Trungley Hall Shooters Complex

Ecological Assessment

Temora Local Government Area, NSW

Prepared for Geolyse Pty Ltd

Revised report - April 2018

OzArk Environmental & Heritage Management Pty Limited

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DOCUMENT CONTROLS

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Client	Geolyse Pty Ltd		
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	Name	**Signed**	**Date**
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Draft series V1.X = OzArk internal edits	V1.0	05.10.2017	NA to RM
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FINAL once latest version of draft approved by client	V3.0	16.11.2017	RM to DW
FINAL – Revised assessment that includes additional impact footprint of proposed bushfire mitigation requirements, as advised by Geolyse February 2018.	V3.1	16.04.2018	KH review (bushfire inclusions)

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EXECUTIVE SUMMARY

OzArk Environmental & Heritage Management Pty Ltd (OzArk) has been engaged by Geolyse (the client), on behalf of the Sporting Shooters Association (NSW) (the proponent) to complete an ecological assessment of Lot 941 DP130014 on Schlunkes Road, Trungley Hall, NSW.

This report examines the potential impact on biodiversity of the activities associated with the proposed Trungley Hall Sporting Shooters Complex (the proposal) under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The proposal is situated within the Temora Shire Local Government Area.

Field assessment was carried out by Rowan Murphy on Thursday 15 and Friday 16 June 2017. The assessment followed the *Working Draft Threatened Species Survey and Assessment Guidelines NSW* (DEC, 2004). Weather was cool and overcast, ranging from 0.6°C overnight to 16.6°C on Thursday 15 June. No rain or adverse weather conditions impacted the field assessment. The ecological survey was carried out over winter, which is not ideal for identifying several threatened species of plants known to occur in the region.

The topography of the study area is moderately steep in places and undulating in elevation between 280m and 320m AHD. The study area is part of the Reefton Hills and is about 4 kilometres south of Gidgingidginbung Pinnacle

The study area has been mapped as a mixture of remnant native vegetation and agricultural grazing; part of the subject site has been historically quarried. Field survey of the project site revealed that the remnant vegetation had been lightly grazed; an apiary and evidence of recreational hunting / vermin control was also identified in the study area.

Two Plant Community Types (PCTs) were identified in the subject site and are to be impacted by the proposal:

- PCT 76: Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions.
- PCT 217: Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion.

PCT 76 is associated with the following Endangered Ecological Communities (EECs):

- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia – EPBC Act.
- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions – TSC Act.

This study has found that the proposed development footprint, including areas required for bushfire mitigation, will result in 12.34 ha of vegetation impact, of which approximately 60% is in existing native woodland vegetation and 40% is in derived grassland already cleared of overstorey trees.

The trap, sporting clay and archery ranges are not expected to cause a measurable impact to vegetation.

No threatened fauna or flora species were recorded within the study area. Threatened species with assessed potential to occur within the study area are unlikely to be significantly impacted by the proposed work such that a viable local population would become locally extinct.

Eleven native fauna species and two invasive species were recorded in the subject site during the field survey.

The proposal has followed the principles of 'avoid, minimise, mitigate' to reduce the impact of the proposal on local biodiversity values.

The following avoidance measures have been made and/or are recommended:

- Areas mapped as consistent with the Inland Grey Box Woodland EEC have been avoided. The proposal has been redesigned to retain these areas. Areas mapped as consistent with the Inland Grey Box Woodland EEC have been avoided. The proposal has been redesigned to retain these areas.
- Larger trees are to be retained where possible by aligning the new tracks and camp sites to avoid the removal of large habitat trees.
- All areas not directly required for construction or bushfire mitigation will be protected from impact and the native vegetation retained, during construction and after the development has commenced operation.
- The Grey Box woodland area is to be permanently marked off with fencing or bollards to prevent vehicle access and/or inadvertent expansion of the camping area into this endangered ecological community.

The design of the proposal has minimised the potential impact to biodiversity by:

- Minimising the size and extent of access roads and car parks.
- Clustering the club house and amenities buildings with the proposed shooting ranges.
- Designing the proposed shooting ranges over the previously quarried area to minimise vegetation removal.

Further mitigation measures have been recommended to manage the potential impact to biodiversity to minimise risk.

Having considered the ecology within the study area and the proposed impact, it is apparent that the proposal is:

- Unlikely to significantly affect any of the listed threatened species, fauna populations or communities.
- Unlikely to augment or significantly contribute to any of the National or State listed Key Threatening Processes.
- Unlikely to significantly affect any Ramsar wetland or any listed migratory species.
- Unlikely to significantly affect local hydrology.

The proposed activity should not be considered to constitute a significant impact and, as such, no Species Impact Statement (SIS) is warranted.

No specific licences, permits, approvals and notifications required for the construction, maintenance and operation of the proposal under Part 4 of the EP&A Act have been identified.

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1 Introduction

OzArk Environmental & Heritage Management Pty Ltd (OzArk) has been engaged by Geolyse (the client), on behalf of the Sporting Shooters Association (NSW) (the proponent) to complete an ecological assessment of Lot 941 DP130014 on Schlunkes Road, Trungley Hall, NSW.

This report examines the potential impact on biodiversity of the proposed development associated with the proposed Trungley Hall Sporting Shooters Complex (the proposal) under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The proposal is situated within the Temora Shire Local Government Area.

1.1 Background

OzArk prepared an ecological assessment for the project in November 2017, which was used to inform the environmental impact assessment for the proposal, prepared by Geolyse and submitted to Temora Shire Council in late 2017. On review of the proposal by the Department of Planning, additional information is required[1] to progress the proposal to 'Gateway Approval'. The following matter is of relevance to the ecological assessment.

> NSW Department of Planning "*It is not clear from the information provided whether the environmental assessment prepared in support of the planning proposal has considered {of} the extent of clearing required to comply with relevant bushfire hazard mitigation requirements. The environmental report and planning proposal will need to be amended to address this issue prior to the Department determining whether to issue a Gateway Determination.*

Geolyse completed a bushfire assessment of the site in relation to the provisions of Section 79BA of the EP&A Act, the requirements of the *Planning for Bush Fire Protection* (2006, including Addendum Appendix 3 2010) and Clause 44 of the Rural Fires Regulation 2013. Recommendations for bushfire protection have been included in the planning proposal (sections 4.1.3 and 5.9 of the SEE) and comprise the following measures.

- Implementation of a fuel managed area of not less than 100 metres surrounding all buildings;
- Provision of a 20 metre wide fuel management corridor to each side of the main access road;
- Management of the entirety of the proposed primitive camp site as an APZ inner protection area;
- Provision of a 50 metre APZ around the primitive camp site, managed as an inner protection area by reference to the above.
- Construction of the clubhouse in accordance with Section 3 and 5 of AS3959-2009 (BAL 12.5);
- Construction/upgrade of the main access road (connecting as far as the club house and initial car parking area) to a minimum width of 6.5 metres with a carrying capacity of 28 tonnes gross vehicle mass;

[1] As per email advice from Will Mayes, Planning Officer in the NSW Department of Planning, to Temora Shire Council, dated 15/2/2018.

- Provision of internal access roads with a minimum width of 4 metres with a carrying capacity of 15 tonnes GVM together with a 10 metre wide fuel management corridor to each side of the road;
- Portable Fire Extinguishers shall be installed in accordance with A.S. 2444 – 2004.
- Overhead electrical transmission lines are to be installed with short pole spacing and no part of a tree is closer to a power line than the distance set out in accordance with the specifications in 'Vegetation Safety Clearances' issued by Energy Australia – NS179 – 2002.
- Bottled gas is installed and maintained in accordance with A.S. 1596. Metal piping is to be used. Release valves are to be directed away from the building/s and at least 2 metres from any combustible material.

The proposed APZ and fuel management corridors above are relevant to the ecological assessment as they comprise part of the impact footprint for the development. The proposed bushfire buffers are shown in **Figure 1-4**.

This report provides a revised ecological assessment in response to the above matters and includes consideration of the proposed bushfire mitigation measures which contribute to an increased area of the impact footprint.

1.2 Objectives

The objectives of the ecological assessment are to provide:

- Accurate predictions and mapping of any vegetation clearing on site;
- Detailed assessment of the potential impact to any threatened species, populations, endangered ecological communities or their habitats; groundwater dependent ecosystems predicted to occur; and any potential for offset requirements in accordance with the relevant Office of Environment and Heritage (OEH) Guidelines.
- Assessment of the proposed impact footprint, considering both the areas required for construction and the areas required for bushfire fuel management zones.
- Detailed description of the measures to avoid, minimise, mitigate and offset biodiversity impacts.

This assessment meets these objectives while addressing requirements under the following legislation.

1.2.1 International agreements

- Japan-Australia Migratory Bird Agreement (JAMBA).
- China-Australia Migratory Bird Agreement (CAMBA).
- Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).
- Ramsar Convention on Wetlands (Ramsar).

1.2.2 Commonwealth of Australia

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), including:
    - EPBC Act Environmental Offsets Policy.
    - Significant Impact Guidelines Version 1.1, 2013.

1.2.3 New South Wales

The EP&A Act provides the legal framework for the assessment and approval of the proposed construction activities. Various legislation and instruments are integrated with the EP&A Act including:

- *Threatened Species Conservation Act 1995* (TSC Act).[2]
- *Fisheries Management Act 1994* (FM Act).
- *Biosecurity Act 2015.*
- *Temora Local Environmental Plan 2010* including Temora Shire DCP 2012.

1.3 Location

The study area includes Lot 941 DP130014 which encompasses approximately 90 hectares of land, located 5.4 kilometres northwest of Trungley Hall and 20 kilometres north of Temora. The study area is bounded to the north by Schlunkes Road and is surrounded by agricultural properties (**Figure 1-2**).

Three terms are used in this report to contextualise the proposal:

- Subject site.
- Study area.
- 10km buffer.

Boundaries of the subject site and study area are shown in **Figure 1-2**. Additional terms and abbreviations used are provided in **Appendix F**.

1.3.1 Subject site

The 'subject site' is the area directly affected by the proposal (DEC, 2004). A summary of the features of the proposed Trungley Hall Sporting Shooters Complex development at the subject site is given in **Table 1-1**.

The area required for construction of buildings, roads and other facilities, as well as for bushfire mitigation (APZ and fuel management corridors along roads) will be approximately 12.32 ha. The trap, sporting clay and archery ranges have been excluded from the current assessment, as it has been advised that native vegetation in these areas will not be impacted.

[2] The TSC Act has been repealed and replaced by the *Biodiversity Conservation Act 2016*; this assessment has been carried out under transitional arrangements.

Table 1-1: The proposed development features and estimated impact footprint.

Subject site	Previously assessed impact footprint	Description and estimated area of impact with bushfire mitigation.	Revised impact with bushfire APZ	Proportion woodland versus derived grassland
Main access road	1.95 ha	Main access road of 200 m length (6.5 m width) with 20 metre fuel management corridor to each side.	Combined development features, APZ to buildings and fuel management corridors to access roads, as per **Figure 1-4**	100% woodland
Car parks		Carpark areas x 6 of approximately 8m x 25 m (TBC).		20% woodland 80% derived grassland
Internal tracks		Internal tracks of 1,900 m total length, at 4 m width, with 10 metre wide fuel management corridor to each side of tracks.		80% woodland 20% derived grassland
Club house and amenities	0.07 ha	Direct impact in building footprint, with fuel managed area (APZ) of not less than 100 metres surrounding all buildings.		50% woodland 50% derived grassland
Rifle and pistol range	0.7 ha	Total direct impact		100% derived grassland
Camp site	2 ha	Most trees to be retained, understorey vegetation to be managed to inner APZ standard (low fuel state).		100% woodland
TOTAL	**4.72 ha**		**12.32 ha**	60% woodland 40% derived grassland

1.3.2 Study area

The 'study area' includes the 'subject sites' and any additional areas likely to be affected by the proposal, either directly or indirectly (DEC, 2004). The study area is the subject site with a 500m buffer and is shown on **Figure 1-2**.

The regional context of the study area is provided in **Table 1-2** and proximity to environmentally sensitive areas is shown in **Table 1-3**.

Table 1-2: Regional context of the study area

Criteria	Value
Interim Biogeographic Regionalisation for Australia (IBRA Region)	NSW South Western Slopes, Lower slopes subregion
State	NSW
Local Government Area	Temora Shire Council
Nearest town	Barmedman
Accessed from nearest town by	Schlunkes Road
Nearest locality	Trungley Hall
Mitchell Landform	Ardlethan Hills
Land use / disturbance	Grazing
Nearest waterway (Name, Strahler Order)	Unnamed Strahler first order tributary of Greens Creek
Spot point Australian Height Datum (AHD)	300m
Surrounding land use	Agricultural

Table 1-3: Proximity of environmentally sensitive areas to the study area

Environmental Considerations	In the study area?
An area reserved or dedicated under the *National Parks and Wildlife Act 1974*?	No
Is the proposal located within land reserved or dedicated within the meaning of the *Crown Lands Act 1989* for preservation of other environmental protection purposes?	No
A World Heritage Area?	No
Environmental Protection Zones in environmental planning instruments?	No
Lands protected under SEPP 14 – Coastal Wetlands?	No
Lands protected under SEPP 26 – Littoral Rainforests?	No
Lands protected under SEPP 71 – Coastal Protection?	No
Lands protected under SEPP 44 – Koala Protection?	No
Lands protected under SEPP Sydney Drinking Water Catchment?	No
Land identified as wilderness under the *Wilderness Act 1987* or declared as wilderness under the *National Parks and Wildlife Act 1974*?	No
Aquatic reserves dedicated under the *Fisheries Management Act 1994*?	No
Wetland areas dedicated under the Ramsar Wetlands Convention?	No
Land identified as State Forest under the *Forestry Act 1916*?	No
Land within a mining subsidence district?	No
Acid sulphate area?	No
Protected riparian habitat?	No
Mapped as Key Fish Habitat?	No
Critical habitat NSW?	No
Critical habitat nationally?	No

1.3.3 10 kilometre search area

The 10km search area contains all land within a 10km radius of the study area. The 10km search area is used to review database records of listed plants and animals to predict what may occur in the study area.

Figure 1-1: Regional context of the study area

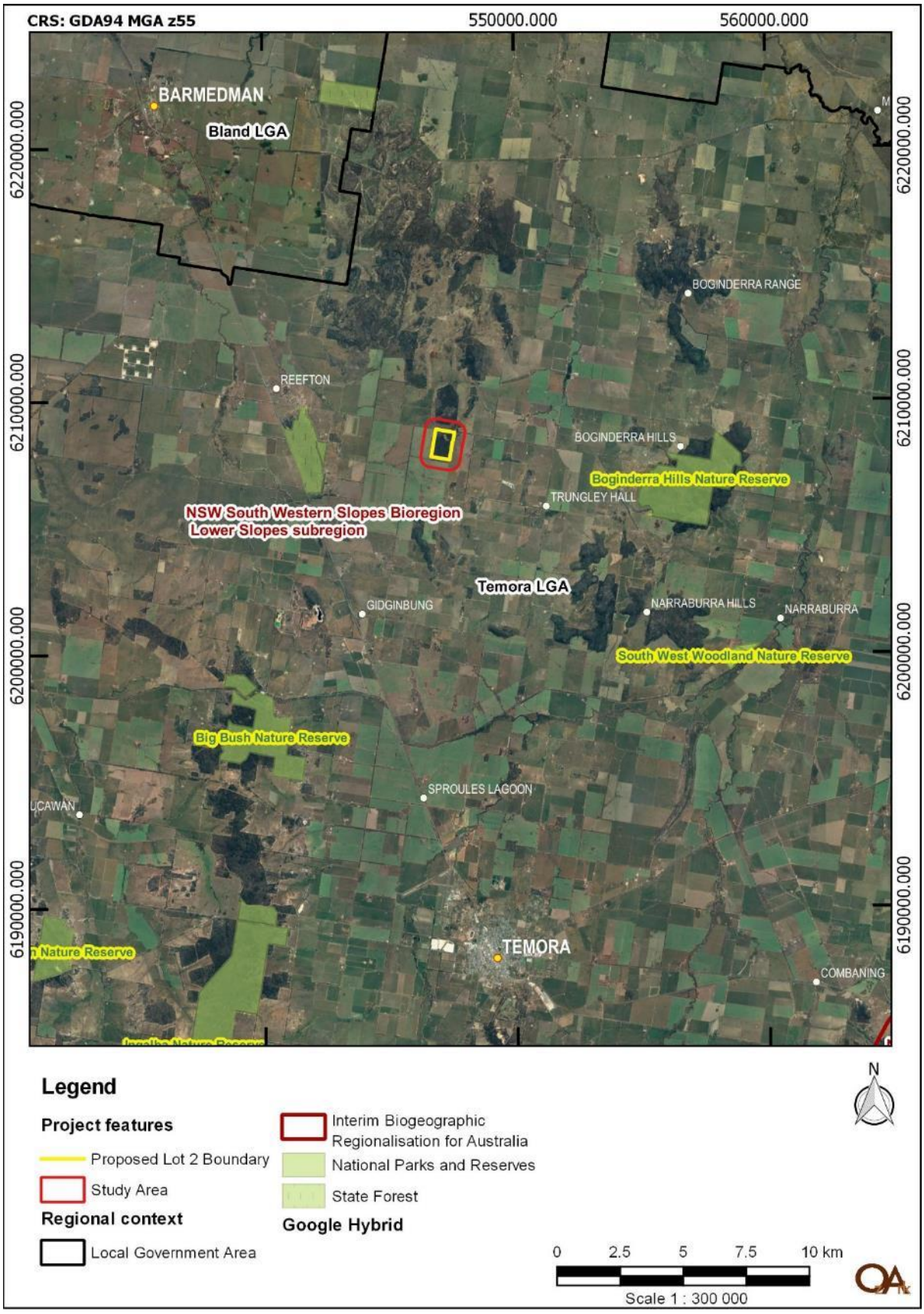


Figure 1-2: The study area

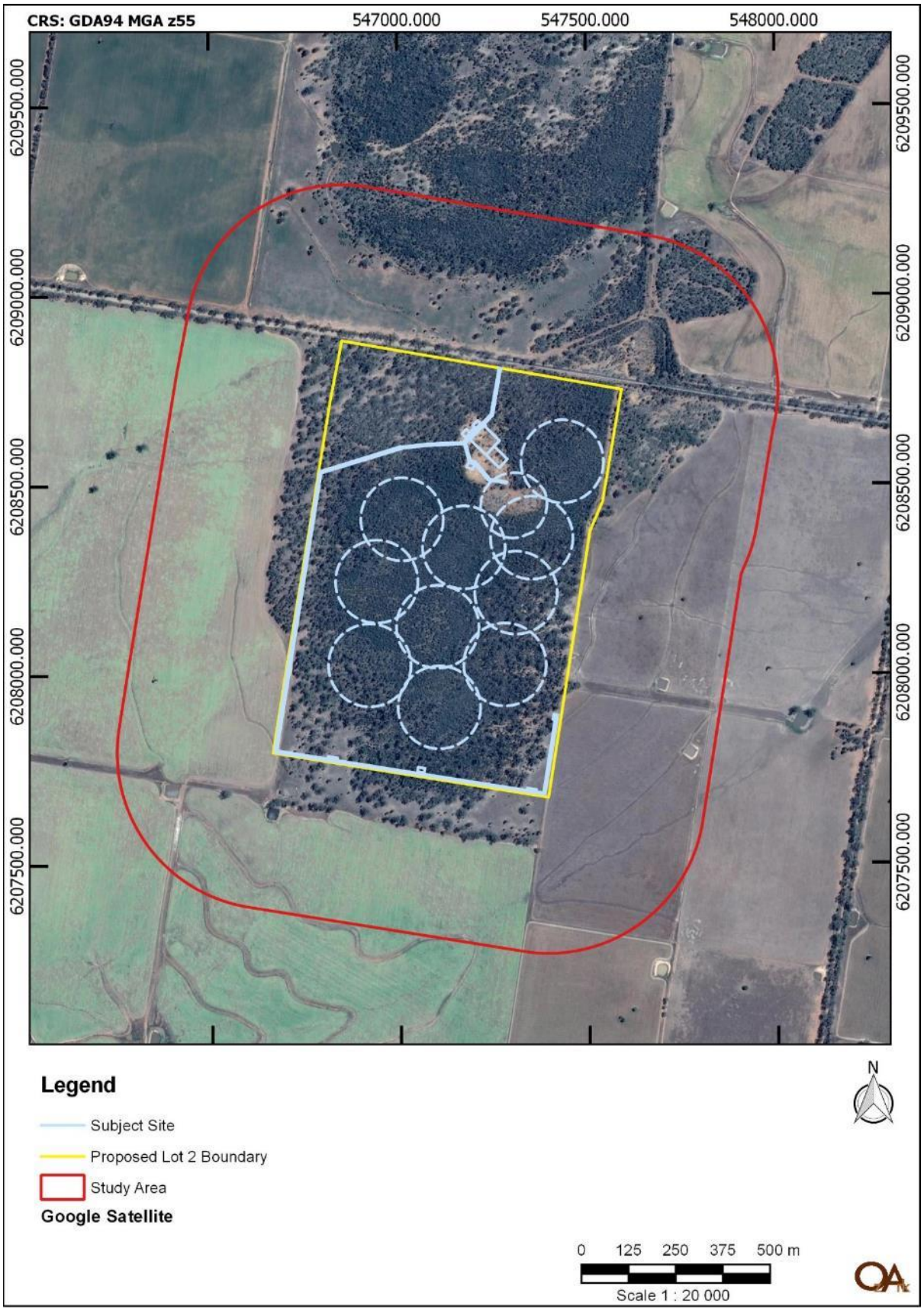


Figure 1-3: Detailed design of the subject site

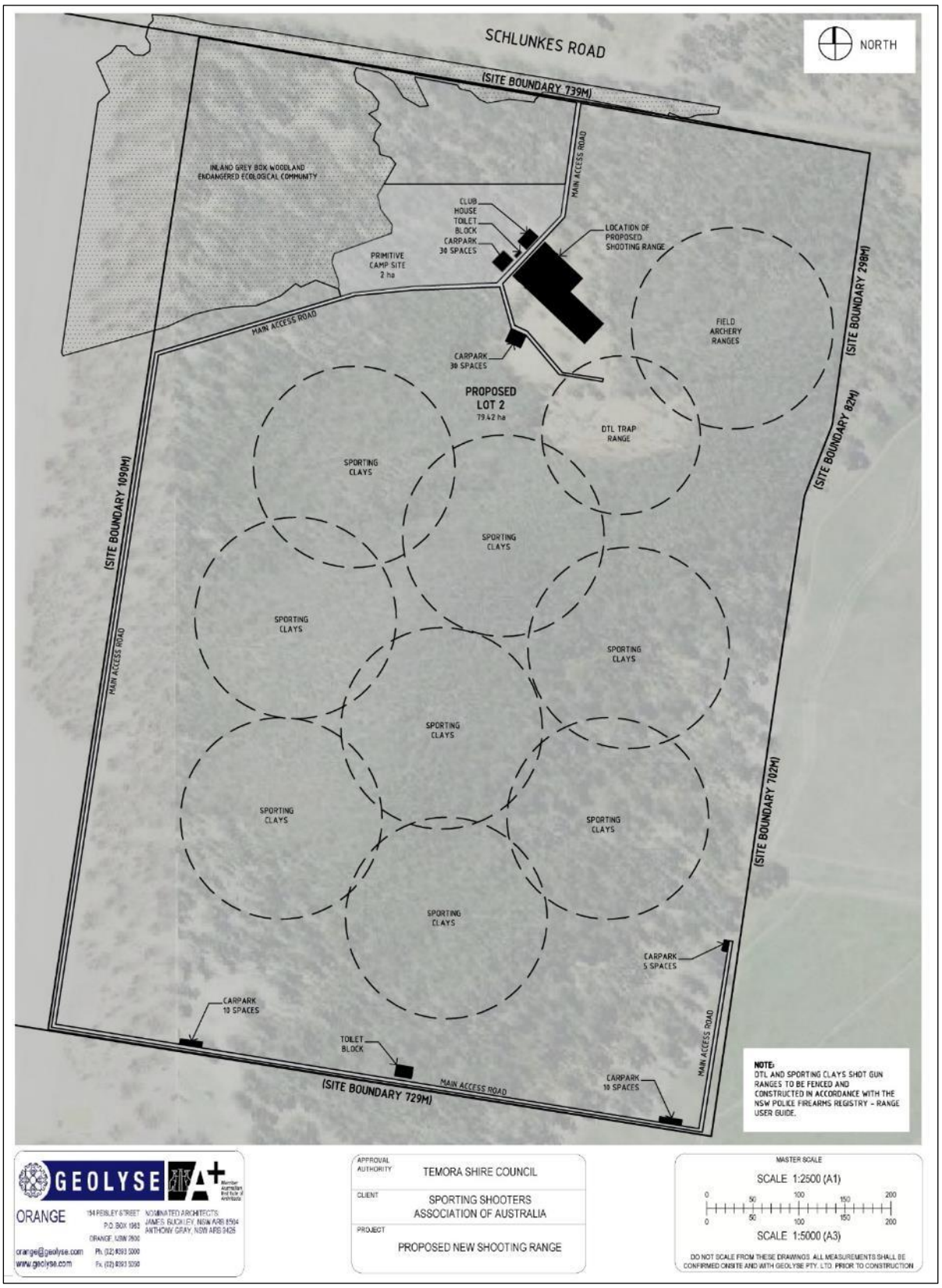
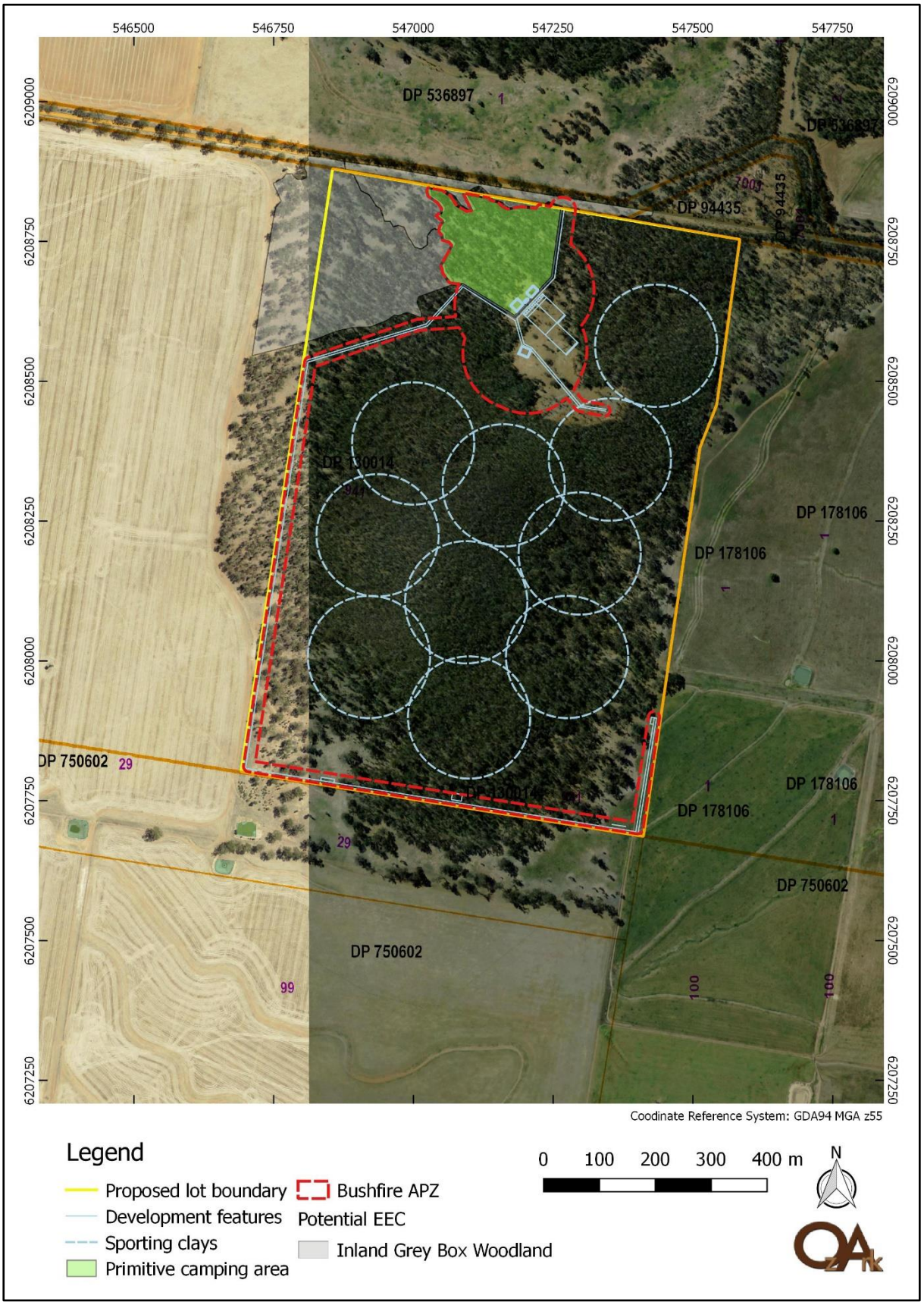


Figure 1-4: Proposed bushfire APZ and fuel management areas



2 Methods

The methodology employed for this report consisted of:

- A desktop and literature review of ecological databases and literature sources as direct references for the field survey.
- A field survey of the study area.

