

# Fingerboard Mineral Sands Project

Inquiry and Advisory Committee – Expert  
Witness Presentation

Detailed Ecological Investigations and Impact  
Assessment

Aaron Organ  
Director / Principal Ecologist  
11 May 2021

# Qualifications and Experience

- Director and Principal Ecologist at Ecology and Heritage Partners Pty Ltd and work from 292 Mt Alexander Road, Ascot Vale, Victoria
- 25 years' experience working in the environmental field, including 21 years in an environmental consultant capacity
- Extensive working knowledge of terrestrial ecology throughout Victoria, and have either managed or played an important role in providing environmental advice on a large number of major infrastructure projects such as proposed pipelines, and road and rail developments, many throughout East Gippsland
- Lead author and/or co-author for over 500 projects and have provided expert advice to a range of clients
- Projects include a proposed wind farms in Victoria, South Australia and Tasmania, long-term flora and fauna monitoring throughout the Illawarra escarpment New South Wales, and several mineral sands projects in Victoria, including the Donald Mineral Sands Project (EES), WIM150 Mineral Sands Project (EES), Ouyen Mineral Sands Project (EES) and WIM100 Mineral Sands Project (EES)
- Several staff at Ecology and Heritage Partners undertook the ecological investigations on the project over the past 5 years

# Ecology EES Scoping Requirements

- The evaluation objective for biodiversity as outlined in the Scoping Requirements for the project is:

*‘To avoid or minimise potential adverse effects on native vegetation, listed threatened and migratory species and ecological communities, and habitat for these species, as well as address offset requirements for residual environmental effects consistent with state and Commonwealth policies’.*

- Scoping Requirements
  - Priorities for characterising the existing environment:
  - Design and Mitigation Measures
  - Assessment of likely effects / impacts
  - Approach to manage performance
  - Commonwealth Offsets

# Methods

## Desktop Assessment

- The DELWP online databases (e.g. NatureKit)
- EVC benchmarks
- The Victorian Biodiversity Atlas and Birdlife Atlas
- The Commonwealth DAWE Protected Matters Search Tool for matters of NES protected under EPBC Act
- Relevant listings under the FFG Act, including the latest Threatened and Protected listings
- Species National Recovery Plans and Action Statements under the FFG Act for species and ecological communities relevant to the project
- Previous ecological or other relevant assessments of the project area (e.g. Surface and Groundwater Water Assessments)



# Methods

## Flora Survey

- Undertaken between Winter 2016 and January 2019 to inform the EES
- A habitat hectare assessment in areas supporting native vegetation
- >400 person hours surveying native vegetation, ecological communities and listed flora species
- Targeted surveys for Swamp Everlasting, Dwarf Kerrawang and Gaping Leek-orchid, and State significant flora species
- Large Tree Assessment
- Additional surveys for Gaping Leek-orchid along the Gippsland Railway (6 November 2020)
- Additional vegetation mapping between 4 and 6 May 2021



# Methods

## Fauna Survey

- A total of 22 days (44-person days and more than 400-person hours) of terrestrial fauna surveys were undertaken as part of the investigations:
  - Between 24 and 28 October 2016 (five days)
  - Between 19 and 21 March 2018 (three days)
  - Between 10 and 14 October 2018 (five days)
  - Between 27 and 30 November 2018 (four days / nights)
  - 11 January 2019
  - Between 26 and 29 August 2019 (4 days)
- Aquatic habitat assessment and surveys
- Targeted surveys for significant species (e.g. Giant Burrowing Frog, Powerful Owl, Masked Owl, Australian Grayling and Dwarf Galaxias)
- Survey conducted to the required Commonwealth and State agency standards



# Results – Vegetation and Communities

- **178 flora species** (46 introduced) and 117 terrestrial fauna species (nine introduced) recorded during the field surveys
- Approximately **300 hectares of remnant vegetation** in the project area represented by 11 Ecological Vegetation Classes (EVCs) present:
  - Aquatic Herbland (EVC 653)
  - Box Ironbark Forest (EVC 61)
  - Dry Valley Forest (EVC 169)
  - Lowland Forest (EVC 16)
  - Lowland Herb-rich Forest (EVC 877)
  - Plains Grassy Forest (EVC 151)
  - Plains Grassy Wetland (EVC 125)
  - Plains Grassy Woodland (EVC 55)
  - Riparian Scrubland (EVC 19)
  - Sedgy Wetland (EVC 136)
  - Valley Grassy Forest (EVC 47)
- Over **1,400 large trees** (in patches and scattered), consisting predominately of large old eucalypts
- Approximately **1.74 ha** of the EPBC Act-listed Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated Native Grassland ecological community
- **9.91 ha** of the State significant Forest Red Gum Grassy Woodland ecological community



