



*Hamilton Environmental Services*  
ABN: 89 108 410 911



**TEST OF SIGNIFICANCE –  
420-508 PERRICOOTA ROAD, MOAMA**



## Test of Significance – 420-508 Perricoota Road, Moama

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**Cover Photo:** The entrance to 472 Perricoota Road, Moama.

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## 1. INTRODUCTION

In August 2021, Hamilton Environmental Services (HES) was engaged to undertake a Biodiversity Assessment and complete a Test of Significance under Part 7 Division 1 Section 7.3 of the *Biodiversity Conservation Act 2016* for the Perricoota Views Pty Ltd, for the development of Lot 1 DP1283567 and Lot 1-3 DP854487.

The applicant is seeking to undertake a 140 lot residential subdivision on the property.

Field assessment of the site was conducted on the 9<sup>th</sup> August 2021 by Dr. Steve Hamilton, and this report presents these findings.

## 2. BACKGROUND

### 2.1 Consultant Background

#### Steve Hamilton (Dr.)

*AssocDipAppBiol, BAppSc(AppBiol), MAppSc (RMIT), PhD (University of Melbourne), BAM accredited Assessor (DPIE NSW), Vegetation Quality Assessment Certified (DSE/DEPI/DELWP Victoria), Bush Broker Site Assessor (DELWP Victoria), Certificate IV in Training and Assessment.*

Steve is an ecologist specialising in flora and fauna inventory, auditing, monitoring and surveying, as well as soil typing, analysis and mapping. He has 12 years consulting experience, associated with a range of ecological evaluations and monitoring processes across all of Victoria, and southern and western New South Wales, which includes assessing and mapping vegetation condition, vegetation type, targeted threatened species surveys, habitat quality assessment (in Victoria, Habitat Hectares assessment and 'Net Loss' evaluations), across the range of terrestrial, riparian and wetland ecosystems.

He has vast experience in the assessment of native vegetation and species, and habitat loss assessment, for irrigation, residential, infrastructure and mining (including sand, rock and ore extraction) developments, and the successful negotiation of the appropriate legislative, regulatory and statutory frameworks across the three levels of Government to provide suitable outcomes for clients across both States to allow developments to proceed. In Victoria, this involves the production of Net Loss Reports, Vegetation Offset Management Plans and Work Plans, and in NSW, reporting for potential native vegetation/habitat losses, Tests of Significance and BAM assessments, threatened species threats in Development Applications (DAs), and in more detailed situations where Director General Requirements (or Secretary's Environmental Assessment Requirements; SEARs) are specified, Environmental Impact Statements (EISs) or Reviews of Environmental Factors (REFs).

Beyond statutory requirements and reporting, Steve is often called upon to provide technical reporting into particular issues, such as research/survey investigations into vegetation-soil-fauna management issues in natural areas or for development proposals, such as weed management surveys and strategies, kangaroo survey and management, potential mining pollution impacts, sustainability of timber resources, soil mapping and land capability assessment, ecosystem restoration, or revegetation design.

Prior to consulting, Steve spent 20 years as a senior teaching/research academic, and has more than 30 peer-reviewed papers and many technical reports, most focussing on the impacts of disturbance on the ecology and floristics of woodlands and grasslands.



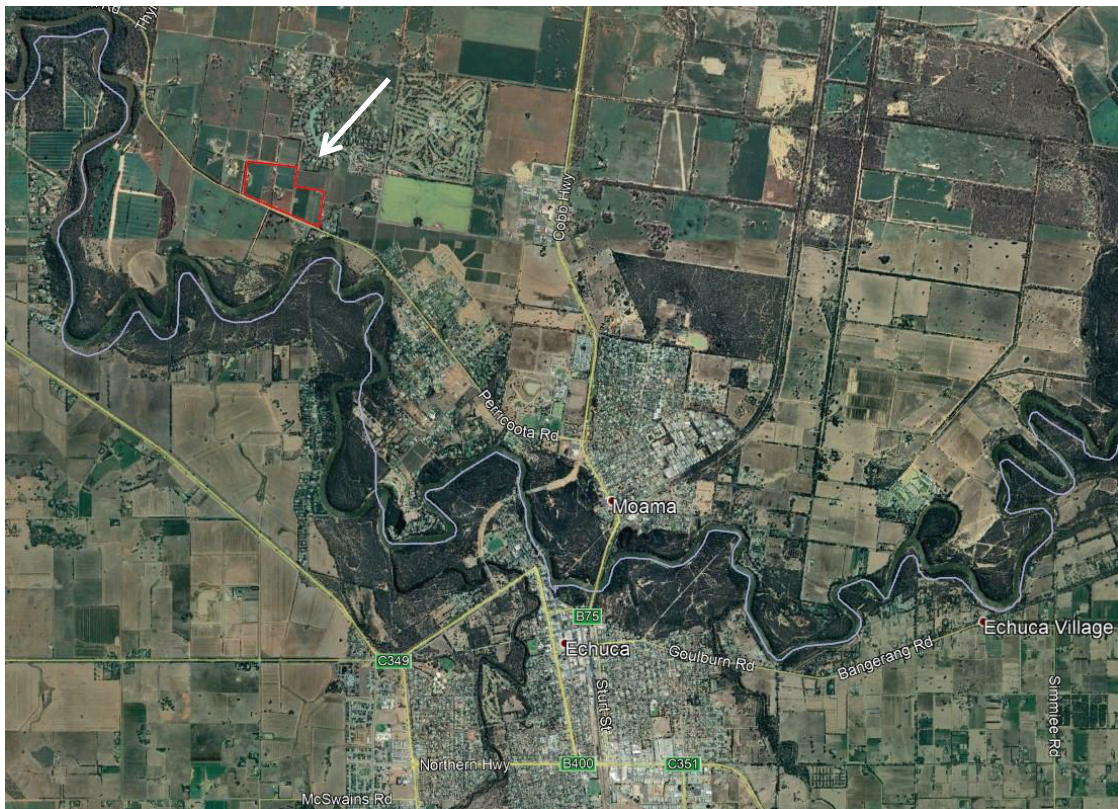
## 2.2 Location and Description

The property is 4.7 km north-west of the centre of the township of Moama (Fig. 2-1).

The property 420-508 Perricoota Road, Moama, is a broadly rectangular shaped area of 43.5 ha, and has maximum dimensions of 570 m north-south, and 950 m east-west.

The western boundary of the property is Myall Road, the southern boundary is Perricoota Road, and freehold properties to the east and north; the property to the east is Perricoota Vines Holiday Retreat, and the properties to the north are established vineyards (Fig. 2-2).

The properties are in close proximity to the Murray River corridor to the south, with 420 Perricoota Road within 150 m of this corridor.



**Figure 2-1** Aerial image of the general location of the assessed property, outlined in red (Google Earth 2021).

The fully-fenced properties 420 and 446 Perricoota Road are currently separate rural properties with a dwelling and associated garden, with both properties utilised for grazing (420 Perricoota Road) and cropping (446 Perricoota Road).

