Preliminary Flora and Fauna assessment

Proposed Industrial Subdivision
3660 The Escort Way, Cudal NSW

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Executive Summary

Background

A planning proposal is proposed for 3660 The Escort Way, Cudal NSW to rezone the eastern area of the lot to an employment zone. The proposed indicative development plan will include fourteen industrial lots and one general industrial lot. A concrete batching facility and associated infrastructure exist in the western section of the lot. The structures will be allocated to three of the proposed lots. The lot has a current land-use of oat cropping in the eastern section with industrial activities in the western section. The lot has a land-use history of livestock grazing, cropping and industrial concrete production.

The subject site is the proposed rezoning and development area in the eastern section of 3660 The Escort Way, Cudal NSW and includes Lots 2 to 15 and cpart of Lot 1. The subject site has an area of approximately 11 hectares located adjacent to the township of Cudal. Land to the east of the site has been developed for industrial, agricultural and community land-use, land to the north and west remains agricultural and land to the south is residential.

An assessment of the development area is required to determine impacts on flora and fauna as part of the planning proposal.

Scope

This report is a preliminary flora and fauna assessment for the existence of key habitats or threatened species, provides an overview of the flora and fauna species present and assesses the impact of the industrial subdivision on flora and fauna.

Summary

An assessment of the impacts of the development was undertaken by site inspection and desktop study.

The subject site comprises predominantly introduced pasture grasses and broadleaved weeds. Isolated stands of remnant eucalyptus trees exist in the southeastern corner and western edge of the site. Vegetation has been extensively modified through historical practices associated with cropping, pasture improvement and livestock grazing. Current grain cropping practices are expected to impact on the usage of the grassland by native fauna. Historical grazing increases bare ground cover, reduces native vegetation cover and diversity, increases the risk of weed invasion and reduces foraging habitat and shelter for fauna derived from the grasslands. No threatened floral species were identified on the subject site.

The stands of eucalyptus trees located in the southeastern corner and on the western edge of the subject site are proposed to be retained and may provide fauna with nesting sites and foraging habitat. Fallen tree limbs were identified in the vicinity of the trees which provide additional shelter and foraging habitat for fauna. Food sources include insects, berries, seeds, small vertebrates and grazing fodder. No threatened fauna species were identified on the subject site.

Native vegetation comprised two stands of remnant eucalypts consisting of white box and yellow box trees and minor native succulents in the cultivated crop. No other native vegetation was identified on the subject site.

No impacts on threatened species with potential to occur in the study area from the development were identified in the Biodiversity Conservation Act (2016) Test of Significance or EPBC Act considerations. The area to be cleared is less than the threshold for native vegetation clearing. The subject site is not located within land with high biodiversity value as defined by clause 7.3(3) of the

Biodiversity Conservation Regulation 2017 from a review of the biodiversity values map. The proposed development does not trigger the Biodiversity Offset Scheme Thresholds. The development is not expected to have a significant impact on the long-term survival of threatened species and communities in the South Eastern Highlands Bioregion.

Recommendations

The following actions are recommended:

- Avoid the introduction of additional introduced plants that may become weeds in adjacent areas.
- Implementation of erosion and sediment control plans prior to construction activities.
- Implementation of 15m tree protection zones (the maximum allowable TPZ is 15m in accordance with AS4970-2009. This TPZ may be reduced following additional assessment) for eucalypt trees located in the study area and on the subject site.

Contents

1. Background

A planning proposal is proposed for 3660 The Escort Way, Cudal NSW to rezone the eastern area of the lot to an employment zone. The proposed indicative development plan will include fourteen industrial lots and one general industrial lot. A concrete batching facility and associated infrastructure exist in the western section of the lot. The structures will be allocated to three of the proposed lots. The lot has a current land-use of oat cropping in the eastern section with industrial activities in the western section. The lot has a land-use history of livestock grazing, cropping and industrial concrete production.

The subject site is the proposed development area in the eastern section of 3660 The Escort Way, Cudal NSW and includes Lots 2 to 15 and part of Lot 1. The subject site has an area of approximately 11 hectares located adjacent to the township of Cudal. Land to the east of the site has been developed for industrial, agricultural and community land-use, land to the north and west remains agricultural and land to the south is residential.

An assessment of the development area is required to determine impacts on flora and fauna as part of the planning proposal.

2. Scope of report

Envirowest Consulting Pty Ltd was commissioned by iPlan Projects to undertake a preliminary flora and fauna assessment of the development area at 3660 The Escort Way, Cudal NSW.

The assessment will assess the existence of habitat and give an overview of the flora species present. The assessment aims to identify impacts the development may have on threatened flora and fauna species, their communities and any ecological interactions that may occur on the site.

3. Site description

3.1 Location

The subject site is the area directly affected by the proposed development located on Lots 2 to 15 and part of Lot 1. The subject site has an area of approximately 11ha and includes proposed industrial lots, access roads, sewage infrastructure and underground services (Figure 3).

The study area are additional areas likely to be affected (directly or indirectly) by the development and includes the subject site. The study area consists of proposed Lots 2 to 15 and the eastern part of Lot 1 at 3660 The Escort Way and a 50m buffer in all directions from the subject site (Figure 1).

The study area is located along the northern fringes of Cudal (Figure 1) and is located in the South Eastern Highlands Bioregion.

3.2 Climate

Climatic data from the nearest recording station located at Molong indicates the study area has an average annual rainfall of 705mm. Rainfall is most significant in January with an average of 69.8 mm. April is the driest month of the year receiving a rainfall average of 51.4mm.

Availability of soil moisture is lowest in summer and typically not limiting in winter when rainfall exceeds evaporation. Low winter temperatures restrict plant growth from May to September such that plant growth is most active during spring and autumn.

3.3 Topography

The subject site is located on a gentle mid-slope with a predominant westerly aspect. Elevation ranges between 462 and 472 metres above sea level with inclines ranging between 1 and 2%. The lowest elevation occurs on the western boundary of the subject site.

3.4 Vegetation

Ground cover was dominated by a cultivated crop of *Avena sativa* (common oat). Broadleaved weeds commonly widespread in agricultural landscapes were interspersed throughout the crop including *Capsella bursa-pastoris* (shepherd's purse) and *Lamium amplexicaule* (henbit). Vegetation cover was generally 90% across the subject site.

Two stands of *Eucalyptus albens* (white box) and *Eucalyptus melliodora* (yellow box) are located in the southeastern corner and western section of the subject site. Understory vegetation was dominated by introduced broadleaved weed species including *Silybum marianum* (milk thistle) and *Urtica dioica* (common nettle).

Vegetation on the site has been modified through historical clearing and agricultural practices. Historical imagery indicates the subject site comprised livestock grazing in the 1960's with cropping becoming the predominant land-use during the 1970's until the present day.

A detailed description of the vegetation on the subject site is given in Section 6.1.

3.5 Land-uses

The land-use is rural. The subject site is currently used for oat cropping. Historical grazing and cropping activities have included land clearing, introduction of exotic species and application of fertilisers and herbicides.

Land-use to the east has been developed for industrial, agricultural and community land-use, land to the north and west remains agricultural and land to the south is residential.

3.6 Soils and geology

The site is located within the Cudal and Canowindra Soil Landscapes. The Cudal Soil Landscape comprises the undulating rises, undulating low hills and dissected plateaux around Cudal, with a small area north-east of Molong and to the south of Cowra. The dominant soils are Euchrozems, with Non-calcic Brown Soils on lower slopes. The geological unit is tertiary basalt. The parent rock is Basalt. The parent material is in situ deposits of parent rock.

The Canowindra Soil Landscape comprises undulating rises to undulating lowhills south-west of Cudal and around Canowindra. The main soils are Non-calcic Brown Soils. Yellow and Brown Solodic Soils occur in some drainage lines, especially to the west, with shallow Red Podzolic Soils sometimes found on crests and upper slopes. Red Earths also occur on the higher crests, with depositional sands in some valleys. The geological unit is undifferentiated, Canowindra Porphyry, alluvial and Kenyu Formation. The parent rock Quartz feldspar porphyry with sparse garnets, shale, limestone, and alluvium. The soil parent material is made up of *in situ* and colluvial-alluvial deposits of above parent rock (eSPADE v2.2).

No evidence of erosion or salinity was observed within the subject site.

3.7 Surface water

Surface water is largely expected to infiltrate. Excess surface water flows will follow topography on the site and flow towards Boree Creek located to the west of the subject site.

3.8 Groundwater

No groundwater bores are known to be located on the site. The NSW Office of Water groundwater database identifies three bores located within 500m of the site. A summary of bore details is given in Table 1.

Table 1. Groundwater bores within 500m of the site

No.	Date drilled	Location	SWL (m)	Use	Status
GW704562	04/01/2017	400m SW	-	Stock, domestic	Supply obtained
GW057989	-	400m W	-	Irrigation	Supply obtained
GW063616	01/04/1985	300m S	7	Stock, domestic	Unknown

4. Proposed development

A planning proposal is proposed for 3660 The Escort Way, Cudal NSW to rezone the subject site to an employment zone. The proposed indicative development plan will include fourteen industrial lots and one general industrial lot (Figure 3).

The lots are expected to be connected to reticulated water and on-site wastewater management systems and be accessible from access roads. The development will remove the majority of existing vegetation on proposed Lots 2 to 15, and crop vegetation in the eastern section of Lot 1 will be removed to allow for a communal secondary treated wastewater disposal system within the subject site. The isolated stand of *Eucalyptus albens* (white box) and *Eucalyptus melliodora* (yellow box) in the southeastern corner and on the western edge of the subject site is proposed to be retained and undisturbed.

5. Methodology

5.1 Desktop study

A desktop study was undertaken to collect information on individual species and in particular the presence of any threatened or endangered species. This was determined primarily by habitat assessment of the subject site and a search of the OEH Bionet database. The area for the database search covered a 5km radius from the subject site.

The Office of Environment and Heritage (OEH) NSW Threatened Species Website was reviewed for threatened species, populations and communities known or predicted to occur within the Cabonne Local Government Area.

The impact of the proposed development on flora and fauna on the subject site was assessed in accordance with the Test of Significance under Section 7.3 of the *Biodiversity Conservation Act* (2016) and EPBC Act considerations. The habitat, life cycles and general ecology of a range of both plant and animal species was researched. This and all other information has been used to make impact assessments.

The proposed development was assessed against the Biodiversity Offset Scheme thresholds in accordance with the *Biodiversity Conservation Act 2016* to determine if the Biodiversity Assessment Method applied.

5.2 Field surveys

An overall description of the subject site was completed by conducting a general field survey. A quadrat method was undertaken to estimate native groundcover using *Assessing native groundcover* (2015), Office of Environment and Heritage guidelines. The aim of the survey was to assess the subject site and study area which included a vegetation and topography assessment,

identification of major land-uses, species identification, a land and water degradation assessment and evaluation of potential habitat for fauna.

The survey was undertaken on 4 September 2023. The conditions on the day were fine and warm. Representative photographs of the site are presented in Figure 5.

The field data for flora species was recorded on a presence or absence basis.

6. Results and discussion

6.1 Flora

The study area consists of cultivated grasslands.

The subject site has an agricultural land-use history of livestock grazing and cropping. The site is currently a rural holding cultivated with grain crops. Vegetation across the subject site has been impacted by the agricultural land-use history and current cultivation practices.

The subject site consists primarily of modified grasslands dominated by a cultivated crop of *Avena sativa* (common oat). Other introduced pasture grasses and broadleaved weeds present in the grasslands include *Lolium multiflorum* (annual ryegrass), *Secale cereale* (cereal rye), *Capsella bursa-pastoris* (shepherd's purse), *Cerastium glomeratum* (mouse-eared chickweed) and *Lamium amplexicaule* (henbit). Understory vegetation below tree canopies were dominated by introduced broadleaved weeds including *Silybum marianum* (milk thistle), *Ambrosia artemisiifolia* (annual ragweed) and *Fumaria officinalis* (common fumitory).

Native species *Crassula colorata* (dense crassula) was identified as isolated plants in the grasslands. The density of native species in the grasslands was estimated at <2% of total groundcover, equating to approximately 0.2ha.

Eucalyptus melliodora (yellow box) and *Eucalyptus albens* (white box) were identified as an isolated stand in the southeastern corner and western edge of the subject site. The stands may be vestigial to the endangered Grey Box Grassy Woodland and Derived Native Grassland community that was historically widespread across central New South Wales and has been heavily fragmented to enable grazing and pastoral activities. The trees are proposed to be retained and are not expected to be impacted by the development.

Vegetation surrounding the two industrial sheds proposed to be allocated to Lots 2 and 3 was sparse and dominated by introduced species.

No threatened or endangered species were observed within the grasslands of the subject site. Flora recorded during the field surveys are presented in Table 2.

Table 2. Flora species recorded for each vegetation type

Scientific name	Common name	Species origin
Trees		
Eucalyptus melliodora	Yellow box	Native
Eucalyptus albens	White box	Native
Herbs		
Ambrosia artemisiifolia	Annual ragweed	Introduced
Amsinckia intermedia	Common fiddleneck	Introduced
Arctotheca calendula	Capeweed	Introduced
Capsella bursa-pastoris	Shepherd's purse	Introduced
Cerastium glomeratum	Mouse-eared chickweed	Introduced
Conyza bonariensis	Flaxleaf fleabane	Introduced
Fumaria officinalis	Common fumitory	Introduced
Lamium amplexicaule	Henbit	Introduced
Malva parviflora	Mallow weed	Introduced
Medicago polymorpha	Burr medic	Introduced
Medicago sativa	Alfalfa	Introduced
Silybum marianum	Milk thistle	Introduced
Sisymbrium orientale	Indian hedge mustard	Introduced
Taraxacum officinale	Dandelion	Introduced
Urtica dioica	Stinging nettle	Introduced
Grasses		
Avena sativa	Common oat	Introduced
Dactyloctenium aegyptium	Common crowsfoot	Introduced
Lolium multiflorum	Annual ryegrass	Introduced
Secale cereale	Cereal rye	Introduced
Succulents		
Crassula colorata	Dense crassula	Native

6.2 Fauna

Faunal habitat within the subject site was dominated by modified grasslands with remnant trees in the southeastern corner and western edge of the subject site.