# Results – Flora

## Listed Flora Species diversity

- The known occurrence of four **State significant flora** species:
  - Slender Wire-lily
  - Blue Mat-rush
  - Slender Tick-trefoil
  - Sandfly Zieria
- The potential occurrence (outside of the footprint) of three **nationally significant flora** species:
  - Swamp Everlasting
  - Dwarf Kerrawang
  - Gaping Leek-orchid
- The potential occurrence of a small number of other State significant species within the project area



Glenaladale

Calulu

C602

Main Rd

Bairnsdale Dargo Rd

Stockdale

Munro-Stockdale

Hillside

Lindenow-Glenaladale Rd

Bengworden Rd

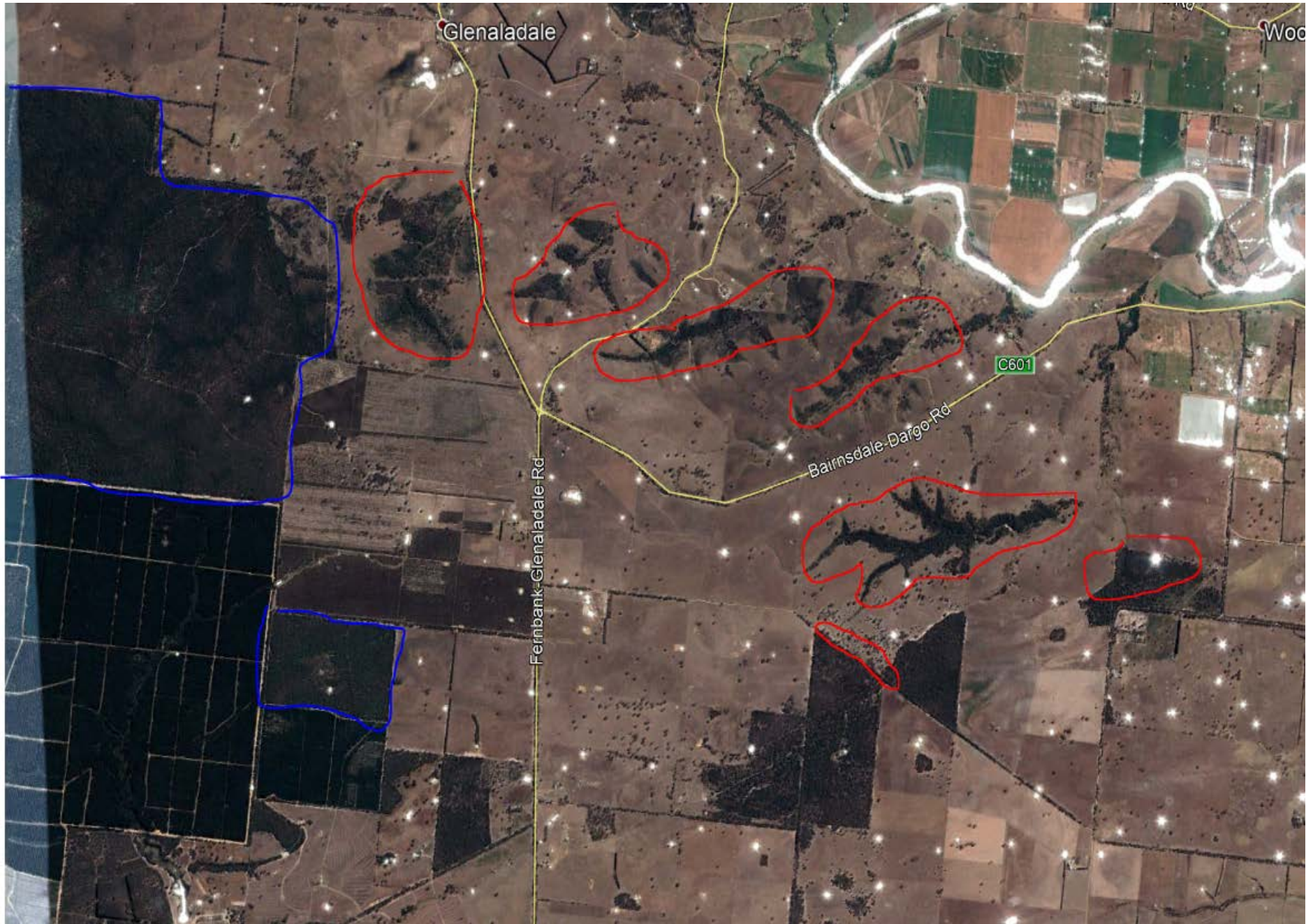
Fernbank

A1

Image Landsat  
Princedale Copernicus









# Results – Fauna

## Fauna Species

- 117 terrestrial fauna species recorded, including 108 native species and nine introduced species
- The known occurrence of two Nationally significant fauna species (Grey-headed Flying-fox, Australian Grayling)
- The known occurrence of one State significant fauna species (Yellow-bellied Sheathtail Bat)
- The potential occurrence (albeit low likelihood) of four fauna species of national significance:
  - Swift Parrot
  - Painted Honeyeater
  - Dwarf Galaxias
  - Giant Burrowing Frog



