

Submission Cover Sheet

Fingerboards Mineral Sands Project Inquiry and Advisory
Committee - EES

457

Request to be heard?: Yes

Full Name: Kristopher James Woodward

Organisation: On behalf of myself and three farming enterprises listed on First Page

Affected property: Horseshoe Bend & Mitchell River Downstream (Barrier to Mouth of River)

Attachment 1: DFU-_Submissio

Attachment 2:

Attachment 3:

Comments: see attached submission

Kalbar Fingerboards Heavy Mineral Sand Project Environmental Effects Survey Submission.

L.D & E.M Woodward

G.D & S.K Woodward

D.A & L.M Woodward

K.J Woodward

In opening this submission we'd like to acknowledge Traditional Land Owners the Gunaikurnai people. We pay our respects to their Elders, past, present & emerging, and any Aboriginal Elders of other communities whom may hold interest in our submission.

The following submission data is drawn from —

- Climate science, Surveys, Case Studies, Websites, Strategy's, phone calls, books & process's.
- Governmental — State & Federal Reports, Audits, & National inquiries.
- Life-time River Management Bio-Assay's, direct observations & first hand local salinity knowledge from the experts, 'the people of the land'.

Kalbar reducing the Mitchell River's fresh water flow during critical 'dilution flow'¹ periods & removing 3-gigalitre (GL) of water per annum will: hinder the rivers salinity flushing process; extend highly fragile salinisation periods; and increase already high *downstream*² salinity time frames to dangerous levels.

In this submission we show Kalbar removing fresh water from the Mitchell River as a principle threat to the Environmental, Social & Economic value of its waterway. Kalbar's proposal contradicts ministerial advice given by the Australian National Auditors Office (ANAO) on plans of (future) action to 'improve environmental flows'³.

Furthermore, reducing fresh water inflow will have a knock-on effect to adjacent downstream systems, surrounding Lakes & Wetlands - jeopardising fresh water dependent ecosystems & species.

The Fingerboards Mineral Sands Mine must not be allowed to go ahead in its entirety on all aforementioned grounds.

¹ Australian National Auditors Office cites dilution flows of East Gippsland rivers as the following – "The contribution of freshwater run-off to dilute the level of Salinity in a stream or River" – Auditor-General Audit Report No.17 2004–05 Performance Audit 'The Administration of the National Action Plan for Salinity and Water Quality'.

² For the purpose of this submission we define downstream as the Mitchel River Barrier to the mouth of the Silt Jetties.

³ ANAO (recommendations)- National Action Plan for Salinity and Water Quality – Page 54 – 3.2

Whilst we acknowledge technical studies have been undertaken by Kalbar, upon review of the EES, there have been no included studies (independent or in-house) regarding: River salinity; impacts of slashing fresh water dilution flows; or alternating localised stream pathways.

Direct observations, anecdotal farmer evidence, state & local organisational data, citizen science programs *and* historical evidence⁴ strongly support fresh water flushes (at any time of year) as keeping primary & secondary salinity at bay. In the case of Mitchell Rivers multi-million dollar downstream enterprises we estimate the critical importance & effectiveness of dilution flows to extend well past the last 50 - 100 years.

Under Kalbar’s proposal to detract surface water, approximately 4.5 GL of water will be required for construction/start-up and 3 GL (pa) thereafter for a 15- 20-year operational period. In comparison 4.5GL makes up 67% of what regional irrigators already remove⁵ dwarfing local town water reservoirs, well over triple the size of East Gippsland Waters (EGW) ‘Mitchell storage reservoir’⁶ — thus abetting an already stretched subtraction of annual fresh water volume.

The table below shows Mitchell River ‘annual flow averages’ as nearly halving over a 60 + year period.

