Fingerboards Mineral Sands Project

Environment Effects Statement

Expert Witness Statement

Lincoln Kern, Ecological and Bushfire Risk Consultant

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Qualifications and Experience of Lincoln Kern

I am a trained ecologist with a Bachelor's Degree in Biology and Environmental Studies (completed in 1986 with field studies in Pacific Northwest USA, Southwest USA, India and Central America) from Antioch College in Yellow Springs, Ohio, USA, and a Graduate Diploma in Environmental Management (1998) from Deakin University, Victoria. In addition, I have been involved in environmental planning, ecological restoration and bushfire risk management for 26 years in Victoria through positions with the National Trust of Australia (Victoria) (1991-93), Greening Australia Victoria (1992 including organising a series of field days on reconciling fire risk and native vegetation management), as a supervisor for labour market programs (part-time1993-94) and through Practical Ecology P/L, formed in 1993. I also worked in 1998 as Environmental Planner for Wellington Shire Council in Gippsland where I assessed many native vegetation clearing applications, developed the Shire's roadside vegetation management plan and participated in developing the municipal fire plan.

As owner and manager of Practical Ecology P/L I manage and implement extensive contract works, ecological consulting and bushfire risk management projects. The work has included designing work programs and managing crews implementing ecological restoration works such as weed control projects in remnant vegetation, terrestrial and wetland revegetation projects. I have also written many management plans for bushland reserves across metropolitan Melbourne and dozens of flora and fauna assessments and land management plans for bush blocks in municipalities across Victoria. In addition, I have produced or coordinated many dozens of ecological and bushfire reports on a wide range of projects, from urban and rural subdivisions to houses on rural bush blocks. I have also coordinated the investigation of several incidents of illegal clearing for Councils and the Victorian Department of Environment.

My expertise in fire ecology and fire risk management is based on training in fire ecology through my academic training, a formal course in applying the Wildfire Management Overlay in 2005, ongoing training since that time including the University of Technology Sydney's Development and Planning in Bushfire Prone Areas short course completed in Victoria in November 2013 and most recently training in planning prescribed fire and fire suppression. I have coordinated many wildfire management plans and bushfire management statements and stayed up to date with fire risk assessment techniques through project work, liaison with fire management authorities and attending relevant national conferences.

As manager of Practical Ecology, I have designed and implemented hundreds of restoration projects, flora and fauna surveys and planning assessments across Melbourne and Victoria. I have also developed particular experience in developing property management plans for bushland properties that reconcile development, bushfire risk and native vegetation protection through negotiating with many land owners over several years.

In summary, my expertise is in reconciling planning law and objectives and the assessment and management of native vegetation and bushfire risks. Over time I have taken extensive knowledge of vegetation, ecology and bushfire and combined it with knowledge and experience of the planning system gained through training and experience. My detailed CV is attached at the end of the statement.

Instructions to Lincoln Kern

I was commissioned by Environmental Justice Australia as an expert in ecology and terrestrial and aquatic biodiversity. I was specifically asked to review the components of the EES that address terrestrial and aquatic biodiversity values of the proposed mineral sands project, including

- Technical Study: Detailed ecological investigations (Appendix 5)
- Chapter 8: Terrestrial and aquatic biodiversity (Section 8.2)
- Chapter 9: Environmental and socioeconomic impact assessment (Section 9.1)
- Chapter 10: Matters of National Environmental Significance (various sections)

I was also asked to inspect the vegetation and habitat two farms affected by the proposed mineral sands project, 2705 Bairnsdale- Dargo Road, Glenaladale and 2495 Bairnsdale-Dargo Road, Fernbank.

I was instructed to consider and discuss the following issues:

- Significance of the native vegetation, habitats and flora and fauna present in the Project Area
- The accuracy of vegetation assessments for the two farms I was asked to inspect, adjacent areas and beyond if possible
- The adequacy of assessment of risks to indigenous flora and fauna

The Letter of Brief is attached at the end of this statement.

Documents and other materials considered

This statement will summarise my expert opinion on relevant issues as investigated, discussed and documented in the statement below. In addition to reviewing the sections of the EES directly relevant to terrestrial and aquatic biodiversity I read through other sections of the EES to ensure I understood the parameters of the overall project, including:

Scoping Requirements
Summary Report
Map Book
Chapters 8 – Environmental and socioeconomic context
Chapter 9- Environmental and socioeconomic Impact Assessment
Chapter 10 – Matters of National Environmental Significance
Chapter 11 – Closure
Attachment E – Biodiversity Offset Management Strategy
Appendix A020 – Rehabilitation

A report by Treetec were also reviewed:

Rare or Threatened Flora and Fauna Surveying of the proposed Kalbar Fingerboards Mineral Sands Project Site by Bradley Jenner, Treetec Professional Tree Services dated 2 November 2020

Scientific Background:

Bennett, A. and Lumsden, L. (May 2003). *Bats and Paddock Trees – Insights from recent research*. Department of Sustainability and Environment, East Melbourne.

Manning, A. D. and Fischer, J. (2005). *Scattered Paddock Trees: The Living Dead or the Lifeline to the Future*. In Lindenmayer *et al* 2005.

Fischer, J., Stott, J. and Law, B. S. (2010). The disproportionate value of scattered trees. *Biological Conservation* Vol. 143 (1564–1567).

Gibbons, P. and Lindenmayer, D. (2002). *Tree Hollows and Wildlife Conservation in Australia*. CSIRO Publishing, Collingwood, Victoria.

Heard, S. (2015). *Improving Knowledge of Water-Dependent Assets and Receptors in the Gippsland Basin DEPARTMENT OF ENVIRONMENT, LAND, WATER AND PLANNING Groundwater Dependent Ecosystem Conceptual Modelling Final* V2 20 May 2015

Lindenmayer, D. *et al* (2011). *What makes a farm good for wildlife?* CSIRO Publishing, Collingwood, Victoria.

Executive Summary

The Fingerboards Mineral Sands Project would have an enormous impact on the local environment with at least 1350 hectares of land completely deconstructed and transformed including the loss of approximately 210 hectares of threatened and rare native vegetation. This impact and loss of native vegetation and habitat would occur mainly in the Gippsland Plains bioregion which is already substantially cleared. The native vegetation proposed for clearing is more significant than the proponent of the projects indicate with the substantial loss of 704 Large Trees with hollows and or developing hollows a significant impact and that the vast majority of the proposed clearing is of Endangered or Vulnerable EVCs that are already mostly cleared across the Gippsland Plain.

The level of native vegetation clearing, approximately 210 ha, is also extreme for any recent project in Victoria, particular because the EVCs affected are mostly Vulnerable or Endangered and already too uncommon because of past clearing. With native vegetation controls implemented in Victorian Planning Schemes since 1989 because of a high level of historic and ongoing clearing and the obligation to avoid and minimise clearing as the peak obligation in the current planning scheme the proposed clearing is too high of an impact in a region already significantly cleared and degraded.

Through a limited peer review exercise, I identified several significant but easily spotted errors in native vegetation mapping for the project and if the incidence of such errors exists across the entire Project Area then there are significant questions and possible concerns about the process having met the obligations to properly assess all native vegetation losses. Further more detailed peer review is recommended to determine if there are significant errors in the mapping and loss calculation.

Threatened flora and fauna survey work by Treetec highlights several important issues. Their work confirms that more threatened flora species occur in the Project Area then are recorded in the ecological assessment for the project. The existence of these threatened flora species provide evidence that the endangered EVCs that would be cleared for the project have species that may be limited to local habitats and to vegetation types only present in certain environments. The timing of the flora surveys conducted for the ecological assessment of the project are also inadequate for identifying populations of important flora species such as orchids.

Rare woodland birds such as the Swift Parrot have been recorded in the local area over time and some of their preferred and occasional habitat is in the Project Area and surrounding local area. It is more than possible that they are occasional visitors during their migrations in search of their preferred flowering eucalypts and the species is generally reliant on dispersed areas of habitat over a long-term time frame. The judgement made in the ecological assessment that there is no critical habitat in the Project Area may be a judgement, combined with many other similar judgements in development decisions across eastern Australia, that continues to cause the threatening processes that is driving this species extinct. Each small increment of lost habitat may seem

inconsequential, although the vegetation losses for the mine would be substantial within themselves, but they accumulate over time and across landscapes.

It is proposed to restore 200 hectares of the local woodland through direct seeding and it can likely be achieved. However, the only indication of a future management regime is that grazing animals will be excluded. Woodland restoration without grazing for biomass reduction and maybe income within a framework of conservation management may create a situation where there is no viable future for the restoration after the mine closes. If there are no reasonable viable long-term arrangements for management then there may no point to this work. It is important to consider and propose a reasonable long term management regime to ensure that this substantial work is not just "greenwashing".

All of the offsets required for this project should be obtained or in some form made legally certain to be available under the requirements of Clause 52.17 and this rule should be enforced as part of any possible approval for this project as there is uncertainty if the offsets will be available in the future if the mine is approved and it is likely to approved as a whole and not in stages.

