



Hamilton Environmental Services
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TEST OF SIGNIFICANCE – 17 MAIDEN SMITH DRIVE MOAMA



Test of Significance – 17 Maiden Smith Drive, Moama

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Cover Photo: The existing entrance to the property on Maiden Smith Drive.

TABLE OF CONTENTS

| | | |
|-------------------|---|-----------|
| 1. | Introduction | 4 |
| 2. | Background | 4 |
| 2.1 | Consultant Background | 4 |
| 2.2 | Location and Description | 5 |
| 3. | Methodology | 6 |
| 3.1 | Desktop Review | 6 |
| 3.2 | General Site Assessment | 6 |
| 3.3 | Taxonomy | 9 |
| 3.3.1 | Flora | 9 |
| 3.3.2 | Fauna | 9 |
| 4. | Existing Environment | 9 |
| 4.1 | Vegetation | 9 |
| 4.2 | Significant Trees | 11 |
| 4.3 | Fauna | 12 |
| 4.4 | Threatened Species and Communities | 17 |
| 4.4.1 | Threatened community likelihood | 17 |
| 4.4.2 | Threatened species likelihood | 18 |
| 4.4.3 | Assessment of Significance | 19 |
| 5. | Avoidance and Minimisation of Native Vegetation | 21 |
| 6. | Recommendation | 21 |
| 7. | References | 22 |
| 7.1 | Personal communications | 23 |
| Appendix A | Flora Inventory for 17 Maiden Smith Drive Moama | 24 |
| Appendix B | Observed Fauna of 17 Maiden Smith Drive Moama | 27 |
| Appendix C | Assessed Trees | 29 |
| Appendix D | Threatened Species Likelihood of Presence | 33 |
| Appendix E | Biodiversity Offset Scheme Entry Threshold (BOSET) Tool Report dated 13th June 2021 | 39 |

1. INTRODUCTION

In April 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 landholder of 17 Maiden Smith Drive, Moama, Lot 17 DP258661.

The landholder is seeking to establish a 24 lot subdivision on the property.

Field assessment of the site was conducted on the 3rd May 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 2 km north-west of the centre of the township of Moama (Fig. 2-1).

Lot 17 DP258661 is a broadly rectangular shaped parcel of 3.22 ha, and has maximum dimensions of 305 m north-south, and 120 m east-west; the southern boundary is Maiden Smith Drive frontage, the western frontage is Merool Street, the northern boundary Perricoota Road, and the eastern boundary is a freehold grazing property; the Murray River corridor is less than 600 m south of the Maiden Smith Drive entrance (Fig. 2-2).

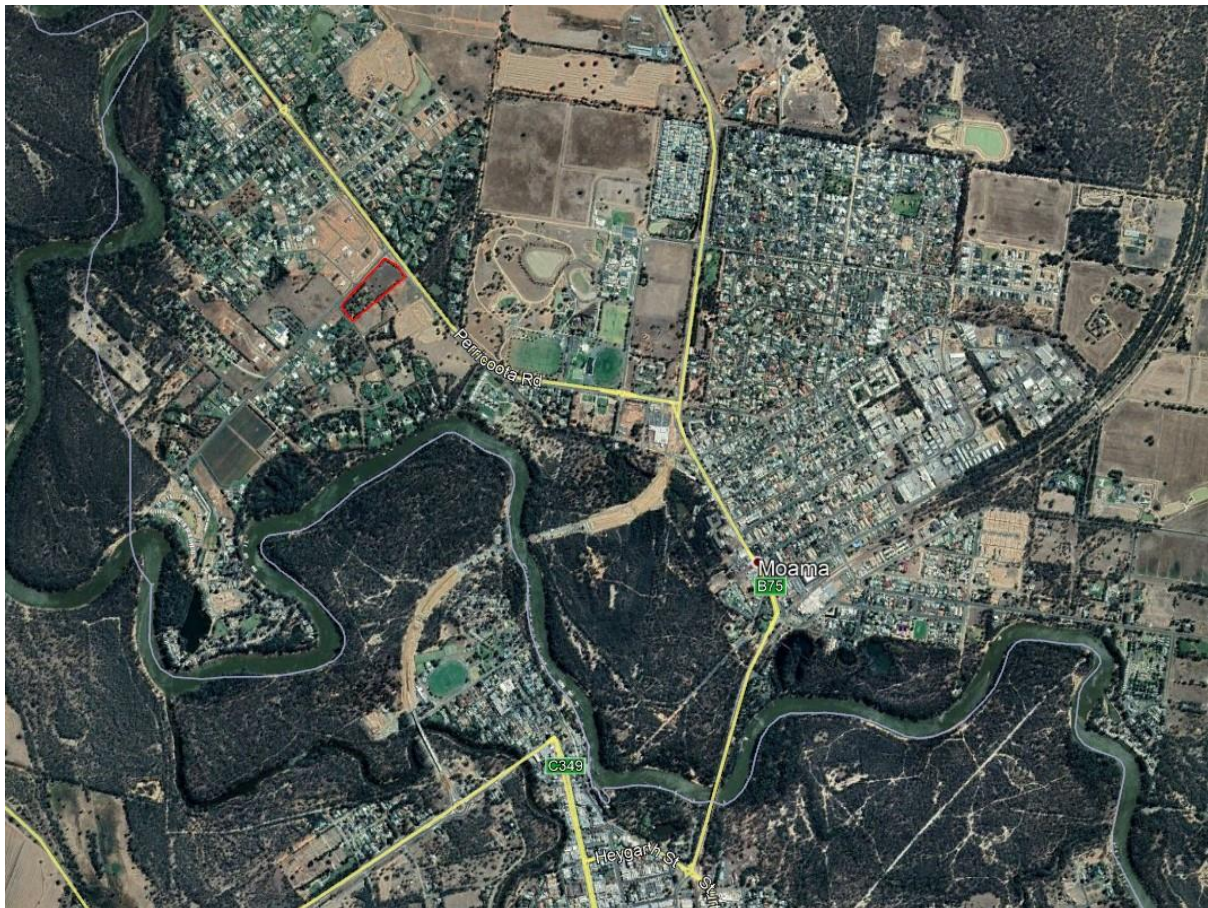


Figure 2-1 Aerial image of the general location of the assessed property, outlined in red (Google Earth 2021).

The fenced property has been wholly cleared of indigenous woody vegetation; all woody vegetation on the property has been planted – a mixture of exotic, indigenous and non-indigenous native trees and shrubs.

The eastern half of the property has been in the past utilised as a grazing paddock, and while this usage has not been recent, the paddock area is regularly slashed/mown, probably for fuel management. The ground layer in this disturbed area retains a sparse indigenous ground layer, the evidence of cured plant material suggests that the area is dominated seasonally by introduced opportunistic annual species; this paddock area has narrow linear plantations of mostly indigenous and non-indigenous native trees and shrubs around its western, northern and eastern boundaries (see Fig. 2-2).

The western half of the property contains the existing dwelling and sheds and the property access track, with most of this area being utilised as an extended garden, which has been extensively

planted with a range of exotic and non-indigenous native trees and shrubs, and which has defined plantations of these species on the western, southern and eastern boundaries (see Fig. 2-2). The ground layer in this area is dominated by a range of by introduced opportunistic annual and perennial species.

As indicated previously, the landholder is seeking to undertake a 23 lot subdivision on the property; the proposed layout is shown in Fig. 2-3.