The assessment rationale was to evaluate the type and quality of habitat to be affected by the proposal; apply professional judgement, then complete targeted assessment of potential habitat to detect the regions listed species, populations or communities.

2.1 Reporting

Reporting components were completed by:

- Main Author: Rowan Murphy.
- Editor: Nikki Allen.
- April 2018 revision by Dr Kate Hammill, Senior Ecologist

2.1.1 Licensing and qualifications

OzArk operates under NSW Department of Primary Industries (DPI) Ethics Approval No. 17/456 and NSW Scientific Research License 101908. Key details of scientific personnel from OzArk are provided in **Table 2–1**.

Table 2-1: Summary of OzArk qualifications

Name	Position	CV Details
Rowan Murphy	Ecologist / Assistant Project Manager	• Bachelor of Environmental Science (University of New England) • Bachelor of Laws (University of New England) • Practicing member of the NSW Ecological Consulting Association • Practicing member of the Environment Institute of Australia and New Zealand (EIANZ) • National Railtrack Safety Induction (ARTC) • WHS White Card: 1652972 • Apply First Aid (Parasol) ID: 6007220.
Nikki Allen	Environmental Scientist	• BSc. Major in Chemistry and Geography. University of New South Wales at the Australian Defence Force Academy • Grad. Dip. In Environmental Health. Queensland University of Technology. • Apply First Aid (ABC First Aid) ID: 34795 • CPCCOHS1001A Work Safely in the Construction Industry (White Card) • Roads and Maritime Worker on Foot Training

2.2 Desktop review

2.2.1 Information sources

Preliminary assessments drew on local experience, previous preliminary reporting and information held on government databases and archives (**Appendix E**). Data was used to assist in identifying distributions, suitable habitats and known records of threatened species to increase the effectiveness of field investigations. All databases were searched on 12 June 2017. Information sources reviewed included:

- Aerial photograph interpretation of the landscape and previous vegetation maps.
- Literature reviews (OzArk library, OEH Biometric list) to determine vegetation and species habitat(s) within the proposed study area and environs.
- Review of flora and fauna records contained in the NSW Threatened Species Database, EPBC Protected Matters Search Tool and DPI Records Viewer.
- NSW Wildlife Atlas/Bionet GIS data request and website search.
- Royal Botanical Gardens (PlantNET NSW Flora Online).

The background searches enabled the consultant to develop a predictive model for threatened flora and fauna to be recorded in the study area (**Section 4**).

2.2.2 Predictive Model

A review of the previously recorded (**Appendix E** – NSW Wildlife Atlas/Bionet GIS data), predicted (**Appendix E** – OEH, DPI Fisheries and Commonwealth database searches) and field survey recorded (**Appendix A**) threatened species was used to inform the list of threatened species with potential to be impacted by the proposal as discussed in **sections 3.4** and **3.5**. An assessment of likelihood of occurrence for listed species, populations, communities and migratory species identified from database searches was compiled (**Appendix B**). Five terms of likelihood for occurrence (based on database results or other records, presence or absence of suitable habitat, features of the study area, results of the field survey and professional judgement) were used to determine the likelihood of occurrence:

- “Yes” = the species was or has been observed on the site.
- “Likely” = a medium to high probability that a species uses the site.
- “Potential” = suitable habitat for a species occurs on the site, but there is insufficient information to the species as likely to occur, or unlikely to occur.
- “Unlikely” = a very low to low probability that a species uses the site.
- “No” = habitat on-site and in the vicinity is unsuitable for the species.

Once a species presence was determined the likelihood of the species to be impacted by the proposal was determined. This decision was based upon whether or not the location, duration and methods of the proposal would impact on important habitat features, breeding requirements, food sources and threatening processes. Species determined to have potential to be impacted by the proposal are listed in **sections 3.4** and **3.5**. Assessments of significance were undertaken for these species and results are summarised in **section 3.8**.

2.3 Field survey

Field assessment was carried out by Rowan Murphy on Thursday 15 and Friday 16 June 2017. The assessment followed the *Working Draft Threatened Species Survey and Assessment Guidelines NSW* (DEC, 2004). Survey effort and location of flora plots is provided in **Figure 2-1**.

Weather was cool and overcast, ranging from 0.6°C overnight to 16.6°C on Thursday 15 June. No rain or adverse weather conditions impacted the field assessment. The ecological survey was carried out over winter, which is not ideal for identifying several threatened species of plants known to occur in the region.

The objective of the field assessment was to:

- Describe the nature and extent of vegetation removal
- Determine if species, populations or communities listed in the EPBC, TSC or FM Acts would be, or have potential to be, affected by the proposal
- Determine if ground water dependant ecological communities would be, or have potential to be, affected by the proposal
- Describe the quality and value of the habitat affected by the proposal.

2.3.1 Flora

The flora assessment methodology followed the NSW Office of Environment and Heritage (OEH) *BioBanking Assessment Methods 2014* (BBAM) (OEH, 2014) and the "Random Meander Technique" described by Cropper (1993). Formal 20m by 20m vegetation, 50m by one metre transects and 20m by 50m habitat plots following BBAM were used for this assessment.

Plant identification followed nomenclature in Harden (1990-2002), Cunningham (1992) and Royal Botanic Gardens (2017). Special consideration was given to locating rare or threatened plants identified in database searches and literature review as having the potential to occur. The national conservation significance of flora was determined by referencing the schedules associated with the TSC Act and the EPBC Act.

2.3.2 Ecological communities

Ecological communities were identified in the field using (Benson, 2009) and conditional classes were assigned following definitions of low condition vegetation stated in BBAM (OEH, 2014).

A list of predicted threatened or endangered EPBC Act, TSC Act and FM Act communities was brought into the field during the assessment. Where the community had potential to be the listed community the description and definition for the listed item was cross referenced.

2.3.3 Fauna

Habitat assessment

Habitat in the study area was assessed for its potential to provide resources for listed species predicted to occur in **Appendix B**. Preference of habitat for these species was determined by OEH, Department of Primary Industries (DPI) Fisheries and the Australian Government Department of Environment and Energy (DoEE) threatened online species profiles.

Database searches were undertaken before the assessment to inform the consultant of what species predicted or known in the 10km buffer may be recorded or should need a targeted search.

Any indirect evidence of fauna i.e. scats, tracks, calls, fur feathers, sloughed skins etc. was assessed.

Each mature tree in the subject site was inspected for hollows and to determine if they were used for breeding. All eucalyptus trees in the study area were also assessed for nests, feeding habitat including mistletoe or resting habitat. Where a tree with a hollow was observed it was given a score reflecting its habitat value.

Birds

Opportunistic sightings of birds were recorded during the assessment of the study area. Particular attention was given to identifying tree hollows with signs of breeding activity or the presence of nests.

2.3.4 Limitations

Not all animals and plants can be fully accounted for within any given study area. The presence of threatened species is not static. It changes over time, often in response to longer term natural forces which can, at any time, be dramatically influenced by man-made disturbance or weather. In order to overcome some of these limitations, database searches were conducted for threatened species, populations and ecological communities known to occur within the region. A 'precautionary approach' for species occurrence has been adopted where required.

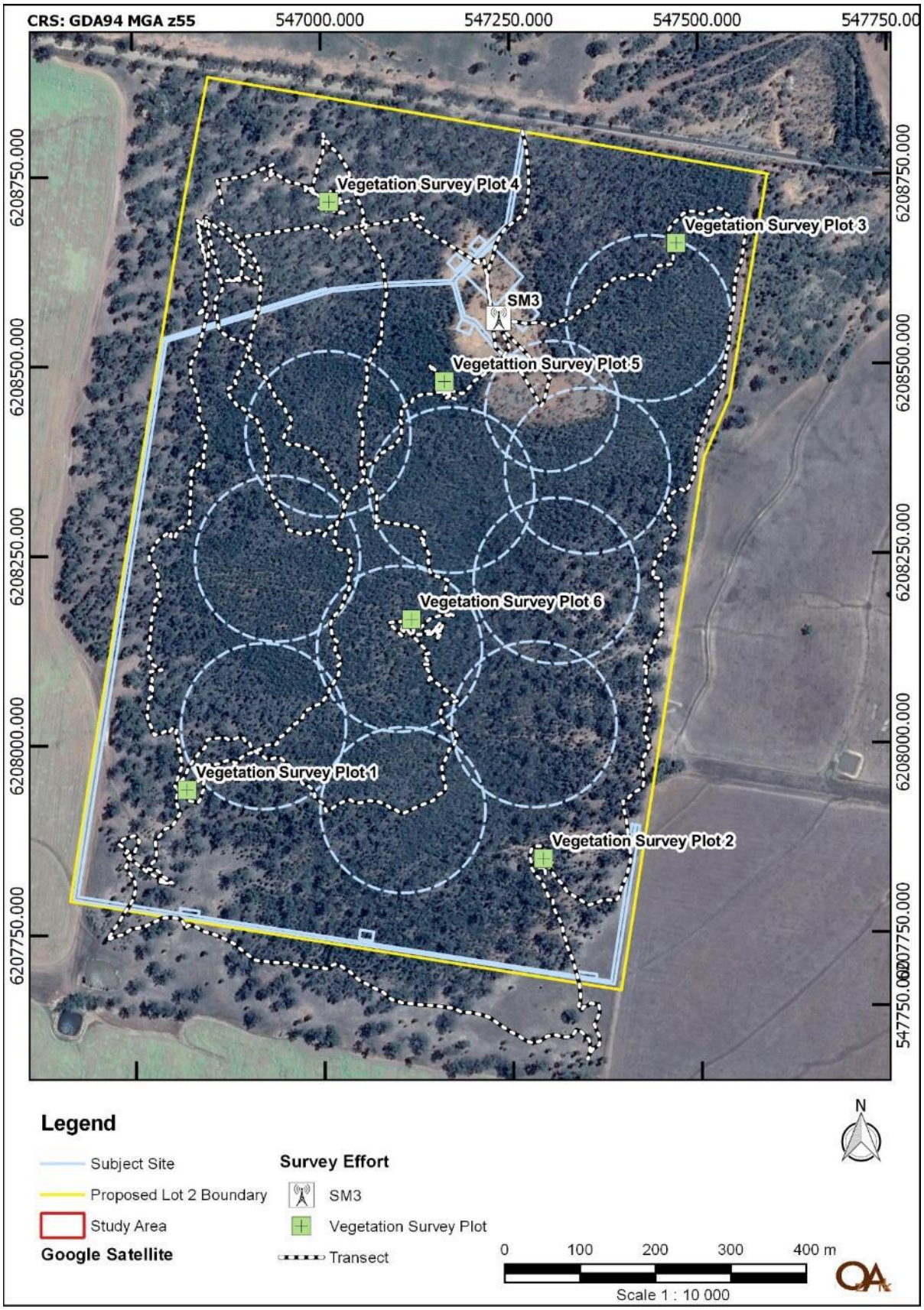
This report is based upon data acquired from recent and current surveys, however, it should be recognised that data gathered is indicative of the environmental conditions of the site at the time the report was prepared.

Limitations associated with the survey included:

- Trapping was not a component of the assessment.
- The field assessment was carried out in winter.

The above-mentioned constraints are not considered to compromise the findings or results of the field assessment as a precautionary approach to threatened species presence has been undertaken based upon a habitat assessment and literature review.

Figure 2-1: Survey transect and flora plots



3 Results

3.1 Landscape context

Landscape context of the study area locality is important when predicting the presence and abundance of species. Landscape features such as distance to water and land use can greatly influence the present of certain species in an area.

The topography of the study area is moderately steep in places and undulating in elevation between 280m and 320m AHD. The study area is part of the Reefton Hills and is about 4 kilometres south of Gidgingidginbung Pinnacle (**Figure 3-1**).

3.1.1 Climate

The study area is located within the South Western Slopes bioregion which has a sub-humid climate characterised by hot summers and no dry season. Average climate statistics from the Temora Research Station monitoring station show temperatures range from an average monthly maximum temperature of 31.5°C in January to an average monthly minimum temperature of 2.1°C in July. Average annual rainfall in the region of the study area is the highest in October with 52.2mm and lowest in February with 31.5mm (Bureau of Meteorology, 2017).

3.1.2 Mitchell Landscape

The proposal is located wholly within the Ardlethan Hills Mitchel Landscape unit. It is characterised by rolling hills and rises on Ordovician quartzose sandstone, greywacke, chert, and phyllite. General elevation ranges from 200m-412m, with a local relief of 50m-60m. Soils consist of stony red and brown texture-contrast soils merging to calcareous red earth on valley floors (Mitchell, 2002).

3.1.3 Land use

The study area has been mapped as a mixture of remnant native vegetation and agricultural grazing; part of the subject site has been historically quarried (OEH, 2013) (**Figure 3-2**).

Field survey of the project site revealed that the remnant vegetation had been lightly grazed; an apiary and evidence of recreational hunting / vermin control was also identified in the study area (**Plates 1** and **2**).

Plate 1: Apiary in the study area

Plate 2: Evidence of prior hunting

Figure 3-1: Topographical context of the study area

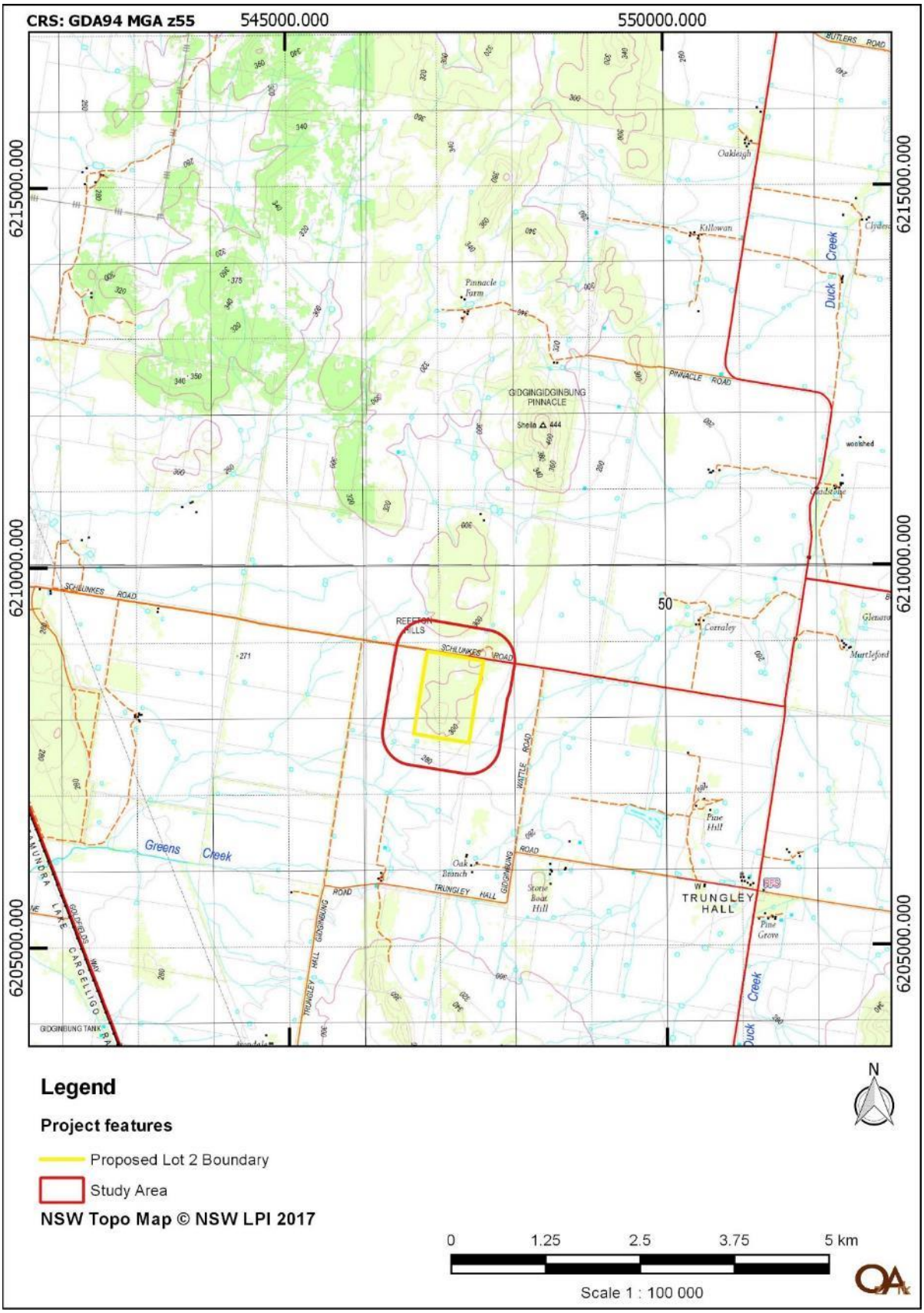
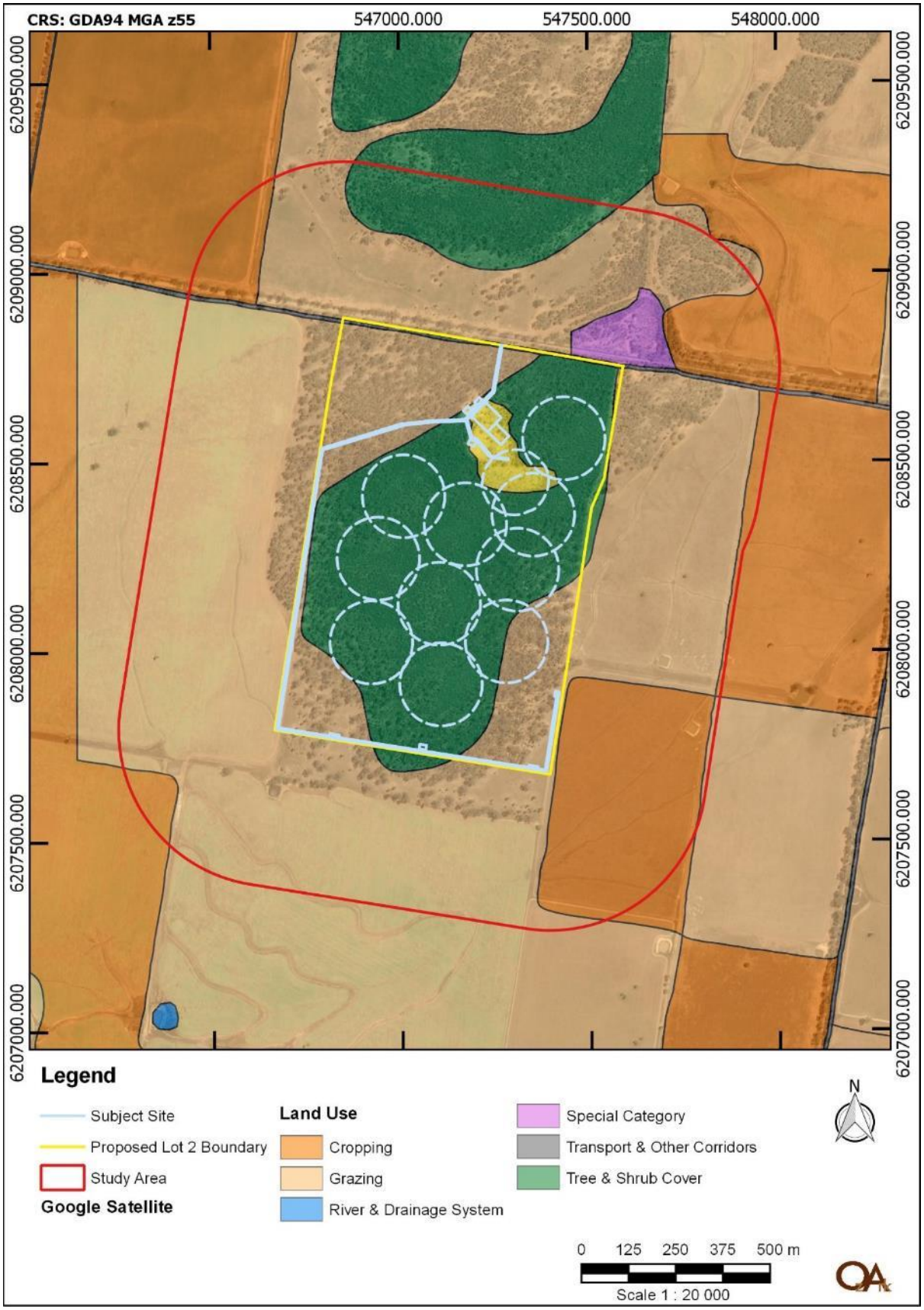


Figure 3-2: Land use of the study area



3.2 Aquatic ecological communities

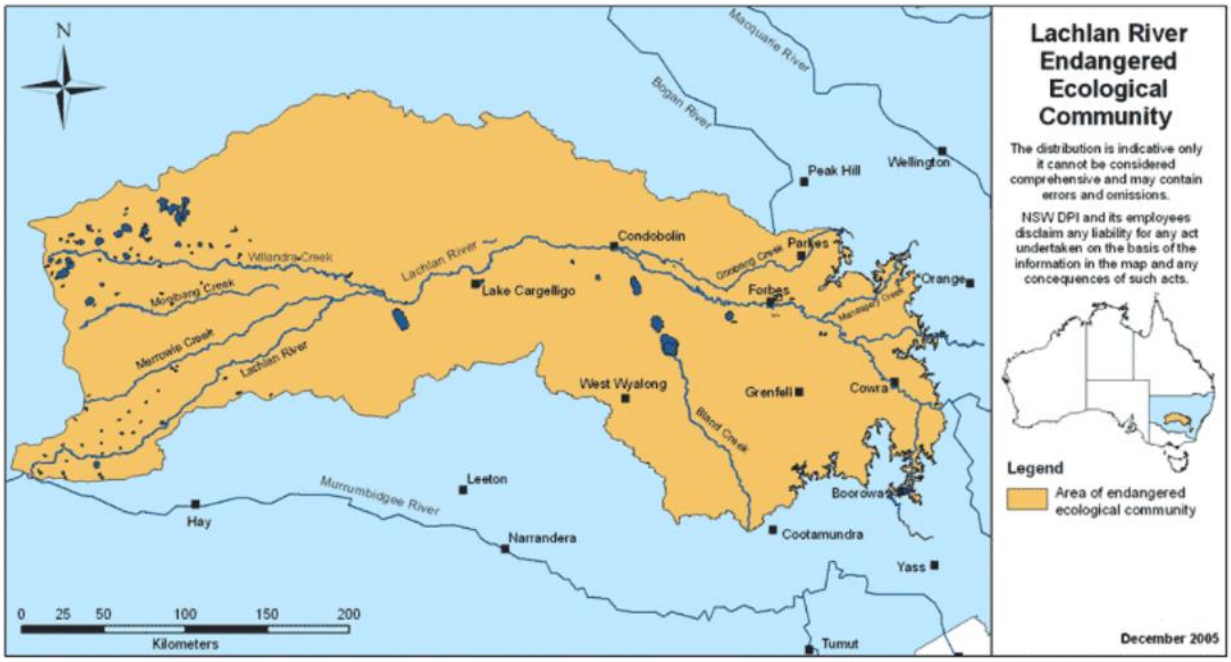
Endangered aquatic ecological communities face a very high risk of extinction in the near future as determined by the Fisheries Scientific Committee. An ecological community is eligible for listing as endangered if it has undergone a very large reduction in ecological function, geographic distribution or genetic diversity, and is affected by a threatening process (DPI, 2016).

3.2.1 Predicted and recorded aquatic ecological communities

Watercourses within the study area are part of the catchment for the *Lachlan River Endangered Ecological Community* (EEC).

The Lowland Catchment of the Lachlan River is part of the Murray-Darling Basin. The Lachlan River EEC includes all fish and aquatic invertebrates within all natural rivers, creeks, streams and associated lagoons, billabongs, lakes, wetlands, paleochannels, floodrunners, effluent streams (those that flow away from the river) and the floodplains of the Lachlan River within the State of New South Wales, and including Lake Brewster, Lake Cargelligo and Lake Cowal (DPI Fisheries, 2006). The extent of the Lachlan River EEC is mapped in **Figure 3-3**.

Figure 3-3: Extent of the Lachlan River EEC (Source: DPI Fisheries 2006)



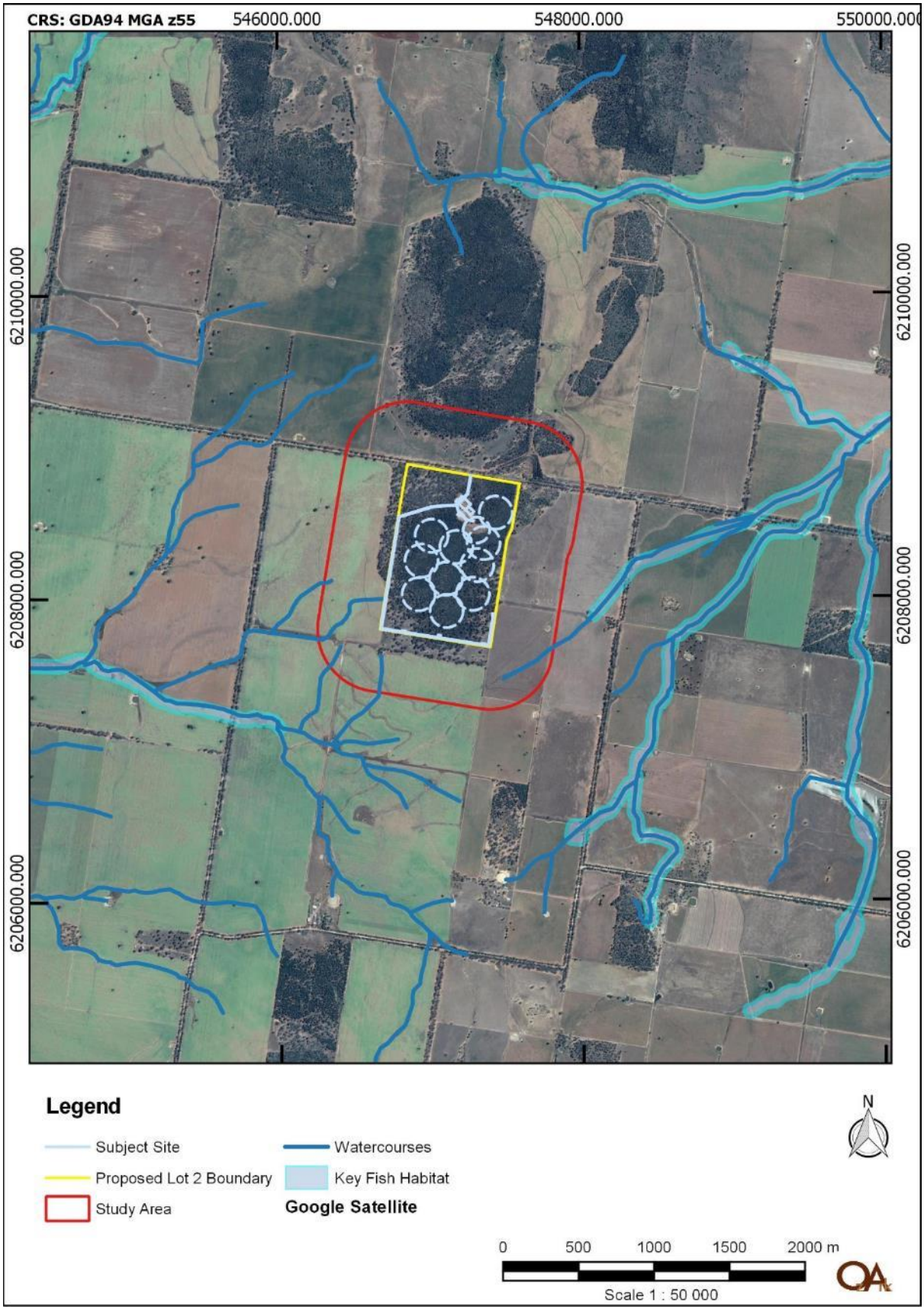
3.2.2 Drainage

Drainage features within the study area are limited to three unnamed Strahler first order tributary of Greens Creek and one unnamed Strahler first order tributary of Duck Creek (**Figure 3-4**). None of these drainage lines are located within the subject site.