2016-11-01 6:00:03 AM M 1/5 7°C  
HC600 HYPERFIRE



2016-11-09 2:49:30 AM M 4/5 12°C  
HC600 HYPERFIRE  
2016-10-28 8:21:03 AM M 3/5 10°C



HC600 HYPERFIRE



HC600 HYPERFIRE









# Impact Assessment

## Direct Impacts (EES Appendix A005)

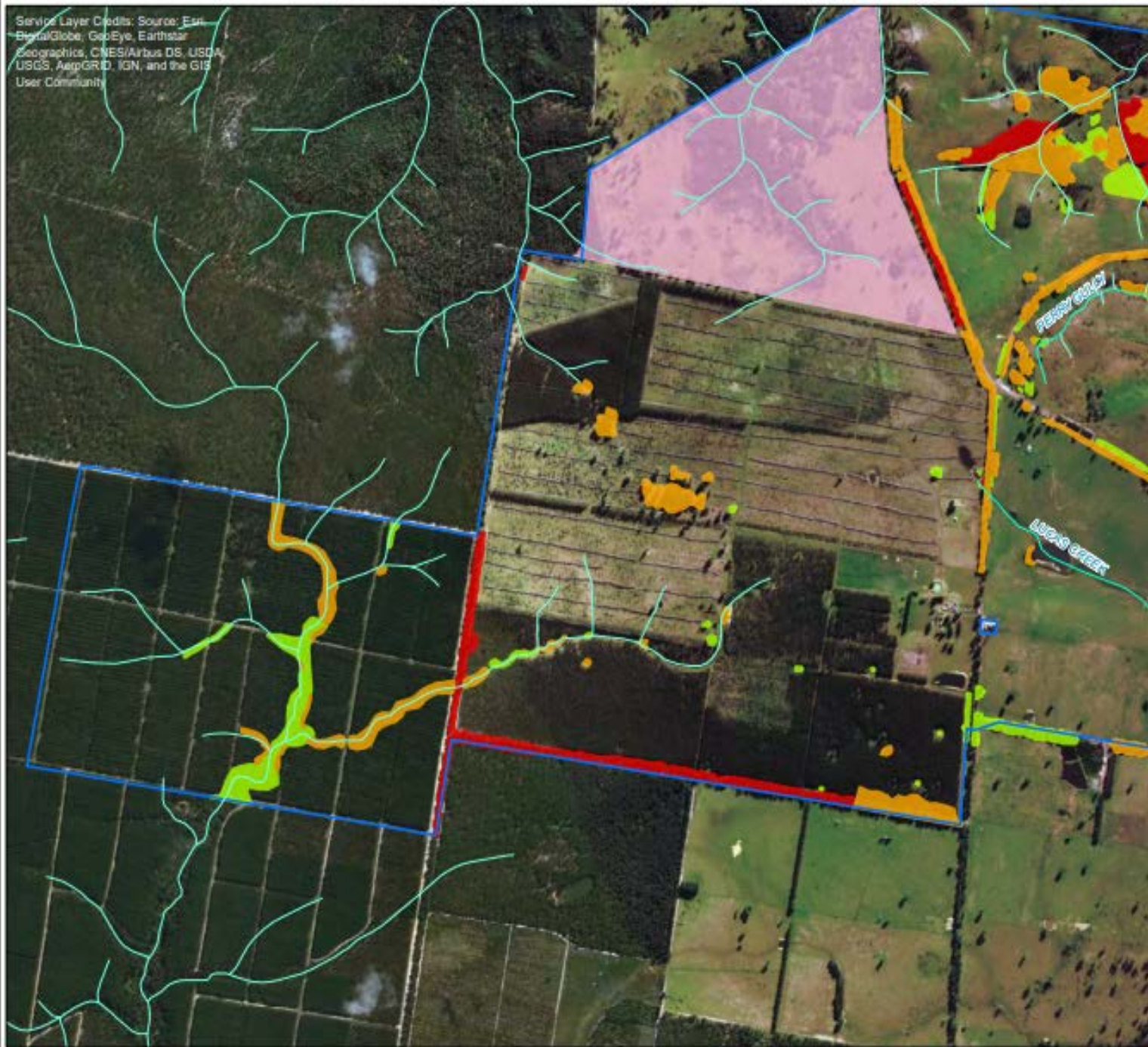
- 160.30 ha of native vegetation – **Now 223.58 ha (May 2021)**
- **373 Large trees** in patches and **461 scattered trees**
- **1.74 ha** of the nationally significant GRGGW ecological community
- **14.54 ha** of the State significant Forest Red Gum Grassy Woodland ecological – **Now 9.91 ha (May 2021)**
- State significant flora species: Slender Wire-lily (33 plants), Blue Mat-rush (three plants) and Sandfly Zieria (10 plants)
- Removal of known habitat for the following fauna species of State and regional significance:
  - Yellow-bellied Sheath-tail Bat, Emu, Eastern Long-necked Turtle, Masked Owl, Grey-headed Flying Fox
- Estimated an additional **31.471 ha, 110 Large Trees** in patches and **44 Scattered Trees** proposed to be impacted across 2705 Dargo-Bairnsdale Road, Glenaladale

