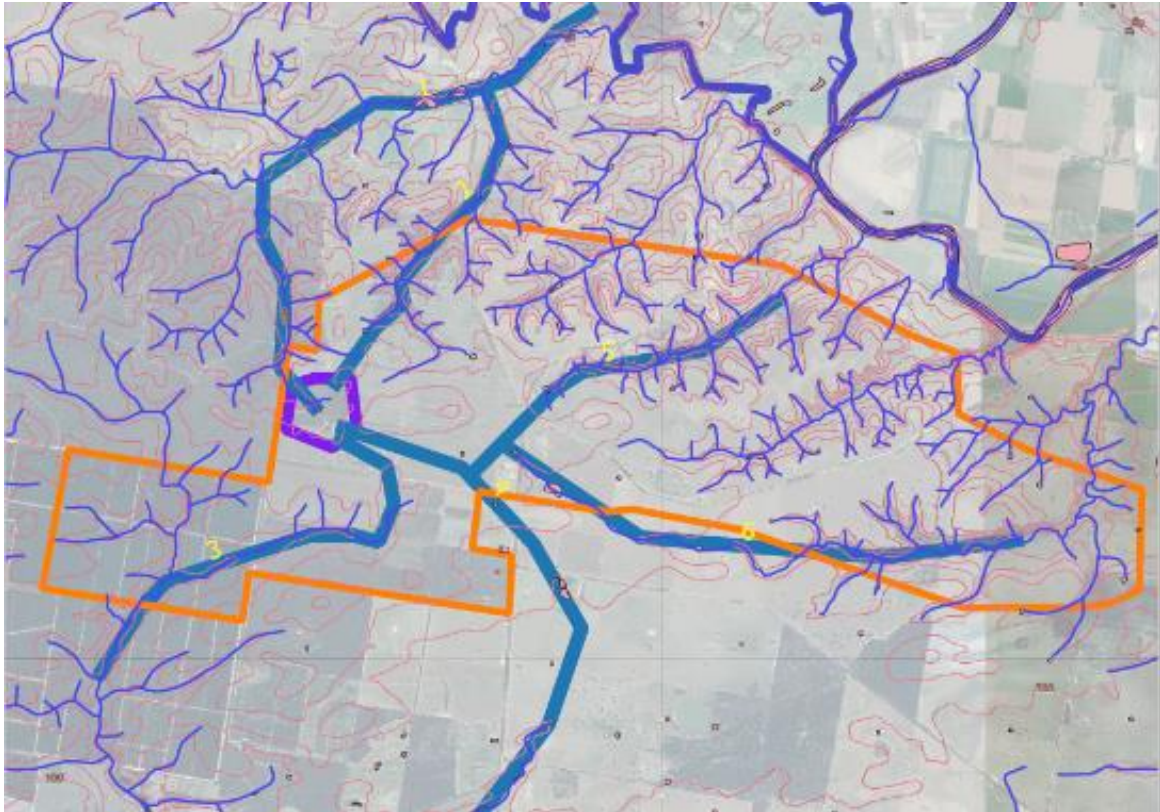


Figure 18: Possible flow paths for 'freshwater' dam failure



Figure 19 Image of gully illustrating how close groundwater is to the surface

4.4. The risk of failure of the tailings dam and water storage dam in Perry Gully and the risk this failure is preceded by the failure of a mine pit wall.
 History demonstrates it is rare for a mining company to pre-release water before a storm. How is it possible to mitigate against intrusion of storm water into the Perry Gully while these dams are under construction

EVIDENCE - Dam design drawings. Perry Gully.