3.2.3 Impact to aquatic ecological communities

The proposal will not directly impact any waterway. No impact to the Lachlan River EEC is anticipated.

Figure 3-4: Drainage of the study area



3.3 Terrestrial ecological communities

An ecological community is a naturally occurring group of native plants, animals and other organisms that are interacting in a unique habitat. Its structure, composition and distribution are determined by environmental factors such as soil type, position in the landscape, altitude, climate and water availability (DoE, 2016).

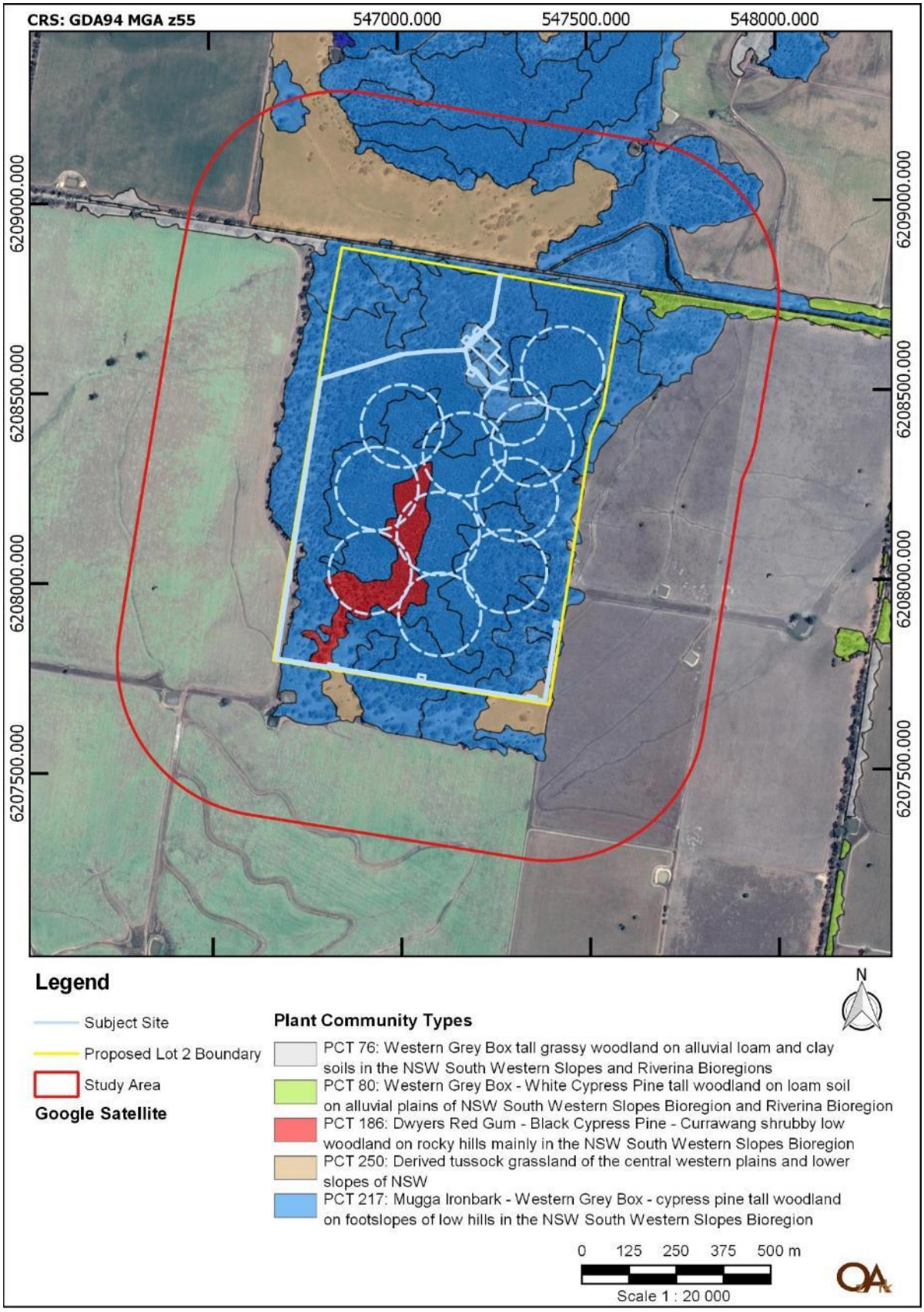
3.3.1 Predicted vegetation communities

The NSW Vegetation Information System (VIS) provides the NSW Government, its clients and the community with a central authoritative repository for native vegetation data. This data is generally comprised of predictive modelling extrapolated from field observations.

State Vegetation Type Map, Central West/Lachlan Regional Native Vegetation PCT Map, Version 1.0, Vegetation Information System (VIS) 4468 (OEH, 2016) was used to map the predicted vegetation communities. It found the following Plant Community Types (PCTs) were present in the study area (**Figure 3-3**):

- PCT 76: Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions.
- PCT 80: Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion.
- PCT 186: Dwyers Red Gum – Black Cypress Pine – Currawang Shrubby low woodland on rocky hills mainly in the NSW South Western Slopes Bioregion.
- PCT 250: Derived tussock grassland of the central western plains and lower slopes of NSW.
- PCT 217: Mugga Ironbark – Western Grey Box – cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion.

Figure 3-5: Previously mapped vegetation communities of the study area



3.3.2 Recorded vegetation communities

Field survey of the subject site recorded two PCTs to be impacted by the proposal:

- PCT 76: Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions.
- PCT 217: Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion.

The extent of these vegetation communities is mapped in **Figure 3-6**. A description of each community is provided below.

PCT 76: Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions

PCT 76 is a tall woodland to 25m high, which is dominated by Western Grey Box (*Eucalyptus microcarpa*). Western Grey Box is often the only tree species often occupying 90% of the canopy cover but other trees may occur including Yellow Box (*Eucalyptus mellidora*), White Cypress Pine (*Callitris glaucophylla*) and Bulloak (*Allocasuarina luehmannii*).

The shrub layer is absent or sparse and includes *Dodonaea viscosa* subsp. *cuneata*, *Acacia buxifolia*, *Acacia acinacea*, *Acacia hakeoides*, *Bursaria spinosa*. Grazing has eliminated shrubs these in many places. A mid-dense or dense grass ground cover is present composed of *Austrodanthonia caespitosa*, *Austrodanthonia setacea*, *Austrostipa scabra* subsp. *falcata*, *Paspalidium constrictum*, *Themeda australis*, *Austrostipa aristiglumis*, *Aristida behriana* and *Elymus scaber* var. *scaber* along with introduced grass species such as *Bromus* spp., *Vulpia* spp. and *Hordeum leporinum*. The small scrambler *Einadia nutans* subsp*. nutans* is usually present. Native forbs include *Sida corrugata, Wahlenbergia gracilis, Vittadinia gracilis*, *Dianella porracea, Oxalis perennans* and *Chamaesyce drummondii*.

PCT 76 varies with soil type and drainage. Areas on heaver clays contain less shrubs and a rich forb/grass cover. Areas on lighter loam soils may contain White Cypress Pine and Yellow Box. Little is known about natural succession due to gross changes of understorey due to weed invasion. Fire may have played a significant role in grass/shrub dynamics.

Plate 3: PCT 76 recorded within the study area

PCT 217: Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion

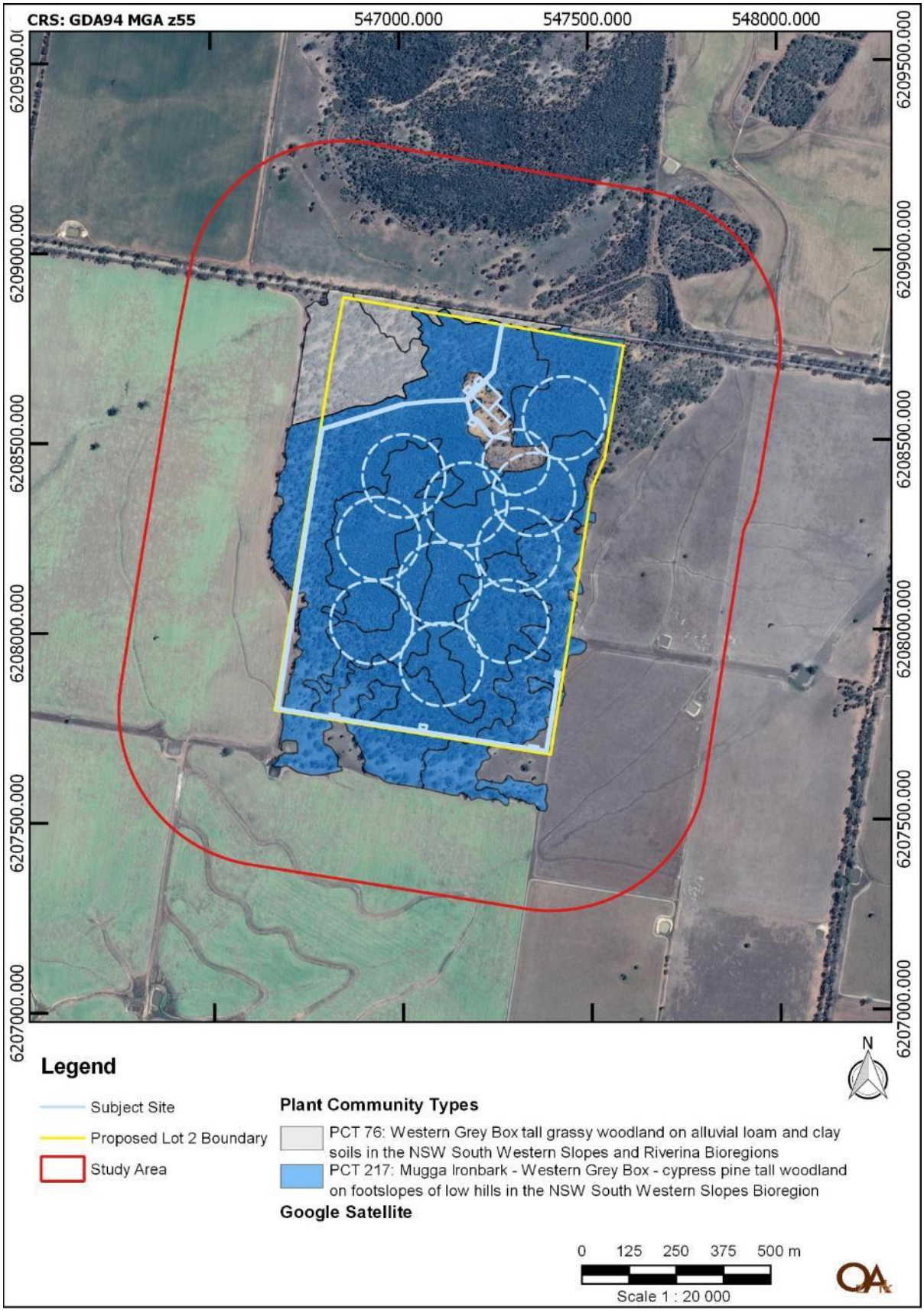
PCT 217 is a tall to very tall open forest to woodland to 25m high dominated by Mugga Ironbark (*Eucalyptus sideroxylon*) and Western Grey Box (*Eucalyptus microcarpa*) with either White Cypress Pine (*Callitris glaucophylla*) or Black Cypress Pine (*Callitris endlicheri*). Other trees may include Dwyer's Red Gum (*Eucalyptus dwyeri*), Kurrajong (*Brachychiton populneus* subsp. *populneus*) and Green Mallee (*Eucalyptus viridis*). Small trees include narrow-leaved quandong (*Santalum acuminatum*), Native Cherry (*Exocarpos cupressiformis*) or Currawong (*Acacia doratoxylon*).

The shrub layer is generally sparse but thickets may occur and species composition depends on grazing and burning history. It includes hop bushes (*Dodonaea viscosa* subsp. *spatulata*, *Dodonaea heterodmorpha*), cough bushes (*Cassinia uncata*, *Cassinia laevis*), wattles (*Acacia deanei, Acacia hakeoides, Acacia buxifolia*), daisy bushes (*Ozothamnus diosmifolius, Olearia ramulosa, Olearia ramulosa*), *Bertya cunninghamii*, *Grevillea floribunda* and *Leptospermum divaricatum*.

The ground cover is sparse to mid-dense with a scattering of small shrubs such as *Melichrus urceolatus* and *Lissanthe strigosa*. Grass species include *Eragrostis lacunaria*, *Austrostipa scabra, Austrostipa densiflora, Austrodanthonia setacea* and *Austrodanthonia fulva*. Forbs include *Calotis cuneifolia*, *Dianella revoluta* var. *revoluta*, *Xerochrysum viscosa, Einadia hastata* and *Goodenia hederacea* subsp. *hederacea*. Occurs on red-brown clay or clay-loam soil derived from sedimentary or metamorphic rocks on footslopes and hillslopes of low hills and rises in the undulating central western slopes of NSW.

Plate 4: PCT 217 recorded within the study area

Figure 3-6: Vegetation communities recorded in the study area



3.3.3 Threatened terrestrial ecological communities

An ecological community is listed as threatened if there is a significant decline in its distribution or ecological function. This could include a change in community structure or composition, disruption of ecological processes, invasion by exotic species, or habitat degradation or fragmentation (OEH, 2016).

PCT 76 is associated with the following Endangered Ecological Communities (EECs):

- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia – EPBC Act.
- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions – TSC Act.

For this report, no delineation has been made between areas that meet the NSW listing criteria but do not meet the Commonwealth listing criteria. Management of the entire viable local population will ensure that no significant impact occurs to areas that qualify for protection under the EPBC Act.

Parts of PCT 76 meet the Commonwealth EPBC Act listing criteria for the Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia – endangered ecological community listing (Threatened Species Scientific Committee, 2010) (**Figure 3-7**). Although the vegetation plots did not meet the lower benchmark criteria to be protected under the Commonwealth listing; the precautionary principle has been applied to assume that parts of the mapped vegetation communities will be in a sufficient condition to meet this criteria. One of the disadvantages of applying random vegetation survey plots in the scientific methodology is that the random placement does not always allow for the capture of data in 'high quality' patches.

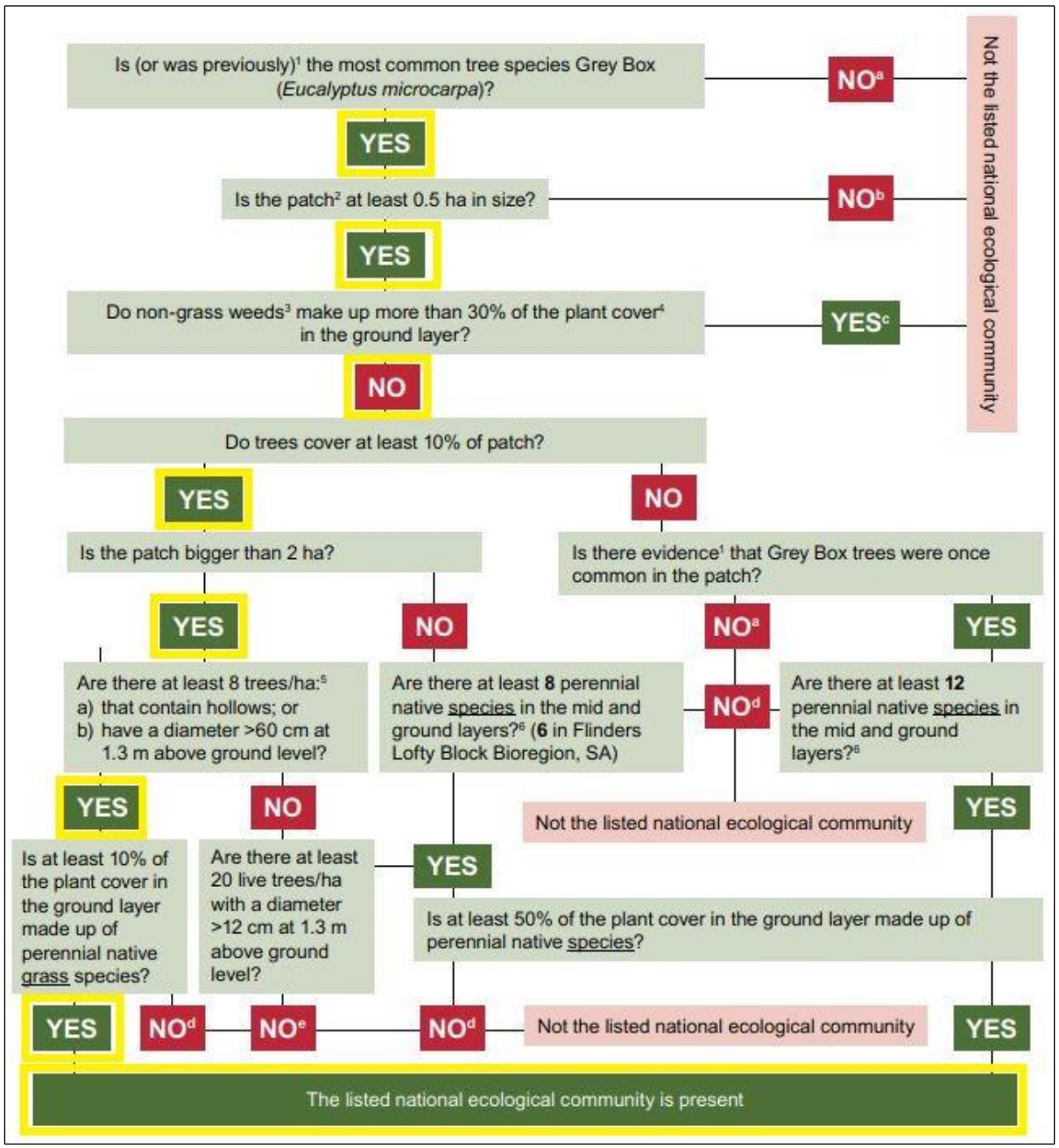
Inland Grey Box Woodland EEC includes those woodlands in which the most characteristic tree species*, Eucalyptus microcarpa* (Inland Grey Box), is often found in association with *E. populnea* subsp. *bimbil* (Bimble or Poplar Box), *Callitris glaucophylla* (White Cypress Pine), *Brachychiton populneus* (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. The community generally occurs as an open woodland 15–25 m tall but in some locations the over-storey may be absent as a result of past clearing or thinning, leaving only an understorey (OEH, 2011b).

The viable local population of the Inland Grey Box Woodland EEC has been mapped in **Figure 3-8**. The viable local population has been defined as the vegetation communities which have been mapped to be consistent with the Inland Grey Box Woodland EEC.

3.3.4 Groundwater dependant ecosystems

The study area is mapped by the Bureau of Meteorology (BoM) Atlas of Groundwater Dependant Ecosystems (GDEs) as having as having vegetation with a low potential for surface expression of groundwater (**Appendix E**).

Figure 3-7: EPBC Act guidelines for Grey Box Grassy Woodland EEC identification



3.3.5 Impact to terrestrial ecological communities

The proposal has been redesigned to avoid impact to the Inland Grey Box Woodland EEC. There will be no significant impact to this EEC.

The direct impact to native vegetation (PCT 217) will be approximately 12.3212.34 ha. The trap, sporting clay and archery ranges are not expected to cause a measurable impact to vegetation.

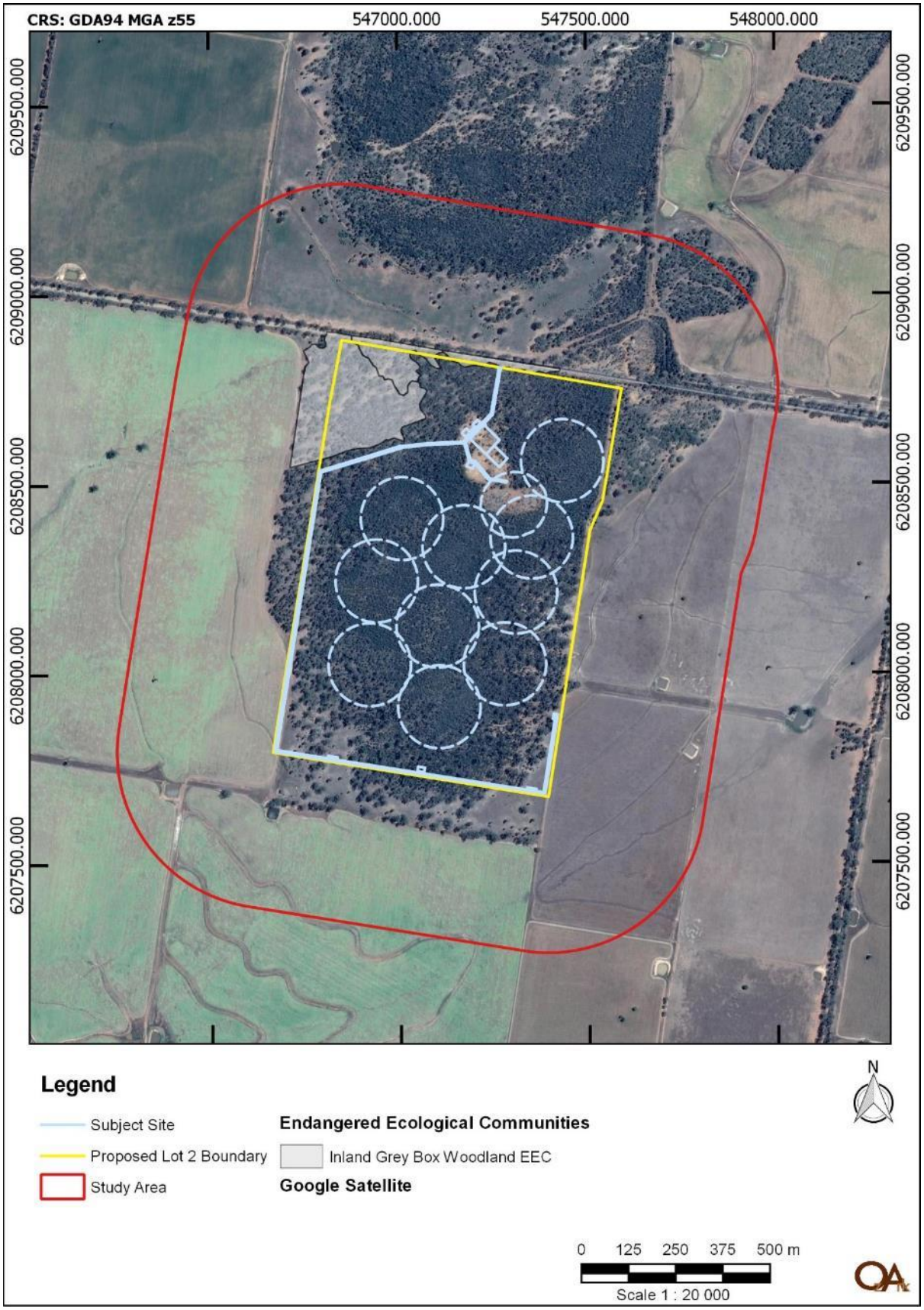
There will be three types of impact to native vegetation.

- The construction areas will require complete clearing of vegetation, and disturbance to soil for buildings and roads.
- The fuel management corridors along the roads will require clearing of trees and shrubs, and regular (e.g. annual) slashing to reduce the height and quantity of fine fuels such as

grasses. These areas will provide a fire break to minimise the risk of fire spreading onto and off the property, and provide safer access for the users of the site and emergency services in the event of a bushfire emergency.

- The APZ areas, which are not otherwise required for construction or road corridors, will require thinning of trees to achieve canopy separation, and removal of shrubs and heavier fuel loads in the understorey. Given the existing sparse nature of the ground layer vegetation, there will be minimal removal of existing vegetation in these areas. The primitive camping area will require a similar level of vegetation management. These areas retain some biodiversity values as the vegetation will not be completely cleared. Priority will be given the retaining larger trees and clumps of shrubs and groundcover, to minimise loss of habitat.

Figure 3-8: Viable local population of threatened ecological communities



3.4 Flora

3.4.1 Predicted flora

A review of habitat requirements and database search records for each listed species, populations and ecological communities predicted to occur in the study area concluded three threatened plants have potential to be impacted by the proposal (**Table 3-1**).

Table 3-1: Threatened species with potential to be impacted by the proposal

Type	Scientific Name	Common Name	TSC Act	EPBC Act	Records in 10km
Herb	*Senecio garlandii*	Woolly Ragwort	Vulnerable		2
Orchids	*Diuris sp. (Oaklands, D.L. Jones 5380)*	Oaklands Diuris	Endangered		0
Orchids	*Diuris tricolor*	Pine Donkey Orchid	Vulnerable		0

3.4.2 Recorded flora

No threatened flora species were recorded within the study area. Threatened flora with assessed potential to occur within the study area are unlikely to be significantly impacted by the proposed work such that a viable local population would become locally extinct.

Impact on weed burden

The land use surrounding the study area is agricultural with a moderate weed burden. No significant invasion of the native vegetation communities with priority weed species was recorded during the field survey.

The proposal is unlikely to significantly increase the weed burden within the study area beyond existing levels. Risks include; increased traffic and vegetation clearing. Weed management is recommended for the study area as required during the operational phase of the proposal.

3.5 Fauna

3.5.1 Predicted threatened fauna

A review of habitat requirements and database search records for each listed species, population and ecological communities predicted to occur in the study area (**Figure 3-9**) concluded 16 threatened animals have potential to be impacted by the proposal (**Table 3-2**).

Table 3-2: Threatened fauna species with potential to be impacted by the proposal

Type	Scientific Name	Common Name	NSW Status	Commonwealth Status	10km Records
Aves	*Artamus cyanopterus cyanopterus*	Dusky Woodswallow	Vulnerable		11
Aves	*Chthonicola sagittata*	Speckled Warbler	Vulnerable		3
Aves	*Climacteris picumnus victoriae*	Brown Treecreeper (eastern subspecies)	Vulnerable		21
Aves	*Epthianura albifrons*	White-fronted Chat	Vulnerable		2
Aves	*Falco subniger*	Black Falcon	Vulnerable		1
Aves	*Grantiella picta*	Painted Honeyeater	Vulnerable	Vulnerable	1
Aves	*Hieraaetus morphnoides*	Little Eagle	Vulnerable		2
Aves	*Lathamus discolor*	Swift Parrot	Endangered	Critically Endangered	2
Aves	*Melanodryas cucullata cucullata*	Hooded Robin (south-eastern form)	Vulnerable		2
Aves	*Melithreptus gularis gularis*	Black-chinned Honeyeater (eastern subspecies)	Vulnerable		3
Aves	*Neophema pulchella*	Turquoise Parrot	Vulnerable		2
Aves	*Pachycephala inornata*	Gilbert's Whistler	Vulnerable		4
Aves	*Petroica phoenicea*	Flame Robin	Vulnerable		1
Aves	*Polytelis swainsonii*	Superb Parrot	Vulnerable	Vulnerable	1
Aves	*Pomatostomus temporalis temporalis*	Grey-crowned Babbler (eastern subspecies)	Vulnerable		19
Aves	*Stagonopleura guttata*	Diamond Firetail	Vulnerable		6
Bats	*Chalinolobus picatus*	Little Pied Bat	Vulnerable		0
Bats	*Nyctophilus corbeni*	Corben's Long-eared Bat	Vulnerable	Vulnerable	0
Bats	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	Vulnerable		0
Bats	*Vespadelus baverstocki*	Inland Forest Bat	Vulnerable		0
Marsupials	*Petaurus norfolcensis*	Squirrel Glider	Vulnerable		1

3.5.2 Recorded fauna

No threatened fauna species were recorded within the study area. Threatened fauna with assessed potential to occur within the study area are unlikely to be significantly impacted by the proposed work such that a viable local population would become locally extinct.

Eleven native fauna species and two invasive species were recorded in the subject site during the field survey (**Table 3-3**).

