Submission Cover Sheet

Fingerboards Mineral Sands Project Inquiry and Advisory Committee - EES

552

Request to be heard?: No

Full Name: Graeme Dear

Organisation: East Gippsland Catchment Management Authority

Affected property:

Attachment 1: EGCMA_Fingerbo

Attachment 2:

Attachment 3:

Comments: see attached submission

EAST GIPPSLAND CATCHMENT MANAGEMENT AUTHORITY

SUBMISSION

To: **Fingerboards Mineral Sands Project Inquiry and Advisory Committee**

From: **Chief Executive Officer**
East Gippsland Catchment Management Authority

Subject: **Environment Effects Statement**
Fingerboards Mineral Sands Project

1. INTRODUCTION

The Environment Effects Statement (EES) for the Fingerboards Mineral Sands Project has been reviewed by East Gippsland Catchment Management Authority ("the Authority"). This submission sets out the Authority's assessment of that review.

The Authority is responsible for management of the catchments, waterways, and floodplains of the East Gippsland region, under the *Victorian Water Act 1989* (Water Act) and *Catchment and Land Protection Act 1994* (CaLP Act). The Authority's relevant responsibilities under the Water Act include:

Key Provisions	Focus Issues
Part 10, Division 2: Waterway Management Including (Sec 189): *"…. improve the environmental values and health of water ecosystems, including their biodiversity, ecological functions, quality of water and other uses that depend on environmental condition…."*	Waterway protection, includes receiving waterways of Mitchell River and Gippsland Lakes.
EGCMA By-law No 1: Waterway Protection (made under Sections 160, 161 and 219 of the Act). Applies to designated waterways; authorises Works on Waterways permit process	Waterway protection. Physical disturbance. Changes to flows, water quality, and vegetation regimes.

As such we are responsible for providing statutory advice regarding waterway protection, floodplain management and catchment management.

The Authority is also responsible for planning and implementing priority waterway works under the Water Act. The priority waterways are described in the following strategies and plans:

1. Water for Victoria Plan 2016
2. Victorian Waterway Management Strategy 2013
3. East Gippsland Regional Waterway Strategy 2014
4. Gippsland Lakes Ramsar Site Management Plan 2015

Catchment Values

As the largest unregulated river in the state, the Mitchell River is listed as a Heritage River in Victoria (*Heritage Rivers Act, 1992*). The river is a major contributor of natural freshwater flows into the Gippsland Lakes and has populations of rare and important fish species such as Australian Grayling, Australian Bass, Black Bream and Estuary Perch. These species have both natural, recreational and economic importance to the region.

The river also supplies potable water for approximately 25,000 East Gippsland residents in townships such as Lindenow, Bairnsdale, Paynesville, Metung, Nicholson, Swan Reach, Lakes Entrance, Bruthen, Lake Tyers and Nowa Nowa.

The river provides water to the Lindenow Valley district irrigation area. This area is a major supplier of fresh produce for Australia and supports many transport, farm supply and value add manufacturing businesses in the region.

The river flows into Jones Bay on the Gippsland Lakes, known to be an important refuge for native fish, birds and animals. The Mitchell river mouth; also known as the silt jetties, is the largest example of this type of landform feature in the world.

It is a priority waterway for health improvement programs within the strategic plans listed above. Within the Victorian Government's Water for Victoria Plan, it is listed as one of 36 priority waterways to be the focus of a 30-year large-scale project to rehabilitate the section of the river from Glenaladale to the mouth of the Mitchell. The project is a partnership between landholders, agencies and the Authority to remove bankside weeds, fence off access to grazing stock and revegetate the bank with native vegetation.

This large-scale restoration program will compliment recent work, approximately $1.8M has been invested in the program in recent years. Over 45 local farmers are helping to improve the condition of 70km of the river and wetlands between Glenaladale and Bairnsdale.

The Mitchell River is the major eastern tributary to the Gippsland Lakes, providing critical freshwater flows to fringing wetlands and the ecologically important habitats of Jones Bay and Lake King.

The Gippsland Lakes are also listed as one of the 36 priority waterways in the Water for Victoria Plan. Over the past five years the Victorian Government has invested $12.5M in projects to improve the health of the Lakes system, under the guidance of the Ministerially appointed Gippsland Lakes Coordinating Committee. The program of works involves Traditional Owners, the Gunaikurnai, and all key land and waterway managers across the Gippsland Lakes catchment. Additionally, over 40 different community, agency and natural resource management partners have been involved in this program to protect and enhance the lakes, their catchment and wetlands.

