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Our Ref: 2432

5 April 2024

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Senior Strategic Planner, Strategic Implementation
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Dear Peter,

Re: Victorian Grassland Earless Dragon, Habitat Assessment, Marshall Precinct Structure Plan Area, Victoria

Background

Ecolink Consulting Pty Ltd was engaged by the City of Greater Geelong to undertake a habitat assessment for the Victorian Grassland Earless Dragon *Tympanocryptis pinguicolla* within Marshall Precinct Structure Plan (PSP) Area (the study area).

The delivery of the Marshall PSP has been delayed by the presence of potential habitat for the Victorian Grassland Earless Dragon. A 'Habitat Refinement Exercise' has been requested to explore the probability of the historic land-use, current vegetation and geology within the PSP providing extant, suitable habitat for the species. This is consistent with Strategy 2, Action 2.1 of the *Draft National Recovery Plan for Grassland Earless Dragons*, which recommends comprehensive predevelopment surveys for areas of potential habitat for the species, to prevent any further loss of potential habitat (Department of Climate Change Energy the Environment and Water 2023b).

The purpose of this assessment was therefore to:

- Identify the likely presence of Victorian Grassland Earless Dragon habitat within the study area;
- Recommend appropriate mitigation measures to minimise impacts to this species within the study area (if relevant); and
- Discuss the implications of the assessment, based on relevant legislation and policies.

Limitations

Due to the nature of the assessment, several limitations must be considered, including:

- The majority of the Marshall PSP consists of privately held land, at which access for the purposes of this assessment was not granted. Therefore, only the publicly held land was thoroughly assessed. Where sightlines could be established, binoculars were used to attempt to discern the floral species composition and extent;
- Victorian Grassland Earless Dragons are a cryptic species only recently rediscovered. The academic literature surrounding this population of the species is undeveloped and assessment guidelines for the species and its habitat are unrefined;
- Several properties within the study area were not fully assessed based on vegetation and houses obscuring sightlines (Figure 1), these areas include parts of the following properties:
    - 89-109 Drews Road;
    - 67-87 Drews Road;
    - 61-69 Horseshoe Bend Road;
    - 32-60 Horseshoe Bend Road;
    - 62-80 Horseshoe Bend Road;
    - 81-89 Horseshoe Bend Road;
    - 91-99 Horseshoe Bend Road;
    - 450-454 Barwon Heads Road;
    - 470-480 Barwon Heads Road;
    - 456-458 Barwon Heads Road; and,
    - 444 Barwon Heads Road.

Conservation Status and Biology

The Victorian Grassland Earless Dragon is listed as Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) and Critically Endangered under the *Flora and Fauna Guarantee Act 1988* (Vic) (FFG Act).

The Victorian Grassland Earless Dragon is a small lizard, up to approximately 12 centimetres in length. Earless dragons differ from other members of the family by lacking an external ear opening and functional tympanum (ear drum).

The Victorian Grassland Earless Dragon is pale grey-brown to red-brown in colour. It has three narrow and well-defined pale stripes running down its back: one along the spine and two in the 'dorsolateral' area. These stripes generally extend onto the tail.

The last confirmed sighting of the Victorian Grassland Earless Dragon in Victoria was in the greater Geelong area in 1969 (Department of Environment Land Water and Planning 2023c). The species was thought to have gone extinct within Victoria, but it was recently rediscovered during 2023 within Melbourne's Growth Areas. For this reason, little information about the local habitat of the species is available. Observations of related subspecies, in New South Wales and the Australian Capital Territory (ACT), indicate that the species is found in natural temperate grasslands, dominated by Wallaby-grasses *Rytidosperma* spp., Spear-grasses *Austrostipa* spp., Tussock-grasses *Poa* spp. and possibly Kangaroo Grass *Themeda triandra* (Robertson and Evans 2012).

Plate 1. A captive Victorian Grassland Earless Dragon at the Melbourne Zoo. Source: The Guardian newspaper citing Melbourne Zoo.

Captures in the ACT suggest that the lizards prefer well-drained, natural temperate grasslands that are relatively undisturbed and with minimal pasture improvement (Department of Climate Change Energy the Environment and Water 2023a). There appears to be a preference for shorter grassland with an open structure or with open, unvegetated areas. Some aspects of the structure of the grassland, such as distribution of tussocks and low (200-300mm average), tussock height, are likely to be important (McGrath 2015; Robertson and Evans 2012).