The north-western and south-western plantations are avoided in the proposed layout as a buffer area along the western boundary, and most of the extent of the other current plantations are at the rear of all the other proposed lots, and being at the rear of these lots, and likely to be clear of building envelopes (see Fig. 2-3). These other plantations are therefore more likely to avoid impact from development consequently.

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 3rd May 2021, Dr. Steve Hamilton (BAAS 18106) visited the property and the adjacent area to undertake the assessment. On this day, air temperatures were between 18 to 21°C, the sky was overcast, 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 1 ½ hours.

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);
- Individuals in plantations were generally not separately assessed. 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 eighty six (186) images were taken across the area during the assessment to facilitate identification and to provide context to the description.



Figure 2-2 Aerial image of the 17 Maiden Smith Drive Moama property, showing the garden area and the various plantations around the boundary (Image from ESRI Australia 2021).

Figure 2-3 Layout of the proposed subdivision (NESD 24th June 2020).



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 |

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

The inventory of species noted across the property is recorded in Appendix A.

A total of 66 vascular plant species were recorded across the assessed site; 56 of these species were introduced (of which 39 are planted), and 10 indigenous (Table 4-1; Appendix A).

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

Table 4-1 The number of indigenous and introduced species across the designated zones of the property.

| Patch | Introduced species | Indigenous species | Total species |
|------------------------|--------------------|--------------------|---------------|
| Paddock | 25 | 10 | 35 |
| Garden and plantations | 39 | 7 | 46 |
| Total | 56 | 10 | 66 |

As indicated, the fenced property has been wholly cleared of indigenous woody vegetation; all woody vegetation on the property has been planted – a mixture of exotic, indigenous and non-indigenous native trees and shrubs.

The eastern half of the property has been in the past utilised as a grazing paddock, and while this usage has not been recent, the paddock area is regularly slashed/mown, probably for fuel management. The ground layer in this disturbed area retains a very sparse indigenous ground layer of species such as Brown-backed Wallaby-grass, Plains Grass, Climbing Saltbush, Ruby Saltbush, Curly

Windmill Grass, Black Cotton Bush, Black Rolypoly and Fuzzweed (5-10 % projective foliage cover). However, the evidence of cured plant material suggests that the area is dominated seasonally by introduced opportunistic annual species such as Great Brome, Annual Veldtgrass, Yorkshire Fog-grass, Barley Grass, Toowoomba Canary Grass, Curled Dock, Treasure Flower, Plantain and Milk Thistle (70 % cover counting cured annual plant material); this paddock area has narrow linear plantations of mostly indigenous and non-indigenous native trees and shrubs around its western, northern and eastern boundaries, including species such as Pin-cushion Hakea, Hakea Wattle, Sugar Gum, Yellow Gum, River Red Gum, Dwarf She-oak, Green Mallee, Pear-fruited Mallee, Swamp Mallet, Yellow Top Mallee Ash, Manna Gum, Willow-leaved Peppermint, Varnish Wattle, Mallee Wattle, Lightwood, Golden Wattle, Blackwood, and Flinders Range Wattle (see Fig. 2-2). Individual plants of Spotted Gum and Radiata Pine have been planted in the paddock.



Plate 4-1 Views across the paddock area: looking north-east along the north-eastern plantation (top left), looking south-east along the southern boundary of the paddock (top right), the northern plantation on the northern boundary (bottom left), and looking south-west along the north-western plantation along the western boundary (bottom right). Selected assessed trees are numbered in white.

The western half of the property contains the existing dwelling and sheds and the property access track, with the majority of this area being utilised as an extended garden, which has been extensively planted with a range of exotic and non-indigenous native trees and shrubs such as Weeping Myall, Mallee Wattle, Red Ironbark, Desert Ash, Tasmanian Blue Gum, Argyle Apple, Citrus spp., Yellow Gum, Bottlebrush, Willow-leaved Peppermint, Swamp Mallett, White Gum, Silky Oak, Lemon-scented Gum, Spotted Gum, Agapanthus, Bouganvillea, Prunus, Bracelet Honey-myrtle, Cotoneaster, Hakea Wattle, Flinders Range Wattle, Willow-leaved Hakea, Broad-leaved Privet, London Oak and Canary Island Date Palm, which has defined plantations of these species on the western, southern and eastern boundaries (see Fig. 2-2). The ground layer in this area is dominated by a range of by

introduced opportunistic annual and perennial species, such as Plantain, Great Brome, Capeweed, Wireweed, Curled Dock, Wimmera Ryegrass, Barley Grass and Kikuyu; much of this area is regularly mown as a lawn.

The northern section of the property is mapped as NSW Plant Community Type (PCT) ID 165 – Derived corkscrew grass grassland/forbland on sandplains and plains in the semi-arid (warm) climate zone (from Environment and Heritage 2012 and DPIE 2021d); however, as indicated, this regularly slashed area retains a very sparse indigenous ground layer of species (5-10 % projective foliage cover), but the evidence of cured plant material suggests that the area is dominated seasonally by introduced opportunistic annual species (70 % cover counting cured annual plant material).

4.2 Significant Trees

A total of 83 tree and shrub individuals were assessed across the parcel, and the characteristics of all these individuals can be viewed in the table in Appendix C.

The location of all assessed trees can be seen across Figures 4-1 to 4-3.

In regard to the assessed trees:

- All assessed trees are planted – there are no remnant indigenous trees or shrubs. Most trees in plantations were not separately assessed;
- Trees are a mixture of exotic, non-indigenous native and indigenous trees and shrubs species including Sugar Gum, River Red Gum, Dwarf She-oak, Weeping Myall, Mallee Wattle, Lightwood, Golden Wattle, Blackwood, Pear-fruited Mallee, Yellow Top Mallee Ash, Manna Gum, Red Ironbark, Desert Ash, Tasmanian Blue Gum, Argyle Apple, Citrus spp., Yellow Gum, Bottlebrush, Willow-leaved Peppermint, Swamp Mallett, White Gum, Silky Oak, Lemon-scented Gum, Spotted Gum, Agapanthus, Bouganvillea, Prunus, Bracelet Honey-myrtle, Cotoneaster, Hakea Wattle, Flinders Range Wattle, Willow-leaved Hakea, Broad-leaved Privet, London Oak and Canary Island Date Palm;
- In the paddock area, Trees 1, 2, 18, 25 and 26 are separately planted, while Trees 3 to 17 are recruits from the planted Hakea Wattles within the north-eastern plantation. All other assessed trees are within the garden area.

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).

There will need to be care taken in regards towards the plantation trees that are proposed for retention to ensure that their TPZs are not impacted.