It appears that Gippsland Red Gum Grassy Woodlands in general and specific sites such as Sapling Morass Flora and Fauna Reserve, may be GDEs yet it appears that the GDE assessment dismisses any risks to these values. These Red Gum woodlands will remain around the mine and through the bore field and rely on groundwater in dry times. I am not qualified to comment on possible groundwater regime changes that could occur with the mine and bore field but I do believe the issue needs to better considered.

Statement of Expert Evidence

1. INTRODUCTION, APPOINTMENT AND METHODOLOGY

1.1 Kalbar Resources propose to develop the Fingerboards Mineral Sands Project, including a mine as well as associated processing facilities and infrastructure required to process the mined ore into mineral concentrate that will be exported to Asia. The mineral sand resource occurs in a sedimentary layer approximately 40 m below the existing land surface and wholesale removal of the overburden is proposed to reach the ore. The entire project area is 1675 hectares according to the Summary Report.

1.2 I was commissioned by Environmental Justice Australia in October 2020 on behalf of Submitter 813 to consider the existing ecological values within the proposed mineral sands project footprint, referred to as the Project Area throughout this witness statement.

1.3 I inspected the 2495 Bairnsdale–Dargo Road, Fernbank on 23 October 2020 and 2705 Bairnsdale–Dargo Road, Glenaladale on 24 October 2020. I was able to inspect the vast majority of the first property but only generally inspected the second property due to inclement weather.

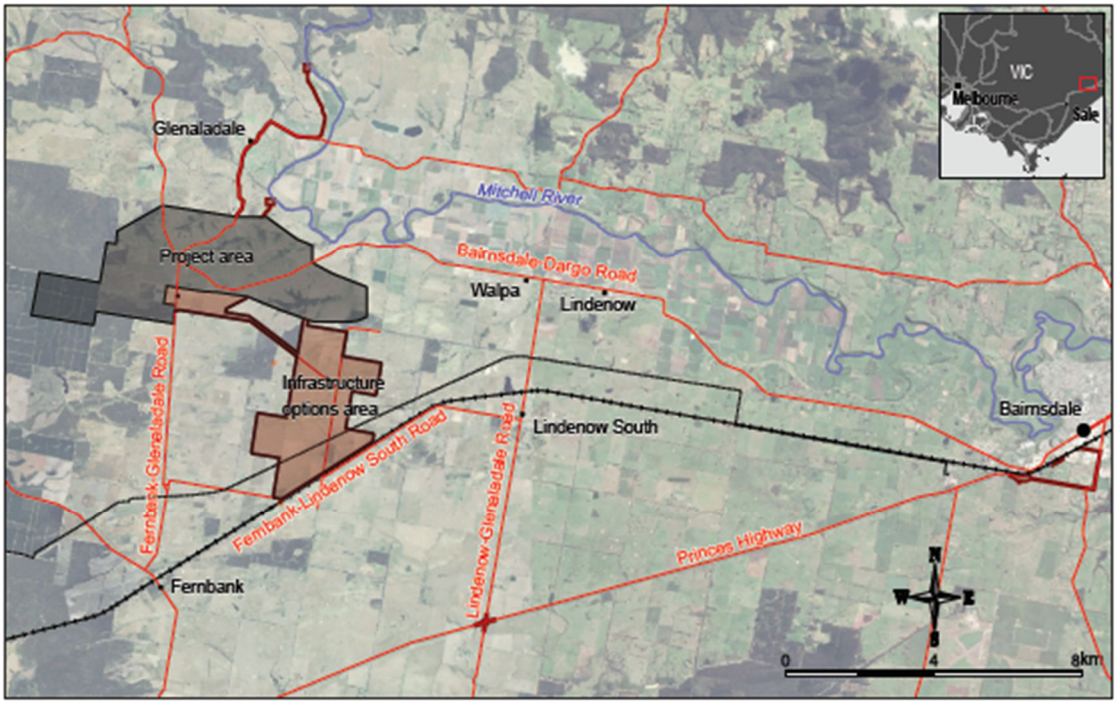


Figure 1 Project area and the associated infrastructure options area which will include a water supply borefield, and power, water and road infrastructure.

Figure 1. Project area.

2. Overview of the Substantial Impacts of the Proposed Mineral Sands Project

2.1 It is clear that the proposed mineral sands development will have a very significant impact on the local environment. In order to access the layer of mineral sands the planned open pit mine area is 1,192 hectares. The entire landscape will be substantially transformed because of the removal of overburden and the mineral sands underneath. A further 158 hectares will be required to locate supporting infrastructure and facilities, again producing substantial permanent disturbance.

2.2 At least 1350 hectares of land will be permanently transformed with topsoil, subsoil and lower rock layers with all ecological values removed. The mine and infrastructure footprint would then have the overburden replaced and contoured to a semblance of the original topography. The current extant native vegetation and habitats will be only replaced with vegetation that would be a pale reflection of the original cover. The mine operators will be required to get the landform and soils stable and these soil surfaces will be completely reformed and new with no soil seedbanks to help regenerate native vegetation over time. Native vegetation can only be returned to the disturbed site through planting nursery stock and direct seeding which can only establish a limited range of flora species over time. The Large Trees with hollows and other significant resources for native fauna that would be removed will take a minimum of 100 years to even begin to replace the existing hollows. Critical ecological values will either never be re-established or will take many decades if not hundreds of years.

2.3 The proponents emphasise that they will rehabilitate the land so that farming can occur with substantial plantings and establishment of native vegetation as part of the staged rehabilitation program. While grazing pastures with a limited mixture of native and exotic grasses may be easily recreated the restored local indigenous vegetation systems will be much simpler with much fewer flora species and habitat structures than the original remnant vegetation. Most of the values of the remnant native vegetation currently present, even degraded by past clearing and ongoing grazing in some cases, simply cannot be replaced through restoration works to significant degree even with a long-time frame because restoring dramatically disturbed landscapes to any state resembling their original condition is virtually impossible.

2.4 The level of clearing of native vegetation is also an extreme quantity for any development, with a calculated loss of 160.30 hectares of native vegetation from surveyed portions of the Project Area plus another 49.52 hectares estimated for the site at 2705 Bairnsdale-Dargo Road, Glenaladale that was not surveyed. This would be a total of approximately 210 hectares of native vegetation lost in bioregions that are already substantially disturbed and over cleared because of their good conditions for farming.

2.5 Clearing 210 hectares of native vegetation is extreme for any infrastructure project since native vegetation controls were introduced in Victoria. For example, two state significant road projects with likely much greater initial and sustained economic benefits than this

project didn't and won't result in the clearing of more than 55 hectares of native vegetation each. The construction on Peninsula Link resulted in the loss of 55 hectares and the native vegetation loss as a result of Northeast Link will be approximately 52 hectares. There are very few development projects in Victoria that I have been aware of in over 25 years of experience as an ecological consultant that have cleared over 10 hectares much less over 200. The obligation to avoid and minimise clearing of native vegetation was introduced in 2003 because of the high levels of vegetation clearing up until that point, particular in over-cleared and degraded bioregion such as the Gippsland Plains and Victorian Volcanic Plains, and it became clear that it was important to reverse the loss of native vegetation in a state that had the highest levels of native vegetation loss in Australia. The obligation to avoid and minimise clearing is higher in areas like the Project Area where the native vegetation and habitats are already substantially destroyed and disturbed.

2.6 In addition, the proponents of the project and the technical report presents data in way that highlights the limited cover of native vegetation and high level of degradation rather than highlighting the ecological significance of what remains. Once a state where a minority of certain types of native vegetation and habitats remain is reached there are two alternative paths. The perspective emphasised in the EES documents is that the Project Area has a limited amount of degraded native vegetation that is expendable but I would suggest that the evidence indicates that the native vegetation and habitats across the Gippsland Plains and part of the East Gippsland Lowland bioregions have been so depleted and degraded that the remaining areas are actually more threatened, significant and deserving of retention, protection and management.

2.7 The limited cover of native vegetation and its degraded condition is not in a state to be discounted or to be seen to have limited value. Rather, the indigenous remnants that remain are important to retain for conservation of flora and fauna, sustainable farming and land use and should be seen as the basis for restoration of indigenous habitats and ecological processes.

2.8 The Project Area is mostly in the Gippsland Plains Bioregion with just the western end in the East Gippsland Lowlands Bioregion. The Gippsland Plains bioregion, primarily the open grassy plains portions of the bioregion, has been selectively cleared for farming and in an advanced degraded state with many of the native vegetation and habitats that only occur in the bioregion substantially lost with earlier clearing for farming and urbanisation. The East Gippsland Lowlands bioregion is only substantially cleared on its western extremes, exactly where the Fingerboards Mineral Sands Project would cause further clearing. The loss of native vegetation that would be required as part of the mineral sands projects would be another large incremental impact on an already heavily stressed ecological system.

2.9 The Gippsland Plains is a bioregion that has already been substantially cleared, except for large patches of coastal vegetation, with the majority of the wetland, grasslands and woodlands that occurred on open plains cleared and destroyed with many existing remnants degraded and disturbed. The types of native vegetation and habitats that

occurred, and still do to a much smaller degree, are unique to the Gippsland Plains because of its unique characteristics.

