

**FLORA AND FAUNA ASSESSMENT
NORTH BUNGENDORE
PALERANG COUNCIL**



a report prepared by

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Cover Photograph: View of the eastern part of the study area. The exotic Scotch Thistle, shown in the foreground, is prominent across most of the study area; the land beyond the dam has recently been ploughed.

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FLORA AND FAUNA ASSESSMENT NORTH BUNGENDORE PALERANG COUNCIL

1 INTRODUCTION

This report was commissioned by Don Fox Planning of Pennant Hills on behalf of Elmslea Land Development Pty Limited, who are investigating a parcel of land on the northern side of Bungendore for its potential for residential subdivision. The location of the study area is shown on **Figure 1**.

The purpose of this study is to carry out a field investigation of the land, identify the presence of important flora and fauna features and comment on the conservation values of these features. At this stage there is no proposals for subdivision or other developments.

In particular, this report contains:

- a. a description of the vegetation and fauna habitat in the study area;
- b. lists of the plant and animals species observed;
- c. an assessment of the potential presence of significant flora and fauna, including:
 - species, populations and communities listed under the New South Wales *Threatened Species Conservation Act 1995*;
 - matters of national environmental significance listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*; and
 - any other feature of importance.
- d. a discussion of the potential for subdivision and the presence of important conservation areas for flora and fauna.

An inspection of the site was originally undertaken by Kevin Mills & Associates in November 2004, when a preliminary report was prepared (KMA 2004). Kevin Mills & Associates has also previously investigated the adjoining land on Elmslea Estate (KMA 2002). The current field survey was undertaken on 6 and 7 December 2010. Additionally, relevant information from the above two reports was used where relevant.

2 THE STUDY AREA

The study area is a large area of land adjoining the northern side of the existing Elmslea Estate, on the northern edge of the town of Bungendore in the Palerang local government area. The land, referred to here as the study area, is known as Lot 1 in DP 798111. The study area covers the area between Tarago Road in the west, the railway in the east and the Elmslea Estate to the south. To the north there is farmland, with the Cocunil tip in adjacent to the north-western corner of the land.

The land is undulating with no very steep slopes or ridges. Minor drainage lines cross the land, and there are four small farm dams. Altitude ranges from 700 metres in the west to 750 metres in the eastern part of the land.

The underlying geology is metamorphosed Ordovician sediments on the higher eastern land, with rather deep old alluvial soils on some of the lower western parts of the land.

The land is grazing land, and has been for a long period of time. Most of the land has been pasture improved through seeding, fertilizing and probably ploughing in some places. The original vegetation was probably Yellow Box – Red Gum Woodland, with possibly some treeless natural temperate grassland on the lowest areas. There is very little native vegetation on the site today.