Table 3-3: Fauna recorded during the field survey

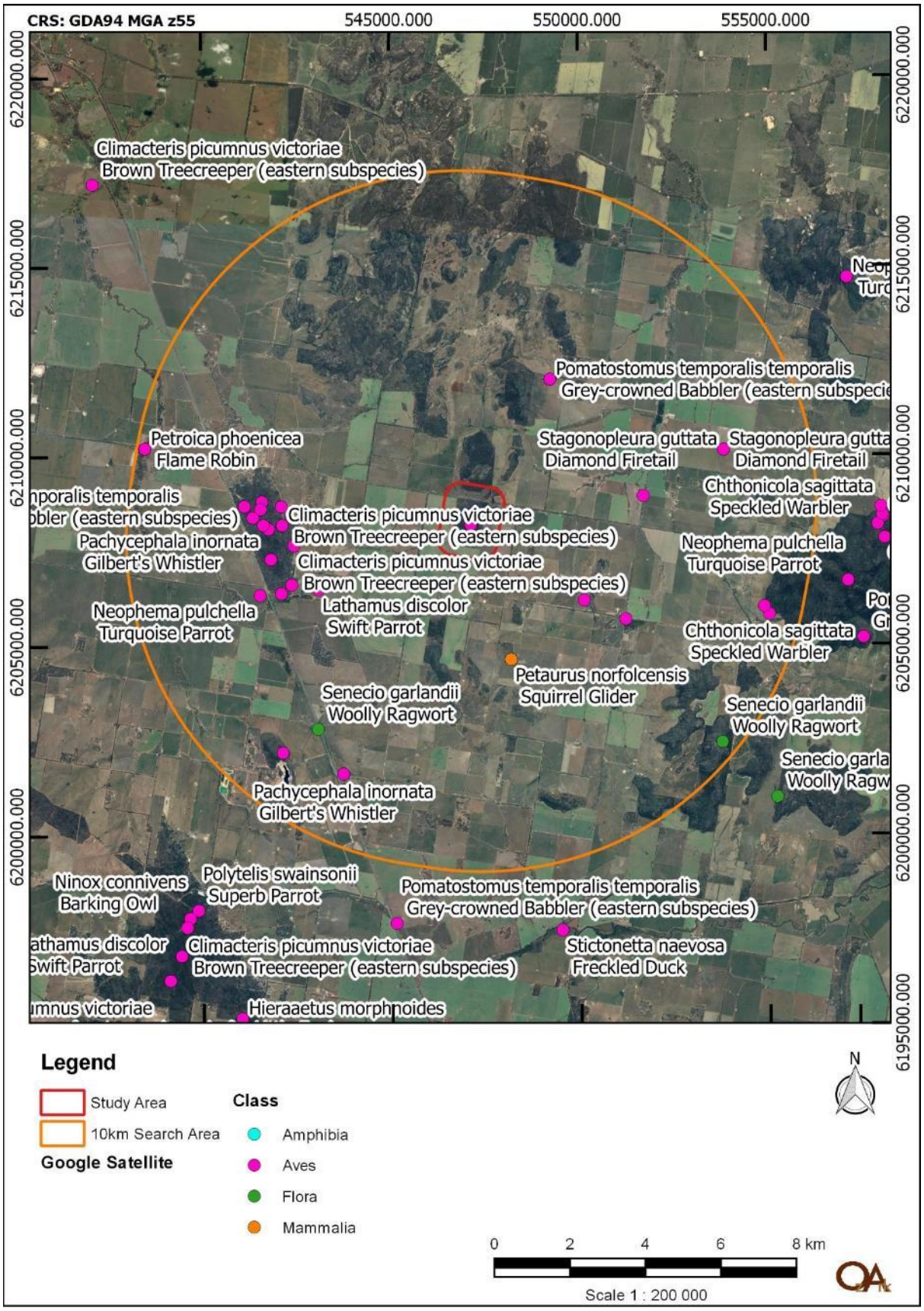
Type	Scientific Name	Common Name	TSC Act	EPBC Act
Aves	*Climacteris affinis*	White-browed Treecreeper		
Aves	*Eolophus roseicapilla*	Galah		
Aves	*Lichenostomus leucotis*	White-eared Honeyeater		
Aves	*Lichenostomus penicillatus*	White-plumed Honeyeater		
Aves	*Manorina melanocephala*	Noisy Miner		
Aves	*Ocyphaps lophotes*	Crested Pigeon		
Aves	*Platycercus eximius*	Eastern Rosella		
Aves	*Plectorhyncha lanceolata*	Striped Honeyeater		
Aves	*Pomatostomus superciliosus*	White-browed Babbler		
Aves	*Rhipidura albiscapa*	Grey Fantail		
Aves	*Rhipidura leucophrys*	Willie Wagtail		
Mammalia	*Ovis aries*	Sheep		
Mammalia	*Sus scrofa*	Pigs	KTP	
Marsupials	*Macropus giganteus*	Eastern Grey Kangaroo		

3.5.3 Impact to fauna

The proposal is unlikely to impact threatened fauna species or populations such that a viable local population is placed at risk of local extinction.

The proposal is likely to have a minor detrimental impact on bird populations within the subject site during shooting activities.

Figure 3-9: Threatened species within 10km of the study area



3.6 Key threatening processes

There are five Key Threatening Processes (KTP's) at the NSW or Commonwealth level which will be exacerbated by the proposal:

- Clearing of native vegetation.
- Bushrock removal.
- Anthropogenic climate change.
- Removal of dead wood and dead trees.
- Loss or degradation (or both) of sites used for hill-topping by butterflies.

A summary of the proposed impacts relating to the relevant key threatening processes is given in **Table 3-4**.

Table 3-4: Review of proposed impacts to key threatening processes

Key Threatening Process	TSC Act	FM Act	EPBC Act	KTP present in study area?	Exacerbated?
Aggressive exclusion of birds by noisy miners (*Manorina melanocephala*)	✔		✔	No	No
Alteration of habitat following subsidence due to longwall mining	✔			No	No
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	✔	✔		Yes	No
Anthropogenic climate change	✔	✔	✔	Yes	Negligible
Bushrock removal	✔			No	**Yes**
Clearing of native vegetation	✔		✔	Yes	Yes
Competition and grazing by the feral European rabbit (*Oryctolagus cuniculus*)	✔		✔	Yes	No
Competition and habitat degradation by feral goats (*Capra hircus*)	✔		✔	No	No
Competition from feral honey bees (*Apis mellifera*)	✔			Yes	No
Death or injury to marine species following capture in shark control programs on ocean beaches	✔	✔		No	No
Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments	✔		✔	No	No
Forest Eucalypt dieback associated with over-abundant psyllids and bell miners	✔			No	No
Herbivory and environmental degradation caused by feral deer	✔			Yes	No
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	✔			Yes	No
Hook and line fishing in areas important for the survival of threatened fish species		✔		No	No
Importation of red imported fire ants (*Solenopsis invicta*)	✔		✔	No	No
Incidental catch (bycatch) of Sea Turtle during coastal otter-trawling operations within Australian waters north of 28 degrees South			✔	No	No

Key Threatening Process	TSC Act	FM Act	EPBC Act	KTP present in study area?	Exacerbated?
Incidental catch (or bycatch) of seabirds during oceanic longline fishing operations			✔	No	No
Infection by psittacine circoviral (beak and feather) disease affecting endangered psittacine species and populations	✔		✔	Yes	No
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	✔		✔	No	No
Infection of native plants by *Phytophthora cinnamomi*	✔		✔	No	No
Introduction and Establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae	✔			No	No
Introduction of non-indigenous fish and marine vegetation to the coastal waters of New South Wales		✔		No	No
Introduction of the large earth bumblebee (*Bombus terrestris*)	✔			No	No
Invasion and establishment of exotic vines and scramblers	✔			No	No
Invasion and establishment of Scotch broom (*Cytisus scoparius*)	✔			Yes	No
Invasion and establishment of the cane toad (*Bufo marinus*)	✔		✔	No	No
Invasion of native plant communities by African Olive *Olea europaea* L. subsp. *cuspidata*	✔			No	No
Invasion of native plant communities by exotic perennial grasses	✔			Yes	No
Invasion of native plant communities by *Chrysanthemoides monilifera* (bitou bush and boneseed)	✔			No	No
Invasion of northern Australia by Gamba Grass and other introduced grasses			✔	No	No
Invasion of the yellow crazy ant (*Anoplolepis gracilipes* (Fr. Smith)) into NSW	✔		✔	No	No
Invasion, establishment and spread of *Lantana camara*	✔			No	No
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	✔		✔	No	No
Loss of hollow-bearing trees	✔			Yes	No
Loss or degradation (or both) of sites used for hill-topping by butterflies	✔			No	Yes
Novel biota and their impact on biodiversity			✔	No	No
Predation and hybridisation of feral dogs (*Canis lupus familiaris*)	✔			Yes	No
Predation by exotic rats on Australian offshore islands of less than 1000 km2 (100,000 ha)			✔	No	No
Predation by the European red fox (*Vulpes vulpes*)	✔		✔	Yes	No

Key Threatening Process	TSC Act	FM Act	EPBC Act	KTP present in study area?	Exacerbated?
Predation by the feral cat (*Felis catus*)	✔		✔	Yes	No
Predation by the ship rat (*Rattus rattus*) on Lord Howe Island	✔		✔	No	No
Predation by *Gambusia holbrooki* Girard, 1859 (plague minnow or mosquito fish)	✔			No	No
Predation, habitat degradation, competition and disease transmission by feral pigs (*Sus scrofa*)	✔		✔	Yes	No
Removal of dead wood and dead trees	✔			Yes	Yes
The degradation of native riparian vegetation along New South Wales water courses		✔		No	No
The introduction of fish to fresh waters within a river catchment outside their natural range		✔		No	No
The removal of large woody debris from NSW rivers and streams		✔		No	No

3.7 Matters of National Environmental Significance

Under the environmental assessment provisions of the EPBC Act, the Matters of National Environmental Significance (MNES) and impacts on Commonwealth land are required to be considered to assist in determining whether the proposal should be referred to the Australian Government DoEE. No MNES will be impacted by the proposed works (**Table 3-5**).

Table 3-5: Impacts to Matters of National Environmental Significance

Factor	Impact
Any impact on a World Heritage property?	NIL
Any impact on a National Heritage place?	NIL
Any impact on a wetland of international importance?	NIL
Any impact on a listed threatened species or communities?	NIL
Any impacts on listed migratory species?	NIL
Any impact on a Commonwealth marine area?	NIL
Does the proposal involve a nuclear action (including uranium mining)?	NIL
Additionally, any impact (direct or indirect) on Commonwealth land?	NIL
Any impact on a water resource, in relation to coal seam gas development and large coal mining development?	NIL

3.8 Significance of potential impact

Management of ecological items is determined on the basis of their assessed significance as well as the likely impact of the proposal. Significance of a species, population or community is determined by appointed NSW and National Scientific Committees; with cultural and public significance are considerations within the significance determination process. Within the framework of an impact assessment, impact to listed significant items must be assessed at a state level (under the FM Act and TSC Act), and if also nationally listed, under the EPBC Act. The following sections identify state or nationally listed threatened species and then determines if the impact is 'significant'.

3.8.1 Commonwealth legislation

The EPBC Act protects nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as matters of national environmental significance. The EPBC Act policy *Matters of National Environmental Significance: Significant Impact Guidelines 1.1* (DoE, 2013) forms the basis of determining if impact to protected matters is significant.

The habitat assessment identified five species listed under the EPBC Act which may potentially be affected by the proposal (**Appendix B**).

Table 3-6 gives an overview of the assessments and shows that the proposal:

1. Is not likely to have a significant impact on a matter of national environmental significance. The matters of national environmental significance are:

- World heritage properties.
- National heritage places.
- Wetlands of international importance.
- Threatened species and ecological communities.
- Migratory species.
- Commonwealth marine areas.
- The Great Barrier Reef Marine Park. And;
- Nuclear actions (including uranium mines).
- A water resource, in relation to coal seam gas development and large coal mining development.

2. Is not likely to have a significant impact on the environment in general (for actions by Commonwealth agencies or actions on Commonwealth land) or the environment on Commonwealth land (for actions outside Commonwealth land).

A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity (DoE, 2013).

Table 3-6: Summary of the findings of EPBC Act significance assessments

Threatened species, or communities		Important population	Likely significant impact?
Bats			
Nyctophilus corbeni	Corben's Long-eared Bat	No	No
Birds			
Grantiella picta	Painted Honeyeater	No	No
Lathamus discolor	Swift Parrot	No	No
Merops ornatus	Rainbow Bee-eater	No	No
Polytelis swainsonii	Superb Parrot	No	No
Endangered Ecological Communities			
Grey Box *(Eucalyptus microcarpa)* Grassy Woodlands and Derived Native Grasslands of South-eastern Australia		Yes	No

3.8.2 NSW legislation

Twenty-seven subject species listed under the NSW TSC Act have been identified in the predictive model with potential to occur in the study area.

Table 3-7 gives an overview of the results of the seven-part tests (**Appendix D**) and shows a *Species Impact Statement* is not required, because:

(a) In the case of a threatened species, the proposal is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

(b) In the case of an endangered population, the proposal is not likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

(c) In the case of an endangered ecological community or critically endangered ecological community:
   (i) The proposal is not 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) The proposal is not 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.

(d) In relation to the habitat of a threatened species, population or ecological community:
   (i) The extent to which habitat is likely to be removed or modified as a result of the proposal is not significant, and
   (ii) That an area of habitat is not likely to become fragmented or isolated from other areas of habitat as a result of the proposal, and
   (iii) The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality is not significant.

(e) That the proposal is not likely to have an adverse effect on critical habitat (either directly or indirectly).

(f) That the proposal is not consistent with the objectives or actions of a recovery plan or threat abatement plan.

(g) That the proposal constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Table 3-7: Summary of the findings of TSC Act 7-Part Tests

Threatened species, or communities		7-Part Test Questions							Likely significant impact?
		1	2	3	4	5	6	7	
Aves									
Artamus cyanopterus cyanopterus	Dusky Woodswallow	N	X	X	N	N	Y	Y	No
Chthonicola sagittata	Speckled Warbler	N	X	X	N	N	Y	Y	No
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	N	X	X	N	N	Y	Y	No
Epthianura albifrons	White-fronted Chat	N	X	X	N	N	Y	Y	No

Threatened species, or communities		7-Part Test Questions							Likely significant impact?
		1	2	3	4	5	6	7	
Falco subniger	Black Falcon	N	X	X	N	N	Y	Y	No
Grantiella picta	Painted Honeyeater	N	X	X	N	N	Y	Y	No
Hieraaetus morphnoides	Little Eagle	N	X	X	N	N	Y	Y	No
Lathamus discolor	Swift Parrot	N	X	X	N	N	Y	Y	No
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	N	X	X	N	N	Y	Y	No
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	N	X	X	N	N	Y	Y	No
Merops ornatus	Rainbow Bee-eater	N	X	X	N	N	Y	Y	No
Neophema pulchella	Turquoise Parrot	N	X	X	N	N	Y	Y	No
Pachycephala inornata	Gilbert's Whistler	N	X	X	N	N	Y	Y	No
Petroica phoenicea	Flame Robin	N	X	X	N	N	Y	Y	No
Polytelis swainsonii	Superb Parrot	N	X	X	N	N	Y	Y	No
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	N	X	X	N	N	Y	Y	No
Stagonopleura guttata	Diamond Firetail	N	X	X	N	N	Y	Y	No
Bats									
Chalinolobus picatus	Little Pied Bat	N	X	X	N	N	Y	Y	No
Nyctophilus corbeni	Corben's Long-eared Bat	N	X	X	N	N	Y	Y	No
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	N	X	X	N	N	Y	Y	No
Scoteanax rueppellii	Greater Broad-nosed Bat	N	X	X	N	N	Y	Y	No
Vespadelus baverstocki	Inland Forest Bat	N	X	X	N	N	Y	Y	No
Marsupials									
Petaurus norfolcensis	Squirrel Glider	N	X	X	N	N	Y	Y	No
Flora									
Senecio garlandii	Woolly Ragwort	N	X	X	N	N	Y	Y	No
Diuris sp. (Oaklands, D.L. Jones 5380)	Oaklands Diuris	N	X	X	N	N	Y	Y	No
Diuris tricolor	Pine Donkey Orchid	N	X	X	N	N	Y	Y	No
Communities									
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions		X	X	N	N	N	Y	Y	No

Notes: Y= Yes (negative impact), N= No (no or positive impact), P = Potential, X= not applicable, ?= unknown impact.

4 Environmental safeguards

The proposal has followed the principles of 'avoid, minimise, mitigate' to reduce the impact of the proposal on local biodiversity values.

4.1 Avoid impact

The following avoidance measures have been made:

- Areas mapped as consistent with the Inland Grey Box Woodland EEC have been avoided. The proposal has been redesigned to retain these areas.
- Larger trees are to be retained where possible by aligning the new tracks and camp sites to avoid the removal of large habitat trees.
- All areas not directly required for construction or bushfire mitigation will be protected from impact and the native vegetation retained, during construction and after the development has commenced operation.
- The Grey Box woodland area is to be permanently marked off with fencing or bollards to prevent vehicle access and/or inadvertent expansion of the camping area into this endangered ecological community.

4.2 Minimise impact

The design of the proposal has minimised the potential impact to biodiversity by:

- Minimising the size and extent of access roads and car parks.
- Clustering the club house and amenities buildings with the proposed shooting ranges.
- Designing the proposed shooting ranges over the previously quarried area to minimise vegetation removal.
- A vegetation management plan is recommended to be prepared to ensure the Grey Box woodland EEC is protected and only the minimum amount of vegetation modification and removal is undertaken for bushfire mitigation, consistent with allowances for inner and outer APZ as per *Planning for Bush Fire Protection*.

4.3 Mitigate impact

The mitigation measures in **Table 4-1** have been recommended to reduce the potential impact of the proposal.

Table 4-1: Summary of mitigation methods

Impact	Environmental safeguards	Responsibility	Timing
General	1. All personnel would be inducted to be aware that any impact to threatened species, populations or communities have legislative consequences whether deliberate or accidental without development approval under the EP&A Act. 2. Evidence of all personnel receiving an induction would be kept on file (signed induction sheets etc.). 3. A profile for each of the subject species previously recorded within 10km of the study area will be shown to personnel during inductions. Pictures of these species would be included in the profile to assist staff in avoiding these species. 4. Any change in design outside the assessed impact footprint within the study area will require further ecological survey.	Proponent	Pre-construction, construction, operation
Clearing and prevention of over-clearing	5. Before starting work, a physical vegetation clearing boundary at the approved clearing limit is to be demarcated and implemented. The delineation of such a boundary may include the use of temporary fencing, flagging tape, or similar. 6. Vegetation would be removed in a manner that avoids damage to surrounding vegetation. Ensure groundcover disturbance is kept to a minimum. 7. Where possible, vegetation to be removed would be mulched on-site and re-used to stabilise disturbed areas. 8. Prior to clearing, inspect trees with bird nests or hollows before pushing or felling to ensure the nests are vacant. Inspection would occur immediately before pushing or felling. If a bird is in the nest, clear the trees around it first to see if the animal will disperse. If the bird is a nestling all measures would be taken to collect the bird and remove to a safe location. 9. Trees with nests or hollows are to be “knocked” and watched for movement of fauna for at least 15 minutes, before felling occurs. 10. Parts of trees from tree felling can be placed in areas of native vegetation to be retained. This will provide habitat complexity in the form of fallen timber to increase species diversity.	Contractor	Pre-construction
Soil Management	11. Erosion and sediment controls in line with Landcom’s Managing Urban Stormwater, Soils & Construction Guidelines (The Blue Book. Landcom 2004) are required. 12. Erosion and sedimentation controls are to be checked and maintained on a regular basis. Including clearing of sediment from behind barriers and after heavy rainfall events. 13. Erosion and sediment control measures are not to be removed until the works are complete and areas are stabilised.	Contractor	Pre-construction and construction
Introduction and spread of noxious	14. If declared noxious weeds are identified during construction they would be managed according to the requirements of the *Biosecurity Act 2015.*	Contractor	Construction

Impact	Environmental safeguards	Responsibility	Timing
weeds and pathogens	15. Construction machinery (bulldozers, excavators, trucks, loaders and graders) would be cleaned using a high-pressure washer (or other suitable device) before entering and exiting work sites. 16. All pesticides would be used in accordance with the requirements on the label. Any person carrying out pesticide (including herbicide) application would be trained to do so and have the proper certificate of completion/competency or statement of attainment issued by a registered training organisation.		
Introduction of invasive fauna	17. All food scraps and rubbish are to be appropriately disposed of in sealed receptacles to prevent providing forage habitats for foxes, rats, dogs and cats.	Contractor	Construction
Disturbance to fallen timber, dead wood and bush rock	18. Any fallen timber, dead wood and bush rock (if present) encountered on site would be left in situ or relocated to a suitable place nearby. Rock would be removed with suitable machinery so as not to damage the underlying rock or result in excessive soil disturbance.	Contractor	Construction

5 Conclusion

This study has found that the proposed development footprint, including areas required for bushfire mitigation, will result in 12.34 ha of vegetation impact, of which 60% is in existing native woodland vegetation and 40% is in derived grassland already cleared of overstorey trees.

Two vegetation communities occur on the site:

- PCT 76: Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions.
- PCT 217: Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion.

PCT 76 is associated with the following Endangered Ecological Communities (EECs):

- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia – EPBC Act.
- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions – TSC Act.

No threatened fauna or flora species were recorded within the study area. Threatened species with assessed potential to occur within the study area are unlikely to be significantly impacted by the proposed work such that a viable local population would become locally extinct.

Eleven native fauna species and two invasive species were recorded in the subject site during the field survey.

The proposal has followed the principles of 'avoid, minimise, mitigate' to reduce the impact of the proposal on local biodiversity values.

The following avoidance measures have been made:

- Areas mapped as consistent with the Inland Grey Box Woodland EEC have been avoided. The proposal has been redesigned to retain these areas.

The design of the proposal has minimised the potential impact to biodiversity by:

- Minimising the size and extent of access roads and car parks.
- Clustering the club house and amenities buildings with the proposed shooting ranges.
- Designing the proposed shooting ranges over the previously quarried area to minimise vegetation removal.

Further mitigation measures have been recommended to manage the potential impact to biodiversity to minimise risk.

Having considered the ecology within the study area and the proposed impact, it is apparent that the proposal is:

- Unlikely to significantly affect any of the listed threatened species, fauna populations or communities.
- Unlikely to augment or significantly contribute to any of the National or State listed Key Threatening Processes.

- Unlikely to significantly affect any Ramsar wetland or any listed migratory species.
- Unlikely to significantly affect local hydrology.

The proposed activity should not be considered to constitute a significant impact and, as such, no Species Impact Statement (SIS) is warranted.

No specific licences, permits, approvals and notifications required for the construction, maintenance and operation of the proposal under Part 4 of the EP&A Act have been identified.

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Appendix A: Field survey results

Flora species list

Project Name: Trungley Hall Shooters Complex						
20x20m Plot ID	**1**	**2**	**3**	**4**	**5**	**6**
GPS Zone	55	55	55	55	55	55
GDA N	6207940.09	6207847.27	6208658.485	6208714.884	6208477.16	6208163.742
GDA E	546818.4507	547290.1016	547470.017	547010.0023	547161.9138	547116.8735
Details						
20x20m Plot ID	**1**	**2**	**3**	**4**	**5**	**6**
Dominant Stratum	Upper	Mid	Upper	Upper	Mid	Mid
Dominant Stratum % Cover	30%	40%	35%	30%	60%	50%
Landscape Position and Mitchell Landscape	Slope Ardlethan Hills	Slope Ardlethan Hills	Valley Ardlethan Hills	Flats Ardlethan Hills	Crest Ardlethan Hills	Crest Ardlethan Hills
Health	Healthy	Healthy	Healthy	Healthy	Healthy	Healthy
Condition	Good	Good	Good	Good	Good	Good
Plant Community Type	217	217	217	76	217	217
PCT Name	Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion	Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion	Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion	Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion	Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion
EEC?	No	No	No	Yes	No	No
Formation	Western Slopes Dry Sclerophyll Forests	Western Slopes Dry Sclerophyll Forests	Western Slopes Dry Sclerophyll Forests	Floodplain Transition Woodlands	Western Slopes Dry Sclerophyll Forests	Western Slopes Dry Sclerophyll Forests
Highly Cleared Vegetation Type? (>70%)	No, 69%	No, 69%	No, 69%	Yes, 92%	No, 69%	No, 69%
Upper Stratum % cover	30%	20%	35%	30%	20%	10%
Mid Stratum % Cover	20%	40%	20%	1%	60%	50%
Lower Stratum % Cover	60%	15%	5%	60%	10%	15%
Upper Stratum height (m)	20m	15m	15m	20m	18m	5m
Mid Stratum height (m)	1.5m	2.5m	2m	2m	2.5m	2.5m

Lower Stratum height (m)	0.2m	0.3m	0.2m	0.4m	0.5m	0.2m
% Bare Ground	15%	10%	60%	0%	20%	50%
% Rocks	0%	1%	2%	0%	1%	3%
Ground logs 20x50m >10cm diameter	5m	15m	20m	10m	20m	10m
Tree Hollows 20x50m area						
Plot ID	**1**	**2**	**3**	**4**	**5**	**6**
Very Large	0	0	0	0	0	0
Large	0	0	0	0	0	0
Medium	0	2	0	0	0	0
Small	2	3	0	0	0	0
Terrestrial habitat						
Plot ID	**1**	**2**	**3**	**4**	**5**	**6**
Biodiversity links?	No	No	No	No	No	No
Habitat features	Hollows, small bird habitat	Hollows, small bird habitat	Smal bird habitat	Leaf litter,open woodland, ground logs	Small bird habitat	Small bird habitat
Plot ID	**1**	**2**	**3**	**4**	**5**	**6**
Upper stratum species						
1 (Dominant)	Mugga Ironbark (*Eucalyptus sideroxylon*)	Mugga Ironbark (*Eucalyptus sideroxylon*)	Mugga Ironbark (*Eucalyptus sideroxylon*)	Western Grey Box (*Eucalyptus microcarpa*)	Mugga Ironbark (*Eucalyptus sideroxylon*)	White Cypress Pine (*Callitris glaucophylla*)
2 (Co-dominant 1)	White Cypress Pine (*Callitris glaucophylla*)	White Cypress Pine (*Callitris glaucophylla*)	White Cypress Pine (*Callitris glaucophylla*)	Mugga Ironbark (*Eucalyptus sideroxylon*)	White Cypress Pine (*Callitris glaucophylla*)	Dwyer's Red Gum (*Eucalyptus dwyeri*)
3 (Co-dominant 2)			Dwyer's Red Gum (*Eucalyptus dwyeri*)			Bulloak (*Allocasuarina luehmannii*)
Bulloak (*Allocasuarina luehmannii*)						0.1
Dwyer's Red Gum (*Eucalyptus dwyeri*)			0.5			0.5
Kurrajong (*Brachychiton populneus* subsp. *trilobus*)						0.1
Mugga Ironbark (*Eucalyptus sideroxylon*)	1	0.5	1	0.5	2	0.1
Western Grey Box (*Eucalyptus microcarpa*)				1		

White Cypress Pine (*Callitris glaucophylla*)	2	2	2		1	2
Mid stratum species						
1 (Dominant)	White Cypress Pine (*Callitris glaucophylla*)	White Cypress Pine (*Callitris glaucophylla*)	White Cypress Pine (*Callitris glaucophylla*)	Currawang (*Acacia doratoxylon*)	White Cypress Pine (*Callitris glaucophylla*)	White Cypress Pine (*Callitris glaucophylla*)
2 (Co-dominant 1)				Wilga (*Geijera parviflora*)	Mugga Ironbark (*Eucalyptus sideroxylon*)	Dwyer's Red Gum (*Eucalyptus dwyeri*)
3 (Co-dominant 2)						
Currawang (*Acacia doratoxylon*)				0.5		
Dwyer's Red Gum (*Eucalyptus dwyeri*)						0.5
Mugga Ironbark (*Eucalyptus sideroxylon*)					0.5	
White Cypress Pine (*Callitris glaucophylla*)	2	1	2		2	2
Wilga (*Geijera parviflora*)				0.5		
Lower stratum species						
1 (Dominant)	Speargrass (*Austrostipa scabra* subsp. *scabra*),	Speargrass (*Austrostipa scabra* subsp. *scabra*),	Speargrass (*Austrostipa scabra* subsp. *scabra*),	Speargrass (*Austrostipa scabra* subsp. *scabra*),	Speargrass (*Austrostipa scabra* subsp. *scabra*),	Speargrass (*Austrostipa scabra* subsp. *scabra*),
2 (Co-dominant 1)	Smallflower Wallaby Grass (*Rytidosperma setaceum*) (Synonyms: *Austrodanthonia setacea*)	Smallflower Wallaby Grass (*Rytidosperma setaceum*) (Synonyms: *Austrodanthonia setacea*)	Sticky Everlasting (*Xerochrysum viscosum*)	Wallaby Grass (*Austrodanthonia bipartita*)	Sticky Everlasting (*Xerochrysum viscosum*)	Sticky Everlasting (*Xerochrysum viscosum*)
3 (Co-dominant 2)	White Cypress Pine (*Callitris glaucophylla*)	Sticky Everlasting (*Xerochrysum viscosum*)	Wallaby Grass (*Austrodanthonia bipartita*)	Purple Burr-daisy (*Calotis cuneifolia*)	Wallaby Grass (*Austrodanthonia bipartita*)	Wallaby Grass (*Austrodanthonia bipartita*)
Berry Salt Bush (*Einadia hastate*)	0.5			0.5		
Poison Rock Fern (*Cheilanthes sieberi* subsp. *sieberi*)		0.5			0.5	
Purple Burr-daisy (*Calotis cuneifolia*)				0.5		