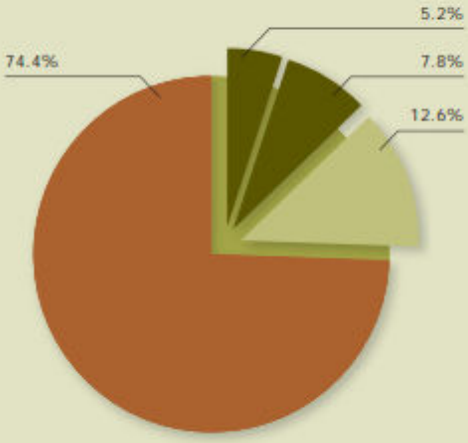
2.10 Figures 2 and 3 below provide descriptions of the state of historic land use and native vegetation in the two bioregions that the Project Area is within as published by the Victorian Environmental Assessment Council. The summaries provide a good summary of the conditions in each bioregion with the state of the Gippsland Plains bioregion particularly extreme with 75% of the native vegetation cleared and lost. Indigenous habitats are already substantially lost or modified across by the bioregion.

2.11 The next two sections will talk about the importance of two specific ecological values that would be lost if the project goes ahead and further illustrate the importance and significance of the native vegetation and habitats that remain in the Project Area.

GIPPSLAND PLAIN

TOTAL BIOREGION 1,208,072 ha

- **Largely-intact landscape** 5,280 ha – less than 1%
- **Fragmented landscape** 1,202,792 ha – ~100%



FRAGMENTED LANDSCAPE

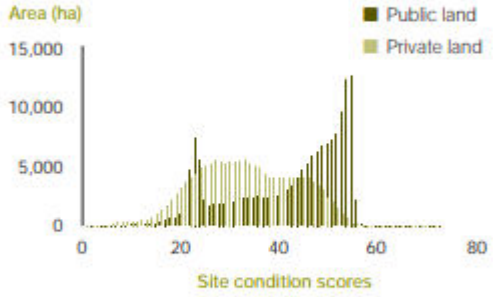
- **Native vegetation extent** 308,320 ha – **25.6%**
  - **On public land** (total) 156,911 ha – 13.0%
    - In conservation reserves 62,785 ha – 5.2%
    - In other public land categories 94,126 ha – 7.8%
  - **On private land** 151,409 ha – 12.6%
- **Not native vegetation** 894,472 ha – **74.4%**

KEY FINDINGS

The Gippsland Plain retains native vegetation of disparate pattern, reflecting a variety of land-use histories in the bioregion. Less than one percent of the bioregion is largely-intact. Much of the bioregion has been heavily modified with only a quarter of the original extent of native vegetation remaining of which about half is on public land, a substantial proportion within conservation reserves. Overall site condition and landscape context scores for public land are greater than private land and the overall state median. In each patch size class, the proportion by area on private land is slightly greater than that on public land for all except the largest patch size, in which public land dominates.

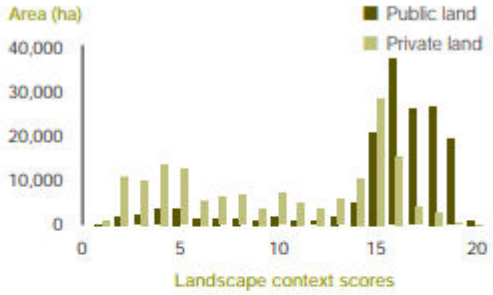
The western end of the bioregion encompasses the populated southeastern suburbs of Melbourne. Here native vegetation patches are few, small and of poor quality. The Mornington Peninsula and the eastern rural area of the bioregion have a high proportion of small scattered patches of poor site condition because of agricultural land-use activities. Similarly, in the central area of the Gippsland Plain – particularly adjacent to the Highlands – Southern Fall bioregion – the land has been heavily cleared for agriculture and few patches of substantial size exist. In these areas the proportion of native vegetation on road reserves is higher than elsewhere in the bioregion. Several islands in the Nooramunga Marine and Coastal Park have vegetation of moderate to good site condition. Large patches occur in the less fertile regions near the coast – around the Gippsland Lakes and Ninety Mile Beach, on French Island and between Holey Plains State Park and Yarram. These patches are of high quality and connectivity – a variegated landscape (see figure 2.3), contrasting sharply with the relictual landscapes of the remainder of the bioregion.

Distribution of site condition scores



Public land median score – 45.7
Private land median score – 32.4
[Statewide median score – 36.8]

Distribution of landscape context scores



Public land median score – 15.8
Private land median score – 9.9
[Statewide median score – 14.9]

BIOPHYSICAL BASIS

The Gippsland Plain bioregion is characterised by lowland alluvial and coastal plains formed from erodible Tertiary sediments and Quaternary alluvial deposits. The terrain is flat to gently undulating and vegetated by Swamp Scrub and open forests with a grassy and herbaceous ground-layer. The bioregion is generally below 200 m in altitude, with coastal areas of sandy beaches, shallow inlets and extensive mudflats and mangroves. The Gippsland Plain contains a large number of freshwater wetlands and saline estuaries and lagoons. Major rivers include the Bass, La Trobe, Thomson, Macalister, Avon and Mitchell.

Average annual rainfall across the bioregion: 600-1100 mm
Daily mean temperature across the bioregion: 9-15°C

LAND USE HISTORY

European settlement occurred relatively late, with most settlement occurring after 1860 and settled by families on small farms. Vegetation on less fertile soils was cleared after the development of fertilisers and trace element technology in the 1950s. Substantial areas in the west of the bioregion near Melbourne are urbanised and areas to the immediate east have been heavily cleared for dairy and cattle grazing. Land-use outside the Melbourne region is varied but centred on natural resources – agriculture, energy, forestry and water are the most significant economic activities. In some areas, there has been considerable purchase of land for lifestyle properties and coastal areas are popular tourist locations.

Figure 2. Overview of the current condition of the Gippsland Plains Bioregion.

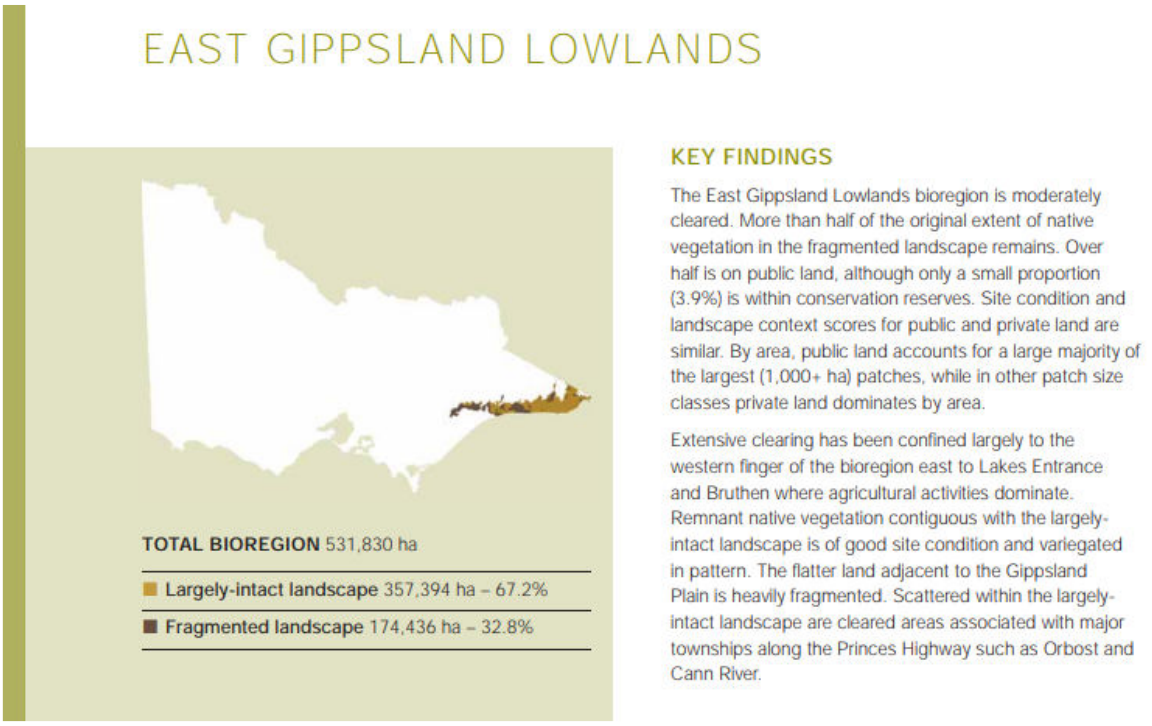


Figure 3. Overview of the current condition of the East Gippsland Lowlands Bioregion

Source: http://www.veac.vic.gov.au/documents/Chapter%205%20-%20Findings%20by%20Bioregion.pdf

3. Loss of Large Trees with hollows

3.1 The Technical Report on Ecology indicates that 704 Large Trees, 373 within Habitat patches and 331 as scattered trees, with 131 of those trees over 120 cm Diameter at Breast Height (DBH). The Technical Report on ecology states that some of the large trees were inspected for hollows but this is hardly necessary or effective if assessed from the ground because it can be very hard to observe tree hollows. The Large Old Tree, from Native Vegetation Framework days prior to 2013, and Large Tree definition was developed and is used in planning assessments because it serves as an excellent surrogate measure to determine ecological significance. The threshold for Large Tree status for each EVC is the point when they likely start forming hollows and becoming more significant food sources. Having said that the report was more than correct to highlight that larger trees over 120 cm DBH are more likely to have hollows but even the younger trees that are just over the threshold size will be well on their way to providing the tree hollows that are required habitat for many species of native fauna.