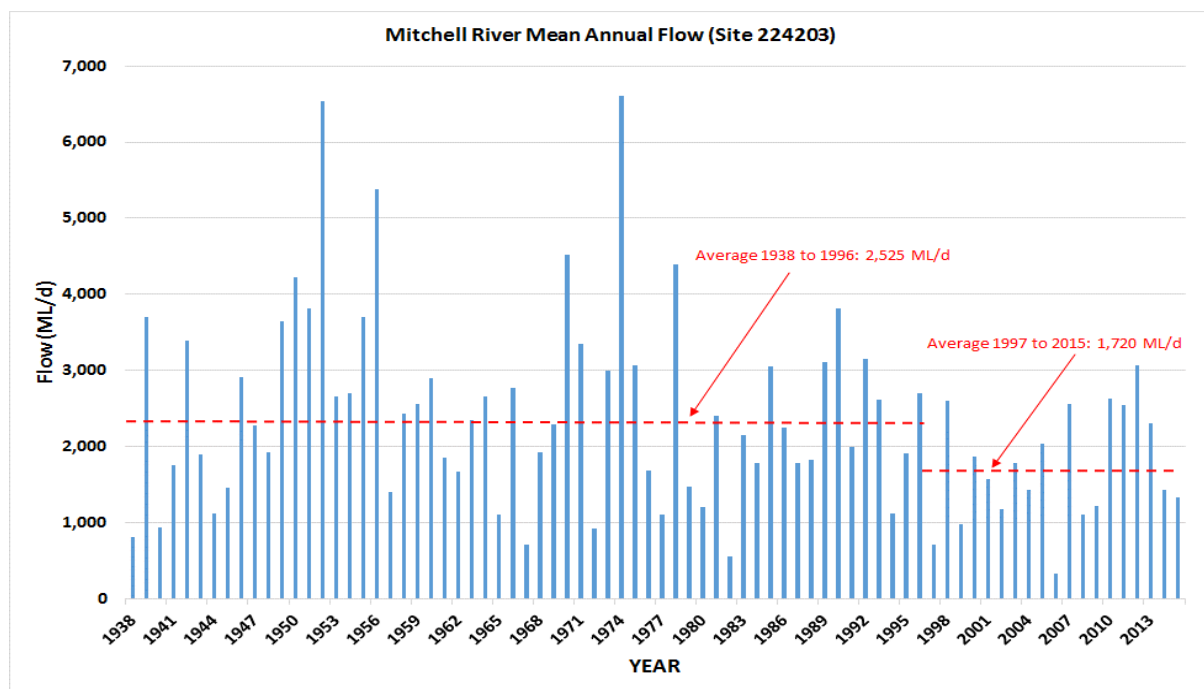


Figure 1- EGW - Annual Water Outlook – Dec 2016 to Nov 2017 (showing declining flow).

⁴ The Salinity Audit of the Murray-Darling basin, A 100-Year Perspective.

Salinisation of land and water resources: human causes, extent, management and case studies

⁵ <http://www.srw.com.au/wp-content/uploads/2020/02/Mitchell-River-Basin-Local-Water-Report-2019.pdf>

⁶ <https://www.egwater.vic.gov.au/water-storage-levels>

It is well known that the Mitchell River rock barrier (below Calvert st. Bairnsdale) acts as a preventative measure for salinity ‘upstream’ — established decades ago by John Monash as a tool for town water security.

The downstream Mitchell River pathway running through to the world famous ‘Silt Jetties’ suffers the worst salinisation of the entire system — many years remaining too salty to drink for months on end⁷ — Only from the likes of groundwater bores & pre-filled dams, downstream enterprises can provide fresh water for livestock & horticulture during salty months.

The EGCMA (East Gippsland Catchment Management Authority) define river ‘freshes’ as ‘the first seasonal ‘flush’ of water through a waterway’.⁸ – These seasonal flushes are exactly what the Kalbar project will alter.

To quote Southern Rural Water (SRW):

‘Groundwater levels are tied to Mitchell River flows & recharge during floods.’⁹

To quote EGCMA Regarding the Snowy River:

‘The available scientific evidence suggests that the regulation of the Snowy River since the construction of the Jindabyne Dam and the resulting lower flows in winter and spring has allowed saline conditions to extend further upstream for longer periods.’¹⁰

The same report regarding the Mitchell Rivers close neighbour the Nicholson River states:

‘Tests indicate that water conditions at three (sample) sites are generally good, although readings vary at different times. In the upper estuary, water quality is often quite poor, with test results indicating low levels of oxygen & a pungent ‘rotten egg gas’ smell. Since the floods in July 2007, water quality has improved. A long term trend is increasing salinity’.