# Impact Assessment

- Of the **160.30 ha proposed** to be impacted the majority of this vegetation is either in low (i.e. **24.53 ha or 15.30%** of the total area) or moderate quality (i.e. **114.71 ha or 71.55%** of the total area)
- High quality vegetation (i.e. **21.08 ha or 13.15%** of the total area)
- Linear patches of Plains Grassy Forest, Lowland Herb-rich Forest and Plains Grassy Woodland located along Bairnsdale-Dargo Road and Limpyers Road will be dissected by the project footprint
- Direct mortality of fauna through habitat removal and increased traffic
- Loss of hollow-bearing trees
- Removal and disturbance of aquatic habitat and ephemeral drainage lines / gullies
- Noise, dust, spills and lighting
- Low potential for impacts to Groundwater Dependent Ecosystems within and outside of the Project Area
- No impacts to the Gippsland Lakes Ramsar site, nor significant impacts to any EPBC Act-listed species



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### Legend

- Project Area
- Vegetation quality (Habitat score)
  - Low (10 - 29)
  - Moderate (30 - 49)
  - High (50+)
  - Land Not Surveyed



**Figure 7b**  
Vegetation Quality throughout Study Area  
Fingerboards Mineral Sands  
Project: Flora and Fauna Assessment



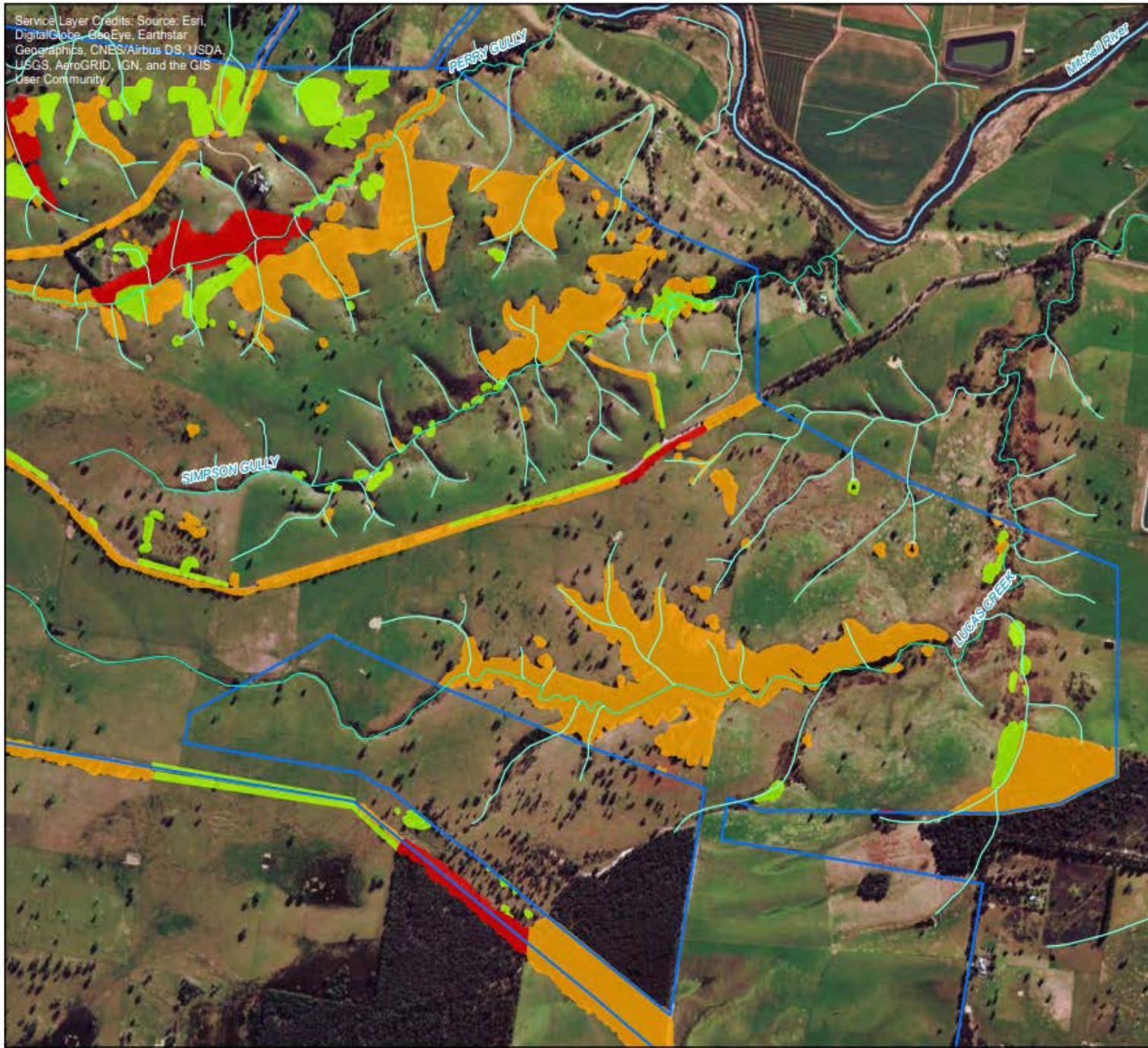
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ES&H 01/2019