3.2 The loss of Large Trees world be an irreversible impact that cannot mitigated by the proposed revegetation for at least 100 to 200 years because hollows only start forming in eucalypts once they reach 80 or more years of age. Please note that the term "paddock trees" refer to the scattered trees across the paddocks of the Project Area but much of their indigenous ecological value will overlap with the valued habitat components of Large Trees in habitat patches as well.

3.3 The Large Trees proposed for removal are ecologically significant because they provide hollows and an abundance of foraging resources, i.e. flowers, nectar, buds and flowers, much more significant than smaller trees providing food for a wide variety of native fauna. Larger old trees are also likely to provide more shelter, such as crevices and bark slabs, for native fauna such as bats which provide significant ecological services (Bennett and Lumsden 2003 and Gibbons and Lindenmayer 2002).

3.4 Lindenmayer *et al* 2011 summarises the importance of paddock trees in south-eastern Australia agricultural landscapes. Scattered paddock trees are legacies of the previous, often denser, cover of native woodland. Most of the tree cover in many agricultural areas comprises paddock trees and these trees typically pre-date European settlement as would be true in the Project Area. Studies have indicated that paddock trees have many critical values for woodland biodiversity. Paddock trees can be so valuable in agricultural landscapes that they have been termed 'keystone structures'. This means that scattered paddock trees have an array of functions which makes them disproportionately valuable relative to the area they occupy.

3.5 More recent ecological research by Fischer *et al* (2010) continues to confirm the importance and disproportionate value of paddock trees in agricultural landscapes. David Lindenmayer has done much of the relevant research in rural landscapes over time and made a significant effort to translate the scientific evidence into practical information like his book (2011) *What makes a good farm for wildlife*?. Manning and Fischer (2005) have also defined the issue well with the title and subject of their chapter, *Scattered Paddock Trees: The Living Dead or the Lifeline to the Future,* highlighting that paddock trees are valuable for conserving indigenous biodiversity in agricultural landscapes and should be the basis for partial restoration of native vegetation in agricultural landscapes and ecosystem services.

3.6 Large hollow bearing trees, including those proposed for removal in this case, are critically important habitat components for many native fauna species and increasingly threatened in south-eastern Australia. According to Gibbons and Lindenmayer (2002) tree hollows are critical to the survival of many native fauna species, including 13% of all amphibian, 10% of all reptile, 15% of all bird and 31% of all mammal species. Tree hollows are important for an incredible range of Australian and local fauna species and the loss of the large trees they occur in is a key threatening process for many threatened fauna species because of their historic and ongoing loss.

3.7 Trees with hollows are also nationally threatened with the loss of hollow bearing trees being listed as a threatening process under both the Environmental Protection and Biodiversity Conservation Act and the Victorian Flora and Fauna Guarantee Act. It is likely that the situation will get worse before it gets better with hollow bearing trees likely to decline further, predominantly because of agricultural intensification and change from grazing to cropping but also due urban development and mining, before there are substantial replacements growing as hollows only start to form after 80 years of age in eucalypts (Gibbons and Lindenmayer 2002). Removing smaller trees of moderate age just beginning to form hollows exacerbates this trend because they are the trees that will have hollows relatively soon as opposed to tree plantings from the last 30 years of Landcare and emerging restoration efforts where hollows will take many decades to form.

3.8 The loss of significant numbers of Large Trees that are likely to have hollows and other resources for native fauna species would be an unacceptable impact of the proposed mineral sands project because it represents the loss of a largely irreplaceable ecological resources that are important for a wide range of native fauna species. We know that the survival of many native fauna species is threatened by the loss of large trees and it is clear that we need to reverse the trend of loss and retain large old trees whether they are scattered trees across farm paddocks or within patches of remnant vegetation.

3.9 The provision of nest boxes is often seen as a partial solution to the problem of losing hollows but they are being shown to be substantially inferior to natural hollows because of the heat stress they can cause in contrast to well insulated tree hollows. Nest boxes also require conscientious monitoring and management of pest species to ensure they are effectively used by native fauna and this important nest box management work is too often not done or done inadequately. Preserving large trees with natural hollows and other important fauna resources will always be a more reliable and much less expensive method of ensuring this key habitat component is available for many species of native fauna.

4. Loss of Endangered, Vulnerable and Depleted Ecological Vegetation Classes

4.1 Another surrogate assessment of the significance of remnant vegetation is the Bioregional Conservation Significance (BCS) of any remnants present in the Project based on the Ecological Vegetation Classes (EVC) present on a site. The different levels of this classification system indicate the extant area of the specific EVC and its' condition in a bioregion. The BCS of the EVCs in the Project Area is another indication of the significant ecological value of the native vegetation across the Project Area and its loss and degradation over time. If less native vegetation of specific vegetation or habitat types remain extant then the remnants become valuable for their rarity.

4.2 The EVCs in the Project Area are indications of the historic loss and degraded status of many of the EVCs found in the Project Area and the bioregions that it is within. The BCS of the EVCs are either Depleted, Vulnerable or Endangered and the definitions of each

level are presented below in Figure 4. The main criteria for the different categories are the amount of specific EVCs that may remain in a bioregion as calculated by DELWP based on general determination and modelling of EVCs from 2005. Please note that Endangered EVCs have usually had 90% or more of their former extent removed, Vulnerable EVCs have usually 70% or more cleared and Depleted EVCs have at least 50% of their former extent destroyed.

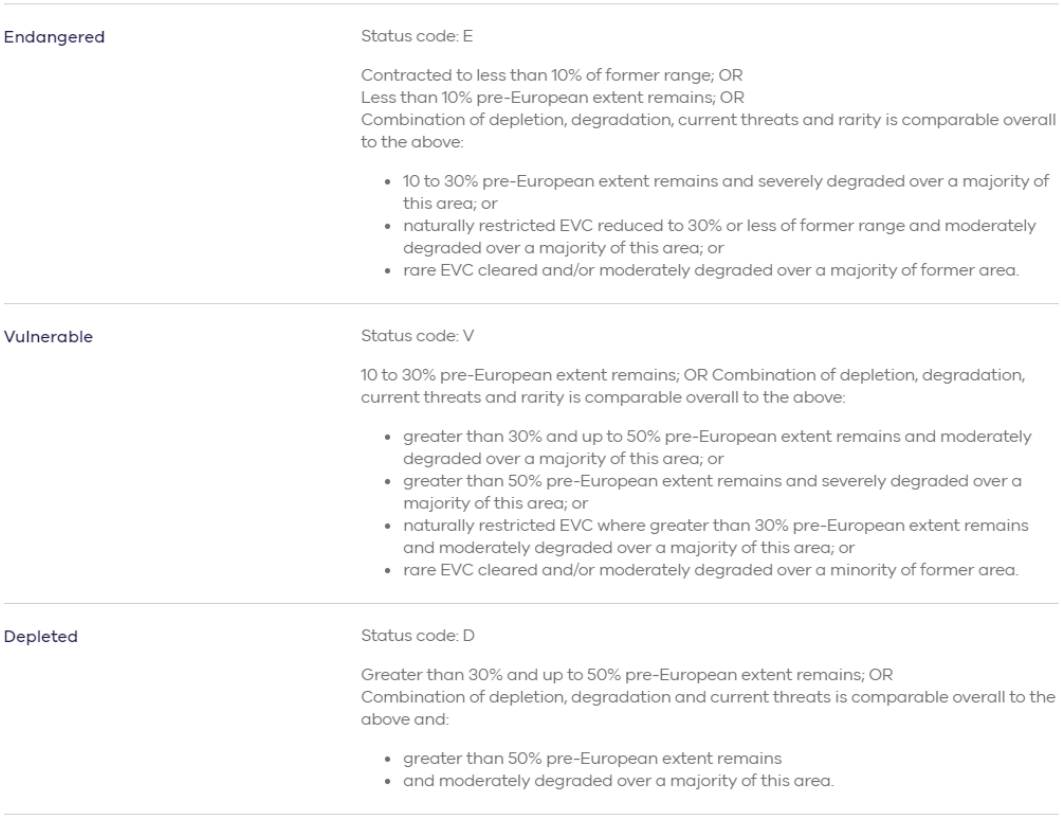


Figure 4. Definitions of Bioregional Conservation Status.

Source: https://www.environment.vic.gov.au/biodiversity/bioregions-and-evc-benchmarks

4.3 I have taken the data on proposed native vegetation losses in the Technical Report on ecology and analysed them in a way that illustrates the historic impacts on the vegetation and the decreasing extent of the relevant EVCs. The table below analyses the estimated EVC losses in relation to their Bioregional Conservation Significance.