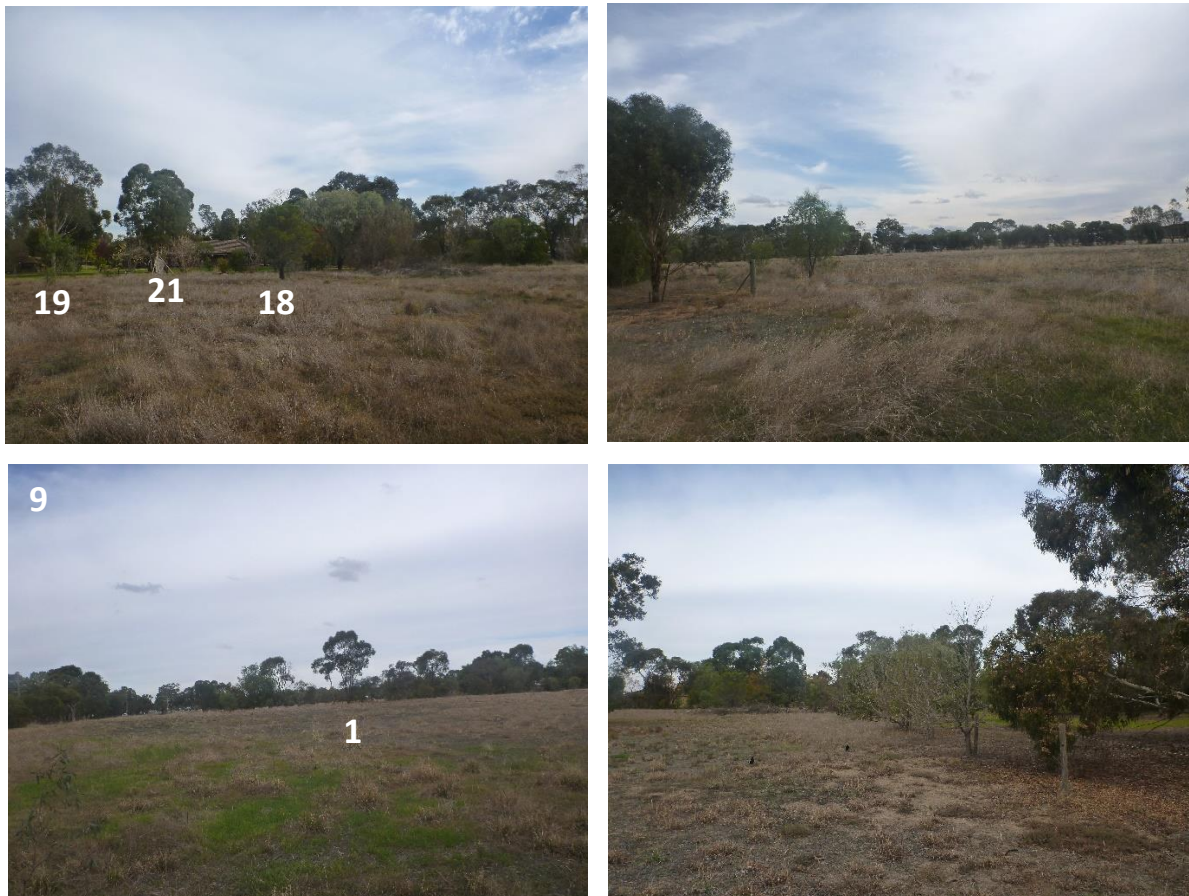


Plate 4-2 Views across the paddock area: looking south towards the garden and house (top left), looking south-east along the eastern boundary of the paddock from the north-eastern corner (top right), looking south-east from the north-western corner (bottom left), and looking south-east along the garden boundary (bottom right). Selected assessed trees are numbered in white.

4.3 Fauna

There were 7 species of fauna observed (all birds), including the introduced Indian Mynah.

Details of those species noted or inferred over the assessment period are detailed in Appendix B.

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

The eastern half of the property has been in the past utilised as a grazing paddock, and while this usage has not been recent, the paddock area is regularly slashed/mown, probably for fuel management. The ground layer in this disturbed area retains a sparse indigenous ground layer, the evidence of cured plant material suggests that the area is dominated seasonally by introduced opportunistic annual species; this paddock area has narrow linear plantations of mostly indigenous and non-indigenous native trees and shrubs around its western, northern and eastern boundaries.

The western half of the property contains the existing dwelling and sheds and the property access track, with most of this area being utilised as an extended garden, which has been extensively planted with a range of exotic and non-indigenous native trees and shrubs, and which has defined plantations of these species on the western, southern and eastern boundaries. The ground layer in this area is dominated by a range of by introduced opportunistic annual and perennial species.

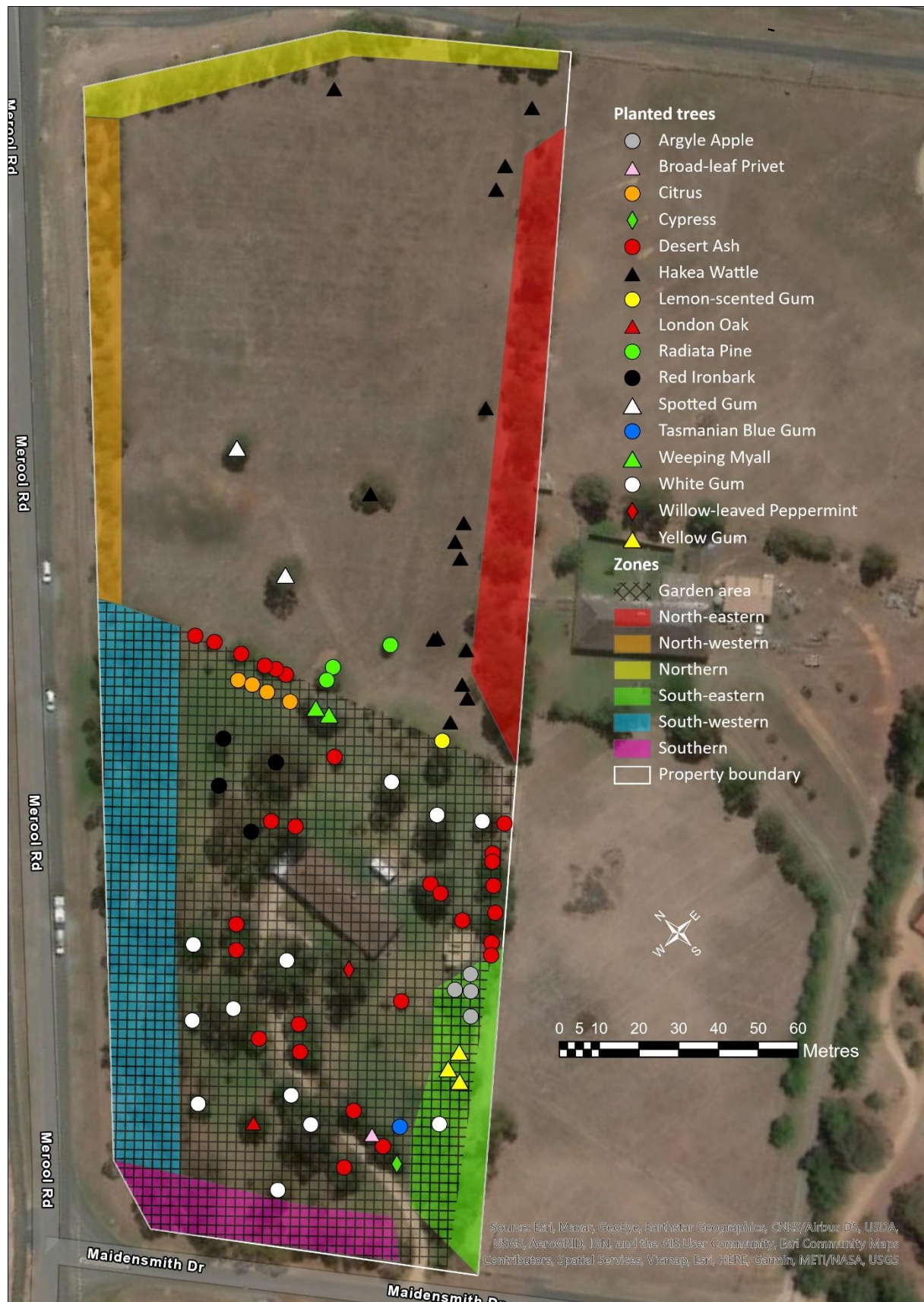


Figure 4-1 Aerial image of 17 Maiden Smith Drive Moama, showing the location of planted exotic and non-indigenous native trees and shrubs (Image from ESRI Australia 2021).