Freshwater Dam from Technical Note 114

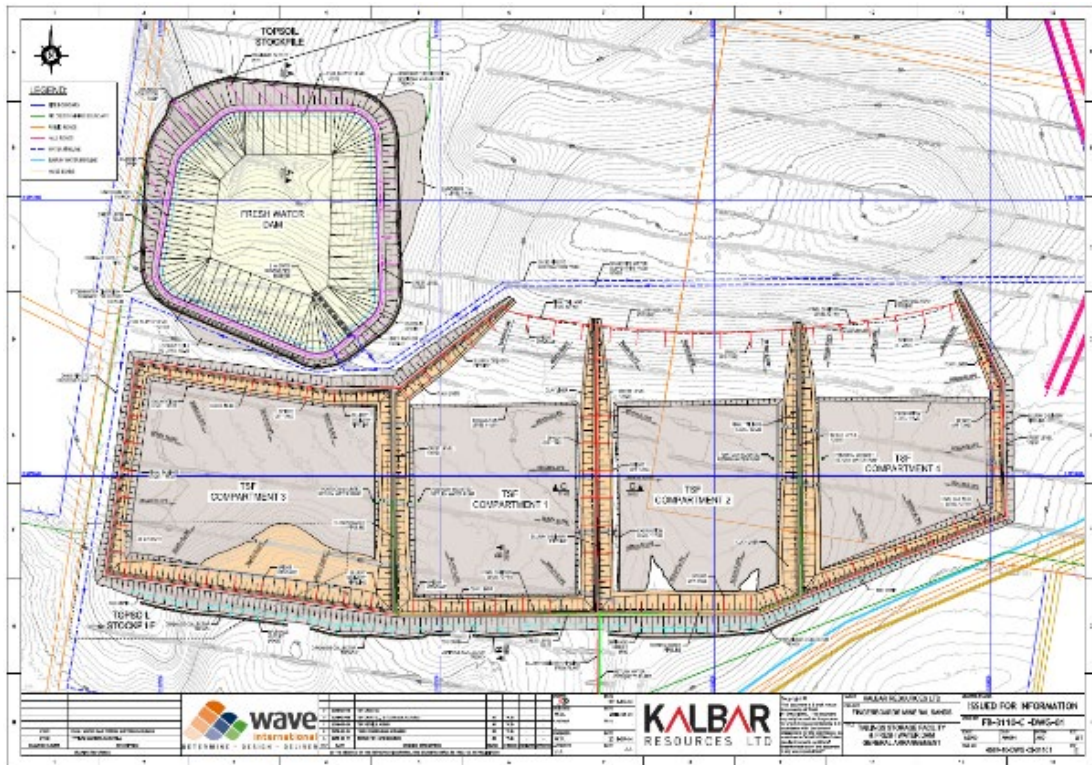


Figure 20: General freshwater dam design

Perry Gully Tailings Storage Facility - Technical Notes 116-119 below

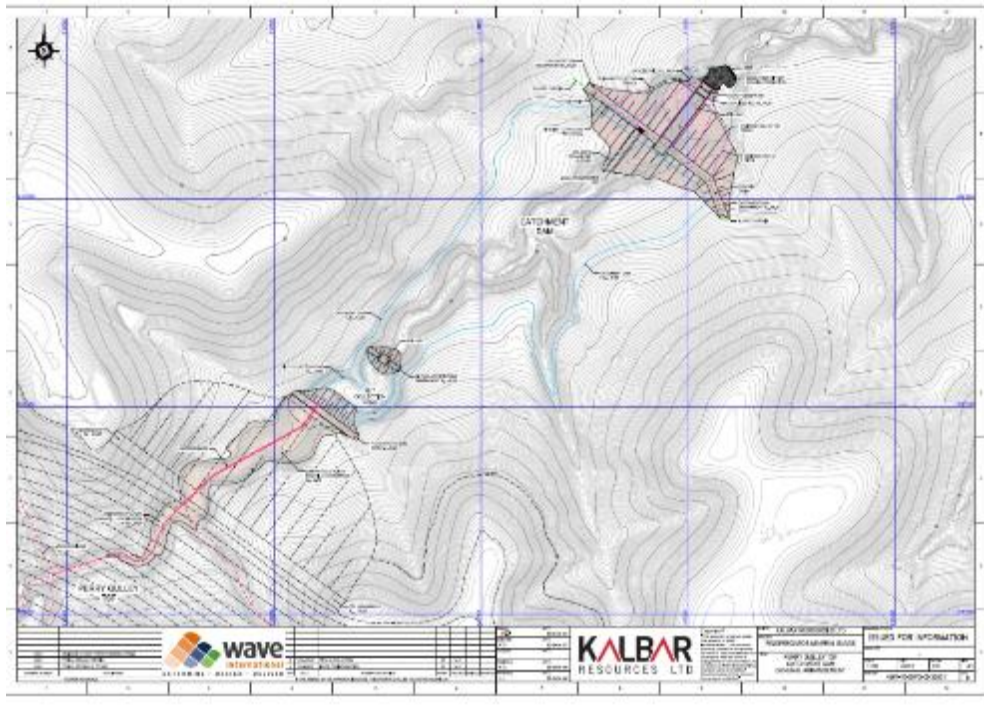


Figure 21: TD 116 TSF Catchment Dam general arrangement