Bioregional Conservation Status of EVCs to be cleared	Area in hectares	% of proposed clearing
Endangered including EVCs from surveyed areas and the estimated losses from 2705 Bairnsdale-Dargo Road, Glenaladale	107.88	51%
Vulnerable	87.33	42%
Depleted	8.61	4%
Current Wetland layer	6.10	3%
Total	**209.92**	

4.4 The analysis in the table above provides some dramatic indicators regarding the historic loss of the relevant EVCs and their current significance. Over 50% of the EVCs proposed for removal are already Endangered and clearing another 107 hectares will be a significant impact for these EVCs even if it appears that many hectares remain elsewhere with the modelling presented in the Technical Report on Ecology. Over 40% of the extant EVCs are considered Vulnerable with more than 70% cleared in the bioregion. These are pretty damning numbers indicating yet again that majority of the EVCs in the Project Area are already substantially lost and degraded and another significant loss of extent, over 200 hectares, would be an unacceptable impact on native vegetation types that are disproportionately affected by historic clearing.

4.5 The plan presented below indicates the BCS of the EVCs in the Project Area and across the eastern end of the Gippsland Plains bioregion. We know from the statistics presented in the table above that that vast majority of EVCs in the local area are Endangered or Vulnerable even if the plan presented below indicates an odd yellow colour in the Project area that isn't in the key. This plan also effectively shows the status of EVCs across the Gippsland Plains with remnant vegetation only remaining along roadsides, limited areas of public land and sometimes in remnants on private land. This plan again shows that the native vegetation and habitats across the Gippsland Plains and western end of the East Gippsland Lowlands bioregions is already reduced in extent and likely severely degraded.

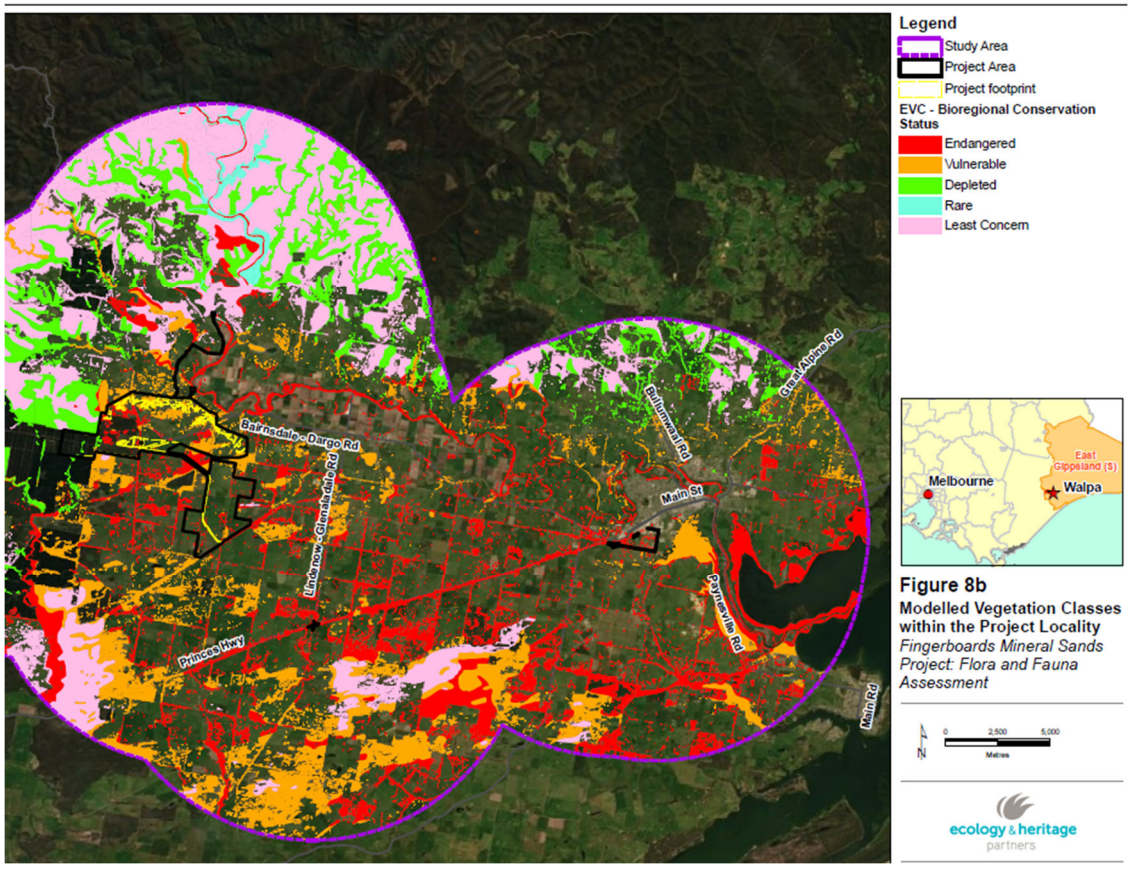


Figure 5. The Bioregional Conservation Status of EVCs in the Project Area and across the adjacent plains.

Source: Technical Report on Ecology for the Fingerboards Project EES.

4.6 In summary, the Bioregional Conservation Significance of the EVCs and native vegetation in the Project Area indicates that the specific EVCs are already substantially cleared and threatened across the Gippsland Plains with many of the remnants degraded by agricultural use. Another significant block of vegetation clearing on the Gippsland Plains will further exacerbate the substantial historic loss of the vegetation and habitats across the bioregion.

5. Accuracy of Vegetation Assessment and Mapping

5.1 A simple peer review of the accuracy of the vegetation mapping work done as part of the ecological assessment for the proposed mineral sands project. The aim and method were to inspect a sample of the different components of the native vegetation assessment, i.e. habitat patches and scattered trees, and determine if the mapping undertaken by Ecology and Heritage Partners (EHP) was generally accurate. I was able to inspect most of the vegetation around 2495 Bairnsdale-Dargo Road, Fernbank including Bairnsdale-Dargo, Chettles and Limpyers Roads.

5.2 As I was inspecting 2495 Bairnsdale-Dargo Road, Fernbank I inspected all of the mapped vegetation on that property and immediate area then considered several factors including the EVC present, whether trees were planted and introduced and the extent of habitat zones. I was able to inspect native vegetation across ten of the "Ecological Features" maps in the vicinity of the property, including 6c, 6d, 6e, 6i, 6l, 6m, 6P, 6ae, 6af and 6ag, and found several concerning issues. Of the ten maps where I was able to inspect the areas of mapped native vegetation, I found what I would consider significant errors in mapping on two of the ten maps considered as detailed in the next three examples.

5.3 Two patches of trees were found that were clearly planted and introduced yet were called the Valley Grassy Forest EVC. In these patches the trees were definitively planted and introduced with very little indigenous understorey present so that at least two patches are not eligible as habitat zones. These likely errors would reduce the losses and offsets required.

5.4 Several patches of EVCs were found that were clearly different EVCs to the labels on the maps. Several examples were labelled as the Lowland Forest EVC, which would usually be dominated by Messmate *Eucalyptus obliqua* with the occasional Narrow-leaf Peppermint *E. radiata*, but were clearly dominated by Forest Red Gum E. *tereticornis* ssp. *mediana*. With this significant difference between eucalypt species dominating different EVCs, it was sometimes straightforward to see different EVCs simply based on the dominant tree species. This error in mapping would produce an outcome an EVC with a BCS of Vulnerable would be abundant than a rarer EVC, i.e. Plains Grassy Woodland which has a BCS of Endangered.

5.5 In one case it also appeared that a linear group of "scattered trees" along a roadside were clearly connected by indigenous understorey of 25% cover or more and were more properly a habitat zone. It may have been possible that the understorey improved since the assessment work for the project but in my view the groundstorey and shrub layer

was good enough to have been present for many years. This error in mapping would add the to the likely clearing required for the project.

Figure 6. Planted and introduced eucalypts near the dam at 2495 Bairnsdale-Dargo Road mapped as Valley Grassy Forest EVC.

Figure 7. Examples of the Plains Grassy Woodland EVC dominated by Forest Red Gums on Chettles Road near the junction of Fernbank-Glenaladale Road.

Figure 8. Plains Grassy Woodland EVC dominated by Forest Red Gum mapped as Lowland Forest at the junction of Fernbank-Glenaladale and Chettles Roads.

Figure 9. Native vegetation on the Bairnsdale-Dargo Road mapped as Plains Grassy Woodland but clearly not dominated by Forest Red Gum as would be expected and is more likely Lowland Forest.

5.6 These errors in mapping identified native vegetation as part of a small sample in relation to the overall project area prompts several concerns. Vegetation mapping on three out of the ten Ecological Features map sheets I inspected were found to contain several discrepancies and they had a range of likely consequences, in some cases reducing losses and offsets, in other cases just changing the possible type of offset and yet other cases increasing the vegetation losses and required offset.

5.7 The first significant issue is that the errors I identified are pretty glaring considering the simple assessment process used. I did not take the time to look at subtle differences

between habitat zones but looked for clear simple indicators to determine if the vegetation mapping was accurate. With this simple approach I may have even missed more subtle errors in the area I inspected and reviewed the mapping data.