Trees located in the remnant stands may be used by fauna as a food source in the form of insects, nesting in branches (birds), shelter in tree hollows (birds, possums, bats, reptiles and colony forming insects) and habitat for reptiles. A colony of *Apis mellifera* (European honeybee) were observed sheltering in a *Eucalyptus albens* (white box) tree hollow at the time of the field survey. The introduced species of bee is considered naturalised in Australia and may displace native species from tree hollows and compete for resources. Logs and dead standing timber were also identified around trees located in the southeastern corner which may provide shelter and foraging habitat for reptiles and small birds.

The trees located on the subject site are not proposed to be removed to enable the proposed development.

Groundcover vegetation in the grasslands would provide fauna with food (grazing, seeds and insects) and shelter from terrestrial predators and birds of prey. A pair of *Megalurus cruralis* (brown songlark) were observed foraging for aerial insects in the grasslands at the time of the field survey. The species is widespread throughout Australia, highly nomadic and includes farmland in its territories.

Historical livestock grazing and current cultivation practices increases bare ground cover, reduces native vegetation cover and richness, increases the risk of weed invasion and reduces foraging habitat and shelter derived from the grasslands for fauna.

No threatened or endangered fauna species were observed within the subject site. Fauna recorded during the field surveys are presented in Table 3.

Table 3. Fauna species identified in opportunistic observations

Scientific Name	Common Name	Comments
Apis mellifera	European honeybee	Sighted
Gymnorhina tibicen	Australian magpie	Sighted
Megalurus cruralis	Brown songlark	Sighted
Milvus migrans	Black kite	Sighted
Psephotus haematonotus	Red-rumped parrot	Sighted

6.3 Threatened species

6.3.1 Threatened species recorded within the study area

No threatened species or populations were identified on the subject site. No threatened species are listed on the OEH Bionet database as being recorded within the study area.

6.3.2 Threatened species recorded in the vicinity

Threatened flora and fauna species, which have been recorded in the vicinity, are listed in Table 4. The data was obtained from the OEH Bionet database. Each species is listed based on the opinion of the Scientific Committee according to the Biodiversity Conservation Act 2016 or in accordance with the EPBC Act (1999). The search area covered a 5km radius from the subject site.

One threatened species *Polytelis swainsonii* (Superb parrot) has been recorded within 5km of the subject site (Table 4). The sighting was recorded in 2022 approximately 0.6km north of the site in an area of remnant open eucalypt woodland near Boree Creek. The species diet comprises grass seeds, herbaceous plants, fruits, berries, nectar, buds, flowers, insects and grain and individuals will travel up to 10km from nesting sites to forage. Breeding individuals will nest in tree hollows of open box woodland and isolated living or dead paddock trees. Key threatening processes to the species include removal of hollow bearing trees, paddock trees and open box woodland as foraging habitat.

6.3.3 Threatened species with potential to occur in the vicinity

Threatened flora and fauna species, with the potential to occur in the area, are listed in Table 4. The data was obtained from the OEH Bionet database. The search area covered the Cabonne Local Government Area.

Habitat attributes for *Polytelis swainsonii* (Superb Parrot), *Pteropus poliocephalus* (Grey-headed Flying-fox), *Saccolaimus flaviventris* (Yellow Bellied Sheath-tail Bat), *Anseranas semipalmata* (Magpie Goose), *Burhinus grallarius* (Bush Stone-curlew), *Circus assimilis* (Spotted Harrier), *Climacteris picumnus victoriae* (Brown Treecreeper [eastern subspecies]), *Epthianura albifrons* (White fronted Chat), *Falco hypoleucos* (Grey Falcon), *Falco subniger* (Black Falcon), *Grus rubicunda* (Brolga), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Neophema pulchella* (Turquoise Parrot), *Petroica boodang* (Scarlet Robin), *Petroica phoenicea* (Flame Robin) and *Delma impar* (Striped Legless Lizard) are found within the subject site. The survival of these species is not expected to be impacted by the development due to the relatively small amount of suitable habitat and availability of suitable alternative habitat elsewhere in the locality. The impact of the development on these species has been assessed in accordance with the Assessment of Significance (Appendix 2) and EPBC Act considerations (Appendix 3). No significant impacts were identified.

Habitat attributes for the remainder of the species listed in Table 4 are not found within the subject site though may occur elsewhere in the study area and/or vicinity. The survival of these species is not expected to be impacted by the development.

Table 4. Threatened species predicted to occur on the site from the NSW Threatened Species Website and recorded occurrence of threatened species on the NSW OEH Bionet (Search area – 5km radius of subject site)

Scientific Name	Common Name	Last recorded date	Distance from the site (km)	NSW Status	Federal Status
Mammals					
Bettongia lesueur graii	Boodie, Burrowing Bettong (mainland)	1941[1]	-	E4, P	X
Cercartetus nanus	Eastern Pygmy-possum	1996	-	V, P	Not listed
Chalinolobus dwyeri	Large-eared Pied Bat	2019	-	V, P	V
Chalinolobus picatus	Little Pied Bat	2008	-	V, P	Not listed
Dasyurus maculatus	Spotted-tailed Quoll	2006	-	V, P	E
Falsistrellus tasmaniensis	Eastern False Pipistrelle	NR	-	V, P	Not listed
Miniopterus orianae oceanensis	Large Bent-winged Bat	2023	-	V, P	Not listed
Myotis macropus	Southern Myotis	2020	-	V, P	Not listed
Nyctophilus corbeni	Corben's Long-eared Bat	1997	-	V, P	V
Petauroides volans	Southern Greater Glider	2019	-	E1, P	E
Petaurus australis	Yellow-bellied Glider	1983	-	V, P	V
Petaurus norfolcensis	Squirrel Glider	2021	-	V, P	Not listed
Petrogale penicillata	Brush-tailed Rock-wallaby	NR	-	E1, P	V
Phascogale tapoatafa	Brush-tailed Phascogale	NR	-	V,P	Not listed
Phascolarctos cinereus	Koala	2021	-	E1,P	E
Pseudomys novaehollandiae	New Holland Mouse	1997	-	P	V
Pteropus poliocephalus	Grey-headed Flying-fox	2021	-	V,P	V
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	2021	-	V,P	Not listed
Scoteanax rueppellii	Greater Broad-nosed Bat	NR	-	V,P	Not listed
Sminthopsis macroura	Stripe-faced Dunnart	NR	-	V,P	Not listed
Avifauna					
Anseranas semipalmata	Magpie Goose	NR	-	V,P	Not listed
Anthochaera phrygia	Regent Honeyeater	1978	-	E4A,P,2	CE
Artamus cyanopterus cyanopterus	Dusky Woodswallow	2022	-	V,P	Not listed
Botaurus poiciloptilus	Australasian Bittern	NR	-	E1,P	E
Burhinus grallarius	Bush Stone-curlew	2017	-	E1,P	Not listed
Calidris ferruginea	Curlew Sandpiper	NR	-	E1,P	CE,C,J,K
Callocephalon fimbriatum	Gang-gang Cockatoo	NR	-	V,P,3	E
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	2022	-	V,P,2	V
Certhionyx variegatus	Pied Honeyeater	2019	-	V,P	Not listed
Chthonicola sagittata	Speckled Warbler	2022	-	V,P	Not listed
Cinclosoma castanotum	Chestnut Quail-thrush	NR	-	V,P	Not listed
Circus assimilis	Spotted Harrier	2020	-	V,P	Not listed
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	2020	-	V,P	Not listed
Daphoenositta chrysoptera	Varied Sittella	2021	-	V,P	Not listed
Drymodes brunneopygia	Southern Scrub-robin	NR	-	V,P	Not listed
Ephippiorhynchus asiaticus	Black-necked Stork	NR	-	E1,P	Not listed
Epthianura albifrons	White-fronted Chat	2020	-	V,P	Not listed
Falco hypoleucos	Grey Falcon	NR	-	V,P,2	V
Falco subniger	Black Falcon	1978	-	V,P	Not listed
Glossopsitta porphyrocephala	Purple-crowned Lorikeet	NR	-	V,P,3	Not listed
Glossopsitta pusilla	Little Lorikeet	2019	-	V,P	Not listed
Grantiella picta	Painted Honeyeater	2013	-	V,P	V
Grus rubicunda	Brolga	NR	-	V,P	Not listed
Haliaeetus leucogaster	White-bellied Sea-Eagle	2019	-	V,P	Not listed
Hamirostra melanosternon	Black-breasted Buzzard	NR	-	V,P,3	Not listed
Hieraaetus morphnoides	Little Eagle	2016	-	V,P	Not listed
Hirundapus caudacutus	White-throated Needletail	2002	-	P	V,C,J,K
Hylacola cautus	Shy Heathwren	NR	-	V,P	Not listed
Lathamus discolor	Swift Parrot	2022	-	E1,P	CE
Leipoa ocellata	Malleefowl	1949	-	E1,P	V

Limosa limosa	Black-tailed Godwit	NR	-	V,P	C,J,K
Lophochroa leadbeateri	Major Mitchell's Cockatoo	1987	-	V,P,2	Not listed
Lophoictinia isura	Square-tailed Kite	NR	-	V,P,3	Not listed
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	2019	-	V,P	Not listed
Melithreptus gularis gularis	Black-chinned Honeyeater	2014	-	V,P	Not listed
Neophema pulchella	Turquoise Parrot	2020	-	V,P,3	Not listed
Ninox connivens	Barking Owl	2005	-	V,P,3	Not listed
Ninox strenua	Powerful Owl	2022	-	V,P,3	Not listed
Oxyura australis	Blue-billed Duck	NR	-	V,P	Not listed
Pachycephala inornata	Gilbert's Whistler	1997	-	V,P	Not listed
Pedionomus torquatus	Plains-wanderer	NR	-	E1,P,3	CE
Petroica boodang	Scarlet Robin	2013	-	V,P	Not listed
Petroica phoenicea	Flame Robin	2020	-	V,P	Not listed
Petroica rodinogaster	Pink Robin	NR	-	V,P	Not listed
Polytelis swainsonii	Superb Parrot	2022	0.6km N	V,P,3	V
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	2022	-	V,P	Not listed
Rostratula australis	Australian Painted Snipe	NR	-	E1,P	E
Stagonopleura guttata	Diamond Firetail	2020	-	V,P	Not listed
Stictonetta naevosa	Freckled Duck	NR	-	V,P	Not listed
Tyto novaehollandiae	Masked Owl	2013	-	V,P,3	Not listed
Amphibia					
Crinia sloanei	Sloane's Froglet	1998	-	E1,P	E
Litoria aurea	Green and Golden Bell Frog	2012	-	E1,P	V
Litoria booroolongensis	Booroolong Frog	NR	-	E1,P	E
Litoria castanea	Yellow-spotted Tree Frog	NR	-	E4A,P	CE
Litoria littlejohni	Littlejohn's Tree Frog	NR	-	E1,P	E
Litoria raniformis	Southern Bell Frog	2012	-	E1,P	V
Mixophyes balbus	Stuttering Frog	NR	-	E1,P,2	V
Pseudophryne australis	Red-crowned Toadlet	NR	-	V,P	Not listed
Reptilia					
Aprasia parapulchella	Pink-tailed Legless Lizard	2014	-	V,P	V
Delma impar	Striped Legless Lizard	NR	-	V,P	V
Hemiaspis damelii	Grey Snake	NR	-	E1,P	E
Hoplocephalus bitorquatus	Pale-headed Snake	NR	-	V,P	
Hoplocephalus bungaroides	Broad-headed Snake	NR	-	E1,P,2	V
Tympanocryptis mccartneyi	Bathurst Grassland Earless Dragon	NR	-	E4A,P	CE
Varanus rosenbergi	Rosenberg's Goanna	2005	-	V,P	
Flora					
Acacia ausfeldii	Ausfeld's Wattle	NR	-	V	Not listed
Acacia clunies-rossiae	Kanangra Wattle	NR	-	V	Not listed
Acacia flocktoniae	Flockton Wattle	NR	-	V	V
Acacia meiantha	-	2017	-	E1	E
Acacia phasmoides	Phantom Wattle	NR	-	V	V
Ammobium craspedioides	Yass Daisy	NR	-	V	V
Amphibromus fluitans	Floating Swamp Wallaby-grass	NR	-	V	V
Asterolasia buxifolia	-	NR	-	E1	Not listed
Austrostipa metatoris	A spear-grass	NR	-	V	V
Austrostipa wakoolica	A spear-grass	NR	-	E1	E
Boronia deanei	Deane's Boronia	NR	-	V,P	V
Bossiaea fragrans	-	NR	-	E4A	CE
Brachyscome muelleroides	Claypan Daisy	NR	-	V	V
Brachyscome papillosa	Mossgiel Daisy	NR	-	V	V
Caesia parviflora var. minor	Small Pale Grass-lily	2021	-	E1	Not listed
Caladenia arenaria	Sand-hill Spider Orchid	NR	-	E1,P,2	E
Caladenia attenuata	Duramana Fingers	NR	-	E4A,P,2	CE
Caladenia concolor	Crimson Spider Orchid	NR	-	E1,P,2	V