This from Victorian Fisheries Authority:

‘Estuary fish are present downstream from the rock barrier at Bairnsdale. The most common species are black bream (26-30 cm long) present in good numbers all year. During summer, if flows are low & salinity increases, there can be a massive upstream movement of European carp, with large numbers of European carp congregating below the rock barrier.’¹¹

Rivers around our nation all share similar stories - the impacts of altered dilution flows are of utmost importance to the salinity of River systems.

⁷ J.D Woodward Beef Cattle enterprise - water monitoring regimes show Dec – March as rivers saltiest months.

⁸ https://egcma.com.au/wp-content/uploads/2019/06/East_Gippsland_Waterway_Strategy-Final.pdf

⁹ www.srw.com.au/files/General_publications/September_2011_-_Mitchell_River_Basin_Local_Water_Report.pdf

¹⁰ https://egcma.com.au/wp-content/uploads/2019/06/Improving_East_Gippsland_Rivers.pdf

¹¹ <https://vfa.vic.gov.au/recreational-fishing/fishing-locations/inland-angling-guide/areas/mitchell/mitchell-angling-waters>

Examples, such as that of the ‘Regional Valley Systems’ in Western Australia are in such an advanced state of salinisation that no form of control is likely to ever see a return to farming enterprises.

Any attempt to further reduce the Mitchell Rivers flushing capacity will be catastrophic for already stretched saline periods of the Mitchell. Kalbar’s 3GL(pa) is an excessive & un-acceptable amount of water to extract from much needed dilution flows.

We are not alone, Kalbar’s own peer review¹² states the following :

‘It is understood that up to 3GL/year (~95L/sec) surface water may be extracted for 15 years from the Mitchell River. Two potential off-take locations are provided in the Project description, however, unlike the groundwater extraction scenario no assessment and/or modelling of impacts has been undertaken. The impact assessment (Coffey, 2019) does not include any assessment of the local impacts from extraction within the Mitchell River, and therefore has not met a number of the Scoping Requirements. This level of assessment is considered relevant for the EES irrespective of whether an allocation can be obtained. As a minimum, the impact assessment on the Mitchell River off-take should give consideration of the matters listed in Section 40 of the Water Act 1989.’

Regarding Kalbar’s aforementioned lack of consideration toward the ‘Water Act 1989’. Of particular concerns is:

‘Section 40. matters that must be taken into account ‘[i]n considering an application under [section 36\(1\)](#), the Minister must have regard to the following matters - S. 40(1)(ba) - (c) the existing and projected quality of water in the area.’¹³

So it is apparent, through local knowledge, Kalbar peer review & Government opinion – *fresh water dilution flow is the single most important factor in eliminating River Salinity.*¹⁴

¹² Kalbar - Water Independent Peer Review Report and Proponent Response - 4.2 Surface Water 4.2.1

¹³ http://classic.austlii.edu.au/au/legis/vic/consol_act/wa198983/s40.html

¹⁴ www.aphref.aph.gov.au_house_committee_scin_salinity_report_chapter3.pdf

https://egcma.com.au/wp-content/uploads/2019/06/East_Gippsland_Waterway_Strategy-Final.pdf
DFU - (Down-stream Farmers Union) Anecdotal Evidence & Bio-Assay’s

American Engineering firm Aecon (authors of the East Gippsland Water Drought response plan) state the following regarding Kalbar’s proposed surface water extraction:

‘[t]he surface water and groundwater supply scenarios did not consider all matters listed in Section 40 of the Water Act 1989, as required in a Take & Use Licence application’.