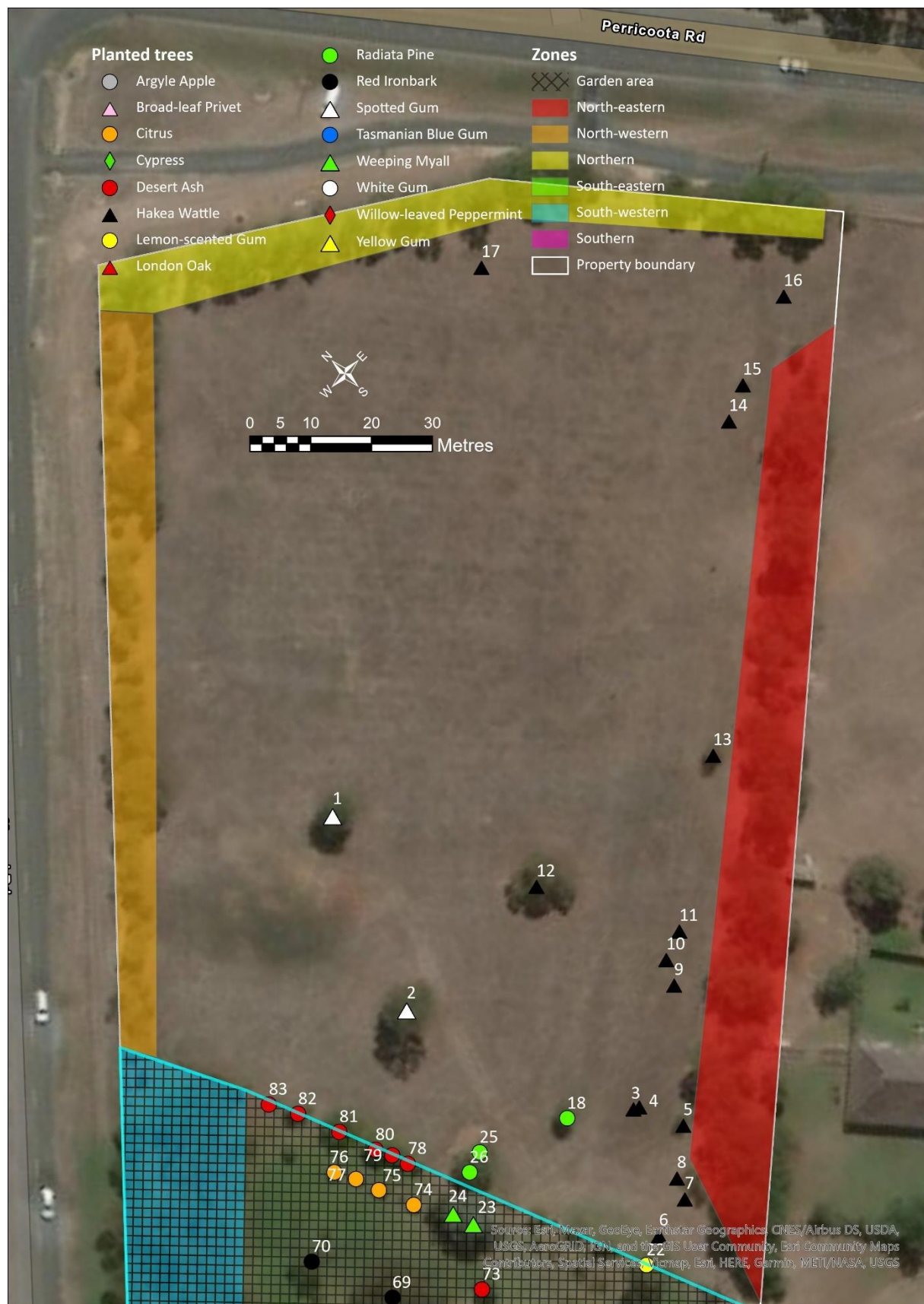


Figure 4-2 Aerial image of the northern half of 17 Maiden Smith Drive Moama, showing the location of planted exotic and non-indigenous native trees and shrubs; numbers are tree identifiers in the table in Appendix C (Image from ESRI Australia 2021).



Figure 4-3 Aerial image of the southern half of 17 Maiden Smith Drive Moama, showing the location of planted exotic and non-indigenous native trees and shrubs; numbers are tree identifiers in the table in Appendix C (Image from ESRI Australia 2021).



Plate 4-3 Views across the garden area: looking south towards the garden and house (top left), looking towards the south-western corner (top right), looking south-east along the western boundary of the paddock from the north-eastern corner (middle left), looking east along the southern boundary from the south-western corner (middle right), looking south-east along the eastern boundary (bottom left), and looking west along the northern garden boundary (bottom right). Selected assessed trees are numbered in white.

The Murray River corridor is within 600 m of the site, but there is no continuous vegetation (tree) cover to this corridor; nevertheless, the site clearly maintains potentially a moderate landscape connectivity because of the proximity to the river corridor.

The indigenous fauna observed across the property are typical of peri-urban areas that have been wholly cleared of indigenous woody vegetation and have a predominantly introduced ground layer, but have planted trees and shrubs that provide some structure and habitat; species observed include the indigenous Australian Magpie, Eastern Rosella, Galah, Noisy Friarbird and Red Wattlebird; the presence of the Red Wattlebird and Noisy Friarbird does suggest that nectar feeders have some resources to utilise the site and its tree plantations. However, the dominance on-site of the introduced Indian Mynah – an extremely aggressive and territorial species – will probably exclude most smaller indigenous birds from the site.

Despite the moderate landscape connectivity of the property, the lack of observed species diversity across the site is not surprising, given:

- The lack of an effective indigenous tree canopy and shrub layer, and the commensurate simplified vegetation structure, would considerably limit mammal, reptile, bat and bird species residency;
- The lack of any hollow-bearing trees, or standing dead trees;
- a low abundance and diversity of the indigenous ground layer in the paddock area;
- the lack of fallen timber across the property, which would considerably limit mammal, reptile, bat and bird species residency;
- the likely presence of feral animal populations such as foxes and domestic/semi-domestic/feral 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 across and near the site, 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 may occasionally stray from the corridor and utilise the limited habitat resources of assessed site because of the connectivity, and may infrequently utilise the mostly planted vegetation of the property; it is clear that because this habitat is based mostly on planted exotic and non-indigenous native species, that 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 northern section of the property is mapped as NSW Plant Community Type (PCT) ID 165 – Derived corkscrew grass grassland/forbland on sandplains and plains in the semi-arid (warm) climate zone (from Environment and Heritage 2012 and DPIE 2021d); however, as indicated, this regularly slashed area retains a very sparse indigenous ground layer of species (5-10 % projective foliage cover), but the evidence of cured plant material suggests that the area is dominated seasonally by introduced opportunistic annual species (70 % cover counting cured annual plant material).

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 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* (known as Grassy Box Gum Woodland) are all listed as *Endangered* under the Act (DPIE 2021b); the assessed property was not formerly one of the six threatened community at a State or a National level.

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 D).

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 D).

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 level of disturbance to the site, the moderate landscape connectivity, known records for species and the currency of these records, and the highly simplified composition, abundance and structure of the vegetation of the site (Appendix D).