Properties 472 and 508 Perricoota Road are currently utilised by Nicholas Vineyards, and have until recently been substantially planted to vines, although these have been removed on 508 Perricoota Road, which has been planted to crop. Both properties retain considerable infrastructure relating to vineyard management, and both properties maintain a number of plantations of exotic, indigenous and non-indigenous native trees and shrubs.

All properties have been completely cleared of indigenous woody vegetation, except for one immature River Red Gum (*Eucalyptus camaldulensis*) found on the southern boundary of 472 Perricoota Road, and a mature, hollow-bearing Grey Box (*E. microcarpa*) found just north of the northern boundary of 472 Perricoota Road. Given the intensive agricultural land use of all four properties, they are dominated by introduced ground layer species.





Figure 2-2 Aerial image of the 420-508 Perricoota Road, Moama properties, the location of assessed trees, and location and extent of plantations (Image from ESRI Australia 2021).

The Proposed Layout Plan for the residential subdivision is shown in Fig. 2-3.

### 3. METHODOLOGY

#### 3.1 Desktop Review

The following desktop information was gathered prior to field assessment:

- Aerial imagery and base map from Land and Property Information New South Wales;
- Determination of a general species list for the area (Department of Planning, Industry and Environment [DPIE] 2021a);
- Matters of National Significance reporting for the 10 km radius around the property (Department of Agriculture, Water and Environment [DAWE] 2021);
- Flora, fauna and threatened species lists, sighting records and information for the district was obtained from *BioNet – Website of the Atlas of NSW Wildlife* (DPIE 2021b).

#### 3.2 General Site Assessment

On the 9<sup>th</sup> August 2021, Dr. Steve Hamilton (BAAS 18106) visited the property and the adjacent area to undertake the assessment. On this day, air temperatures were between 8 to 10°C, the sky was overcast, there was light rain, and there was a light wind (Bureau of Meteorology 2021).

The entire site was traversed by foot, and continuous active searching was conducted over a total period of 90 minutes.

In a general sense, the following assessments were undertaken across the assessed area:

- Vascular plant species were identified and noted according to zone, with an overall cover/abundance value recorded for each species in each zone completed post-field assessment (see Table 3-1);
- The species, location, diameter, health and basic hollow characteristics of all assessed tree individuals was recorded, and an image of the tree taken;
- Opportunistic recording of any fauna;
- Digital images across the site taken.

One hundred and seven (107) images were taken across the area during the assessment to facilitate identification and to provide context to the description.

**Table 3-1 Modified Braun-Blanquet scale applied to assessment to each vascular plant species identified.**

Visual assessment of cover/abundance	
Symbol	Description
+	rare, cover < 5%
1	Uncommon, cover < 5 %
2	Very common, cover < 5 % or cover 5-25 % with any number of individuals
3	Cover 25-50 % with any number of individuals
4	Cover 50-75 % with any number of individuals
5	Cover 75-100 % with any number of individuals



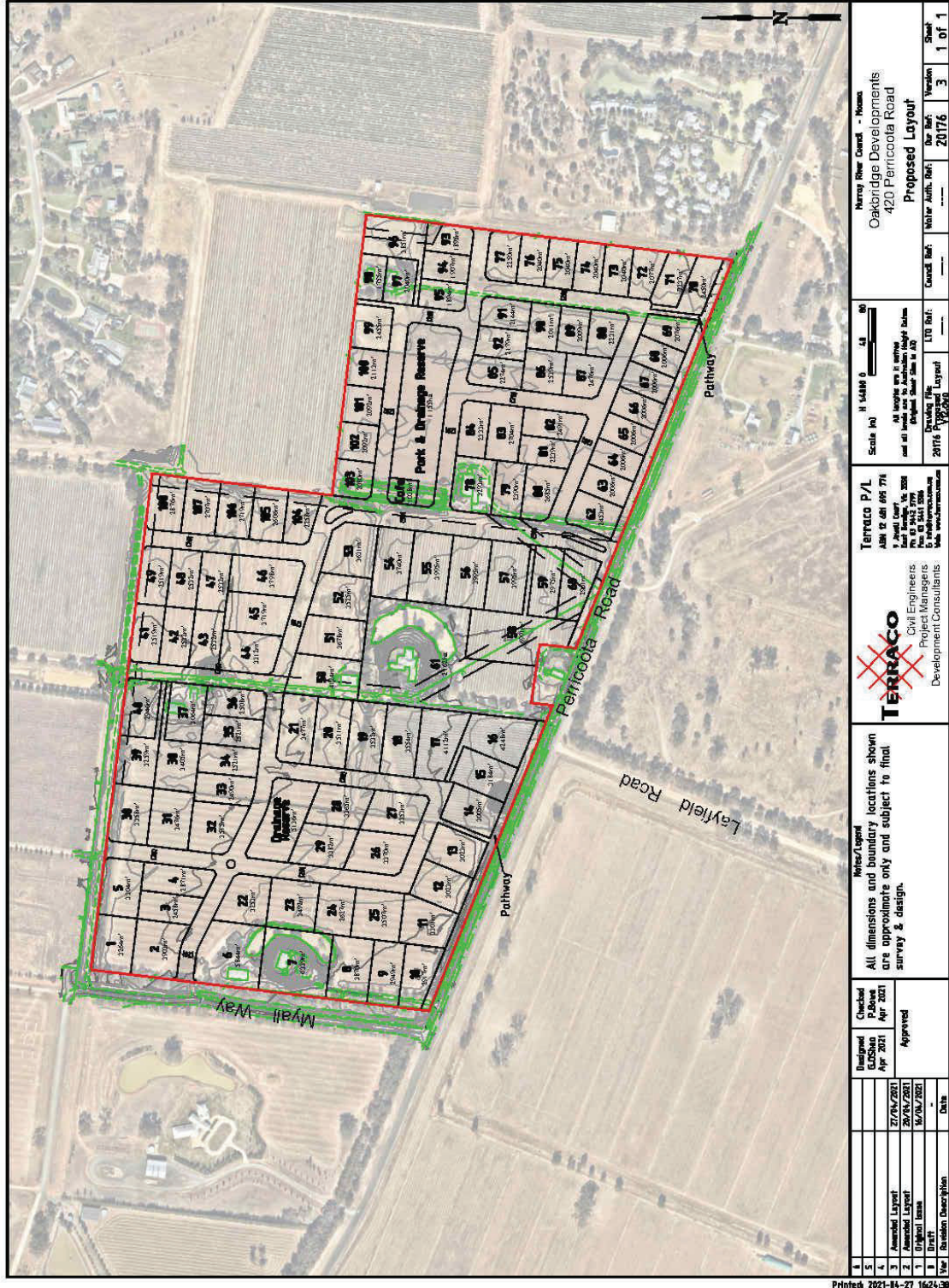


Figure 2-3 Proposed Layout Plan of Subdivision, 420-508 Perricoota Road, Moama (Terraco, dated 26/4/21).