Caladenia rosella	Rosella Spider Orchid	NR	-	E4,P,2	E
Callistemon megalongensis	Megalong Valley Bottlebrush	NR	-	E4A	CE
Cullen parvum	Small Scurf-pea	NR	-	E1	Not listed
Dichanthium setosum	Bluegrass	NR	-	V	V
Diuris sp. (Oaklands, D.L. Jones 5380)	Oaklands Diuris	NR	-	E1,P,2	Not listed
Diuris tricolor	Pine Donkey Orchid	NR	-	V,P,2	Not listed
Eleocharis obicis	Spike-Rush	NR	-	V	V
Eucalyptus aggregata	Black Gum	2006	-	V	V
Eucalyptus alligatrix subsp. alligatrix	-	NR	-	V	V
Eucalyptus cannonii	Capertee Stringybark	NR	-	V	Not listed
Eucalyptus canobolensis	Silver-Leaf Candlebark	2019	-	E1	E
Eucalyptus pulverulenta	Silver-leafed Gum	NR	-	V	V
Eucalyptus robertsonii subsp. hemisphaerica	Robertson's Peppermint	2011	-	V	V
Euphrasia arguta	-	NR	-	E4A	CE
Euphrasia collina subsp. muelleri	Mueller's Eyebright	NR	-	E1	E
Euphrasia scabra	Rough Eyebright	NR	-	E1,3	Not listed
Grevillea divaricata	-	NR	-	E1,3	Not listed
Grevillea ilicifolia subsp. ilicifolia	Holly-leaf Grevillea	NR	-	E4A	Not listed
Grevillea wilkinsonii	Tumut Grevillea	NR	-	E4A	E
Homoranthus darwinioides	Fairy Bells	NR	-	V	V
Indigofera efoliata	Leafless Indigo	NR	-	E1,3	E
Isotoma fluviatilis subsp. fluviatilis	-	1959	-	3	X
Kippistia suaedifolia	Fleshy Minuria	NR	-	E1	Not listed
Lepidium aschersonii	Spiny Peppercress	NR	-	V	V
Lepidium hyssopifolium	Aromatic Peppercress	NR	-	E1	E
Lepidium monoplocoides	Winged Peppercress	NR	-	E1	E
Leptorhynchos orientalis	Lanky Buttons	NR	-	E1	Not listed
Leucochrysum albicans subsp. tricolor	Hoary Sunray	NR	-	E1	E
Persoonia marginata	Clandulla Geebung	NR	-	V,P	V
Pilularia novae-hollandiae	Austral Pillwort	NR	-	E1,3	Not listed
Pomaderris cocoparrana	Cocoparra Pomaderris	NR	-	E1	E
Pomaderris cotoneaster	Cotoneaster Pomaderris	NR	-	E1	E
Pomaderris queenslandica	Scant Pomaderris	2009	-	E1	Not listed
Prasophyllum petilum	Tarengo Leek Orchid	NR	-	E1,P,2	E
Prasophyllum sp. Wybong	-	NR	-	P	CE
Prostanthera gilesii	-	2018	-	E4A,2	Not listed
Pultenaea humilis	Dwarf Bush-pea	NR	-	V	Not listed
Senecio garlandii	Woolly Ragwort	NR	-	V	Not listed
Swainsona murrayana	Slender Darling Pea	NR	-	V	V
Swainsona recta	Small Purple-pea	NR	-	E1	E
Swainsona sericea	Silky Swainson-pea	2022	-	V	Not listed
Thesium australe	Austral Toadflax	NR	-	V	V
Tylophora linearis	-	1997	-	V	E
Veronica blakelyi	-	NR	-	V	Not listed
Zieria obcordata	Granite Zieria	NR	-	E1	E
Community					
Coolac-Tumut Serpentinite Shrubby Woodland in the NSW South Western Slopes and South Eastern Highlands Bioregions	Coolac-Tumut Serpentinite Shrubby Woodland in the NSW South Western Slopes and South Eastern Highlands Bioregions	NR	-	E3	Not listed
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	NR	-	E3	Not listed

Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	NR	-	Not listed	E
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	NR	-	E3	Not listed
Mallee and Mallee-Broombush dominated woodland and shrubland, lacking Triodia, in the NSW South Western Slopes Bioregion	Mallee and Mallee-Broombush dominated woodland and shrubland, lacking Triodia, in the NSW South Western Slopes Bioregion	NR	-	E4B	Not listed
Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion	Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion	NR	-	E4B	Not listed
Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	NR	-	E3	Not listed
Mt Canobolas Xanthoparmelia Lichen Community	Mt Canobolas Xanthoparmelia Lichen Community	NR	-	E3	Not listed
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	NR	-	E3	Not listed
Poplar Box Grassy Woodland on Alluvial Plains	Poplar Box Grassy Woodland on Alluvial Plains	NR	-	Not listed	E
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	NR	-	E3	Not listed
Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions	Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions	NR	-	E3	Not listed
Weeping Myall Woodlands	Weeping Myall Woodlands	NR	-	Not listed	E
Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	NR	-	E4B	Not listed
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and	NR	-	E4B	Not listed
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	NR	-	Not listed	CE

[1] Species was recorded from a population that is considered locally extinct.

NSW Status - Legal status of a species according to the Biodiversity Conservation Act (2016)

E1 – Endangered	E2 – Endangered population	E3 – Endangered ecological community	1 – Sensitivity class 1
E4 – Extinct	E4A – Critically endangered	E4B – Critically endangered ecological community	2 – Sensitivity class 2
V – Vulnerable	V2 – Vulnerable ecological community	P – Protected	3 – Sensitivity class 3

Federal Status - Legal status of a species according to the Environment Protection and Biodiversity Conservation Act (1999)

CE – Critically endangered	E – Endangered	V – Vulnerable	CD – Conservation Dependent
X – Extinct	C – Listed on China Australia Migratory Bird Agreement	J – Listed on Japan Australia Migratory Bird Agreement	K – Listed on Republic of Korea Australia Migratory Bird Agreement

6.4 Impacts of the development on flora and fauna

A planning proposal to rezone the eastern area of the existing lot to an employment zone is proposed. Development will include the creation of industrial lots, access roads, a communal secondary treated wastewater system and installation of underground services. Vegetation across the subject site is dominated by modified grasslands and will be removed as part of site development works for industrial building establishment, road construction, installation of underground services and contouring. The total area of disturbance from the development works across the subject site is approximately 11ha.

Areas of native vegetation will require removal. Native vegetation on the subject site requiring removal comprises succulent species *Crassula colorata*. Succulents were identified as isolated vegetation interspersed amongst the cultivated crop of *Avena sativa*. The total area of native vegetation removal is approximately 0.22ha.

No native tree species were identified in the area of vegetation removal. The isolated stand of *Eucalyptus albens* and *Eucalyptus melliodora* in the southeast corner and woodland formation along the western edge of the subject site are proposed to be retained.

All soil disturbance works on the site will be undertaken in accordance with a sediment and erosion control plan which will manage potential impacts on waterways from sediment. The controls to be implemented are expected to include retaining vegetation to reduce surface water velocity, use of surface diversion banks and revegetation of disturbed areas.

The Test of Significance under Section 7.3 of the *Biodiversity Conservation Act* (2016) for threatened and endangered species which inhabit or have potential to inhabit the subject site are presented in Appendix 2. EPBC Act considerations for listed vulnerable and endangered species are presented in Appendix 3. No threatened or endangered flora or fauna are expected to inhabit the subject site due to modification through historical cultivation and grazing land-use. Species with potential to occur on the site due to habitat features will not be impacted as these species are highly mobile. The development is not expected to have a significant impact on the long-term survival of threatened species and communities within the South Eastern Highlands Bioregion.

6.5 Biodiversity Offsets Scheme thresholds

6.5.1 Thresholds

Whether the amount of native vegetation being cleared exceeds a threshold area based on the minimum lot size associated with the property

The existing minimum lot size permitted for the site is 100 hectares (Cabonne LEP 2012). The proposed minimum lot size is expected be 0.4ha. Up to 1ha of native vegetation is permitted to be cleared for the existing lot size. Following rezoning, the subdivision is permitted to clear up to 0.25ha of native vegetation for a minimum lot size of 0.4ha. Native succulents will be removed equating to approximately 0.22ha of native vegetation. The area to be cleared is less than the threshold for native vegetation clearing.

Whether the impacts occur on an area mapped on the Biodiversity Values map published by the Minister for the Environment

The subject site is not located within land with high biodiversity value as defined by clause 7.3(3) of the Biodiversity Conservation Regulation 2017 from a review of the biodiversity values map.

The test of significance indicates no significant impact

No significant impacts on threatened flora, fauna or communities were identified in the test of significance.

6.5.2 Requirement for Biodiversity Offset Scheme

The triggers for assessing if the Biodiversity Offset Scheme applies have not been exceeded and the Biodiversity Offset Scheme does not apply.

7. Conclusions

An assessment of the impacts of the subdivision was undertaken by site inspection and desktop study.

The subject site comprises predominantly introduced pasture grasses and broadleaved weeds. An isolated stand of remnant eucalyptus trees exist on-site. Vegetation has been extensively modified through historical practices associated with cropping, pasture improvement and livestock grazing. Current grain cropping practices are expected to impact on the usage of the grassland by native fauna. Historical grazing increases bare ground cover, reduces native vegetation cover and diversity, increases the risk of weed invasion and reduces foraging habitat and shelter for fauna derived from the grasslands. No threatened floral species were identified on the subject site.

The stands of eucalyptus trees located in the southeastern corner and on the western edge of the subject site are proposed to be retained and may provide fauna with nesting sites and foraging habitat. Fallen tree limbs were identified in the vicinity of the trees which provide additional shelter and foraging habitat for fauna. Food sources include insects, berries, seeds, small vertebrates and grazing fodder. No threatened fauna species were identified on the subject site.

Native vegetation comprised a stand of remnant eucalypts consisting of grey box and yellow box trees and minor native succulents in the cultivated crop. No other native vegetation was identified on the subject site.

No impacts on threatened species with potential to occur in the study area from the development were identified in the Biodiversity Conservation Act (2016) Test of Significance or EPBC Act considerations. The area to be cleared is less than the threshold for native vegetation clearing. The subject site is not located within land with high biodiversity value as defined by clause 7.3(3) of the Biodiversity Conservation Regulation 2017 from a review of the biodiversity values map. The proposed development does not trigger the Biodiversity Offset Scheme Thresholds.

The development is not expected to have a significant impact on the long-term survival of threatened species and communities in the South Eastern Highlands Bioregion.

8. Recommendations

The following actions are recommended:

- Avoid the introduction of additional introduced plants that may become weeds in adjacent areas.
- Implementation of erosion and sediment control plans prior to construction activities.
- Implementation of 15m tree protection zones (the maximum allowable TPZ is 15m in accordance with AS4970-2009. This TPZ may be reduced following additional assessment) for eucalypt trees located in the study area and on the subject site.

9. Limitations

The assessment was preliminary and did not include a detailed trapping or spotlighting program. The information presented is thought to be accurate however Envirowest Consulting Pty Ltd will not be responsible for any errors of omissions or the results of any actions taken on the basis of the information.

10. References

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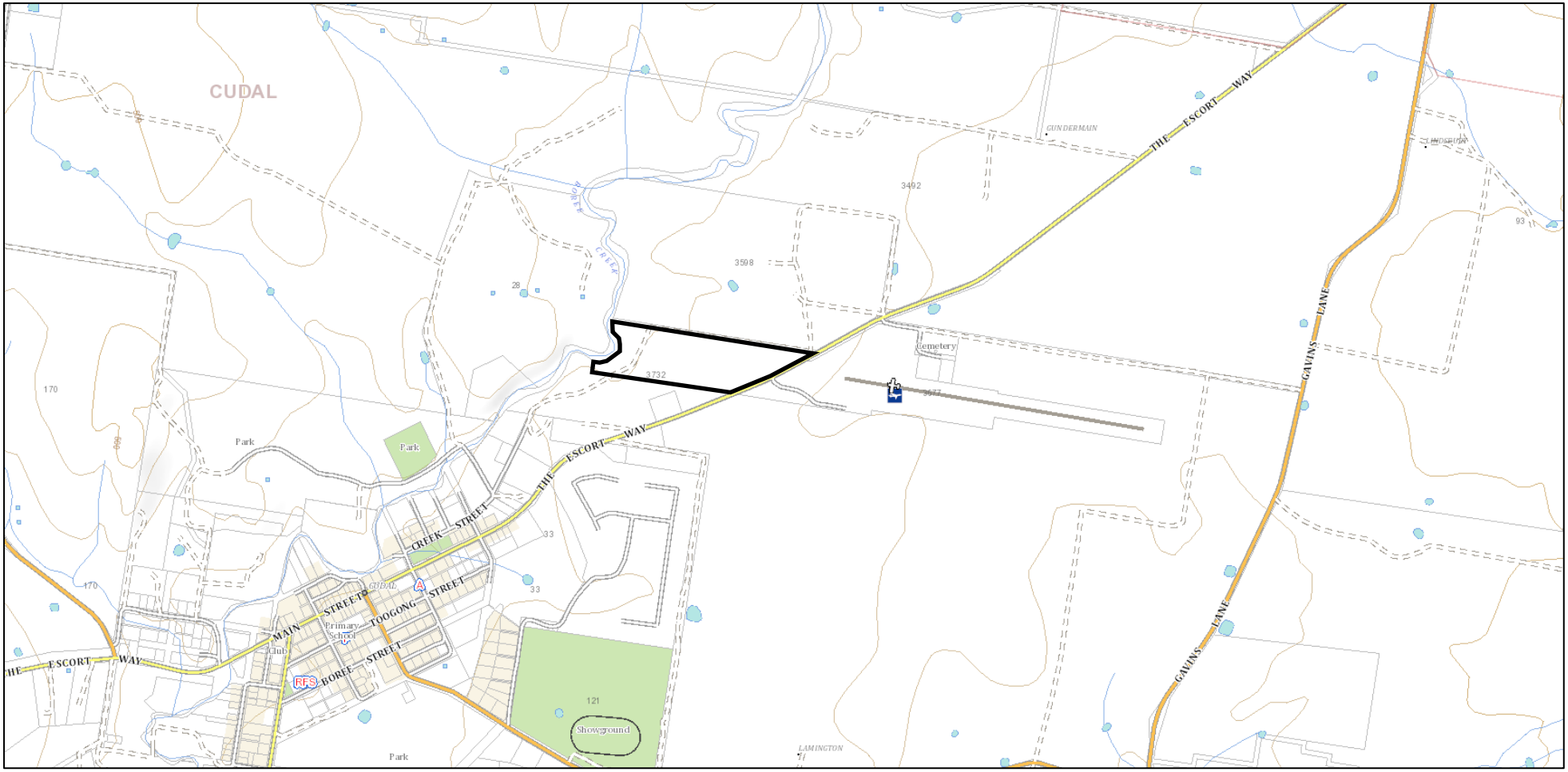
Figures