Of these species, all flora, and twenty 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. Corben's Long-eared Bat, Fork-tailed Swift, Grey-crowned Babbler, Painted Honeyeater, Southern Bell Frog, Squirrel Glider, Koala, Yellow-bellied Sheathtail 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, four species of fauna – Brown Treecreeper, Little Lorikeet, Superb Parrot and Swift Parrot – were considered to have potential to find the site and utilise it given the available habitat resources.

As indicated, the fenced property has been wholly cleared of indigenous woody vegetation; all woody vegetation on the property has been planted – a mixture of exotic, indigenous and non-indigenous native trees and shrubs.

The eastern half of the property has been in the past utilised as a grazing paddock, and while this usage has not been recent, the paddock area is regularly slashed/mown, probably for fuel management. The ground layer in this disturbed area retains a very sparse indigenous ground layer, the evidence of cured plant material suggests that the area is dominated seasonally by introduced opportunistic annual species; this paddock area has narrow linear plantations of mostly indigenous and non-indigenous native trees and shrubs around its western, northern and eastern boundaries.

The western half of the property contains the existing dwelling and sheds and the property access track, with most of this area being utilised as an extended garden, which has been extensively planted with a range of exotic and non-indigenous native trees and shrubs, and which has defined plantations of these species on the western, southern and eastern boundaries. The ground layer in this area is dominated by a range of introduced opportunistic annual and perennial species.

The north-western and south-western plantations are avoided in the proposed layout as a buffer area along the western boundary, and most of the extent of the other current plantations are at the rear of all the other proposed lots, and being at the rear of these lots, and likely to be clear of building envelopes. These other plantations are therefore more likely to avoid impact from development consequently.

Therefore, there is likely to be limited loss of the available habitat resources from planted vegetation because of the proposed development, and it is unlikely that the minimal loss of any planted vegetation from a site 600 m from the Murray River corridor, but disconnected from it, will not have any impact on these threatened species that have potential to find the site and utilise it given the available habitat resources.

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 discussed, the fenced property has been wholly cleared of indigenous woody vegetation; all woody vegetation on the property has been planted – a mixture of exotic, indigenous and non-indigenous native trees and shrubs. There is likely to be limited loss of the available habitat resources from planted vegetation because of the proposed development, and it is likely that the minimal loss of any planted vegetation from a site 600 m from the Murray River corridor, but disconnected from it, will have any impact on these threatened species that have potential to find the site and utilise it given the available habitat resources.

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 D).

After likelihood assessment, no representative threatened communities or threatened flora are considered likely to occur in the area, and four 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 D).

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 four threatened species.

Fauna. Four 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 of the Murray River corridor, and all have similar issues regarding 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, 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 discussed, the fenced property has been wholly cleared of indigenous woody vegetation; all woody vegetation on the property has been planted – a mixture of exotic, indigenous and non-indigenous native trees and shrubs. There is likely to be limited loss of the available habitat resources from planted vegetation because of the proposed development, and it is likely that the minimal loss of any planted vegetation from a site 600 m from the Murray River corridor, but disconnected from it, will not place any of the four 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 discussed, the fenced property has been wholly cleared of indigenous woody vegetation; all woody vegetation on the property has been planted – a mixture of exotic, indigenous and non-indigenous native trees and shrubs. There is likely to be limited loss of the available habitat resources from planted vegetation as a consequence of the proposed development, and it is likely that the minimal loss of any planted vegetation from a site 600 m from the Murray River corridor, but disconnected from it, will not place any of the four species threatened species that have potential to find the site and utilise it given the available habitat resources, at any risk because of the minimal 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 discussed, the fenced property has been wholly cleared of indigenous woody vegetation; all woody vegetation on the property has been planted – a mixture of exotic, indigenous and non-indigenous native trees and shrubs. There is likely to be limited loss of the available habitat resources from planted vegetation because of the proposed development,

and it is likely that the minimal loss of any planted vegetation from a site 600 m from the Murray River corridor, but disconnected from it, will not result in any isolation or fragmentation of habitat for any of the four 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 discussed, the fenced property has been wholly cleared of indigenous woody vegetation; all woody vegetation on the property has been planted – a mixture of exotic, indigenous and non-indigenous native trees and shrubs. There is likely to be limited loss of the available habitat resources from planted vegetation because of the proposed development, and it is likely that the minimal loss of any planted vegetation from a site 600 m from the Murray River corridor, but disconnected from it, will not result in any impact on the long-term survival of any of the four 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.*

The development will not result in any key threatening process.

5. AVOIDANCE AND MINIMISATION OF NATIVE VEGETATION

While there is no significant native vegetation on-site, there has been considerable effort in design to retain as much of the planted vegetation on the site as possible.

The north-western and south-western plantations are avoided in the proposed layout as a buffer area along the western boundary, and most of the extent of the other current plantations are at the rear of all the other proposed lots, and being at the rear of these lots, and likely to be clear of building envelopes. These other plantations are therefore more likely to avoid impact from development consequently.

6. RECOMMENDATION

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 2020e).

As indicated previously, the proposed subdivision area has already been wholly cleared of any indigenous woody vegetation, and the only indigenous species found on the site is a very sparse and low diversity ground layer vegetation in the disturbed paddock area in the north of the site; this paddock area is highly modified, and does not constitute a derived grassland or shrubland based on the current vegetation conditions, and does not conform to the PCT as mapped.

Therefore, there is no significant native vegetation to be impacted by the proposed development.

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 2019) is 0.08 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, the development does not need to enter the BOS or require a BDAR to be undertaken, as there is no significant native vegetation to be impacted.

The whole property 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 there will be a small loss of some planted vegetation; there will not be any significant impacts on any threatened species or community consequently.

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APPENDIX A FLORA INVENTORY FOR 17 MAIDEN SMITH DRIVE MOAMA

Recorded vascular plant species for the assessed area at 17 Maiden Smith Drive Moama on the 3rd May 2021. Vascular flora have been recorded for presence using a cover-abundance scale that is outlined in Table 3-1.

An asterisk denotes an introduced species.