### 3.3 Taxonomy

#### 3.3.1 Flora

Vascular plants that could not be identified in the field, specimens and images were collected for identification using the *Flora of New South Wales* (Harden 1990, 1991, 1992, 1993), and *PlantNet Flora On-line* (Royal Botanic Gardens Sydney 2021).

#### 3.3.2 Fauna

Any fauna observed were recorded, with the nomenclature based variously on the compilations of Hero *et al.* (1991), Menkhorst (1995), Cogger (1996) and Simpson and Day (1998), utilising Triggs (1996) for identification using indirect methods, such as the presence of scats or tracks

## 4. EXISTING ENVIRONMENT

### 4.1 Vegetation

A total of 17 vascular plant species were recorded across the proposed development area.

There were no rare or threatened species observed (after DPIE 2021a).

As indicated, the fully-fenced properties 420 and 446 Perricoota Road are currently separate rural properties with a dwelling and associated garden, with both properties utilised for grazing (420 Perricoota Road) and cropping (446 Perricoota Road). Properties 472 and 508 Perricoota Road are currently utilised by Nicholas Vineyards, and have until recently been substantially planted to vines, although these have been removed on 508 Perricoota Road, which has been planted to crop. Both properties retain considerable infrastructure relating to vineyard management, and both properties maintain a number of plantations and gardens of existing dwellings that contain exotic, indigenous and non-indigenous native trees and shrubs, such as London Plane (*Platanus x acerifolius*), Desert Ash (*Fraxinus angustifolium*), White Cedar (*Melia azerdarach*), Weeping Willow (*Salix babylonica*), Weeping Myall (*Acacia pendula*), Spotted Gum (*Corymbia maculata*), Yellow Gum (*Eucalyptus leucoxylon*) and Red Ironbark (*E. sideroxylon*).

All properties have been completely cleared of indigenous woody vegetation, except for one immature River Red Gum found on the southern boundary of 472 Perricoota Road, and a mature, hollow-bearing Grey Box found just north of the northern boundary of 472 Perricoota Road. Given the intensive agricultural land use of all four properties, they are dominated by introduced ground layer species, with species such as Wheat (*Triticum aestivum*), Capeweed (*Arctotheca calendula*), Common Stork's-bill (*Erodium cicutarium*), Barley Grass (*Hordeum leporinum*), Wireweed (*Polygonum aviculare*), Milk Thistle (*Sonchus oleraceus*), Shepherd's Purse (*Capsella bursa-pastoris*), Soursob (*Oxalis pes-caprae*), Small-flowered Mallow (*Malva parvifolium*), Prickly Lettuce (*Lactuca serriola*), Plantain (*Plantago lanceolata*), Wimmera Ryegrass (*Lolium rigidum*), Great Brome (*Bromus diandrus*), White Clover (*Trifolium repens*) and Onion-grass (*Romulea rosea*) are also common in this area (90 % projective foliage cover)

indigenous ground layer species such as Ringed Wallaby Grass (*Rytidopserma caespitosum*) and Curly Windmill Grass (*Enteropogon acicularis*) are found as small patches and as individual plants, but at a very low abundance (< 1 % projective foliage cover).

The properties are likely to have been a mixture of former NSW Plant Community Type (PCT) ID 237 – *Floodplain Transition Woodlands - Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone* and PCT ID 44 - *Riverine Plain Grasslands - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion* (from Environment and Heritage 2012 and DPIE 2021d); however, there are no remnants of these communities.



**Plate 4-1** Views across the properties: looking across 420 Perricoota Road (top left), looking north along the access road to 446 Perricoota Road (top right), looking across 446 Perricoota Road (middle left), looking north along the access road to 472 Perricoota Road (middle right), looking north along the access road to 508 Perricoota Road (bottom left), and the northern section of 508 Perricoota Road (bottom right).

## 4.2 Significant Trees

Construction projects that involve earthworks or soil disturbance can cause indirect losses of native vegetation that are retained during construction due to root damage and soil modification within the zone where roots occur. Of particular concern is the longer-term impact of soil compaction and



excavation (e.g. trenching for pipelines) close to trees and the effects of this on immediate and longer-term tree health. Standards Australia (2009) has provided guidance and clarity on this issue, and has defined an acceptable distance for tree retention in order to prevent indirect losses of native vegetation during and after construction activities as a guiding principle. These designated Tree Protection Zones (TPZs) should be implemented for the duration of construction activities (Standards Australia 2009) as part of the development conditions.

A TPZ is a specific area above and below the ground, with a radius 12 times the Diameter at Breast Height (dbh; 1.3 m) of any individual tree; the TPZ of trees should be no less than 2 m or greater than 15 m, and it is recommended that physical barriers be erected to delineate the TPZ during construction activities. Should a development impinge on the TPZ area for > 10 % of its area, the tree shall be considered a loss, and will have to be offset (Standards Australia 2009).

Only two trees were assessed; as these were the only trees proposed for loss across the properties or in close proximity:

- Tree 1 is a River Red Gum of 25 cm diameter at breast height (dbh), and is not hollow-bearing;
- Tree 2 is Grey Box of 130 cm dbh, and is hollow-bearing, but is 25 m north of the northern boundary of the proposed development.

The location of both assessed trees and the various locations and extents of the plantations can be seen in Fig. 2-2.



**Plate 4-2** Images of the two assessed trees: (Tree 1 (left) and Tree 2 (right)).

### **4.3 Fauna**

There were five species of fauna observed or inferred at the site, all indigenous: the Australian Magpie, Magpie-lark, Eastern Rosella, Pied Currawong and Galah.

There were no rare or threatened species observed at the site (DPIE 2021a).

The Murray River corridor is within 150 m of the proposed lots, and while there is no native vegetation across the properties that is continuous to the top of bank, the site maintains a good landscape connectivity.



The indigenous fauna observed across the site is likely to be typical of those observed in cleared and disturbed sites that have been utilised for agricultural production for a lengthy period, and that for the majority of the site lack a tree canopy and an understorey structure. Despite the good connectivity of the properties, the lack of observed species diversity across the site is not surprising given the extent of modification.

Therefore, while a greater species diversity was expected, ultimately, the condition of the majority of the site does not provide significant faunal habitat because of:

- The lack of an indigenous remnant tree canopy across the site;
- The lack of hollow-bearing trees, or standing dead trees;
- the lack of understorey woody vegetation across the property (and adjacent properties as well) and the commensurate simplified vegetation structure, which would considerably limit mammal, reptile, bat and bird species residency;
- a very low abundance and diversity of indigenous ground layer;
- the lack of fallen timber, which would considerably limit mammal, reptile, bat and bird species residency;
- the likely presence of feral animal populations such as foxes and feral/semi-domestic/domestic cats, which would actively predate any ground-dwelling or near ground-dwelling species heavily.