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### Legend

 Project Area

### Vegetation quality (Habitat score)

 Low (10 - 29)

 Moderate (30 - 49)

 High (50+)



**Figure 7c**  
**Vegetation Quality**  
**throughout Study Area**  
*Fingerboards Mineral Sands*  
*Project: Flora and Fauna*  
*Assessment*



  
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# Impact Avoidance

## Section 8.1.1 in Technical Report

- Changed mine area/plan to avoid the State Park to the west
- Realignment of proposed haul roads and pipelines
- Road to rail siding alignments have been designed to avoid native vegetation and will avoid known populations of Gaping Leek-orchid
- Process infrastructure and water infrastructure have been located to avoid native vegetation removal
- Careys Lane diversion alignment specifically avoids native vegetation
- Avoidance of infrastructure and waste dumps within gullies



# Mitigation Measures

## Section 8.1.1 in Technical Report

- Further avoidance of biodiversity values
- Pre-clearing significant species surveys
- Flora and fauna salvage/ translocation
- Water quality monitoring
- Reinstatement of fauna habitat
- 200-hectare Grassy Woodland Restoration Project (Seed Production Area)
- Establishment of 'no-go areas'
- Installation of nest boxes
- Dust, noise and light suppression / management
- Contingency measures to manage unexpected discovery of listed flora and fauna species during construction and operation of the project
- Staff and contractor inductions

Species	Required offsets for the project within the study area (excluding 2705 Bairnsdale-Dargo Road) *	Estimated additional credits required for vegetation removal at 2705 Bairnsdale-Dargo Road ^	Previous <u>estimated</u> offsets required for the entire project (in the EES Appendix A005)	Total estimated offset required for the project after additional patches of native vegetation mapped (May 2021)
Australian Grayling	29.022	0	29.022	<b>34.264</b>
Flinders Pygmy Perch	57.384	0	57.384	<b>63.411</b>
Sticky Wattle	91.822	36.844	128.666	<b>136.537</b>
Yellow-wood	38.066	0	38.066	<b>38.540</b>
Thick-lip Spider-orchid	46.310	0	46.310	<b>46.084</b>
Purple Diuris	97.984	36.828	134.812	<b>139.674</b>
Bushy Hedgehog -grass	102.384	37.094	139.478	<b>144.335</b>
Rough-grain Love-grass	98.544	36.844	135.388	<b>140.249</b>
Slender Violet-bush	66.713	36.956	103.669	<b>111.068</b>
Slender Wire-lily	102.384	37.103	139.487	<b>144.335</b>
Golden Pomaderris	0	137.302	137.302	<b>144.335</b>
Star Cucumber	28.253	0	28.253	<b>28.412</b>
One-flower Early Nancy	97.589	36.843	134.432	<b>140.057</b>
Limestone Blue Wattle	87.710	34.446	122.156	<b>130.087</b>
Thin-leaf Daisy-bush	56.891	34.931	91.822	<b>98.648</b>
Forest Red-box	94.130	36.844	130.974	<b>137.980</b>
Gaping Leek-orchid	0	0	0	<b>0.057</b>
Silky Kidney-weed	0	135.388	135.388	<b>140.249</b>
Heath Spider-orchid	40.354	0	40.354	<b>40.829</b>

# Offset Management Strategy

- Biodiversity Offset Strategy prepared as part of the EES
- Additional on-site assessments of 10 properties completed by Ethos NRM
- Six properties support the between 5.5 ha and 40 ha of EPBC Act-listed Gippsland Red-gum ecological community
- All General Habitat Units (1.001) can be met along with all Large Trees
- Large Species Habitat Unit requirement which will need to be met
- Ongoing discussions with several landowners who are interested in establishing an offset(s) on their land
- Offset sites will be permanently secured on a staged various stages of the project, prior to vegetation removal
- Ongoing management of threats with the overall objective of vegetation and habitat improvement