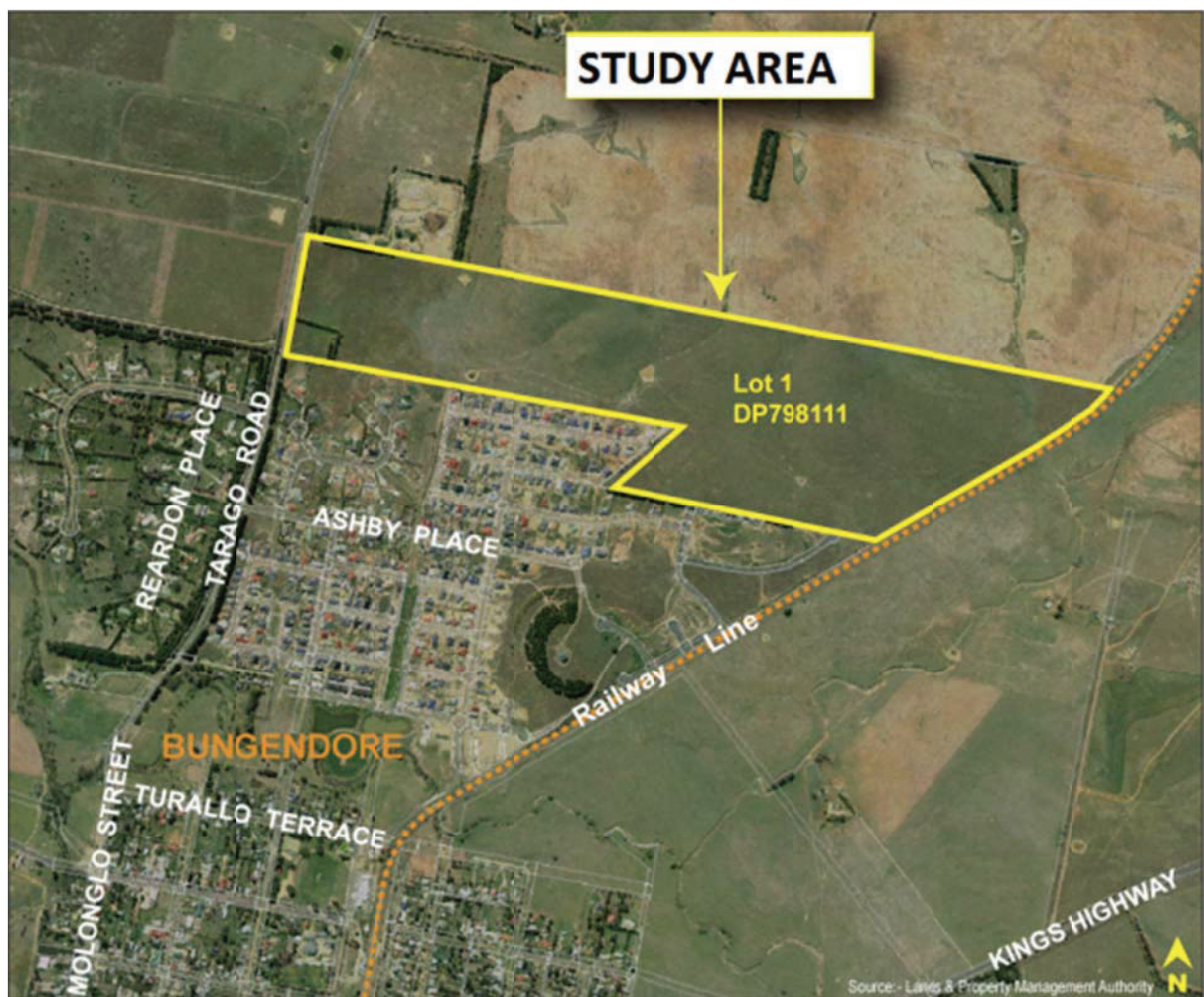


Figure 1. Location of the Study Area.

The Survey

A previous preliminary vegetation survey was undertaken in the study area in November 2004, as part of a larger parcel of land extending to the north. The current survey was more intensive and included vegetation sampling (plant sampling plots). The purpose of this work is to obtain a detailed appreciation of the vegetation cover and to identify any special vegetation feature, such as rare plants and listed plant communities.

Plant sampling plots of 20 metres by 20 metres (400m²) in size, the standard used in vegetation sampling, were temporarily established within vegetation considered to be fairly typical or representative of the area being sampled. More than one plant sampling plot was established if the community covered a large area, in which case the sites were selected to demonstrate variation within the community across its geographic spread. The plots are selected to avoid variations related to "edge effects" or caused by disturbance, e.g. from recent fires, clearing, erosion, etc. In the current case, plots were located in areas where native plants were abundant, even if involving only a single species.

A *pro forma* or standard survey sheet was completed for each plot to record the following information:

Plot data:	unique plot identification number
	date of survey
	plot size (usually 20m by 20m)
	plot location (name of location and GPS reading)
	land tenure
	landform, geology and soil type
	slope (gentle, moderate, steep, very steep)
	aspect (north, south etc)
	altitude (metres)
	whether a photograph was taken.
Floristic data:	height and proportional coverage (%) of each layer or stratum (tree canopy, middle storey, shrub understorey, ground cover)
	species present in each stratum (natives and exotics)
	abundance score for each species, as set out below
	if treeless, the closest natural tree species to the plot.

Floristic data for each species within each plot was gathered using a subjective abundance score from 1 to 6 based upon the following range of cover scores. Individual species with less than four individuals are noted.

1	<5% uncommon to rare	4	25% - 50% foliage cover
2	<5% common	5	50% - 75% foliage cover
3	5% - 25% foliage cover	6	75% -100% foliage cover.

Notes were made on the structure and condition of the vegetation. A general description of each community or "unit" was then prepared. The general description of

each plant community is based largely on the data collected during these plant sampling surveys.

