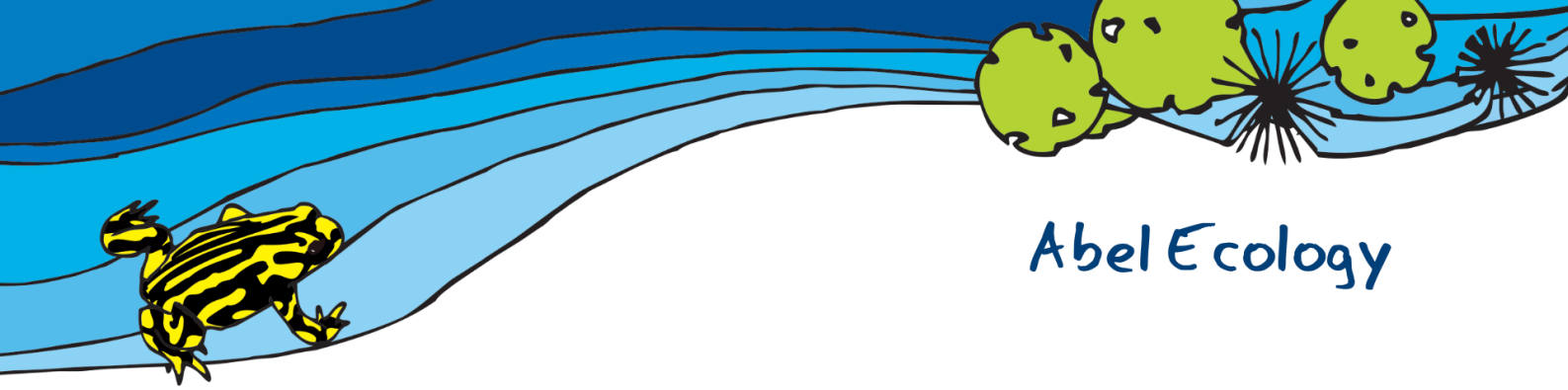

Prescribed Ecological Actions Report (PEAR)

for

3 Memory Avenue, Crookwell, NSW 2583

Lot 2 DP 702788

Proposed Residential Subdivision & Childcare Centre

Prepared for:	Blue Sox Developments Pty Ltd
Report No:	AE25-REP-2764-ISS 1
Prepared by:	Abel Ecology
Date:	15 April 2025

BAM Ecology Pty Ltd (T/A Abel Ecology)
2 Samuel 20:18
ACN 626 221 467 – ABN 37 626 221 467

PO Box 495, Springwood, NSW, 2777
Unit 2, 10-11 Ferguson Road
Springwood, NSW, 2777
56 Sharp Street Cooma, NSW 2630

T (02) 4751 9487
E info@abelecology.com.au
W www.abelecology.com.au
W www.snowymonaropdhub.com.au

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Document History

Report	Version	Prepared by	Technical Review by	Proofread by	Submission	
					Method	Date
Report	Draft A	Callista Harris	Dr Danny Wotherspoon Nicholas Tong	Sue Simmons	Dropbox	04 April 2025
Report	Issue 1	Callista Harris		Stacey Burn	Dropbox	15 April 2025

Executive summary

The proposal is for a residential subdivision and childcare centre (Figure 1).

A biodiversity survey was carried out at 3 Memory Avenue, Crookwell NSW, to assess the likely impacts of the proposal on species and ecological communities present on the site, and whether the proposal will trigger entry into the Biodiversity Offsets Scheme identified in s. 7.4 of the *Biodiversity Conservation Act 2016*.

This report also describes whether there is likely to be any significant effect on any endangered ecological community, endangered population, threatened species or their habitats, as per the listings in the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999) (Commonwealth legislation).

The following three considerations are triggers for entry into the Biodiversity Offsets Scheme:

- Threshold 1: The proposal does not exceed the clearing threshold area as described in clause 7.2 of the BC Regulation 2017.
- Threshold 2: The proposal does not undertake clearing of native vegetation or any prescribed activities (clause 6.1 of the BC Regulation 2017) on land shaded in the Biodiversity Values Land Map.
- Threshold 3: The proposal is not likely to significantly affect any threatened species or Endangered or Critically Endangered Species.

There is no impediment to this proposal in the scope of this report. None of the three thresholds for entry into the Biodiversity Offsets Scheme are triggered by the proposal.

The provisions of the EPBC Act 1999 do not apply to this proposal and it does not require referral to the Commonwealth.

Abel Ecology recommends the following conditions of consent for the proposal:

- Prior to the start of tree clearing, a pre-clearance survey should be undertaken by a suitably qualified Fauna Spotter Catcher/Project Ecologist to identify and relocate any protected animals that may be impacted by the works.
  Reason: to reduce the risk of harm to "protected animals" as defined by Schedule 5 of the *Biodiversity Conservation Act 2016*.
- Three (3) nest boxes must be installed for each tree hollow removed. The number of tree hollows removed is to be confirmed by the pre-clearance survey conducted by the appointed Fauna Spotter Catcher/Project Ecologist. They must be installed within the property or adjacent location with landholder permission, in accordance with the guidance provided in Appendix A of the Prescribed Ecological Actions Report. In the absence of trees, nest boxes may be installed onto poles on the site. Installation does not need to be supervised by a project ecologist, however a project ecologist must review the locations and confirm they have been installed correctly.
  Reason: to mitigate the impacts of habitat removal and to provide breeding habitat for native fauna.
- Where possible, any future landscaping should use species from PCT 3347: *Southern Tableland Creekflat Ribbon Gum Forest*, as detailed in Appendix B of the Prescribed Ecological Actions Report.
  Reason: To provide foraging habitat for native fauna.

This report should be read in conjunction with the Arboricultural Impact Assessment Report (AE24 JP2765 ARB 01APR25).

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List of Abbreviations

Abbreviation	Meaning
AHD	Australian Height Datum
BAM	Biodiversity Assessment Method
BC Act	*Biodiversity Conservation Act 2016*
BC Regulation	Biodiversity Conservation Regulation 2017
BV Map	Biodiversity Values Map
Upper Lachlan LEP 2010	*Upper Lachlan Local Environmental Plan 2010*
Upper Lachlan DCP 2010	*Upper Lachlan Development Control Plan 2010*
Cm, m, ha	Centimetre, metre, hectare
Commonwealth DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
BOS	Biodiversity Offsets Scheme
CEEC	Critically Endangered Ecological Community
EEC	Endangered Ecological Community
EP&A Act	*Environmental Planning & Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
MNES	Matters of National Environmental Significance
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
PEAR	Prescribed Ecological Actions Report
PCT	Plant Community Type
SEPP	State Environmental Planning Policy
TEC	Threatened Ecological Community

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1. Introduction

1.1 Legislative context

3 Memory Avenue, Crookwell NSW 2583 (the subject land) is in the north-eastern section of Crookwell, within the Upper Lachlan Local Government Area (Figure 1).

Blue Sox Developments Pty Ltd (the applicant) proposes a residential subdivision and childcare centre (the proposal) at the subject land (Figure 2).

This Prescribed Ecological Actions Report (PEAR) meets the requirements of the NSW *Biodiversity Conservation Act 2016* (BC Act) and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to enable Upper Lachlan Shire Council to assess the proposal under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Throughout this report 'threatened' refers to those species and ecological communities listed as 'endangered' or 'vulnerable' under the BC Act and EPBC Act.

Council must consider the following three Biodiversity Offsets Scheme (BOS) triggers:

- Threshold Trigger 1: Exceeding the clearing threshold on an area of native vegetation
- Threshold Trigger 2: Native vegetation clearing or prescribed activities on land included in the Biodiversity Values Land Map
- Threshold Trigger 3: A "significant effect" on threatened species or ecological communities.

A biodiversity survey of the development footprint was undertaken on 19th November 2024. The proposal was assessed against the three triggers listed above.

Adjacent land was surveyed in order to consider indirect impacts and edge effects created by the proposed development.

The proposal was also assessed to find if it would have a significant effect on any threatened species or ecological communities listed under the EPBC Act.

The proposal is to subdivide the property into 21 lots (Figure 2) 20 lots would be for residential use and one (1) lot would be developed with a childcare centre.

Most of the property (excluding one tree) and some trees within the adjacent road reserve are to be cleared to facilitate the construction of the proposal (Figure 3). This involves the removal of nineteen (19) native trees (Figure 8). Please refer to the Arboricultural Impact Assessment Report what trees will be removed (AE24 JP2765 ARB 01APR25).

Figure 1. The property

Source: (Nearmap, 2024)