| Common name | Scientific name | Paddock | Garden & plantations |
|------------------------------------|-----------------------------------|---------|----------------------|
| Hakea Wattle (planted) | <i>Acacia hakeoides</i> | 2 | 2 |
| Lightwood (planted) | <i>Acacia implexa</i> | 2 | |
| Flinders Range Wattle (planted) | <i>Acacia iteaphylla</i> * | 2 | 2 |
| Blackwood (planted) | <i>Acacia melanoxylon</i> * | 2 | |
| Mallee Wattle (planted) | <i>Acacia montana</i> | 2 | 2 |
| Weeping Myall (planted) | <i>Acacia pendula</i> * | | 2 |
| Golden Wattle (planted) | <i>Acacia pycnantha</i> | 2 | |
| Varnish Wattle (planted) | <i>Acacia verniciflua</i> | 2 | |
| Agapanthus (planted) | <i>Agapanthus</i> sp.* | | 2 |
| A She-oak (planted) | <i>Allocasuarina</i> sp.* | 2 | |
| Capeweed | <i>Arctotheca calendula</i> * | 2 | 1 |
| Brown-backed Wallaby-grass | <i>Austrodanthonia duttoniana</i> | 2 | 1 |
| Plains Grass | <i>Austrostipa aristiglumis</i> | 2 | |
| Wild Oat | <i>Avena fatua</i> * | 2 | + |
| Bougainvillea (planted) | <i>Bougainvillea</i> sp.* | | 2 |
| Great Brome | <i>Bromus diandrus</i> * | 2 | 2 |
| A Bottlebrush (planted) | <i>Callistemon</i> sp.* | | 2 |
| Shepherd's Purse | <i>Capsella bursa-pastoris</i> * | 1 | |
| Citrus (planted) | <i>Citrus</i> sp.* | | 2 |
| Lemon-scented Gum (planted) | <i>Corymbia citriodora</i> * | | 2 |
| Spotted Gum (planted) | <i>Corymbia maculata</i> * | 1 | 2 |
| Cotoneaster (planted) | <i>Cotoneaster</i> sp.* | | 2 |
| Paterson's Curse | <i>Echium plantagineum</i> * | 2 | |
| Annual Veldtgrass | <i>Ehrharta longifolia</i> * | 1 | 2 |
| Climbing Saltbush | <i>Einadia nutans</i> | 2 | 1 |
| Ruby Saltbush | <i>Enchylaena tomentosa</i> | 2 | 1 |
| Curly Windmill Grass | <i>Enteropogon acicularis</i> | 2 | |
| Pear-fruited Mallee (planted) | <i>Eucalyptus pyriformis</i> * | 2 | |
| River Red Gum (planted) | <i>Eucalyptus camaldulensis</i> | 2 | |
| Argyle Apple (planted) | <i>Eucalyptus cinerea</i> * | | 2 |
| Sugar Gum (planted) | <i>Eucalyptus cladocalyx</i> * | 2 | |
| Tasmanian Blue Gum (planted) | <i>Eucalyptus globulus</i> * | | 2 |
| Yellow Gum (planted) | <i>Eucalyptus leucoxylon</i> * | 2 | 2 |
| Yellow Top Mallee Ash (planted) | <i>Eucalyptus luehmanniana</i> * | 2 | |
| Willow-leaved Peppermint (planted) | <i>Eucalyptus nicholii</i> * | 2 | 2 |
| White Gum (planted) | <i>Eucalyptus rossii</i> * | | 2 |
| Red Ironbark (planted) | <i>Eucalyptus sideroxylon</i> * | | 2 |

Test of Significance – 17 Maiden Smith Drive, Moama

| Common name | Scientific name | Paddock | Garden & plantations |
|-----------------------------------|------------------------------------|---------|----------------------|
| Manna Gum (planted) | <i>Eucalyptus viminalis</i> * | 2 | |
| Green Mallee (planted) | <i>Eucalyptus viridis</i> * | 2 | |
| Swamp Mallet (planted) | <i>Eucalyptus spathulata</i> * | 2 | 2 |
| Desert Ash (planted) | <i>Fraxinus</i> sp.* | | 2 |
| Treasure Flower | <i>Gazania rigens</i> * | 2 | 1 |
| Silky Oak (planted) | <i>Grevillea robusta</i> * | | 2 |
| Pin-cushion Hakea (planted) | <i>Hakea laurina</i> * | 2 | 2 |
| Willow-leaved Hakea (planted) | <i>Hakea salicifolia</i> * | | 2 |
| Yorkshire Fog-grass | <i>Holcus lanatus</i> * | 1 | |
| Barley Grass | <i>Hordeum leporinum</i> * | 2 | 2 |
| Broad-leaf privet (planted) | <i>Ligustrum lucidum</i> * | | 2 |
| Wimmera Ryegrass | <i>Lolium rigidum</i> * | | 2 |
| Black Cotton Bush | <i>Maireana decalvans</i> | 1 | 1 |
| Bracelet Honey-myrtle (planted) | <i>Melaleuca armillaris</i> * | | 2 |
| A Paperbark (planted) | <i>Melaleuca</i> sp.* | | 2 |
| Water Couch | <i>Paspalum distichum</i> | 2 | 2 |
| Kikuyu Grass | <i>Pennisetum clandestinum</i> * | + | 3 |
| Toowoomba Canary Grass | <i>Phalaris aquatica</i> * | 1 | |
| Canary Island Date Palm (planted) | <i>Phoenix canariensis</i> * | | 2 |
| Radiata Pine (planted) | <i>Pinus radiata</i> * | 1 | 2 |
| Plantain | <i>Plantago lanceolata</i> * | 1 | 2 |
| Wireweed | <i>Polygonum aviculare</i> * | | 2 |
| Prunus (planted) | <i>Prunus</i> sp.* | | 2 |
| Jersey Cudweed | <i>Pseudognaphalium luteoalbum</i> | | 1 |
| London Oak (planted) | <i>Quercus robur</i> * | | 2 |
| Curled Dock | <i>Rumex crispus</i> * | 1 | |
| Black Rolypoly | <i>Sclerolaena muricata</i> | 2 | 1 |
| Milk Thistle | <i>Sonchus oleraceus</i> * | 1 | |
| Fuzzweed | <i>Vittadinia cuneata</i> | + | + |

APPENDIX B OBSERVED FAUNA OF 17 MAIDEN SMITH DRIVE MOAMA

Observed or inferred fauna at the sites and surrounds between 2.00 and 3.30 pm
on the 3rd May 2021.

An asterisk denotes an introduced species.

| Common name | Scientific name | Mode of observation ¹ |
|-------------------|--------------------------------|----------------------------------|
| Birds | | |
| Australian Magpie | <i>Gymnorhina tibicen</i> | A,V |
| Eastern Rosella | <i>Platycercus eximius</i> | A,V |
| Galah | <i>Eolophus roseicapilla</i> | A,V |
| Indian Mynah | <i>Acridotheres tristis</i> * | A,V |
| Noisy Friarbird | <i>Philemon corniculatus</i> | A,V |
| Red Wattlebird | <i>Anthochaera carunculata</i> | A,V |
| Mammals | | |
| Brown Hare | <i>Lepus europaeus</i> * | V,S |