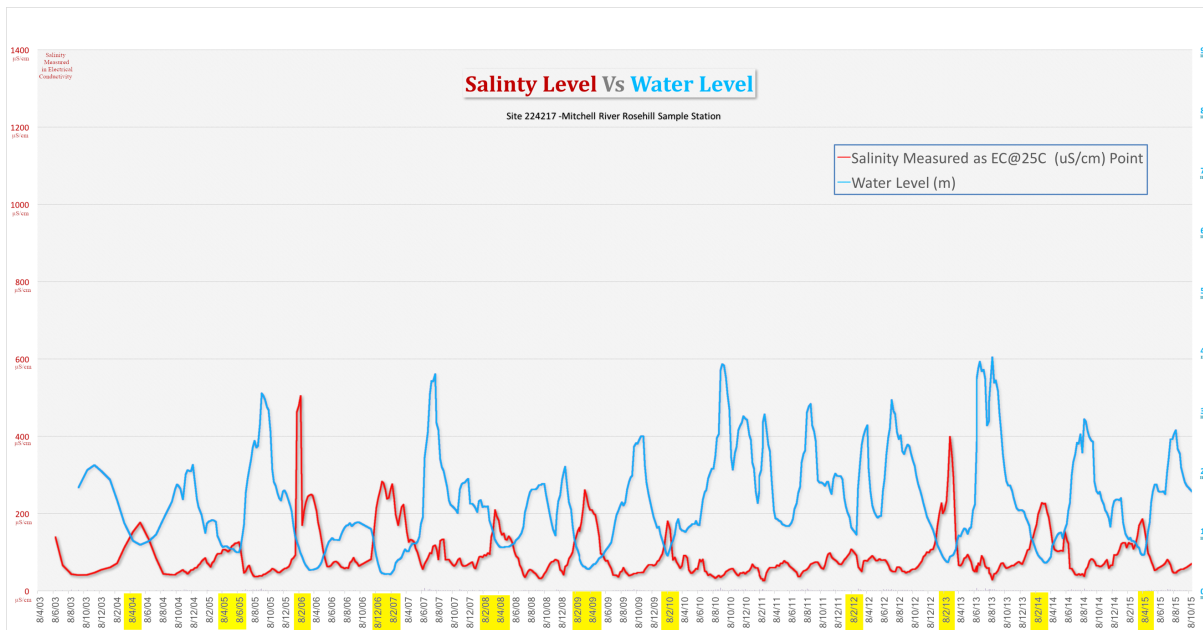
Put simply, Kalbar does not meet ministerial requirements to remove any water & does not properly address local impacts.

Water extraction for this project scope will have significant impact on downstream dilution flows & salinity ultimately affecting: water supply; Agriculture; irrigation; stock watering; industrial & commercial use; water supplies; and water based recreation – Kalbar’s surface water extraction places the Mitchell River’s dilution flows into a losing battle.



A section of the Downstream Mitchell River catchment (below the Calvert St rock barrier).

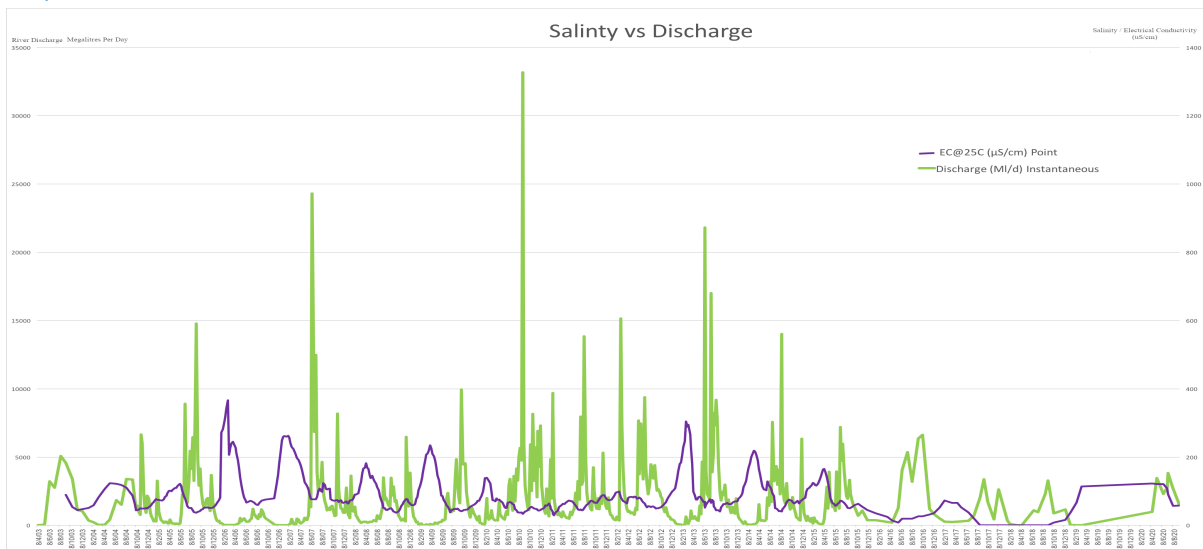
Laying claim towards the Mitchell Rivers highly fragile salinity issues, it’s relationship between fresh water flows, water levels & water discharge we submit Graph 1 & 2, clearly showing correlation between water levels & salinity¹⁵.