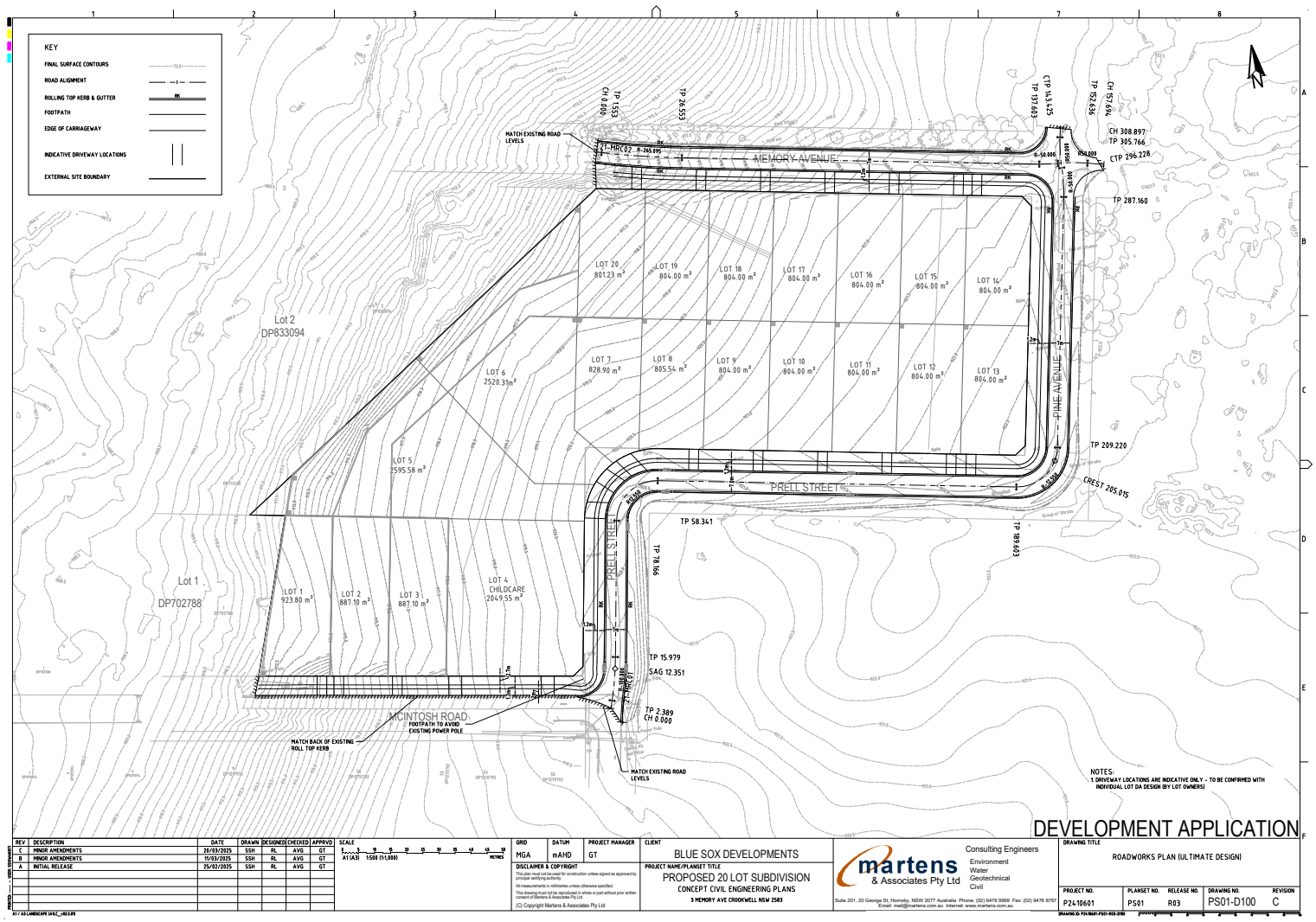

Figure 2. The proposal

Source: Martens & associates Pty Ltd, Roadworks Plan, 20/03/2025

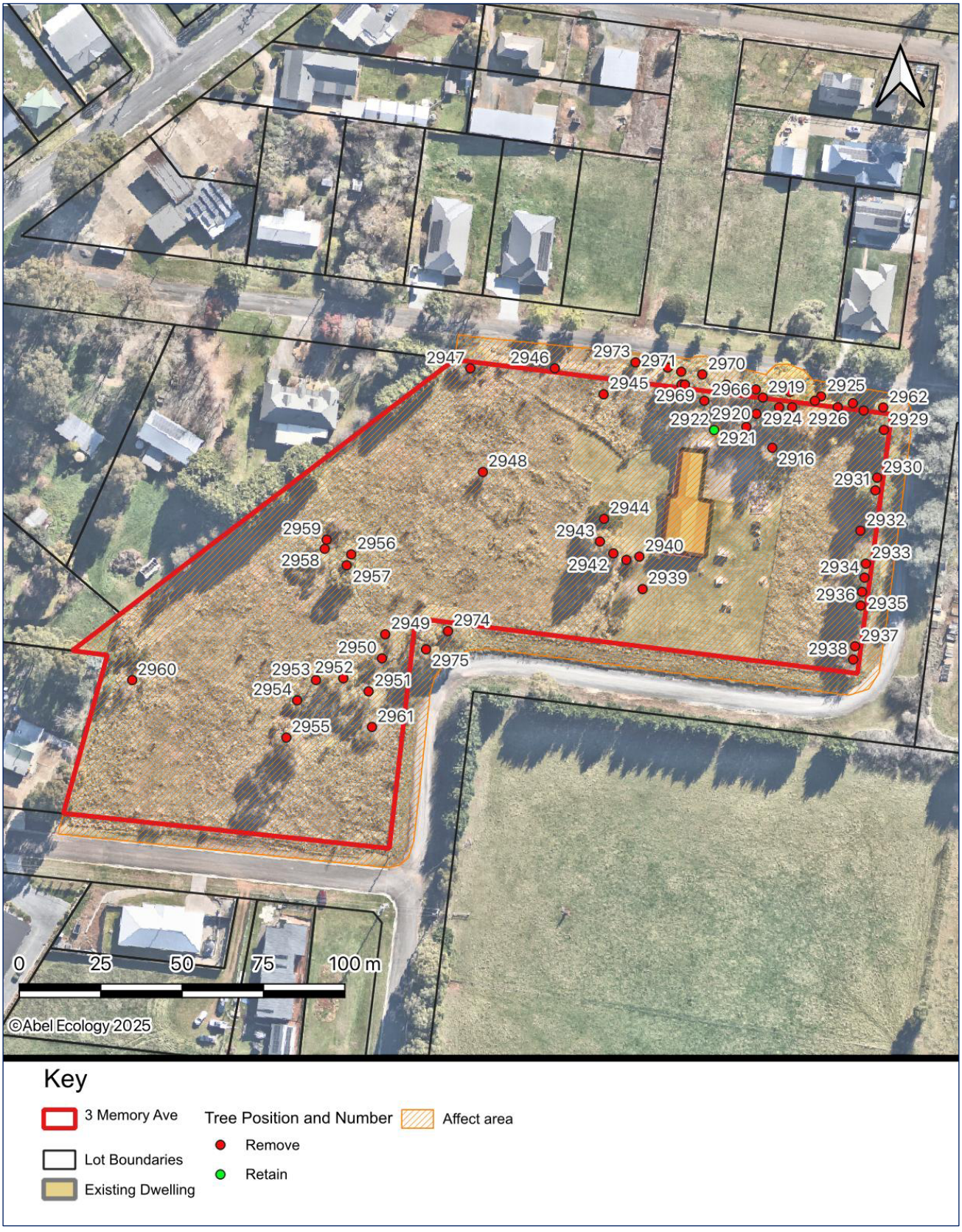

Figure 3. Area to be affected

2. Landscape features of the site and the locality

2.1 Site description

The property slopes downhill towards the west. The highest point is 922 m Australian Height Datum (AHD) on near the eastern property boundary, and the lowest point is 911.5 m AHD near the western property boundary.

The surrounding land is used for residential, rural residential, and rural purposes. A cemetery is located directly to the east.

2.2 History of the site

The property has previously been cleared and used for agriculture. Some remnant eucalypts remain. A house, carport and shed have been constructed on the property. A row of pine trees has been planted near the eastern property boundary.

2.3 Geology and soils

The property is part of the Taralga soil landscape (SI5512ta) (NSW DPIE, 2024). This soil type is described as:

> *"Occurs near Crookwell and Taralga on remnants of Tertiary lava flows. Krasnozems (Uf6.12) and Xanthozems (Gn4) are found on crests. On sideslopes, friable to slightly hardsetting, acid, texture-contrast soils similar to Chocolate Soils (Dr2.21, Dr4.11, Db3.11) predominate. Prairie Soils (Gn4.42) are common on footslopes, with alluvial soils and wiesenbodens in drainage lines." (NSW DCCEEW, 2024)*

The native vegetation associated with this soil type is:

> *"A brown barrel-ribbon gum community is typical. It is an intermediate sclerophyll forest vegetation type, with well-developed but discontinuous substratum of small trees and shrubs. Above 900 m snow gum communities may be found. Clearing of this community has been extensive, and it remains in its natural state only where slopes are extremely steep." (NSW DCCEEW, 2024)*

2.4 Landscape features

2.4.1 Site landscape features

Table 1 describes the landscape features on the property.

Table 1. Site landscape features

Vegetation	The land has been previously cleared for agriculture. Some remnant eucalypts remain. A row of pine trees has been planted near the eastern property boundary. Exotic shrubs and trees have self-seeded on the land.
Human structures	A house, carport and shed have been constructed on the property.
Wetlands/dams/watercourse	There are no wetlands, dams or watercourses on the property.
Karst, caves, crevices and other geological features of significance	The property does not contain any karst, caves or crevices.
Vehicle traffic and road mortality	No roadkill was observed on the property or surrounding roads.

3. Field survey methods

3.1 BioNet Atlas of NSW Wildlife website search

Records from the BioNet Atlas of NSW Wildlife (NSW DEH, 2024) were accessed using the following search criteria:

Licensed Report of all Valid Records of Threatened (listed on BC Act 2016) or Commonwealth listed Entities in selected area [North: -34.33 West: 149.27 East: 149.68 South: -34.63] recorded since 01 Jan 2000 until 20 Dec 2024 returned a total of 284 records of 28 species.

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°; ^^ rounded to 0.01°). Copyright the State of NSW through the Department of Planning, Industry and Environment.

The results were clipped to a 10 km radius of the property. Table 2 details the search listings and Figure 4 shows the results.

Appendix C assesses if suitable habitat occurs within the property and adjacent road reserve for each of the species listed in Table 2. The assessment found that suitable habitat occurs for all of the species except for Black Gum. Five-part tests were undertaken for these species (refer to Appendix D).

Table 2. BioNet threatened flora & fauna species records within a 10 km radius of the property since 1 Jan 2000

Common name	*Scientific name*	NSW Status	Comm. Status
Little Eagle	*Hieraaetus morphnoides*	V,P	
Spotted Harrier	*Circus assimilis*	V,P	
Gang-gang Cockatoo	*Callocephalon fimbriatum*	E1,P,3	E
Varied Sittella	*Daphoenositta chrysoptera*	V,P	
Dusky Woodswallow	*Artamus cyanopterus cyanopterus*	V,P	
Flame Robin	*Petroica phoenicea*	V,P	
Grey-headed Flying-fox	*Pteropus poliocephalus*	V,P	V
Black Gum	*Eucalyptus aggregata*	V	V

Key:	E = Endangered
P = Protected	E1 = Endangered Species
V = Vulnerable	3 = Category 3 sensitive species

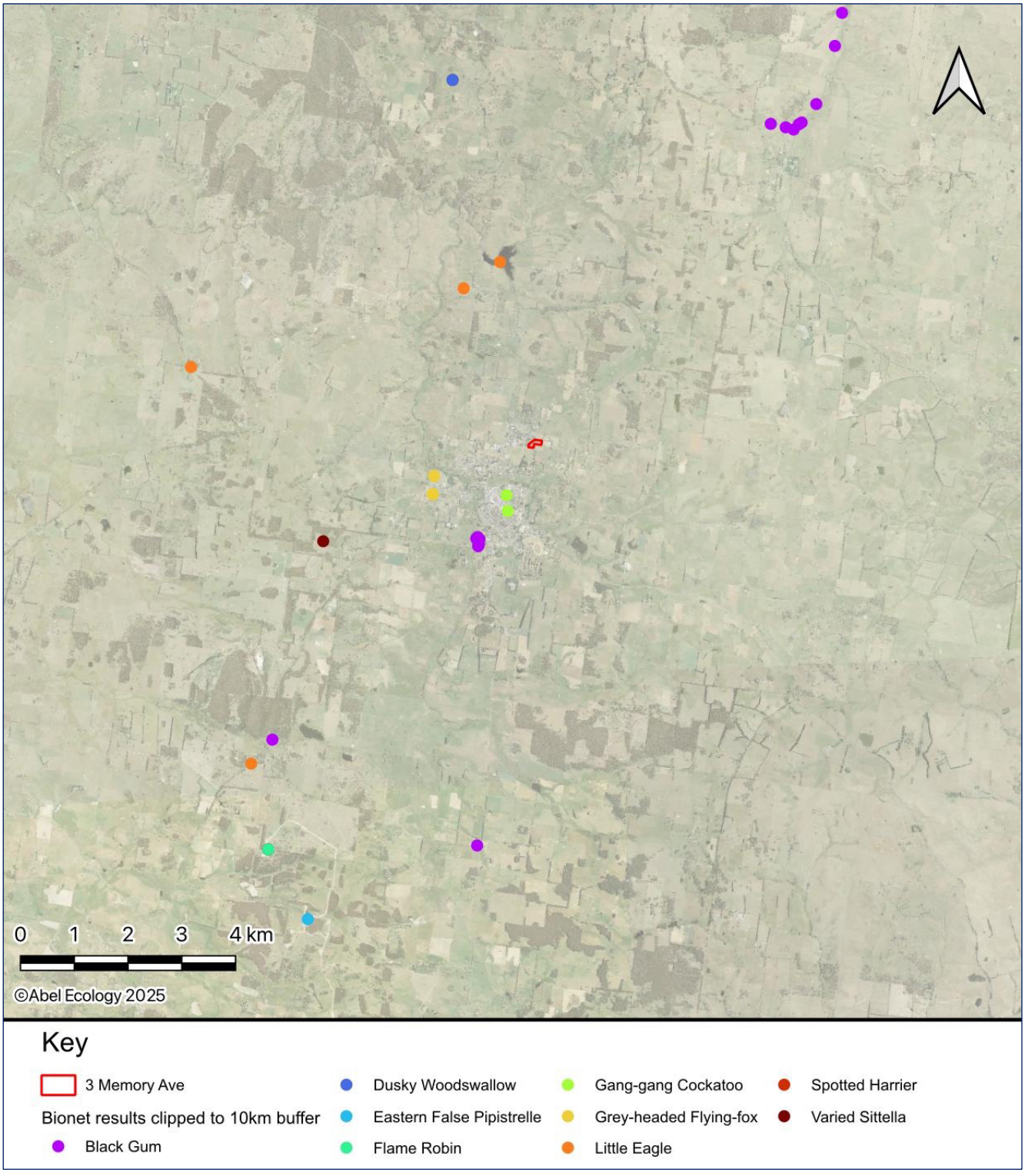

Figure 4. BioNet search results

Source: (NSW DEH, 2024)

3.2 Field work effort

Over one day of fieldwork a total of 10 hours were spent undertaking survey work on the property and adjacent road reserve. Adjacent land was also surveyed in order to consider indirect impacts and edge effects created by the proposed development.

Table 3. Survey dates and weather conditions

Date	Time	Temperature (°C)	Task	Hours (hrs x no. people)
19 November 2024	7 am – 12 noon	25	Flora and fauna survey	5 hours x 2 people = 10 hours

Table 4. Staff associated with field work and analysis of field work

Staff member	Field work	Analysis of field work
Andy Araya	Flora and Fauna survey	Nick Tong
Callista Harris	Flora and Fauna survey	Nick Tong

3.3 Flora survey method, vegetation community and habitat classification

A flora survey was conducted to compile a species list and vegetation descriptions. Two floristic plot-based surveys in accordance with the Biodiversity Assessment Method (BAM) (NSW DPIE, 2020) were undertaken in the locations shown in Figure 5. Prior to the survey, areas with canopy from the aerial imagery were assumed to be native vegetation. The location of Plot 1 was chosen to represent the vegetation present within the open grassland areas. The location of Plot 2 was chosen to represent areas of vegetation that included canopy cover. Both are located in areas to be impacted under the proposal.

Targeted surveys were not made for threatened species (See Appendix 5) since the site is largely cleared and disturbed. Vegetation quality is assessed as described below. The plant community on site was classified according to the NSW VIS.