Legend

Lot boundary

Figure 1. Site locality map		
3660 The Escort Way, Cudal NSW		
	Envirowest Consulting Pty Ltd	
Job: R16134ff	Drawn by: EH	Date: 05/10/2023

Legend

Subject site

Study area

Approximate Scale 1: 2,500

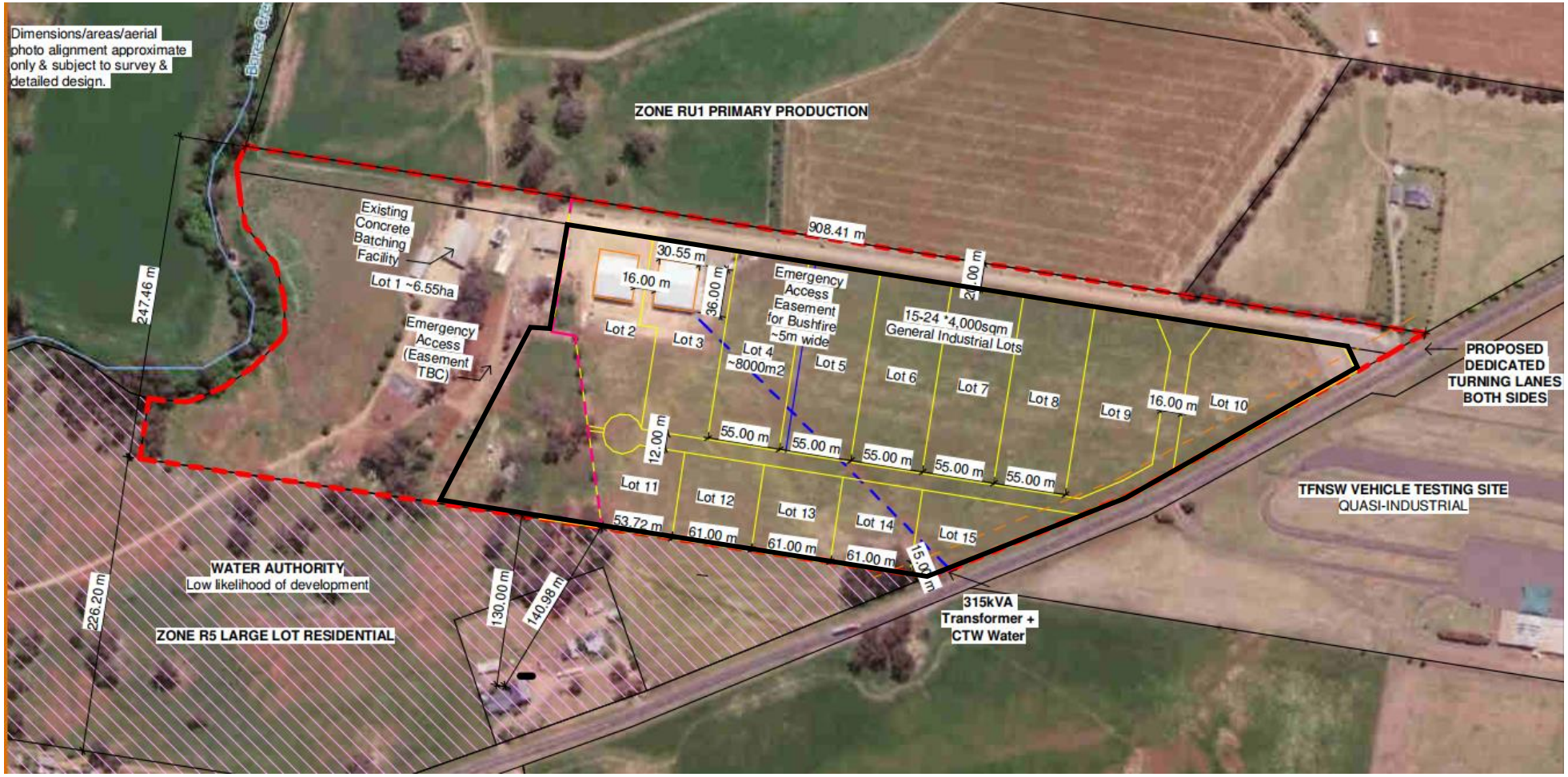
0 25 50 100m

Figure 2. Aerial photograph of subject site

3660 The Escort Way, Cudal NSW

Envirowest Consulting Pty Ltd

Job: R16134ff | Drawn by: EH | Date: 05/10/2023



Legend

Subject site boundary

Figure 3. Proposed rezoning area and indicative development plan		
3660 The Escort Way, Cudal NSW		
	Envirowest Consulting Pty Ltd	
Job: R16134ff	Drawn by: -	Date: -

Approximate Scale 1: 2,500

0 25 50 100m

Legend

Subject site boundary

Isolated native succulents to be removed (<2% coverage in subject site)

Figure 4. Native vegetation to be removed		
3660 The Escort Way, Cudal NSW		
	Envirowest Consulting Pty Ltd	
Job: R16134ff	Drawn by: EH	Date: 10/10/2023

Figure 5. Photographs of the subject site








Appendices

Appendix 1. Impacts of the proposal on flora, fauna and communities
Appendix 2. Test of Significance
Appendix 3. EPBC Act considerations

Impacts of the proposal on flora, fauna and communities

1. Species unlikely to be present

The preferred habitat and ecology of some species, identified as possibly present from the NSW Threatened Species website or have been identified within 5km of the subject site (Table 4) indicate they are unlikely to be present on the site. Some species can be reasonably excluded and do not require evaluation in the Assessment of Significance, "seven-part test" or EPBC Act considerations. The species excluded and the basis for this are presented in the table below. Reasons for exclusion are listed as habitat likely to be impacted on. Information provided within the table, is referenced from the OEH Threatened Species Profile for individual species or Ayers *et al.* (1996).

Species	TSC Act	EPBC Act	Occurrence	Habitat requirements	Presence of habitat	Likelihood of occurrence	Potential impact
Mammals							
Bettongia lesueur graii Boodie, Burrowing Bettong (mainland)	Not listed	X	X	The Boodie once lived in a range of dry subtropical and tropical habitats, from open *Eucalyptus* and *Acacia* woodlands to arid spinifex grasslands. It is extinct on mainland Australia. In its current range on the islands, it seems to prefer open *Triodia* (spinifex) and dune habitats, but will burrow anywhere except places with rocky substrate.	Absent	None	No
Cercartetus nanus Eastern Pygmy-possum	V	Not listed	P	Eastern pygmy-possums inhabit rainforest to sclerophyll forests and woodland to heath. They feed on nectar and pollen from banksias, eucalypts and bottlebrushes, insects and soft fruits when there are no flowers. The eastern pygmy-possum shelters in tree hollows, rotten stumps, holes in the ground, abandoned bird-nests or thickets of vegetation.	Absent	Unlikely	No
Chalinolobus dwyeri Large-eared Pied Bat	V	V	P	Large-eared pied bats roost in caves, crevices in cliffs, old mine workings and in disused, bottle-shaped mud nests of the Fairy Martin. They inhabit well-timbered areas containing gullies. It is thought that the species probably forages for small, flying insects below the forest canopy.	Absent	Unlikely	No
Chalinolobus picatus Little Pied Bat	V	Not listed	P	Occurs in dry open forest, open woodland, mulga woodlands, chenopod shrublands, cypress pine forest and mallee and Bimbil box woodlands. Roosts in caves, rock outcrops, mine shafts, tunnels, tree hollows and buildings	Absent	Unlikely	No

Dasyurus maculatus Spotted-tailed Quoll	V	E	P	The spotted tailed quoll is recorded within a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. The spotted tailed quoll requires hollow-bearing trees, fallen logs, small caves, rock crevices, boulder fields and rocky-cliff faces within its range to be used as den sites. The spotted tailed quoll feeds on a variety of prey including gliders, possums, small wallabies, rats, birds, bandicoots, rabbits and insects. Rocks and boulder fields are important habitat features for the spotted tailed quoll.	Absent	Unlikely	No
Falsistrellus tasmaniensis Eastern False Pipistrelle	V	Not listed	K	Prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. Hunts beetles, moths, weevils and other flying insects above or just below the tree canopy.	Absent	Unlikely	No
Miniopterus orianae oceanensis Large Bent-wing-Bat	V	Not listed	P	Primarily roosts in caves but also uses derelict mines, stormwater tunnels, buildings and other man-made structures. Hunts in forested areas, catching moths and other flying insects above the treetops.	Absent	Unlikely	No
Myotis macropus Southern myotis	V	Not listed	P	Found along the coast and rarely more than 100km inland, except along major rivers. Generally, roost in groups of 10 to 15 close to water in caves, mine shafts, hollow bearing trees, stormwater channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish.	Absent	Unlikely	No
Nyctophilus corbeni Corben's Long-eared Bat	Not listed	V	K	Inhabits a variety of vegetation types, including mallee, bulloke *Allocasuarina leuhmanni* and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark. Slow flying agile bat, utilising the understorey to hunt non-flying prey - especially caterpillars and beetles - and will even hunt on the ground.	Absent	Unlikely	No
Petauroides volans Greater glider	Not listed	V	K	Inhabits mature eucalypt forests and woodlands. Typically found in higher abundance in taller montane, moist eucalypt forests with mature trees and abundant hollows.	Absent	Unlikely	No
Petaurus australis Yellow-bellied Glider	V	Not listed	K	Occur in tall mature eucalypt forests generally in areas with high rainfall and nutrient rich soils. Den in hollows of large trees.	Absent	Unlikely	No
Petaurus norfolcensis Squirrel Glider	V	Not listed	K	Inhabits mature or old growth Box, Box-Ironbark woodlands. Prefers mixed species stands with a shrub or Acacia mid-storey.	Absent	Unlikely	No

Petrogale penicillata Brush-tailed Rock-wallaby	V	V	K	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Shelter or bask during the day in rock crevices, caves and overhangs and are most active at night when foraging. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees.	Absent	Unlikely	No
Phascogale tapoatafa Brush-tailed Phascogale	V	Not listed	P	Prefers dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest. Agile climber foraging preferentially in rough barked trees of 25cm DBH or greater. Nest and shelter in tree hollows.	Absent	Unlikely	No
Phascolarctos cinereus Koala	V	V	K	The koala is an arboreal mammal and is dependent on good tree coverage. Koalas mainly occur on the central and north coasts with some populations in the western region. They inhabit eucalypt woodlands and forests where acceptable food trees are present.	Absent	Unlikely	No
Pseudomys novaehollandiae New Holland Mouse	Not listed	V	K	Known to inhabit open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes. It is a social animal, living predominantly in burrows shared with other individuals.	Absent	Unlikely	No
Pteropus poliocephalus Grey-headed Flying-fox	V	V	K	Grey headed flying foxes occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps. Roosting camps are generally located within 20km of a regular food source and are commonly found in gullies close to water. The grey headed flying fox feed on the pollen and nectar of native trees in particular eucalypts, melaleuca and banksia and fruits of rainforest trees and vines.	Marginal	Possible	Yes
Saccolaimus flaviventris Yellow Bellied Sheath-tail Bat	V	Not listed	P	Yellow-bellied sheathtail-bats forage in most habitats for insects. They roost singly or in groups in tree hollows and buildings. In treeless areas they are known to utilise mammal burrows.	Marginal	Possible	Yes
Scoteanax rueppellii Greater Broad-nosed Bat	V	Not listed	K	Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings. Forages after sunset, flying slowly and directly along creek and river corridors at an altitude of 3 - 6 m.	Absent	Unlikely	No
Sminthopsis macroura Stripe-faced Dunnart	V	Not listed	P	Native dry grasslands and low dry shrublands, often along drainage lines where food and shelter resources tend to be better. They shelter in cracks in the soil, in grass tussocks or under rocks and logs.	Absent	Unlikely	No

Avifauna							
Anseranas semipalmata Magpie Goose	V	Not listed	K	Mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges. Equally at home in aquatic or terrestrial habitats; often seen walking and grazing on land; feeds on grasses, bulbs and rhizomes.	Marginal	Possible	Yes
Anthochaera phrygia Regent Honeyeater	E4	CE	P	Most commonly found in box-ironbark woodlands and will also inhabit swamp mahogany forests and riverine she-oak woodlands. Remnant stands of timber, roadside reserves, travelling stock routes and native street trees also provide foraging habitat. The regent honeyeater mainly feeds on the nectar from a wide range of eucalypts and mistletoes. They also feed on fruit from mistletoe and insects. A shrubby understorey is an important source of insects and nesting material.	Marginal	Possible	No
Artamus cyanopterus cyanopterus Dusky Woodswallow	V	Not listed	K	Widespread in eastern, southern and southwestern Australia in woodlands and dry sclerophyll forest usually dominated by eucalypts. It is also recorded in shrublands and heathlands. Nesting occurs from late September to late February. The nest is an open shallow untidy cup frequently in an open hollow, crevice or stump. They eat invertebrates, mainly insects which are captured whilst hovering and sallying over the canopy or water.	Marginal	Unlikely	No
Botaurus poiciloptilus Australasian Bittern	E1	E	P	Favours permanent freshwater wetlands with tall, dense vegetation particularly bulrushes and spikerushes. Feeds mainly at night on frogs, fish, yabbies, spiders, insects and snails.	Absent	Unlikely	No
Burhinus grallarius Bush Stone-curlew	E1	Not listed	P	Inhabits open forest and woodlands with a sparse grassy groundlayer and fallen timber. Also inhabits open plains. It is largely nocturnal and especially active on moonlit nights. The bush stone-curlew feeds on insects and small vertebrates such as frogs, lizards and snakes. They form a nest on the ground in a scrape or small bare patch.	Marginal	Possible	Yes
Calidris ferruginea Curlew Sandpiper	E1	CE	K	It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland. It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed. It roosts on shingle, shell or sand beaches; spits or islets on the coast or in wetlands; or sometimes in salt marsh, among beach-cast seaweed, or on rocky shores.	Absent	Unlikely	No