Smallflower Wallaby Grass (*Rytidosperma setaceum*) (Synonyms: *Austrodanthonia setacea*)	1	0.5		0.5		
Speargrass (*Austrostipa scabra* subsp. *scabra*),	2	0.5	0.5	1	0.5	1
Sticky Everlasting (*Xerochrysum viscosum*)	1	1	1	0.5	1	1
Tall Windmill Grass (*Chloris verticillata*)				0.5		
Wallaby Grass (*Austrodanthonia bipartita*)	1	0.5	0.5	1	0.5	0.5
White Cypress Pine (*Callitris glaucophylla*)	1					

Score	*Braun Banquet (BB) Cover
0	Absent from quadrant
0.1	Represented by a solitary item (<5% cover)
0.5	Represented by a few (<5) items (<5% cover)
1	Represented by >5 items (<5% cover)
2	Represented by many (>5) items (5-25% cover)
3	Represented by many items (25 - 50% cover)
4	Represented by many items (50-75% cover)
5	Represented by many items (75-100% cover)

Appendix B: Habitat assessment table

Full profile

Type	Scientific name	Common name	NSW status	Commonwealth status	NSW Occurrence	Commonwealth Occurrence	10km	Habitat	Predicted	Affected?
Animal>Amphibians	*Crinia sloanei*	Sloane's Froglet	Vulnerable		Known		No	Sloane's Froglet has been recorded from widely scattered sites in the floodplains of the Murray-Darling Basin, with the majority of records in the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales. It is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats.	Unlikely - no watercourses	Unlikely
Animal>Amphibians	*Litoria raniformis*	Southern Bell Frog	Endangered	Vulnerable	Known		No	The Southern Bell Frog is known to exist only in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. Usually found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha swamps and River Red Gum swamps or billabongs along floodplains and river valleys. They are also found in irrigated rice crops, particularly where there is no available natural habitat.	Unlikely - no watercourses	Unlikely
Animal>Bats	*Chalinolobus dwyeri*	Large-eared Pied Bat	Vulnerable	Vulnerable	Known		No	Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (Petrochelidon ariel), frequenting low to mid-elevation dry open forest and woodland close to these features. Found in well-timbered areas containing gullies.	Unlikely - no caves	Unlikely
Animal>Bats	*Chalinolobus picatus*	Little Pied Bat	Vulnerable		Known		No	The Little-Pied Bat is found in inland Queensland and NSW (including Western Plains and slopes) extending slightly into South Australia and Victoria. 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. Can tolerate high temperatures and dryness but need access to nearby open water.	Potential - suitable habitat	Potential
Animal>Bats	*Falsistrellus tasmaniensis*	Eastern False Pipistrelle	Vulnerable		Known		No	The Eastern False Pipistrelle is found on the south-east coast and ranges of Australia, from southern Queensland to Victoria and Tasmania. 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.	Potential - suitable habitat	Unlikely
Animal>Bats	*Myotis macropus*	Southern Myotis	Vulnerable		Known		No	The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface.	Unlikely - no watercourses or caves	Unlikely
Animal>Bats	*Nyctophilus corbeni*	Corben's Long-eared Bat	Vulnerable	Vulnerable	Known	Likely	No	Overall, the distribution of the south eastern form coincides approximately with the Murray Darling Basin with the Pilliga Scrub region being the distinct stronghold for this species. 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.	Potential - suitable habitat	Potential
Animal>Bats	*Pteropus poliocephalus*	Grey-headed Flying-fox	Vulnerable	Vulnerable	Known	Foraging and feeding	No	Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. In times of natural resource shortages, they may be found in unusual locations. Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	No - unsuitable habitat	Unlikely
Animal>Bats	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	Vulnerable		Known		No	The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia. In the most southerly part of its range - most of Victoria, south-western NSW and adjacent South Australia - it is a rare visitor in late summer and autumn. There are scattered records of this species across the New England Tablelands and North West Slopes. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory.	Potential - suitable habitat	Potential

Type	Scientific name	Common name	NSW status	Commonwealth status	NSW Occurrence	Commonwealth Occurrence	10km	Habitat	Predicted	Affected?
Animal>Birds	*Actitis hypoleucos*	Common Sandpiper				Likely	No	The Common Sandpiper is found along all coastlines of Australia and in many areas inland. The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow, and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags.	Unlikely - not coastal	Unlikely
Animal>Birds	*Anseranas semipalmata*	Magpie Goose	Vulnerable		Known		No	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. Activities are centred on wetlands, mainly those on floodplains of rivers and large shallow wetlands formed by run-off. Often seen in trios or flocks on shallow wetlands, dry ephemeral swamps, wet grasslands and floodplains; roosts in tall vegetation.	Unlikely - no wetlands	Unlikely
Animal>Birds	*Anthochaera phrygia*	Regent Honeyeater	Critically Endangered	Critically Endangered	Known	Known	No	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. Range is between north-eastern Victoria and south-eastern Queensland. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In the last 10 years Regent Honeyeaters have been recorded in urban areas around Albury where woodlands tree species such as Mugga Ironbark and Yellow Box were planted 20 years ago. The Regent Honeyeater is a generalist forager, although it feeds mainly on the nectar from a relatively small number of eucalypts that produce high volumes of nectar.	Potential - suitable habitat, outside core range	Unlikely
Animal>Birds	*Apus pacificus*	Fork-tailed Swift				Likely	No	In NSW, the Fork-tailed Swift is recorded in all regions. Many records occur east of the Great Divide, however, a few populations have been found west of the Great Divide. The Fork-tailed Swift is almost exclusively aerial, flying from less then 1 m to at least 300 m above ground and probably much higher. In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches and also over islands and sometimes well out to sea. They also occur over settled areas, including towns, urban areas and cities. They mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. They are also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes. The sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pines.	Potential - aerial foraging	Unlikely
Animal>Birds	*Artamus cyanopterus cyanopterus*	Dusky Woodswallow	Vulnerable		Known		Yes	The Dusky Woodswallow is a woodland dependant bird. It is found in woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. It has also been recorded in shrublands and heathlands and various modified habitats, including regenerating forests. Common habitat requirements are an open understorey with sparse eucalypt saplings, acacias and other shrubs, including heath. The ground cover may consist of grasses, sedges or open ground, often with coarse woody debris. Birds are also often observed in farm land, road sides and golf courses, usually at the edges of forest or woodland or wind breaks with dead timber.	Potential - suitable habitat	Potential
Animal>Birds	*Botaurus poiciloptilus*	Australasian Bittern	Endangered	Endangered	Known	May Occur	No	Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (Typha spp.) and spikerushes (Eleocharis spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails. Feeding platforms may be constructed over deeper water from reeds trampled by the bird; platforms are often littered with prey remains. Breeding occurs in summer from October to January; nests are built in secluded places in densely-vegetated wetlands on a platform of reeds; there are usually six olive-brown eggs to a clutch.	Unlikely - no wetlands	Unlikely
Animal>Birds	*Burhinus grallarius*	Bush Stone-curlew	Endangered		Known		No	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east it is either rare or extinct throughout its former range. Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber.	Unlikely - outside current known range	Unlikely

Type	Scientific name	Common name	NSW status	Commonwealth status	NSW Occurrence	Commonwealth Occurrence	10km	Habitat	Predicted	Affected?
Animal>Birds	*Calidris ferruginea*	Curlew Sandpiper	Endangered	Critically Endangered	Known	Likely	No	In Australia, Curlew Sandpipers occur around the coasts and are also quite widespread inland, though in smaller numbers. Records occur in all states during the non-breeding period, and also during the breeding season when many non-breeding one year old birds remain in Australia rather than migrating north. Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters.	Unlikely - not coastal	Unlikely
Animal>Birds	*Callocephalon fimbriatum*	Gang-gang Cockatoo	Vulnerable		Known		No	The Gang-gang Cockatoo is distributed from southern Victoria through south- and central-eastern New South Wales. In New South Wales, the Gang-gang Cockatoo is distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. It occurs regularly in the Australian Capital Territory. It is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee. In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands,particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas.	Unlikely - at edge of species extent	Unlikely
Animal>Birds	*Calyptorhynchus lathami*	Glossy Black-Cockatoo	Vulnerable		Known		No	The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW. Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa)* are important foods. Inland populations feed on a wide range of sheoaks, including Drooping Sheoak, *Allocasuaraina diminuta*, and *A. gymnathera*. Belah is also utilised and may be a critical food source for some populations. In the Riverina, birds are associated with hills and rocky rises supporting Drooping Sheoak, but also recorded in open woodlands dominated by Belah (*Casuarina cristata*). Feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and *Allocasuarina* species), shredding the cones with the massive bill. Dependent on large hollow-bearing eucalypts for nest sites. A single egg is laid between March and May.	Potential - suitable habitat	Unlikely
Animal>Birds	*Calyptorhynchus lathami* - endangered population	Glossy Black-Cockatoo, Riverina population	Endangered Population		Known		No	The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW. Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa)* are important foods. Inland populations feed on a wide range of sheoaks, including Drooping Sheoak, *Allocasuaraina diminuta*, and *A. gymnathera*. Belah is also utilised and may be a critical food source for some populations. In the Riverina, birds are associated with hills and rocky rises supporting Drooping Sheoak, but also recorded in open woodlands dominated by Belah (*Casuarina cristata*). Feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and *Allocasuarina* species), shredding the cones with the massive bill. Dependent on large hollow-bearing eucalypts for nest sites. A single egg is laid between March and May.	Potential - suitable habitat	Unlikely
Animal>Birds	*Certhionyx variegatus*	Pied Honeyeater	Vulnerable		Known		No	Widespread throughout acacia, mallee and spinifex scrubs of arid and semi-arid Australia. Occasionally occurs further east, on the slopes and plains and the Hunter Valley, typically during periods of drought. Inhabits wattle shrub, primarily Mulga (Acacia aneura), mallee, spinifex and eucalypt woodlands, usually when shrubs are flowering; feeds on nectar, predominantly from various species of emu-bushes (Eremophila spp.); also from mistletoes and various other shrubs (e.g. Grevillea spp.); also eats saltbush fruit, berries, seed, flowers and insects.	Unlikely - unsuitable habitat, not arid or semi-arid	Unlikely

Type	Scientific name	Common name	NSW status	Commonwealth status	NSW Occurrence	Commonwealth Occurrence	10km	Habitat	Predicted	Affected?
Animal>Birds	*Chthonicola sagittata*	Speckled Warbler	Vulnerable		Known		Yes	The Speckled Warbler has a patchy distribution throughout south-eastern Queensland, the eastern half of NSW and into Victoria, as far west as the Grampians. The species is most frequently reported from the hills and tablelands of the Great Dividing Range, and rarely from the coast. The Speckled Warbler lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include 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.	Potential - suitable habitat	Potential
Animal>Birds	*Cinclosoma castanotum*	Chestnut Quail-thrush	Vulnerable		Known		No	The Chestnut Quail-thrush is endemic to arid and semi-arid southern Australia, reaching its northern extent in the south of the Northern Territory. It mainly occupies 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.	Unlikely - unsuitable habitat, not arid or semi-arid	Unlikely
Animal>Birds	*Circus assimilis*	Spotted Harrier	Vulnerable		Known		No	The Spotted Harrier occurs throughout the Australian mainland, except in densly forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands.	Unlikely - no wetlands	Unlikely
Animal>Birds	*Climacteris affinis* - endangered population	White-browed Treecreeper population in Carrathool local government area south of the Lachlan River and Griffith local government area	Endangered Population		Known		No	In NSW, the White-browed Treecreeper occupies a broad area of western NSW, west from a line from Balranald to Lake Cargelligo then Lightning Ridge. The species appears absent in the far north west of the state with no records occurring west of a line from Broughams Gate, 100km northwest of Broken Hill to Hungerford. A small population, now recognised as isolated, occurs in Carrathool local government area south of the Lachlan River and Griffith local government areas. Occurs in a range of semi-arid and arid tall shrublands and woodlands across the southern half of Australia. In NSW, the species occupies a variety of habitats including Mulga, Brigalow, Gidgee, Belah, Buloke and White Cypress. The species may also occur in habitats adjacent to those detailed above, including Coolibah, River Red Gum and Black Box.	No - outside the required LGA	Unlikely
Animal>Birds	*Climacteris picumnus victoriae*	Brown Treecreeper (eastern subspecies)	Vulnerable		Known		Yes	The Brown Treecreeper is endemic to eastern Australia and occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges. The western boundary of the range of the species runs approximately through Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell. The eastern subspecies lives in eucalypt woodlands through central NSW and in coastal areas with drier open woodlands. Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey; also found in mallee and River Red Gum (Eucalyptus camaldulensis) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging.	Potential - suitable habitat	Potential
Animal>Birds	*Daphoenositta chrysoptera*	Varied Sittella	Vulnerable		Known		No	The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.	Potential - suitable habitat	Unlikely
Animal>Birds	*Drymodes brunneopygia*	Southern Scrub-robin	Vulnerable		Known		No	The Southern Scrub-robin inhabits mallee and acacia scrub, particularly with dense sub-shrubs in the understorey, including Broombush and other dry shrubs. This species is restricted to mallees and shrublands across southern Australia and in NSW is confined to two main areas. The first is in central NSW and is centred on Round Hill and Nombinnie Nature Reserves; the second occurs in the far south west of NSW, mainly within the Scotia mallee centred on Tarawi NR and Scotia Sanctuary.	Unlikely - unsuitable habitat, not semi-arid scrub	Unlikely

Type	Scientific name	Common name	NSW status	Commonwealth status	NSW Occurrence	Commonwealth Occurrence	10km	Habitat	Predicted	Affected?
Animal>Birds	*Epthianura albifrons*	White-fronted Chat	Vulnerable		Known		Yes	The distribution of the White-fronted Chat extends across the southern half of Australia, from the southernmost areas of Queensland to southern Tasmania and across to Western Australia as far north as Carnarvon (Barrett et al. 2003). Found mostly in temperate to arid climates and very rarely seen in sub-tropical areas, the White-fronted Chat occupies foothills and lowlands below 1000 m above sea level (North 1904; Higgins et al. 2001; Barrett et al. 2003). In New South Wales the White-fronted Chat occurs mostly in the southern half of the state, occurring in damp open habitats along the coast, and near waterways in the western part of the state (Higgins et al. 2001). Along the coastline, White-fronted Chats are found predominantly in saltmarsh vegetation although they are also observed in open grasslands and sometimes in low shrubs bordering wetland areas. These birds are unlikely to fly over urbanised areas.	Potential - suitable habitat	Potential
Animal>Birds	*Falco hypoleucos*	Grey Falcon	Endangered		Known		No	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. 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. Also occurs near wetlands where surface water attracts prey.	Potential - suitable habitat	Unlikely
Animal>Birds	*Falco subniger*	Black Falcon	Vulnerable		Known		Yes	The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. In New South Wales there is assumed to be a single population that is continuous with a broader continental population, given that falcons are highly mobile, commonly travelling hundreds of kilometres. Populations are likely to occur in most substantial reserve of flat, open habitats in the arid and semi-arid zones, particularly those with riparian habitats. The Black Falcon inhabits woodland, shrubland and grassland in the arid and semi-arid zones, especially wooded (eucalyptdominated) watercourses; it also uses agricultural land with scattered remnant trees. The Falcon is often associated with streams or wetlands, visiting them in search of prey. It uses standing dead trees as lookout posts.	Potential - suitable habitat	Potential
Animal>Birds	*Gallinago hardwickii*	Latham's Snipe				May Occur	No	Latham's Snipe is a non-breeding visitor to south-eastern Australia, and is a passage migrant through northern Australia. The species has been recorded along the east coast of Australia from Cape York Peninsula through to south-eastern South Australia. In Australia, Latham's Snipe occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies) . However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity. The structure and composition of the vegetation that occurs around these wetlands is not important in determining the suitability of habitat (Naarding 1983).	Unlikely - no wetlands	Unlikely
Animal>Birds	*Glossopsitta porphyrocephala*	Purple-crowned Lorikeet	Vulnerable		Known		No	It is uncommon in NSW, with records scattered across the box-ironbark woodlands of the Riverina and south west slopes, the River Red Gum forests and mallee of the Murray Valley as far west as the South Australian border, and, more rarely, the forests of the South Coast. The species is nomadic and most, if not all, records from NSW are associated with flowering events. Found in open forests and woodlands, particularly where there are large flowering eucalypts. Also recorded from mallee habitats.	Potential - suitable habitat	Unlikely
Animal>Birds	*Glossopsitta pusilla*	Little Lorikeet	Vulnerable		Known		No	The Little Lorikeet is distributed widely across the coastal and Great Divide regions of eastern Australia from Cape York to South Australia. NSW provides a large portion of the species' core habitat, with lorikeets found westward as far as Dubbo and Albury. Forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species.	Unlikely - no riparian habitat	Unlikely
Animal>Birds	*Grantiella picta*	Painted Honeyeater	Vulnerable	Vulnerable	Known	Likely	Yes	The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus Amyema.	Potential - suitable habitat	Potential

Type	Scientific name	Common name	NSW status	Commonwealth status	NSW Occurrence	Commonwealth Occurrence	10km	Habitat	Predicted	Affected?
Animal>Birds	*Grus rubicunda*	Brolga	Vulnerable		Known		No	The Brolga was formerly found across Australia, except for the south-east corner, Tasmania and the south-western third of the country. It is still abundant in the northern tropics, but very sparse across the southern part of its range. Though Brolgas often feed in dry grassland or ploughed paddocks or even desert claypans, they are dependent on wetlands too, especially shallow swamps, where they will forage with their head entirely submerged.	Potential - suitable habitat	Unlikely
Animal>Birds	*Haliaeetus leucogaster*	White-bellied Sea Eagle	Vulnerable		Known		No	The White-bellied Sea-Eagle is distributed along the coastline (including offshore islands) of mainland Australia and Tasmania. It also extends inland along some of the larger waterways, especially in eastern Australia. The habitats occupied by the sea-eagle are characterised by the presence of large areas of open water (larger rivers, swamps, lakes, the sea and sewage ponds). Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, forest (including rainforest) and even urban areas. Breeding territories are located close to water, and mainly in tall open forest or woodland, although nests are sometimes located in other habitats such as dense forest (including rainforest), closed scrub or in remnant trees on cleared land.	Unlikely - no open water	Unlikely
Animal>Birds	*Hamirostra melanosternon*	Black-breasted Buzzard	Vulnerable		Known		No	The Black-breasted Buzzard is found sparsely in areas of less than 500mm rainfall, from north-western NSW and north-eastern South Australia to the east coast at about Rockhampton, then across northern Australia south almost to Perth, avoiding only the Western Australian deserts. Lives in a range of inland habitats, especially along timbered watercourses which is the preferred breeding habitat. Also hunts over grasslands and sparsely timbered woodlands.	Potential - suitable habitat	Unlikely
Animal>Birds	*Hieraaetus morphnoides*	Little Eagle	Vulnerable		Known		Yes	The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter.	Potential - suitable habitat	Potential
Animal>Birds	*Hirundapus caudacutus*	White-throated Needletail				Known	No	The White-throated Needletail is widespread in across the coast of eastern and south-eastern Australia, and Tasmania. White-throated Needletails only occur as vagrants in the Northern Territory and in Western Australia. In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable (Cramp 1985), but there are, nevertheless, certain preferences exhibited by the species. They are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland.	Potential - suitable habitat	Unlikely
Animal>Birds	*Hylacola cautus*	Shy Heathwren	Vulnerable		Known		No	The Shy Heathwren inhabits mallee woodlands with a relatively dense understorey of shrubs and heath plants. The central NSW population (for example in Cocoparra NP) also occurs at low densities in rocky hilltop vegetation with a thick shrub layer such as Broombush or Tea-tree. Occurs across southern Australia extending from the wheatbelt in southern Western Australia east to central NSW, including Kangaroo Island.	Unlikely - unsuitable habitat, not semi-arid scrub	Unlikely
Animal>Birds	*Lathamus discolor*	Swift Parrot	Endangered	Critically Endangered	Known	Likely	Yes	Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes. Migrates to the Australian south-east mainland between March and October. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany Eucalyptus robusta, Spotted Gum Corymbia maculata, Red Bloodwood C. gummifera, Mugga Ironbark E. sideroxylon, and White Box E. albens. Commonly used lerp infested trees include Inland Grey Box E. microcarpa, Grey Box E. moluccana and Blackbutt E. pilularis. Return to some foraging sites on a cyclic basis depending on food availability. Following winter they return to Tasmania where they breed from September to January, nesting in old trees with hollows and feeding in forests dominated by Tasmanian Blue Gum Eucalyptus globulus.	Potential - suitable habitat	Potential

Type	Scientific name	Common name	NSW status	Commonwealth status	NSW Occurrence	Commonwealth Occurrence	10km	Habitat	Predicted	Affected?
Animal>Birds	*Leipoa ocellata*	Malleefowl	Endangered	Vulnerable	Known	Likely	No	The stronghold for this species in NSW is the mallee in the south west centred on Mallee Cliffs NP and extending east to near Balranald and scattered records as far north as Mungo NP. West of the Darling River a population also occurs in the Scotia mallee including Tarawi NR and Scotia Sanctuary, and is part of a larger population north of the Murray River in South Australia. The population in central NSW has been significantly reduced through land clearance and fox predation and now occurs chiefly in Yathong, Nombinnie and Round Hill NRs and surrounding areas, though birds continue to survive in Loughnan NR. Predominantly inhabit mallee communities, preferring the tall, dense and floristically-rich mallee found in higher rainfall (300 - 450 mm mean annual rainfall) areas. 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, such as Inland Grey Box, Ironbark or Bimble Box Woodlands with thick understorey, or in other woodlands such dominated by Mulga or native Cypress Pine species. Prefers areas of light sandy to sandy loam soils and habitats with a dense but discontinuous canopy and dense and diverse shrub and herb layers.	Unlikely - unsuitable habitat, not pilliga scrub	Unlikely
Animal>Birds	*Limosa limosa*	Black-tailed Godwit	Vulnerable		Known		No	The Black-tailed Godwit is found in all states and territories of Australia, however, it prefers coastal regions and the largest populations are found on the north coast between Darwin and Weipa. In Australia the Black-tailed Godwit has a primarily coastal habitat environment. The species is commonly found in sheltered bays, estuaries and lagoons with large intertidal mudflats or sandflats, or spits and banks of mud, sand or shell-grit; occasionally recorded on rocky coasts or coral islets. The use of habitat often depends on the stage of the tide. It is also found in shallow and sparsely vegetated, near-coastal, wetlands; such as saltmarsh, saltflats, river pools, swamps, lagoons and floodplains. There are a few inland records, around shallow, freshwater and saline lakes, swamps, dams and bore-overflows. They also use lagoons in sewage farms and saltworks.	Unlikely - no open water	Unlikely
Animal>Birds	*Lophochroa leadbeateri*	Major Mitchell's Cockatoo	Vulnerable		Known		No	This Cockatoo is found across the arid and semi-arid inland, from south-western Queensland south to north-west Victoria, through most of South Australia, north into the south-west Northern Territory and across to the west coast between Shark Bay and about Jurien. In NSW it is found regularly as far east as about Bourke and Griffith, and sporadically further east than that. 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.	Potential - suitable habitat	Unlikely
Animal>Birds	*Lophoictinia isura*	Square-tailed Kite	Vulnerable		Known		No	The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. In arid north-western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland.	Potential - suitable habitat	Unlikely
Animal>Birds	*Melanodryas cucullata cucullata*	Hooded Robin (south-eastern form)	Vulnerable		Known		Yes	The Hooded Robin is widespread, found across Australia, except for the driest deserts and the wetter coastal areas - northern and eastern coastal Queensland and Tasmania. However, it is common in few places, and rarely found on the coast. Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses. Often perches on low dead stumps and fallen timber or on low-hanging branches, using a perch-and-pounce method of hunting insect prey.	Potential - suitable habitat	Potential

Type	Scientific name	Common name	NSW status	Commonwealth status	NSW Occurrence	Commonwealth Occurrence	10km	Habitat	Predicted	Affected?
Animal>Birds	*Melithreptus gularis gularis*	Black-chinned Honeyeater (eastern subspecies)	Vulnerable		Known		Yes	The eastern subspecies extends south from central Queensland, through NSW, Victoria into south eastern South Australia, though it is very rare in the last state. In NSW it is widespread, with records from the tablelands and western slopes of the Great Dividing Range to the north-west and central-west plains and the Riverina. It is rarely recorded east of the Great Dividing Range, although regularly observed from the Richmond and Clarence River areas. It has also been recorded at a few scattered sites in the Hunter, Central Coast and Illawarra regions, though it is very rare in the latter. Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (Eucalyptus sideroxylon), White Box (E. albens), Inland Grey Box (E. microcarpa), Yellow Box (E. melliodora), Blakely's Red Gum (E. blakelyi) and Forest Red Gum (E. tereticornis). Also inhabits open forests of smooth-barked gums, stringybarks, ironbarks, river sheoaks (nesting habitat) and tea-trees	Potential - suitable habitat	Potential
Animal>Birds	*Motacilla flava*	Yellow Wagtail				May Occur	No	Occurs throughout Australia. Can be found in a range of land uses including pastures, wetlands, shrublands, grasslands and man made environments. The yellow wagtail typically forages in damp grassland and on relatively bare open ground at edges of rivers, lakes and wetlands, but also feeds in dry grassland and in fields of cereal crops.	Potential - suitable habitat	Unlikely
Animal>Birds	*Myiagra cyanoleuca*	Satin Flycatcher				May Occur	No	The Satin Flycatcher is widespread in eastern Australia and vagrant to New Zealand (Blakers et al. 1984; Coates 1990a). In Queensland, it is widespread but scattered in the east, being recorded on passage on a few islands in the western Torres Strait. Satin Flycatchers inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests. Satin Flycatchers mainly inhabit eucalypt forests, often near wetlands or watercourses. They generally occur in moister, taller forests than the Leaden Flycatcher, Myiagra rebecula, often occurring in gullies. They also occur in eucalypt woodlands with open understorey and grass ground cover, and are generally absent from rainforest.	Unlikely - unsuitable woodland habitat	Unlikely
Animal>Birds	*Neophema pulchella*	Turquoise Parrot	Vulnerable		Known		Yes	The Turquoise Parrot's range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range. Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland.	Potential - suitable habitat	Potential
Animal>Birds	*Ninox connivens*	Barking Owl	Vulnerable		Known		No	The Barking Owl is found throughout continental Australia except for the central arid regions and now occurs in a wide but sparse distribution in NSW. Core populations exist on the western slopes and plains (especially the Pilliga) and in some northeast coastal and escarpment forests. Sometimes extend their home range into urban areas, hunting birds in garden trees and insects attracted to streetlights. Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (e.g. western NSW) due to the higher density of prey on these fertile soils. Roost in shaded portions of tree canopies, including tall midstorey trees with dense foliage such as Acacia and Casuarina species.	Unlikely - no riparian habitat	Unlikely
Animal>Birds	*Numenius madagascariensis*	Eastern Curlew	Not listed	Critically Endangered		Likely	No	Within Australia, the Eastern Curlew has a primarily coastal distribution. The species is found in all states and rarely inland. The Eastern Curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. The birds are often recorded among saltmarsh and on mudflats fringed by mangroves, and sometimes use the mangroves. The birds are also found in saltworks and sewage farms.	Unlikely - not coastal	Unlikely
Animal>Birds	*Oxyura australis*	Blue-billed Duck	Vulnerable		Known		No	The Blue-billed Duck is endemic to south-eastern and south-western Australia. It is widespread in NSW, but most common in the southern Murray-Darling Basin area. Birds disperse during the breeding season to deep swamps up to 300 km away. It is generally only during summer or in drier years that they are seen in coastal areas. The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. It will fly if disturbed, but prefers to dive if approached.	Unlikely - no wetlands	Unlikely