The Victorian Grassland Earless Dragon is known to make use of arthropod burrows and also shelters beneath rocks in Victoria (McGrath 2015). Surface basalt rock is likely to provide important habitat (Department of Climate Change Energy the Environment and Water 2023a; McGrath 2015; Robertson and Evans 2012). Where suitable grassland and rocky habitat occurred in close proximity to landscape and habitat structural changes, such as rock outcrops, this improved the likelihood of it being habitat for the lizard (McGrath 2015).

The main factors involved in the decline of the Victorian Grassland Earless Dragon are thought to be loss and fragmentation of habitat due to urban, industrial or agricultural development. In remaining areas of habitat, degradation processes are thought to have included: ploughing, changed fire regimes, changed grazing regimes, weed invasion, use of agricultural chemicals and rock removal (Department of Climate Change Energy the Environment and Water 2023a; Robertson and Evans 2012).

The exact distribution of the currently known population remains confidential, to restrain public observers and potential poachers (Nick Clemann, DEECA, *pers. comm.* 13 June 2023). The current habitat and potential distribution of the species within Victoria includes an area from western Melbourne, extending north-west to Bulla and Sunbury and south-west to Bacchus Marsh. It then extends further south towards Balliang and Sutherlands Creek (inclusive of Little River and Lara) and

then extending to western side of Geelong, as far as Murgheboloc. Habitats also potentially include some areas of the Bellarine Peninsula, such as around Armstrong Creek (Department of Climate Change Energy the Environment and Water 2023a).

Methods

The habitat assessment was completed by Liam McCormack, Principal Ecologist, on 25 March 2024. Liam is suitably qualified and experienced to complete the surveys.

The study area was assessed via vehicle and on foot. 'Over-the-fence' style assessments made up the majority of the habitat surveying. Notes of the Victorian Grassland Earless Dragon habitat attributes were kept throughout the assessment. A photograph of key features was taken.

In order to determine the ecological values that have previously been recorded within the study area, and its vicinity, the following resources were consulted to inform the conclusions drawn in this report:

- The NatureKit webpage (Department of Environment Land Water and Planning 2023a) from the Department of Energy, Environment, and Climate Action (DEECA) to identify the historic and current Ecological Vegetation Classes (EVCs);
- The Victorian Biodiversity Atlas (Department of Environment Land Water and Planning 2023c) for historic records of Victorian Grassland Earless Dragon within three kilometres of the study area; and,
- Nearmap aerial photography to understand previous land use (Nearmap 2024).

Results

The Study Area

The study area largely consists of low density residential lots, often presenting as hobby farms, grazing low numbers of stock. Most of the areas of vegetation within the PSP appear to have been subject to a slashing regime, occurring anywhere from several times annually, to bi-annually (Nearmap 2024). Some areas within the Marshall Precinct appear to have not been slashed within the last 14 years, due to trees preventing access by mowers and tractors This was confirmed using Nearmap aerial photography (Nearmap 2024).

The vegetation within most of the study area consisted of invasive pasture grasses, including Toowoomba Canary-grass *Phalaris aquatica*, Perennial Rye-grass *Lolium perenne*, Panic Veldt-grass *Ehrharta erecta*, Wild Oats *Avena* spp., and environmental weeds such as Capeweed *Arctotheca calendula*, Prickly Lettuce *Lactuca serriola*, and Twiggy Turnip *Brassica fruticulosa*.

Many indigenous trees, including River Red-gums *Eucalyptus camaldulensis,* were present in the study area, occurring as scattered trees or intersecting canopies and forming large patches of native vegetation. Thes indigenous patches were often times infill planted with native, but not indigenous, *Eucalypts*, Monterrey Cypress *Cupressus macrocarpa* and myriad other horticultural trees. In some instances, understorey vegetation was observed, including Ecological Vegetation Class (EVC) 132: Plains Grassland relic vegetation. This vegetation largely consisted of Common Wallaby Grass *Rytidosperma caespitosum*, Slender Wallaby Grass *Rytidosperma pallidum*, Bristly Wallaby Grass *Rytidosperma setaceum* or Pale-flowered Flax-lily *Dianella longifolia,* within the understorey layer, and Hedge Wattle *Acacia paradoxa* occurring as a limited midstorey species. In most of the instances of

native vegetation, patches were small and fragmented, only supporting one or two native species. Often, due to overgrazing, paddocks consisted of bare ground with large populations of invasive Stinkwort *Dittrichia graveolens* or native Finger Rush *Juncus subsecundus*, these areas of Finger Rush were often the largest patches of native vegetation and often formed monocultures due to selective grazing by ungulates.