Callocephalon fimbriatum Gang-gang Cockatoo	V	Not listed	K	In summer, generally found in tall mountain forests and woodlands particularly in heavily timbered and mature wet sclerophyll forests. In winter, may occur at lower altitudes in drier more open forests and woodlands particularly box-ironbark assemblages. Favours old growth attributes for nesting and roosting.	Absent	Unlikely	No
Calyptorhynchus lathami Glossy Black Cockatoo	V	Not listed	K	Inhabits open forest and woodlands with stands of sheoak species.	Absent	Unlikely	No
Certhionyx variegatus Pied Honeyeater	V	Not listed	P	The pied honeyeater is widespread throughout acacia, mallee and spinifex scrubs of arid and semi-arid Australia. They are highly nomadic, following the erratic flowering of shrubs. Acacia, mallee and spinifex scrub communities were not identified on the subject site.	Absent	Unlikely	No
Chthonicola sagittata Speckled Warbler	V	Not listed	K	Lives in a wide range of *Eucalyptus* dominated communities that have a grassy understorey. Typical habitat includes scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area.	Absent	Unlikely	No
Cinclosoma castanotum Chestnut Quail-thrush	V	Not listed	K	Throughout its distribution it occurs in a wide range of arid and semi-arid habitats; mainly in the low shrubs and undergrowth of mallee scrub, but also in Acacia scrubs, dry sclerophyll woodland, heath, and native pine. However, in NSW it seems to occur almost exclusively in mallee habitats, with understorey dominated by spinifex, chenopods or other shrubs including Acacia species. Only rarely, such as in Cocoparra NP, is it recorded in other types of woodland, and in these areas a dense understorey may be a prerequisite.	Absent	Unlikely	No
Circus assimilis Spotted Harrier	V	Not listed	K	The Spotted Harrier is found in open wooded country in tropical and temperate Australia, particularly in arid and semi-arid areas. It hunts by day on ground birds, mice, rats, rabbits and lizards. The nest is built in trees in open or remnant woodland.	Absent	Possible	Yes
Climacteris picumnus victoriae Brown Treecreeper (eastern subspecies)	V	Not listed	K	Widespread within eastern Australia, occurring in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. They forage in trees and on the ground for insects, mostly ants. They also feed on nectar from Mugga Ironbark and paperbark, lizards and food scraps. The brown treecreeper nests in hollows of dead standing or live trees.	Marginal	Possible	Yes

Daphoenositta chrysoptera Varied Sittella	V	Not listed	K	Varied Sittella are found in eucalypt woodlands and forests. They prefer rough-barked trees like stringybarks and ironbarks or mature trees with hollows or dead branches. They feed mainly by gleaning on tree trunks or branches looking for insects. The nest is a deep open cup of bark and spiderweb.	Absent	Unlikely	No
Drymodes brunneopygia Southern Scrub-robin	V	Not listed	K	Inhabits mallee and acacia scrub, particularly with dense sub-shrubs in the understorey, including Broombush and other dry shrubs. Occupies vegetation with a post fire age of 4-80 years but is most abundant in areas with a post fire age of 26-40 years as dependent on a well-developed shrub layer. Forages around the base of mallee trees and on the ground beneath shrubs for ground- and litter-dwelling invertebrates, with certain ant species dominating.	Absent	Unlikely	No
Ephippiorhynchus asiaticus Black-necked Stork	E1	Not listed	K	Floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers are the key habitat in NSW for the Black-necked Stork. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries.	Absent	Unlikely	No
Epthianura albifrons White fronted Chat	V	Not listed	K	Found mostly in temperate to arid climates and very rarely sub-tropical areas, it occupies foothills and lowlands up to 1000m above sea level. It occurs mostly in the southern half of NSW in damp open habitats along the coast and near waterways in the western part. Forages on bare or grassy ground in wetland areas.	Marginal	Possible	Yes
Falco hypoleucos Grey Falcon	V	V	K	Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Like other falcons it utilises old nests of other birds of prey and ravens, usually high in a living eucalypt near water or a watercourse.	Present	Possible	Yes
Falco subniger Black Falcon	V	Not listed	K	The black falcon is widely but sparsely distributed in NSW mostly occurring in inland regions. It inhabits woodland, shrubland and grassland in the arid and semi-arid zones, especially wooded watercourses and agricultural land with scattered remnant trees and is usually associated with streams and wetlands. The black falcon feeds mostly on other birds but also some small mammals.	Present	Possible	Yes
Glossopsitta porphyrocephala Purple-crowned Lorikeet	V	Not listed	K	Found in open forests and woodlands, particularly where there are large flowering eucalypts. Also recorded from mallee habitats. Feed primarily on nectar and pollen of flowering Eucalypts, including planted trees in urban areas. May rarely raid orchards to feed on ripe fruit. Breeds away from feeding areas, utilising hollow branches or holes in trees. Also roosts in dense vegetation up to several kilometres away from feeding areas.	Absent	Unlikely	No

Glossopsitta pusilla Little Lorikeet	V	Not listed	K	The Little Lorikeet is found in dry, open eucalypt forests and woodlands. They forage in small flocks, feeding primarily on nectar and pollen in the tree canopy. On the Western Slopes and Tablelands, White Box and Yellow Box are particularly important food sources for pollen and nectar. The nest hollows are located at heights of between 2 and 15m in living smooth-barked eucalypts.	Absent	Unlikely	No
Grantiella picta Painted Honeyeater	V	V	K	Inhabits boree, brigalow and box-gum woodlands and box-ironbark forests. Specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Nest from spring to autumn in a small delicate nest hanging within the outer canopy of drooping eucalypts, she-oak, paperbark or mistletoes branches.	Absent	Unlikely	No
Grus rubicunda Brolga	V	Not listed	K	Brolgas often feed in dry grassland or ploughed paddocks or even desert claypans, however they are dependent on wetlands too, especially shallow swamps, where they will forage with their head entirely submerged. They feed using their heavy straight bill as a 'crowbar' to probe the ground or turn it over, primarily on sedge roots and tubers. They will also take large insects, crustaceans, molluscs and frogs.	Present	Possible	Yes
Haliaeetus leucogaster White-bellied Sea Eagle	V	Not listed	K	The White-bellied Sea Eagle habitats are characterised by the presence of large areas of open water including rivers, swamps, lakes and the sea. Terrestrial habitat includes coastal dunes, tidal flats grassland, heathland, woodland and forest. In NSW it is widespread along the east coast, and all major rivers and waterways/ Breeding habitat consists of mature tall open forest, tall woodland and swamp sclerophyll forest.	Absent	Unlikely	No
Hamirostra melanosternon Black-breasted Buzzard	V	Not listed	K	Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest).	Absent	Unlikely	No
Hieraaetus morphnoides Little Eagle	V	Not listed	K	The Little Eagle is seen over woodland and forested lands and open country extending into the arid zone. It tends to avoid rainforest and heavy forest. It searches for prey on the wind and from a high exposed perch. Prey includes rabbits, other live mammals and insects. They nest in mature living trees in open woodland or tree lined watercourses and rarely in isolated trees.	Marginal	Possible	Yes

Hirundapus caudacutus White-throated Needletail	Not listed	V	K	Migratory and usually seen in eastern Australia from October to April. Breeds in forests in south-eastern Siberia, Mongolia, the Korean Penninsula and northern Japan June-August. More common in coastal areas, less so inland.	Absent	Unlikely	No
Hylacola cautus Shy Heathwren	V	Not listed	K	Inhabits mallee woodlands with a relatively dense understorey of shrubs and heath plants. Feeds on the ground, almost entirely on insects.	Absent	Unlikely	No
Lathamus discolour Swift Parrot	E1	CE	K	Breeding in Tasmania and its nearby islands the swift parrot migrates to south-eastern Australia to feed during winter. Inhabiting winter flowering species such as Red Ironbark, Yellow Gum, White Box, Swamp Gum and Manna Gum that have an association with psyllid infestations.	Absent	Unlikely	No
Leipoa ocellata Malleefowl	E1	V	K	Predominantly inhabit mallee communities, preferring the tall, dense and floristically-rich mallee found in higher rainfall. Utilises mallee with a spinifex understorey, but usually at lower densities than in areas with a shrub understorey. Less frequently found in other eucalypt woodlands.	Absent	Unlikely	No
Limosa limosa Black-tailed Godwit	V	Not listed	K	Primarily found along the coast, usually in sheltered bays, estuaries and lagoons with large intertidal mudflats and/or sandflats. This species also occurs inland on mudflats and in large muddy lakes and swamps where the water is less than 10cm deep. Forages for insects, crustaceans, molluscs, worms, larvae, spiders, fish eggs, frog eggs and tadpoles in soft mud or shallow water.	Absent	Unlikely	No
Lophochroa leadbeateri Major Mitchell's Cockatoo	V	Not listed	K	Inhabits a wide range of treed and treeless inland habitats, always within easy reach of water. Feeds mostly on the ground, especially on the seeds of native and exotic melons and on the seeds of species of saltbush, wattles and cypress pines.	Marginal	Possible	Yes
Lophoictinia isura Square Tailed Kite	V	Not listed	K	The square tailed kite ranges along coastal and subcoastal areas from southwestern to northern Australia. Scattered records in NSW indicate that the species is a regular resident in the north, north east and along the major west flowing river systems. The square tailed kite is found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses.	Absent	Unlikely	No
Melanodryas cucullata cucullata Hooded Robin (south eastern form)	V	Not listed	K	Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee. The habitat needs to be structurally diverse with mature eucalypts, saplings, small shrubs and tall native grasses. The hooded robin feeds on insects. They nest in a tree fork or crevice using bark and grasses to form the nest.	Absent	Unlikely	No

Melithreptus gularis gularis Black-chinned Honeyeater (Eastern subspecies)	V	Not listed	K	Inhabits drier open forests or woodlands dominated by box and ironbark eucalypts. It also inhabits open forests of smooth-barked gums, stringybarks, ironbarks and tea-trees. The black-chinned honeyeater moves quickly from tree to tree, foraging rapidly along outer twigs, underside of branches and trunks, probing for insects. Nectar is taken from flowers and honeydew is gleaned from foliage. The nest is placed high in the crown of the tree and hidden by foliage.	Absent	Unlikely	No
Neophema pulchella Turquoise Parrot	V	Not listed	P	Extending from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range the turquoise parrot lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. They prefer to feed in the shade of a tree and spends most of the day on the ground searching for the seeds of grasses and herbaceous plants. The turquoise parrot nests in tree hollows, logs or posts.	Marginal	Possible	Yes
Ninox connivens Barking Owl	V	Not listed	K	Inhabits eucalypt woodland, open forest, swamp woodlands and, especially in inland areas, timber along watercourses. Denser vegetation is used occasionally for roosting. The barking owl feeds on a variety of prey with invertebrates predominant for most of the years and birds and small mammals becoming important during breeding.	Marginal	Unlikely	No
Ninox strenua Powerful Owl	V	Not listed	P	Primarily distributed on coast, inhabits dense vegetation & old trees in sheltered gullies. The powerful owl inhabits a range of vegetation types from woodland and open sclerophyll forest to tall open wet forest and rainforest. It requires large tracts of forest or woodland but can occur in fragmented landscapes. Breeding and hunting is undertaken in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats.	Marginal	Unlikely	No
Oxyura australis Blue-billed Duck	V	Not listed	K	Prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. Blue-billed ducks will feed by day far from the shore, particularly if dense cover is available in the central parts of the wetland.	Absent	Unlikely	No
Pachycephala inornata Gilbert's Whistler	V	Not listed	K	The Gilbert's Whistler occurs in a range of habitats within NSW, though the shared feature appears to be a dense shrub layer. It forages on or near the ground in shrub thickets and in tops of small trees.	Absent	Unlikely	No
Pedionomus torquatus Plains-wanderer	E1	CE	K	Plains-wanderers live in semi-arid, lowland native grasslands that typically occur on hard red-brown soils. Preferred habitat of the Plains-wanderer typically comprises 50% bare ground, 10% fallen litter, and 40% herbs, forbs and grasses.	Absent	Unlikely	No

Petroica boodang Scarlet Robin	V	Not listed	K	The Scarlet Robin lives in mature and regrowth eucalypt forest and woodlands. In autumn and winter, many Scarlet Robins live in open grassy woodland and grasslands or grazed paddocks with scattered trees. They forage insects and other invertebrates from low perches, fenceposts or on the ground. The nest is an open cup made of plant fibres and cobwebs and is built in the fork of a tree.	Marginal	Possible	Yes
Petroica phoenicea Flame Robin	V	Not listed	P	The Flame Robin breeds in upland tall moist eucalypt forests and woodlands and prefer clearings or areas with open understoreys. In winter, they migrate to drier more open habitats in the lowlands and live in dry forests, open woodlands and in pastures and native grasslands with or without scattered trees. They forage small invertebrates from low perches or take flying insects in the air.	Marginal	Possible	Yes
Petroica rodinogaster Pink Robin	V	Not listed	K	Inhabits rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies. Insects and spiders are the main dietary items.	Absent	Unlikely	No
Polytelis swansonii Superb Parrot	V	V	K	Inhabits box-gum, box-cypress pine and boree woodlands and river red gum forest or woodland. On the South West Slopes nest trees can be in open Box-Gum Woodland or isolated paddock trees. The superb parrot may forage up to 10km from nesting sites, primarily in grassy box woodland. They feed in trees and understorey shrubs and on the ground and their diet consists mainly of grass seeds and herbaceous plants.	Marginal	Unlikely	Yes
Pomatostomus temporalis temporalis Grey-crowned Babbler (eastern subspecies)	V	Not listed	K	Inhabits open box-gum woodland on the slopes and box-cypress pine and open box woodlands on alluvial plains. Flight is laborious with birds hopping to the top of a tree and gliding down to the next. Birds are generally unable to cross large open areas. The grey-crowned babbler feeds on invertebrates.	Absent	Unlikely	No
Rostratula australis Australian Painted Snipe	E1	E	K	Inhabits fringes of swamps, dams and marshy areas with a cover of grasses, lignum, low scrub or open timber. The nest is constructed on the ground amongst tall vegetation such as grasses and leaves.	Absent	Unlikely	No
Stagonopleura guttata Diamond Firetail	V	Not listed	K	It is found in grassy woodlands as well as open forest, mallee and natural temperate grassland. The diamond firetail feeds on the ground on ripe and partly ripe grass and herb seeds, green leaves and insects. Nests are globular structures built in either the shrubby understorey or higher up. They roost in dense shrubs or in smaller nests.	Absent	Unlikely	No