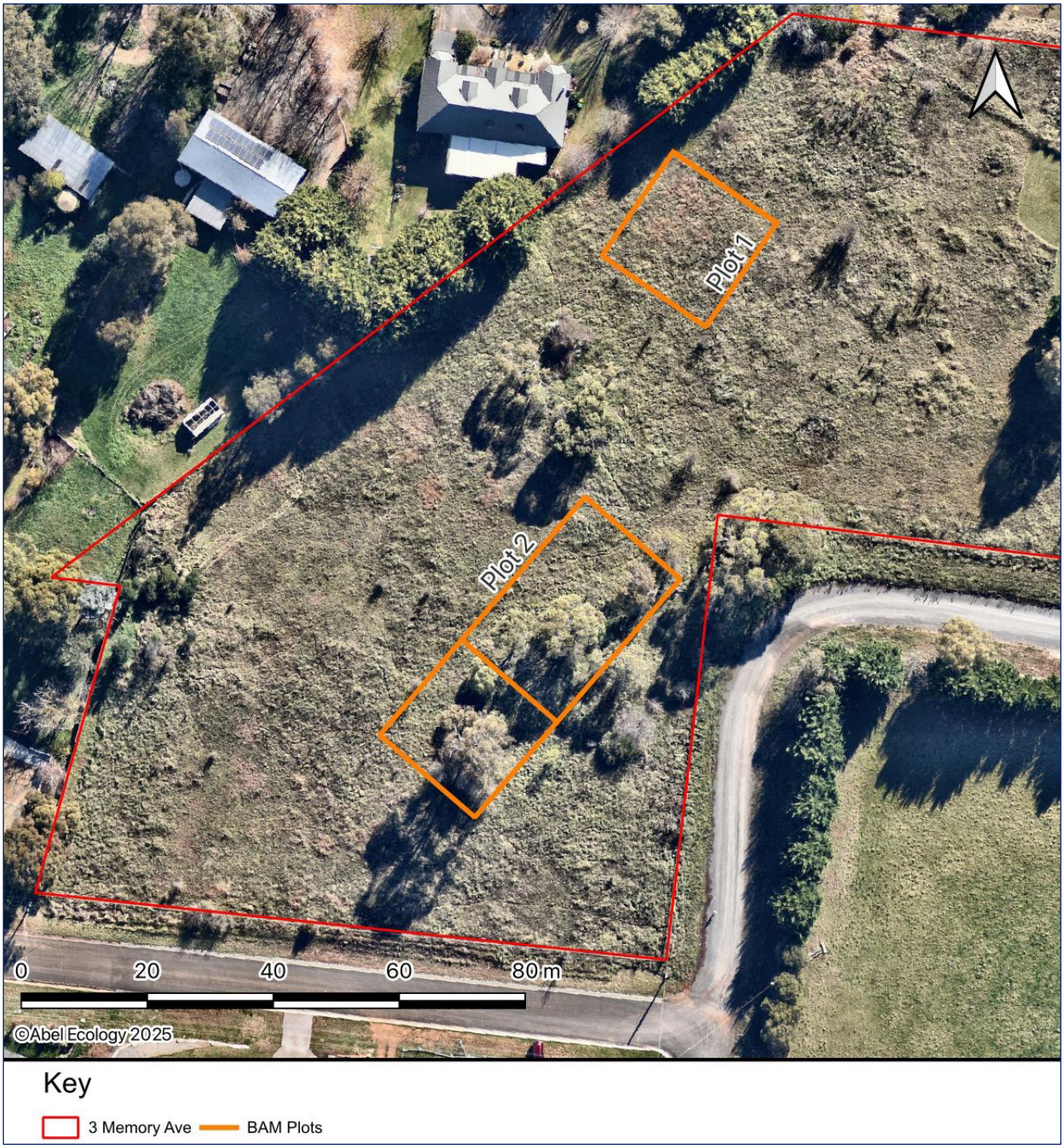

Figure 5. BAM plot locations

3.4 Fauna survey method

The methods of survey undertaken to detect the various faunal groups or their habitat are outlined below. Consideration was made for threatened species based on records of sightings from the BioNet Atlas website, previous surveys, and the ecologist's knowledge.

3.4.1 Diurnal fauna searches

Searching, opportunistic observations and call recording provides an indication of types of species using a site. These methods are used to identify and record live animals, or record indirect evidence of animal presence on the site. On occasions, specific surveys may be conducted for a targeted group or species, such as searching the margins of a dam for frogs. Generally, birds, reptiles, frogs and mammals, or evidence of them, may all be present in the same habitat at the time of survey, therefore searching for these faunal groups is generally run concurrently. This involved:

a. Searching shelter sites, basking sites, opportunistic observation, and assessment of shelter site diversity suitability for reptiles.

b. Searching shelter sites, calling sites, egg deposition sites, spotlighting and triangulation on calling males for frogs.

c. Opportunistic observations and identification of calls of species, and search for indirect evidence such as nests, feathers, scratch marks and feeding signs for birds.

d. Searching for indirect evidence, such as diggings, droppings, runways and burrows, and opportunistic observations for mammals.

While rigorous surveys are likely to find more species, high species richness for birds can be recorded in a relatively short amount of time. Bird surveys are used as a simple indicator of other parameters, such as biodiversity and the functioning of the ecosystem.

3.5 Limitations of the survey

The diurnal survey was not suitable for detecting nocturnal species; however, the survey includes searching for indirect evidence of presence.

Species that may use the site were not detected during the survey for the following reasons:

a) The species were present during the survey but was not detected due to dormancy, inactivity or cryptic habits.
b) The species use the site at other times of the year but were not present during the survey due to being nomadic or migratory.

4. Survey Results: Vegetation and habitat description

4.1 Site vegetation and habitat

The property and adjacent road reserve contains groundcover, shrubs and trees:

- The groundcover vegetation was found to be heavily dominated by exotic species, in particular by *Dactylis glomerata* (Cocksfoot) with numerous other exotic groundcover species more sparsely intermixed. See figure 6 as an example. The native Kangaroo Grass (*Themeda triandra*) was found to be sparsely occurring.
- The shrubs consisted of exotic species including thickets of Common Hawthorn and Prunus spp. and some Small-leaved Privet (*Ligustrum sinense*) (Figure 7).
- 41 of the 60 assessed trees as part of the Arboricultural Impact Assessment Report (AE24 JP2765 ARB 01APR25).were found to be a mix of exotic species. Some of these included Monterey Pine (*Pinus radiata*), Apple (*Malus pumila*), Poplars (*Populus spp.*) and *Prunus* species.
- There are 19 native trees of three different species: Snow Gum (*Eucalyptus pauciflora*), White Box (*Eucalyptus albens*), and Apple Box (*Eucalyptus bridgesiana*). The trees are shown in Figure 8. These trees may be remnant or may be planted. We have assumed it is remnant, and on this basis have assigned the remnant native trees to Plant Community Type (PCT) 3347: Southern Tableland Creekflat Ribbon Gum Forest (NSW DEH, 2024).

Appendix E contains a full flora species list. It includes the tree species, the plants identified in both BAM plots, and plants from other parts of the property.

For the purposes of this assessment, we have used the definition of hollow-bearing trees contained within the BAM (NSW DPIE, 2020). One hollow-bearing tree was observed (tree 2955), a Snow Gum. The hollow is vertical and less than 10 cm in diameter (Figure 9 & Figure 10). It may provide some limited habitat value. Other trees (trees 2952, 2956) were noted to have possible hollows, but this was unable to be confirmed due to visual assessment from the ground. In addition, a hole/possible burrow at the base of tree 2959 (Figure 11, Figure 12) was observed and an echidna was seen nearby.

Most of the property was free of fallen logs and dead wood. In the southern part of the property, near the Snow Gums, there were more fallen logs and dead wood on the ground.

Figure 6. Example of exotic groundcover vegetation at the site.

Figure 7. Example of exotic shrub thicket on site.

Figure 8. Native vegetation on the property and in road reserve

Figure 9. Location of small hollow in tree 2955

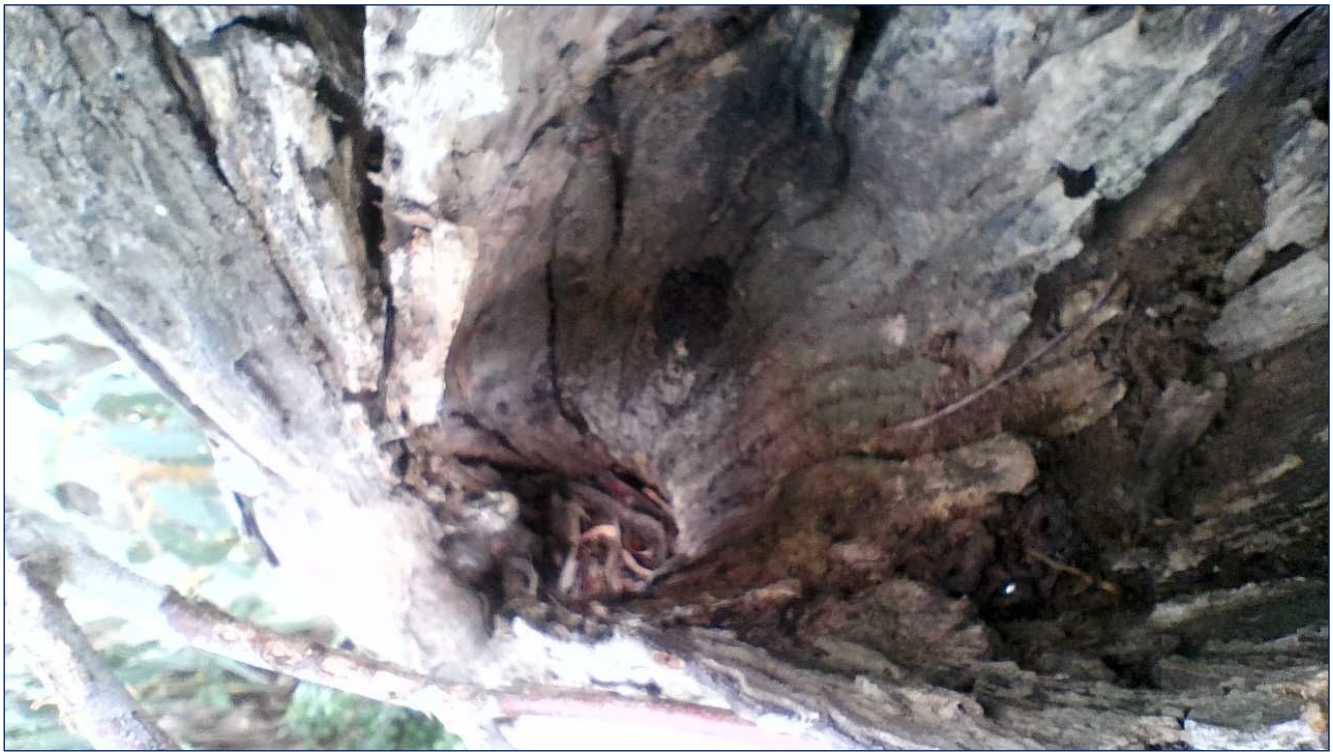

Figure 10. Interior of small hollow in tree 2955

Figure 11. Trunk of tree 2959.

Figure 12. Possible burrow found at base of tree 2959.

4.2 Species and Communities of conservation concern

No threatened flora species were observed.

The property and adjacent road reserve contains some Snow Gums. It also contains one Apple Box, which may be remnant or may be planted. We have assumed it is remnant, and on this basis have assigned the remnant native trees to Plant Community Type (PCT) 3347: *Southern Tableland Creekflat Ribbon Gum Forest* (NSW DEH, 2024).

This PCT is not associated with any Threatened Ecological Communities (TECs).

This PCT is found in the surrounding area, as shown in Figure 13.

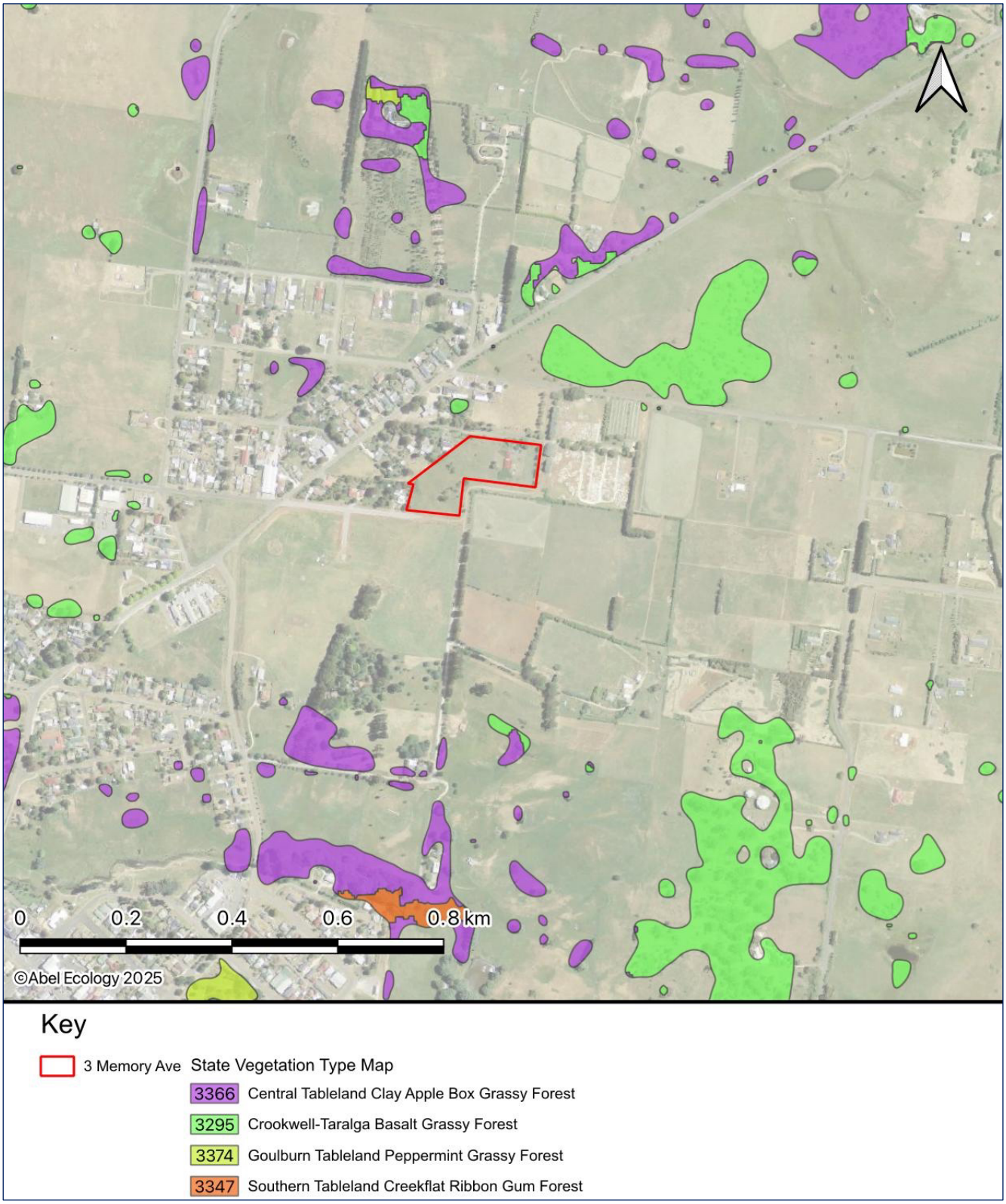

Figure 13. State Vegetation Type Map Version C2.0M2.1

4.3 Weeds

The *Biosecurity Act 2015* requires each landholder and/or occupier to control biosecurity matter (weeds) on their property. The landholder and/or occupier is to develop an effective control strategy and plan to ensure they meet their General Biosecurity Duty.