Type	Scientific name	Common name	NSW status	Commonwealth status	NSW Occurrence	Commonwealth Occurrence	10km	Habitat	Predicted	Affected?
Animal>Birds	*Pachycephala inornata*	Gilbert's Whistler	Vulnerable		Known		Yes	The Gilbert's Whistler is sparsely distributed over much of the arid and semi-arid zone of inland southern Australia. The eastern population extends from the central NSW mallee (Yathong, Nombinnie and Round Hill NRs), south and east through the Cocoparra Range to Pomingalama Reserve (near Wagga Wagga) then north through the South West Slopes east as far as Cowra and Burrendong Dam, to the Goonoo reserves (with scattered records as far north as Pilliga). The species is also recorded in River Red Gum forests along the Murray River valley between Mathoura and Wentworth, with the eastern populations (between Mathoura and Barham) apparently isolated from other NSW populations. It is widely recorded in mallee shrublands, but also occurs in box-ironbark woodlands, Cypress Pine and Belah woodlands and River Red Gum forests, though at this stage it is only known to use this habitat along the Murray, Edwards and Wakool Rivers. Within the mallee the species is often found in association with an understorey of spinifex and low shrubs including wattles, hakeas, sennas and hop-bushes. In woodland habitats, the understorey comprises dense patches of shrubs, particularly thickets of regrowth Callitris pine. Parasitic 'cherries' (Exocarpus species) appear to be an important habitat component in Belah and Red Gum communities, though in the latter case other dense shrubs, such as Lignum and wattles, are also utilised.	Potential - suitable habitat	Potential
Animal>Birds	*Pedionomus torquatus*	Plains-wanderer	Endangered	Critically Endangered	Known		No	The vast majority (>99%) of records of Plains-wanderers in NSW over the past 30 years come from an area of the western Riverina bounded by Hay and Narrandera on the Murrumbidgee River in the north, the Cobb Highway in the west, the Billabong Creek in the south, and Urana in the east. Plains-wanderers live in semi-arid, lowland native grasslands that typically occur on hard red-brown soils. Habitat structure appears to play a more important role than plant species composition. Preferred habitat of the Plains-wanderer typically comprises 50% bare ground, 10% fallen litter, and 40% herbs, forbs and grasses. Most of the grassland habitat of the Plains-wanderer is <5 cm high, but some vegetation up to a maximum of 30 cm is important for concealment, as long as grass tussocks are spaced 10-20 cm apart. The average home range of a single bird is about 12 ha.	Unlikely - not suitable woodland habitat	Unlikely
Animal>Birds	*Petroica boodang*	Scarlet Robin	Vulnerable		Known		No	The Scarlet Robin is found from south east Queensland to south east South Australia and also in Tasmania and south west Western Australia. In NSW, it occurs from the coast to the inland slopes. After breeding, some Scarlet Robins disperse to the lower valleys and plains of the tablelands and slopes. Some birds may appear as far west as the eastern edges of the inland plains in autumn and winter. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat. The Scarlet Robin breeds on ridges, hills and foothills of the western slopes, the Great Dividing Range and eastern coastal regions; this species is occasionally found up to 1000 metres in altitude. The Scarlet Robin is primarily a resident in forests and woodlands, but some adults and young birds disperse to more open habitats after breeding. In autumn and winter many Scarlet Robins live in open grassy woodlands, and grasslands or grazed paddocks with scattered trees.	Potential - suitable habitat	Unlikely
Animal>Birds	*Petroica phoenicea*	Flame Robin	Vulnerable		Known		Yes	The Flame Robin is endemic to south eastern Australia, and ranges from near the Queensland border to south east South Australia and also in Tasmania. In NSW, it breeds in upland areas and in winter, many birds move to the inland slopes and plains. Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. The groundlayer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense. Occasionally occurs in temperate rainforest, and also in herbfields, heathlands, shrublands and sedgelands at high altitudes. In winter, birds migrate to drier more open habitats in the lowlands (i.e. valleys below the ranges, and to the western slopes and plains). Often occurs in recently burnt areas; however, habitat becomes unsuitable as vegetation closes up following regeneration. In winter lives in dry forests, open woodlands and in pastures and native grasslands, with or without scattered trees. In winter, occasionally seen in heathland or other shrublands in coastal areas.	Potential - suitable habitat	Potential

Type	Scientific name	Common name	NSW status	Commonwealth status	NSW Occurrence	Commonwealth Occurrence	10km	Habitat	Predicted	Affected?
Animal>Birds	*Polytelis swainsonii*	Superb Parrot	Vulnerable	Vulnerable	Known	Known	Yes	The Superb Parrot is found throughout eastern inland NSW. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. Birds breeding in this region are mainly absent during winter, when they migrate north to the region of the upper Namoi and Gwydir Rivers. The other main breeding sites are in the Riverina along the corridors of the Murray, Edward and Murrumbidgee Rivers where birds are present all year round. Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. In the Riverina the birds nest in the hollows of large trees (dead or alive) mainly in tall riparian River Red Gum Forest or Woodland. On the South West Slopes nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box.	Potential - suitable habitat	Potential
Animal>Birds	*Pomatostomus temporalis temporalis*	Grey-crowned Babbler (eastern subspecies)	Vulnerable		Known		Yes	The eastern subspecies (temporalis occurs from Cape York south through Queensland, NSW and Victoria and formerly to the south east of South Australia. This subspecies also occurs in the Trans-Fly Region in southern New Guinea. In NSW, the eastern sub-species occurs on the western slopes of the Great Dividing Range, and on the western plains reaching as far as Louth and Balranald. It also occurs in woodlands in the Hunter Valley and in several locations on the north coast of NSW. It may be extinct in the southern, central and New England tablelands. Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions.	Potential - suitable habitat	Potential
Animal>Birds	*Rhipidura rufifrons*	Rufous Fantail				May Occur	No	The Rufous Fantail occurs in coastal and near coastal districts of northern and eastern Australia. In east and south-east Australia, the Rufous Fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts such as Tallow-wood (Eucalyptus microcorys), Mountain Grey Gum (E. cypellocarpa), Narrow-leaved Peppermint (E. radiata), Mountain Ash (E. regnans), Alpine Ash (E. delegatensis), Blackbutt (E. pilularis) or Red Mahogany (E. resinifera); usually with a dense shrubby understorey often including ferns. They also occur in subtropical and temperate rainforests; for example near Bega in south-east NSW, where they are recorded in temperate Lilly Pilly (Acmena smithi) rainforest, with Grey Myrtle (Backhousia myrtifolia), Sassafras (Doryphora sassafras) and Sweet Pittosporum (Pittosporum undulatum) subdominants. They occasionally occur in secondary regrowth, following logging or disturbance in forests or rainforests. When on passage, they are sometimes recorded in drier sclerophyll forests and woodlands, including Spotted Gum (Eucalyptus maculata), Yellow Box (E. melliodora), ironbarks or stringybarks, often with a shrubby or heath understorey. They are also recorded from parks and gardens when on passage. In north and north-east Australia, they often occur in tropical rainforest and monsoon rainforests, including semi-evergreen mesophyll vine forests, semi-deciduous vine thickets or thickets of Paperbarks (Melaleuca spp.) (Higgins et al. 2006).	Unlikely - outside range and not correct habitat	Unlikely
Animal>Birds	*Rostratula australis*	Australian Painted Snipe	Endangered	Endangered	Known	Likely	No	Most records are from the south east, particularly the Murray Darling Basin, with scattered records across northern Australia and historical records from around the Perth region in Western Australia. In NSW many records are from the Murray-Darling Basin including the Paroo wetlands, Lake Cowal, Macquarie Marshes, Fivebough Swamp and more recently, swamps near Balldale and Wanganella. Other important locations with recent records include wetlands on the Hawkesbury River and the Clarence and lower Hunter Valleys. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds.	Unlikely - no wetlands	Unlikely
Animal>Birds	*Stagonopleura guttata*	Diamond Firetail	Vulnerable		Known		Yes	The Diamond Firetail is endemic to south-eastern Australia, extending from central Queensland to the Eyre Peninsula in South Australia. It is widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Cental and South Western Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. This species has a scattered distribution over the rest of NSW, though is very rare west of the Darling River. Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum Eucalyptus pauciflora Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland.	Potential - suitable habitat	Potential

Type	Scientific name	Common name	NSW status	Commonwealth status	NSW Occurrence	Commonwealth Occurrence	10km	Habitat	Predicted	Affected?
Animal>Birds	*Stictonetta naevosa*	Freckled Duck	Vulnerable		Known		No	The Freckled Duck is found primarily in south-eastern and south-western Australia, occurring as a vagrant elsewhere. It breeds in large temporary swamps created by floods in the Bulloo and Lake Eyre basins and the Murray-Darling system, particularly along the Paroo and Lachlan Rivers, and other rivers within the Riverina. The duck is forced to disperse during extensive inland droughts when wetlands in the Murray River basin provide important habitat. The species may also occur as far as coastal NSW and Victoria during such times. Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds.	Unlikely - no wetlands	Unlikely
Animal>Birds	*Tyto novaehollandiae*	Masked Owl	Vulnerable		Known		No	The Masked Owl extends from the coast where it is most abundant to the western plains. Overall records for this species fall within approximately 90% of NSW, excluding the most arid north-western corner. There is no seasonal variation in its distribution. Lives in dry eucalypt forests and woodlands from sea level to 1100 m. A forest owl, but 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.	Potential - suitable habitat	Unlikely
Animal>Birds	*Calidris melanotos*	Pectoral Sandpiper				Likely	No	the Pectoral Sandpiper is widespread, but scattered. Records exist east of the Great Divide, from Casino and Ballina, south to Ulladulla. West of the Great Divide, the species is widespread in the Riverina and Lower Western regions. In Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	Unlikely - no wetlands	Unlikely
Animal>Fish	*Galaxias rostratus*	Flathead Galaxias	Critically Endangered	Critically Endangered	Known		No	The Flathead Galaxias is known from the southern part of the Murray Darling Basin. They have been recorded in the Macquarie, Lachlan, Murrumbidgee and Murray Rivers in NSW. Flathead Galaxias are found in still or slow moving water bodies such as wetlands and lowland streams. The species has been recorded forming shoals. They have been associated with a range of habitats including rock and sandy bottoms and aquatic vegetation.	Unlikely - no watercourses	Unlikely
Animal>Fish	*Maccullochella peelii*	Murray Cod	Not listed	Vulnerable		May Occur	No	The Murray Cod was historically distributed throughout the Murray-Darling Basin (the Basin), with the exception of the upper reaches of some tributaries. The distribution of the Murray Cod occurs in the following bioregions according to the Interim Biogeographic Regionalisation for Australia (IBRA7) (DSEWPaC 2012ae): Murray-Darling Depression, Riverina, NSW South Western Slopes, South Eastern Highlands, Cobar Peneplain, Darling Riverine Plains, Brigalow Belt South and Nandewar. The Murray Cod utilises a diverse range of habitats from clear rocky streams, such as those found in the upper western slopes of NSW (including the ACT), to slow-flowing, turbid lowland rivers and billabongs. Murray Cod are frequently found in the main channels of rivers and larger tributaries. The species is, therefore, considered a main-channel specialist. Murray Cod tend to occur in floodplain channels and anabranches when they are inundated.	Unlikely - no watercourses	Unlikely
Animal>Fish	*Macquaria australasica*	Macquarie Perch	Endangered	Endangered	Known	May Occur	No	Macquarie Perch are found in the Murray-Darling Basin (particularly upstream reaches) of the Lachlan, Murrumbidgee and Murray rivers, and parts of south-eastern coastal NSW, including the Hawkesbury/Nepean and Shoalhaven catchments. Macquarie perch are found in both river and lake habitats, especially the upper reaches of rivers and their tributaries.	Unlikely - no watercourses	Unlikely
Animal>Fish	*Tandanus tandanus*	Eel Tailed Catfish	Endangered Population		Known		No	Eel Tailed Catfish are naturally distributed throughout the Murray-Darling Basin and in the Eastern drainages NSW north of Newcastle. Eel Tailed Catfish numbers in the Murray-Darling Basin have declined due to a range of impacts including invasive species, habitat degradation, cold water pollution and fishing pressures and are now virtually absent from the Murray, Murrumbidgee and Lachlan catchments.	Unlikely - no watercourses	Unlikely
Animal>Marsupials	*Cercartetus nanus*	Eastern Pygmy-possum	Vulnerable		Known		No	The Eastern Pygmy-possum is found in south-eastern Australia, from southern Queensland to eastern South Australia and in Tasmania. In NSW it extents from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes. Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest. Shelters in tree hollows, rotten stumps, holes in the ground, abandoned bird-nests, Ringtail Possum (Pseudocheirus peregrinus) dreys or thickets of vegetation, (e.g. grass-tree skirts).	Potential - suitable habitat	Unlikely

Type	Scientific name	Common name	NSW status	Commonwealth status	NSW Occurrence	Commonwealth Occurrence	10km	Habitat	Predicted	Affected?
Animal>Marsupials	*Dasyurus maculatus*	Spotted-tailed Quoll	Vulnerable	Endangered	Known		No	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites.	Potential - suitable habitat	Unlikely
Animal>Marsupials	*Petaurus norfolcensis*	Squirrel Glider	Vulnerable		Known		Yes	The species is widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria. Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey.	Potential - suitable habitat	Potential
Animal>Marsupials	*Petaurus norfolcensis* - endangered population	Squirrel Glider in the Wagga Wagga Local Government Area	Endangered Population		Known		No	The extent of the endangered population is legally defined by the boundaries of the Wagga Wagga LGA. Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey.	No - not within Wagga LGA	No
Animal>Marsupials	*Phascolarctos cinereus*	Koala	Vulnerable	Vulnerable	Known	Known	No	The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In NSW it mainly occurs on the central and north coasts with some populations in the west of the Great Dividing Range. Inhabit eucalypt woodlands and forests.	Unlikely - no feed trees, no riparian zone	Unlikely
Animal>Marsupials	*Sminthopsis macroura*	Stripe-faced Dunnart	Vulnerable		Predicted		No	The Stripe-faced Dunnart is found throughout much of inland central and northern Australia, extending into central and northern NSW, western Queensland, Northern Territory, South Australia and Western Australia. They are rare on the NSW Central West Slopes and North West Slopes with the most easterly records of recent times located around Dubbo, Coonabarabran, Warialda and Ashford. 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. Co-occupies areas with the more common Fat-tailed Dunnart, but prefers relatively ungrazed habitats with greater diversity and healthier understorey vegetation.	Unlikely - no semi-arid grasslands	Unlikely
Animal>Reptiles	*Aprasia parapulchella*	Pink-tailed Legless Lizard	Vulnerable	Vulnerable	Known	Likely	No	There is a concentration of populations in the Canberra/Queanbeyan Region. Other populations have been recorded near Cooma, Yass, Bathurst, Albury and West Wyalong. This species is also found in the Australian Capital Territory. Inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (Themeda australis). Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks. Commonly found beneath small, partially-embedded rocks and appear to spend considerable time in burrows below these rocks; the burrows have been constructed by and are often still inhabited by small black ants and termites.	Potential - suitable habitat	Unlikely
Community> Threatened Ecological Communities	Weeping Myall Woodlands	Weeping Myall Woodlands	Not listed	Endangered		May Occur	No	The Weeping Myall Woodlands occurs on the inland alluvial plains west of the Great Dividing Range in NSW and Queensland, with one small outlying patch in northern Victoria. It occurs in the Riverina, NSW South Western Slopes, Darling Riverine Plains, Brigalow Belt South, Brigalow Belt North, Murray-Darling Depression, Nandewar and Cobar Peneplain IBRA Bioregions.	No - not recorded	No
Community>Threatened Ecological Communities	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	Endangered Ecological Community		Known		No	Fuzzy Box Woodland on alluvial soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South bioregions occurs on brown loam or clay, alluvial or colluvial soils on prior streams and abandoned channels or slight depressions on the undulating plains or flats of the western slopes of the Great Dividing Range. This community often occurs upslope from River Red Gum communities, just above frequently inundated areas on the floodplain. It also occurs on colluvial soils on lower slopes and on valley flats. Only one small stand is currently known from a conservation reserve, at Weddin Mountains National Park near Grenfell.	No - not recorded	No

Type	Scientific name	Common name	NSW status	Commonwealth status	NSW Occurrence	Commonwealth Occurrence	10km	Habitat	Predicted	Affected?
Community>Threatened Ecological Communities	Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Inland Grey Box Woodland		Endangered		Likely	No	generally occurs in landscapes of low-relief such as flat to undulating plains, low slopes and rises and, to a lesser extent, drainage depressions and flats. The ecological community may extend to more elevated hillslopes on the fringes of its range where it intergrades with other woodland or dry sclerophyll forest communities. This ecological community often occurs on productive soils derived from alluvial or colluvial materials but may occur on a range of substrates. Soils include: duplex soils; red-brown earths; gradational soils; non-calceric and calceric browns with variable textures including sandy clay loam, clay loam, sandy loam, loam, heavy clay; and loams with quartzite surface stones and rocky outcroppings in the Mount Lofty Ranges. Gilgai topography may be present. The ecological community tends to occupy drier sites within the belt of grassy woodlands in south-eastern Australia. The Grey Box (E. microcarpa) Grassy woodlands and Derived Native Grasslands of SouthEastern Australia ecological community occurs from central-western NSW, through northern and central Victoria into South Australia. The core distribution of the ecological community lies within the NSW South Western Slopes, Riverina, Victorian Midlands and Murray Darling Depression bioregions but occurrences of the national ecological community may also extend into some of the adjoining bioregions.	Yes - recorded	Yes
Community>Threatened Ecological Communities	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	Inland Grey Box Woodland	Endangered Ecological Community	Endangered	Known		No	Inland Grey Box Woodland occurs predominately within the Riverina and South West Slopes regions of NSW down to the Victorian border. It includes Albury to the east and may extend out west towards Hay. This community also extends across the slopes and plains in Central and Northern NSW up to the Queensland Border. Inland Grey Box Woodland occurs on fertile soils of the western slopes and plains of NSW. The community generally occurs where average rainfall is 375- 800 mm pa and the mean maximum annual temperature is 22- 26°C.	Yes - recorded	Yes
Community>Threatened Ecological Communities	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	Critically Endangered Ecological Community		Known		No	Mallee and Mallee-Broombush woodland has a very highly restricted distribution, with known occurrences falling with a region of less than 4000 km2 bounded by Lake Cowal - Temora - Ardlethan - Ungarie. It is estimated that the total area remaining is around 2300 hectares within the local government areas of Bland and Temora. It comes in three varients on plains to the east and north of West Wyalong on red earths including the aeolian soil known as parna; on low hills and rises in sandy loam soils over substrates including gravel ferricrete (ironstone) and mixed sedimentary, metamorphic and granitic substrates; on rocky rises of sandstone and other sedimentary rock types, mainly to the south west of West Wyalong.	No - not recorded	Unlikely
Community>Threatened Ecological Communities	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	Weeping Myall Woodlands	Endangered Ecological Community	Endangered	Known		No	This EEC is known from parts of the Local Government Areas of Berrigan, Bland, Bogan, Carrathool, Conargo, Coolamon, Coonamble, Corowa, Forbes, Gilgandra, Griffith, Gwydir, Inverell, Jerilderee, Lachlan, Leeton, Lockhart, Moree Plains, Murray, Murrumbidgee, Narrabri, Narranderra, Narromine, Parkes, Urana, Wagga Wagga and Warren, and but may occur elsewhere in these bioregions.	No - not recorded	No
Community>Threatened Ecological Communities	White Box Yellow Box Blakely's Red Gum Woodland	White Box Yellow Box Blakely's Red Gum Woodland	Endangered Ecological Community		Known		No	The Box – Gum Grassy Woodland and Derived Grassland ecological community occurs in an arc along the western slopes and tablelands of the Great Dividing Range from Southern Queensland through NSW to central Victoria (Beadle 1981). It occurs in the Brigalow Belt South, Nandewar, New England Tableland, South Eastern Queensland, Sydney Basin, NSW North Coast, South Eastern Highlands, South East Corner, NSW South Western Slopes, Victorian Midlands and Riverina Bioregions (Environment Australia 2000).	No - not recorded	No
Community>Threatened Ecological Communities	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and		Critically Endangered		Likely	No	Box-Gum Woodland is found from the Queensland border in the north, to the Victorian border in the south. It occurs in the tablelands and western slopes of NSW. Characterised by the presence or prior occurrence of White Box, Yellow Box and/or Blakely's Red Gum.	No - not recorded	No

Type	Scientific name	Common name	NSW status	Commonwealth status	NSW Occurrence	Commonwealth Occurrence	10km	Habitat	Predicted	Affected?
	Derived Native Grassland	Derived Native Grassland								
Plant>Epiphytes and Climbers	*Tylophora linearis*	Tylophora linearis	Vulnerable	Endangered	Known	May Occur	No	Majority of linearis records occur in the central western region. Records from Goonoo, Pillaga West, Pillaga East, Bibblewindi, Cumbil and Eura State Forests, Coolbaggie NR, Goobang NP and Beni SCA. Also has been recorded Hiawatha State Forest near West Wyalong in the south and there are old records as far north as Crow Mountain near Barraba and near Glenmorgan in the western Darling Downs. Grows in dry scrub and open forest. Recorded from low-altitude sedimentary flats in dry woodlands of Eucalyptus fibrosa, Eucalyptus sideroxylon, Eucalyptus albens, Callitris endlicheri, Callitris glaucophylla and Allocasuarina luehmannii. Also grows in association with Acacia hakeoides, Acacia lineata, Melaleuca uncinata, Myoporum species and Casuarina species.	Potential - suitable habitat	Unlikely
Plant>Ferns and Cycads	*Pilularia novae-hollandiae*	Austral Pillwort	Endangered		Known		No	In NSW, Austral Pillwort has been recorded from suburban Sydney, Khancoban, the Riverina between Albury and Urana (including Henty, Walbundrie, Balldale and Howlong), Oolambeyan National Park near Carathool and at Lake Cowal near West Wyalong. Austral Pillwort 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. Most of the records in the Albury-Urana area were from table drains on the sides of roads.	Unlikely - no wetlands	Unlikely
Plant>Herbs and Forbs	*Amphibromus fluitans*	Floating Swamp Wallaby-grass	Vulnerable	Vulnerable	Known		No	Amphibromus fluitans is found in Albury and surrounds. It 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. Habitats in south-western NSW include swamp margins in mud, dam and tank beds in hard clay and in semi-dry mud of lagoons with Potamogeton and Chamaeraphis species.	Unlikely - no wetlands	Unlikely
Plant>Herbs and Forbs	*Austrostipa metatoris*	A spear-grass	Vulnerable	Vulnerable	Known		No	Most records of Austrostipa metatoris occur in the Murray Valley with sites including Cunninyeuk Station, Stony Crossing, Kyalite State Forest (now part of Murrumbidgee Valley Regional Park) and Lake Benanee. Grows in sandy areas of the Murray Valley; 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.	Unlikely - no semi-arid grasslands	Unlikely
Plant>Herbs and Forbs	*Austrostipa wakoolica*	A spear-grass	Endangered	Endangered	Known	Likely	No	Spear grasses grow 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; and a low, rocky rise. Confined to the floodplains of the Murray River tributaries of central-western and south-western NSW, with localities including Manna State Forest, Matong, Lake Tooim, Merran Creek, Tulla, Cunninyeuk and Mairjimmy State Forest (now part of South West Woodland Nature Reserve).	Unlikely - no semi-arid grasslands	Unlikely
Plant>Herbs and Forbs	*Brachyscome muelleroides*	Claypan Daisy	Vulnerable	Vulnerable	Known		No	The Claypan Daisy occurs in the Wagga Wagga, Narranderra, Tocumwal and Walbundrie areas. Grows in damp areas on the margins of claypans in moist grassland with Pycnosorus globosus, Agrostis avenacea and Austrodanthonia duttoniana. Also recorded from the margins of lagoons in mud or water, and in association with Calotis anthemoides.	Unlikely - no moist grassland habitat	Unlikely
Plant>Herbs and Forbs	*Brachyscome papillosa*	Mossgiel Daisy	Vulnerable	Vulnerable	Known		No	The Mossgiel Daisy is endemic to NSW and chiefly occurs within the Riverina Bioregion, from Mossgiel in the north, Murrumbidgee Valley (Yanga) National Park in the south west to Urana in the south east. Sites are scattered across this Bioregion including the Jerilderie area, the Hay Plain (Maude and Oxley) and around Darlington Point. Recorded primarily in clay soils on Bladder Saltbush (Atriplex vesicaria) and Leafless Bluebush (Maireana aphylla) plains, but also in grassland and in Inland Grey Box (Eucalyptus microcarpa) - Cypress Pine (Callitris spp.) woodland.	Unlikely - no semi-arid shrubland habitat	Unlikely

Type	Scientific name	Common name	NSW status	Commonwealth status	NSW Occurrence	Commonwealth Occurrence	10km	Habitat	Predicted	Affected?
Plant>Herbs and Forbs	*Cullen parvum*	Small Scurf-pea	Endangered		Known		No	The Small Scurf-pea is known in NSW from only two herbarium collections; one from Wagga Wagga in 1884 and the other from Jindera (near Albury) in 1967. In known populations in Victoria and NSW, 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, in areas with rainfall of between 450 and 700 mm.	Unlikely - outside known range and no associated species	Unlikely
Plant>Herbs and Forbs	*Eleocharis obicis*	Spike-Rush	Vulnerable	Vulnerable	Known		No	The Spike-Rush grows in ephemerally wet situations such as roadside mitre drains and depressions, usually in low-lying grasslands. Sites include depressions with heavy clay soils on the Lachlan River floodplain; it is also found near Condobolin and Hay, as well as being known from an old collection from the Barrier Range near Broken Hill.	Unlikely - no wet areas or clay soils	Unlikely
Plant>Herbs and Forbs	*Lepidium aschersonii*	Spiny Peppercress	Vulnerable	Vulnerable	Known		No	Not widespread, occurring in the marginal central-western slopes and north-western plains regions of NSW (and potentially the south western plains). In the north of the State recent surveys have recorded a number of new sites including Brigalow Nature Reserve, Brigalow State Conservation Area, Leard State Conservation Area and Bobbiwaa State Conservation Area. Also known from the West Wyalong in the south of the State. The Spiny Peppercress occurs in periodically wet sites such as gilgai depressions and the margins of freshwater and saline marshes and shallow lakes, usually on heavy clay soil .	Unlikely - no wet areas or clay soils	Unlikely
Plant>Herbs and Forbs	*Lepidium monoplocoides*	Winged Peppercress	Endangered	Endangered	Known		No	The Winged Peppercress occurs on seasonally moist to waterlogged sites, on heavy fertile soils, with a mean annual rainfall of around 300-500 mm. Widespread in the semi-arid western plains regions of NSW.	Unlikely - no wet areas or heavy soils	Unlikely
Plant>Herbs and Forbs	*Leptorhynchos orientalis*	Lanky Buttons	Endangered		Known		No	Recorded from several Hay Plain and southern Riverina localities. 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. Associated species include Eucalyptus populnea subsp. bimbil, Acacia pendula, Eragrostis australasica, Lepidium monoplocoides, Enchylaena tomentosa, Minuria leptophylla, Rhodanthe floribunda, R. pygmaea and Ptilotus spathulatus.	Unlikely - no known associated species	Unlikely
Plant>Herbs and Forbs	*Senecio garlandii*	Woolly Ragwort	Vulnerable		Known		Yes	Woolly Ragwort is found between Temora, Bethungra and Albury and possibly Burrinjuck near Yass. The largest populations are at The Rock and Mt Tabletop (and surrounds). Woolly Ragwort occurs on sheltered slopes of rocky outcrops.	Potential - suitable habitat	Potential
Plant>Herbs and Forbs	*Swainsona murrayana*	Slender Darling Pea	Vulnerable	Vulnerable	Known		No	Found throughout NSW , it has been recorded in the Jerilderie and Deniliquin areas of the southern riverine plain, the Hay plain as far north as Willandra National Park, near Broken Hill and in various localities between Dubbo and Moree. The species has been collected from clay-based soils, ranging from grey, red and brown cracking clays to red-brown earths and loams. 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. The species may require some disturbance and has been known to occur in paddocks that have been moderately grazed or occasionally cultivated.	Unlikely - no semi-arid woodlands	Unlikely
Plant>Herbs and Forbs	*Swainsona recta*	Small Purple-pea	Endangered	Endangered	Known	May Occur	No	Populations of the Small Purple-pea still exist in the Queanbeyan and Wellington-Mudgee areas. Over 80% of the southern population grows on a railway easement. Before European settlement Small Purple-pea occurred in the grassy understorey of woodlands and open-forests dominated by Blakely's Red Gum Eucalyptus blakelyi, Yellow Box E. melliodora, Candlebark Gum E. rubida and Long-leaf Box E. goniocalyx. Grows in association with understorey dominants that include Kangaroo Grass Themeda australis, poa tussocks Poa spp. and spear-grasses Austrostipa spp.	Unlikely - outside known range and no associated species	Unlikely
Plant>Herbs and Forbs	*Swainsona sericea*	Silky Swainson-pea	Vulnerable		Known		No	Silky Swainson-pea has been recorded from the Northern Tablelands to the Southern Tablelands and further inland on the slopes and plains. There is one isolated record from the far north-west of NSW. Its stronghold is on the Monaro. Also found in South Australia, Victoria and Queensland. Found in Natural Temperate Grassland and Snow Gum *Eucalyptus pauciflora* Woodland on the Monaro. Found in Box-Gum Woodland in the Southern Tablelands and South West Slopes.	Unlikely - outside known range and no associated species	Unlikely