It should be noted that much of the vegetation mapped as EVC 132: Plains Grassland by the Department of Energy, Environment and Climate Action (DEECA) modelling in 2005, has largely contracted or been invaded by exotic species, to the point of replacement, across the Marshall Precinct.

Two, mostly contiguous, areas of native vegetation located within 67-87 Drews Road and 89-109 Drews Road, are likely to provide the best quality vegetation within the precinct. These areas could not be fully assessed as sightlines with binoculars could not be achieved amidst the trees to fully assess understorey vegetation. However, upon reviewing historical aerial photography, these two areas, likely due to the density of trees, have remained mostly free from slashing since 2010 (Nearmap 2024). Due to the inability to assess this area and the protection the trees have afforded from intensive land use, these areas may retain native vegetation of better quality than that which was assessed elsewhere. It has been made known to Ecolink Consulting that these areas support embedded rock and gilgai structure, potentially suitable for Victorian Grassland Earless Dragons (*pers*. *comm*. Peter Schembri, Senior Strategic Planner, Geelong City Council 28 March 2024)

In the interior of the block of properties between Horseshoe Bend Road, Reserve Road, and Barwon Heads Road, sightlines could also not be achieved with binoculars (Figure 1). Upon reviewing the aerial imagery and noting the intensive slashing/stocking regime this area has undergone, it is unlikely this unassessed area retains native grassland vegetation.

Habitat within the Study Area

There are no recent, publicly available records of Victorian Grassland Earless Dragon within the vicinity of the study area, or anywhere else in Victoria (Department of Environment Land Water and Planning 2023c).

The majority of the assessable parts of the study area does not contain habitat for Victorian Grassland Earless Dragons, as it does not contain many of the preferred habitat features described above. That is:

- The study area has historically been, and was observed to be currently, intensively managed. In the cases of stocking rates, often paddocks had been overstocked and grassy vegetation completely removed. Most other grassy vegetation has been recently and historically slashed.
- The vegetation within the study area is generally dominated by exotic pasture grasses and only isolated occurrences of indigenous grasses occur within the study area, such as around fence lines or within private gardens. Exotic grasses are negatively correlated with the presence of Victorian Grassland Earless Dragon (Department of Climate Change Energy the Environment and Water 2023a); and,
- No submerged or surface basalt rock were observed within the study area. The study area has an absence of refuge habitats which may be utilised by the species.

Despite this, the areas within 67-87 Drews Road and 89-109 Drews Road have a low likelihood of providing habitat for Victorian Grassland Earless Dragon, based on:

- The presence of embedded rocks and gilgais (*pers. comm*. Peter Schembri, Senior Strategic Planner, Geelong City Council 28 March 2024); and,
- Naturekit vegetation mapping, and long distance botanical assessment, suggesting that the vegetation is likely the best quality within the precinct (Department of Environment Land Water and Planning 2023b); and,
- Historical aerial mapping suggests these areas have not been slashed or subject to tilling within the databases records current records (Nearmap 2024).

However, an on-ground assessment of these areas has not been made and Ecolink Consulting cannot confirm the quality of habitat within these areas.

Habitat Adjoining the Study Area

The study area is mostly hemmed by suburban development on three sides, except for the north-east. Much of the land to the north-east consists of similar, highly utilised exotic grasslands, often being grazed by sheep, horses or cows. These areas also appeared to lack rock structures and exhibited higher levels of wetlands and aquatic EVC's as the Marshall Precinct due to the proximity to the Barwon River. In turn, much of the vegetation is mapped as EVC 647: Plains Sedgy Wetland or EVC 56: Floodplain Riparian Woodland, both of which are not consistent with the Victorian Grassland Earless Dragon's habitat preferences. Despite this, a comprehensive, total, assessment of the area to the north-east of the study area was not carried out.

Recommendations and Conclusion

It is concluded that the study area is unlikely to provide Victorian Grassland Earless Dragon habitat due to an absence of suitable habitat features. It is unlikely that Victorian Grassland Earless Dragon will constrain the gazetting of the Marshall PSP.

The areas that could not be visually assessed have a low, but not zero possibility of supporting Victorian Grassland Earless Dragon habitat, and some of those areas may contain the higher-quality vegetation than what was assessed elsewhere (Figure 1). As mentioned, Geelong City Council inform us that the areas within 67-87 Drews Road and 89-109 Drews Road support embedded rocks, this, and the likely higher quality vegetation in these areas, may result in a moderate level of habitat for Victorian Grassland Earless Dragon in these areas. An on-ground assessment of those areas would be required to assess the habitat with greater certainty. It is recommended that access from the landholders be sought, and on-ground assessments conducted to rule out this possibility.