The realigned diverted Fernbank-Glenaladale Road is now being shown going through the Perry Gully.

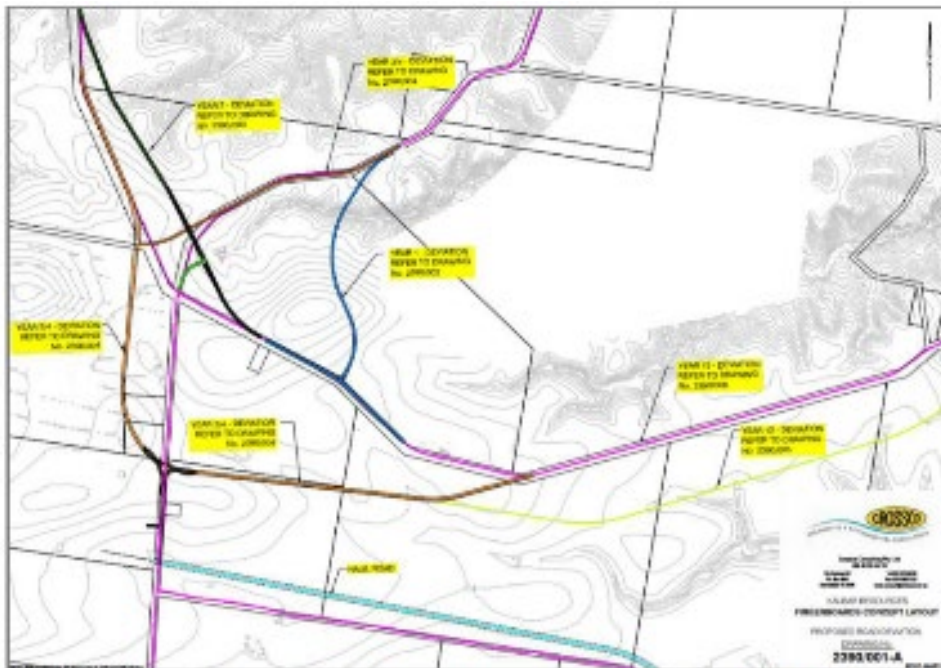


Figure 2 January tabled plans – proposed road network - diversions and staging (Tabled Document 45) ²³

²³ Tabled Document 45 Figure 2 showing diversion of Fernbank-Glenaladale Road through the Perry Gully