Vegetation Classification

The vegetation communities in the study areas were classified on the basis of their structure and the dominant species in the tallest stratum, using the structural classification system devised by Walker and Hopkins (1990). Of most importance is the definitions of grassland types, which are based on the percentage of native species and their cover. The following definitions used in this report are widely accepted in the botanical literature; most of those relating to grasslands are from the report by Rehwinkel (1997).

Woodland: a community of well spaced trees (projective foliage cover 10-30%) growing to a height of 4 to 30 metres.

Open Woodland: a community of scattered trees (projective foliage cover <10% growing to a height of 4 to 30 metres.

Grassland: vegetation dominated by grasses and forbs, with <10% tree and/or shrub cover.

Native Grassland: grassland with >50% of vegetation cover composed of indigenous species, >50% of all species are native, and the minimum vegetation cover, alive or dead, is >10%.

Natural Grassland: native grassland considered to have had <10% tree and/or shrub cover at the time of European settlement.

Secondary Grassland: a native grassland remaining after the removal or dieback of previously occurring trees and/or shrubs, where these occupied >10% cover.

Native Pastures: containing native and introduced species, where introduced species occupy >50%, but <75% of both cover and species present, where pasture species have often been mechanically sown.

Exotic Grassland: where >75% of species and cover are composed of introduced plants.

Natural Temperate Grassland: a threatened grassland community listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act*. The Recovery Plan for Natural Temperate Grassland (Environment ACT 2006) provides the following information:

"The community is dominated by moderately tall (25-50cm) to tall (50cm – 1.0m), dense to open tussock grasses with up to 70% of the species being forbs. The community may be treeless or contain up to 10% cover of trees, shrubs or sedges. In the Southern Tablelands, Natural Temperate Grasslands are located at altitudes between 560 and 1200 metres in valleys influenced by cold air drainage and in broad plains. The community occurs within the geographical region of the Southern Tablelands of NSW and ACT, which extends southwards from the

Abercrombie River to the Victorian Border, from Boorowa and Jindabyne to the west and Goulburn to Braidwood and Bombala to the east."

"Natural Temperate Grassland is a native ecological community that is dominated by native species of perennial tussock grasses. The dominant grasses are *Themeda triandra* [australis], *Austrodanthonia* species, *Bothriochloa macra* and *Poa* species. The upper canopy stratum generally varies in height from mid-high (0.25-0.5m) to tall (0.5-1.0m). There is also a diversity of native herbaceous plants (forbs), which may comprise up to 70% of species present. The community is naturally treeless or has less than 10% projective foliage cover of trees or shrubs in its tallest stratum. The ecological community that makes up NTG-ST [Natural Temperate Grassland – Southern Tablelands] is defined by the vegetation structure thought to have been present at the time of European settlement."

Nomenclature

The plant species names in this report are the current names published by the National Herbarium of New South Wales in the *Flora of New South Wales* (Harden 1992-2002) and its online equivalent. Most of the common names are from the *Flora of New South Wales* (op. cit.), *Australian Plant Genera* by Baines (1981) and *Weeds of the South-east* by Richardson, Richardson and Shepherd (2006).

Vegetation Description

As noted above, the original natural vegetation occurring on the land was removed many years ago. That vegetation locally was likely to have been natural temperate grassland, verging on Yellow Box – Red Gum Woodland. A map in the report by Fallding (2002) showing “modelled native vegetation pre-1750” shows the area around Bungendore as ‘native grassland’. The vegetation on the land today consists almost entirely of exotic grassland. There are no natural indigenous trees on the land, although very old eucalypt stumps can be seen in a few places that indicate trees once grew there.

For descriptive purposes, the area is divided into four separate paddocks. Recent substantial rain has produced tall, lush and dense growth of grasses and forbs, often over 1.5 metres in height. This season is therefore an ideal time to undertake plant surveys.

The most western paddock, designated 1 on **Figure 2**, is primarily exotic grassland; the dominant species being Scotch Thistle *Onopordium acanthium*, Phalaris *Phalaris* sp., Fescue *Vulpia myuros*, Soft Brome *Bromus hordaceus*, Great Brome *Bromus diandrus*, Cocksfoot *Dactylis glomerata*, Barley Grass *Hordeum* sp., Oats *Avena* sp., Sorrel *Acetosella vulgaris*, and Flatweed *Hypochaeris radicata*.