Stictonetta naevosa Freckled Duck	V	Not listed	K	Prefers permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. The freckled duck moves to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds during drier times. They rest during the day and feed at dawn, dusk and night on algae, seeds and vegetative parts of aquatic grasses and rushes and small invertebrates.	Absent	Unlikely	No
Tyto novaehollandiae Masked Owl	V	Not listed	K	The species lives in dry eucalypt forests and woodlands, often hunts along the edges of forests, including roadsides. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting.	Absent	Unlikely	No
Amphibia							
Crinia sloanei Sloane's Froglet	E1	E	K	It is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats.	Marginal	Unlikely	No
Litoria aurea Green and Golden Bell Frog	E1	V	K	Optimum habitat includes water-bodies that are unshaded, free of predatory fish, have a grassy area nearby and sheltering sites available.	Absent	Unlikely	No
Litoria booroolongensis Booroolong Frog	E1	E	P	Aquatic species inhabiting vegetation within or at the edges of permanent or ephemeral water with some fringing vegetation cover. The booroolong frog shelters under rocks or amongst vegetation near the ground on the stream edge.	Absent	Unlikely	No
Litoria castanea Yellow-spotted Tree Frog	E4A	E	P	There is only a single known population of the Yellow-spotted Tree Frog which occurs on the Southern Tablelands. Historically, this species occurred in two separate highland ranges including the central highlands from Bathurst/Orange to Bombala. The Yellow-spotted Tree Frog requires large permanent ponds or slow flowing streams with plenty of emergent vegetation such as bulrushes.	Absent	Unlikely	No
Litoria littlejohni Littlejohn's Tree Frog	E1	E	P	This species breeds in the upper reaches of permanent streams and in perched swamps. Non-breeding habitat is heath based forests and woodlands where it shelters under leaf litter and low vegetation, and hunts for invertebrate prey either in shrubs or on the ground.	Absent	Unlikely	No
Litoria raniformis Southern Bell Frog	E1	V	K	Usually found in or around permanent or ephemeral swamps and sometimes irrigated rice crops.	Absent	Unlikely	No
Mixophyes balbus Stuttering Frog	E1	V	P	Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range	Absent	Unlikely	No

Pseudophryne australis Red-crowned Toadlet	V	Not listed	P	Inhabits open forest, mostly on Hawkesbury and Narrabeen Sandstone, and periodically wet drainage lines below sandstone ridges that often have shale lenses or cappings. Shelters under rocks and amongst masses of dense vegetation or thick piles of leaf litter.	Absent	Unlikely	No
Reptilia							
Aprasia parapulchella Pink-tailed Legless Lizard	V	V	K	The pink-tailed legless lizard is only known from the Central and Southern Tablelands and the South Western Slopes. Inhabits sloping, open woodlands with predominantly native grassy groundlayers particularly those dominated by kangaroo grass. Sites are typically well-drained, with rocky outcrops or scattered, partially buried rocks.	Absent	Unlikely	No
Delma impar Striped Legless Lizard	V	V	K	Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Habitat is where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass Themeda australis, spear-grasses Austrostipa spp. and poa tussocks Poa spp., and occasionally wallaby grasses Austrodanthonia spp.	Marginal	Possible	Yes
Hemiaspis damelii Grey Snake	E1	E	P	Floodplains and ephemeral wetlands associated with heavy clay soils are key habitat features for the Grey Snake. The species shelters in soil cracks, rocks, logs, flood debris, and abandoned burrows within these habitats. The species diet is primarily composed of ground-dwelling frogs.	Absent	Unlikely	No
Hoplocephalus bitorquatus Pale-headed Snake	V	Not listed	P	Found mainly in dry eucalypt forests and woodlands, cypress forest and occasionally in rainforest or moist eucalypt forest. The species diet is primarily composed of tree frogs, although ground-dwelling frogs, lizards and small mammals.	Absent	Unlikely	No
Hoplocephalus bungaroides Broad-headed Snake	E1	V	P	Shelters in rock crevices and under flat sandstone rocks on exposed cliff edges and feeds mostly on geckos and small skinks.	Absent	Unlikely	No
Tympanocryptis mccartneyi Bathurst Grassland Earless Dragon	E4A	CE	P	This species inhabits treeless plains and open grasslands and has been found along railway tracks and in vacant paddocks with tall pasture grass in the Bathurst area.	Absent	Unlikely	No

Varanus rosenbergi Rosenberg's Goanna	V	Not listed	P	Occurs on the Sydney Sandstone in Wollemi National Park, in the Goulburn and ACT regions and near Cooma in the south. Found in heath, open forest and woodland. Associated with termites, the mounds of which this species nest in. Termite mounds are a critical habitat component. Feeds on carrion, birds, eggs, reptiles and small mammals. Shelters in hollow logs, rock crevices and in burrows.	Absent	Unlikely	No
Flora							
Acacia ausfeldii Ausfeld's Wattle	V	Not listed	K	Found to the east of Dubbo in the Mudgee-Ulan-Gulgong area, South Western Slopes bioregion, with some records in the adjoining Brigalow Belt South, South Eastern Highlands and the Sydney Basin bioregions Associated species include Eucalyptus albens, E. blakelyi and Callitris spp., with an understorey dominated by Cassinia spp. and grasses.	Absent	Unlikely	No
Acacia clunies-rossiae Kanangra Wattle	V	Not listed	K	Grows in dry sclerophyll forest on skeletal soils on rocky slopes, or on alluvium along creeks in the Kowmung and Coxs River areas entirely within Kanangra-Boyd and Blue Mountains National Parks.	Absent	Unlikely	No
Acacia flocktoniae Flockton Wattle	V	V	K	Grows in dry sclerophyll forest on sandstone.	Absent	Unlikely	No
Acacia meiantha	E1	E	P	Acacia meiantha is an erect or sometimes straggling shrub to 1.5m. Three isolated populations occur within the Central Tablelands. The populations are found at Clarence, Mullions Range and Aarons Range. It occurs on different geologies and in different plant communities. At Mullions Range it occurs mainly in open eucalypt forest or woodland in association with E. rossii, E. mannifera, E. dives and E. macrorhyncha as well as A. buxifolia, A. dealbata and A. gunnii on gravelly clay or brown loamy soil in areas above 860m asl. A. meiantha was not identified on the site.	Absent	Unlikely	No
Acacia phasmoides Phantom Wattle	V	V	K	Grows in shrubby woodland on sandy, granitic soil near creeks or in rocky crevices.	Absent	Unlikely	No
Ammobium craspedioides Yass Daisy	V	V	K	Found in moist or dry forest communities, Box-Gum Woodland and secondary grassland derived from clearing of these communities. Unaffected by light grazing.	Absent	Unlikely	No
Amphibromus fluitans Floating Swamp Wallaby-grass	V	V	K	This species grows mostly in permanent swamps. The species needs wetlands which are at least moderately fertile and which have some bare ground, conditions which are produced by seasonally fluctuating water levels.	Absent	Unlikely	No

Asterolasia buxifolia	E	Not listed	K	Little is known about the species. Apparently restricted to the riparian zone of a granitic rocky section of the Lett River.	Absent	Unlikely	No
Austrostipa metatoris A spear-grass	V	V	K	habitats include sandhills, sandridges, undulating plains and flat open mallee country, with red to red-brown clay-loam to sandy-loam soils; associated species include Eucalyptus populnea, E. intertexta, Callitris glaucophylla, Casuarina cristata, Santalum acuminatum and Dodonaea viscosa.	Absent	Unlikely	No
Austrostipa wakoolica	E1	E	K	Grows on floodplains of the Murray River tributaries, in open woodland on grey, silty clay or sandy loam soils; habitats include the edges of a lignum swamp with box and mallee; creek banks in grey, silty clay; mallee and lignum sandy-loam flat; open Cypress Pine Forest on low sandy range.	Absent	Unlikely	No
Boronia deanei Deane's Boronia	V	V	K	Grows in wet heath, often at the margins of open forest adjoining swamps or along streams.	Absent	Unlikely	No
Bossiaea fragrans	E4A	CE	K	Occurs on spilite, rhyolite or slate and volcanic substrates and is often associated with Red Stringybark.	Absent	Unlikely	No
Brachyscome muelleroides Claypan Daisy	V	V	K	Grows in damp areas on the margins of claypans in moist grassland with Pycnosorus globosus, Agrostis avenacea and Austrodanthonia duttoniana.	Absent	Unlikely	No
Brachyscome papillosa Mossgiel Daisy	V	V	K	Recorded primarily in clay soils on Bladder Saltbush and Leafless Bluebush plains, but also in grassland and in Inland Grey Box - Cypress Pine woodland.	Marginal	Unlikely	No
Caesia parviflora var. minor	E1	Not listed	K	Found in damp places in open forest on wet heathland on sandstone and sand.	Absent	Unlikely	No
Caladenia arenaria Sand-hill Spider Orchid	E1	E	K	Occurs in woodland with sandy soil, especially that dominated by White Cypress Pine.	Absent	Unlikely	No
Caladenia attenuata Duramana Fingers	E4A	CE	P	It has a highly restricted distribution, having been recorded from 2 localities within the Bathurst Ilford region with an area of occupance estimated to be 8 square kilometres.	Absent	Unlikely	No
Caladenia concolor Crimson Spider Orchid	E1	V	K	Habitat is regrowth woodland on granite ridge country that has retained a high diversity of plant species, including other orchids.	Absent	Unlikely	No

Caladenia rosella Rosella Spider Orchid	E4A	E	P	The species is found in woodlands and low forests of Red Box (Eucalyptus polyanthemos), Long-leafed Box (E. goniocalyx) and Red Stringybark (E. macrorhyncha) in well-drained, skeletal soils.	Absent	Unlikely	No
Callistemon megalongensis Megalong Valley Bottlebrush	E4A	CE	K	Occurs in shrubby swamp habitat and swampy woodland. Associated species include Callistemon citrinus, Leptospermum morrisonii, L. juniperinum, L. polygalifolium, L. obovatum, Empodisma minus and Grevillea asplenifolia with occasional emergent Melaleuca linearifolia and Eucalyptus camphora.	Absent	Unlikely	No
Cullen parvum Small Scurf-pea	E4A	CE	K	Plants are found in grassland, River Red Gum (Eucalyptus camaldulensis) Woodland or Box-Gum Woodland, sometimes on grazed land and usually on table drains or adjacent to drainage lines or watercourses.	Marginal	Unlikely	No
Dichanthium setosum Bluegrass	V	V	K	Often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture. Associated with heavy basaltic black soils and red-brown loams with clay subsoil.	Marginal	Possible	Yes
Diuris sp. (Oaklands, D.L. Jones 5380) Oaklands Diuris	E1	Not listed	K	Grows in White Cypress Pine (Callitris glaucophylla) Woodland, either among dense grasses in flat areas with associated eucalypts, or amongst sparse grasses and forbs on low sandhills.	Absent	Unlikely	No
Diuris tricolor Pine Donkey Orchid	V	Not listed	K	Associated species include Callitris glaucophylla, Eucalyptus populnea, Eucalyptus intertexta, Ironbark and Acacia shrubland. The understorey is often grassy with herbaceous plants such as Bulbine species.	Absent	Unlikely	No
Eleocharis obicis Spike-Rush	V	V	K	Grows in ephemerally wet situations such as roadside mitre drains and depressions, usually in low-lying grasslands near Condobolin, Hay and near Broken Hill.	Absent	Unlikely	No
Eucalyptus aggregata Black Gum	V	V	P	Black Gum occurs mainly in the wetter, cooler and higher parts of the Central and Southern Tablelands. They grow in the lowest parts of the landscape 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 E. pauciflora, E. viminalis, E. rubida, E. stellulata and E. ovata.	Absent	Unlikely	No
Eucalyptus alligatrix subsp. alligatrix	V	V	K	Only known from a single location south-west of Rylstone. The population is confined to an area of a few hectares where an estimated 3,000 to 4,500 trees survive. Grows in dry sclerophyll woodland on shallow relatively infertile soils.	Absent	Unlikely	No