The General Biosecurity Duty (GBD) is imposed on any person who deals with biosecurity matter (weeds), and who knows (or ought reasonably to know) of the biosecurity risk posed (or likely to be posed), has a biosecurity duty to ensure that the risk associated with those weeds is prevented, eliminated or minimised - so far as is reasonably practicable. A requirement is that all public and private landowners or managers and all other people who deal with weed species (biosecurity matter) must use the most appropriate approach to prevent, eliminate or minimise the negative impact (biosecurity risk) of those weeds.

Council may issue a Biosecurity Direction when any owner/occupier fails in their biosecurity duty to control weeds on their land. The owner/occupier must comply with this biosecurity direction. A penalty notice or prosecution may follow if the owner/occupier fails to comply with the Biosecurity Direction.

One Weed of National Significance was detected during the survey: Blackberry (*Rubus spp.*).

One Priority Weed for the South East was detected during the survey: Blackberry (*Rubus spp.*).

5. Survey Results: Fauna

5.1 Species of conservation concern

No threatened fauna species were observed during the survey.

5.2 Fauna results

A total of eight (8) species were detected, including four (4) mammals and four (4) birds (Table 5). None of these species are threatened under the BC Act or EPBC Act.

Table 5. List of fauna detected on the site

Common Name	*Scientific Name*	Conservation Status	Recorded AE
Birds			
Eastern Rosella	*Platycercus eximius*	Not threatened	O
Laughing Kookaburra	*Dacelo novaeguineae*	Not threatened	O
Brown Thornbill	*Acanthiza pusilla*	Not threatened	O
Australian Magpie	*Gymnorhina tibicen*	Not threatened	O

Common Name	*Scientific Name*	Conservation Status	Recorded AE
Mammals			
Common Brushtail Possum	*Trichosurus vulpecula*	Not threatened	O
Short-beaked Echidna	*Tachyglossus aculeatus*	Not threatened	O
Rabbit*	*Oryctolagus cuniculus*	Not threatened	O
Brown Hare*	*Lepus capensis*	Not threatened	O

Key

* = Introduced fauna

O = Observed

6. Discussion of results

Most of the property has previously been cleared, with some remnant native trees remaining. The groundcover is dominated by exotic species, a result of previous mowing and grazing practices. At the time of the site survey the groundcover did not appear to have been mowed or grazed in a long time. The tall Cocksfoot (*Dactylis glomerata*) provides shelter for native fauna, and an Echidna was seen foraging in the grass. The groundcover featured flowers and seed heads, which provide food for native fauna.

The landscape is mostly open, however, there are many dense thickets of thorny exotic shrubs, which provide habitat and a food source for small mammals and birds.

The property contains several exotic tree species, such as Cherry Plum (*Prunus cerasifera*), which are likely to be self-seeded.

One (1) hollow-bearing tree was identified, however, the hollow is small and is of limited habitat value. There are mature trees throughout the property, which provide good habitat for nesting species. Other trees (trees 2952, 2956) were noted to have possible hollows, but this was unable to be confirmed due to visual assessment from the ground.

Some coarse woody debris is present on the ground near the native trees, which provides habitat for native fauna.

There is a possible burrow at the base of tree 2959. An echidna was seen nearby.

The trees do not show any evidence of having been burnt recently, suggesting it has been a long time since fire burnt through this area.

Native faunal indicator species, small forest birds and Magpie, are consistent with an open woodland habitat.

Ecological services for the site, such as bioturbators, pollinators, and seed dispersers, are present and functioning normally.

7. Legislative assessment

7.1 EP&A Act 1979

7.1.1 Section 1.3 Objects of Act

One of the objects of the EP&A Act is:

> *"To facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,"*

Clause 193 of the EP&A Regulation 2021 defines the principles of ecologically sustainable development:

> *"(a) the precautionary principle,*
>
> *(b) inter-generational equity,*
>
> *(c) conservation of biological diversity and ecological integrity,*
>
> *(d) improved valuation, pricing and incentive mechanisms."*

The proposal requires removal of 1,097 m^2 of native tree canopy within the property and adjacent road reserve. The rest of the property and adjacent road reserve contains exotic species, which would also be removed. The impacts of vegetation removal would be mitigated by:

- Nest boxes would be installed to provide replacement fauna habitat for hollows lost.
- Where possible, any future landscaping would use species from PCT 3347: *Southern Tableland Creekflat Ribbon Gum Forest* (Appendix B) (NSW DEH, 2024).

Further detail is provided in section 10 of this report.

7.1.2 Section 4.15 Evaluation

In accordance with section 4.15(1)(b) of the EP&A Act, the determining authority (Upper Lachlan Shire Council) will assess the proposal against:

> *"The likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality"*

The proposal is located on disturbed agricultural land that is dominated by exotic species. It contains 1,097 m^2 of native tree canopy, which would be removed. The land contains limited habitat features important for biodiversity. Overall, the land is a suitable location for additional housing in Crookwell and the negative impacts of native vegetation removal can be mitigated.

7.2 SEPP (Biodiversity and Conservation) 2021 – Chapter 4

Upper Lachlan Shire Council is within the Central and Southern Tablelands Koala Management Area. There is no Koala Plan of Management for the Council area.

Section 4.9 of Chapter 4 of *State Environmental Planning Policy (Biodiversity and Conservation) 2021* (SEPP (Biodiversity and Conservation) 2021) states:

> *"(2) Before a council may grant consent to a development application for consent to carry out development on the land, the council must assess whether the development is likely to have any impact on koalas or koala habitat.*
>
> *(3) If the council is satisfied that the development is likely to have low or no impact on koalas or koala habitat, the council may grant consent to the development application."*

Only one (1) tree species present on the property and adjacent road reserve is identified on the Central and Southern Tablelands koala feed tree list (Table 6) – Snow Gum. There are seventeen (17) Snow Gums on the property and in the adjacent road reserve, which would be removed to facilitate the proposal.

The BioNet search did not list any sightings of koalas (refer to section 3.1 of this report). During the site survey, no Koalas, or evidence of Koalas, was seen on the property and adjacent road reserve. Therefore, it is considered unlikely that Koalas would use the site.

The proposal is unlikely to have any significant impact on Koalas.

Table 6. Central and Southern Tablelands koala feed tree list

Common name	*Scientific name*
White box	*Eucalyptus albens*
Cabbage gum	*Eucalyptus amplifolia*
Blakely's red gum	*Eucalyptus blakelyi*
River red gum	*Eucalyptus camaldulensis*
Monkey gum	*Eucalyptus cypellocarpa*
Brittle gum	*Eucalyptus mannifera*
Grey gum	*Eucalyptus punctata*
Forest red gum	*Eucalyptus tereticornis*
Ribbon gum	*Eucalyptus viminalis*
High use:	
White stringybark	*Eucalyptus globoidea*
Inland scribbly gum	*Eucalyptus rossii*
Hard-leaved scribbly gum	*Eucalyptus sclerophylla*
Blue-leaved stringybark	*Eucalyptus agglomerata*
Coast grey box	*Eucalyptus bosistoana*
Apple box	*Eucalyptus bridgesiana*
Fuzzy box	*Eucalyptus conica*
Mountain gum	*Eucalyptus dalrympleana*
Tumbledown red gum	*Eucalyptus dealbata*
Broad-leaved peppermint	*Eucalyptus dives*
River peppermint	*Eucalyptus elata*
Narrow-leaved or thin-leaved stringybark	*Eucalyptus eugenioides*
Broad-leaved red ironbark	*Eucalyptus fibrosa*)
Bundy	*Eucalyptus goniocalyx*
Red stringybark	*Eucalyptus macrorhyncha*
Maiden's blue gum	*Eucalyptus maidenii*
Yellow box	*Eucalyptus melliodora*
Western grey box	*Eucalyptus microcarpa*
Large-flowered bundy	*Eucalyptus nortonii*
Messmate	*Eucalyptus obliqua*
Stringybark	*Eucalyptus oblonga*

Common name	*Scientific name*
Grey ironbark	*Eucalyptus paniculata*
White Sally or snow gum	*Eucalyptus pauciflora*
Sydney peppermint	*Eucalyptus piperita*
Red box	*Eucalyptus polyanthemos*
White-topped box	*Eucalyptus quadrangulata*
Narrow-leaved peppermint	*Eucalyptus radiata*
Candlebark	*Eucalyptus rubida*
Mugga ironbark	*Eucalyptus sideroxylon*
Silvertop ash	*Eucalyptus sieberi*

7.3 Upper Lachlan LEP 2010

7.3.1 Clause 6.2 Biodiversity

Under *Upper Lachlan Local Environmental Plan 2010* (Upper Lachlan LEP 2010), the entire property is identified on the Natural Resources Sensitivity—Biodiversity Map). Table 7 assesses the proposal against the clause.

Table 7. Assessment against Clause 6.2 of Upper Lachlan LEP 2010

Clause	Assessment
(3) Before determining a development application for land to which this clause applies, the consent authority must consider any adverse impact from the proposed development on— *(a) a native ecological community, and*	The property and adjacent road reserve contains remnant native trees. The trees are associated with PCT 3347, which is not associated with any TECs.
(b) the habitat of any threatened species, populations or ecological community, and	The proposal requires removal of 1,097 m^2 of native tree canopy within the property and adjacent road reserve. The rest of the property and adjacent road reserve contains exotic species, which would also be removed. Five-part tests of significance were undertaken for threatened species that may find suitable habitat within the property and adjacent road reserve (refer to Appendix D). The tests found that the proposal would not have a significant effect on any threatened species or their habitats.
(c) a regionally significant species of fauna and flora or habitat, and	The LEP does not define 'regionally significant' species, therefore, the proposal cannot be assessed against this clause. However, as stated above Five-part tests of significance were undertaken (refer to Appendix D) which found that the proposal would not have a significant effect.
(d) a habitat element providing connectivity.	The property is surrounded by residential, rural residential and rural land, and is not considered to provide key habitat connectivity.
(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that— *(a) the development is designed, sited and will be managed to avoid any adverse environmental impact, or* *(b) if that impact cannot be avoided—the development is designed, sited and will be managed to minimise that impact, or* *(c) if that impact cannot be minimised—the development will be managed to mitigate that impact.*	The proposal requires removal of 1,097 m^2 of native tree canopy within the property and adjacent road reserve. The rest of the property and adjacent road reserve contains exotic species, which would also be removed. In relation to (a), the proposal has not been designed to avoid adverse environmental impacts. In relation to (b), the proposal has not been designed to minimise adverse environmental impacts. In relation to (c), the impacts of vegetation removal would be mitigated by the conditions of consent detailed in section 10 of this report.

7.4 Upper Lachlan DCP

7.4.1 Section 4.2.6 Biodiversity management

The objectives of this section of the DCP are:

- *"To protect ecological and biodiversity values of environmentally sensitive areas,*
- *To maintain and enhance significant habitat and ecological corridors, and*
- *To ensure connectivity between areas of native vegetation and habitat with and external to the site."*

Regional corridors

One of the controls under this section of the DCP relates to regional habitat and ecological corridors, stating that: *"Existing regional habitat and ecological corridors (local or strategic linkage) are retained and enhanced."*

The DCP doesn't specify where "regional habitat" and "ecological corridors" are located within the LGA.