5.8 My assessment work is a small sample of the overall mapping process but if these errors would be quite concerning if they are reproduced at similar rates across the entire Project Area. If this rate of mapping errors existed across the entire Project Area could potentially accumulate to a significant variation in the vegetation losses and required offsets to those calculated in the ecological assessment for the project.

5.9 The more significant issue concerning these identified errors is that the accurate assessment of native vegetation losses is strictly required under Clause 52.17 of the East Gippsland Planning Scheme. This small sample shows that there are at least several small to significant errors in the vegetation mapping in this part of the Project Area that if reflected across the entire project could reflect a level of inaccuracy that doesn't meet the requirements of Clause 52.17.

5.10 I would recommend that a more detailed peer review of the vegetation be undertaken to see if there are more significant levels of errors on a wider basis. My limited peer review based on a limited sample raises concerns that the clear obligations under relevant planning provisions to properly assess native vegetation that may be affected by the proposed development may not have been completed to the degree required.

6. Threatened Flora and Fauna Survey by Treetec

6.1 I reviewed the report on threatened flora and fauna survey work they undertook dated 2 November 2020 and considered the implications for the proposed mineral sands project.

6.2 Treetec was able to find populations of several threatened taxa of flora although their survey did not result in new records threatened fauna. The flora taxa they were able to observe in their brief survey does increase the significance of the native vegetation that would be removed for the project. This is somewhat expected given the substantial impact on endangered, vulnerable and depleted EVCs that would occur as part of the proposed mineral sands projects as discussed above.

6.3 Any EVC or group of similar EVCs in similar environmental contexts will have a unique suite of plants associated with the vegetation types as well as more ubiquitous species that occur across many EVCs and environments. The Treetec survey results indicate specific flora species that generally occur in the relatively dry vegetation types that occur on this portion of the Gippsland Plains and East Gippsland Lowlands bioregions. There are clear reasons why these species have become threatened as they generally occur in vegetation types that have been generally heavily impacted by clearing and development or their populations are of limited size and distribution.

6.4 Treetec also makes a very important and correct point on the timing of the survey work for the proposed mineral sands projects. The majority of the survey work was

undertaken in the middle of a significant and record-breaking drought in East Gippsland. The drought just broke in 2020 with the current La Nina season after 4 or 5 years of rainfall significantly below average rainfall. The timing of the flora surveys undertaken for the proposed mineral sands project were in 2016 at the beginning of a drought that would have caused many plant species to be dormant.

6.5 Treetec also properly points out that an accurate orchid survey can only occur at limited times of each season because of their short leaf growth and flowering period and sometimes only in certain years because of drought. In addition, Victoria also has many terrestrial orchid species, almost 400, and many are rare or threatened so it is important to survey for them with the correct timing. Targeted flora surveys were done for two weeks in October and November 2016 but would not have been overly effective for orchids. A whole significant group, predominantly Greenhoods or *Pterostylis* spp., generally flower in August and September and can easily have all of there above ground parts burnt off by October. The survey timing would have been appropriate for another significant group, predominantly Sun Orchids or *Thelymitra* spp. but many others, but it occurred in a drought year when reduced or even no flowering may have occurred yet they will often still be present in the ground as corms. There could easily be many orchid species that have not been observed in the survey process implemented.

6.6 This issue highlights that the flora survey undertaken for the proposed mineral sands project was inadequate in many regards and despite the opportunity to do subsequent assessments in later years no further survey work was implemented.

7. Rare Woodland Birds and their use of local habitat

7.1 The ecological assessment discusses the potential risks to various woodland bird species on page 84. The authors suggest that the Regent Honeyeater, Painted Honeyeater and Swift Parrot would only use the local habitat on extremely rare occasions and because of that "there is no important or limiting foraging habitat for the species within the project area…"

7.2 Unfortunately, these types of judgements partially explain why these species keep declining over time even though we know they imminently threatened with extinction. The Swift Parrot provides a particularly good case study of how fauna species can be driven extinct through small incremental decisions.

7.3 There are only approximately 1000 individual Swift Parrots still in the wild and their status has not improved in recent decades because the threatening processes that affect them have continued even after we generally know the problems affecting them. Swift Parrots nest and raise young in old growth Blue Gum forests in Tasmania with logging having significant impacts on there habitat. They migrate to the mainland over winter and go wherever their favourite trees are flowering. Box-Ironbark Forests are their main source of food in the winter but they are often observed feeding on other trees such as Yellow Gum and Red Gums as kind of road houses on the way to the more prolific flowering patches of Ironbark trees. The Box-Ironbark Forests they rely on have been substantially cleared across the mainland with only 15% left in Victoria. The open

woodlands of the inland slopes that they also rely on have also been widely cleared. It is no big mystery why they are a threatened species but the threatening processes are difficult to address.

7.4 The view that because the rare Swift Parrot only occasionally visits a site for foraging and therefore it is not critical or important habitat is very likely the way we can cause their continued decline. As a species they will migrate across huge areas in search of their preferred flowering trees and are therefore generally reliant over a long time over extensive habitats occurring across a large continent. The historic clearing of Box-Ironbark Forest and other feed trees helped lead to the decline of the species and further incremental clearing, no matter how small, accumulating in many small decisions across its range will likely exacerbate its' problems.

8. Plains Grassy Woodland Regeneration as part of the rehabilitation

8.1 The possibility of implementing 200 hectares of Plains Grassy Woodland restoration as part of the rehabilitation for the project is being offered as unique opportunity for rehabilitation of part of the Project Area. Kalbar Resources have already hired Dr. Paul Gibson-Roy to begin implementing the substantial efforts needed for seed collection, seed orchard production facilities and implementation. I am familiar with Dr. Gibson-Roys' work and confident that he can achieve such an outcome if he has enough resources. 200 hectares of direct seeded woodland will be likely be an unprecedented effort but the offer to do so should be viewed as greenwashing because it is unclear how or which authority will manage the site and habitat to be created into the future.

8.2 It is proposed to implement 200 hectares of woodland restoration but then the Rehabilitation Plan suggests that no stock grazing will be allowed on the restored land. Suggesting that no stock grazing would occur is problematic because grassy woodlands do need ongoing biomass reduction and sheep grazing could be the way to implement such work as already often happens in protected areas with grasslands and grassy woodlands, with a focus on conservation management, while providing some income. This option could provide opportunities for the woodland restoration site to be privately owned.

8.3 No long-term management regimes or responsibility for the ongoing management of a woodland restoration site was identified in my reading. If there is no consideration or proper arrangements for future management of the land after the mine is closed and indefinitely into the future then the woodland restoration would simply be an "environmental mitigation" thrown in to look "green" and compensate for native vegetation losses and will not be an effective long-term gain in habitat if there is no secure future for the site. With no clear long-term planning and arrangements to be considered this significant restoration effort is just greenwashing, a nice sounding but poorly considered rehabilitation option cobbled onto to a proposal with an enormous negative impact to make the significant impact perceived as less substantial. If there is no certainty about long term ownership and management responsibility then there is

little if any point in beginning and implementing the works because the native vegetation and habitat created would not be secure for the long term.

8.4 Groundwater Dependent Ecosystems

8.5 I have reviewed the assessment of Groundwater Dependent Ecosystems (GDEs) included in the ecological assessment and I have concerns that the assessment may not have taken into account all of the possible or likely GDEs in the local area and the risks that groundwater depletion may pose. The assessment indicates that the only significant GDEs that are even possibly at risk is riparian vegetation along the Mitchell River. There is no detailed mention or discussion about possible impacts of depleting groundwater on Plains Grassy Woodland EVC and the equivalent EPBC-listed and FFG-listed Gippsland Red Gum Grassy Woodland.

8.6 Heard (2015) clearly indicates that "Red gums are dependent on groundwater in dry periods" but likely access rainwater on the surface in wetter times. Woodland dominated by Forest red Gums is very common across the Project Area and the local area; substantial areas are likely to be retained in close proximity to the mine footprint and bore field if the mine goes ahead.

8.7 There are also concerns about possible impacts on the Sapling Morass Flora and Fauna where the rare Swamp Everlasting *Xerochrysum palustre* has been recorded. Sapling Morass is a sedge wetland surrounded by Red Gums. This type of wetland ecosystem often dries out and is adapted to droughts but it is possible that between climate change and depletion of groundwater through the bore field that ground water regimes could change time and cause changes in habitat composition.

8.8 I am not qualified to comment on how groundwater regimes might change if the mine and associated bore field is built. However, I have identified a concern that doesn't appear to be adequately addressed in the GDE assessment undertaken.

9. Offsetting Issues

9.1 It is suggested in the offset strategy that the offsets will be staged as each stage of the mine is implemented. This seems inappropriate because it goes against a basic principle under Clause 52.17 that all offsets must be obtained prior to any clearing occurring for a proposed project and the mineral sands project is one single project. The proponent might argue that they can delay each stage of offsets because they will remove native vegetation in steps but it is unlikely that approvals for the proposed mineral sands project will be staged and it is likely that approval for the mine will occur for the mine as whole.

