RMCG

Fingerboards mineral sands project
Expert witness presentation: Horticultural Impact

Dr Doris Blaesing, 12 May 2021

Horticultural Impact Assessment

Kalbar Operations Pty Limited (Kalbar) engaged RM Consulting Group (RMCG) 20 August 2018 to undertake a horticultural impact assessment of the proposed Fingerboards Mineral Sands Project (the Project) and prepare a report.

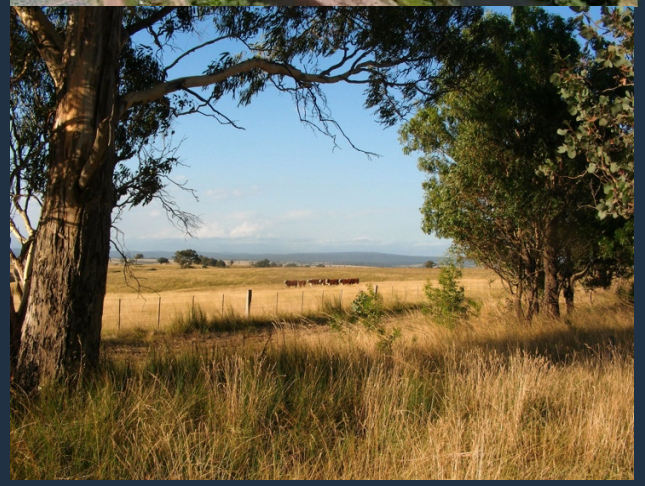
The Horticultural Impact Assessment (HIA) report was prepared in support of the EES.

Horticultural Impact Assessment method

Potential impacts of the Fingerboards Mineral Sand Project on horticulture

Describe horticulture production and concerns	Study EES technical reports	Investigate concerns not or not fully covered by EES reports	Horticultural Impact Assessment
1. Consult landholders *2. Understand regional horticultural production systems*	*1. Study hazards, risks, impacts and their mitigation* *2. Describe how these respond to concerns*	*1. Labour* *2. Climate change* *3. Regional image* *4. Co-existence case studies*	*1. Synthesise findings* *2. Recommend additional mitigation measures*

I last visited the proposed site and surrounding areas on 20 January 2021



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Horticulture production in the Study Area

- Approximately ~4,700 hectares of vegetable production (2016 Land Use data) – mainly conventional and also organic, vine grape production of about 40 ha.
- Markets:
  - ~ 80% Interstate, ~1% exported, remainder Victoria
- Food chain value addition a key feature of the region:
  - Bagged, ready-to-eat, washed salad greens; 6 of the top 10 processors have a footprint in East Gippsland.
  - Regional food initiatives including Food & Fibre Gippsland, Gippsland Food Plan Vision and Strategic Framework.
  - Established food processors – e.g. Vegco / One Harvest, Patties Food.
  - Food safety QA, voluntary environmental management systems (e.g. EnviroVeg) .

Responses to matters raised in submissions that are relevant to the Horticultural Impact Assessment (HIA)