# Proposed Commonwealth Offset Site





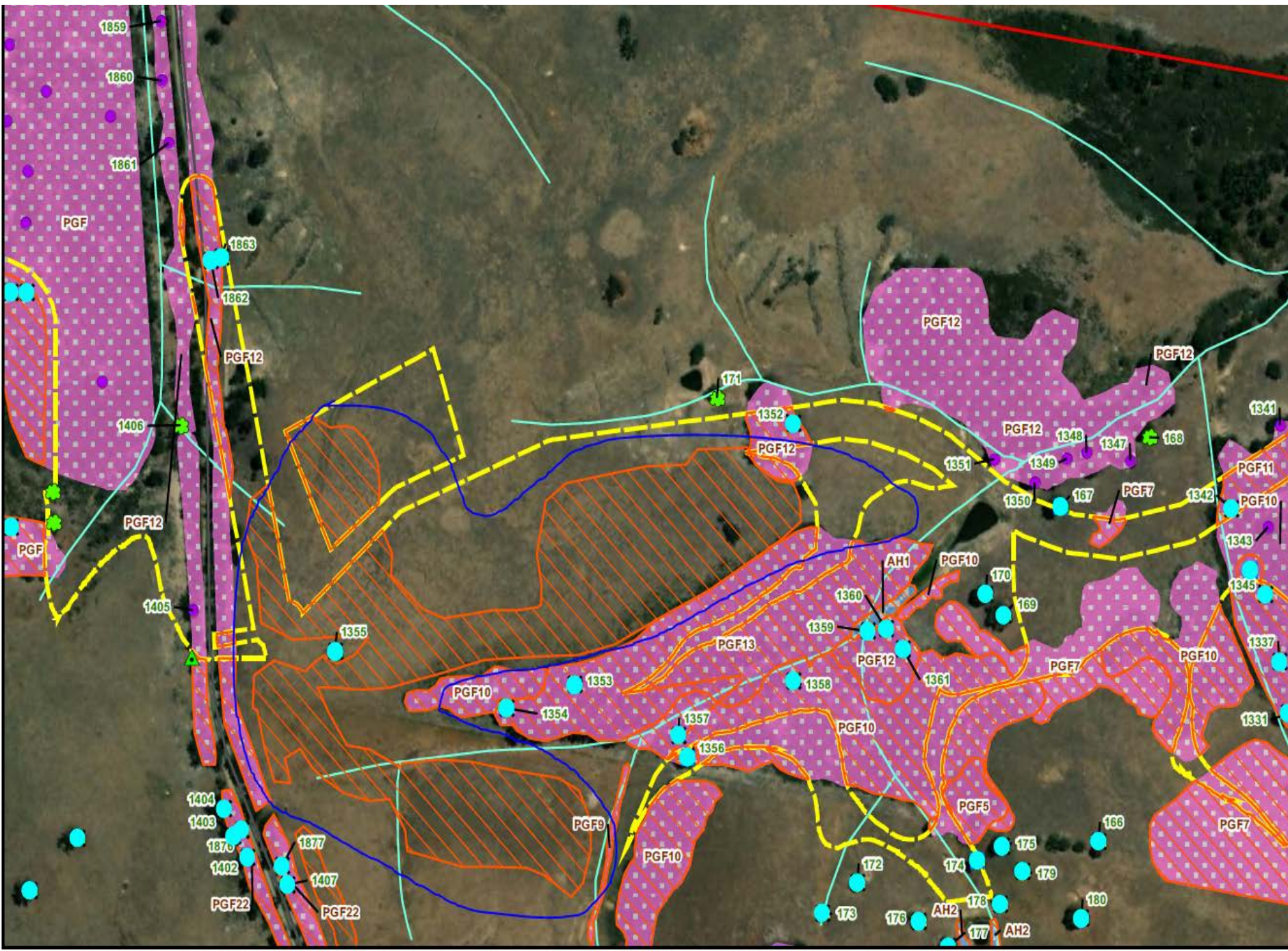
# Recent Updates (May 2021)

- Expert Conclave which resulted in a few outstanding matters:
  - Mapping of additional areas of secondary grassland / degraded native vegetation
  - Review the Ecological Vegetation Classes (EVCs) classification of native vegetation along Glenaladale-Dargo Road, and at the intersection of Fernbank-Glenaladale Road and Chettles Lane
  - The provision of information regarding the presence of any additional areas of Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated Native Grassland (GRGGW) ecological community
  - Provide further information on the likelihood of occurrence of additional State significance flora species.
  - The current scope did not include an ecological assessment on 2705 Bairnsdale-Dargo Road, Glenaladale, nor does it include an explanation of the discrepancies pertaining to the extent of vegetation and offset requirements between the EES Appendix A005 and the EES (Kalbar 2020).