9.2 A significant problem with the staged approach to offsets is that the critical offsets might be taken from the market over time. The project requires many species-specific units and these units often come from limited sources that could be purchased by other parties over the decades the mine will operate within. A complex analysis in the offset

strategy would seem to indicate that there are many possible offsets available and it may be possible that adequate offsets will be available when needed. However, even with several potential properties listed there is no indication about how far negotiations have gone or how likely it is that the land holders will agree to provided offsets. It is not a certainty that the required offsets will be available in 5, 10 and 15 years and the rule under 52.17 to provide all offsets for a project before the clearing starts is designed to address this uncertainty. Creating the certainty that the offsets have been created is a key principle of the relevant clause and no exception is highlighted just because of the scale of a project. Some kind of legal agreement or bonds that ensure the offsets will be available might be acceptable to create the certainty required but none of this is discussed.

9.3 All of the offsets required for this project should be obtained or in some form made legally certain to be available under the requirements of Clause 52.17 and this rule be should enforced as part of any possible approval for this project. The quantity of offsets required for the project are enormous and relatively specific in the detailed requirements so there would be significant uncertainty in later years if they are not obtained before any clearing occurs. It is doubtful that stages of the project will be approved in stages so the offset is not appropriate to implement in stages either.

10. Summary and Conclusions

10.1 The Fingerboards Mineral Sands Project would have an enormous impact on the local environment with at least 1350 hectares of land completely deconstructed and transformed including the loss of approximately 210 hectares of threatened and rare native vegetation. This impact and loss of native vegetation and habitat would occur mainly in the Gippsland Plains bioregion which is already substantially cleared. The native vegetation proposed for clearing is more significant than the proponent of the projects indicate with the substantial loss of 704 Large Trees with hollows and or developing hollows a significant impact and that the vast majority of the proposed clearing is of Endangered or Vulnerable EVCs that are already mostly cleared across the Gippsland Plain.

10.2 The level of native vegetation clearing, approximately 210 ha, is also extreme for any recent project in Victoria, particular because the EVCs affected are mostly Vulnerable or Endangered and already too uncommon because of past clearing. With native vegetation controls implemented in Victorian Planning Schemes since 1989 because of a high level of historic and ongoing clearing and the obligation to avoid and minimise clearing as the peak obligation in the current planning scheme the proposed clearing is too high of an impact in a region already significantly cleared and degraded.

10.3 Through a limited peer review exercise, I identified several significant but easily spotted errors in native vegetation mapping for the project and if the incidence of such errors exists across the entire Project Area then there are significant questions and possible concerns about the process having met the obligations to properly assess all native

vegetation losses. Further more detailed peer review is recommended to determine if there are significant errors in the mapping and loss calculation.

10.4 Threatened flora and fauna survey work by Treetec highlights several important issues. Their work confirms that more threatened flora species occur in the Project Area then are recorded in the ecological assessment for the project. The existence of these threatened flora species provide evidence that the endangered EVCs that would be cleared for the project have species that may be limited to local habitats and to vegetation types only present in certain environments. The timing of the flora surveys conducted for the ecological assessment of the project are also inadequate for identifying populations of important flora species such as orchids.

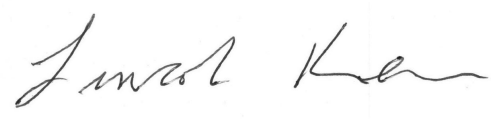
10.5 Rare woodland birds such as the Swift Parrot have been recorded in the local area over time and some of their preferred and occasional habitat is in the Project Area and surrounding local area. It is more than possible that they are occasional visitors during their migrations in search of their preferred flowering eucalypts and the species is generally reliant on dispersed areas of habitat over a long-term time frame. The judgement made in the ecological assessment that there is no critical habitat in the Project Area may be a judgement, combined with many other similar judgements in development decisions across eastern Australia, that continues to cause the threatening processes that is driving this species extinct. Each small increment of lost habitat may seem inconsequential, although the vegetation losses for the mine would be substantial within themselves, but they accumulate over time and across landscapes.

10.6 It is proposed to restore 200 hectares of the local woodland through direct seeding and it can likely be achieved. However, the only indication of a future management regime is that grazing animals will be excluded. Woodland restoration without grazing for biomass reduction and maybe income within a framework of conservation management may create a situation where there is no viable future for the restoration after the mine closes. If there are no reasonable viable long-term arrangements for management then there may no point to this work. It is important to consider and propose a reasonable long term management regime to ensure that this substantial work is not just "greenwashing".

10.7 It appears that Gippsland Red Gum Grassy Woodlands in general and specific sites such as Sapling Morass Flora and Fauna Reserve, may be GDEs yet it appears that the GDE assessment dismisses any risks to these values. These Red Gum woodlands will remain around the mine and through the bore field and rely on groundwater in dry times. I am not qualified to comment on possible groundwater regime changes that could occur with the mine and bore field but I do believe the issue needs to better considered.

10.8 All of the offsets required for this project should be obtained or in some form made legally certain to be available under the requirements of Clause 52.17 and this rule should be enforced as part of any possible approval for this project as there is uncertainty if the offsets will be available in the future if the mine is approved and it is likely to approved as a whole and not in stages.

10.9 Finally, I have made all the inquiries that I believe are desirable and appropriate and that no matters of significance that I regard as relevant have to my knowledge been withheld from the Panel.



Lincoln Kern, Ecological Consultant and Managing Director Date: 1 February 2021

Curriculum Vitae: Lincoln Kern

Date of Birth 1 February 1963

Lincoln was trained in botany and environmental science in the United States and has been working in the environmental field in Victoria on a full-time basis since 1991 including time with the Merri Creek Management Committee, the National Trust Save the Bush Program and Greening Australia Victoria. Lincoln has run Practical Ecology Pty. Ltd. since November 1993, offering an integrated service for managers of native vegetation and developers as required.

Lincoln has provided relevant and realistic management advice because he has extensive experience with costing, planning and doing the required physical works and sharing practical approaches to reconciling development and nature conservation objectives with staff and the public. He also specialises in devising vegetation management systems that are clear and useful to every person involved and interested in managing vegetation, whether amateur or professional.

Education

April 2014	**Suppressing Wildfire and Planning Prescribed Burns** Training required to work on a fire crew and implement prescribed burns accredited by Timber Training Creswick Pty Ltd – since this time I have participated in several prescribed burns.
Novem-ber 2013	**Design and Building Bushfire Prone Areas Course** Week-long course run by University of Technology Sydney on preparing Bushfire Attack Level Assessments and Bushfire Management Statements and designing development and building in response to AS3959 and the relevant Victorian Planning Scheme provisions.
Novem-ber 2005	**Wildfire Management Overlay Implementation Course** Week-long course sponsored by the Country Fire Authority to train people in designing developments to meet the requirements of the Wildfire Management Overlay in Victoria
1998	**Graduate Diploma of Applied Science (Environmental Management).** Deakin University, Rusden Campus. Part-time: Begun February 1995 and completed in April 1998.
1992	**Bush Regeneration Supervisors Course** Organised by National Trust, Victoria A course exploring management skills, the role of management plans and monitoring programs in bush regeneration.
1990	**Bush Regeneration Techniques Course** Organised by National Trust, Victoria. A course emphasising plant identification and ecology and technical skills needed to manage bushland.
Winter 1988	**Rainforest Field Studies** Semester-long field course in Guatemala and Belize organised by University of California at Santa Cruz

February 1987	**Permaculture Design Course** Organised by Aprovecho Institute, Cottage Grove, Oregon USA and presented at Solala Agriculture College, Guatemala
1986	**B.A. Antioch College, Yellow Springs, Ohio, USA** Major in Biology with course work in Botany, Environmental Studies, Anthropology and Education

Employment History

2007 to 2011	**Governor-in Council Appointee on the Alpine Resorts Coordinating Council** Responsible for contributing to general business, chairing the Sustainability Committee of the Council and attending Environmental Officer Forums
1993 to present – part-time from June 1998 to May 1999	**Practical Ecology Pty. Ltd.** – Ecological Consultant and Managing Director Consulting and contracting business specialising in native vegetation management. Services include: • vegetation management ecological restoration project designs • flora and fauna surveys & management plans • preparing bushfire management plans and wildfire management statements • coordinating planning processes requiring reconciliation of conservation and development objectives • expert witness representation at VCAT and Planning Panels • education services including plant ID, land management planning, net gain and planning policy etc • community group coordination and/or support • coordination of contract works including revegetation, wetland planting and remnant vegetation management
June 1998 to May 1999	**Wellington Shire Council –** Environmental Planner Provided environmental advice to Council and officers with roles in commenting on planning permits and developing a wide variety of environmental programs.
1993/94	**Victoria University of Technology, Melton LEAP PROGRAM** – Part time supervisor based at Taylor's Creek, Keilor. Supervision and formal training of program participants students in regeneration work in a suburban creek valley.
June 1991 – Nov 1993	**National Trust 'Save the Bush'** – Part time Technical Supervisor • Development of works programs for and supervision of bush regeneration crews • vegetation surveys • developing and presenting bushland management courses • working with community groups.
June 1992 – June 1993	**Greening Australia Victoria** – Part time Project Officer, Urban Program • Assessments for Parks and Waterways community grants • Conservation project advice to community groups

	• Coordination of education programs and community information days
May 1991 – June 2003	**Council of Adult Education** – Casual Tutor Self developed and run short courses in: • Natural history • Field botany • Organic gardening and permaculture
1991-92	**Merri Creek Management Committee** – Revegetation Crew Member • Site preparation and maintenance, • Direct seeding and tubestock planting • Remnant vegetation management.
1986 – 1989	**Biologist/Inspector** – Foreign Fisheries Observer Program, National Marine Fisheries Service, Seattle, Washington USA. Monitoring the species, catch size and adherence to fishing regulations of foreign fishing vessels in American waters off of Oregon, Washington and Alaska
1984	**Coordinator – Environmental Field Program** Antioch College Science Institute, Yellow Springs, Ohio USA. As one of three coordinators, developed and implemented the curriculum and itinerary of a 3 month field program for adults in Arizona and New Mexico.