The property is located between urban and rural land, with no continuous canopy or understorey. The property is not considered to be part of an ecological corridor. Therefore, the provisions of this section of the DCP do not apply to the property.

High and Medium Conservation Value areas

One of the controls under this section of the DCP relates to land mapped as containing *High Conservation Values* or *Medium Conservation Values*.

The Upper Lachlan LEP 2010 does not contain maps of *High Conservation Values* or *Medium Conservation Values*. It contains a *Natural Resources Sensitivity—Biodiversity Map*, which is equivalent.

The property is identified on the *Natural Resources Sensitivity—Biodiversity Map*.

Table 8 assesses the proposal against the provisions for High and Medium Conservation Value areas.

Table 8. Assessment against Upper Lachlan DCP 2010 - High and Medium Conservation Value areas

Clause	Assessment
All native vegetation in medium or high condition should be retained and protected.	The Arboricultural Impact Assessment Report (AIAR) for the proposal assesses the condition of trees on the property and in the adjacent road reserve. There are 19 native trees in this area: Six are in good condition. Eleven are in fair condition. Two are in poor condition. All native trees on the property, and some native trees in the adjacent road reserve, would be removed for the following reasons: The land slopes down towards the west. Earthworks are proposed to reduce the slope of the land. Some trees in the road reserve would be removed to facilitate vehicle access to the proposed lots.
Hollow-bearing trees and other important habitat resources, i.e. known or potential feed trees for Glossy Black Cockatoos, should be retained and protected.	There are no Casuarina or Allocasuarina trees within the property that could provide food for Glossy Black Cockatoos. One hollow-bearing tree was observed (tree 2955), a Snow Gum. The hollow is vertical and less than 10 cm in diameter (Figure 9 & Figure 10). It has limited habitat value. This tree is proposed for removal.
Native vegetation and important habitat resources should be appropriately buffered from development and associated activities.	The proposal involves removal of all native trees on the property and in the adjacent road reserve. No buffer is required.
Livestock should be excluded from areas identified as supporting high conservation value (HCV) vegetation or medium conservation value (MCV) vegetation, except where a plan has been developed for 'managed seasonal grazing'.	N/A – the property is not currently used for grazing.
Plant species known to be invasive should not be permitted in any lands that are known to support HCV or MCV vegetation.	One Priority Weed for the South East was detected during the survey: Blackberry (*Rubus spp.*). After the proposal is approved, the property would be cleared and the Blackberry would be removed.
Wherever possible development and activities should be designed to achieve net improvements in biodiversity values i.e. through the protection and enhancement of MCV, HCV and the enhancement of local and regional corridors.	This provision is not appropriate in this context of urban development with no connectivity to surrounding habitat.

7.5 EPBC Act

Under the EPBC Act a referral is required to the Australian Government for proposed actions that have the potential to significantly impact on Matters of National Environmental Significance (MNES) or the environment of Commonwealth land. Section 9 of this report assesses the proposal's impact on MNES and the environment of Commonwealth land. There is unlikely to be a significant impact on relevant matters of MNES or the environment of Commonwealth land. Accordingly, the proposal has not been referred to the Australian Government under the EPBC Act.

8. BOS entry thresholds - assessment

8.1 Threshold One: BC Regulation 2017 clearing area threshold

The BOS clearing thresholds are detailed in Section 7.2 of the Biodiversity Conservation Regulation 2017 (BC Regulation) and are based on Minimum Lot Size or actual lot size. The thresholds are shown in Table 9.

Table 9. Areas section 7.2(4) Biodiversity Conservation Regulation 2017

Minimum lot size of land	Area clearing threshold
Less than 1 hectare	0.25 hectare or more
Less than 40 hectares but not less than 1 hectare	0.5 hectare or more
Less than 1,000 hectares but not less than 40 hectares	1 hectare or more
1,000 hectares or more	2 hectares or more

The property has a Minimum Lot Size of 800 m^2 under Upper Lachlan LEP 2010, meaning that the clearing threshold for the land is 2,500 m^2.

The proposal will require the removal of 1,097 m^2 of native tree canopy, as shown in Figure 8. This does not exceed the clearing threshold.

8.2 Threshold Two: Clearing or prescribed activities as listed in the Biodiversity Conservation Regulation 2017 on land included on the Biodiversity Values Map

The property and adjacent road reserve are not identified on the Biodiversity Values Map.

8.3 Threshold 3: Five-part test summary

Under Section 7.3 of the Biodiversity Conservation Act several factors (listed in Appendix D) need to be considered in deciding whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats. If there is likely to be a significant effect on threatened species, etc., the proposal triggers entry into the BOS.

While the overall proposal incorporates mitigating considerations, these are not taken into account in determining the outcome of the five-part tests.

Five-part tests were undertaken for Little Eagle, Spotted Harrier, Gang-gang Cockatoo, Varied Sittella, Dusky Woodswallow, Flame Robin & Grey-headed Flying-fox (refer to Appendix D).

The proposal would not have a significant effect on any threatened species, populations or ecological communities, or their habitats. Therefore, the proposal does not trigger entry into the BOS.

9. EPBC Act assessment

The Protected Matters Search Tool was used on 13 November 2024 to find relevant Matters of National Environmental Significance (MNES) within a 10 km radius of the property (Commonwealth DCCEEW, 2024). The report is attached in Appendix F.

There are no World Heritage Properties, National Heritage Places, Wetlands of International Importance or Commonwealth Marine Areas within the search radius.

Two (2) TECs are listed as *likely to occur* within the property (Table 10).

Table 10. TECs listed in PMST search results

TEC code	Name	Threatened category
152	*Natural Temperate Grassland of the South Eastern Highlands*	Critically Endangered
43	*White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*	Critically Endangered

No TECs were identified during the site survey.

Thirty-five Threatened Species are listed as *may occur, likely to occur* or *known to occur* within the property: Swift Parrot, Curlew Sandpiper, Koala, Hoary Sunray, Australian Painted Snipe, Large-eared Pied Bat, Spotted-tail Quoll, Key's Matchstick Grasshopper, South-eastern Hooded Robin, Gang-gang Cockatoo, Silver Perch, Greater Glider, Basalt Pepper-cress, Macquarie Perch, Booroolong Frog, River Swamp Wallaby-grass, Southern Bell Frog, Black Gum, Sharp-tailed Sandpiper, Large-fruit Fireweed, Golden Sun Moth, Superb Parrot, Southern Whiteface, Grey Falcon, Blue-winged Parrot, Yellow-bellied Glider (south-eastern), Diamond Firetail, White-throated Needletail, Striped Legless Lizard, South-eastern Glossy Black-Cockatoo, Brown Treecreeper, Austral Toadflax, Latham's Snipe, Pink-tailed Worm-lizard, and Painted Honeyeater.

No Threatened Species were identified during the site survey. The habitat on site is not likely to support a population of any of these species.

Eight (8) Migratory Species are listed as *may occur* or *likely to occur* within the property: Fork-tailed Swift, Sharp-tailed Sandpiper, Pectoral Sandpiper, Curlew Sandpiper, Yellow Wagtail, Common Sandpiper, White-throated Needletail and Latham's Snipe.

No Migratory Species were identified during the site survey.

No referral to the Commonwealth Government is needed under the EPBC Act for impacts to TECs, Threatened Species or Migratory Species.

10. Conclusion and Recommendations

None of the three thresholds are triggered as follows:

1. Area of clearing
2. Biodiversity Land Map – clearing or prescribed biodiversity impacts
3. Five Part Tests

The proposal doesn't trigger entry into the BOS. Therefore, a Biodiversity Development Assessment Report (BDAR) is not required.

There is unlikely to be a significant impact on relevant matters of MNES or the environment of Commonwealth land. Accordingly, the proposal has not been referred to the Australian Government under the EPBC Act.

The proposal is not expected to have any indirect impacts on the ecology of surrounding properties.

To meet the principles of ecologically sustainable development, the objects of the EP&A Act and the objects of the BC Act, we recommend that the following conditions are added to the consent:

- Prior to the start of tree clearing, a pre-clearance survey should undertaken by a suitably qualified Fauna Spotter Catcher/Project Ecologist to identify and relocate any protected animals that may be impacted by the works.
  Reason: to reduce the risk of harm to "protected animals" as defined by Schedule 5 of the *Biodiversity Conservation Act 2016*.

- Three (3) nest boxes must be installed for each tree hollow removed. The number of tree hollows removed is to be confirmed by the pre-clearance survey conducted by the appointed Fauna Spotter Catcher/Project Ecologist. They must be installed within the property or adjacent location with landholder permission, in accordance with the guidance provided in Appendix A of the Prescribed Ecological Actions Report. In the absence of trees, nest boxes may be installed onto poles on the site. Installation does not need to be supervised by a project ecologist; however a project ecologist must review the locations and confirm they have been installed correctly.
  Reason: to mitigate the impacts of habitat removal and to provide breeding habitat for native fauna.

- Where possible, any future landscaping should use species from PCT 3347: *Southern Tableland Creekflat Ribbon Gum Forest*, as detailed in Appendix B of the Prescribed Ecological Actions Report.
  Reason: To provide foraging habitat for native fauna.

11. Bibliography

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Appendix A Nest box installation guidance

General guidance:

- Ideally boxes should be installed on large, mature trees, close to or on the main trunk or a thick horizontal limb. However, they can also be installed on buildings or on poles. As high as possible to prevent predation but low enough to be safely accessible for monitoring and maintenance.
- Bird boxes should face away from hot afternoon sun.
- Bat boxes should be installed with different orientations, one facing north, for use in winter. During summer the bats will avoid the hot afternoon sun by using a south or south-east facing box.
- Boxes should face away from prevailing winds and nighttime lights.
- Bird boxes should be placed on a vertical or slightly forward-angled trunk, to reduce rainwater entry.
- Installing a smooth collar of metal or plastic around the base of the tree or pole will reduce the chance of predation by cats and rats.

Species-specific guidance for nest box installation

Species	Nest box installation guidance
Brush-tailed Possum	Ideally, the box should be at least 4 meters from the ground, to provide protection from predators and pests. The box should face away from prevailing winds and should not face towards the afternoon sun. If it is not possible to avoid both the winds and direct sunshine, having a baffle attached will help.
Kookaburra	Ideally, the box should be installed 5-10 m off the ground.
Lorikeet	Ideally, the boxes should be installed 4-8 m off the ground. As low as 2 m off the ground can work but is not ideal.
Small or large parrot	Ideally, the boxes should be installed 4-14 m off the ground.
Wood duck	The boxes should be installed: • A minimum of 1.8 m from the ground. • Where there is a clear flight path to the box entrance.
Microbat	The boxes should be installed: • Ideally 4-6 m from the ground. • Select trees with no branches below 6 m so there is no clutter obstructing the bat flight path. • Away from nocturnal light sources such as street lights. Bats prefer having many roosts within a short distance of one another; they can change roost daily in response to temperatures, parasites, and to avoid predators. For this reason, boxes should be installed facing different orientations.

Appendix B Recommended planting species list

PCT 3347 tree species

Common Name	*Scientific name*
Ribbon Gum	*Eucalyptus viminalis*
Snow Gum	*Eucalyptus pauciflora*
Silver Wattle	*Acacia dealbata*
Black Sally	*Eucalyptus stellulata*
Blackwood	*Acacia melanoxylon*
Candlebark	*Eucalyptus rubida*
Apple Box	*Eucalyptus bridgesiana*
Broad-leaved Peppermint	*Eucalyptus dives*
Mountain Gum	*Eucalyptus dalrympleana*
Swamp Gum	*Eucalyptus ovata*
Black Wattle	*Acacia decurrens*
Black Gum	*Eucalyptus aggregata*
Cabbage Gum	*Eucalyptus amplifolia*
Red Stringybark	*Eucalyptus macrorhyncha*
Brittle Gum	*Eucalyptus mannifera*
Yellow Box	*Eucalyptus melliodora*
Brittle Gum	*Eucalyptus praecox*

Non-tree species that occur at a frequency of greater than 10% in PCT 3347

Type	Common name	*Scientific name*
Shrub	Native Raspberry	*Rubus parvifolius*
Shrub		*Cassinia longifolia*
Shrub	Native Blackthorn	*Bursaria spinosa*
Shrub	Hoary Guinea Flower	*Hibbertia obtusifolia*
Shrub	Honeypots	*Acrotriche serrulata*
Shrub	River Lomatia	*Lomatia myricoides*
Shrub	Peach Heath	*Lissanthe strigosa*
Shrub	Urn Heath	*Melichrus urceolatus*