Kind regards,

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[redacted]

Botanist/Ecologist
Ecolink Consulting Pty Ltd

References

Department of Climate Change Energy the Environment and Water (2023a). 'Conservation Advice for Tympanocryptis pinguicolla (Victorian grassland earless dragon).' Department of Climate Change Energy the Environment and Water, Canberra.

Department of Climate Change Energy the Environment and Water (2023b). 'Draft National Recovery Plan for Four Grassland Earless Dragons (Tympanocryptis spp.) of Southeast Australia '.

Department of Environment Land Water and Planning (2023a). NatureKit. Available at http://maps.biodiversity.vic.gov.au/viewer/?viewer=NatureKit. Accessed January 2023. Department of Environment Land Water and Planning, Melbourne.

Department of Environment Land Water and Planning (2023b). NatureKit. Available at http://maps.biodiversity.vic.gov.au/viewer/?viewer=NatureKit. Accessed January 2023. Department of Environment Land Water and Planning, Melbourne.

Department of Environment Land Water and Planning (2023c). Victorian Biodiversity Atlas. Available at https://vba.dse.vic.gov.au/vba/index.jsp. Accessed January 2023. Department of Environment Land Water and Planning, Melbourne.

McGrath T (2015). The conservation and ecology of a rare and declining agamid lizard, the grassland earless dragon Tympanocryptis pinguicolla in the Monaro region of New South Wales, Australia. Unpublished thesis submitted in fulfilment of the requirements for a Masters in Applied Science by Research at the University of Canberra. (McGrath T: Canberra).

Nearmap (2024). PhotoMaps by Nearmap. Available at http://maps.au.nearmap.com/. Accessed February 2024 2023. Nearmap, Victoria.

Robertson P and Evans M (2012). 'National Recovery Plan for the Grassland Earless Dragon Tympanocryptis pinguicolla.' ACT Department of Territory and Municipal Services, Canberra.

Plates

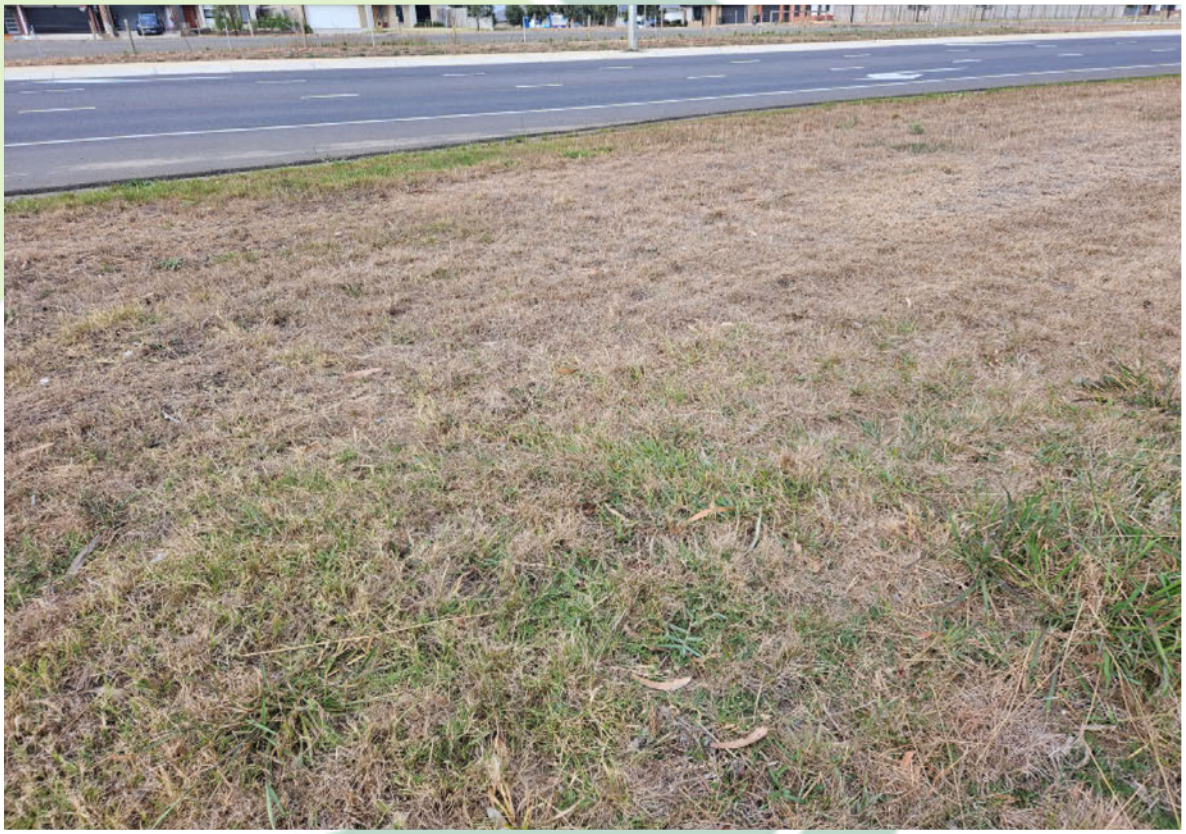


Plate 2. Much of the study area consists of paddocks and lawns comprising invasive grass species.