Type	Scientific name	Common name	NSW status	Commonwealth status	NSW Occurrence	Commonwealth Occurrence	10km	Habitat	Predicted	Affected?
Plant>Orchids	*Caladenia arenaria*	Sand-hill Spider Orchid	Endangered	Endangered	Known		No	*Caladenia arenaria* is found mostly on the south west plains and western south west slopes. The Sand-hill Spider Orchid is currently only known to occur in the Riverina between Urana and Narranderra. Occurs in woodland with sandy soil, especially that dominated by White Cypress Pine (*Callitris glaucophylla*).	Potential - suitable habitat	Unlikely
Plant>Orchids	*Caladenia concolor*	Crimson Spider Orchid	Endangered	Vulnerable	Known		No	Crimson Spider Orchid has two populations in NSW. One comprises a few hundred plants on private property near Bethungra and the other of about 100 plants occurs in Burrinjuck Nature reserve. The other occurrences of the Crimson Spider Orchid in NSW are from the Nail Can Hill Crown Reserve near Albury. Habitat is regrowth woodland on granite ridge country that has retained a high diversity of plant species, including other orchids. The dominant trees are Blakely's Red Gum (Eucalyptus blakelyi), Red Stringybark (E. macrorhyncha), Red Box (E. polyanthemos) and White Box (E. albens); the diverse understorey includes Silver Wattle (Acacia dealbata), Hop Bitter-pea (Daviesia latifolia), Common Beard-heath (Leucopogon virgatus), Spreading Flax-lily (Dianella revoluta) and Poa Tussock (Poa sieberiana).	Unlikely - outside known range and no associated species	Unlikely
Plant>Orchids	*Diuris sp*. (Oaklands, D.L. Jones 5380)	Oaklands Diuris	Endangered		Known		No	The Oakland Diuris is currently known only from the Oaklands-Urana region of southern NSW. 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. Grows mostly on sandy loam soils.	Potential - suitable habitat	Potential
Plant>Orchids	*Diuris tricolor*	Pine Donkey Orchid	Vulnerable		Known		No	Sporadically distributed on the western slopes of NSW, extending from south of Narrandera all the way to the north of NSW. Localities in the south include Red Hill north of Narrandera, Coolamon, and several sites west of Wagga Wagga. Condobolin-Nymagee road, Wattamondara towards Cowra, Eugowra, Girilambone, Dubbo and Cooyal, in the Central West. Pilliga SCA, Pilliga National Park and Bibblewindi State Forest in the north and Muswellbrook in the east. Disturbance regimes are not known, although the species is usually recorded from disturbed habitats. 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. The Pine Donkey Orchid grows in sclerophyll forest among grass, often with native Cypress Pine (Callitris spp.). It is found in sandy soils, either on flats or small rises. Also recorded from a red earth soil in a Bimble Box community in western NSW.	Potential - suitable habitat	Potential
Plant>Shrubs	*Acacia ausfeldii*	Ausfeld's Wattle	Vulnerable		Known		No	Populations are recorded from Yarrobil National Park, Goodiman State Conservation Area and there is a 1963 record from Munghorn Gap Nature Reserve. A large population is also known from Tuckland State Forest to the northwest of Gulgong. In the Mudgee - Ulan area, A. ausfeldii is mostly found on flat ground in remnant roadside patches of woodland with Eucalyptus albens (White Box), E. blakelyi (Blakely's Red Gum) and Callitris spp. (Native Cypress Pines), with an understorey dominated by Cassinia spp. and grasses.	Unlikely - outside known range and no associated species	Unlikely
Plant>Shrubs	*Grevillea ilicifolia* subsp. *ilicifolia*	Holly-leaf Grevillea	Critically Endangered		Predicted		No	In New South Wales Grevillea ilicifolia subsp. ilicifolia has been recorded from shrubby mallee communities. The only population confirmed as extant occurs at Round Hill Nature Reserve north-west of Lake Cargelligo.	Unlikely - outside known range and no associated species	Unlikely
Plant>Shrubs	*Philotheca ericifolia*		Not listed	Vulnerable	Known	May Occur	No	*Philotheca ericifolia* is known only from the upper Hunter Valley and Pilliga to Peak Hill districts of NSW. The records are scattered over a range of over 400 km between West Wyalong and the Pilliga Scrub. Site localities include Pilliga East State Forest, Goonoo State Forest, Hervey Range, Wingen Maid Nature Reserve, Toongi, Denman, Rylestone district and Kandos Weir. Grows chiefly in dry sclerophyll forest and heath on damp sandy flats and gullies. It has been collected from a variety of habitats including heath, open woodland, dry sandy creek beds, and rocky ridge and cliff tops.	Potential - suitable habitat	Unlikely

Appendix C: EPBC Act assessment of significance

Notes:

Important Population as determined by the *Environment Protection and Biodiversity Conservation Act 1999*, is one that for a vulnerable species:

a) is likely to be key source populations either for breeding or dispersal
b) is likely to be necessary for maintaining genetic diversity
c) is at or near the limit of the species range.

A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity (DoE, 2013).

Threatened species, or communities	Important population	Likely significant impact?
Bats		
Nyctophilus corbeni	Corben's Long-eared Bat	The proposal does not involve significant removal of native vegetation within the subject site (about 12.32 ha of a 240 ha contiguous patch; 5%). No important population of Corben's Long-eared Bat has been identified in the locality of the study area. The proposal is unlikely to have a significant impact on this species.
Birds		
Grantiella picta	Painted Honeyeater	The proposal does not involve significant removal of native vegetation within the subject site (about 12.32 ha of a 240 ha contiguous patch; 512.34 ha5%). No significant populations of these bird species have been identified in the study area.
Lathamus discolor	Swift Parrot	
Polytelis swainsonii	Superb Parrot	
Endangered Ecological Communities		
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia		All remnant stands of endangered ecological communities are important. A remnant patch of this endangered ecological community was recorded within the study area. The proposal has been redesigned to avoid directly impacting (clearing) this endangered ecological community. Additional avoidance and minimisation measures have been included to reduce potential ongoing impacts to the Grey Box woodland, which could occur if there is increase activity and use of the site, including in the adjacent primitive camping area. If these measures are in place and the site and native vegetation is appropriately managed to give due protection to this woodland patch, the woodland is expected to be protected and there should be no significant impact to this community has been identified.

Appendix D: TSC Act assessment of significance

(a) In the case of a threatened species, the Proposal is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.
(b) In the case of an endangered population, the Proposal is not likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.
(c) In the case of an endangered ecological community or critically endangered ecological community:

i. The Proposal is not 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. The Proposal is not 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.

(d) In relation to the habitat of a threatened species, population or ecological community:
(i) The extent to which habitat is likely to be removed or modified as a result of the Proposal, and

iii. That an area of habitat is not likely to become fragmented or isolated from other areas of habitat as a result of the Proposal, and
iv. The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

(e) That the Proposal is not likely to have an adverse effect on critical habitat (either directly or indirectly).
(f) That the Proposal is not consistent with the objectives or actions of a recovery plan or threat abatement plan.
(g_ That the Proposal constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Key:

X = The development will not impact critical habitat.

+ = The proposal is not consistent with objectives or actions of a recovery plan or threat abatement plan.

= The proposed development constitutes or is part of a key threatening process:

- Clearing of native vegetation.
- Bushrock removal.
- Removal of dead wood and dead trees.

Species		7-Part Test Questions					
Scientific Name	**Common Name**	**a/b**	**c**	**d**	**e**	**f**	**g**
Woodland Birds							
Artamus cyanopterus cyanopterus	Dusky Woodswallow	The proposal involves the removal of about 12.34 ha of native vegetation within the subject site, which is connected to a larger 240 ha contiguous patch. The clearing represents approximately 5% loss of the wider patch of native vegetation. This impact is not likely to place a viable local population of any of these bird species at risk of local extinction. These bird species rely on woodlands for refuge, roosting and foraging habitat. The proposal is unlikely to disrupt the life cycle of a viable local population of these species to the extent that the population is placed at risk of local extinction.	N/A	The importance of the habitat identified in the study area for these species is low. No viable local population of these species has been recorded in the subject site.	X	+	#
Chthonicola sagittata	Speckled Warbler						
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)						
Epthianura albifrons	White-fronted Chat						
Grantiella picta	Painted Honeyeater						
Lathamus discolor	Swift Parrot						
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)						
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)						
Neophema pulchella	Turquoise Parrot						
Pachycephala inornata	Gilbert's Whistler						
Petroica phoenicea	Flame Robin						
Polytelis swainsonii	Superb Parrot						
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)						
Stagonopleura guttata	Diamond Firetail						
Birds of prey							

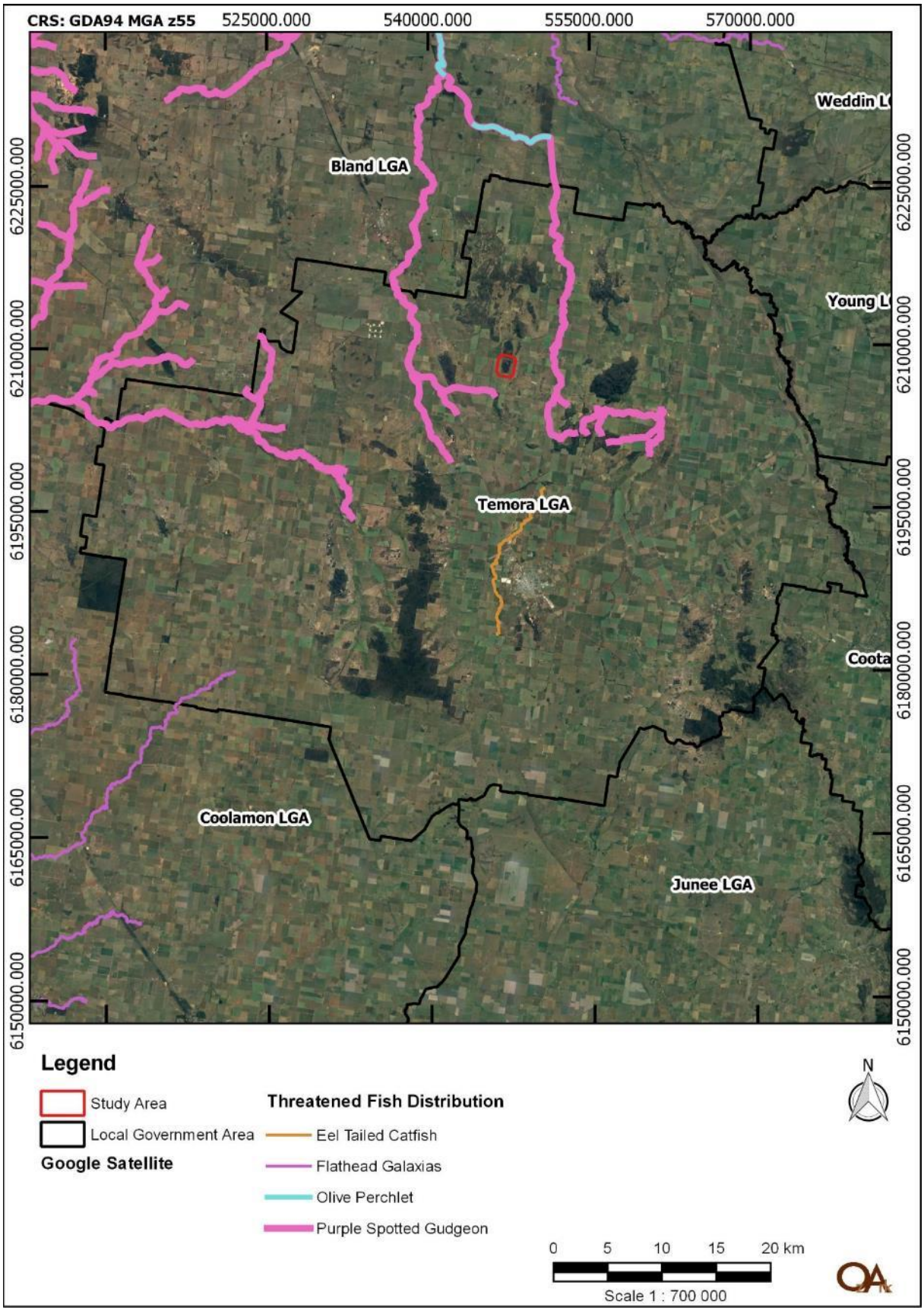
Species		7-Part Test Questions					
Scientific Name	**Common Name**	**a/b**	**c**	**d**	**e**	**f**	**g**
Falco subniger	Black Falcon	These bird species have large home ranges over a variety of habitats. The proposal is unlikely to affect these species ability to forage or roost in the region. This impact is not likely to place a viable local population of this species at risk of local extinction. The proposal is unlikely to disrupt the life cycle of a viable local population of these species to the extent that the population is placed at risk of local extinction.	N/A	The importance of the habitat identified in the study area for this species is low. No viable local population of this species has been recorded in the subject site. There are few hollow bearing trees in the subject site and most of these will be retained.	X	+	#
Hieraaetus morphnoides	Little Eagle						
Bats							
Chalinolobus picatus	Little Pied Bat	The proposal involves the removal of about 12.34 ha of native vegetation within the subject site, which is connected to a larger 240 ha contiguous patch. The clearing represents approximately 5% loss of the wider patch of native vegetation. This impact is not likely to place a viable local population of this species at risk of local extinction.	N/A	The importance of the habitat identified in the study area for this species is low. No viable local population of this species has been recorded in the subject site. There are few hollow bearing trees in the subject site and most of these will be retained.	X	+	#
Nyctophilus corbeni	Corben's Long-eared Bat						
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat						
Scoteanax rueppellii	Greater Broad-nosed Bat						
Vespadelus baverstocki	Inland Forest Bat						
Marsupials							
Petaurus norfolcensis	Squirrel Glider	The proposal involves the removal of about 12.34 ha of native vegetation within the subject site, which is connected to a larger 240 ha contiguous patch. The clearing represents approximately 5% loss of the wider patch of native vegetation. This impact is not likely to place a viable local population of this species at risk of local extinction.	N/A	The importance of the habitat identified in the study area for this species is low. No viable local population of this species has been recorded in the subject site. There are few hollow bearing trees in the subject site and most of these will be retained.	X	+	#
Flora							
Senecio garlandii	Woolly Ragwort		N/A		X	+	#

Species		7-Part Test Questions					
Scientific Name	**Common Name**	**a/b**	**c**	**d**	**e**	**f**	**g**
Diuris sp. (Oaklands, D.L. Jones 5380)	Oaklands Diuris	The proposal involves the removal of about 12.34 ha of native vegetation within the subject site, which is connected to a larger 240 ha contiguous patch. The clearing represents approximately 5% loss of the wider patch of native vegetation. This impact is not likely to place a viable local population of these plant species at risk of local extinction. The removal of grazing in the subject site will increase the chances of survival of individuals within the subject site.		The importance of the habitat identified in the study area for this species is low. No viable local population of this species has been recorded in the subject site. There are few hollow bearing trees in the subject site and most of these will be retained.			
Diuris tricolor	Pine Donkey Orchid						
Endangered Ecological Communities							
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions		N/A	The proposal has been redesigned to completely avoid any impact to this endangered ecological community. The proposal is not 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. The proposal is not 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.	There will be no reduction in the extent of this endangered ecological community. The remnant stand is not likely to be isolated from other areas of habitat or fragmented as a result of this proposal. All remnant stands of endangered ecological communities are important.	X	+	#

Appendix E: Database search results

Ground water dependant ecosystems (Source: BoM)

Primary Industries (Fishing and Aquaculture)



Search results from NSW OEH Threatened Species Database

Kingdom	Type	Scientific Name	Common Name	NSW Status	Occurrence
Animal	Amphibians	*Crinia sloanei*	Sloane's Froglet	Vulnerable	Known
Animal	Amphibians	*Litoria raniformis*	Southern Bell Frog	Endangered	Known
Animal	Bats	*Chalinolobus dwyeri*	Large-eared Pied Bat	Vulnerable	Predicted
Animal	Bats	*Chalinolobus picatus*	Little Pied Bat	Vulnerable	Known
Animal	Bats	*Falsistrellus tasmaniensis*	Eastern False Pipistrelle	Vulnerable	Known
Animal	Bats	*Miniopterus schreibersii oceanensis*	Eastern Bentwing-bat	Vulnerable	Known
Animal	Bats	*Myotis macropus*	Southern Myotis	Vulnerable	Known
Animal	Bats	*Nyctophilus corbeni*	Corben's Long-eared Bat	Vulnerable	Known
Animal	Bats	*Pteropus poliocephalus*	Grey-headed Flying-fox	Vulnerable	Known
Animal	Bats	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	Vulnerable	Known
Animal	Bats	*Scoteanax rueppellii*	Greater Broad-nosed Bat	Vulnerable	Known
Animal	Bats	*Vespadelus baverstocki*	Inland Forest Bat	Vulnerable	Known
Animal	Birds	* White-bellied Sea-Eagle </o:p>"	Vulnerable	Known
Animal	Birds	*Anseranas semipalmata*	Magpie Goose	Vulnerable	Known
Animal	Birds	*Anthochaera phrygia*	Regent Honeyeater	Critically Endangered	Known
Animal	Birds	*Artamus cyanopterus cyanopterus*	Dusky Woodswallow	Vulnerable	Known
Animal	Birds	*Botaurus poiciloptilus*	Australasian Bittern	Endangered	Known
Animal	Birds	*Burhinus grallarius*	Bush Stone-curlew	Endangered	Known
Animal	Birds	*Calidris ferruginea*	Curlew Sandpiper	Endangered	Known
Animal	Birds	*Callocephalon fimbriatum*	Gang-gang Cockatoo	Vulnerable	Known
Animal	Birds	*Calyptorhynchus lathami*	Glossy Black-Cockatoo	Vulnerable	Known
Animal	Birds	*Calyptorhynchus lathami - endangered population*	Glossy Black-Cockatoo, Riverina population	Endangered Population	Known
Animal	Birds	*Certhionyx variegatus*	Pied Honeyeater	Vulnerable	Known
Animal	Birds	*Chthonicola sagittata*	Speckled Warbler	Vulnerable	Known
Animal	Birds	*Cinclosoma castanotum*	Chestnut Quail-thrush	Vulnerable	Known

Kingdom	Type	Scientific Name	Common Name	NSW Status	Occurrence
Animal	Birds	*Circus assimilis*	Spotted Harrier	Vulnerable	Known
Animal	Birds	*Climacteris affinis - endangered population*	White-browed Treecreeper population in Carrathool local government area south of the Lachlan River and Griffith local government area	Endangered Population	Known
Animal	Birds	*Climacteris picumnus victoriae*	Brown Treecreeper (eastern subspecies)	Vulnerable	Known
Animal	Birds	*Daphoenositta chrysoptera*	Varied Sittella	Vulnerable	Known
Animal	Birds	*Drymodes brunneopygia*	Southern Scrub-robin	Vulnerable	Known
Animal	Birds	*Epthianura albifrons*	White-fronted Chat	Vulnerable	Known
Animal	Birds	*Falco hypoleucos*	Grey Falcon	Endangered	Known
Animal	Birds	*Falco subniger*	Black Falcon	Vulnerable	Known
Animal	Birds	*Glossopsitta porphyrocephala*	Purple-crowned Lorikeet	Vulnerable	Predicted
Animal	Birds	*Glossopsitta pusilla*	Little Lorikeet	Vulnerable	Known
Animal	Birds	*Grantiella picta*	Painted Honeyeater	Vulnerable	Known
Animal	Birds	*Grus rubicunda*	Brolga	Vulnerable	Known
Animal	Birds	*Hamirostra melanosternon*	Black-breasted Buzzard	Vulnerable	Known
Animal	Birds	*Hieraaetus morphnoides*	Little Eagle	Vulnerable	Known
Animal	Birds	*Hylacola cautus*	Shy Heathwren	Vulnerable	Known
Animal	Birds	*Lathamus discolor*	Swift Parrot	Endangered	Known
Animal	Birds	*Leipoa ocellata*	Malleefowl	Endangered	Known
Animal	Birds	*Limosa limosa*	Black-tailed Godwit	Vulnerable	Known
Animal	Birds	*Lophochroa leadbeateri*	Major Mitchell's Cockatoo	Vulnerable	Known
Animal	Birds	*Lophoictinia isura*	Square-tailed Kite	Vulnerable	Known
Animal	Birds	*Melanodryas cucullata cucullata*	Hooded Robin (south-eastern form)	Vulnerable	Known
Animal	Birds	*Melithreptus gularis gularis*	Black-chinned Honeyeater (eastern subspecies)	Vulnerable	Known
Animal	Birds	*Neophema pulchella*	Turquoise Parrot	Vulnerable	Known
Animal	Birds	*Ninox connivens*	Barking Owl	Vulnerable	Known
Animal	Birds	*Oxyura australis*	Blue-billed Duck	Vulnerable	Known
Animal	Birds	*Pachycephala inornata*	Gilbert's Whistler	Vulnerable	Known
Animal	Birds	*Pedionomus torquatus*	Plains-wanderer	Endangered	Known
Animal	Birds	*Petroica boodang*	Scarlet Robin	Vulnerable	Known
Animal	Birds	*Petroica phoenicea*	Flame Robin	Vulnerable	Known
Animal	Birds	*Polytelis swainsonii*	Superb Parrot	Vulnerable	Known
Animal	Birds	*Pomatostomus temporalis temporalis*	Grey-crowned Babbler (eastern subspecies)	Vulnerable	Known

Kingdom	Type	Scientific Name	Common Name	NSW Status	Occurrence
Animal	Birds	*Rostratula australis*	Australian Painted Snipe	Endangered	Known
Animal	Birds	*Stagonopleura guttata*	Diamond Firetail	Vulnerable	Known
Animal	Birds	*Stictonetta naevosa*	Freckled Duck	Vulnerable	Known
Animal	Birds	*Tyto novaehollandiae*	Masked Owl	Vulnerable	Predicted
Animal	Marsupials	*Cercartetus nanus*	Eastern Pygmy-possum	Vulnerable	Predicted
Animal	Marsupials	*Dasyurus maculatus*	Spotted-tailed Quoll	Vulnerable	Known
Animal	Marsupials	*Petaurus norfolcensis*	Squirrel Glider	Vulnerable	Known
Animal	Marsupials	*Petaurus norfolcensis - endangered population*	Squirrel Glider in the Wagga Wagga Local Government Area	Endangered Population	Known
Animal	Marsupials	*Phascolarctos cinereus*	Koala	Vulnerable	Known
Animal	Marsupials	*Sminthopsis macroura*	Stripe-faced Dunnart	Vulnerable	Predicted
Animal	Reptiles	*Aprasia parapulchella*	Pink-tailed Legless Lizard	Vulnerable	Known
Community	Threatened Ecological Communities	*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	Endangered Ecological Community	Known
Community	Threatened Ecological Communities	*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	Endangered Ecological Community	Known
Community	Threatened Ecological Communities	*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	Critically Endangered Ecological Community	Known
Community	Threatened Ecological Communities	*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	Endangered Ecological Community	Known

Kingdom	Type	Scientific Name	Common Name	NSW Status	Occurrence
Community	Threatened Ecological Communities	*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	Endangered Ecological Community	Predicted
Community	Threatened Ecological Communities	*White Box Yellow Box Blakelyâ€™s Red Gum Woodland*	White Box Yellow Box Blakelyâ€™s Red Gum Woodland	Endangered Ecological Community	Known
Plant	Epiphytes and Climbers	*Tylophora linearis*	Tylophora linearis	Vulnerable	Known
Plant	Ferns and Cycads	*Pilularia novae-hollandiae*	Austral Pillwort	Endangered	Known
Plant	Herbs and Forbs	*Amphibromus fluitans*	Floating Swamp Wallaby-grass	Vulnerable	Known
Plant	Herbs and Forbs	*Austrostipa metatoris*	A spear-grass	Vulnerable	Known
Plant	Herbs and Forbs	*Austrostipa wakoolica*	A spear-grass	Endangered	Known
Plant	Herbs and Forbs	*Brachyscome muelleroides*	Claypan Daisy	Vulnerable	Known
Plant	Herbs and Forbs	*Brachyscome papillosa*	Mossgiel Daisy	Vulnerable	Known
Plant	Herbs and Forbs	*Cullen parvum*	Small Scurf-pea	Endangered	Known
Plant	Herbs and Forbs	*Eleocharis obicis*	Spike-Rush	Vulnerable	Known
Plant	Herbs and Forbs	*Lepidium aschersonii*	Spiny Peppercress	Vulnerable	Known
Plant	Herbs and Forbs	*Lepidium monoplocoides*	Winged Peppercress	Endangered	Known
Plant	Herbs and Forbs	*Leptorhynchos orientalis*	Lanky Buttons	Endangered	Known
Plant	Herbs and Forbs	*Senecio garlandii*	Woolly Ragwort	Vulnerable	Known
Plant	Herbs and Forbs	*Swainsona murrayana*	Slender Darling Pea	Vulnerable	Known
Plant	Herbs and Forbs	*Swainsona recta*	Small Purple-pea	Endangered	Known
Plant	Herbs and Forbs	*Swainsona sericea*	Silky Swainson-pea	Vulnerable	Known
Plant	Orchids	*Caladenia arenaria*	Sand-hill Spider Orchid	Endangered	Known
Plant	Orchids	*Caladenia concolor*	Crimson Spider Orchid	Endangered	Predicted
Plant	Orchids	*Diuris pedunculata*	Small Snake Orchid	Endangered	Known
Plant	Orchids	*Diuris sp. (Oaklands, D.L. Jones 5380)*	Oaklands Diuris	Endangered	Known
Plant	Orchids	*Diuris tricolor*	Pine Donkey Orchid	Vulnerable	Known
Plant	Shrubs	*Acacia ausfeldii*	Ausfeld's Wattle	Vulnerable	Known
Plant	Shrubs	*Grevillea ilicifolia subsp. ilicifolia*	Holly-leaf Grevillea	Critically Endangered	Predicted
Plant	Shrubs	*Kippistia suaedifolia*	Fleshy Minuria	Endangered	Known

Kingdom	Type	Scientific Name	Common Name	NSW Status	Occurrence
Plant	Shrubs	*Philotheca angustifolia subsp. angustifolia*	Philotheca angustifolia subsp. angustifolia	Presumed Extinct	Known
Threat	Disease	Infection by Psittacine Circoviral (beak and feather) Disease affecting endangered psittacine species and populations	Infection by Psittacine circoviral (beak and feather) disease affecting endangered psittacine species	Key Threatening Process	Predicted
Threat	Disease	Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	Key Threatening Process	Predicted
Threat	Disease	Infection of native plants by Phytophthora cinnamomi	Infection of native plants by Phytophthora cinnamomi	Key Threatening Process	Predicted
Threat	Habitat Loss/Change	Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	Alteration to the natural flow regimes of rivers, streams, floodplains & wetlands.	Key Threatening Process	Predicted
Threat	Habitat Loss/Change	Anthropogenic Climate Change	Human-caused Climate Change	Key Threatening Process	Predicted
Threat	Habitat Loss/Change	Bushrock removal	Bushrock Removal	Key Threatening Process	Predicted
Threat	Habitat Loss/Change	Clearing of native vegetation	Clearing of native vegetation	Key Threatening Process	Predicted
Threat	Habitat Loss/Change	High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	Ecological consequences of high frequency fires	Key Threatening Process	Predicted
Threat	Habitat Loss/Change	Loss of Hollow-bearing Trees	Loss of Hollow-bearing Trees	Key Threatening Process	Predicted
Threat	Habitat Loss/Change	Loss or degradation (or both) of sites used for hill-topping by butterflies	Loss and/or degradation of sites used for hill-topping by butterflies	Key Threatening Process	Predicted
Threat	Habitat Loss/Change	Removal of dead wood and dead trees	Removal of dead wood and dead trees	Key Threatening Process	Predicted
Threat	Other Threat	Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	Key Threatening Process	Predicted