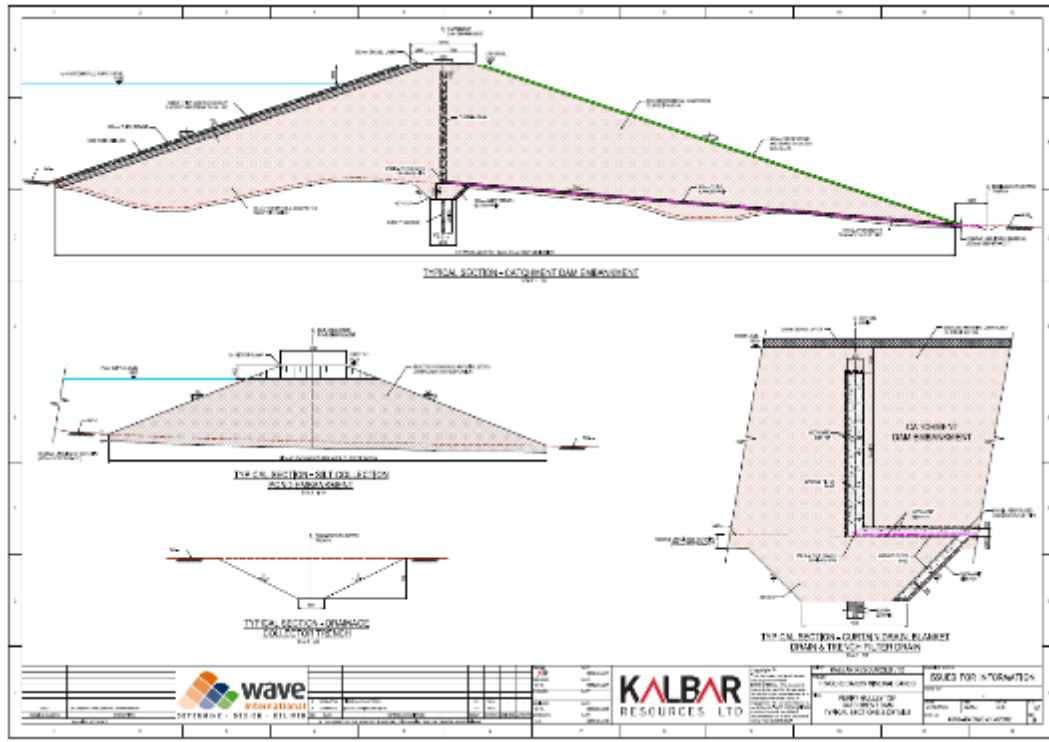


Figure 22: TD 117 Perry Gully TSF typical sections

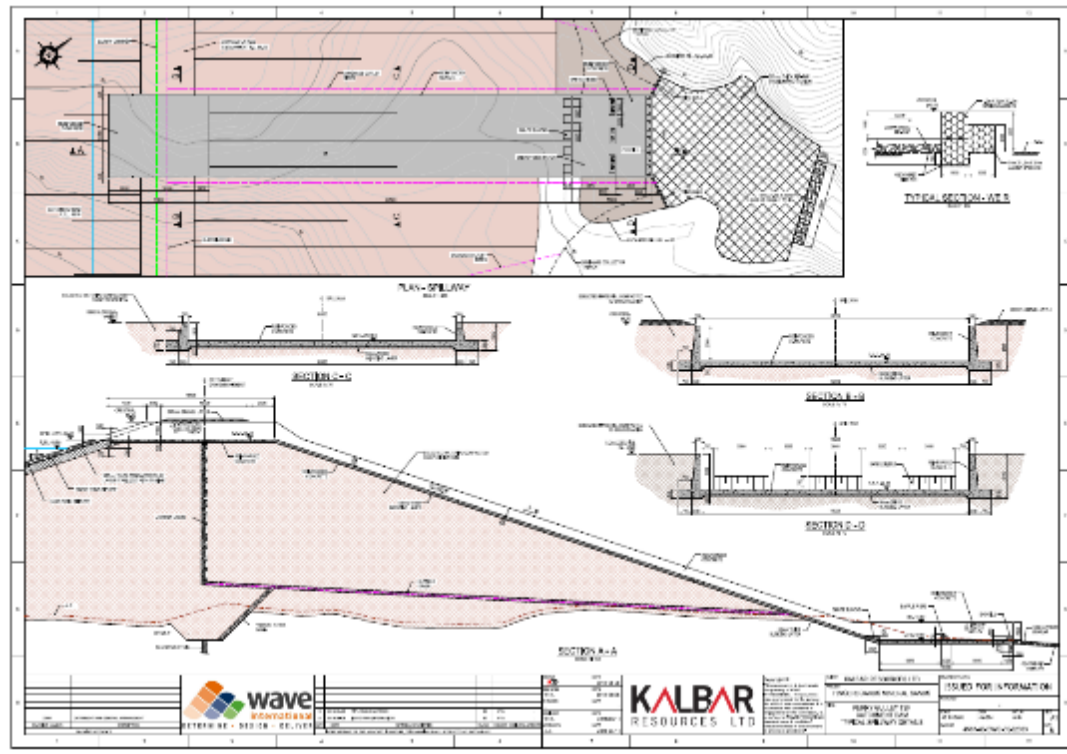


Figure 23: TD 118 Perry Gully TSF typical spillway details

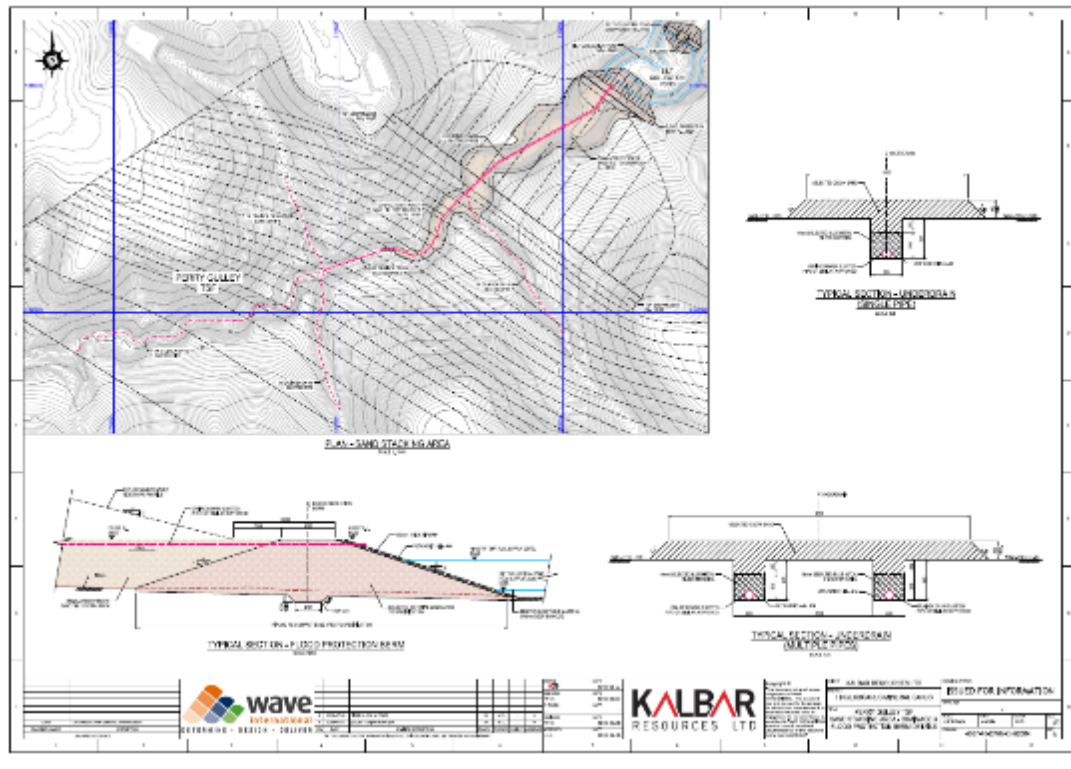


Figure 24: TD 119 Sand Staking Drainage and Flood Protection

ERR - Management and design of mine tailing storage facilities.²⁴

Leading Practice in Tailings Dam Management Queensland University Report on mine tailing storage design. Professor David Williams.²⁵

Professor Williams stresses that mine facilities that will remain are to be designed for 'in perpetuity'. This means that the Perry Gully TSF should be designed for a 10,000 year event.

²⁴ Technical Guideline Design and Management of Tailings Storage Facilities DEDJTR

²⁵ https://www.youtube.com/watch?v=f9V6-yIF_is



According to Professor Williams, if the Cadia dam failure had happened in Brazil the mining company would have been pushed off the site, the police and military would have taken over the site, the police would have arrested and questioned people, workers would be banned from the site (but Newcrest would still be paying them.)