Dense patches of Scotch Thistle *Onopordium acanthium* occur in the eastern half of the paddock. There are also areas of Speargrass *Austrostipa scabra*; although that native grass dominates, there are almost no other native species present (see survey plot NBUN01). Along the western and southern sides of the paddock, there are rows of planted Radiata Pine *Pinus radiata*, with a few Black Locust *Robinia pseudoacacia* and Elm *Ulmus* sp. trees; the latter species is suckering profusely in places. In the southwest corner, there is a square of planted trees of the same species, with the addition of a eucalypt.

To the east, paddock number 2 is dominated by Scotch Thistle *Onopordium acanthium*, Phalaris *Phalaris* sp., and the other exotics listed above. The slope in the northern-central part of the paddock supports native grassland; see survey plot NBUN02. This area appears to be a remnant of the original native grassland; the approximate extent of the area is shown on **Figure 2**.

Paddock 3 is almost entirely recently ploughed or poisoned with herbicide. These areas support exotic grassland containing the dominant local introduced species as listed above, or bare ground. Two sites were located that support native grassland, these areas were sampled at survey plots NBUN04 and NBUN05; see **Appendix 3**. The first is in the southern central part of the paddock, around survey plot NBUN04 and covers an area of about 60 metres by 70 metres, as determined by pacing. Plot NBUN04 contained a total of 34 native species; this is high for the study area but not when compared to high quality sites elsewhere in the region. The common species are Speargrass *Austrostipa bigeniculata*, Common Everlasting *Chrysocephalum apiculatum*, Australian Bindweed *Convolvulus erubescens*, Kidney Weed *Dichondra repens* and Hairy Panic *Panicum effusum*.

The second area of native grassland is in the extreme eastern corner of the paddock, around survey plot NBUN05. That site is about 100 metres by 50 metres in area, as measured from an aerial photograph. Except for the presence of Chilean Needle Grass *Nassella neesiana*, this area is of reasonable quality as native grassland. The common native species here are Speargrass *Austrostipa* spp., Common Everlasting *Chrysocephalum apiculatum*, Australian Bindweed *Convolvulus erubescens*, Variable Plantain *Plantago varia* and Short Wallaby Grass *Austrodanthonia carphoides*.

Paddock 4, actually fenced with Paddock 3, is in the south-eastern part of the study area abutting the existing subdivision to the south. The majority of the area is exotic grassland, with patches of Speargrasses *Austrostipa* spp. Abundant species are Scotch Thistle *Onopordium acanthium*, Fescue *Vulpia myuros*, Hairy Brassica *Hirschfeldia incana*, Rye Grass *Lolium* sp, Saffron Thistle *Carthamus lanatus* and smaller exotics such as Sheep Sorrel *Acetosella vulgaris*. One area of native grassland occurs on the highest part of the area, around survey plot NBUN06. That area of about 100 metres by 80 metres in size, as measured from an aerial photograph. The common native species here include Speargrass *Austrostipa bigeniculata*, Common Everlasting *Chrysocephalum apiculatum*, Hairy Panic *Panicum effusum* and Bluebells *Wahlenbergia* spp.

The four dams on the land support some fringing wetland plants, including the natives Hyssop Loosestrife *Lythrum hyssopifolia*, Rushes *Juncus* spp. and Water Couch *Paspalum distichum*.

Plant Sampling Results

To investigate the character and quality of the native grassland in the study area, six plant survey plots were temporarily established. The survey methods are described above. The resultant survey sheets are produced at **Appendix 3**. The locations of the six plant survey plots are shown on **Figure 2**. A summary of the results for each plot is provided in **Table 1**, in terms of the species recorded, a site quality score as developed by Rehwinkel (2007), and the type of grassland present.

<i>Plot No.</i>	<i>Location</i>	<i>Natives</i>	<i>Exotics</i>	<i>Site Quality Score¹</i>	<i>Designated Grassland Type</i>
1	Paddock 1	4	16	0	Native pasture
2	Paddock 2	8	15	0	Native pasture
3	Paddock 2	5	15	1	Native pasture
4	Paddock 3	34	19	16	Native grassland
5	Paddock 3	25	15	10	Native grassland
6	Paddock 4	26	29	13	Native grassland

1. Based on Rehwinkel (2007).

The quality of the native grassland in the area is not high. Three plots produced scores to indicating “moderate to high floristic value” (Rehwinkel 2007). Rehwinkel also states that if a site “achieves a score of 4 or more, then it has values consistent with those defined for the Natural Temperate Grassland EEC”, i.e. the Commonwealth EPBC Act listed grassland community. The presence of old eucalypt stumps may indicate that the higher parts of the land was originally a transition zone between treeless grassland (Natural Temperate Grassland) and Yellow Box – Red Gum Woodland.