Eucalyptus cannonii Capertee Stringybark	V	Not listed	K	The Capertee Stringybark is predominantly restricted to the central tablelands and slopes of NSW between the Golden Highway in the north, and the Mitchell Highway in the south. The species' distribution is bounded from east of Bathurst, to Wallerwang near Lithgow, north along the western edge of Wollemi National Park and north-west to Mudgee.	Absent	Unlikely	No
Eucalyptus canobolensis Silver-Leaf Candlebark	V	E	K	Known only from Mt Canobolas near Orange. Found predominantly between 1100-1300m. The species is more or less restricted to the Mt Canobolas State Recreation Area.	Absent	Unlikely	No
Eucalyptus pulverulenta Silver-leafed Gum	V	V	K	Grows in shallow soils as an understorey plant in open forest, typically dominated by Brittle Gum (Eucalyptus mannifera), Red Stringybark (E. macrorhynca), Broad-leafed Peppermint (E. dives), Silvertop Ash (E. sieberi) and Apple Box (E. bridgesiana).	Absent	Unlikely	No
Eucalyptus robertsonii subsp. hemisphaerica Robertson's Peppermint	V	V	P	Found only in the central tablelands of NSW, east and south east of Bathurst and Orange. They are locally frequent in grassy or dry sclerophyll woodland or forest on lighter soils and often on granite. Associated vegetation includes mixed woodlands of Eucalyptus piperita, E. goniocalyx, E. dalrympleana, E. dives, E. mannifera and E. rossii. E. robertsonii was not identified on the site.	Marginal	Unlikely	No
Euphrasia arguta	E4A	CE	P	The species was rediscovered in the Nundle area in 2008. Historic records of the species noted the following habitats: 'in the open forest country around Bathurst in sub humid places', 'on the grassy country near Bathurst', and 'in meadows near rivers'.	Marginal	Unlikely	No
Euphrasia collina subsp. muelleri Mueller's Eyebright	E1	E	P	Little is known about the habitat this species preferred, although there is a reference to "damp places" in an early von Mueller collection. Extant populations in Victoria occur in heathy woodland.	Absent	Unlikely	No
Euphrasia scabra Rough Eyebright	E1	Not listed	P	Occurs in or at the margins of swampy grassland or in sphagnum bogs, often in wet, peaty soil.	Absent	Unlikely	No
Grevillea divaricata	E1	Not listed	K	Occurs in dry open forest lands and as possibly growing on rocky river margins.	Absent	Unlikely	No
Grevillea ilicifolia subsp. ilicifolia Holly-leaf Grevillea	E4A	Not listed	K	Occurs in shrubby mallee communities.	Absent	Unlikely	No

Grevillea wilkinsonii Tumut Grevillea	E4A	E	K	Most healthy adult plants occur in open sunny areas, and those plants found under the canopy of dense vegetation tend to be spindly and are sometimes subject to sooty mould infestations.	Marginal	Unlikely	No
Homoranthus darwinioides Fairy Bells	V	V	P	Grows in in various woodland habitats with shrubby understoreys, usually in gravely sandy soils.	Absent	Unlikely	No
Indigofera efoliata Leafless Indigo	E1	E	K	Recorded in Goonoo State Forest in Eucalyptus crebra and Callitris glaucophylla dry sclerophyll forest, and in Eucalyptus microcarpa and Callitris glaucophylla tall woodland. Herbarium records note the species as growing on slight rises amongst ironstone formation in stony red-brown sandy loam.	Absent	Unlikely	No
Isotoma fluviatilis subsp. fluviatilis	Not listed	X	K	Known to grow in damp places, on the Cumberland Plain, including freshwater wetland, grassland/alluvial woodland and an alluvial woodland/shale plains woodland.	Absent	Unlikely	No
Kippistia suaedifolia Fleshy Minuria	E1	Not listed	K	Grows around saline lakes and depressions, often in association with gypsum. Rare in NSW, recorded only from a restricted area on a loamy and highly gypseous soil.	Absent	Unlikely	No
Lepidium aschersonii Spiny Peppercress	V	V	K	Found on ridges of gilgai clays dominated by Brigalow (Acacia harpophylla), Belah (Casuarina cristata), Buloke (Allocasuarina luehmanii) and Grey Box (Eucalyptus microcarpa). In the south has been recorded growing in Bull Mallee (Eucalyptus behriana). Often the understorey is dominated by introduced plants.	Absent	Unlikely	No
Lepidium hyssopifolium Aromatic Peppercress	E1	E	K	In NSW the species was known to have occurred in both woodland with a grassy understorey and in grassland.	Marginal	Unlikely	No
Lepidium monoplocoides Winged Peppercress	E1	E	K	Occurs on seasonally moist to waterlogged sites, on heavy fertile soils. redominant vegetation is usually an open woodland.	Absent	Unlikely	No
Leptorhynchos orientalis Lanky Buttons	E1	Not Listed	K	Grows in woodland or grassland, sometimes on the margins of swamps. Communities include a Bimble Box plain in red-brown soil, dense Acacia pendula woodland with herbaceous understorey on red clay to clay-loam, open grassland areas on red soils, and red clay plains at the edge of a Canegrass swamp.	Absent	Unlikely	No
Leucochrysum albicans subsp. tricolor Hoary Sunray	Not listed	E	P	Occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils. In NSW it currently occurs on the southern tablelands.	Marginal	Unlikely	No

Persoonia marginata Clandulla Geebung	V	V	K	Grows in dry sclerophyll forest and woodland communities on sandstone.	Absent	Unlikely	No
Pilularia novae-hollandiae Austral Pillwort	E1	Not listed	K	Grows in shallow swamps and waterways, often among grasses and sedges. It is most often recorded in drying mud as this is when it is most conspicuous.	Absent	Unlikely	No
Pomaderris cocoparrana Cocoparra Pomaderris	E1	E	K	Confined to the Cocoparra Ranges near Griffith. An isolated population also occurs 65 kilometres east of the Ranges on private land north of Ardlethan.	Absent	Unlikely	No
Pomaderris cotoneaster Cotoneaster Pomaderris	E1	E	K	Habitats include forest with deep, friable soil, amongst rock beside a creek, on rocky forested slopes and in steep gullies between sandstone cliffs.	Absent	Unlikely	No
Pomaderris queenslandica Scant Pomaderris	E1	Not listed	K	Found in moist eucalypt forest or sheltered woodlands with a shrubby understorey, and occasionally along creeks.	Absent	Unlikely	No
Prasophyllum petilum Tarengo Leek Orchid	E1	E	K	Grows in grassy woodland in association with River Tussock Poa labillardieri, Black Gum Eucalyptus aggregata and tea-trees Leptospermum spp. near Queanbeyan and within the grassy groundlayer dominated by Kanagroo Grass under Box-Gum Woodland.	Absent	Unlikely	No
Prasophyllum sp. Wybong	Not listed	CE	P	Known to occur in open eucalypt woodland and grassland.	Marginal	Unlikely	No
Prostanthera gilesii	E4A	Not listed	K	Known only from Mount Canobolas State Conservation Area, south-west of Orange in central western NSW.	Absent	Unlikely	No
Pultenaea humilis Dwarf Bush-pea	V	Not listed	K	Found in isolated remnants of native woodland and forest communities that occur in extensively cleared agricultural landscapes.	Marginal	Unlikely	No
Senecio garlandii Woolly Ragwort	V	Not listed	K	Occurs on sheltered slopes of rocky outcrops.	Absent	Unlikely	No
Swainsona murrayana Slender Darling Pea	V	V	K	Grows in a variety of vegetation types including bladder saltbush, black box and grassland communities on level plains, floodplains and depressions and is often found with Maireana species. Plants have been found in remnant native grasslands or grassy woodlands that have been intermittently grazed or cultivated.	Marginal	Unlikely	No

Swainsona recta Small Purple-pea	E1	E	P	Historically recorded from Carcoar, Culcairn and Wagga Wagga where it is now probably extinct. Populations still exist in the Queanbeyan and Wellington-Mudgee areas. Before European settlement it occurred in the grassy understorey of woodlands and open forests dominated by Eucalyptus blakelyi, E. melliodora, E. rubida and E. goniocalyx.	Absent	Unlikely	No
Swainsona sericea Silky Swainson-pea	V	Not listed	K	Found in temperate grassland and snow gum woodland on the Monaro and box-gum woodland in the southern tablelands and southwest slopes. Sometimes found in association with cypress pines.	Absent	Unlikely	No
Thesium australe Austral Toadflax	V	V	K	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast, often in association with Kangaroo grass.	Absent	Unlikely	No
Tylophora linearis	V	E	K	Grows in dry scrub and open forest.	Absent	Unlikely	No
Veronica blakelyi	V	Not listed	K	Occurs in eucalypt forest, often in moist and sheltered areas. Associated canopy species include Eucalyptus dives, E. dalrympleana, E. rossii and E. pauciflora.	Absent	Unlikely	No
Zieria obcordata Granite Zieria	E1	E	K	Grows in eucalypt woodland or shrubland dominated by species of Acacia on rocky hillsides. Also occurs in Eucalyptus and Callitris dominated woodland with an open, low shrub understorey, on moderately steep, mainly west to north-facing slopes in sandy loam amongst granite boulders.	Absent	Unlikely	No
Ecological communities							
Coolac-Tumut Serpentinite Shrubby Woodland in the NSW South Western Slopes and South Eastern Highlands Bioregions	E3	Not listed	K	Coolac-Tumut Serpentinite Shrubby Woodland consists of an overstorey of drooping sheoak (Allocasuarina verticillata) with the shrubs hickory wattle (Acacia implexa), grasstrees (Xanthorrhoea glauca) and Ricinocarpos bowmanii.The groundlayer is consists of a range of native grasses and herbs, often including kangaroo grass (Themeda australis), wiregrasses (Aristida spp.), wallaby grasses (Rytidosperma spp.), Senecio quadridentatus, rock fern (Cheilanthes seiberi) and Carex breviculmis. Scattered trees of white box (Eucalyptus albens) and bundy (Eucalyptus nortonii) can occur.	Absent	Unlikely	No

Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	E3	Not listed	K	Tall woodland or open forest dominated by Fuzzy Box Eucalyptus conica, often with Grey Box Eucalyptus microcarpa, Yellow Box Eucalyptus melliodora, or Kurrajong Brachychiton populneus. Buloke Allocasuarina luehmannii is common in places. Shrubs are generally sparse, and the groundcover moderately dense. Community occurs on brown loam or clay, alluvial or colluvial soils on prior streams and abandoned channels or slight depressions on undulating plains or flats of the western slopes.	Marginal	Unlikely	No
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Not listed	E	K	This ecological community is relatively less well studied and understood in comparison with other grassy woodland systems in south-eastern Australia, and in NSW it can be transitional between the temperate lower slopes and tablelands communities. Typically, condition is assessed by reference to patch size and vegetation structure thresholds or species composition metrics to determine if the patch satisfies condition criteria or conservation advice.	Marginal	Possible	No
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	E3	Not listed	K	Inland Grey Box Woodland includes those woodlands in which the most characteristic tree species, Eucalyptus microcarpa (Inland Grey Box), is often found in association with E. populnea subsp. bimbil (Bimble or Poplar Box), Callitris glaucophylla (White Cypress Pine), Brachychiton populneus (Kurrajong), Allocasuarina luehmannii (Bulloak) or E. melliodora (Yellow Box), and sometimes with E. albens (White Box). Shrubs are typically sparse or absent, although this component can be diverse and may be locally common, especially in drier western portions of the community. A variable ground layer of grass and herbaceous species is present at most sites. At severely disturbed sites the ground layer may be absent.	Marginal	Unlikely	No
Mallee and Mallee-Broombush dominated woodland and shrubland, lacking Triodia, in the NSW South Western Slopes Bioregion	E4B	Not listed	K	The variant of the community dominated by Bull Mallee and White Mallee tends to occur on plains to the east and north of West Wyalong on red earths including the aeolian soil known as parna. This community typically has a canopy layer co-dominated by the mallee eucalypts Eucalyptus behriana (Bull Mallee) and E. dumosa (White Mallee), with either (on flat land) E. socialis (Red Mallee), or (on low rises) E. polybractea (Blue Mallee) and E. viridis (Green Mallee).	Absent	Unlikely	No
Monaro Tableland Cool Temperate Grassy Woodland in the South Eastern Highlands Bioregion	E4B	Not listed	P	Woodland with a sparse to very sparse tree layer dominated by Eucalyptus pauciflora either as a single species or with any of Acacia melanoxylon, E. rubida, E. stellulata and/or E. viminalis. Occurs in the Southern Tablelands of NSW occupying broad valley floors and slopes and low rises of moderately undulating tablelands.	Absent	Unlikely	No

Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	E3	Not listed	K	Dense, open or sparse layer of shrubs with soft-leaved sedges, grasses and forbs. Small trees may be present as scattered emergents or absent. Species include Baeckea gunniana, B. utilis, Callistemon pityoides, Leptospermum juniperinum, L. lanigerum, L. myrtifolium, L. obovatum, L. polygalifolium, C. appressa, C. fascicularis, C. gaudichaudiana, P. costiniana, and P. labillardieri. It is the only type of wetland that may contain more than trace amounts of Sphagnum spp., the hummock peat-forming mosses. Small trees may be present as scattered emergents or absent.	Absent	Unlikely	No
Mt Canobolas Xanthoparmelia Lichen Community	E3	Not listed	K	A foliose lichen community characterised by the following assemblage of terricolous (soil-dwelling) and saxicolous (rock-dwelling) species: Cladia fuliginosa - Xanthoparmelia canobolasensis - Xanthoparmelia digitiformis - Xanthoparmelia metaclystoides - Xanthoparmelia metastrigosa - Xanthoparmelia multipartita - Xanthoparmela neorimalis - Xanthoparmelia sulcifera - Xanthoparmelia tasmanica. The community occurs at Mt Canobolas in central-western New South Wales, on rock faces and soils of the Mt Canobolas Tertiary volcanic complex.	Absent	Unlikely	No
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	E3	Not listed	K	The structure of the community varies from low woodland and low open woodland to low sparse woodland or open shrubland, depending on site quality and disturbance history. The tree layer grows up to a height of about 10 metres and invariably includes Acacia pendula (Weeping Myall or Boree) as one of the dominant species or the only tree species present. The understorey includes an open layer of chenopod shrubs and other woody plant species and an open to continuous groundcover of grasses and herbs.	Absent	Unlikely	No
Poplar Box Grassy Woodland on Alluvial Plains	Not listed	E	K	The Poplar Box Grassy Woodland on Alluvial Plains ecological community is typically a grassy woodland or occasionally open grassy forest, with a canopy dominated by Eucalyptus populnea and an understorey mostly of grasses and other forbs. Other sub-dominant tree species may include Callitris glaucophylla, Casuarina cristata, Eucalyptus coolabah, E. largiflorens and E. melanophloia.	Absent	Unlikely	No
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	E3	Not listed	K	In the Riverina bioregion and the far south-western portion of the NSW South Western Slopes bioregion, the community is dominated by White Cypress Pine typically associated with prior streams and aeolian source-bordering dunes, which are scattered within an extensive alluvial clay plain dominated by chenopod shrublands.	Absent	Unlikely	No
Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions	E3	Not listed	P	Dominated by an open canopy of species including E. viminalis, E. radiata, E. dalrympleana subsp. dalrympleana and E. pauciflora. Typically occurs on loam or clay soils associated with basalt or less commonly alluvium, fine grained sedimentary rocks, granites and similar substrates. Occurs at altitudes between 600m to 900m above sea level.	Absent	Unlikely	No