4.5 The traffic Assessment describes that four trucks or tankers a week carry flocculant and diesel in to site. This is 3000 tankers of flocculant, carbon and VOC's that will be incorporated in to the soil profile during the life of mine. As the diesel use exceeds 3 million litres of diesel a year NPI requires that a soil assessment be prepared. As the NPI classify Kalbar as a category 2 polluter NPI require that a VOC assessment is prepared.

4.6 There is a long established history of the regulators ERR and EPA withdrawing from their responsibilities to manage mine sites. And we already see this happening at the Fingerboards with neither of the key regulators being willing to take on responsibility for in-pit storage of millions of tonnes of coarse and heavily flocculated fine tailings.

EVIDENCE - Woodvale 53V Audit.

GHD Report monitoring failure by Dr Peter Beck. Stawell Gold mines.

Costerfield mine. Mandalay. Golder reviews 1&2.

(Victorian Government documents held by ERR and EPA

It appears the Department rather than forcing mines to implement all necessary risk mitigation measures, instead foists the responsibility for reducing risks on to the community. And indeed, mixed messages are given as the department continues to

'assure' the community they are safe BUT [not to drink the water](#) and to follow other advice about reducing risk²⁶

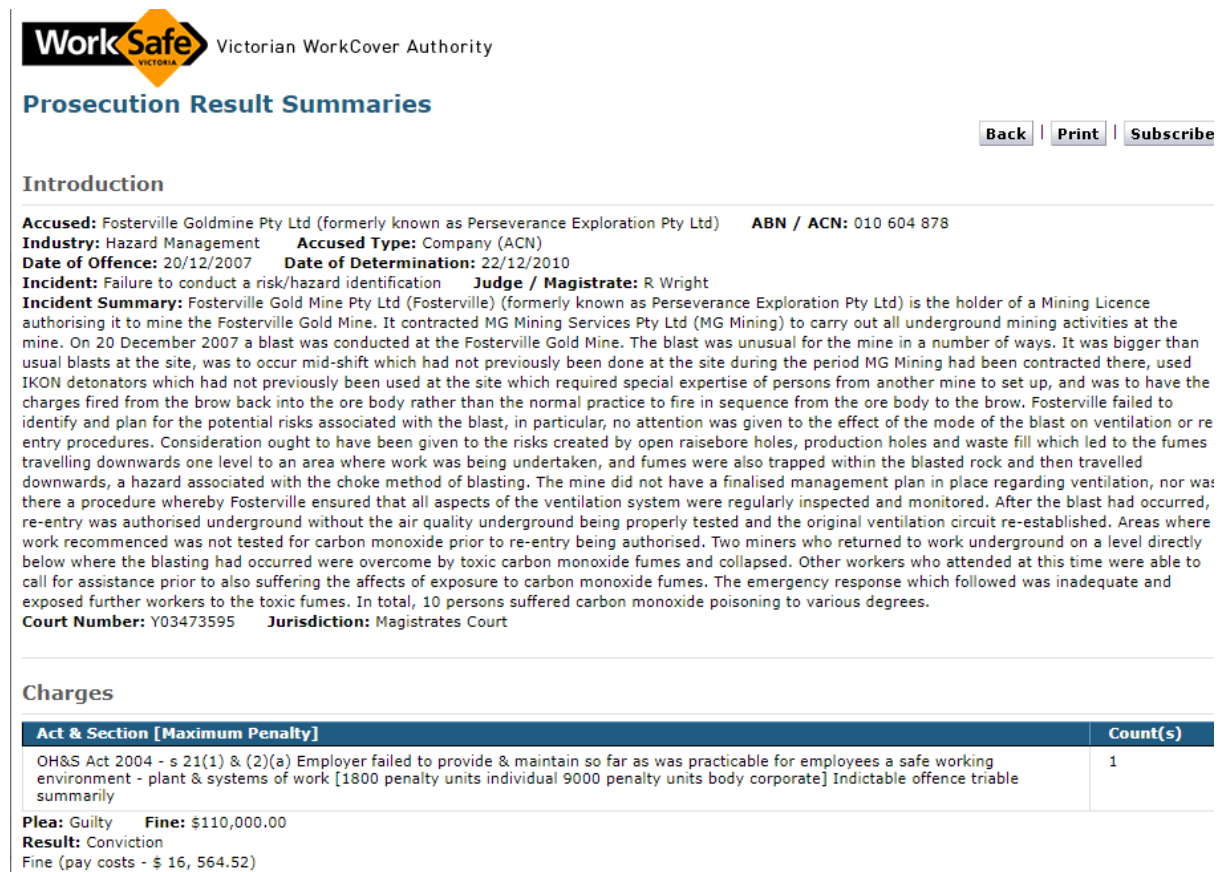
4.7. Adaptive management is for the football field, not a mine site.