On this basis, while some bird fauna will be able to utilise the nectar resources found as a consequence of the planted vegetation across property and adjacent properties, there are limited habitat opportunities for fauna in terms of residence because of the lack of vegetation structure, on-going disturbance at the site, and the lack of structural and compositional diversity. However, it is reasonable to assume that some fauna found within the Murray River corridor will occasionally utilise the limited habitat resources of the assessed site because of the connectivity; however, it is clear that the majority of the site would not be primary or even secondary habitat for many species, and usage would be highly infrequent and opportunistic.

## **4.4 Threatened Species and Communities**

### **4.4.1 Threatened community likelihood**

As stated previously, the properties are likely to have been a mixture of former NSW Plant Community Type (PCT) ID 237 – *Floodplain Transition Woodlands - Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone* and PCT ID 44 - *Riverine Plain Grasslands - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion* (from Environment and Heritage 2012 and DPIE 2021d); however, there are no remnants of these communities.

Threatened Ecological Communities (TECs) are listed in the schedules of the *Biodiversity Conservation Act 2016*; *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions*, the *Allocasuarina luehmannii* Woodland in the Riverina and Murray-Darling Depression Bioregions, the *Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes Bioregions*, and *White Box-Yellow Box-Blakely's Red Gum Woodland* are listed as *Endangered* under the Act (DPIE 2021b).

Matters of National Environmental Significance searching reveals that the nationally critically endangered *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* and *Seasonal Herbaceous Wetlands (freshwater) of the Temperate Lowland* communities, and the nationally endangered *Natural Grasslands of the Murray Valley Plains*, *Grey Box Grassy Woodlands and Derived Native Grasslands of South-eastern Australia*, *Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions* and the *Weeping Myall Woodlands* communities occur within a 20 km radius of the site (DAWE 2021).

Threatened Ecological Communities (TECs) are listed in the schedules of the *Biodiversity Conservation Act 2016*. Several TECs are considered to occur within the district of the proposed development: *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Penepplain, Nandewar and Brigalow Belt South Bioregions*, the *Allocasuarina luehmannii* Woodland in the Riverina and Murray-Darling Depression Bioregions, the *Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes Bioregions*, and *White Box Yellow Box Blakely's Red Gum Woodland* (known as Grassy Box Gum Woodland) are all listed as *Endangered* under the Act (DPIE 2021b); the assessed properties were probably partly *Inland Grey Box Woodland in the Riverina*, but there are now no remnants of this community across the site.

#### **4.4.2 Threatened species likelihood**

There were no rare or threatened species under the *Biodiversity Conservation Act 2016* observed at the property (DPIE 2021a).

The likelihood of presence for all recorded threatened species within a 10 km radius of the site has been considered (DPIE 2021a).

*BioNet – Website of the Atlas of NSW Wildlife and Matters of National Environmental Significance* searches revealed that there were records or predicted occurrences of twenty four (24) threatened fauna species within a 10 km radius of the site (DPIE 2021a, DAWE 2021; Appendix A).

*BioNet – Website of the Atlas of NSW Wildlife and Matters of National Environmental Significance* revealed that there were nine (9) records or predicted occurrences of threatened flora species within a 10 km radius of the site (DPIE 2021a, DAWE 2021; Appendix A).

The likelihood of the presence of these species and their likelihood of utilisation of the proposed development area was considered and rated based on the habitat preferences of the species, the habitat quality of the site, the good landscape connectivity, known records for species and the currency of these records, and the composition, abundance and structure of the vegetation of the site (Appendix A).

Of these species, all flora, and nineteen fauna species were not likely to occur at the site or to utilise it because of the following issues (or combination of them):

- the lack of a suitable community/habitat type (e.g. Floating Swamp Wallaby-grass, Australasian Bittern, Bush Stone-curlew, Rigid Spider-orchid, Golden Sun Moth, Grey-headed Flying-fox, Plains-wanderer, Spiny Rice-flower, Turnip Copperburr);
- the lack of connectivity of the site through clearing of habitat to areas of known occurrence (e.g. Fork-tailed Swift, Grey-crowned Babbler, Painted Honeyeater, Southern Bell Frog, Squirrel Glider, Koala, Yellow-bellied Sheath-tail Bat);
- disturbance to, and simplification of the site (e.g. Claypan Daisy, Sloane's Froglet, Southern Bell Frog, Striped Legless Lizard).

Based on the assumptions described above, five species of fauna – Brown Treecreeper, Corben's Long-eared Bat, Little Lorikeet, Superb Parrot and Swift Parrot – were considered to have potential to find the site and utilise it given the limited available habitat resources.

The subdivision will result in the removal of 1 immature River Red Gum which is non-hollow-bearing, and it is unlikely that the loss of this native vegetation from a site 140 m from the Murray River corridor, will not have any impact on those threatened species that have potential to find the site and utilise it given the available habitat resources.

A range of planted exotic, indigenous and non-indigenous native trees and shrubs within established plantations and gardens will also be removed.

#### 4.4.3 Assessment of Significance

Part 7 Division 1 Section 7.3 of the *Biodiversity Conservation Act 2016* sets out five parameters that a determining authority must consider in deciding whether an activity is likely to have a significant effect on threatened species, populations, or ecological communities, or their habitats.

As indicated, the assessed properties have been completely cleared of indigenous woody vegetation, except for one immature River Red Gum found on the southern boundary of 472 Perricoota Road, and a mature, hollow-bearing Grey Box found just north of the northern boundary of 472 Perricoota Road. Given the intensive agricultural land use of all four properties, they are dominated by introduced ground layer species; indigenous ground layer species are found as small patches and as individual plants, but at a very low abundance.

The subdivision will result in the removal of 1 immature River Red Gum which is non-hollow-bearing.

Six threatened communities, nine threatened species of flora and twenty four species of fauna have been recorded within a 10 km radius of the site (DPIE 2021a) or are known or predicted to occur within 10 km of the site (DAWE 2021)(Appendix A).

After likelihood assessment, no representative threatened communities or threatened flora are considered likely to occur in the area, and five fauna species have been determined to have potential to occur on the site, have been evaluated using the five parameters (Appendix D), and it is considered that the proposed development would have no impact on the other species and populations, or their habitats (Appendix A).

The application of the five parameters of Part 7 Division 1 Section 7.3 of the *Biodiversity Conservation Act 2016* in the following section specifically addresses the effects of the development on the five threatened species.

**Fauna. Five threatened fauna have been considered to have potential to utilise the site are being considered in the following section collectively. As all of them have been recorded recently within reasonable proximity on the Murray River corridor, and all have similar issues in regard to their likely usage of the site given its quality and connectivity, this is considered a prudent action rather than providing a lengthy and repetitive response for each of the following individual species - Brown Treecreeper, Corben's Long-eared Bat, Little Lorikeet, Superb Parrot and Swift Parrot.**

1 (a) *in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

As indicated, the assessed properties have been completely cleared of indigenous woody vegetation, except for one immature River Red, and they are dominated by introduced ground layer species; indigenous ground layer species are found as small patches and as individual plants, but at a very low abundance. The subdivision will result in the removal of 1 immature River Red Gum which is non-hollow-bearing, and it unlikely that the loss of this tree from a site < 150 m from the Murray River will place any of the five species threatened species that have potential to find the site and utilise it given the available habitat resources, at the risk of local extinction.