The health of the lakes is critical to the sustainability of the Gippsland region. The Gippsland Lakes are recognised internationally as a Ramsar site for their very significant environmental values. Protecting these values underpins the recreational benefits of the lakes, that so many Victorians enjoy, as well as economic values such as tourism and fishing that help support the economy of the Gippsland region.

The Gippsland Lakes was listed as a Ramsar site in 1982 in recognition of its outstanding coastal wetland values and features. The Gippsland Lakes meets six of the nine criteria for identifying Wetlands of Internationally Importance.

In Australia, there is also a requirement for all sites to have an Ecological Character Description (ECD) that sets out why the site was listed and the critical components, processes and services (CPS) that make up a site's ecological character. An ECD benchmark is set at time of listing that is used to set limits of acceptable change (LAC) for each CPS. Site managers monitor ecological character through undertaking LAC assessments for each CPS.

The site includes 11 Ramsar wetland habitat types which range from coastal lagoons, subtidal seagrass and algal beds, to brackish and freshwater marsh environments. The diversity of these wetland habitats is underpinned by complex and dynamic ecosystem processes including:

- Hydrology and hydrodynamics (freshwater riverine inputs and marine saline inflows);
- Water quality and sediment nutrient dynamics;
- Geomorphology;
- Climate;
- Shoreline and coastal processes; and
- A range of biological processes.

The site supports:

- Over 20,000 waterbirds;
- Breeding of 48 different waterbird species;
- 12 nationally listed threatened species;
- Over 1% of the population of nationally important species (chestnut teal; little tern; and fairy tern);
- Nationally listed coastal saltmarsh; and
- One of only two known populations of Burrunan dolphin.

The Authority is the Ramsar site co-ordinator for the Gippsland Lakes. Management of the Gippsland Lakes Ramsar site is guided by the Gippsland Lakes Ramsar Site Management Plan which documents the management strategies required to protect and maintain ecological character.

Mining Risks

The scale and nature of the open cut mining proposed (especially the intention to begin mining operations from the eastern boundary) increases the risk that the mine site and surrounding landscape could remain unproductive, unstable, and subject to significant erosion issues for generations to come. Such erosion could generate elevated levels of sediment to the Mitchell River system and adversely impact the values of the lower Mitchell River and the Gippsland Lakes.

The proposed mining area is a fragile plateau characterised by thin, low productivity topsoils which is dissected by steep and eroding ephemeral gullies. The proposed mining intends to remove, process, and replace this landscape to an average depth of 29 meters over an area of more than 1350 hectares. This is a significant change to the existing landscape and will likely create instability, both on and off-site for a significant period. The significant structural disruption and long period of exposure will require a high level of management, monitoring and oversight to ensure these risks are effectively managed.

Of particular concern, is the future stability of the eastern escarpment area of the site with its steep ephemeral gullies draining directly to the nearby Mitchell River. The escarpments and foothills in this part of the Mitchell valley have a history of tunnel erosion resulting from dispersive sub-soils (see *Reference 1*).

Many aspects of the proposed land rehabilitation program remain conceptual and are yet to be trialled or proven in practice on a landscape with similar characteristics as the Fingerboards site. Utilisation of practices applied to less complicated sites in the past will likely not be enough to manage on-site and off-site impacts.

We believe; given the complexity of this location, a cautious approach to location, scale and type of initial works, together with stringent licensing requirements is an appropriate course of action.

If the proposal proceeds, the application of a trial area and works, designed to provide proof of concept may be appropriate in this instance.

2. THE ENVIRONMENT EFFECTS STATEMENT

Our commentary on the EES will be confined to our statutory roles as stated above, specifically related to the following sections of the EES:

- Chapter 9: Environmental and Socioeconomic Impact Assessment;
- Chapter 11: Closure; and,
- Chapter 12: Environmental Management Framework.

The Authority believes that the EES provides insufficient detail on several issues to enable the risks of the proposed mining to be effectively assessed at this stage. This means, based on the information and statements to date, we are not confident the risks will be managed sufficiently, to ensure the values of the impacted catchments and waterways can be protected for the long term.

The EES issues of concern and areas requiring more detail to the Authority are described in the following sections.

2.1. Performance Standards

The EES includes many statements of the proponent's intentions which are vague and unquantified. Statements which are critical to the management of risks with the mining proposal require:

- clearer descriptions; and
- firming into quantitative performance standards, for which the proponent should then become accountable.