Safe operation of a mine site requires the pre-planning of engineering construction operations and the prior co-ordination of work activities.

Mr. Morris has promoted adaptive management behaviour for his client.

If Worksafe determine that a loss of life (lives) occurred primarily or partly because of a failure by his client to pre-plan and co-ordinate work activities, will a Coroner's Court make a determination that Mr Morris be referred for a criminal charge due to wilful negligence?

EVIDENCE - Extract of WorkSafe findings into accident at Fosterville mine.²⁷



WorkSafe Victorian WorkCover Authority

Prosecution Result Summaries

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Introduction

Accused: Fosterville Goldmine Pty Ltd (formerly known as Perseverance Exploration Pty Ltd) **ABN / ACN:** 010 604 878
Industry: Hazard Management **Accused Type:** Company (ACN)
Date of Offence: 20/12/2007 **Date of Determination:** 22/12/2010
Incident: Failure to conduct a risk/hazard identification **Judge / Magistrate:** R Wright
Incident Summary: Fosterville Gold Mine Pty Ltd (Fosterville) (formerly known as Perseverance Exploration Pty Ltd) is the holder of a Mining Licence authorising it to mine the Fosterville Gold Mine. It contracted MG Mining Services Pty Ltd (MG Mining) to carry out all underground mining activities at the mine. On 20 December 2007 a blast was conducted at the Fosterville Gold Mine. The blast was unusual for the mine in a number of ways. It was bigger than usual blasts at the site, was to occur mid-shift which had not previously been done at the site during the period MG Mining had been contracted there, used IKON detonators which had not previously been used at the site which required special expertise of persons from another mine to set up, and was to have the charges fired from the brow back into the ore body rather than the normal practice to fire in sequence from the ore body to the brow. Fosterville failed to identify and plan for the potential risks associated with the blast, in particular, no attention was given to the effect of the mode of the blast on ventilation or re entry procedures. Consideration ought to have been given to the risks created by open raisebore holes, production holes and waste fill which led to the fumes travelling downwards one level to an area where work was being undertaken, and fumes were also trapped within the blasted rock and then travelled downwards, a hazard associated with the choke method of blasting. The mine did not have a finalised management plan in place regarding ventilation, nor was there a procedure whereby Fosterville ensured that all aspects of the ventilation system were regularly inspected and monitored. After the blast had occurred, re-entry was authorised underground without the air quality underground being properly tested and the original ventilation circuit re-established. Areas where work recommenced was not tested for carbon monoxide prior to re-entry being authorised. Two miners who returned to work underground on a level directly below where the blasting had occurred were overcome by toxic carbon monoxide fumes and collapsed. Other workers who attended at this time were able to call for assistance prior to also suffering the affects of exposure to carbon monoxide fumes. The emergency response which followed was inadequate and exposed further workers to the toxic fumes. In total, 10 persons suffered carbon monoxide poisoning to various degrees.
Court Number: Y03473595 **Jurisdiction:** Magistrates Court

Charges

Act & Section [Maximum Penalty]	Count(s)
OH&S Act 2004 - s 21(1) & (2)(a) Employer failed to provide & maintain so far as was practicable for employees a safe working environment - plant & systems of work [1800 penalty units individual 9000 penalty units body corporate] Indictable offence triable summarily	1