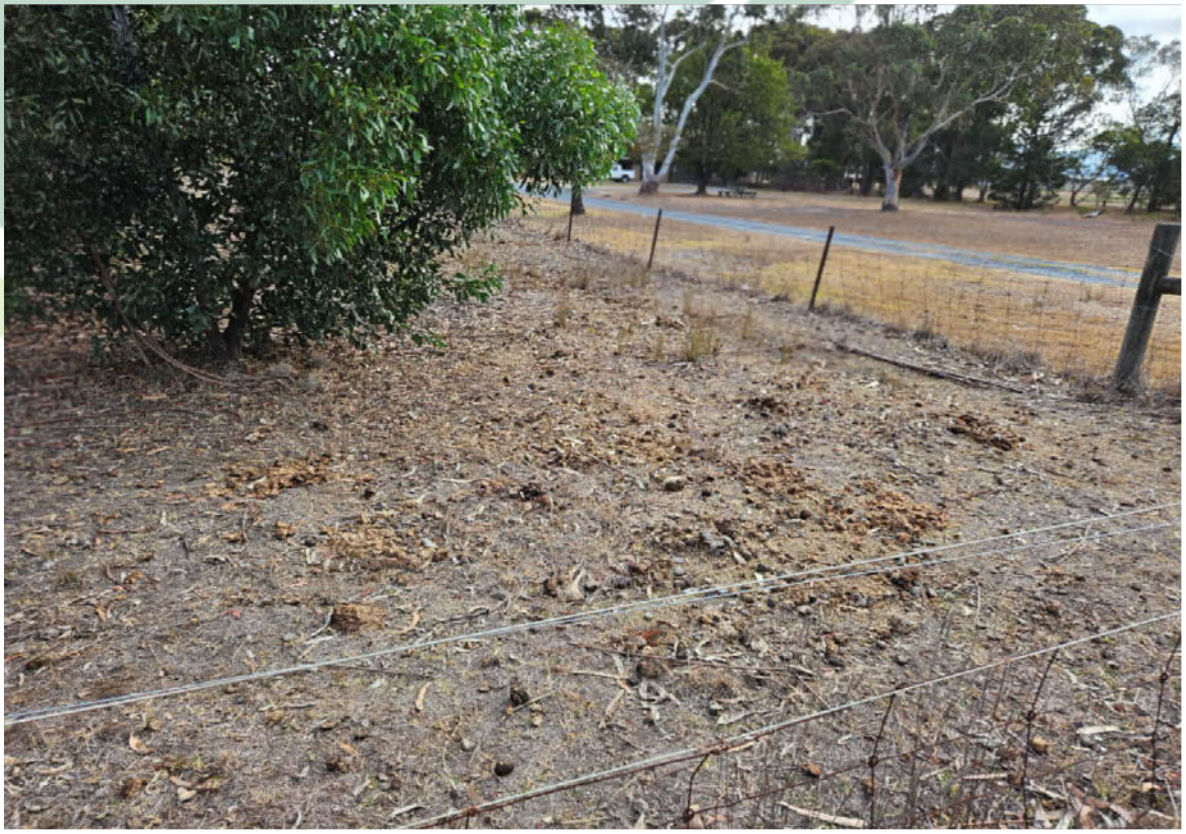


Plate 3. Many paddocks have been overgrazed and have turned to bare ground.