1 (b) *in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:*

(i) *is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*

Not applicable.

(ii) *is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,*



Not applicable.

*1 (c) in relation to the habitat of a threatened species or ecological community:*

- (i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and*

As indicated, the assessed properties have been completely cleared of indigenous woody vegetation, except for one immature River Red, and they are dominated by introduced ground layer species; indigenous ground layer species are found as small patches and as individual plants, but at a very low abundance. The subdivision will result in the removal of 1 immature River Red Gum which is non-hollow-bearing, and it unlikely that the loss of this tree from a site < 150 m from the Murray River will place any of the five species threatened species that have potential to find the site and utilise it given the available habitat resources, at any risk because of the negligible loss of secondary habitat to be removed.

- (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and*

As indicated, the assessed properties have been completely cleared of indigenous woody vegetation, except for one immature River Red, and they are dominated by introduced ground layer species; indigenous ground layer species are found as small patches and as individual plants, but at a very low abundance. The subdivision will result in the removal of 1 immature River Red Gum which is non-hollow-bearing, and it unlikely that the loss of this tree from a site < 150 m from the Murray River will result in the fragmentation or isolation of the five species threatened species that have potential to find the site and utilise it given the available habitat resources.

- (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,*

As indicated, the assessed properties have been completely cleared of indigenous woody vegetation, except for one immature River Red, and they are dominated by introduced ground layer species; indigenous ground layer species are found as small patches and as individual plants, but at a very low abundance. The subdivision will result in the removal of 1 immature River Red Gum which is non-hollow-bearing, and it unlikely that the loss of this tree from a site < 150 m from the Murray River will result in any impact on the long-term survival of any of the five species threatened species that have potential to find the site and utilise it given the available habitat resources.

*1 (d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly):*

No such declaration has been made for the area.

*1 (e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.*

As indicated, the proposed development will result in one key threatening process - *Clearing of native vegetation*.

## **5. AVOIDANCE AND MINIMISATION OF NATIVE VEGETATION**

As indicated, the assessed properties have been completely cleared of indigenous woody vegetation, except for one immature River Red Gum found on the southern boundary of 472 Perricoota Road, and a mature, hollow-bearing Grey Box found just north of the northern boundary of 472 Perricoota Road. Given the intensive agricultural land use of all four properties, they are dominated by

introduced ground layer species; indigenous ground layer species are found as small patches and as individual plants, but at a very low abundance.

The subdivision will result in the removal of 1 immature River Red Gum which is non-hollow-bearing.

The generation of a Biodiversity Offset Scheme Entry Threshold Report (BOSET Report)(DPIE 2021f) reveals that the minimum Lot Size according to the *Murray Local Environmental Plan 2011* (New South Wales Government 2021) is 0.8 ha, and that the Area Clearing Threshold required to enter the Biodiversity Offset Scheme (BOS), and for a Biodiversity Development Assessment Report (BDAR) to be completed, is 0.25 ha.

Therefore, for development to avoid entering the BOS and requiring a BDAR to be undertaken, native vegetation clearance must be < 0.25 ha; the loss of the one immature River Red Gum with an estimated canopy area of 30 m<sup>2</sup> (0.003 ha), is clearly significantly less than the clearance threshold of 0.25 ha.

## 6. RECOMMENDATION

The landholder is seeking to undertake a 108 lot residential subdivision on the property.

The property is not in a declared area of outstanding biodiversity value, the proposed development area is not mapped as *Vulnerable or Sensitive Regulated Land* according to the *State Environmental Planning Policy (Vegetation) 2017*, and is also not mapped as an area of Biodiversity Value (DPIE 2021e); the adjacent Murray River corridor is an area of Biodiversity Value, but the proposed development area is wholly out of this mapped area.

The extent of the native vegetation on the property (effectively, the canopy of the immature tree for loss) is estimated to be < 0.01 ha (30 m<sup>2</sup>).

As indicated, the generation of a BOSET Report reveals that the minimum Lot Size is 0.8 ha, and that the Area Clearing Threshold required to enter the BOS, and for a BDAR to be completed, is 0.25 ha.

Therefore, for the development to avoid entering the BOS and requiring a BDAR to be undertaken, native vegetation clearance must be < 0.25 ha, and the estimated native vegetation loss is significantly less than this threshold amount; therefore, a BDAR is not required.

The four properties that will constitute the proposed residential development has been evaluated and subjected to a Test of Significance under Part 7 Division 1 Section 7.3 of the *Biodiversity Conservation Act 2016*, and it is concluded that in the event of the development incurring the loss of 1 immature River Red Gum which is not hollow-bearing, there will not be any significant impacts on any threatened species or community as a consequence.

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## **APPENDIX A      THREATENED SPECIES LIKELIHOOD OF PRESENCE**

List of threatened communities, and flora and fauna species recorded by the BioNet - Atlas of NSW Wildlife and by Matters of National Environmental Significance search of a 10 km radius from the proposed development site, their status, and their likelihood of occurrence on the site (DPIE 2021b; DAW 2021).

Common Name	Scientific name	Conservation Status (NSW) <sup>1</sup>	Conservation Status (Comm) <sup>2</sup>	Likelihood of Occurrence <sup>3</sup>	Five Part Test
<b>Vegetation community</b>					
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions		e	E	While this TEC is represented within the district, the property is former Grey Box forest/woodland and grassland. <b>Likelihood: Not present</b>	No
Grey Box Grassy Woodlands and Derived Native Grasslands of South-eastern Australia		e	E	While this TEC is represented within the district, the property is former Grey Box forest/woodland and grassland. <b>Likelihood: Not present</b>	No
Murray River endangered ecological community		e		The community is present within proximity to the Murray River; however, due to the minor nature of the work and its location away from the river, the community would not be impacted by the proposal. <b>Likelihood: Not present</b>	No
Natural Grasslands of the Murray Valley Plains		e	CE	While this TEC is represented within the district, the property is Grey Box forest/woodland and grassland. <b>Likelihood: Not present</b>	No
Seasonal herbaceous wetlands (freshwater) of the temperate lowland plains		ce		While this TEC is represented within the district, the property is Grey Box forest/woodland and grassland. <b>Likelihood: Not present</b>	No
Weeping Myall Woodlands		e	E	While this TEC is represented within the district, the property is Grey Box forest/woodland and grassland. <b>Likelihood: Not present</b>	No
<b>Flora</b>					
Floating Swamp Wallaby-grass	<i>Amphibromus fluitans</i>	v	V	The species grows mostly in permanent swamps. The species needs wetlands which are at least moderately fertile and which have some bare ground, conditions which are produced by seasonally-fluctuating water levels. Suitable habitat is not found on the site. Only once sighting within the Murray River Reserve 6 km E of the site in 1979. <b>Likelihood: Highly unlikely to be present</b>	No
Claypan Daisy	<i>Brachyscome muelleroides</i>	v	V	A small annual herb restricted to the mid-Murray/Murrumbidgee Rivers region in NSW and Victoria. It occurs in seasonally wet depressions, and relies on seasonal inundation. The species is now restricted to only 10 known populations. Such habitat is now not found on site. No records within 10 km. <b>Likelihood: Highly unlikely to be present</b>	No
Rigid Spider-orchid	<i>Caladenia tensa</i>		E	This species grows mostly in light soils on sand-hills and sand plains. Little information is now known of its NSW distribution, and the only known populations are in Victoria and South Australia. Such habitat is not found on site. No records of the species within 10 km of the site. <b>Likelihood: Highly unlikely to be present</b>	No
Spiny Rice-flower	<i>Pimelea spinescens</i> ssp. <i>spinescens</i>	xx	CE	This plant now largely occurs on basalt-derived soils west of Melbourne, across the central Victorian volcanic plains, and on alluvial soils across north west Victoria. Recent records regionally are closer to Terrick Terrick NP. Site is not suitable habitat. No record of the species within 10 km. <b>Likelihood: Unlikely to be present</b>	No