Weeping Myall Woodlands	Not listed	E	K	Range from open woodlands to woodlands, generally 4-12 m high, in which Weeping Myall (Acacia pendula) trees are the sole or dominant overstorey species. Other common names for Weeping Myall include Myall, Boree, Balaar, Nilyah, Bastard Gidgee, and Silver Leaf Boree.	Absent	Unlikely	No
Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	E4B	Not listed	P	Woodland with a sparse to very sparse tree layer dominated by Eucalyptus pauciflora either as a single species or with E. rubida. Occurs in the Southern Tablelands of NSW occupying broad valley floors and slopes and low rises of moderately undulating Southern Tablelands.	Absent	Unlikely	No
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	E4B	Not listed	K	An open woodland community (sometimes occurring as a forest formation), in which the most obvious species are one or more of the following: White Box Eucalyptus albens, Yellow Box E. melliodora and Blakely's Red Gum E. blakelyi. Intact sites contain a high diversity of plant species, including the main tree species, additional tree species, some shrub species, several climbing plant species, many grasses and a very high diversity of herbs. Commonly co-occurring eucalypts include Apple Box (E. bridgesiana), Red Box (E. polyanthemos), E. macrorhyncha), Coastal Grey Box (E. moluccana), Candlebark (E. rubida), Bundy (E. goniocalyx), Broad-leaved Stringybark (E. goniocalyx), Youman's Stringybark (E. youmanii) and others.	Absent	Unlikely	No
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	E3	CE	K	Open woodland community in which the most obvious species are White Box, Yellow Box and/or Blakely's Red Gum. The NSW definition of this community differs from the federal definition. The woodland on the site does not comply with the Commonwealth definition.	Absent	Unlikely	No

Codes

Occurrence

Species known (K) to occur were identified in the search area on the Bionet database or from field surveys. Predicted (P) species were identified from the Bionet database.

Presence of habitat

Present: Potential or known suitable habitat features such as soil type, geology, moisture content, topography, aspect and/or altitude or presence of associated species/vegetation type.

Marginal: Some suitable habitat features such as soil type, geology, moisture content, topography, aspect and/or altitude or presence of some associated species/vegetation type.

Absent: No suitable resources/landscape/associated species present.

Likelihood of occurrence

None: Species does not occur on the site.

Unlikely: Species not likely to occur on the site.

Possible: Species could occur and habitat may be suitable.

Present: Species recorded on the site during site inspections.

Potential impact

No: The development would not impact the species or habitat and no impact expected. No Assessment of Significance and/or EPBC Act considerations required.

Yes: The development could impact the species and an Assessment of Significance and/or EPBC Act considerations has been undertaken.

Appendix 2. Test of significance

The test of significance was undertaken for the following species:

- *Anseranas semipalmata* Magpie Goose
- *Burhinus grallarius* Bush Stone-curlew
- *Circus assimilis* Spotted Harrier
- *Climacteris picumnus victoria*e Brown Treecreeper (eastern subspecies)
- *Dichanthium setosum* Bluegrass
- *Delma impar* Striped Legless Lizard
- *Epthianura albifrons* White fronted Chat
- *Falco hypoleucos* Grey Falcon
- *Falco subniger* Black Falcon
- *Grus rubicunda* Brolga
- *Hieraaetus morphnoides* Little Eagle
- *Lophochroa leadbeateri* Major Mitchell's Cockatoo
- *Neophema pulchella* Turquoise Parrot
- *Petroica boodang* Scarlet Robin
- *Petroica phoenicea* Flame Robin
- *Polytelis swainsonii* Superb Parrot
- *Pteropus poliocephalus* Grey-headed Flying-fox
- *Saccolaimus flaviventris* Yellow Bellied Sheath-tail Bat
- Grey Box Grassy Woodland and Derived Native Grassland community

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,

The vegetation on the subject site is dominated by a cultivated crop of *Avena sativa* (common oat) with exotic broadleaved weeds. Native vegetation on the subject site is limited to a remnant eucalypt stand on the southeastern boundary with an exotic understorey and isolated native succulents present below the modified grassland canopy.

Threatened species of bats and avifauna with potential to occur in the grassland on the subject site are highly mobile and expected to relocate to other suitable habitat in the locality. The trees shall be retained and will be available for bat and avifaunal habitat. Terrestrial species *Delma impar* can be found inhabiting grasslands with a highly exotic component, however the species is reliant on the presence of tussock grass species of which are absent from the subject site. Additionally, the species avoids habitat disturbed by ploughing which may occur on-site due to the current and historical cultivation practices.

Threatened grass species *Dichanthium setosum* was identified as potentially occurring on the site. Bluegrass was not observed on the subject site on the day of inspection. Absence of Bluegrass is expected to be a result of regular cultivation practices including soil disturbance through ploughing and seeding with crop species that compete for space. No adverse impacts on the lifecycle or population size of threatened species is expected from the development.

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
(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,

According to DCCEEW Protected Matters Search tool, the Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia community is mapped as 'likely to occur' within the study area outside the proposed development footprint to the west. The isolated stand of remnant eucalypts on

the subject site to the southeast 'may occur' as part of the ecological community according to DCCEEW mapping. The patch may form part of this community. The trees are not proposed for removal and are to be retained onsite.

The patch size of the remnant *E. conica* and *E. melliodora* stand located in the southeastern corner of the subject site is approximately 0.2ha in size and groundcover is dominated by crop and wasteland weeds including *Silybum marianum* (milk thistle), *Ambrosia artemisiifolia* (annual ragweed) and *Fumaria officinalis* (common fumitory) and *Urtica dioica* (common nettle). According to DCCEEW criteria, this isolated stand does not satisfy the criteria for inclusion under conservation advice for The Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia.

The trees located in the southeastern corner are not proposed for removal and are to be retained onsite. The stand is highly modified by current and historical cultivation practices and the development is not expected to have an adverse impact on further habitat modification. No endangered ecological communities identified on the site.

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,

All grassland vegetation within the subject site will be removed. The grassland is dominated by a cultivated crop of *Avena sativa* (common oat) with exotic weeds and minor isolated native succulents (<2% coverage in subject site). Monoculture crops lack the diversity of native or semi-native grasslands, does not support diverse wildlife communities and are not suitable habitat for many native faunal species. The habitat provided by cultivated crop is not considered important to the long-term survival of threatened species. Threatened fauna with potential to occur on the subject site are highly mobile and expected to relocate to other areas in the study area. The vegetation removal is not expected to fragment or isolate other areas of potential habitat.

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)

The subject site or study area is not located in a declared area of outstanding biodiversity value.

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.

Key threatening process (KTP)	**Comment**
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	Introduction of infrastructure and hard surfaces may lead to increased runoff entering Boree Creek to the west.
Bushrock removal	No bushrock is located on-site from site inspection.
Clearing of native vegetation	Minor native succulents (<2% of coverage in the subject site) will be removed as part of the development. The proportion removed is a small distribution of the native vegetation which occurs in the locality.
Competition from feral honeybees, Apis mellifera L.	Feral honeybees are not currently managed within the study area and were observed on the day of investigation; native animals and birds are presently at risk of competition for resources with feral honey bees.

Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	The development is not expected to increase this KTP.
Infection of native plants by *Phytophthora cinnamomi*	The development may result in the importation of soil to the site which may be infected with Phytophthora cinnamomic mould spores.
Invasion and establishment of exotic vines and scramblers	The development may result in the introduction of exotic weeds such as vines and scramblers.
Invasion of native plant communities by exotic perennial grasses	Exotic annual grasses are already established on the subject site. Exotic perennial grasses may replace the exotic annual species following development; however the displacement of native plant communities is not expected due to the absence of native grasses on the subject site.
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	Native plant and animal habitat on the subject site has been impacted by agricultural activities including tree clearing, livestock grazing and cultivation. Ornamental garden plants are expected to be contained around individual buildings.
Loss of Hollow-bearing Trees	All trees on-site will be retained.
Predation by the European Red Fox *Vulpes Vulpes* (Linnaeus, 1758)	Red foxes are presently widespread in agricultural landscapes across NSW and likely already present on the subject site. The development is not expected to increase this KTP.
Removal of dead wood and dead trees	No trees are proposed to be removed from the site. Minimal dead wood was observed on the day of inspection; it is expected that current cultivation practices include dead wood removal to enable machinery to manoeuvre safely across the site. The development is not expected to increase this KTP.

Other key threatening processes are not expected to increase as a result of the development.

Appendix 3. EPBC Act considerations

EPBC Act considerations were undertaken for the following species:

- *Polytelis swainsonii Superb Parrot*
- *Pteropus poliocephalus* Grey-headed Flying-fox
- *Falco hypoleucos* Grey Falcon
- *Delma impar* Striped Legless Lizard
- *Dichanthium setosum* Bluegrass

a. Is the action likely to lead to a long-term decrease in the size of the population?

Potential habitat for the Superb Parrot, Grey-headed Flying Fox, Grey Falcon, Legless Lizard and Bluegrass was identified on the subject site.

The Grey-headed Flying Fox and Superb Parrot may use trees for foraging eucalypt blossoms and roosting. Grey Falcon's may use trees for nesting. Fallen timber from trees may be used by the Striped Legless Lizard as shelter for overwintering. The Grey Falcon and Striped Legless Lizard may use grasslands as a food source and shelter. Bluegrass may become established on-site due to the presence of basaltic derived loams and clay soils found in the Cudal Soil Landscape on-site.

The habitat on-site has been modified as a result of current and historical agricultural activities. Grasslands were dominated by cultivated crop species and exotic weeds. Bat and avifaunal species are highly mobile and expected to relocate to other areas in the study area in search of foraging habitat and shelter. The Striped Legless Lizard is not expected to rely on the grassland as the species requires the presence of tussock grass species for shelter and is generally absent from sites that are ploughed. Bluegrass is unlikely to be established on the subject site due to frequent cultivation activities resulting in competition for space and resources with exotic species. The change in land-use may be beneficial to the establishment of Bluegrass on-site due to cessation of regular soil disturbance and cultivation activities, as well as competition for space with the current cultivated crop.

The action is unlikely to lead to a long-term decrease in the size of the population due to habitat loss of threatened and endangered species identified.

b. Is the action likely to reduce the area of occupancy of the species?

The Grey-headed Flying-Fox, Superb Parrot and Striped Legless Lizard are not expected to occupy the grassland, however species may occupy the remnant stand of eucalypts that are proposed to be retained. No impacts to the occupancy of these three species is expected from removal of grassland. The Grey Falcon is expected to only use the modified grassland for hunting birds and mammals that shelter or forage in monoculture crop landscapes, that of which are widespread in other areas of the locality. Bluegrass was not observed on the subject site on the day of inspection. The habitat on-site has been modified as a result of agricultural activities and the grassland on-site was dominated by exotic grass species. Absence of Bluegrass is expected to be a result of regular cultivation practices including soil disturbance through ploughing and seeding with crop species that compete for space. The small amount of potential habitat to be removed is not expected to reduce the area of occupancy of threatened and endangered species identified.

c. Is the action likely to fragment existing populations into two or more populations?

The habitat on-site has been extensively modified as a result of current and historical agricultural activities, with grassland on-site dominated by a cultivated crop of oat and exotic weed species. Faunal species are mobile expected to relocate to other locations in the study area. The Striped Legless Lizard, Superb Parrot and Grey-headed Flying-fox is not expected to occupy the grassland and may be present at the stand of remnant eucalypt trees which are proposed to be retained and undisturbed. Bluegrass was not observed on-site and expected to be absent due to present cultivation practices. Removal of the habitat is not expected to result in the threatened or endangered populations becoming fragmented.

d. Is the action likely to adversely affect habitat critical to the survival of the species?

Habitat on the subject site was limited to a cultivated crop of common oat, exotic crop weeds and minor isolated native succulents (<2% coverage on the subject site). The succulent species *Crassula colorata* is not listed as a threatened species. The grassland in its present condition has not been identified as critical habitat. Trees on-site are proposed to be retained. The small amount of native habitat to be removed is not expected to adversely impact on habitat critical to the survival of the identified threatened and endangered species.

e. Is the action likely to disrupt the breeding cycle of a population?

Threatened and endangered fauna with potential to occur on the subject site are highly mobile and expected to relocate to other areas in the study area. No threatened floral species were identified as potentially occurring on the site. No adverse impacts on the breeding cycle of threatened or endangered species is expected from the development.

f. Is the action likely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?

Habitat on the subject site was dominated by a cultivated crop of common oat and exotic crop weeds. Trees on site are an isolated stand of eucalypts proposed to be retained and are presently highly modified and fragmented from other remnants stands due to historical agricultural practices. The habitat on-site was considered marginal and the small amount of habitat to be removed is not expected to further modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the identified threatened and endangered species is likely to decline.

g. Is the action likely to result in invasive species that are harmful to a critically endangered, endangered or vulnerable species becoming established in the critically endangered, endangered or vulnerable species' habitat?

The development is adjacent to an existing residential and agricultural area. Invasive species such as feral cats and the European red fox are likely to presently pose a risk to native species. Feral honeybees were observed occupying a tree hollow on the day of investigation and presently compete with native species for tree hollows. It is unlikely the development will lead to an increase in invasive species that are not already present and that will be harmful to threatened species.

h. Is the action likely to introduce disease that may cause the species to decline?

Introduction of diseases that may cause the species to decline is not likely to increase.

i. Is the action likely to interfere with the recovery of the species?

Habitat on the subject site comprises cultivated monoculture grassland dominated by common oat and exotic crop weed species. The habitat to be removed is not expected to interfere with the recovery of identified threatened and endangered species as monoculture crops are not preferred or suitable habitat for many species and do not support wildlife diversity.