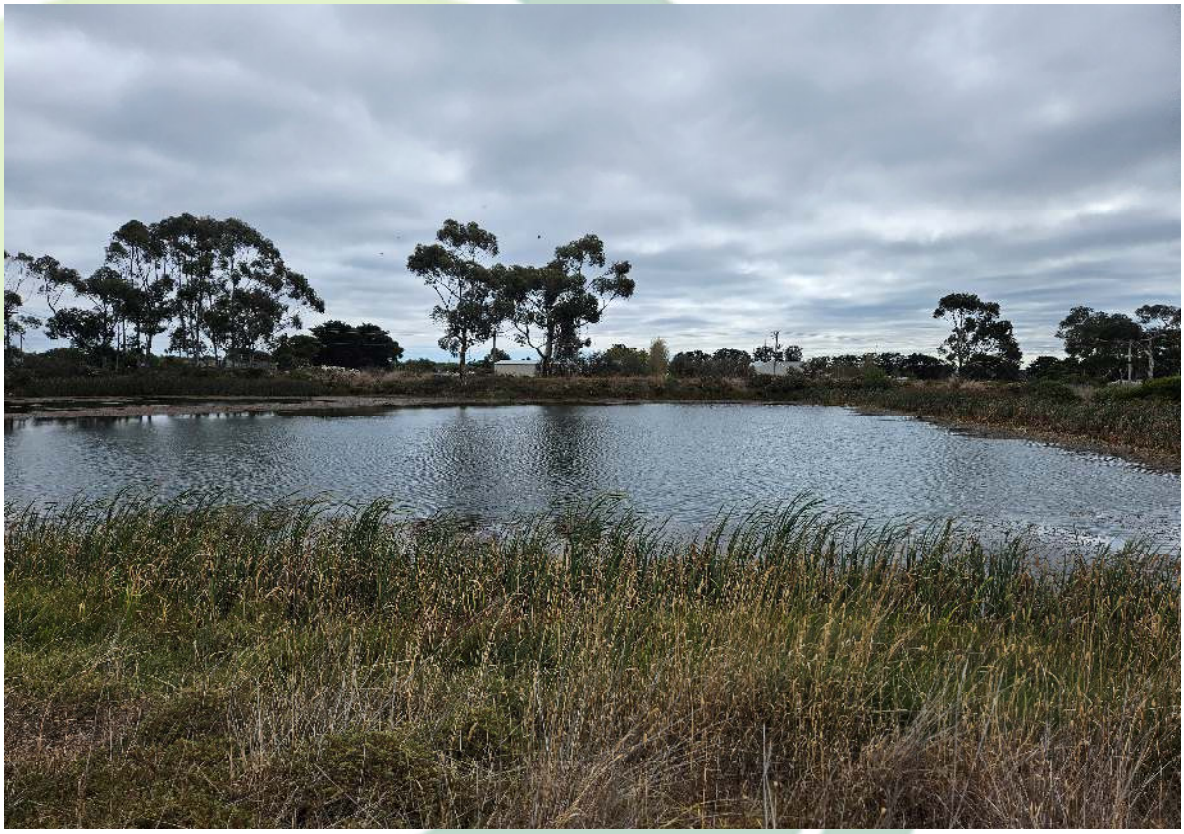


Plate 4. One of three dams within the Marshall Precinct, located in the south-west.