Matters covered in my statement dated 01 February 2021

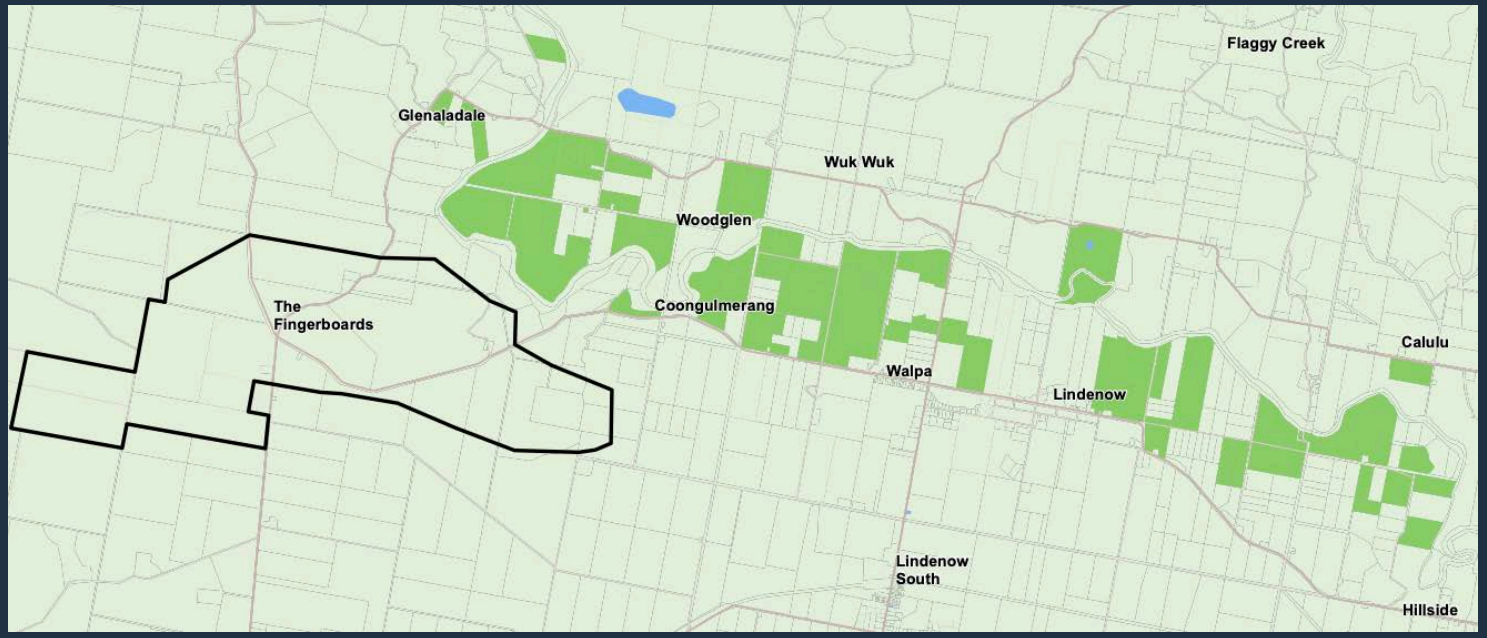
Premises:

- All regulatory KPI's are set and monitored by regulatory bodies according to applicable guidelines and licence conditions.
- The responsible water authority ensures that landholders have access to water and water resources are protected.
- A 'zero risk situation' can never exist; risk must always be managed. Hence:
  - Risk Management Protocols are needed.
  - They will need to be clearly understood by all concerned, communicated, reviewed, and updated as required.

Data use, ground truthing of (production) data

The Hort Impact Assessment (HIA) and my responses are based on published information, including but not limited to data by
- the Australian Bureau of Statistics (ABS),
- Agriculture Victoria,
- The Environmental Systems Research Institute's (ESRI) Land Use Information (2016),
- REMPLAN regional data.

The EES socioeconomic report has been used as a reference.



A strategic report by KPMG (2019) for Food and Fibre Gippsland comments on poor data availability for horticulture on the farm and regional level. *KPMG 2019. "Accelerating growth for the Gippsland food and fibre industry".*

Dust impacts on vegetable production

RMCG relied on the EES technical report by by Katestone Environmental. I refer to mitigation procedures in the relevant EES report and additional mitigation recommend in the HIA report:

- *Cease certain activities when real time monitoring and or weather forecasts alert to risks*
- *Work with landholders to develop further mitigation as required.*

Rain, overhead irrigation and post harvest washing and sanitation can remove dust from all sources.

In addition to the HIA report, my statement emphasises:

Windbreaks (natural and manufactured) around the Project site are a key mitigation measure.

https://www.mining-technology.com/products/wind-fence-types/

Image Source; Weekly Times, February 15, 2019

Continued on next slide

Dust impacts on vegetable production (cont.)

Apart from EES dust mitigation, washing off and windbreaks, general dust issues can be addressed via:

- On farm dust management procedures (e.g. windbreaks on farm, vegetation cover)
- Regional dust management improvement (as planned by Council) i.e. sealing of roads and major tracks

Dust impacts on vegetable production (cont.)

There are no national air quality guideline values for the nuisance dust effect that can be used to assess the impact of dust on the receiving environment. A dust deposition limit of 120 mg/m^2 per day, averaged over 1 month, is often used.
Guideline (Qld) Environmental Protection Act 1994, Application requirements for activities with impacts to air.

A standard for for dust deposition on vegetables does not exist.

Katestone Environmental Pty Ltd. 2020 concluded:
Dust deposition rates are expected to be below the limit of 120 mg/m^2 or 0.12 g/m^2 per day.

An addition to my statement is shown below: Criteria used internationally for dust deposition nuisance and harm to vegetation.