## Test of Significance – 420-508 Perricoota Road, Moama

Common Name	Scientific name	Conservation Status (NSW) <sup>1</sup>	Conservation Status (Comm) <sup>2</sup>	Likelihood of Occurrence <sup>3</sup>	Five Part Test
	<i>Prasophyllum</i> sp. Moama	ce		A species of forb-rich natural grasslands on flat alluvial plains. <i>Prasophyllum</i> sp. Moama is known in NSW from only one locality, discovered in 2005, 11.5 km north of the proposed development area. The species is not endemic to New South Wales, occurring also in Victoria in small to moderate-sized populations within 50 km of Echuca. The Moama site is currently managed, under short-term funding, as a high conservation value area on a Travelling Stock Reserve (TSR), but remains subject to discretionary grazing. Site is not suitable habitat. No records of the species within 10 km. <b>Likelihood: Highly unlikely to be present</b>	No
Lowly Greenhood	<i>Pterostylis despectans</i>	ce	E	In New South Wales the species is known only from a single population discovered in 2005, 11.5 km north of the proposed development area. Several surveys of Riverina grassland and regional Travelling Stock Reserves did not record <i>P. despectans</i> and it seems likely that the species is extremely rare in New South Wales. The species also occurs as very small fragmented populations in central Victoria and in South Australia. The total estimated number of individuals in the Victorian and South Australian populations is less than 1,500. The Moama population has been assessed as comprising between 20 and 60 individual plants. All plants known to date occur within an area of about one hectare, within an apparently suitable habitat patch of about 20 ha. Site is now not suitable habitat. No records of the species within 10 km. <b>Likelihood: Highly unlikely to be present</b>	No
Turnip Copperburr	<i>Sclerolaena napiformis</i>	e	E	Confined to remnant grassland habitats on clay-loam soils. Grows on level plains in tussock grassland of <i>Austrostipa nodosa</i> and <i>Chloris truncata</i> , in grey cracking clay to red-brown loamy clay. Known from only a few small populations in remnant grassland in the southern Riverina of NSW and north-central Victoria. NSW populations are confined to the area between Jerilderie and Moama on travelling stock routes and road reserves. The site is not suitable habitat. Over 150 records for the species along the Cobb Highway/Moama TSR, the closest being 5 km NE of the site. <b>Likelihood: Highly unlikely to be present</b>	No
Slender Darling-pea	<i>Swainsona murrayana</i>	v	E	The species has been collected from clay-based soils, ranging from grey, red and brown cracking clays to red-brown earths and loams. Found throughout NSW, it has been recorded in the Jerilderie and Deniliquin areas of the southern riverine plain, the Hay plain as far north as Willandra National Park, near Broken Hill and in various localities between Dubbo and Moree. Site is suitable habitat, but no record of the species within 10 km. <b>Likelihood: Unlikely to be present</b>	No
Red Darling-pea	<i>Swainsona plagiotropis</i>	v	V	Grassland and Grassy Woodland plant in sites prone to seasonal inundation. Site is now not suitable habitat. No record of the species within 10 km. <b>Likelihood: Unlikely to be present</b>	No
<b>Fauna</b>					
Australian Painted Snipe	<i>Rostratala australis</i>	e	E	The Australian Painted Snipe inhabits many different types of shallow, brackish or freshwater terrestrial wetlands, especially temporary ones which have muddy margins and small, low-lying islands. Suitable wetlands usually support a mosaic of low, patchy vegetation, as well as lignum and canegrass. Good suitable potential habitat available along the margins of the river and surrounding areas, but no suitable habitat occurs on site. No record of the species within 10 km. <b>Likelihood: Highly unlikely to be present</b>	No



## Test of Significance – 420-508 Perricoota Road, Moama

Common Name	Scientific name	Conservation Status (NSW) <sup>1</sup>	Conservation Status (Comm) <sup>2</sup>	Likelihood of Occurrence <sup>3</sup>	Five Part Test
Australasian Bittern	<i>Botaurus poiciloptilus</i>	e	E	Australasian Bitterns specialise in living in dense beds of reeds and rushes, where they are surprisingly difficult to see, as they are particularly well camouflaged among reeds. Added to this, when alarmed, they stand still with neck stretched upwards and bill pointing skywards. Good suitable potential habitat available along the margins of the river and surrounding area, but no suitable habitat occurs on site. No record of the species within 10 km. <b>Likelihood: Highly unlikely to be present</b>	No
Brown Treecreeper (eastern ssp.)	<i>Climacteris picumnus victoriae</i>	v		Occurs in intact woodlands, and adjacent agricultural land. The development site is not suitable habitat, and no vegetation is proposed for removal; there are three records for the species in proximity along the Murray River corridor E of the site. <b>Likelihood: May be present</b>	Yes
Bush Stone-curlew	<i>Burhinus grallarius</i>	e		Range in south-eastern Australia is now largely confined to grassy woodlands and farmland. Likes to roost and nest in grassy woodlands of Buloke, gum or box with low, sparse grassy or herb understorey. Branches on the ground are essential for the bird's camouflage, and it is unlikely to attempt nesting without it. No suitable habitat occurs on site. One record for the species – 1.5 km SE of the site in 2008. <b>Likelihood: Unlikely to be present</b>	No
Corben's Long-eared Bat	<i>Nyctophilus corbeni</i>	v	V	Occurs in intact Buloke, mallee, Cypress-pine, ironbark and box woodlands and forests, and adjacent agricultural land. The property is suitable habitat. Site is well connected to known locations of the species. Not recorded within 10 km of the site. <b>Likelihood: May be present</b>	Yes
Curlew Sandpiper	<i>Calidris ferruginea</i>	E	CE	The Curlew Sandpiper is a common visitor during the Australian summer, congregating in large flocks, sometimes comprising thousands of birds, at sheltered intertidal mudflats and also at the muddy margins of terrestrial wetlands. No suitable habitat occurs on site. Has not been recorded within 20 km of the site. <b>Likelihood: Highly unlikely to be present</b>	No
Eastern Curlew	<i>Numenius madagascariensis</i>	v	Migratory Wetland Species	The Eastern Curlew is widespread in coastal regions in the north-east and south of Australia, including Tasmania, and scattered in other coastal areas, and is found on intertidal mudflats and sand flats, often with beds of seagrass, on sheltered coasts, especially estuaries, mangrove swamps, bays, harbours and lagoons. Site is not suitable habitat, and no records within 20 km. <b>Likelihood: Highly unlikely to be present</b>	No
Fork-tailed Swift	<i>Apus pacificus</i>		Migratory Marine Species	This non-breeding migrant visitor to Australia mostly occurs over inland plains, but sometimes above foothills or in coastal areas. Site does contain some suitable habitat; however there is a lack of connectivity to known locations. Not recorded within 20 km. <b>Likelihood: Unlikely to be present</b>	No
Golden Sun Moth	<i>Synemon plana</i>	e	CE	Occurs in grassy woodlands dominated by indigenous grasses. Some sections of the site may have once been suitable habitat, but is now not suitable habitat. Not recorded within 10 km of the site. <b>Likelihood: Unlikely to be present</b>	No
Grey-crowned Babbler (eastern subspecies)	<i>Pomatostomus temporalis temporalis</i>	v		Prefers extensive intact woodlands with significant shrub and litter layers. The property is not suitable habitat. Two records for the species within 10 km; in the Murray River Reserve 600 m west of the site in 2004, and on Kiely Road 3.5 km NE of the site in 2008. <b>Likelihood: Unlikely to be present</b>	No