1. Identification method: A = audible call; V = visual; N = distinctive nest; S = scat.

APPENDIX C ASSESSED TREES

| Tree number | Common name | Scientific name | Tree location ¹ | |
|-------------|------------------------------------|---------------------------------|----------------------------|----------|
| | | | Easting | Northing |
| 1 | Spotted Gum (planted) | <i>Corymbia maculata</i> * | 296278 | 6002434 |
| 2 | Spotted Gum (planted) | <i>Corymbia maculata</i> * | 296265 | 6002402 |
| 3 | Hakea Wattle (naturalised) | <i>Acacia hakeoides</i> | 296280 | 6002364 |
| 4 | Hakea Wattle (naturalised) | <i>Acacia hakeoides</i> | 296281 | 6002364 |
| 5 | Hakea Wattle (naturalised) | <i>Acacia hakeoides</i> | 296284 | 6002357 |
| 6 | Hakea Wattle (naturalised) | <i>Acacia hakeoides</i> | 296269 | 6002347 |
| 7 | Hakea Wattle (naturalised) | <i>Acacia hakeoides</i> | 296276 | 6002348 |
| 8 | Hakea Wattle (naturalised) | <i>Acacia hakeoides</i> | 296277 | 6002351 |
| 9 | Hakea Wattle (naturalised) | <i>Acacia hakeoides</i> | 296299 | 6002374 |
| 10 | Hakea Wattle (naturalised) | <i>Acacia hakeoides</i> | 296301 | 6002378 |
| 11 | Hakea Wattle (naturalised) | <i>Acacia hakeoides</i> | 296306 | 6002380 |
| 12 | Hakea Wattle (planted) | <i>Acacia hakeoides</i> | 296294 | 6002402 |
| 13 | Hakea Wattle (naturalised) | <i>Acacia hakeoides</i> | 296330 | 6002397 |
| 14 | Hakea Wattle (naturalised) | <i>Acacia hakeoides</i> | 296370 | 6002435 |
| 15 | Hakea Wattle (naturalised) | <i>Acacia hakeoides</i> | 296376 | 6002438 |
| 16 | Hakea Wattle (naturalised) | <i>Acacia hakeoides</i> | 296391 | 6002443 |
| 17 | Hakea Wattle (naturalised) | <i>Acacia hakeoides</i> | 296358 | 6002481 |
| 18 | Radiata Pine (planted) | <i>Pinus radiata</i> * | 296271 | 6002371 |
| 19 | White Gum (planted) | <i>Eucalyptus rossii</i> * | 296250 | 6002332 |
| 20 | White Gum (planted) | <i>Eucalyptus rossii</i> * | 296257 | 6002323 |
| 21 | White Gum (planted) | <i>Eucalyptus rossii</i> * | 296248 | 6002346 |
| 22 | Lemon-scented Gum (planted) | <i>Corymbia citriodora</i> * | 296264 | 6002344 |
| 23 | Weeping Myall (planted) | <i>Acacia pendula</i> * | 296248 | 6002369 |
| 24 | Weeping Myall (planted) | <i>Acacia pendula</i> * | 296247 | 6002373 |
| 25 | Radiata Pine (planted) | <i>Pinus radiata</i> * | 296257 | 6002377 |
| 26 | Radiata Pine (planted) | <i>Pinus radiata</i> * | 296254 | 6002376 |
| 27 | White Gum (planted) | <i>Eucalyptus rossii</i> * | 296196 | 6002276 |
| 28 | Tasmanian Blue Gum (planted) | <i>Eucalyptus globulus</i> * | 296189 | 6002282 |
| 29 | Cypress (planted) | <i>Cupressus</i> sp.* | 296182 | 6002276 |
| 30 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296182 | 6002281 |
| 31 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296183 | 6002293 |
| 32 | Broad-leaf Privet (planted) | <i>Ligustrum lucidum</i> * | 296183 | 6002286 |
| 33 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296184 | 6002313 |
| 34 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296189 | 6002318 |
| 35 | Willow-leaved Peppermint (planted) | <i>Eucalyptus nicholii</i> * | 296207 | 6002319 |
| 36 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296211 | 6002305 |
| 37 | Argyle Apple (planted) | <i>Eucalyptus cinerea</i> * | 296228 | 6002297 |
| 38 | Argyle Apple (planted) | <i>Eucalyptus cinerea</i> * | 296225 | 6002294 |
| 39 | Argyle Apple (planted) | <i>Eucalyptus cinerea</i> * | 296223 | 6002297 |
| 40 | Argyle Apple (planted) | <i>Eucalyptus cinerea</i> * | 296221 | 6002290 |
| 41 | Yellow Gum (planted) | <i>Eucalyptus leucoxylon</i> * | 296213 | 6002285 |
| 42 | Yellow Gum (planted) | <i>Eucalyptus leucoxylon</i> * | 296208 | 6002284 |

| Tree number | Common name | Scientific name | Tree location ¹ | |
|-------------|------------------------|---------------------------------|----------------------------|----------|
| | | | Easting | Northing |
| 43 | Yellow Gum (planted) | <i>Eucalyptus leucoxylon</i> * | 296208 | 6002280 |
| 44 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296261 | 6002319 |
| 45 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296253 | 6002315 |
| 46 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296237 | 6002321 |
| 47 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296237 | 6002317 |
| 48 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296252 | 6002314 |
| 49 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296248 | 6002309 |
| 50 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296243 | 6002304 |
| 51 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296236 | 6002308 |
| 52 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296238 | 6002299 |
| 53 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296235 | 6002297 |
| 54 | London Oak (planted) | <i>Quercus robur</i> * | 296163 | 6002308 |
| 55 | White Gum (planted) | <i>Eucalyptus rossii</i> * | 296156 | 6002321 |
| 56 | White Gum (planted) | <i>Eucalyptus rossii</i> * | 296170 | 6002338 |
| 57 | White Gum (planted) | <i>Eucalyptus rossii</i> * | 296179 | 6002332 |
| 58 | White Gum (planted) | <i>Eucalyptus rossii</i> * | 296156 | 6002292 |
| 59 | White Gum (planted) | <i>Eucalyptus rossii</i> * | 296173 | 6002298 |
| 60 | White Gum (planted) | <i>Eucalyptus rossii</i> * | 296175 | 6002307 |
| 61 | White Gum (planted) | <i>Eucalyptus rossii</i> * | 296172 | 6002284 |
| 62 | White Gum (planted) | <i>Eucalyptus rossii</i> * | 296179 | 6002323 |
| 63 | White Gum (planted) | <i>Eucalyptus rossii</i> * | 296197 | 6002332 |
| 64 | White Gum (planted) | <i>Eucalyptus rossii</i> * | 296183 | 6002351 |
| 65 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296195 | 6002347 |
| 66 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296190 | 6002343 |
| 67 | Red Ironbark (planted) | <i>Eucalyptus sideroxylon</i> * | 296214 | 6002361 |
| 68 | Red Ironbark (planted) | <i>Eucalyptus sideroxylon</i> * | 296216 | 6002375 |
| 69 | Red Ironbark (planted) | <i>Eucalyptus sideroxylon</i> * | 296230 | 6002370 |
| 70 | Red Ironbark (planted) | <i>Eucalyptus sideroxylon</i> * | 296225 | 6002383 |
| 71 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296222 | 6002355 |
| 72 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296219 | 6002360 |
| 73 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296242 | 6002360 |
| 74 | Citrus (planted) | <i>Citrus</i> spp.* | 296243 | 6002378 |
| 75 | Citrus (planted) | <i>Citrus</i> spp.* | 296241 | 6002384 |
| 76 | Citrus (planted) | <i>Citrus</i> spp.* | 296238 | 6002391 |
| 77 | Citrus (planted) | <i>Citrus</i> spp.* | 296239 | 6002388 |
| 78 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296247 | 6002384 |
| 79 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296246 | 6002387 |
| 80 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296245 | 6002389 |
| 81 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296243 | 6002395 |
| 82 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296240 | 6002402 |
| 83 | Desert Ash (planted) | <i>Fraxinus angustifolium</i> * | 296238 | 6002407 |

1. Location data are northings and eastings of MGAz55 coordinates.

APPENDIX D 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) ¹ | Conservation Status (Comm) ² | Likelihood of Occurrence ³ | Five Part Test |
|--|--|--|---|--|----------------|
| Vegetation community | | | | | |
| Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions | | e | E | While this TEC is represented within the district, the property is former River Red Gum forest/woodland. Likelihood: Not present | 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 River Red Gum forest/woodland. Likelihood: Not present | No |
| Murray River endangered ecological community | | e | | The community is present within the Murray River in the study area; 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. Likelihood: Not present | No |
| Natural Grasslands of the Murray Valley Plains | | e | CE | While this TEC is represented within the district, the property is former River Red Gum forest/woodland. Likelihood: Not present | No |
| Seasonal herbaceous wetlands (freshwater) of the temperate lowland plains | | ce | | While this TEC is represented within the district, the property is former River Red Gum forest/woodland. Likelihood: Not present | No |
| Weeping Myall Woodlands | | e | E | While this TEC is represented within the district, the property is former River Red Gum forest/woodland. Likelihood: Not present | No |
| Flora | | | | | |
| 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. Likelihood: Highly unlikely to be present | 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. Likelihood: Highly unlikely to be present | No |
| Rigid Spider-orchid | <i>Caladenia tenax</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. Likelihood: Highly unlikely to be present | 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. Likelihood: Unlikely to be present | No |