Environmental Justice Australia

8 December 2020

Lincoln Kern
Managing Director
Practical Ecology

By email only: *lincolnk@practicalecology.com.au*

Dear Lincoln

Fingerboards Mineral Sands Mine Project, Glenaladale, Victoria

We act on behalf of [redacted], a not-for-profit community group formed in response to the proposed Fingerboards mineral sands mine project (the project).

We write to you as an expert ecologist. The purpose of this letter is to seek your expert opinion on the environmental effects of the project.

We request your expert opinion be provided as an expert witness statement to be submitted to the Fingerboards Mineral Sands Project Inquiry and Advisory Committee. We request that your expert report be provided by **11 January 2021**.

References to Tab numbers in bold in this letter are to the documents in an electronic brief which we provide to you via DropBox [redacted]

Background

1. Kalbar Operations Pty Ltd (**Kalbar**) propose to develop an open pit mineral sands mine covering an approximate area of 1,675 hectares within the eastern part of the Glenaladale mineral sands deposit in East Gippsland, Victoria. The site is located near the Mitchell River and approximately 2km south of Glenaladale, 4km south-west of Mitchell River National Park and 20km north-west of Bairnsdale.

2. The proposal includes the development of an open pit mineral sands mine, two mining unit plants, wet concentrator plant, water supply infrastructure, tailings storage dam and additional site facilities (i.e. site office, warehouse, workshop, loading facilities and fuel storage). The proposed mining methods involve open pit

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mining to extract approximately 170 million tonnes (Mt) of ore over a projected mine life of 20 years to produce 8 Mt of mineral concentrate. Heavy mineral concentrate, separated into magnetic and non-magnetic concentrates, are proposed to be transported via road, rail or a combination of both for export overseas.

3. The project would require up to 9000 kilovolt-ampere (kVA) hours of power likely to be supplied from the electricity grid and water requirements of approximately 3 gigalitres per annum (**Tab 2.1.2 / Project Description**).

4. On 18 December 2016, the Minister for Planning issued a decision determining that an Environment Effects Statement (EES) was required for the project due to the potential for a range of significant environmental effects. The purpose of the EES is to provide a sufficiently detailed description of the proposed project, assess its potential effects on the environment and assess alternative project layouts, designs and approaches to avoid and mitigate effects (**Tab 1.1 / Scoping Requirements**)

5. An Inquiry and Advisory Committee (IAC) has been appointed to review the EES and public submissions (**Tab 1.2 / Terms of Reference**). The IAC will hold public hearings for 4 to 6 weeks, after which it will produce a report for the Minister for Planning. Following receipt of the IAC's report, the Minister for Planning will then make an assessment as to whether the likely environmental effects of the project are acceptable (**Minister's Assessment**).

6. All EES documents are available online at: https://ees.fingerboardsproject.com.au/download.

Instructions

7. We request that you undertake a review of the biodiversity components of the EES and prepare an expert witness statement providing your opinion on:

    a. The compliance of the biodiversity components of the EES (listed below) with the relevant evaluation objective in the Scoping Requirements (**Tab 1.1, pp15-17**) and key policies and guidelines in Victoria:

    Technical Studies

        i. Technical Study: Detailed ecological investigations (Appendix 5) (**Tab 2.3.1**)

        ii. Rehabilitation Report (Appendix 20) (as relevant to biodiversity) (**Tab 2.3.2**)

Chapters and Attachments

iii. Environmental Context (Chapter 8) (Section 8.2) (**Tab 2.1.3**)

iv. Environmental Impact Assessment (Chapter 9) (Section 9.1) (**Tab 2.1.4**)

v. Matters of National Environmental Significance (Chapter 10) (**Tab 2.1.5**)

vi. Environmental Management Framework (Chapter 12) (as relevant to biodiversity) (**Tab 2.1.6**)

vii. Risk Report (Attachment F) (as relevant to biodiversity) (**Tab 2.2.2**)

viii. Mitigation Register (Attachment H) (as relevant to biodiversity) (**Tab 2.2.3**)

b. The adequacy of the identification and characterisation of the existing environment by the project proponent (as relevant to biodiversity), including identification and characterisation of EVCs.

c. Whether the actual or likely direct and indirect effects of the project on native vegetation, listed threatened and migratory species and ecological communities, and habitat for these species, are identified and or appropriately assessed in terms of their level of risk.

d. The adequacy of the proposed mitigation measures to avoid or minimise effects on biodiversity, including significant effects on native vegetation and any listed ecological communities and flora and fauna species and their habitat.

e. The adequacy of the Offset Management Plan, including the calculations of required offsets and the likelihood of obtaining the offsets.

f. Any other matters you identify which you consider relevant within the limits of your expertise.

g. Any appropriate qualifications or conditions that should be attached to findings or conclusions, such as uncertainties or gravity of threats or impacts.

8. We request that the preparation of your expert witness statement is also informed by the survey work undertaken by you at 2495 Bairnsdale-Dargo Road, Fernbank, and 2705 Bairnsdale-Dargo Road, Glenaladale.

(3)

9. As an expert you are able to consider any such material you consider relevant to your enquiry. Please identify in your report any further materials you consult outside of the briefed materials.

Expert Witness Code of Conduct

10. We have enclosed a copy of the *Guide to Expert Evidence provided by Planning Panels Victoria*, which is the relevant guidance for hearings before the IAC (**Tab 3.1**).

11. In preparing your final expert witness statement, please ensure that you include:

    a. your name, address, qualifications, experience and area of expertise

    b. details of any other significant contributors to the report (if there are any) and their expertise

    c. all instructions that define the scope of the statement (original and supplementary and whether in writing or verbal)

    d. details and qualifications of any person who carried out any tests or experiments upon which the expert has relied in preparing the statement

    e. the following declaration:

    'I have made all the inquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have to my knowledge been withheld from the Panel.'

Important dates

12. We request your expert witness report be provided by **11 January 2021.**

13. The IAC will conduct public hearings over a period of 4-6 weeks, commencing on **1 February 2021**. Please advise of the days on which you will not be available to give evidence before the IAC (if required) during the period of 1 February – 12 March 2021.

Confidentiality

14. This request for an expert opinion and the subsequent expert witness statement, as well as any correspondence relating to this request, is for the purposes of the Fingerboards mineral sands mine project EES process, including the public hearings before the IAC. It is therefore confidential and is protected by legal professional privilege.

Fees

15. [redacted]

Please contact Virginia Trescowthick if you have any questions or require further information.

Yours faithfully

[redacted]

Virginia Trescowthick

Lawyer

MAPS

Recorded descrepancies with Ecology and Heritage Partners results

2495 Bairnsdale–Dargo, Fernbank

Legend

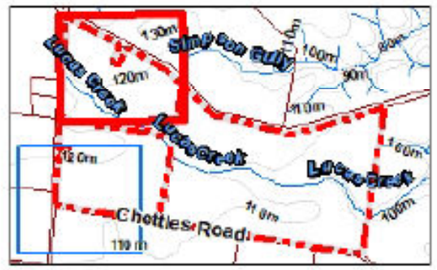
- Subject site
- Parcels
- Contours (10m)
- Natural watercourse

Habitat Zones recorded by Ecology and Heritage Partners

- Lowland Forest
- Plains Grassy Woodland
- Valley Grassy Forest

Trees recorded by Ecology and Heritage Partner

- Scattered large tree
- Scattered small tree
- Large tree within patch
- Observed descrepancies



Details

Date: 27/01/2021

Version: 1

N

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Scale 1:2,500 (Page size A3)

Disclaimer

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PRACTICAL ECOLOGY
ecological restoration & consulting
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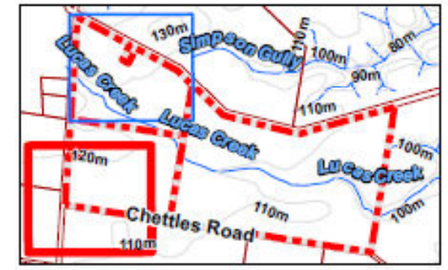

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