## Test of Significance – 420-508 Perricoota Road, Moama

Common Name	Scientific name	Conservation Status (NSW) <sup>1</sup>	Conservation Status (Comm) <sup>2</sup>	Likelihood of Occurrence <sup>3</sup>	Five Part Test
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	v	V	Australia's only endemic flying-fox and occurs in a coastal belt from south-eastern Queensland to Melbourne, Victoria. It is a canopy-feeding frugivore and nectivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands. The site is not suitable habitat for the species, and there is connectivity to known locations. However, no records within 10 km. <b>Likelihood: Unlikely to be present</b>	No
Koala	<i>Phascolarctus cinereus</i>	v	V	Inhabit eucalypt woodlands and forests. Spend most of their time in trees, but will descend and traverse open ground to move between trees. The property is not suitable habitat. No records within 10 km. <b>Likelihood: Unlikely to be present</b>	No
Little Lorikeet	<i>Glossopsitta pusilla</i>	v		The species forages primarily in the canopy of open <i>Eucalyptus</i> forest and woodland. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. The property is secondary habitat, and excellent connectivity to the corridor. One record 8 km NW of the site in 2017. <b>Likelihood: May be present</b>	Yes
Painted Honeyeater	<i>Grantiella picta</i>	v	V	The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. Inhabits Boree/ Weeping Myall, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests, particularly those infested with mistletoe. The property is not primary habitat. No records within 10 km. <b>Likelihood: Unlikely to be present</b>	No
Plains-wanderer	<i>Pedionomus torquatus</i>	e	CE	Occurs in extensive quality riparian grasslands and plains woodlands, and adjacent agricultural land. Site is not suitable habitat. No records within 10 km. <b>Likelihood: Highly unlikely to be present</b>	No
Satin Flycatcher	<i>Myiagra cyanoleuca</i>		Migratory Terrestrial Species	The Satin Flycatcher is found along the east coast of Australia from far northern Queensland to Tasmania, including south-eastern South Australia. It is not a commonly seen species, especially in the far south of its range, where it is a summer breeding migrant. The species is found in tall forests, preferring wetter habitats such as heavily forested gullies, but not rainforests. No records within 10 km. The site and the river alignment is not suitable habitat for the species, and no connectivity to known locations. <b>Likelihood: Unlikely to be present</b>	No
Sloane's Froglet	<i>Crinia sloanei</i>	v		Sloane's Froglet has been recorded from widely scattered sites in the floodplains of the Murray-Darling Basin, with the majority of records in the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales. It has not been recorded recently in the northern part of its range and has only been recorded infrequently in the southern part of its range in NSW. At a number of sites where records are verified by museum specimens, the species has not been subsequently detected during more recent frog surveys in the vicinity (e.g. Holbrook, Nyngan, Wagga Wagga and Tocumwal). It is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats. No suitable habitat now occurs on site. Two records within 10 km – 1 km north in 2008. <b>Likelihood: Unlikely to be present</b>	No
Southern Bell Frog	<i>Litoria raniformis</i>	e	V	In NSW the species was once distributed along the Murray and Murrumbidgee Rivers and their tributaries, the southern slopes of the Monaro district and the central southern tablelands as far north as Tarana, near Bathurst. Currently, the species is known to exist only in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. No records within 10 km. <b>Likelihood: Unlikely to be present</b>	No