These issues are set out in **Table 1**. The issues of concern and their location in the document are listed. The Authority's concerns with each issue are described, together with recommended response actions.

2.2. Monitoring

The frequency, scope and duration of several proposed monitoring parameters require clarification and upgrading. Much of the monitoring data should also be made readily available, current and transparent to enable effective scrutiny of the operations and rehabilitation.

Operations monitoring will require stringent and regular oversight to ensure operational risks are managed within effective timeframes.

Post-closure monitoring should continue for at least 20 years after the completion of rehabilitation due to the slow onset of tunnel erosion and streamside revegetation.

In addition, a mechanism is required for the proponent to become responsible for maintenance and corrective action across this timeframe.

The monitoring issues of concern to the Authority are set out in **Table 2**. Their location in the document is indicated and the Authority's concerns with each issue are described, together with recommended response actions.

2.3. Risk Management and Regulation

The complexity, spatial extent and unique setting of the proposed mining activity will create risks of impact to the surrounding area.

While it is recognised that in the first instance, responsibility for management of these risks' rests with the proponent, the Authority believes that the project will also demand substantial and sustained regulatory controls and independent monitoring.

The Authority believes that the extent of this effort, together with the wide range of specialised knowledge, skills and expertise required has potential to stretch the existing resourcing and capability of regionally based agencies and staff.

To effectively regulate and manage the risks inherent in this project, the Authority believes that an independent panel of specialist personnel; established by Earth Resources Regulation, may be a suitable way to address the high degree of ongoing monitoring that will be required. This approach may also help address the significant levels of community concern associated with the proposal.

This mechanism may be required across all phases of the proposed mining project.

Examples of issues highlighting the need for this approach are presented in **Table 3**. Each example includes a brief description of the Authority's concerns, together with recommended actions in response.

Graeme Dear
Chief Executive Officer
East Gippsland Catchment Management Authority
October 2020

3. REFERENCES

- Tunnel Erosion in East Gippsland,
  Department of Primary Industries, Victoria 3953, April 2010
  http://vro.agriculture.vic.gov.au/dpi/vro/egregn.nsf/pages/eg_tunnel_erosion
- Water for Victoria Plan 2016
  Department of Environment Land Water and Planning
  https://www.water.vic.gov.au/__data/assets/pdf_file/0030/58827/Water-Plan-strategy2.pdf
- Victorian Waterway Management Strategy 2013
  Department of Environment Land Water and Planning
  https://www.water.vic.gov.au/waterways-and-catchments/rivers-estuaries-and-waterways/strategies-and-planning
- East Gippsland Regional Waterway Strategy 2014
  East Gippsland Catchment Management Authority, Bairnsdale, Victoria 3875
  https://egcma.com.au/wp-content/uploads/2019/06/East_Gippsland_Waterway_Strategy-Final.pdf
- Gippsland Lakes Ramsar Site Management Plan 2015
  East Gippsland Catchment Management Authority, Bairnsdale, Victoria 3875
  https://egcma.com.au/wp-content/uploads/2019/06/Gippsland-Lakes-Ramsar-Site-Management-Plan-Full.pdf

Table 1. Performance Standards

Issue		Reference / location	EGCMA concerns	Recommended Action
P1	Surface water and groundwater sub-plan	S 9.3.4.2 (p 9-106)	Example measures unquantified	Sub-plan requires quantifiable and measurable performance standards to replace descriptions such as "*where practicable",* "*reduce suspended sediment levels",* "*at appropriate sites",* etc.
P2	Mitigation measure SW04	Mitigation register		
P3	Revegetation of ephemeral drainage gullies	S 9.3.4.2 (p 9-106)	Revegetation parameters unquantified	Mitigation measure SW34 requires inclusion of quantifiable and measurable standards and performance measures
P4	Mitigation measure SW34	Mitigation register		
P5	Cleaning of sediment traps and dams	S 9.3.4.2 (p 9-108)	Cleaning parameters unquantified	Mitigation measure SW40 requires inclusion of quantifiable and measurable standards and performance measures.
P6	Mitigation measure SW40	Mitigation register		
P7	Reduced frequency of flows in the ephemeral drainage gullies downstream of project area.	Table 9-9 (p9-110); and S 9.6.3.2	Adaptive management strategy unquantified	Mitigation measure SW35 (adaptive management strategy) requires inclusion of quantifiable and measurable decision criteria and performance measures.
P8	Mitigation measure SW35	Mitigation register		
P9	Pre- and post-mining catchment areas	Table 9.11 (P 9-120)	Corrective action unspecified	A commitment, based on quantifiable and measurable decision criteria, to address stability issues detected by monitoring programs conducted in waterways for erosion and potential stability issues. *(also see issue M2, Table 2)*
P10	Visual observations to assess stability of waterways	S9.3.9 (p9-124)		
P11	Environmental Review Committee	S 11.5.2	No commitments are given about how frequently it will meet, how current its information will be, how deeply it will be able to question information, or how much influence it will have.	The committee/panel must be independently convened and requires a clear charter and objectives, and the proponent should be required to honour that charter. The committee/panel should have access to up-to-date monitoring data and analysis. A key objective of the committee/panel should be the design and approval of an appropriate monitoring program before licensing of works occurs and early detection of departures from agreed standards and outcomes.