Annual Mean Deposition Rate	Effect
< 350 mg/m^2/day	Damage to plants unlikely to occur
350 - 650 mg/m^2/day	Damage to plants possible
650 - 950 mg/m^2/day	Damage to plants probable
950 - 1,190 mg/m^2/day	Damage to plants highly probable
< 1,190 mg/m^2/day	Severe damage to plants

SOURCE: (Rio Tinto, 2012)

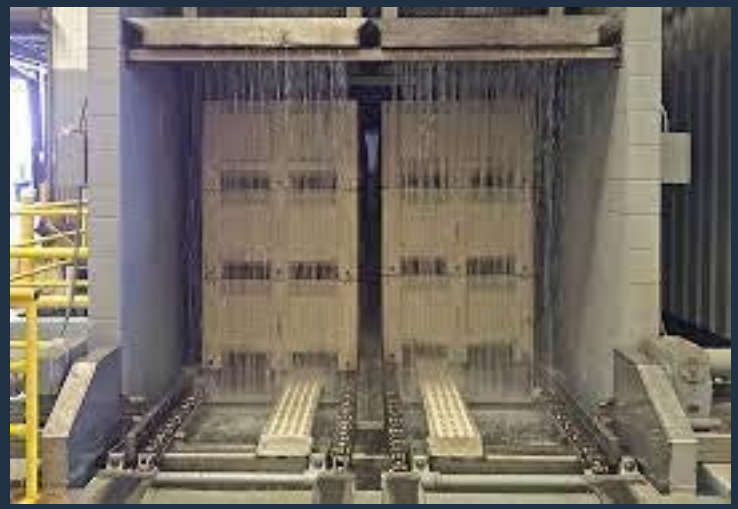
The above table has been copied from: APPENDIX J- Air Quality Impact Assessment (SLR Consulting Pty Ltd) 2018; SIX MILE CREEK DAM Safety Upgrade Project Air Quality Impact Assessment, prepared for: SMEC

Effect of dust on certifications

According to:

- ‘Guidelines for On-Farm Food Safety for Fresh Produce (2019’) and
- food safety standards (e.g. FreshCare)

Fresh produce affected by dust or dirt from any source cannot go to market.



Residue limits (export / import) bans

Air quality modelling and mitigation recommendations by Katestone (EES technical report on air quality) explain that heavy metal contamination of vegetables is unlikely to occur under recommended dust mitigation.

Importing countries classify and regulate contaminants individually. Refer to: https://www.agriculture.gov.au/ag-farm-food/food/nrs/databases.

At the time of preparing the HIA report, about 1% of vegetables were exported to overseas markets.

General bans (e.g. for 2 years as claimed in submissions) do not occur based on my research and to my knowledge.

Water quality impacts

I agree that water quality is important for all who rely on it,
including the environment, irrigators and the community.

I refer to technical experts from Water Technology Pty Ltd who prepared the EES report "Fingerboards Mineral Sands Revised Landscape Stability and Sediment Transport Regime Assessment"

Water availability impacts/threat to aquifers

The issue, including effects of climate change on water resources is out of my area of expertise.
I agree that adequate water supply and surety are vital for irrigators, environment and the community.

Jobs per megalitre of water - Mining vs Horticulture

Based on my assessment using available data, the overall direct employment opportunities in both industries (mining and vegetable production) are comparable when looking at jobs per ML of water.
(Using peak employment numbers for the vegetable industry and an average water use of 4 ML/ha each year for vegetable crops)

0.04 – 0.07 jobs/ML in vegetable production

0.067 jobs/ML – mineral sands mine

Employment numbers in the region

REMPLAN 18-19, jobs in all of Agriculture, Forestry & Fishing :	
East Gippsland area:	1612
Lindenow – Granite Rock area:	421

Competition for labour

I am of the opinion that the mining operation and horticulture industry may compete for workers in areas were shortages already occur e.g. truck, tractor and forklift drivers as well as tradesmen. Still, more job opportunities may attract more people to the region.

Seasonal labour in horticulture is commonly sourced via labour hire companies who provide overseas labour (via labour schemes & backpackers).

Provenance, consumer perception

Most vegetables from the Lindenow area are ‘exported’ from the East Gippsland region. They are currently not identifiable for consumers outside of the region e.g., via branding .

The local food processing company Vegco (One Harvest) sources much of its produce from the Lindenow area and also ‘imports’ considerable volumes from around Australia.

Results from studies into buying behaviour are inconclusive depending on methodology (e.g. asking people vs. examining actual behaviour).

The “Mapping Victoria's Food Systems Study” found major driver to be:

- Price of food
- Convenience
- Dietary preferences

Freshness is another major factor according to the Nielsen study cited in the HIA.

“Clean Green”

Australia (e.g. via Austrade) and many horticultural production regions are claiming a ‘clean green’ image (some examples are Tasmania, Manjimup WA, Lockyer Valley and Atherton Tablelands Qld, Northern Adelaide Plains SA).

Legislation and regulations are in place to mitigate environmental impacts.

Several environmental management systems can be used in agriculture to provide evidence of “clean green”.