Graph 1

As you can see when water (blue) is at reasonable levels salinity (red) is kept at bay. When water drops below average levels, salinity spikes! Yellow highlighted months (across bottom axis) show a pattern in dates with the Rivers Saltiest Months almost always ‘December – March’.

Graph 2



The same applies for Graph 2, with a direct correlation shown (water green, salinity purple). Data collected for these graphs are not downstream, data samples were taken above rock barrier where salinity levels are not as extreme as the downstream section of river, yet we still see many months approaching WHO cut-off standards. All graphs show 13 years of data.

¹⁵ Source data taken from <https://data.water.vic.gov.au/>

Water extracted leading up to saline periods are as equally as important as water taken during saline periods, with winter-fill freshes keeping salinity low enough to prepare for spring & summer months. There is simply no room for Kalbar's yearly extraction without impacting dilution flows.

Reviewing the EES, it is evident several companies sourced by Kalbar to model surface water extraction (EMM & Water technology), indicate caveats of concern. One of these - 'Climate Change' - reported as not being taken into account for *any* modelling scenarios:

'Only the historical climate and river flow data have been investigated. It is likely that future climate and river flow will not replicate past climate and river flow, and as such the investigation gives only an indication of reliability statistics.'¹⁶

This is disturbing given the projects 20-year life span proposal. As is another modelling system 'Gold sim' (referenced within the Kalbar EES) also failing to mention if its modelling takes into account future climate change scenarios.

The Kalbar regional surface water assessment also indicates there modelling only used one, single, water supply scenario regarding their 'water take' proposal.

'[Only] One water supply scenario was investigated, with one set of rules describing water take and water prioritisation on site.'

Seemingly inadequate for an entire report.

Additionally Kalbar's Regional surface water assessment states:

'Due to the quantity and quality of streamflow data on the Mitchell River and the lack of comparable data in the Perry River, the following approach was adopted in model development': "*Apply calibrated parameters from the Mitchell River model to the Perry River catchment model.*"

So, without any credible data on the Perry River, Kalbar have simply applied the Mitchell River's data, in a copy & paste scenario, aiming to risk assess a complete River system & assume the Perry River acts the same as the Mitchell River.

¹⁶ Kalbar EES - 35_Appendix_A006AppF_Surface water assessment regional study.pdf

Adding to these caveats, we make the following points –

- All historical River water sample station data, used throughout Kalbar’s statement is, at best, patchy & erratic.
- Historical data consolidated over the past 100 years, by the Water Measurement Information System (WMIS) & monitored by DELWP provides only 19 sample stations for the entire Mitchell Basin¹⁷ – of those 19 only 6 show Salinity measurements & zero apply to any downstream sections of the river.
- Of all the current operational sample stations, only one is downstream, it does not measure salinity¹⁸, interestingly the 4 readings that were taken in 2003 from the only (downstream) station¹⁹ all show measurements of Salinity dangerously close to WHO (World Health Organisation) drinking cut off for Electrical Conductivity (EC).

In compiling this submission, we can reveal nearly all departments we spoke to openly admit — collection, collaboration & maintenance of data, between departments is, at best, a challenge — Changes in political landscapes, funding & resource allocations across all departments, become evident around impacted sectors as simple as ‘(River) water sample stations’. This coupled with large numbers of farmers too proud to admit there’s growing issues, creates a build-up of problems rarely factored into tabled science.