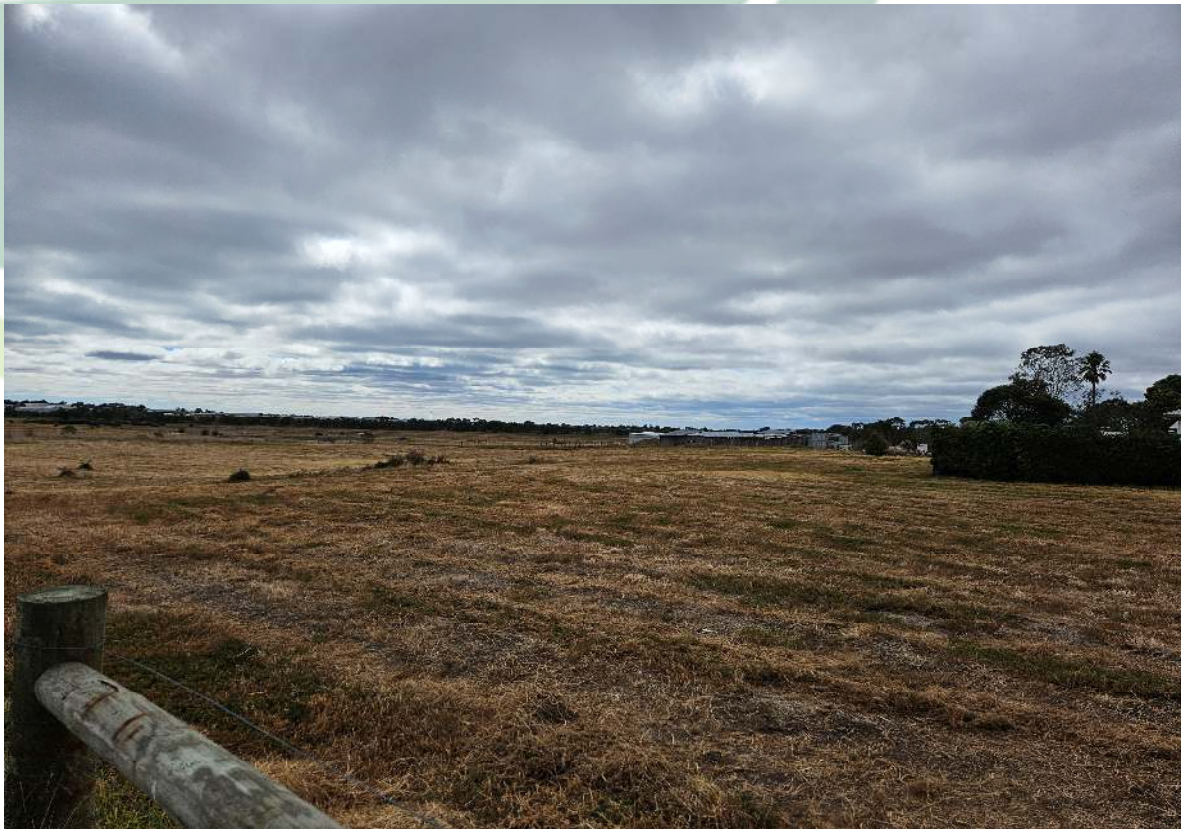


Plate 5. Much of the Marshall Precinct was recently slashed.

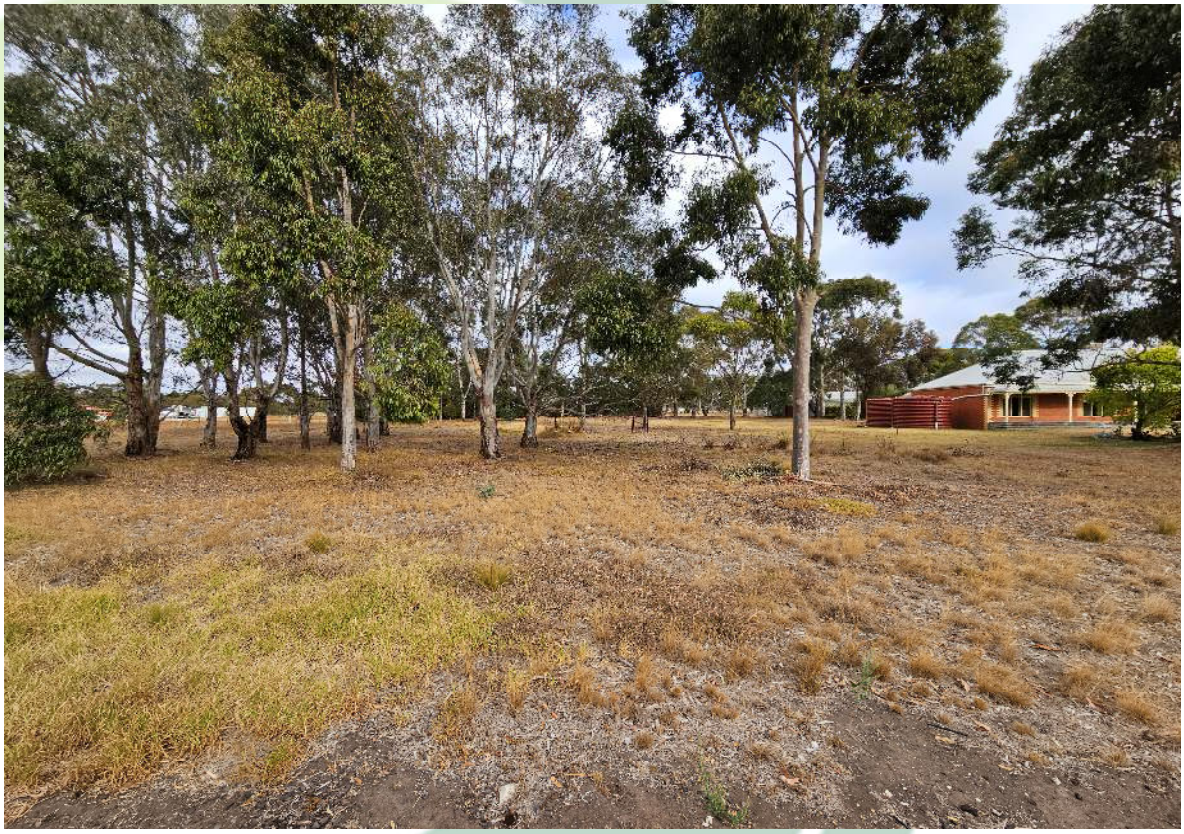


Plate 6. One of the best patches of native grassland vegetation, largely consisting of Wallaby Grass, but lacking rocks and other sources of shelter for Victorian Grassland Earless Dragon.