# Recent Updates

- An additional **~31.809 ha** of highly modified (i.e. structurally and floristically deficient) secondary grassland and other EVCs located across grazed paddocks
- Total proposed vegetation removal across the entire project is **223.58 ha**
- Revision of the extent of EVCs previously mapped along Glenaladale-Dargo Road and the intersection of Fernbank-Glenaladale Road and Chettles Lane
- **No additional areas** of the EPBC Act listed GRGGW ecological community were identified
- Opportunities to **protect, salvage and translocate**, along with the propagation (as Kalbar's Seed Production Area) and reintroduction of additional State significant flora species within the project area and surrounds as part of the project
- A **~5-6% increase** in the required State offsets (Species Habitat Units) for the project







































# Submissions

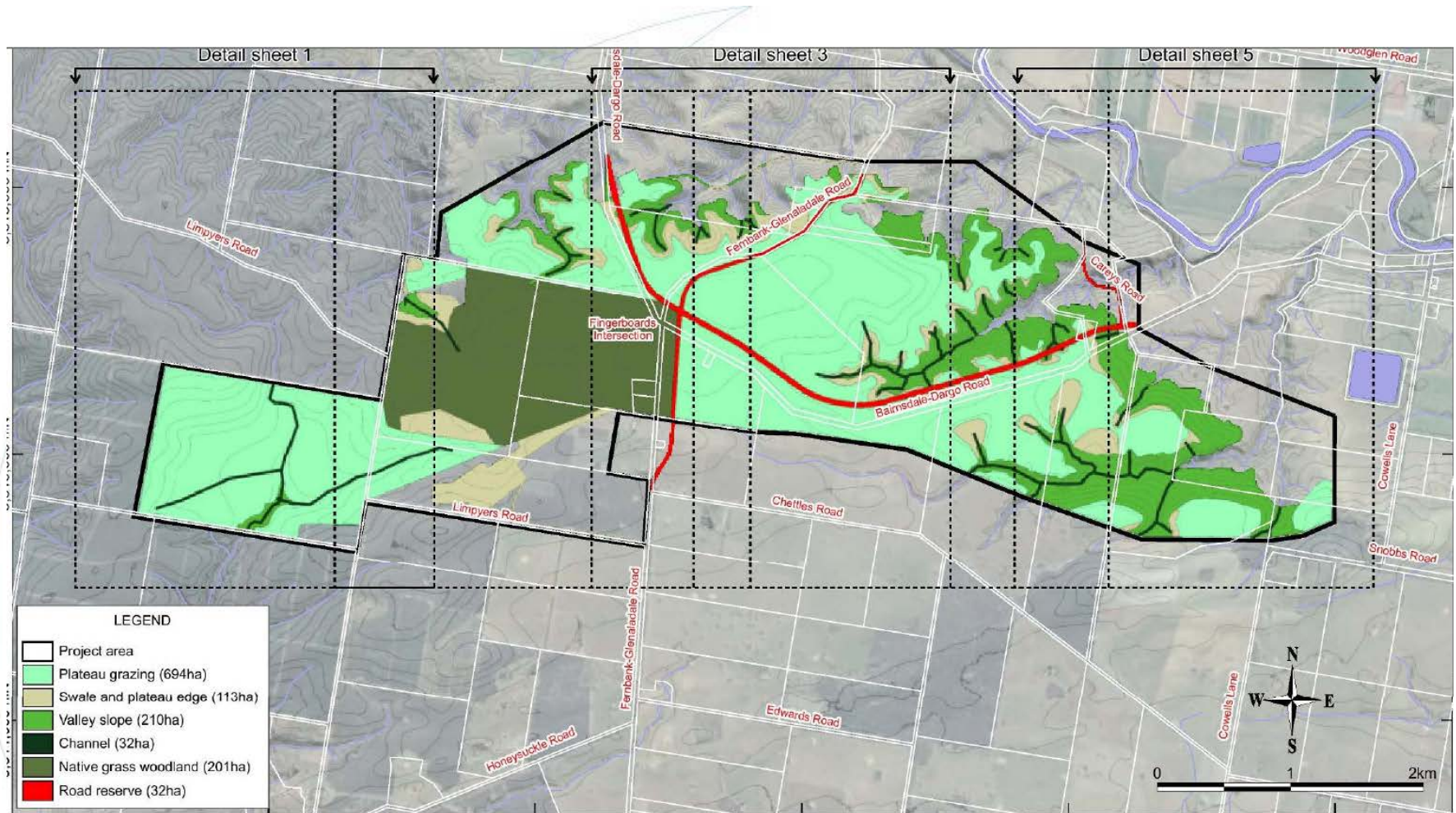
- No detailed ecological investigations at 2705 Dargo-Bairnsdale Road, Glenaladale undertaken as part of the EES
- Further avoidance of biodiversity values
- Location of Fernbank East Railway Siding
- Planning Scheme Considerations (ESO1-38, ESO1-51, VPO1)
- Perry River Catchment 'Chain of Ponds' (Honeysuckle Creek)
- Gippsland Lakes RAMSAR Wetland of International Importance
- Impacts on Gippsland Red-gum EPBC Act-listed community and hollow-bearing trees