*Dead fish downstream at Mitchell Rivers ‘Picnic Point’ - ABC radio reporting water 66 percent as salty as seawater in 2019.*²⁰

¹⁷ <https://data.water.vic.gov.au/>

¹⁸ Salinity is measured as Electrical Conductivity or $\mu\text{S}/\text{cm}$. According to WHO, EC values shouldn’t exceed 400 $\mu\text{S}/\text{cm}$

¹⁹ Site 224200 MITCHELL RIVER @ BAIRNSDALE has 4 readings on EC only

²⁰ https://www.facebook.com/ABCGippsland/posts/10156535082339825?comment_id=10156554101179825

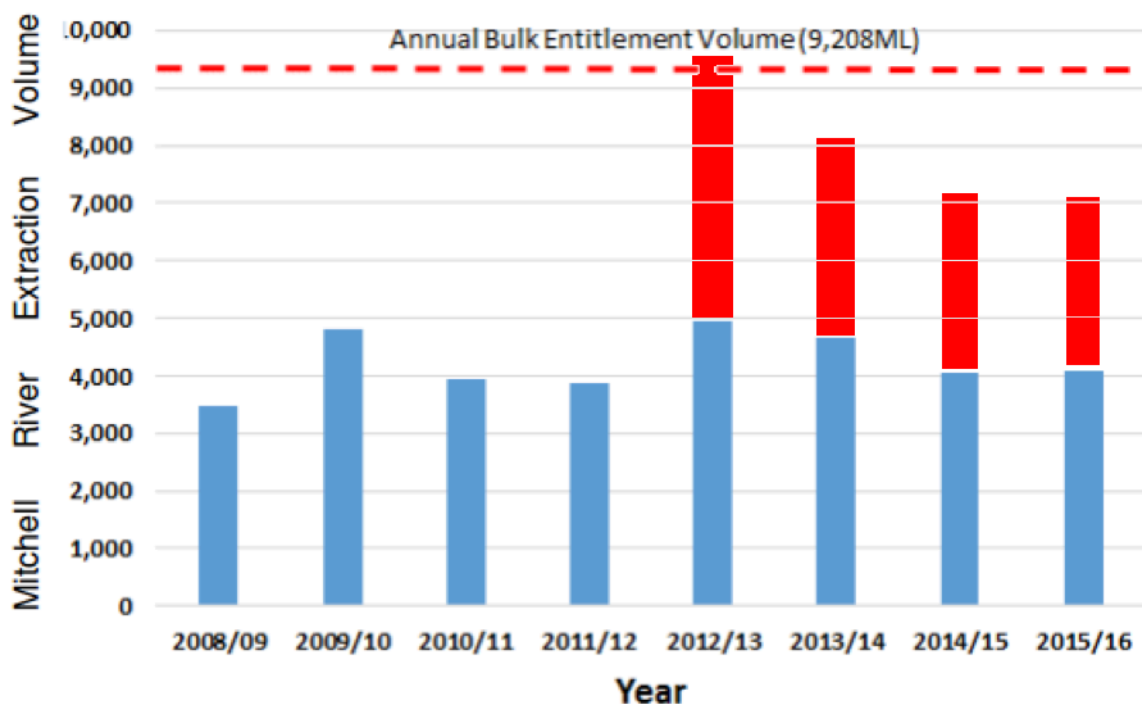
Throughout Kalbar’s EES a diplomatic duty of care & fairness toward accurate reporting seems to be superficial, including but not limited to – Governmental reports taken out of context: An example of this is Kalbar’s use of historical Government data to appear as though the Mitchell Rivers ‘un-used extraction volume’ should aid their cause. Kalbar States:

‘With respect to water availability, the East Gippsland Water Urban Water Strategy (UWS 2017) notes [show]’:

“Bulk entitlement annual volumes and maximum extraction rates are all adequate to meet projected system demands to at least 2065, with spare capacity to meet unexpected growth.”²¹

This submission is *extremely* confident EGW did not calculate “unexpected growth” as a 4.5GL take & use water scenario.

Kalbar’s statement is then followed by an EGW graph we have amended to include a scenario where Kalbar *have* taken its annual fresh water amount from an EGW annual share - Kalbar Extraction shown in red.



As you can see if Kalbar’s start-up was initiated in 2012/13 they could not meet project requirements, the following years also approaching EGW’s headroom for capacity. Irrespectively – this isn’t how a corporate water license is governed.

²¹ Kalbar EES - 35_Appendix_A006AppF_Surface water assessment regional study.pdf

Again reviewing Kalbar’s ‘Groundwater & surface water baseline & impact assessment report’ (by Coffey), made up from seven (of its own) analyses, no evidence, or citation, that we could trace back to reputable origins. To be clear when we say ‘reputable origins’ it appears evidence & justification for removal of Winter-fill water – predominately comes from software modelling.