Type	Common name	*Scientific name*
Fern	Bracken	*Pteridium esculentum*
Grass & grasslike	Weeping Grass	*Microlaena stipoides*
Grass & grasslike	Tussock	*Poa labillardierei var. labillardierei*
Grass & grasslike	Snowgrass	*Poa sieberiana*
Grass & grasslike	Wheatgrass, Common Wheatgrass	*Elymus scaber*
Grass & grasslike		*Themeda triandra*
Grass & grasslike	Tall Sedge	*Carex appressa*
Grass & grasslike	Wallaby Grass	*Rytidosperma racemosum*
Grass & grasslike	Knob Sedge	*Carex inversa*
Grass & grasslike	Spiny-headed Mat-rush	*Lomandra longifolia*
Grass & grasslike	Forest Hedgehog Grass	*Echinopogon ovatus*
Grass & grasslike	Wattle Matt-rush	*Lomandra filiformis*
Grass & grasslike	Wallaby Grass	*Rytidosperma laeve*
Grass & grasslike		*Poa meionectes*
Grass & grasslike		*Dichelachne inaequiglumis*
Grass & grasslike	Shorthair Plumegrass	*Dichelachne micrantha*
Grass & grasslike	Finger Rush	*Juncus subsecundus*
Grass & grasslike	Woodrush	*Luzula flaccida*
Grass & grasslike	Smooth-flowered Wallaby Grass	*Rytidosperma pilosum*
Forb	Kidney Weed	*Dichondra repens*
Forb	Bidgee-widgee	*Acaena novae-zelandiae*
Forb	Stinking Pennywort	*Hydrocotyle laxiflora*
Forb	Native Geranium	*Geranium solanderi*
Forb	Native Violet	*Viola betonicifolia*
Forb	Prickly Starwort	*Stellaria pungens*
Forb	Poverty Raspwort	*Gonocarpus tetragynus*
Forb	Swamp Dock	*Rumex brownii*
Forb	Small St John's Wort	*Hypericum gramineum*
Forb	Australian Carraway	*Oreomyrrhis eriopoda*
Forb		*Oxalis perennans*
Forb	Common Woodruff	*Asperula conferta*
Forb	Acaena	*Acaena ovina*
Forb		*Euchiton japonicus*

Type	Common name	*Scientific name*
Forb	Bear's Ear	*Cymbonotus lawsonianus*
Forb	Small Poranthera	*Poranthera microphylla*
Forb	Hairy Speedwell	*Veronica calycina*
Forb	Prickly Woodruff	*Asperula scoparia*
Forb		*Cynoglossum australe*
Forb	Trailing Speedwell	*Veronica plebeia*
Forb		*Plantago varia*
Forb	Sheep's Burr	*Acaena echinata*
Forb	Two-flowered Knawel	*Scleranthus biflorus*
Forb	Common Buttercup	*Ranunculus lappaceus*
Forb	Cotton Fireweed	*Senecio quadridentatus*
Forb	Button Everlasting	*Coronidium scorpioides*
Forb		*Senecio prenanthoides*
Forb	Solengyne	*Solenogyne gunnii*
Forb	Tall Bluebell	*Wahlenbergia stricta*
Forb		*Epilobium billardierianum*
Forb		*Geranium potentilloides*
Forb		*Oxalis exilis*
Forb	Variable Raspwort	*Haloragis heterophylla*
Forb	Matted Pratia, Trailing Pratia	*Lobelia pedunculata*
Forb	Pale Vanilla-lily	*Arthropodium milleflorum*
Forb	Austral Bear's Ear	*Cymbonotus preissianus*
Forb	Slender Tick-trefoil	*Desmodium gunnii*
Forb		*Geranium neglectum*
Forb		*Veronica gracilis*
Forb	Blueberry Lily	*Dianella longifolia*
Forb	Star Cudweed	*Euchiton involucratus*
Forb		*Senecio diaschides*
Forb	Climbing Saltbush	*Einadia nutans*
Forb		*Hovea linearis*
Other	Twining glycine	*Glycine clandestina*
Other	Slender Tick-trefoil	*Desmodium varians*
Other	Variable Glycine	*Glycine tabacina*

Appendix C Likelihood of occurrence for BioNet results

Name	Preferred habitat	Likelihood of occurrence
Little Eagle *Hieraaetus morphnoides*	• *"Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used.* • *Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter."*	The property contains suitable breeding and foraging habitat.
Spotted Harrier *Circus assimilis*	• *"Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands.* • *Builds a stick nest in a tree and lays eggs in spring (or sometimes autumn), with young remaining in the nest for several months.* • *Preys on terrestrial mammals (eg bandicoots, bettongs, and rodents), birds and reptile, occasionally insects and rarely carrion."*	The property contains suitable breeding and foraging habitat.
Gang-gang Cockatoo *Callocephalon fimbriatum*	• *"In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests.* • *In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas.* • *May also occur in sub-alpine Snow Gum (Eucalyptus pauciflora) woodland and occasionally in temperate rainforests.* • *Favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 7 cm in diameter or larger in eucalypts and 3 metres or more above the ground."*	The property contains suitable foraging habitat. Potential breeding habitat is present.
Varied Sittella *Daphoenositta chrysoptera*	• *"Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.* • *Feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy.*	The property contains suitable breeding and foraging habitat.

Name	Preferred habitat	Likelihood of occurrence
	• *Builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years."*	
Dusky Woodswallow *Artamus cyanopterus cyanopterus*	• *"Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.* • *Primarily eats invertebrates, mainly insects, which are captured whilst hovering or sallying above the canopy or over water. Also frequently hovers, sallies and pounces under the canopy, primarily over leaf litter and dead timber. Also occasionally take nectar, fruit and seed.* • *Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.* • *Primarily eats invertebrates, mainly insects, which are captured whilst hovering or sallying above the canopy or over water. Also frequently hovers, sallies and pounces under the canopy, primarily over leaf litter and dead timber. Also occasionally take nectar, fruit and seed."*	The property contains suitable breeding and foraging habitat.
Flame Robin *Petroica phoenicea*	• *"Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes.* • *Prefers clearings or areas with open understoreys.* • *The groundlayer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense.* • *Occasionally occurs in temperate rainforest, and also in herbfields, heathlands, shrublands and sedgelands at high altitudes.* • *In winter, birds migrate to drier more open habitats in the lowlands (i.e. valleys below the ranges, and to the western slopes and plains).*	The property contains suitable breeding and foraging habitat.

Name	Preferred habitat	Likelihood of occurrence
	• *Often occurs in recently burnt areas; however, habitat becomes unsuitable as vegetation closes up following regeneration.* • *In winter lives in dry forests, open woodlands and in pastures and native grasslands, with or without scattered trees.* • *In winter, occasionally seen in heathland or other shrublands in coastal areas.* • *Birds forage from low perches, from which they sally or pounce onto small invertebrates which they take from the ground or off tree trunks, logs and other coarse woody debris.* • *Nests are often near the ground and are built in sheltered sites, such as shallow cavities in trees, stumps or banks."*	
Grey-headed Flying-fox *Pteropus poliocephalus*	• *"Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.* • *Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.* • *Can travel up to 50 km from the camp to forage; commuting distances are more often <20 km.* • *Feed on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines.* • *Also forage in cultivated gardens and fruit crops."*	The property contains suitable foraging habitat. No suitable breeding habitat is present.
Black Gum *Eucalyptus aggregata*	• *"Grows in the lowest parts of the landscape.* • *Grows on alluvial soils, on cold, poorly-drained flats and hollows adjacent to creeks and small rivers.* • Often grows with other cold-adapted eucalypts, such as Snow Gum or White Sallee (*Eucalyptus pauciflora*), Manna or Ribbon Gum (*E. viminalis)*, Candlebark *(E. rubida)*, Black Sallee (*E. stellulata)* and Swamp Gum (*E. ovata)*. Black Gum usually occurs in an open woodland formation with a grassy groundlayer dominated either by River Tussock (*Poa labillardierei)* or Kangaroo Grass (*Themeda australis),* but with few shrubs. • *Also occurs as isolated paddock trees in modified native or exotic pastures."*	There are no creeks or rivers on or near the property that would provide suitable habitat.

Likelihood of Occurrence

Factors determining the likelihood of occurrence for a particular species include:

- Specific habitat requirements (e.g. aquatic, seasonal, tree hollows, rock outcrop, woody debris, etc),
- Geological / edaphic (soil) characteristics,
- Known distribution (records),
- Climate.

Probability	Description
Unlikely (none)	No suitable habitat or connectivity to suitable habitat offsite. Not known from local area. Not detected on site.
Low	Low value suitable habitat (e.g. highly disturbed conditions; Small habitat/forage areas; High-level weed-invasion; Cleared with fragmented regrowth). Not known from local area. Not detected on site.
Moderate	Moderate value suitable habitat (e.g. Disturbed, weed-invaded; Foraging/roosting habitat present; Habitat corridor). Not detected on site.
High	High value suitable habitat (e.g. breeding/foraging/roosting habitat present; Low or nil weed presence; Habitat corridor). Not detected on site.
Known	Species known to occur within the site (e.g. breeding and foraging habitat; foraging habitat; Habitat corridor). Detected on or adjacent to the site.

Appendix D Five-part tests

While the overall proposal incorporates mitigating considerations, these are not taken into account in determining the outcome of the five-part tests. This is in accordance with the Threatened Species Test of Significance Guidelines, which state that *"Measures that offset or otherwise compensate for the development or activity should not be considered in determining the degree of the effect on threatened species or ecological communities."* (NSW OEH, 2018)

The five-part tests are undertaken in accordance with sections 7.2 and 7.3 of the BC Act, which state:

"7.2 Development or activity "likely to significantly affect threatened species"

(1) For the purposes of this Part, development or an activity is "likely to significantly affect threatened species" if:

(a) it is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in section 7.3, or

(b) the development exceeds the biodiversity offsets scheme threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity values, or

(c) it is carried out in a declared area of outstanding biodiversity value.

(2) To avoid doubt, subsection (1) (b) does not apply to development that is an activity subject to environmental impact assessment under Part 5 of the Environmental Planning and Assessment Act 1979."

"7.3 Test for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats

(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

(a) in the case of a threatened species, whether the proposed development or activity 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

(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

(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,

(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

(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

(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,

(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),

(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."

Diurnal raptors

Common name	*Scientific name*	NSW Status	Comm. Status
Little Eagle	*Hieraaetus morphnoides*	V,P	
Spotted Harrier	*Circus assimilis*	V,P	

Little Eagle *Hieraaetus morphnoides*

- *"Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used.*
- *Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter.*
- *Lays two or three eggs during spring, and young fledge in early summer.*
- *Preys on birds, reptiles and mammals, occasionally adding large insects and carrion."*

Spotted Harrier *Circus assimilis*

- *"Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands.*
- *Builds a stick nest in a tree and lays eggs in spring (or sometimes autumn), with young remaining in the nest for several months.*
- *Preys on terrestrial mammals (eg bandicoots, bettongs, and rodents), birds and reptile, occasionally insects and rarely carrion."*
- In the South Eastern Highlands IBRA Region the species is not associated with PCT 3347.

Five Part Test

a. in the case of a threatened species, whether the proposed development or activity 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,

No. The property and adjacent road reserve contains 1,097 m^2 of native tree canopy (19 trees), some of which may provide suitable breeding habitat for Little Eagle and Spotted Harrier. However, the property is close to large areas of rural land that are used for grazing, which contain native trees. These trees provide suitable breeding habitat for Little Eagle and Spotted Harrier.

The property is 2.1 ha in area. It contains trees, shrubs, and groundcover, which may provide habitat for small animals that are prey for Little Eagle and Spotted Harrier. The proposal involves clearing of the entire property and some trees within the road reserve. However, the property is close to large areas of rural land that are used for grazing. This land provides suitable foraging habitat for Little Eagle and Spotted Harrier.

Overall, the proposal removes a small amount of breeding foraging habitat compared to the habitat available in the region.

The extent of clearing is minor and unlikely to have an adverse effect on the life cycle of Little Eagle and Spotted Harrier such that a local viable population will be placed at risk of extinction.

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. This test is for a group of threatened species.

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. This test is for a group of threatened species.

c. in relation to the habitat of a threatened species, population 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

The property is 2.1 ha in area. The proposal involves clearing of the entire property and some trees within the road reserve. This would remove possible foraging habitat for Little Eagle and Spotted Harrier.

The property is close to large areas of rural land that are used for grazing. This land provides suitable foraging habitat for Little Eagle and Spotted Harrier.

Overall, the proposal removes a small amount of foraging habitat compared to the habitat available in the region.

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

No. The property is located within an existing residential/rural area and is already highly fragmented.

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

Negligible.

Criterion	Comment
Area and quality of habitat within the locality	The property is close to large areas of rural land that are used for grazing. This land provides suitable foraging habitat for Little Eagle and Spotted Harrier.
Area and quality of habitat on site in relation to the area and quality of habitat in the locality.	Similar habitat is available on nearby properties. There are large areas of quality habitat in the area.
Role of habitat to be affected in sustaining habitat connectivity in the locality.	The property is located within an existing residential/rural area and provides minimal connectivity in a highly fragmented landscape.
Ecological integrity of habitat to be affected on site, in relation to the ecological integrity, tenure and security of the habitat which will remain both on site and in the locality.	The proposal involves removal of 1,097 m^2 of native tree canopy. Since this comprises a small number of scattered trees in an urban area, this is not expected to impact the ecological integrity of other habitat available in the locality.

a. 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. The proposal is not located within or near an area of outstanding biodiversity value (NSW DCCEEW, 2024). The proposal will not impact an area of outstanding biodiversity value.

b. whether the proposed development or activity constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Yes. The proposal involves removal of 1,097 m^2 of native tree canopy, which is part of the Clearing of native vegetation Key Threatening Process. Since this comprises a small number of scattered trees in an urban area, this is not expected to impact the ecological integrity of other habitat available in the locality.