Test of Significance – 17 Maiden Smith Drive, Moama

| Common Name | Scientific name | Conservation Status (NSW) ¹ | Conservation Status (Comm) ² | Likelihood of Occurrence ³ | 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. Likelihood: Highly unlikely to be present | 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. Likelihood: Highly unlikely to be present | 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. Likelihood: Highly unlikely to be present | 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 not suitable habitat. No record of the species within 10 km. Likelihood: Unlikely to be present | No |
| Red Darling-pea | <i>Swainsona plagiotropis</i> | v | V | Grassland and Grassy Woodland plant in sites prone to seasonal inundation. Several along the Loddon West Road reserve and adjacent areas to the property. Site is not suitable habitat. No record of the species within 10 km. Likelihood: Unlikely to be present | No |
| Fauna | | | | | |
| Australian Painted Snipe | <i>Rostrallata 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. Likelihood: Highly unlikely to be present | No |

Test of Significance – 17 Maiden Smith Drive, Moama

| Common Name | Scientific name | Conservation Status (NSW) ¹ | Conservation Status (Comm) ² | Likelihood of Occurrence ³ | 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. Likelihood: Highly unlikely to be present | 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 S of the site. Likelihood: May be present | 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 km S of the site in 2008. Likelihood: Unlikely to be present | 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 not suitable habitat. Site is not well connected to known locations of the species. Not recorded within 10 km of the site. Likelihood: Unlikely to be present | No |
| 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. Likelihood: Highly unlikely to be present | 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. Likelihood: Highly unlikely to be present | 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. Likelihood: Unlikely to be present | 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. Likelihood: Unlikely to be present | 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 N of the site in 2008. Likelihood: Unlikely to be present | No |

Test of Significance – 17 Maiden Smith Drive, Moama

| Common Name | Scientific name | Conservation Status (NSW) ¹ | Conservation Status (Comm) ² | Likelihood of Occurrence ³ | 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. Likelihood: Unlikely to be present | 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. Likelihood: Unlikely to be present | 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 moderate connectivity to the corridor. One record 9 km NW of the site in 2017. Likelihood: May be present | 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. Likelihood: Unlikely to be present | 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. Likelihood: Highly unlikely to be present | 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. Likelihood: Unlikely to be present | 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 – 2 km north-west h in 2008. Likelihood: Unlikely to be present | 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. Likelihood: Unlikely to be present | No |

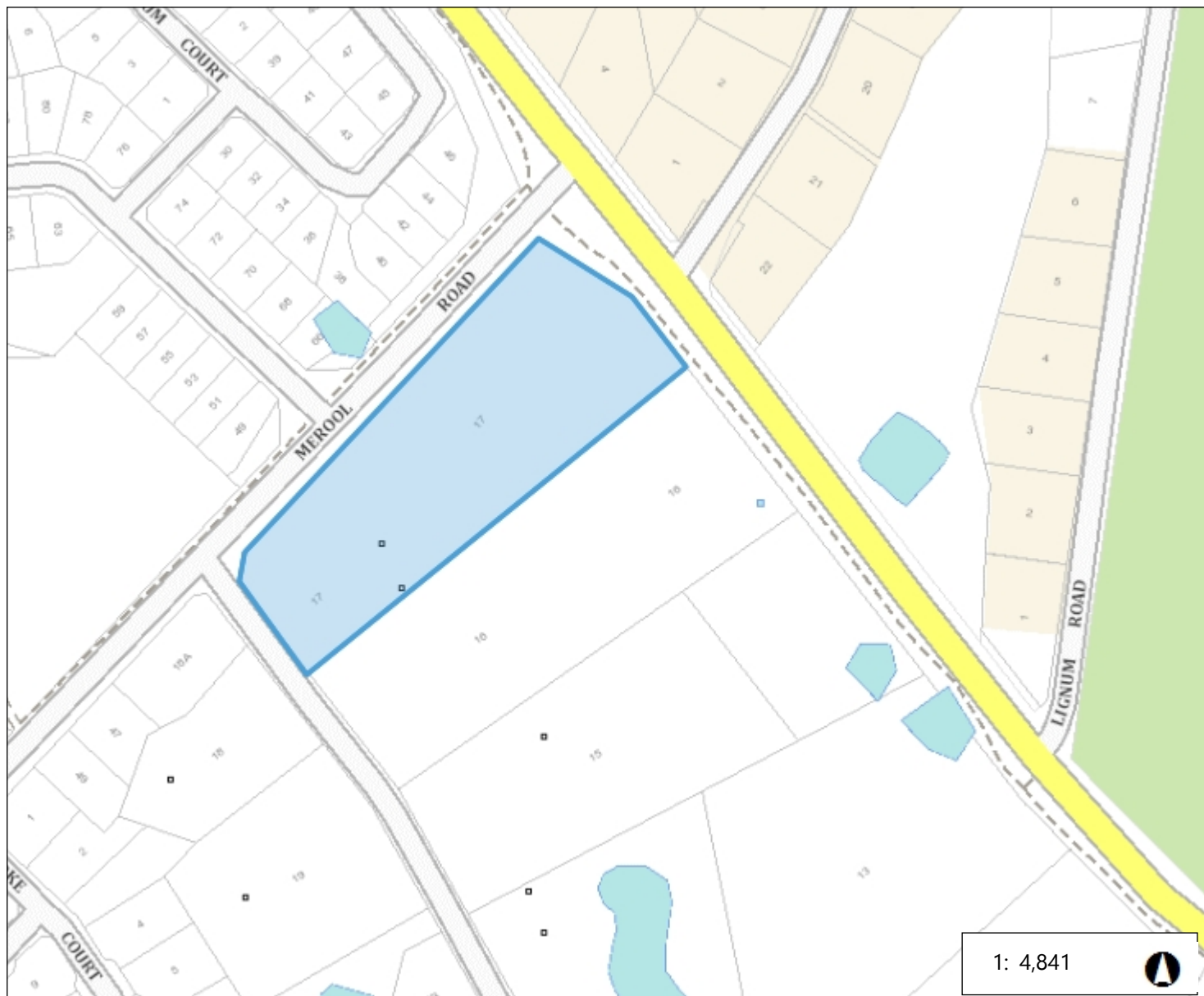
Test of Significance – 17 Maiden Smith Drive, Moama

| Common Name | Scientific name | Conservation Status (NSW) ¹ | Conservation Status (Comm) ² | Likelihood of Occurrence ³ | 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 km S of the site in 2012. Likelihood: Unlikely to be present | 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. Likelihood: Unlikely to be present | 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. Likelihood: May be present | 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. Likelihood: May be present | 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. Likelihood: Unlikely to be present | 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. Likelihood: Unlikely to be present | 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 E BIODIVERSITY OFFSET SCHEME
ENTRY THRESHOLD (BOSET) TOOL
REPORT DATED 13TH JUNE 2021**

Biodiversity Offset Scheme (BOS) Entry Threshold Map



245.9 0 122.96 245.9 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

| | | |
|--|----------------------|-----------------------|
| Date of Calculation | 13/06/2021 9:53 PM | BDAR Required* |
| Total Digitised Area | 3.09 ha | |
| Minimum Lot Size Method | LEP | |
| Minimum Lot Size | 0.08 ha | |
| Area Clearing Threshold | 0.25 ha | |
| Area clearing trigger Area of native vegetation cleared | Unknown [#] | Unknown [#] |
| Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)? | no | no |
| Date of the 90 day Expiry | 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: 13/06/2021 09:53 PM