## Test of Significance – 420-508 Perricoota Road, Moama

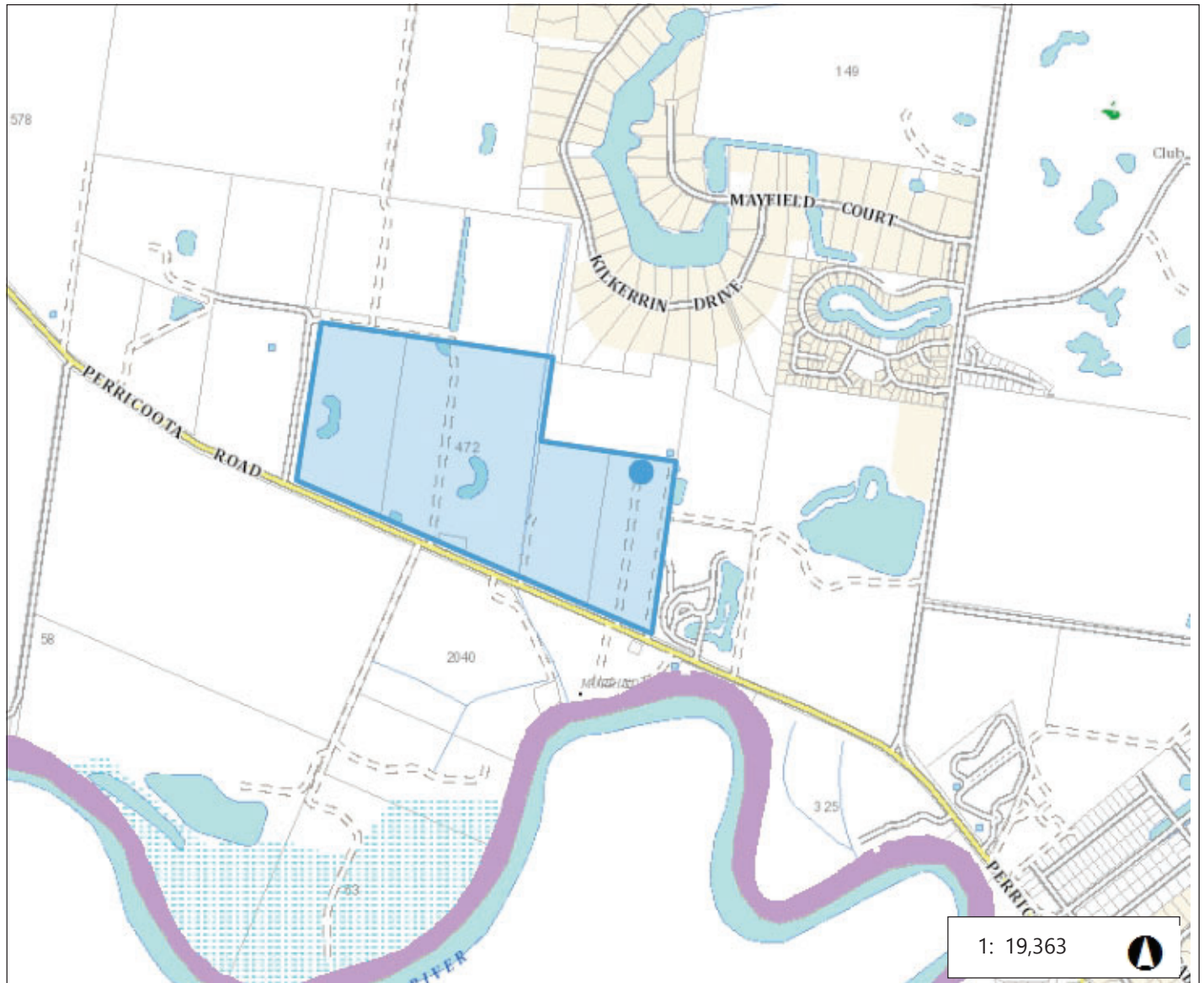
Common Name	Scientific name	Conservation Status (NSW) <sup>1</sup>	Conservation Status (Comm) <sup>2</sup>	Likelihood of Occurrence <sup>3</sup>	Five Part Test
Squirrel Glider	<i>Petaurus norfolcensis</i>	v		Prefers extensive intact woodlands with significant shrub and litter layers in blocks or along roadsides. The development site is not suitable habitat. One record 2.5 km SE of the site in 2012. <b>Likelihood: Unlikely to be present</b>	No
Striped Legless Lizard	<i>Delma impar</i>	v	V	Occurs in intact high quality grassy woodlands and grasslands. Site is not suitable habitat. Not recorded within 10 km of the site. <b>Likelihood: Unlikely to be present</b>	No
Superb Parrot	<i>Polytelis swainsonii</i>	v	V	Occurs in riparian woodlands and forest, and adjacent woodlands and agricultural land. The property is secondary habitat, and moderate connectivity to the corridor. Not recorded within 10 km of the site. <b>Likelihood: May be present</b>	Yes
Swift Parrot	<i>Lathamus discolor</i>	e	CE	Occurs in extensive riparian forests and woodlands, and adjacent agricultural land. The property is secondary habitat, and moderate connectivity to the corridor. Not recorded within 10 km of the site. <b>Likelihood: May be present</b>	Yes
White-throated Needletail	<i>Hirundapus caudacutus</i>		Migratory Terrestrial Species	Often occur in large numbers over eastern and northern Australia. Aerial birds and for a time it was commonly believed that they did not land while in Australia. Feeds on flying insects, such as termites, ants, beetles and flies, often over water. The site has suitable habitat for the species; however, no record of species within 20 km of site. <b>Likelihood: Unlikely to be present</b>	No
Yellow-bellied Sheathtail Bat	<i>Saccolaimus flaviventris</i>	v		The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia. In the most southerly part of its range - most of Victoria, south-western NSW and adjacent South Australia - it is a rare visitor in late summer and autumn. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. The property is not suitable habitat. One record 2.5 km SE of the site in 2013. <b>Likelihood: Unlikely to be present</b>	No

1. x = presumed extinct in NSW; e = endangered in NSW; v = vulnerable in NSW; ce = critically endangered in NSW (from DPIE 2021b).
2. V = vulnerable nationally; E = endangered nationally; CE = critically endangered nationally (DAWE 2021).



**APPENDIX B    BIODIVERSITY OFFSET SCHEME  
ENTRY THRESHOLD (BOSET) TOOL  
REPORT DATED 23<sup>RD</sup> SEPTEMBER  
2021**

## Biodiversity Offset Scheme (BOS) Entry Threshold Map



983.7 0 491.83 983.7 Metres

WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

### Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days

### Notes

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## Biodiversity Values Map and Threshold Report

### Results Summary

<b>Date of Calculation</b>	22/09/2021 8:47 PM	<b>BDAR Required*</b>
<b>Total Digitised Area</b>	43.28 ha	
<b>Minimum Lot Size Method</b>	LEP	
<b>Minimum Lot Size</b>	0.8 ha	
<b>Area Clearing Threshold</b>	0.25 ha	
<b>Area clearing trigger</b> Area of native vegetation cleared	Unknown #	Unknown #
<b>Biodiversity values map trigger</b> Impact on biodiversity values map(not including values added within the last 90 days)?	no	no
<b>Date of the 90 day Expiry</b>	N/A	

\*If BDAR required has:

- at least one 'Yes': you have exceeded the BOS threshold. You are now required to submit a Biodiversity Development Assessment Report with your development application. Go to <https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor> to access a list of assessors who are accredited to apply the Biodiversity Assessment Method and write a Biodiversity Development Assessment Report
- 'No': you have not exceeded the BOS threshold. You may still require a permit from local council. Review the development control plan and consult with council. You may still be required to assess whether the development is "likely to significantly affect threatened species" as determined under the test in s. 7.3 of the Biodiversity Conservation Act 2016. You may still be required to review the area where no vegetation mapping is available.

# Where the area of impact occurs on land with no vegetation mapping available, the tool cannot determine the area of native vegetation cleared and if this exceeds the Area Threshold. You will need to work out the area of native vegetation cleared - refer to the BOSET user guide for how to do this.

On and after the 90 day expiry date a BDAR will be required.

## Disclaimer

This results summary and map can be used as guidance material only. This results summary and map is not guaranteed to be free from error or omission. The State of NSW and Office of Environment and Heritage and its employees disclaim liability for any act done on the information in the results summary or map and any consequences of such acts or omissions. It remains the responsibility of the proponent to ensure that their development application complies with all aspects of the *Biodiversity Conservation Act 2016*.

The mapping provided in this tool has been done with the best available mapping and knowledge of species habitat requirements. This map is valid for a period of 30 days from the date of calculation (above).

## Acknowledgement

I as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature \_\_\_\_\_ Date: 22/09/2021 08:47 PM