# Submissions

- Impacts to significant flora and fauna species, and ecological communities (Grey-headed Flying-fox, Giant Burrowing Frog, flora species)
- Ecological impacts associated with bushfires
- The adequacy of mitigation measures

# Grassy Woodland Restoration Project



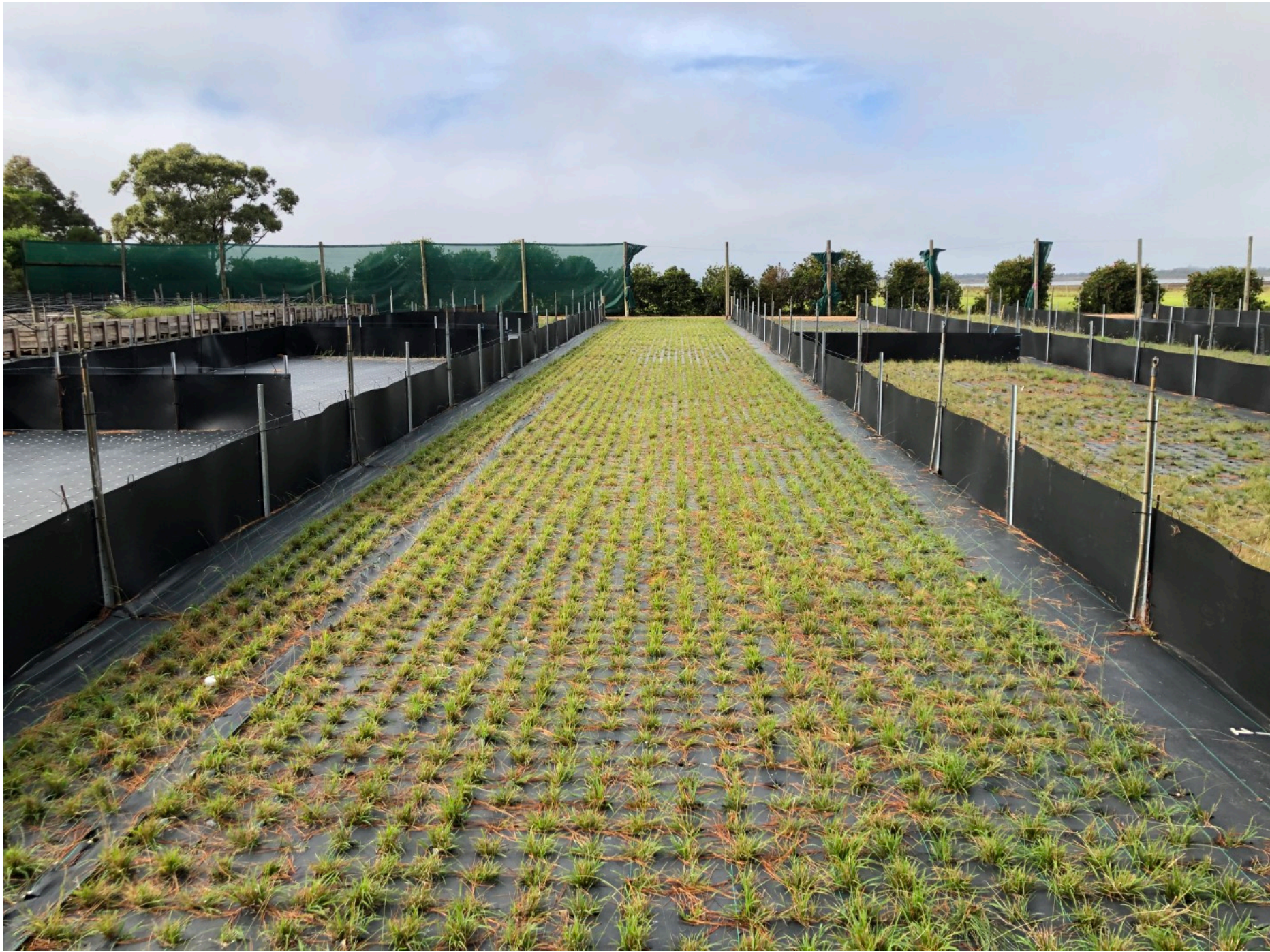






















# Management Plans

Offset  
Management Plan

Construction  
Environmental  
Management Plan

Biodiversity  
Management Plan

Native Vegetation  
Management Plan

Rehabilitation  
Plan

Biodiversity Risk  
Treatment Plan