Kingdom	Type	Scientific Name	Common Name	NSW Status	Occurrence
Threat	Pest Animal	Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners Manorina melanocephala	Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners <span style=font-style: italic">Manorina melanocephala."	Key Threatening Process	Predicted
Threat	Pest Animal	Competition and grazing by the feral European Rabbit, Oryctolagus cuniculus (L.)	Competition and grazing by the feral European rabbit	Key Threatening Process	Predicted
Threat	Pest Animal	Competition and habitat degradation by Feral Goats, Capra hircus Linnaeus 1758	Competition and habitat degradation by Feral Goats, <span style=font-style: italic">Capra hircus Linnaeus 1758"	Key Threatening Process	Predicted
Threat	Pest Animal	Competition from feral honey bees, Apis mellifera L.	Competition from feral honeybees	Key Threatening Process	Predicted
Threat	Pest Animal	Herbivory and environmental degradation caused by feral deer	Herbivory and environmental degradation caused by feral deer	Key Threatening Process	Predicted
Threat	Pest Animal	Importation of Red Imported Fire Ants Solenopsis invicta Buren 1972	Importation of red imported fire ants into NSW	Key Threatening Process	Predicted
Threat	Pest Animal	Introduction of the Large Earth Bumblebee Bombus terrestris (L.)	Introduction of the large earth bumblebee (Bombus terrestris)	Key Threatening Process	Predicted
Threat	Pest Animal	Invasion and establishment of the Cane Toad (Bufo marinus)	Invasion and establishment of the Cane Toad	Key Threatening Process	Predicted
Threat	Pest Animal	Invasion of the Yellow Crazy Ant, Anoplolepis gracilipes (Fr. Smith) into NSW	Invasion of the yellow crazy ant (Anoplolepis gracilipes) into NSW	Key Threatening Process	Predicted
Threat	Pest Animal	Predation and hybridisation by Feral Dogs, Canis lupus familiaris	Predation and hybridisation by Feral Dogs, Canis lupus familiaris	Key Threatening Process	Predicted
Threat	Pest Animal	Predation by Gambusia holbrooki Girard, 1859 (Plague Minnow or Mosquito Fish)	Predation by the Plague Minnow (Gambusia holbrooki)	Key Threatening Process	Predicted
Threat	Pest Animal	Predation by the European Red Fox Vulpes Vulpes (Linnaeus, 1758)	Predation by the European Red Fox	Key Threatening Process	Predicted

Kingdom	Type	Scientific Name	Common Name	NSW Status	Occurrence
Threat	Pest Animal	Predation by the Feral Cat Felis catus (Linnaeus, 1758)	Predation by feral cats	Key Threatening Process	Predicted
Threat	Pest Animal	Predation, habitat degradation, competition and disease transmission by Feral Pigs, Sus scrofa Linnaeus 1758	Predation, habitat degradation, competition and disease transmission by Feral Pigs (Sus scrofa)	Key Threatening Process	Predicted
Threat	Weed	Invasion and establishment of exotic vines and scramblers	Invasion and establishment of exotic vines and scramblers	Key Threatening Process	Predicted
Threat	Weed	Invasion and establishment of Scotch Broom (Cytisus scoparius)	Invasion and establishment of Scotch Broom (<span style=font-style: italic">Cytisus scoparius)"	Key Threatening Process	Predicted
Threat	Weed	Invasion of native plant communities by African Olive Olea europaea subsp. cuspidata (Wall. ex G. Don) Cif.	Invasion of native plant communities by African Olive Olea europaea subsp. cuspidata (Wall. ex G. Don) Cif.	Key Threatening Process	Predicted
Threat	Weed	Invasion of native plant communities by Chrysanthemoides monilifera	Invasion of native plant communities by bitou bush & boneseed	Key Threatening Process	Predicted
Threat	Weed	Invasion of native plant communities by exotic perennial grasses	Invasion of native plant communities by <span style=font-weight: bold">exotic perennial grasses"	Key Threatening Process	Predicted
Threat	Weed	Invasion, establishment and spread of Lantana (Lantana camara L. sens. Lat)	Invasion, establishment and spread of Lantana (<span style=font-style: italic">Lantana camara L. sens. lat)"	Key Threatening Process	Predicted
Threat	Weed	Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	Key Threatening Process	Predicted

Priority Weeds

Scientific Name	Common Name	Duty
	All plants	General Biosecurity Duty
Alternanthera philoxeroides	Alligator weed	Mandatory Measure/Biosecurity Zone/Regional Recommended Measure
Andropogon gayanus	Gamba grass	Prohibited Matter
Annona glabra	Pond apple	Prohibited Matter
Anredera cordifolia	Madeira vine	Mandatory Measure
Asparagus aethiopicus	Ground asparagus	Mandatory Measure
Asparagus africanus	Climbing asparagus	Mandatory Measure
Asparagus asparagoides	Bridal creeper	Mandatory Measure
Asparagus declinatus	Bridal veil creeper	Prohibited Matter
Asparagus plumosus	Climbing asparagus fern	Mandatory Measure
Asparagus scandens	Snakefeather	Mandatory Measure
Asystasia gangetica subsp. mic rantha	Chinese violet	Regional Recommended Measure
Austrocylindropuntia cylindrica	Cane cactus	Mandatory Measure
Austrocylindropuntia species	Prickly pears - Austrocylindropuntias	Mandatory Measure
Bassia scoparia	Kochia	Prohibited Matter
Bryophyllum species	Mother-of-millions	Regional Recommended Measure
Cabomba caroliniana	Cabomba	Mandatory Measure
Centaurea stoebe subsp. micra nthos	Spotted knapweed	Prohibited Matter
Centaurea X moncktonii	Black knapweed	Prohibited Matter
Chromolaena odorata	Siam weed	Prohibited Matter
Chrysanthemoides monilifera s ubsp. monilifera	Boneseed	Mandatory Measure/Control Order
Chrysanthemoides monilifera s ubsp. rotundata	Bitou bush	Mandatory Measure/Biosecurity Zone/Regional Recommended Measure
Clidemia hirta	Koster's curse	Prohibited Matter
Cryptostegia grandiflora	Rubber vine	Prohibited Matter
Cylindropuntia fulgida var. mam illata	Boxing glove cactus	Mandatory Measure
Cylindropuntia imbricata	Rope pear	Mandatory Measure
Cylindropuntia rosea	Hudson pear	Mandatory Measure
Cylindropuntia species	Prickly pears - Cylindropuntias	Mandatory Measure
Cytisus scoparius subsp. scopa rius	Scotch broom	Mandatory Measure/Regional Recommended Measure
Dolichandra unguis-cati	Cat's claw creeper	Mandatory Measure
Eichhornia azurea	Anchored water hyacinth	Prohibited Matter
Eichhornia crassipes	Water hyacinth	Mandatory Measure/Biosecurity Zone/Regional Recommended Measure
Equisetum species	Horsetails	Regional Recommended Measure
Genista linifolia	Flax-leaf broom	Mandatory Measure
Genista monspessulana	Cape broom	Mandatory Measure/Regional Recommended Measure
Gymnocoronis spilanthoides	Senegal tea plant	Regional Recommended Measure
Heteranthera reniformis	Kidney-leaf mud plantain	Regional Recommended Measure
Hieracium species	Hawkweeds	Prohibited Matter
Hydrocleys nymphoides	Water poppy	Regional Recommended Measure
Hydrocotyle ranunculoides	Hydrocotyl	Prohibited Matter
Hymenachne amplexicaulis and hybrids	Hymenachne	Mandatory Measure
Hyparrhenia hirta	Coolatai grass	Regional Recommended Measure
Jatropha gossypiifolia	Bellyache bush	Mandatory Measure
Lagarosiphon major	Lagarosiphon	Prohibited Matter
Lantana camara	Lantana	Mandatory Measure
Leucanthemum vulgare	Ox-eye daisy	Regional Recommended Measure

Scientific Name	Common Name	Duty
Limnobium laevigatum	Frogbit	Prohibited Matter
Limnobium spongia	Spongeplant	Prohibited Matter
Limnocharis flava	Yellow burrhead	Prohibited Matter
Lycium ferocissimum	African boxthorn	Mandatory Measure
Miconia species	Miconia	Prohibited Matter
Mikania micrantha	Mikania vine	Prohibited Matter
Mimosa pigra	Mimosa	Prohibited Matter
Myriophyllum spicatum	Eurasian water milfoil	Prohibited Matter
Nassella hyalina	Cane needle grass	Regional Recommended Measure
Nassella neesiana	Chilean needle grass	Mandatory Measure/Regional Recommended Measure
Nassella tenuissima	Mexican feather grass	Prohibited Matter
Nassella trichotoma	Serrated tussock	Mandatory Measure/Regional Recommended Measure
Nymphaea species	Water lilies	Regional Recommended Measure
Opuntia aurantiaca	Tiger pear	Mandatory Measure
Opuntia monacantha	Smooth tree pear	Mandatory Measure
Opuntia species	Prickly pears - Opuntias	Mandatory Measure
Opuntia stricta	Common pear	Mandatory Measure
Opuntia tomentosa	Velvety tree pear	Mandatory Measure
Orobanche species	Broomrapes	Prohibited Matter
Parkinsonia aculeata	Parkinsonia	Mandatory Measure/Control Order
Parthenium hysterophorus	Parthenium weed	Prohibited Matter/Mandatory Measure
Physalis hederifolia	Prairie ground cherry	Regional Recommended Measure
Physalis longifolia	Perennial ground cherry	Regional Recommended Measure
Pistia stratiotes	Water lettuce	Regional Recommended Measure
Prosopis species	Mesquite	Mandatory Measure/Regional Recommended Measure
Rubus fruticosus species aggregate	Blackberry	Mandatory Measure
Sagittaria platyphylla	Sagittaria	Mandatory Measure/Regional Recommended Measure
Salix cinerea	Grey sallow	Mandatory Measure/Regional Recommended Measure
Salix nigra	Black willow	Mandatory Measure/Regional Recommended Measure
Salix species	Willows	Mandatory Measure
Salvinia molesta	Salvinia	Mandatory Measure/Regional Recommended Measure
Senecio jacobaea	Ragwort	Regional Recommended Measure
Senecio madagascariensis	Fireweed	Mandatory Measure/Regional Recommended Measure
Solanum elaeagnifolium	Silverleaf nightshade	Mandatory Measure
Solanum viarum	Tropical soda apple	Control Order
Stratiotes aloides	Water soldier	Prohibited Matter
Striga species	Witchweeds	Prohibited Matter
Tamarix aphylla	Athel pine	Mandatory Measure
Trapa species	Water caltrop	Prohibited Matter
Ulex europaeus	Gorse	Mandatory Measure/Regional Recommended Measure
Vachellia karroo	Karroo thorn	Prohibited Matter
Vachellia nilotica	Prickly acacia	Prohibited Matter

Duty	Management Action(s)
Biosecurity Control Order	Must be eradicated from the land and be fully and continuously destroyed and suppressed, and the land kept free of the plant after eradication. Seeds and propagules must not be knowingly moved. The local control authority must be notified of any suspected or known presence of this plant.
Biosecurity Zone	Within the Biosecurity Zone this weed must be eradicated where practicable, or as much of the weed destroyed as practicable, and any remaining weed suppressed. The local control authority must be notified of any new infestations of this weed within the Biosecurity Zone.
General Biosecurity Duty	All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.
Mandatory Measure	Must not be imported into the State or sold.
Prohibited Matter	A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.
Regional Recommended Measure	Land managers should mitigate the risk of new weeds being introduced to their land. The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.

Note: Management actions may vary for each noxious weed from the general management actions listed above. If further information is required on a specific noxious weed, visit the DPI Weeds, NSW WeedWise website.

EPBC Protected matters report

Australian Government
Department of the Environment and Energy

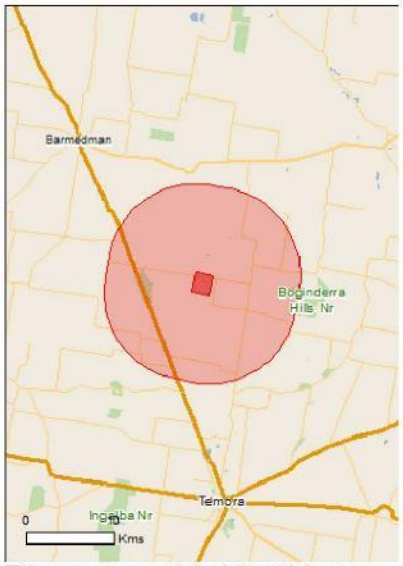
EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

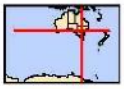
Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 28/09/17 10:52:34



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates
Buffer: 10.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	19
Listed Migratory Species:	10

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	16
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	19
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Banrock station wetland complex	600 - 700km upstream
Hattah-kulkyne lakes	400 - 500km upstream
Riverland	500 - 600km upstream
The coorong, and lakes alexandrina and albert wetland	700 - 800km upstream

Listed Threatened Ecological Communities		[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.		
Name	Status	Type of Presence
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area
Weeping Myall Woodlands	Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Fish		
Maccullochella peelii		
Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area
Macquaria australasica		
Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Mammals		
Nyctophilus corbeni		
Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)		
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat may occur within area
Pteropus poliocephalus		
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Plants		
Austrostipa metatoris		
[66704]	Vulnerable	Species or species habitat may occur within area
Austrostipa wakoolica		
[66623]	Endangered	Species or species habitat likely to occur within area
Philotheca ericifolia		
[64942]	Vulnerable	Species or species habitat likely to occur within area
Tylophora linearis		
[55231]	Endangered	Species or species habitat may occur within area
Reptiles		
Aprasia parapulchella		
Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus		
White-throated Needletail [682]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca		
Satin Flycatcher [612]		Species or species habitat may occur within area
Migratory Wetlands Species		

Name	Threatened	Type of Presence
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

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

Name
Commonwealth Land -

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat may occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Boginderra Hills	NSW

Invasive Species	[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth lands is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of occurrence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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

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

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian mainland

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

Coordinates

-34.25638 147.506448,-34.258721 147.521726,-34.275674 147.518378,-34.272768 147.501841,-34.256025 147.505246,-34.256025 147.505416,-34.25638 147.506448

Acknowledgements

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

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

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

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

Appendix F: Terms and abbreviations

Terms and abbreviations used in this report

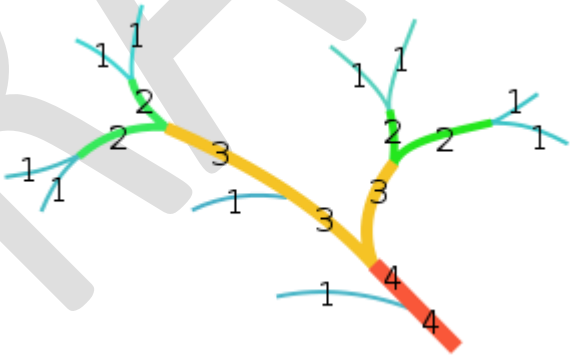
Abbreviation	Terminology	Description
	Assessment of significance	The Assessment of Significance refers to the factors that must be considered by decision makers to assess whether a proposal is likely to have a significant effect on threatened biodiversity. These mechanisms are contained in s5A of the EP&A Act and s94 of the TSC Act.
BoM	Australian Bureau of Meteorology	The Bureau of Meteorology is Australia's national weather, climate and water agency.
CAMBA	China-Australia Migratory Bird Agreement	A bilateral migratory bird agreement with China entered into in 1986. It provides an important mechanism for pursuing conservation outcomes for migratory birds, including migratory waterbirds.
CMA	Catchment Management Authority	Bodies established across New South Wales to ensure regional communities have a say in how natural resources are managed in their catchments. CMA's have now been replaced with LLS's.
	Consent authority	in relation to a development application or an application for a complying development certificate, means: The council having the function to determine the application, or If a provision of this Act, the regulations or an environmental planning instrument specifies a Minister, the Planning Assessment Commission, a joint regional planning panel or public authority (other than a council) as having the function to determine the application-that Minister, Commission, panel or authority, as the case may be.
	Critical habitat	Critical habitat is defined as an area crucial to the survival of an endangered species, population or ecological community. The declaration of critical habitat provides greater protection and stricter controls over activities in the area.
	Cumulative impacts	Impacts, when considered together, lead to a stronger impact than any impact in isolation.
	Direct impacts	Directly affect the habitat and individuals. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat. When applying each factor, consideration must be given to all of the likely direct impacts of the proposed activity or development.
DoE	Australian Government Department of Environment.	The Department of the Environment designs and implements the Australian Government's policies and programmes to protect and conserve the environment, water and heritage and promote climate action.
DP	Deposited Plan	A plan of land deposited in Land and Property Information (part of the Land Management Authority) and used for legal identification purposes. They most commonly depict a subdivision of a parcel of land.
EEC	Endangered Ecological Community	An ecological community identified by relevant legislation likely to become extinct or is in immediate danger of extinction.
	Edge effects	A change in species composition, physical conditions or other ecological factors at the boundary between two ecosystems or the ecological changes carried out at the boundaries of ecosystems (including changes in species composition, gradients of moisture, sunlight, soil and air temperature, wind speed and other factors).
	Environment	The environment includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings.
EPA	Environment Protection Authority	Their purpose is to improve environmental performance and waste management for NSW. The EPA works with community, business, industry and government to maintain a balance between protecting the environment, managing competing demands on the environment and supporting sustainable growth.

Abbreviation	Terminology	Description
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW).	Provides the legislative framework for land use planning and development assessment in NSW.
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth).	Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process.
EPI	Environmental Planning Instrument	Environmental planning instruments are fundamental documents governing development of land in NSW. They are made under Part 3 of the EP&A Act for the purposes of achieving any of the objects under that Act.
ESD	Ecologically sustainable development.	Development which uses, conserves and enhances the resources of the community so ecological processes on which life depends, are maintained and the total quality of life, now and in the future, can be increased.
FM Act	*Fisheries Management Act 1994* (NSW)	The objects of this Act are to conserve, develop and share the fishery resources of the State for the benefit of present and future generations. This Act protects aquatic habitats and species which are not protected under the TSC Act.
GDA	Geocentric Datum of Australia	The Geocentric Datum of Australia (GDA) is the latest Australian coordinate system, replacing the Australian Geodetic Datum (AGD). The GDA is a part of a global coordinate reference frame and is directly compatible with the Global Navigation Satellite Systems.
GDE	Groundwater Dependent Ecosystems	Six types of groundwater dependent ecosystems are conventionally recognised in Australia: Terrestrial vegetation relies the availability of shallow groundwater. Wetlands such as paperbark swamp forests and mound springs ecosystems. River base flow systems where a groundwater discharge provides a base flow component to the river's discharge. Aquifer and cave ecosystems where life exists independent of sunlight Terrestrial fauna, both native and introduced, dependant on groundwater as a source of drinking water. Estuarine and near shore marine systems, such as some coastal mangroves, salt marshes and sea grass beds, which rely on the submarine discharge of groundwater.
GIS	Geographic Information System	A geographic information system (GIS) is a system designed to capture, store, manipulate, analyse, manage, and present all types of spatial or geographical data.
GPS	Global Positioning System	A hand held device capable of applying location coordinates to digital objects such as photographs and GIS data such as lines or points.
	Habitat	The area occupied, or periodically or occasionally occupied, by any threatened species, population or ecological community and includes all the different aspects (both biotic and abiotic) used by species during the different stages of their life cycles.
IBRA	Interim Biogeographic Regionalisation of Australia	The Interim Biogeographic Regionalisation for Australia (IBRA) is a biogeographic regionalisation of Australia developed by the Australian Government's Department of the Environment. Each region is a land area made up of a group of interacting ecosystems repeated in similar form across the landscape.
	Indirect impacts	Occur when project-related activities affect species, populations or ecological communities in a manner other than direct loss. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, fertiliser

Abbreviation	Terminology	Description
		drift, or increased human activity within or directly adjacent to sensitive habitat areas. As with direct impacts, consideration must be given, when applying each factor, to all of the likely indirect impacts of the proposed activity or development.
JAMBA	Japan-Australia Migratory Bird Agreement	A bilateral migratory bird agreement with Japan entered into in 1974. It provides an important mechanism for pursuing conservation outcomes for migratory birds, including migratory waterbirds.
KTP	Key Threatening Process	A key threatening process is defined as a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities. A requirement of their listing on the TSC Act is that the process adversely affects two or more threatened species, populations or ecological communities, or may cause species, populations or ecological communities not threatened to become threatened.
LEP	Local Environmental Plan	A type of planning instrument made under Part 3 of the EP&A Act.
	Life cycle	The series or stages of reproduction, growth, development, ageing and death of an organism.
LG Act	*Local Government Act 1993*	The purposes of this Act are as follows: to provide the legal framework for an effective, efficient, environmentally responsible and open system of local government in New South Wales, to regulate the relationships between the people and bodies comprising the system of local government in New South Wales, to encourage and assist the effective participation of local communities in the affairs of local government, to give councils: the ability to provide goods, services and facilities, and to carry out activities, appropriate to the current and future needs of local communities and of the wider public the responsibility for administering some regulatory systems under this Act a role in the management, improvement and development of the resources of their areas, to require councils, councillors and council employees to have regard to the principles of ecologically sustainable development in carrying out their responsibilities.
LGA	Local Government Area	The relevant LGA is Governed by Council who are the determining authority for this development application.
LLS	Local Land Services	Launched in January 2014. Each LLS delivers services to farmers, landholders and the community across rural and regional New South Wales. LLS bring together agricultural production advice, biosecurity, natural resource management and emergency management into a single organisation.
	Local population	The population occurs in the study area. The assessment of the local population may be extended to include individuals beyond the study area if it can be clearly demonstrated contiguous or interconnecting parts of the population continue beyond the study area. The local population of a threatened plant species comprises those individuals occurring in the study area or the cluster of individuals extend into habitat adjoining and contiguous with the study area could reasonably be expected to be cross-pollinating with those in the study area. The local population of resident fauna species comprises those individuals known or likely to occur in the study area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) are known or likely to utilise habitats in the study area. The local population of migratory or nomadic fauna species comprises those individuals likely to occur in the study area from time to time.

Abbreviation	Terminology	Description
	Local population (EEC)	The ecological community present within the study area. However, the local occurrence may include adjacent areas if the ecological community on the study area forms part of a larger contiguous area of the ecological community and the movement of individuals and exchange of genetic material across the boundary of the study area can be clearly demonstrated.
	Locality	The area within a 50 kilometre radius of the subject site.
MNES	Matters of national environmental significance.	Refers to the seven matters of national environmental significance outlined under the EPBC Act.
NOW	NSW Office of Water	The NSW Office of Water in the Department of Primary Industries is responsible for the management of the state's surface water and groundwater resources. The Department of Primary Industries is a division within NSW Trade and Investment. The Office of Water reports to the NSW Government for water policy and the administration of key water management legislation, including the *Water Management Act 2000* and *Water Act 1912*.
Noxious Weeds Act	*Noxious Weeds Act 1993* (NSW)	The objects of this Act are as follows: • to reduce the negative impact of weeds on the economy, community and environment of this State by establishing control mechanisms to: • prevent the establishment in this state of significant new weeds, and • prevent, eliminate or restrict the spread in this state of particular significant weeds, and • effectively manage widespread significant weeds in this state, • to provide for the monitoring of and reporting on the effectiveness of the management of weeds in this state.
NPW Act	*National Parks and Wildlife Act 1974* (NSW)	The objects of this Act are as follows: • The conservation of nature, including, but not limited to, the conservation of: • habitat, ecosystems and ecosystem processes, and • biological diversity at the community, species and genetic levels, and • landforms of significance, including geological features and processes, and • landscapes and natural features of significance including wilderness and wild rivers, The conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including, but not limited to: • places, objects and features of significance to Aboriginal people, and • places of social value to the people of New South Wales, and • places of historic, architectural or scientific significance, • Fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation, • Providing for the management of land reserved under this Act in accordance with the management principles applicable for each type of reservation. The objects of this Act are to be achieved by applying the principles of ecologically sustainable development.
NV Act	*Native Vegetation Act 2003*	The objects of this Act are: • to provide for, encourage and promote the management of native vegetation on a regional basis in the social, economic and environmental interests of the State, and • to prevent broad scale clearing unless it improves or maintains environmental outcomes, and

Abbreviation	Terminology	Description
		• to protect native vegetation of high conservation value having regard to its contribution to such matters as water quality, biodiversity, or the prevention of salinity or land degradation, and • to improve the condition of existing native vegetation, particularly where it has high conservation value, and • to encourage the revegetation of land, and the rehabilitation of land, with appropriate native vegetation, In accordance with the principles of ecologically sustainable development.
OEH	Office of Environment and Heritage	The Office of Environment and Heritage (OEH) is a separate agency within the Planning and Environment cluster. OEH was formed on 4 April 2011 and works to protect and conserve the NSW environment, including the natural environment, Aboriginal country, culture and heritage and our built heritage, and manages NSW national parks and reserves.
PoEO Act	*Protection of the Environment Operations Act 1997*	The objects of this Act are as follows: • to protect, restore and enhance the quality of the environment in New South Wales, having regard to the need to maintain ecologically sustainable development, • to provide increased opportunities for public involvement and participation in environment protection, • to ensure the community has access to relevant and meaningful information about pollution, • to reduce risks to human health and prevent the degradation of the environment by the use of mechanisms promoting: • pollution prevention and cleaner production, • the reduction to harmless levels of the discharge of substances likely to cause harm to the environment, • the elimination of harmful wastes, • the reduction in the use of materials and the re-use, recovery or recycling of materials, • the making of progressive environmental improvements, including the reduction of pollution at source, • the monitoring and reporting of environmental quality on a regular basis, • to rationalise, simplify and strengthen the regulatory framework for environment protection, • to improve the efficiency of administration of the environment protection legislation, • to assist in the achievement of the objectives of the *Waste Avoidance and Resource Recovery Act 2001*.
RAMSAR	Convention on Wetlands of International Importance	The Ramsar Convention's broad aims are to halt the worldwide loss of wetlands and to conserve, through wise use and management, those remaining. This requires international cooperation, policy making, capacity building and technology transfer.
	Risk of extinction	The likelihood that the local population will become extinct either in the short-term or in the long-term as a result of direct or indirect impacts on the viability of that population.
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement	A bilateral migratory bird agreement with the Republic of Korea entered into in 2007. It provides an important mechanism for pursuing conservation outcomes for migratory birds, including migratory waterbirds.
RF Act	*Rural Fires Act 1997*	The objects of this Act are to provide: • for the prevention, mitigation and suppression of bush and other fires in local government areas (or parts of areas) and other parts of the State constituted as rural fire districts, and • for the co-ordination of bush firefighting and bush fire prevention throughout the State, and • for the protection of persons from injury or death, and property from damage, arising from fires, and • for the protection of infrastructure and environmental, economic, cultural, agricultural and community assets from damage arising from fires, and

Abbreviation	Terminology	Description
		• for the protection of the environment by requiring certain activities referred to in paragraphs (a)-(c1) to be carried out having regard to the principles of ecologically sustainable development described in section 6 (2) of the *Protection of the Environment Administration Act 1991*.
SEPP 44	State Environmental Planning Policy No.44 – Koala Habitat	This Policy aims to encourage the proper conservation and management of areas of natural vegetation with habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline: • by requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat, and • by encouraging the identification of areas of core koala habitat, and • by encouraging the inclusion of areas of core koala habitat in environment protection zones.
Significant impact		A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity.
SIS	Species Impact Statement	A document included with an Environmental Impact Statement which details a full description of the action proposed, including its nature, extent, location, timing and layout and, to the fullest extent reasonably practicable, the information referred to in this section. The requirements as to the contents of an SIS for different categories of protected species are given in section 110 of the TSC Act.
study area		Study area means the subject site and any additional areas which are likely to be affected by the proposal, either directly or indirectly. The study area should extend as far as is necessary to take all potential impacts into account.
Strahler stream order		Strahler stream order and are used to define stream size based on a hierarchy of tributaries. 
subject site		Encompasses all land which the Development Consent with apply to. This is the area to be impacted by the development and is the focus of this report.
Subject Species		Threatened species known to, or have the potential to utilise habitat within the subject site.
TSC Act	*Threatened Species Conservation Act 1995* (NSW)	This Act provides for the protection of all threatened plants and animals native to NSW and their habitats (including endangered populations and ecological communities, and their habitats). Threatened 'fish' and marine vegetation are specifically excluded as these are covered by the *Fisheries Management Act 1994*.