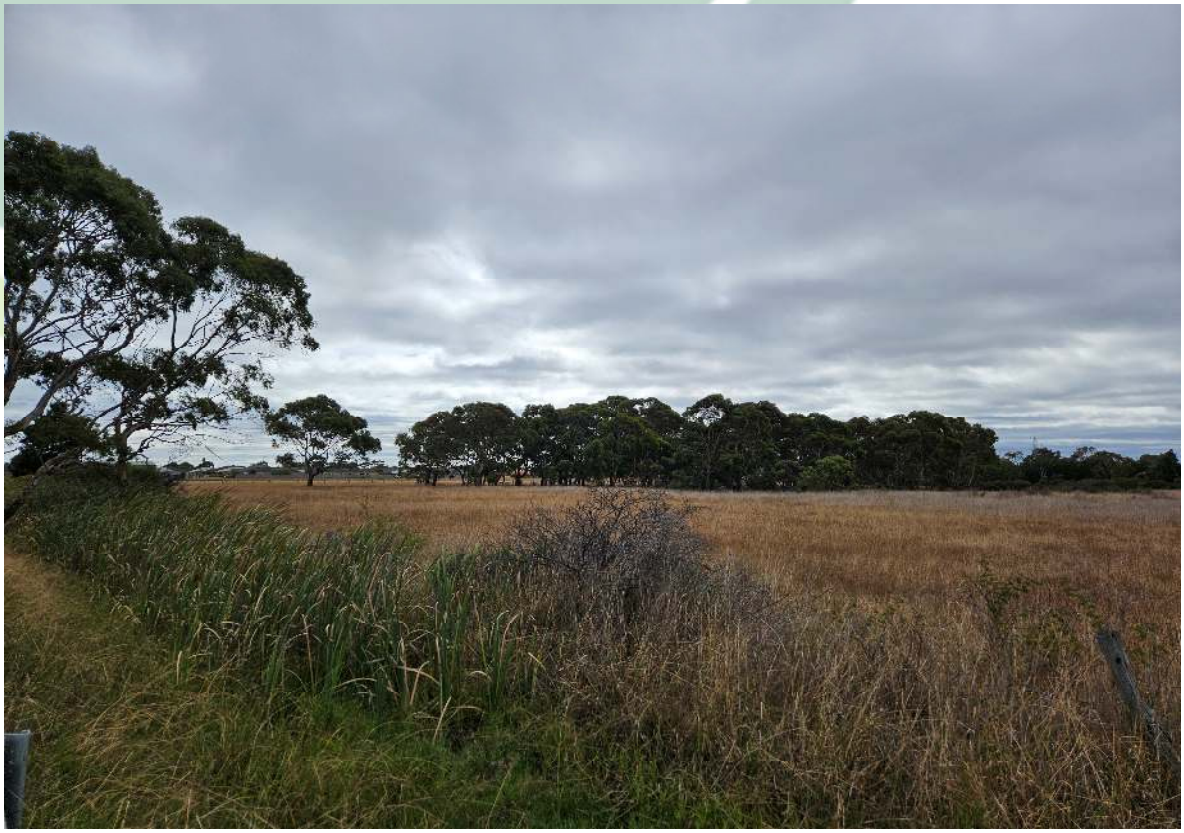


Plate 7. The unassessed vegetation found on 67-87 Drews Road.

Figure 1: Results of the Current Assessment

Marshall Precinct

Legend

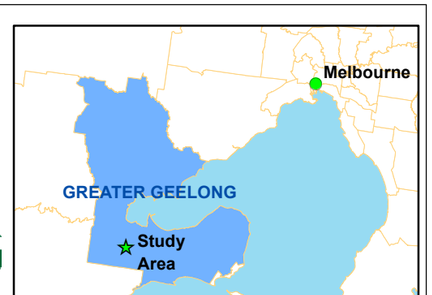
- Study Area
- Photo_Points
- Creeks and Waterways

Victorian Grassland Earless Dragon Habitat

- Inaccessible (Low Likelihood of Habitat)
- Inaccessible (Unlikley to Support Habitat)
- Unsuitable

0 100 200 300 400 Meters

ecolink consulting



P/N 2432 Figure 1. March 2024. Aerial photography: Nearmap. 4 February 2024.