Kalbar states the following based on computer modelling:

‘Quality: - Mitchell River: no measurable effect on water quality.’

This statement, along with others tied to computer modelling beg several questions –

Were program’s coded & written to include algorithms accounting for climate change?

Have any of these computer models been associated or linked with ‘failed’ River Systems’ - such as the Murray Darling?

Are there any conflicts of interest within company’s corporate structure & Kalbar’s corporate structures? – for example Kalbar’s regional manager ‘Chris Cook’ having worked previously for a company assisting it’s EES reports – Aecon.

How can an accurate forecast be modelled, from factors such as Electrical Conductivity (Salinity) if “no” solid data has ever been available?

What percentage of overall modelling vs actual measurements were undergone?

Kalbar’s ‘Coffey Report’ lays another claim toward our main objection:
Reducing fresh water, during critical flow – raises River salinity –
Here’s what they state in their ‘Surface water assessment, site study:

*‘Water Technology’s assessment of flood risk and site water quality effects –
Water strategy reduces downstream flood risk [reduced during operations].’*

Here Kalbar are telling us their strategy to take water during a time of dilution flow is mass reduction.

And again Kalbar’s report highlighting more problems:

‘Residual Impacts - Following the implementation of measures to avoid and minimise impacts on ecological values, the following impacts are likely to occur within the current project footprint as a result of the project’:

‘Potential reduced flows to Mitchell River following surface water extraction which may lead to localised impacts to the aquatic values along the River.’

‘Threatening Processes - The project activities and key threatening processes outlined in Table 22 align with the following Potentially Threatening Processes listed under the FFG Act’:

‘Alteration to the natural flow regimes of rivers and streams.’

The surrounding Gippsland Lakes & Ramsar Wetlands rely on fresh water entering from its surrounding systems to also keep salinity down, recently West Gippsland’s Thomson & Blue Rock Dams have been constructed & intensely irrigated – this has further reduced fresh-water flows to the Gippsland Lakes.

These problems cannot be amended; they need be struck out before they occur. Reducing flows & altering flow regimes is not a standard we should walk past, nor is it a standard we should accept.

It appears general consensus that salinity & fresh water is one of the greatest threats our great country will face over the coming decades. You will be hard pressed to find anyone across the issue, no matter what side of the political spectrum they sit, disagreeing on this.

The Mitchell River is not new to ecological, environmental or socioeconomic threats, our great River has stood the test of time before, and survived.

Writing this submission, we have encountered vast arrays of problems regarding fresh water – towns relying on 30-60-year-old underground aquifers, nation-wide salinity issues, water accountancy corruption, River mismanagement, Floodplain harvesting, water theft & water commodification & an ever increasing sense of community concern. Australia's water storage is 25% less than it was 25 years ago & climbing, it has to stop.

The levels of environmental impacts on downstream farming enterprises downstream of the Mitchell River is too great for a Mineral Sand mine 3 times the size of Bairnsdale to go ahead. Kalbar must not be approved.

In closing we'd like to acknowledge the people of the Murray Darling Basin, including the culturally associated first Nations People from whom over 2 trillion litres of water has vanished²². They are some of the most extremely resilient, courageous & caring people fighting for rejuvenated ecology we have come across. Although its River system & ours are separated by thousands of kilometres of land we share their pain and anguish in recognising the need for greater transparency around water accountancy & the ecocide all River systems face.

We'd also like to acknowledge River people in general & anyone that has a connection with the Mitchell River & its waters.

Thankyou.

“In three generations, a moment in time, we have contaminated the water, air, and soil, driven countless species to extinction, dammed the rivers, poisoned the rain, torn down the ancient forests, and ripped holes in the heavens. As Harvard biologist E. o. Wilson reminds us, this century will be remembered not for its wars or technological advances but rather as the era in which men and women stood by and either passively endorsed or actively supported the massive destruction of biological diversity on the planet.” – Wade Davis

²² <https://www.2tm.com.au/post/where-did-all-the-water-go-new-report-reveals-2-trillion-litres-missing-from-murray-darling#:~:text=A%20new%20report%20has%20revealed,its%20inception%2015%20years%20ago.>