Conclusion

The proposal is unlikely to have a significant effect on Little Eagle or Spotted Harrier.

Woodland Birds

Common name	*Scientific name*	NSW status	Comm. status
Gang-gang Cockatoo	*Callocephalon fimbriatum*	E1,P,3	E
Varied Sittella	*Daphoenositta chrysoptera*	V,P	
Dusky Woodswallow	*Artamus cyanopterus cyanopterus*	V,P	
Flame Robin	*Petroica phoenicea*	V,P	

Gang-gang Cockatoo - *Callocephalon fimbriatum*

- *"In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests.*
- *In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands,particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas.*
- *May also occur in sub-alpine Snow Gum (Eucalyptus pauciflora) woodland and occasionally in temperate rainforests.*
- *Favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 10 cm in diameter or larger and at least 9 m above the ground in eucalypts."*

Varied Sittella - *Daphoenositta chrysoptera*

- *"Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.*
- *Feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy.*
- *Builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years."*

Dusky Woodswallow - *Artamus cyanopterus cyanopterus*

- *"Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.*
- *Primarily eats invertebrates, mainly insects, which are captured whilst hovering or sallying above the canopy or over water. Also frequently hovers, sallies and pounces under the canopy, primarily over leaf litter and dead timber. Also occasionally take nectar, fruit and seed.*
- *Depending on location and local climatic conditions (primarily temperature and rainfall), the dusky woodswallow can be resident year round or migratory. In NSW, after breeding, birds migrate to the north*

of the state and to southeastern Queensland, while Tasmanian birds migrate to southeastern NSW after breeding. Migrants generally depart between March and May, heading south to breed again in spring. There is some evidence of site fidelity for breeding. Although dusky woodswallows generally breed as solitary pairs or occasionally in small flocks, large flocks may form around abundant food sources in winter. Large flocks may also form before migration, which is often undertaken with other species.

- *Nest is an open, cup-shape, made of twigs, grass, fibrous rootlets and occasionally casuarina needles, and may be lined with grass, rootlets or infrequently horsehair, occasionally unlined. Nest sites vary greatly, but generally occur in shrubs or low trees, living or dead, horizontal or upright forks in branches, spouts, hollow stumps or logs, behind loose bark or in a hollow in the top of a wooden fence post. Nest sites may be exposed or well concealed by foliage."*

Flame Robin - ***Petroica phoenicea***

- *"Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes.*
- *Prefers clearings or areas with open understoreys.*
- *The groundlayer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense.*
- *Occasionally occurs in temperate rainforest, and also in herbfields, heathlands, shrublands and sedgelands at high altitudes.*
- *In winter, birds migrate to drier more open habitats in the lowlands (i.e. valleys below the ranges, and to the western slopes and plains).*
- *Often occurs in recently burnt areas; however, habitat becomes unsuitable as vegetation closes up following regeneration.*
- *In winter lives in dry forests, open woodlands and in pastures and native grasslands, with or without scattered trees.*
- *In winter, occasionally seen in heathland or other shrublands in coastal areas.*
- *Birds forage from low perches, from which they sally or pounce onto small invertebrates which they take from the ground or off tree trunks, logs and other coarse woody debris.*
- *Flying insects are often taken in the air and sometimes gleans for invertebrates from foliage and bark.*
- *In their autumn and winter habitats, birds often sally from fence-posts or thistles and other prominent perches in open habitats.*
- *Occur singly, in pairs, or in flocks of up to 40 birds or more; in the non-breeding season they will join up with other insectivorous birds in mixed feeding flocks.*
- *Breeds in spring to late summer.*
- *Nests are often near the ground and are built in sheltered sites, such as shallow cavities in trees, stumps or banks."*
- In the South Eastern Highlands IBRA Region the species is not associated with PCT 3347.

a. in the case of a threatened species, whether the proposed development or activity 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,

No. The property contains native trees, exotic trees, exotic shrubs and exotic groundcover.

Breeding habitat:

- There are a limited number of tree that could potentially provide breeding habitat for Gang-gang Cockatoos.
- There are trees which could provide breeding habitat for Varied Sittella.
- There are shrubs and trees which could provide breeding habitat for Dusky Woodswallow.
- There are sheltered areas close to the ground which could provide suitable breeding habitat for Flame Robin.

Foraging habitat:

- There are eucalypts, hawthorns and fruit trees that provide food for Gang-gang Cockatoo.
- There are trees which could provide a home for arthropods, which are prey for Varied Sittella.
- There are trees, shrubs and groundcover which could provide provide a home for arthropods, which are prey for Dusky Woodswallow.
- There are trees, logs and coarse woody debris which could provide provide a home for arthropods, which are prey for Flame Robin.

Surrounding land:

- The property is close to large areas of rural land that are used for grazing, which contain native trees. This land provides suitable breeding and foraging habitat for Gang-gang Cockatoo, Varied Sittella, Dusky Woodswallow and Flame Robin.
- Overall, the proposal removes a small amount of potential breeding and foraging habitat compared to the habitat available in the region.

The extent of clearing is minor and unlikely to have an adverse effect on the life cycle of any threatened bird such that a local viable population will be placed at risk of extinction.

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. This test is for a group of threatened species.

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. This test is for a group of threatened species.

c. in relation to the habitat of a threatened species, population 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

The property is 2.1 ha in area. The proposal involves clearing of the entire property and some trees within the road reserve. This would remove possible breeding and foraging habitat for Varied Sittella, Dusky Woodswallow, Flame Robin, and Gang-gang Cockatoo.

Overall, the proposal removes a small amount of habitat compared to the habitat available in the region.

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

No. The property is located within an existing residential area and does not provide any habitat connectivity.

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

Negligible.

Criterion	Comment
Area and quality of habitat within the locality	The property is close to large areas of rural land that are used for grazing. This land provides suitable breeding and foraging habitat for Gang-gang Cockatoo, Varied Sittella, Dusky Woodswallow and Flame Robin.
Area and quality of habitat on site in relation to the area and quality of habitat in the locality	Similar habitat is available on nearby properties. There are large areas of quality habitat in the area.
Role of habitat to be affected in sustaining habitat connectivity in the locality	The property is located within an existing residential area and does not provide any habitat connectivity.
Ecological integrity of habitat to be affected on site, in relation to the ecological integrity, tenure and security of the habitat which will remain both on site and in the locality.	The proposal involves removal of 1,097 m^2 of native tree canopy. Since this comprises a small number of scattered trees in an urban area, this is not expected to impact the ecological integrity of other habitat available in the locality.

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. The proposal is not located within or near an area of outstanding biodiversity value (NSW DCCEEW, 2024). The proposal will not impact an area of outstanding biodiversity value.

e. whether the proposed development or activity constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Yes. The proposal involves removal of 1,097 m^2 of native tree canopy, which is part of the Clearing of native vegetation Key Threatening Process. Since this comprises a small number of scattered trees in an urban area, this is not expected to impact the ecological integrity of other habitat available in the locality.

Conclusion

The proposal is unlikely to have a significant effect on any threatened woodland bird species.

Grey-headed Flying-fox

Common name	*Scientific name*	NSW status	Comm. status
Grey-headed Flying-fox	*Pteropus poliocephalus*	V,P	V

- *"Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.*
- *Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.*
- *Individual camps may have tens of thousands of animals and are used for mating, and for giving birth and rearing young.*
- *Annual mating commences in January and conception occurs in April or May; a single young is born in October or November.*
- *Site fidelity to camps is high; some camps have been used for over a century.*
- *Can travel up to 50 km from the camp to forage; commuting distances are more often <20 km.*
- *Feed on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines.*
- *Also forage in cultivated gardens and fruit crops."*

Five Part Test

a. in the case of a threatened species, whether the proposed development or activity 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,

No. This species is likely to feed on the flowering eucalyptus species on the property when they flower as well as the various exotic fruit producing shrubs/trees.

There have been no Grey-headed Flying Foxes observed on the property.

The proposal is unlikely to affect the life cycle of Grey-headed Flying-fox such that a viable local population will be placed at risk of extinction. Any local viable population of Grey-headed Flying-fox will use a wide area for foraging including the large extent of natural vegetation in the Crookwell area.

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. This test is for a threatened species.

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. This test is for a threatened species.

c. in relation to the habitat of a threatened species, population 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

Yes. The property is 2.1 ha in area. The proposal involves clearing of the entire property and some trees within the road reserve. This would remove possible foraging habitat for Grey-headed Flying Fox.

The property is close to large areas of rural land that are used for grazing. This land provides suitable foraging habitat for Grey-headed Flying Fox.

Overall, the proposal removes a small amount of foraging habitat compared to the habitat available in the region.

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

No. The property is located within an existing residential area and does not provide any habitat connectivity.

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

Negligible.

Criterion	Comment
Area and quality of habitat within the locality	The property is close to large areas of rural land that are used for grazing. This land provides suitable foraging habitat for Grey-headed Flying Fox.
Area and quality of habitat on site in relation to the area and quality of habitat in the locality	Similar habitat is available on nearby properties. There are large areas of quality habitat in the area.
Role of habitat to be affected in sustaining habitat connectivity in the locality	The property is located within an existing residential area and does not provide any habitat connectivity.
Ecological integrity of habitat to be affected on site, in relation to the ecological integrity, tenure and security of the habitat which will remain both on site and in locality.	The proposal involves removal of 1,097 m^2 of native tree canopy. Since this comprises a small number of scattered trees in an urban area, this is not expected to impact the ecological integrity of other habitat available in the locality.

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. The proposal is not located within or near an area of outstanding biodiversity value (NSW DCCEEW, 2024). The proposal will not impact an area of outstanding biodiversity value.

e. whether the proposed development or activity constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Yes. The proposal involves removal of 1,097 m^2 of native tree canopy, which is part of the Clearing of native vegetation Key Threatening Process. Since this comprises a small number of scattered trees in an urban area, this is not expected to impact the ecological integrity of other habitat available in the locality.

Conclusion

The proposed activity is unlikely to have a significant effect on Grey-headed Flying-fox.

Appendix E Flora species list

The location of the BAM plots is shown in section 3.3 of this report.

Native flora

Family	*Scientific name*	Common name
Geraniaceae	*Geranium solanderi*	Native Geranium
Myrtaceae	*Eucalyptus pauciflora*	Snow Gum
	Eucalyptus albens	White Box
	Eucalyptus bridgesiana	Apple Box
Poaceae	*Poa labillardierei*	Tussock
	Themeda triandra	Kangaroo Grass
Rosaceae	*Acaena agnipila*	Hairy Sheep's Burr

Exotic flora

Family	*Scientific name*	Common name	Weed of National Significance?	Priority weed for the South East?
Apiaceae	*Conium maculatum*	Hemlock	No	No
Asteraceae	*Conyza spp.*	Fleabane	No	No
	Crepis capillaris	Smooth Hawksbeard	No	No
	Hypochaeris radicata	Catsear	No	No
	Lactuca serriola	Prickly Lettuce	No	No
	Onopordum acanthium	Scotch Thistle	No	No
	Tragopogon porrifolius	Salsify	No	No
Brassicaceae	*Brassica rapa*	Turnip	No	No
Caryophyllaceae	*Dianthus armeria*	Deptford Pink	No	No
Cupressaceae	*Thuja plicata*	Western Red Cedar	No	No
Euphorbiaceae	*Euphorbia oblongata*	Eggleaf spurge	No	No
Fabaceae (Faboideae)	*Melilotus siculus*	Mediterranean Melilot	No	No
	Trifolium repens	White Clover	No	No
Fabaceae (Mimosoideae)	*Acacia baileyana* (native to NSW, but	Cootamundra Wattle	No	No

Family	*Scientific name*	Common name	Weed of National Significance?	Priority weed for the South East?
	introduced to the region)			
Lamiaceae	*Salvia verbenaca*	Vervain	No	No
Malaceae	*Crataegus monogyna*	Hawthorn	No	No
	Malus pumila	Apple	No	No
Oleaceae	*Ligustrum sinense*	Small-leaved Privet	No	No
	Fraxinus spp.		No	No
Pinaceae	*Pinus radiata*	Radiata Pine	No	No
Plantaginaceae	*Plantago lanceolata*	Lamb's Tongues	No	No
Poaceae	*Bromus catharticus*	Praire Grass	No	No
	Bromus diandrus	Great Brome	No	No
	Bromus hordeaceus	Soft Brome	No	No
	Dactylis glomerata	Cocksfoot	No	No
	Phalaris aquatica	Phalaris	No	No
Polygonaceae	*Rumex acetosella*	Sheep Sorrel	No	No
	Rumex crispus	Curled Dock	No	No
Primulaceae	*Lysimachia arvensis*	Scarlet Pimpernel	No	No
Rosaceae	*Potentilla recta*	Sulphur cinquefoil	No	No
	Prunus cerasifera	Cherry Plum	No	No
	Rubus spp.	Blackberry	Yes	Yes
Rubiaceae	*Galium aparine*	Goosegrass	No	No
Salicaceae	*Populus spp.*		No	No