Plea: Guilty **Fine:** \$110,000.00
Result: Conviction
 Fine (pay costs - \$ 16, 564.52)

Figure 25: Extract from Worksafe case

²⁶ Earth Resources: Costerfield Community Update – September 2016

²⁷ <https://www1.worksafe.vic.gov.au/vwa/vwa097-002.nsf/content/LSID%20162647-2>

5 - REHABILITATION

5.1 The VAGO has under-reported the rehabilitation liabilities on mine sites in Victoria. This is because rehabilitation bonds are deliberately undervalued by ERR, commonly to about 20% of a fair assessment. Bonds are self assessed by the company and it is common to not include significant infrastructure. Independent reviews are conducted by industry members. The only recent upgrade of the bond manual resulted in an increase of only 18% from pre 2000 values but even with those updates, the new calculator either omits or fails to adequately account for a number of items that will be of relevance to the Fingerboards mine, e.g allowing only \$50,000 for the cost to remove the massive and deep concrete slab that will be required for the centrifuge plant.²⁸

EVIDENCE

Open Cut & Underground Mine Operations:					
Domain 1: Infrastructure Areas					
Additional Assumptions: Record any relevant assumptions to this domain below:					
Management Precinct	Activity / Description	Applicable (Y or N)	Quantity	Unit	Default Unit Rate
	Demolish and remove ground level conveyors, transfer stations & gantries (scrapping only - does not include dismantling for re-use at another site)	Y		m	\$210.00
	Demolish and remove overhead conveyors, transfer stations & gantries (scrapping only - does not include dismantling for re-use at another site)	Y		m	\$295.00
	Demolish thickener tanks or flocc tanks (variable rate for small, medium and large structures).	Y		@	\$11,800.00
	Remove Concrete pads & footings (< 300mm thickness).	Y		m ²	\$11.80
	Remove Concrete pads, footings and foundations (> 300mm thickness)	Y		m ²	\$65.00

Figure 26: Rehabilitation Bond Calculator 2020 Default Rates for concrete removal

Construction industry estimating

²⁸ Rehabilitation Bond Calculator 2020

Drone image Kangaroo Flat Deborah site.



Drone image Stawell Tsf2.



Lake St Barbara is a former tailings dam at Benambra that has been renamed to make it appear benign. The dam has already cost Victoria taxpayers \$6.9 million to stabilise and supposedly stop leakage of toxic materials to the Tambo River. The new dam is intended to be built up to a height of 44 metres to contain the liquid spoil from a new copper mine in the area. There are understandable fears that the toxic waters could outlive the mine's dam wall, given the site's history.



Figure 27: Lake St Barbara - source Google Maps



and

Woodvale tailings dams.

Mt. Morgan mine newspaper article.

<https://www.abc.net.au/radionational/programs/backgroundbriefing/4513916>

Background briefing [Toxic Mine Water](#)

Bendigo Advertiser - the cost of handling amenity water.

Hirds Pit



Figure 28: Hirds Pit

Deborah mine bond spreadsheet. Cost neutral page for processing precinct.

5.2. It may be impossible to control water erosion at swales and along the escarpment. Cost of erosion control matting and the installation of this material will be prohibitive.

5.3 It is accepted practice for mining companies to bury tyres, conveyor belting, pipes, cabling, oils and lubricants on site to avoid re-cycling fees at land fills.

5.4 An attempt by Bendigo mining/Goldfields Revegetation to rehabilitate dam 5 at Woodvale by seeding with native grasses on “ manufactured” soil has failed. Did Dr. Robson-Green research this project ?

EVIDENCE – photos of failed rehabilitation on ‘manufactured soil’..





Photos of natural rehabilitation





5.5 It should be expected that Kalbar / ERR would not permit an ERC to continue to meet into rehabilitation period.

5.6 Classic music to de-stress the Panel.

([Highway to hell. Live at River Plate. Minute 1:42 to 1:58](#))

The words of the choir are – *“No stop signs, no speed limits, nobody’s gone to stop us now.”*