Table 1. Performance Standards *(cont.)*

Issue		Reference / location	EGCMA concerns	Recommended Action
P12	Proposed mitigation. Erosion and increased turbidity and sediment deposition in waterways • *"Riparian vegetation will be established in rehabilitated flow channels to……. (RH08)".* • *"High rates of vegetation establishment will be prioritised in rehabilitated flow channels…..(RH09)".* • *"Tree densities in areas planned for grazing land use, particularly in swale areas, will be increased to… (RH27)".*	S 11-9 (p11-58)	Revegetation parameters unquantified	Mitigation measures RH08, RH09 and RH 27 require inclusion of quantifiable and measurable standards and performance measures.

Table 2. Monitoring

Issue		Reference / location	EGCMA concerns	Recommended Action
M1	Pre- and post-mining catchment areas	Table 9.11 (P 9-120)	Inadequate frequency of monitoring to detect requirement for timely corrective action	A monitoring plan with clearly defined metrics is required to detect erosion and potential stability issues in waterways: • all waterways downstream of operational areas; • waterways with significantly increased post-mining catchment areas (i.e. Simpson and Moulin Creeks) Monitoring to be conducted at minimum intervals of 6 months and after rainfall events greater than 60mm in 24hrs (approximately 1year ARI)
M2	Assessment of the stability of waterways	S9.3.9 (p9-124)		
M3	Closure monitoring. Rehabilitation (Zone D)	Table 11.10	Inadequate frequency of monitoring to detect requirement for timely corrective action	Increase monitoring frequency to at least quarterly
M4	Closure monitoring. Rehabilitation: Biodiversity, Water, catchment values and hydrology *"Qualitative or quantitative assessment of erosion of constructed landforms and other rehabilitated areas and comparison with agreed reference sites. At a minimum to include visual assessment (and photographic record) to document evidence of sheet, rill or tunnel erosion".* Proposed frequency: *"Twice yearly and after significant rainfall events (>1 in 10 years event) for five years following completion of rehabilitation.*		• Inadequate frequency of monitoring to detect requirement for timely corrective action. • Inadequate duration	• Increase monitoring frequency to at least quarterly. • Increase rainfall trigger to events greater than 60mm in 24hrs (approximately 1year ARI). • Increase duration of monitoring to at least twenty years following completion of rehabilitation.
M5	Closure monitoring. *"Implementation of a post mining land use plan which includes discouragement of livestock grazing on newly created (geomorphologically fragile) landforms, flow lines and riparian areas. Livestock access into geomorphologically fragile areas controlled and monitored."*	Table 11-10	• Monitoring of geomorphologically fragile areas unspecified • Duration unspecified	• Monitoring program for rehabilitated areas requires specific details of frequency and scope. • Requires an accompanying commitment to corrective management action. • Monitoring (and corrective action, where required), to extend for at least twenty years following completion of rehabilitation.

Table 2. Monitoring *(cont.)*

Issue		Reference / location	EGCMA concerns	Recommended Action
M6	Closure monitoring. *"Develop vegetation cover to minimise erosion".* *"Annual surveys of rehabilitated areas from commencement of mining operations to assess progress against criteria".*		Inadequate frequency of monitoring to detect timely requirement for corrective action	• Increase monitoring frequency to at least quarterly. • Increase rainfall trigger to events greater than 60mm in 24hrs (approximately 1year ARI). • Increase duration of monitoring to at least twenty years following completion of rehabilitation.
M7	Closure monitoring. *"Design and construction of post-mining landforms such that post-closure hydrological patterns resemble the pre-mining environment".* Proposed monitoring: *"Two-yearly and following major rainfall events (when 72 hour rainfall exceeds 136 mm, corresponding approximately to a one in five-year 72 hour event".*		Inadequate frequency of monitoring to detect timely requirement for corrective action	• Increase monitoring frequency to at least quarterly. • Increase rainfall trigger to events greater than 60mm in 24hrs (approximately 1year ARI). • Increase duration of monitoring to at least twenty years following completion of rehabilitation.