BAM Plot 1

Scientific name	N, E or H.T.E	Cover	Abundance
Themeda triandra	Alive in NSW, Native	11	300
Plantago lanceolata	Introduced	1.25	100
Rumex crispus	Introduced	0.1	4
Tragopogon porrifolius	Introduced	0.1	4
Dactylis glomerata	Introduced	82	1000
Crepis capillaris	Introduced	0.1	1
Hypochaeris radicata	Introduced	0.1	73
Poa labillardierei	Alive in NSW, Native	0.1	400
Bromus diandrus	High Threat Exotic	0.1	2
Phalaris aquatica	Introduced	0.25	30
Rumex acetosella	Introduced	0.25	150
Salvia verbenaca	Introduced	0.1	4
Dianthus armeria	Introduced	0.1	85
Conyza spp.	Introduced	0.1	61
Potentilla recta	Introduced	0.1	2
Euphorbia oblongata	Introduced	0.1	3
Lysimachia arvensis	Introduced	0.1	53
Onopordum acanthium	Introduced	0.1	2
Bromus hordeaceus	Introduced	0.1	7

BAM Plot 2

Scientific name	N, E or H.T.E	Cover	Abundance
Plantago lanceolata	Introduced	0.75	200
Rumex crispus	Introduced	0.25	60
Tragopogon porrifolius	Introduced	0.1	5
Dactylis glomerata	Introduced	95	1000
Hypochaeris radicata	Introduced	0.3	150
Poa labillardierei	Alive in NSW, Native	0.1	4
Rumex acetosella	Introduced	0.1	4
Salvia verbenaca	Introduced	0.1	2
Potentilla recta	Introduced	0.1	13
Euphorbia oblongata	Introduced	0.1	4
Onopordum acanthium	Introduced	0.1	2
Eucalyptus pauciflora	Alive in NSW, Native	50	2
Crataegus monogyna	High Threat Exotic	25	22
Prunus cerasifera	Introduced	1.3	4
Ligustrum sinense	High Threat Exotic	0.8	2
Bromus catharticus	Introduced	0.1	40
Galium aparine	Introduced	0.1	1
Crepis capillaris	Introduced	0.1	1
Lactuca serriola	Introduced	0.1	1
Geranium solanderi	Alive in NSW, Native	0.1	1
Rubus spp.	Alive in NSW, Native	0.1	1
Brassica rapa	Introduced	0.1	1
Trifolium repens	Introduced	0.1	7
Bromus diandrus	High Threat Exotic	0.1	2

Appendix F EPBC Protected Matters Report

Australian Government
Department of Climate Change, Energy, the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 13-Nov-2024

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	49
Listed Migratory Species:	8

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	3
Commonwealth Heritage Places:	None
Listed Marine Species:	19
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	5
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	800 - 900km upstream from Ramsar site	In feature area
Hattah-kulkyne lakes	600 - 700km upstream from Ramsar site	In feature area
Riverland	700 - 800km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	800 - 900km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities			[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps. Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.			
Community Name	Threatened Category	Presence Text	Buffer Status
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community likely to occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species			[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia			
Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In buffer area only
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat may occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat likely to occur within area	In feature area
FISH			
Bidyanus bidyanus Silver Perch, Bidyan [76155]	Endangered	Species or species habitat may occur within area	In feature area
Maccullochella macquariensis Trout Cod [26171]	Endangered	Species or species habitat may occur within area	In buffer area only
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
FROG			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Litoria booroolongensis Booroolong Frog [1844]	Endangered	Species or species habitat may occur within area	In feature area
Litoria raniformis Southern Bell Frog,, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat may occur within area	In feature area
INSECT			
Keyacris scurra Key's Matchstick Grasshopper [89739]	Endangered	Species or species habitat may occur within area	In feature area
Synemon plana Golden Sun Moth [25234]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat known to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat may occur within area	In feature area
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In buffer area only
PLANT			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ammobium craspedioides Yass Daisy [20758]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Amphibromus fluitans River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat known to occur within area	In feature area
Diuris aequalis Buttercup Doubletail [21588]	Endangered	Species or species habitat may occur within area	In buffer area only
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Eucalyptus aggregata Black Gum [20890]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lepidium aschersonii Spiny Peppercress [10976]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat likely to occur within area	In feature area
Leucochrysum albicans subsp. tricolor Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat likely to occur within area	In feature area
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area	In buffer area only
Rutidosis leptorhynchoides Button Wrinklewort [67251]	Endangered	Species or species habitat may occur within area	In buffer area only
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Swainsona recta Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may occur within area	In buffer area only
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
Xerochrysum palustre Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat may occur within area	In buffer area only
REPTILE			
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [12574]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [12517]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [12635]	NSW	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

EPBC Act Referrals			[Resource Information]	
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Gullen Range Wind Farm	2008/3947	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Aerial baiting for wild dog control	2006/2713	Not Controlled Action	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
		(Particular Manner)		
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

Appendix G Company Profile

Abel Ecology has been in the biodiversity consulting business since 1991, starting in the Sydney Region, and progressively more state wide in New South Wales since 1998, and now also in Victoria. During this time extensive expertise has been gained with regard to Master Planning, Environmental Impact assessments including flora and fauna, bushfire reports, Vegetation Management Plans, Management of threatened species, Review of Environmental Factors, Species Impact Statements, Biodiversity Development Assessment Reports and as Expert Witness in the Land and Environment Court. We have done consultancy work for industrial and commercial developments, golf courses, civil engineering projects, tourist developments as well as residential and rural projects. This process has also generated many connections with relevant government departments and city councils in NSW. Our team consists of seven scientists and four administrative staff, plus casual assistants as required.

Licences

NPWS s132C Scientific licence number is SL100780
NPWS GIS data licence number is CON95034
NSW Dept of Primary Industries Secretary's Animal Care and Ethics Committee Approval: 18/575
NSW Dept of Primary Industries Animal Research Authority. Accreditation No: 84207

The Consultancy Team

Dr Danny Wotherspoon

BSc, DipEd, MA, PhD, Grad Dip Bushfire Protection,

MECA NSW, MEPLA, MNELA, MESA, MEIANZ, White card.

Danny has practised as an ecological and bushfire consultant since 1991. He is a consulting ecologist to private developers, State Government agencies and various City Councils on a regular basis, for development applications, government projects, and as expert witness in the NSW Land and Environment Court.

Danny's PhD researched fragmented vegetation and fauna habitat use. He has special expertise in fauna habitat use. Danny has presented invited papers at international conferences since 2001 in Australia, China, South Africa, Sri Lanka and Israel on his PhD and other research, including golf course habitat management. Danny's scientific papers have been published in both international and Australian academic journals.

Koala survey qualification Dr Danny Wotherspoon

Requirements of SEPP Koala habitat Protection 2021

Surveys Must be Carried Out by a Suitably Qualified Person.

This is taken to mean a person with:

Criterion	Dr Wotherspoon
A minimum undergraduate qualification in natural sciences, ecology, environmental management forestry or similar from a university and	BSc (zoology and ecology) PhD (animal ecology)
A minimum 3 years' experience in environmental assessment including field identification of plant and animal species and habitat.	Ecological consultant since 1991 Certified Practicing Ecological Consultant (ECA NSW registration no. 1).

This includes having as a minimum the following experience in conducting koala surveys:

Criterion	Dr Wotherspoon
• Greater than 10 surveys	Many surveys over more than 20 years. LGAs include Hawkesbury, Campbelltown, Port Macquarie, Blue Mountains, Pittwater, Snowy Monaro etc.
• Experience in using the koala presence survey methods identified below	Yes. Training workshop AKF annual Conference Philip Island 1999. NSW LEC expert witness.
• Can accurately identify preferred koala use trees	Yes. Arborist expert witness, so experience in identifying trees.
• Can distinguish between koala faecal pellets and those from other species that may present similar characteristics	Yes. Training workshop AKF annual Conference Philip Island 1999. Museum collection of pellets held in our office.

The person's skills in koala survey should be demonstrable by relevant qualifications and the following:

Criterion	Dr Wotherspoon
• a history of experience in koala habitat / population assessments and associated survey methods and/or	Research paper published by Australian Koala Foundation (AKF) (1999). Paper presented AKF annual Conference Philip Island 1999 Wotherspoon, D, (2021, in press) Koala survey and the SEPP (Koala Habitat Protection) 2019. *Consulting Ecology.*
• a resume giving details of koala survey projects conducted over the previous 10 years including employers' names and periods of employment (where relevant).	Owner and founder of Abel Ecology P/L (previously Blue Mountain Wilderness Services P/L) since 1991.

Mark Mackinnon

B Env. Sci. (Hons); Grad. Dip. in Bushfire Protection
Bushfire Planning & Design (BPAD), Accredited Practitioner Level 3. Accreditation number 36395.
MEIANZ, White Card

Mark is a passionate and enthusiastic scientist who thrives in the field of natural resource management. Mark has worked for a number of inter-state government agencies and environmental consultancies. He has experience in threatened species, fire ecology, bushfire management, pest plant and animals, and landscape restoration. In particular, he specializes in ornithology and bushfire management. Mark has a number of specialized field-based skills including simple and complex tree climbing, working at heights, general firefighter departmental fire accreditation, venomous snake and reptile handling, immunization to handle bat species, and an A - class bird banding license with mist-net endorsement. Mark is also skilled in ArcGIS mapping, first-aid, four -wheel-driving.

Mark Sherring

BM, MAABR, Cert. Hort., Cert. Bush Regen, Cert. Rural Ops, White Card.

Member of the Australian Association of Bush Regenerators

Mark has extensive knowledge and experience of plant species in New South Wales. He has built up his expert knowledge on NSW native plant species over the many years that he has practised as a Botanist. He is regularly asked to contribute to the extensive (ongoing) flora surveys of the Sydney Basin and Blue Mountains carried out by the Royal Botanic Gardens, Sydney. Mark has extensive field survey experience, having worked for over ten years in various plant-related roles. His role in Abel Ecology is to provide expert advice on flora and on the full range of flora management issues encountered and in the design and management of environmental monitoring projects.

Nick Tong

BSc (Biology), MPhil (Ecology), Cert. III CLM
BAM Accredited Assessor (BAAS22012),
MECA NSW, Snr First Aid, White card.

Nicholas is an experienced ecologist with expertise in fauna, plant species identification, vegetation assessment and ecological restoration. In the last six years, he has been a consulting ecologist to private developers and large corporations, for a variety of projecting including State Significant Developments. Nick has extensive field work experience in Sydney, the Blue Mountains and Central West NSW. His Master's project investigated the impacts of exotic predators on herpetofauna in the arid zone. His role at Abel Ecology is to provide expert advice on fauna and the application of the Biodiversity Offset Scheme.

Emily Barbaro

BA, MPublishing, Grad. Cert. EnvSc, MEScM (enrolled).

Ecologist

Emily has completed a Graduate Certificate in Environmental Science and a Masters of Environmental Science and Management. Emily has completed the Volunteer Botanical Training Program at the Centre for Australian National Biodiversity Research and CSIRO. The Program included both botanical and general herbarium tasks, such as archiving plant specimens, plant identification, and assistance with taxonomic research projects. Emily has previously worked as a Bush Regenerator and has been volunteering with Bushcare for Blue Mountains City Council for the last three years. She is passionate about learning more about her local Blue Mountains flora and fauna.

Erin Parker

B Biodiversity and Conservation, Macquarie University.
Ecologist

Erin has completed a Bachelor of Biodiversity and Conservation at Macquarie University. Erin has previously worked as a bush regeneration team member while completing her degree. There she was able to develop plant ID skills and understanding of the procedures of weed management and restoration. Erin has also taken part in a casual position assisting with threatened species surveys in the Central West of NSW. This involved various tasks including tree hollow surveys for Glossy Black Cockatoos, preparation for reptile surveys, spotlighting, harp trapping surveys of microbats, and Koala SAT plot surveys. Erin is passionate about furthering her knowledge on native Australian flora and fauna, their ecology and impacts.

Callista Harris

BPlan (Hons).

Technical Officer

White Card, Apply First Aid, Work Safely at Heights, Maintain and Operate Chainsaws, Operate Elevating Work Platform (scissor lift), High Risk Work Licence - Boom-Type Elevating Work Platform (WP) (over 11 metres), Venomous snake handling certificate, Damage Mitigation Permit for Removal and relocation of protected animals, Operate and maintain 4WD.

Callista has 9 years' experience as an urban planner. She has a strong knowledge of NSW environmental legislation and has secured approvals for a wide range of developments, including housing developments, industrial developments, solar farms, and infrastructure. She has recently changed careers and has gained valuable on the ground experience working as a fauna spotter catcher, ecologist, and botanist on various projects.

Dr Stephanie Clark

B Sc (Hons), PhD

Stephanie has over 30 years' experience in the collection, identification and taxonomy of marine, estuarine, freshwater and terrestrial molluscs. She has conducted numerous targeted surveys for endangered and threatened species (particularly land and freshwater molluscs) in both Australia and the United States. She is particularly interested in the systematics, taxonomy, morphology (external and internal), population and conservation genetics and conservation of molluscs particularly terrestrial (especially the *Helicoidea*) and freshwater (especially the *Hydrobiidae* and related families) groups.