Table 3. Risk Management and Regulation

Issue		Reference / location	EGCMA concerns	Recommended Action
R1	Closure targets Most appropriate material mix (of topsoils, overburden, ameliorants, tailings) is used in the upper layers (~ 1 m) of post-mining landforms.	Table 11-2	The mixing of soils to achieve desired outcomes has only (to date) been demonstrated in theory and laboratory scale tests.	Include a requirement for the proponent, to the satisfaction of regulators, to: 1. design, conduct, monitor, and evaluate a program of field scale trials, as soon as any approval is granted; and, 2. develop a mass balance of the ingredients for the proposed soil mixture(s) for each stage of mining, based on the learnings from the trials, to demonstrate that the recommended soil mixture(s) can actually be manufactured in sufficient volumes at each stage of rehabilitation. 3. include (as a minimum), field rainfall simulation trials to enable calibration of landform evolution models.
R2	Knowledge Gaps	S11.11		
R3	Adaptive management: • *"Rehabilitation, decommissioning and closure outcomes will also depend on actions and decisions made early in the mine life".* • *"Basing rehabilitation plans and activities on sound science by undertaking site-specific studies and research trials early on in the mine life."*	S11.5.1		The actions described in Actions R1 and R2 (above), are required to address this issue also.
R4	Perry Gully will undergo the most significant modification compared to the current configuration, with a large portion of the upper reaches proposed to be filled. The Authority does not believe that the method of stabilisation proposed will provide adequate erosion protection. *"The proposed hillside across Perry Gully ….. will be composed of Haunted Hills Formation basal gravels with a blended cover of topsoil for greater erosion resistance".*	S 11.5.4.1 Surface Water, S 11.6.2.4	Steepened slopes in Perry Gully at high risk of erosion	Include a requirement for the proponent to design and construct suitable erosion control works on steepened slopes, as required, to recognised industry standards and to the satisfaction of regulators.
R5	Remediation.	S 11.6.2.2	Inadequate scope	The scope of remediation commitments should be increased to include (as a minimum): • Incidences of erosion, in excess of compliance standards; • revegetation failures *(see also issue P12);* • pest plant infestations, pest animals • damage from fire, flood.

Table 3. Risk Management and Regulation *(cont.)*

Issue		Reference / location	EGCMA concerns	Recommended Action
R6	Closure Risk Assessment. Erosion of soils	Table 11-9	Inadequate scope	The scope of remediation commitments should be expanded to include erosion in drainage lines and ephemeral gullies, both within and downstream of mine site. Risks to be mitigated should include (a) inadequate water regime to support growth of vigorous riparian and aquatic vegetation, and (b) inadequate stabilisation measures installed
R7	Closure Issues and Impacts. • *"Erosion (loss) of soils from surface flows of runoff water on the post-mining landform".* • *"Failure of vegetation to establish on the post-mining landform and/or poor growth of vegetation once established".*	S11-8		
R8	Tunnel erosion. *"Potentially dispersive (unstable) soils (such as overburden or fines tailings) placed as part of a constructed subsoil will be treated with gypsum. Treatment will be over a thickness of at least 500 mm and will reduce exchangeable sodium and magnesium to levels that reduce the dispersive risk".*	S11.8.2.2	Inadequate treatment. Tunnel erosion has been identified in this area (in similar terrain) extending up to 8 metres depth. *(Reference A, (Sec 7))*	Soil treatment and mitigations to reduce the risk of tunnel erosion be required to extend to a depth of 8 metres.
R9	Proposed Mitigation. Erosion and increased turbidity and sediment deposition in waterways. *"Gypsum will be applied in sufficient quantity to a depth of at least 500 mm as part of a constructed subsoil where material likely to disperse is placed….(RH28)"*	S11-9 P11-59		
R10	Environmental Management Framework. *"Arrangements for management of and access to baseline and monitoring data, to ensure the transparency and accountability of environmental management…"*	Ch 12	Generally, no commitment for current or real-time data being made available to regulators, the Environment Review Committee, or the community. Annual reporting only, in most cases.	Design and conduct monitoring programs to the satisfaction of regulators, including as detailed in Attachment B.