Plant Species Recorded

Except for the very localised sites identified above, native species are quite uncommon in the study area. Most species are concentrated in these few sites or only found in these areas. In total 61 native species were recorded; many of these are rare on the study area. Also recorded were 64 exotic or introduced plant species. Complete lists of all plant species recorded in the survey appear at **Appendices 1 and 2**, where a list by family and an alphabetical list based on genus are provided. Some of the introduced species are declared noxious under the NSW *Noxious Weeds Act 1993*. Other introduced plants are widely regarded as environmental weeds; that is they threaten natural areas but are not listed noxious weeds in this LGA. The weeds in these categories located in the study area are listed in **Table 2**.

<i>Species</i>	<i>Common Name</i>	<i>Weed Control Class¹</i>
<u>Noxious Weeds</u>		
<i>Echium plantagineum</i>	Paterson’s Curse	4
<i>Hypericum perforatum</i>	St John’s Wort	3
<i>Lycium ferocissimum</i>	African Boxthorn	4
<i>Nassella neesiana</i>	Chilean Needle Grass	4
<i>Onopordium acanthium</i>	Scotch Thistle	4
<i>Rubus fruticosus</i> sp. agg.	Blackberry	4
<u>Environmental Weeds</u>		
<i>Carthamus lanatus</i>	Saffron Thistle	
<i>Chondrilla juncea</i>	Skeleton Weed	
<i>Crataegus monogyna</i>	Hawthorn	

1. See Appendix 4 for weed control classes.



Figure 2. Vegetation Map of the Study Area.

Plant survey plots are numbered NBUN01 to NBUN06.

The areas of native grassland/native pasture indicated around four of the plots are general areas only and are not to scale.

4 FAUNA SPECIES AND HABITATS

Habitats Present

The habitat available for native fauna on the study area is primarily exotic grassland, with a planted copse of pines in one corner of the land. The small areas of native grassland are not likely to be significant to native fauna, because of their small size and because of their isolation from other areas of natural habitat. There are four small farm dams on the site, located in small, ephemeral drainage lines.

Animal Species Recorded

A list of the vertebrate animal species observed during the current study was prepared and is provided in **Appendix 5**. The appendix also lists those species found on the land and nearby in previous studies by Kevin Mills & Associates (2002; 2004). We have assessed the potential of the site to support threatened fauna in the following section.

5 ASSESSMENT OF CONSERVATION VALUES

5.1 THREATENED PLANTS

Threatened plant species are listed under the New South Wales *Threatened Species Conservation Act 1995* (TSC Act). The species are listed on schedules attached to the Act; these are continually being added to by the NSW Scientific Committee. Under the *Threatened Species Conservation Act*, threatened plant species are classified either as “critically endangered” (Schedule 1A, Part 1), “endangered” (Schedule 1, Part 1), “vulnerable” (Schedule 2) or “presumed extinct” (Schedule 1, Part 4).

Records of threatened plant species known to occur within 10 kilometres of Bungendore were sought from the NSW Wildlife Atlas; these are listed in **Table 3**. The table indicates the probability of each species occurring in the study area. Few threatened plant species have been recorded anywhere near Bungendore.

<i>Table 3</i>		
<i>Threatened Plant Species known to occur in the Bungendore Area</i>		
Species	TSC Act¹	Potential to occur on the Site
<i>Wilsonia rotundifolia</i> Round-leaved Wilsonia	E	No suitable habitat present.
<i>Eucalyptus aggregata</i> Black Gum	V	No indigenous trees present.
<i>Diuris aequalis</i> Buttercup Doubeltail	E	No suitable habitat present.

1. E – endangered; V = vulnerable under the *Threatened Species Conservation Act 1995*.

The small, prostrate wetland plant Round-leaved *Wilsonia* *Wilsonia rotundifolia* occurs on Lake George, to the north of Bungendore. There is no suitable habitat in the study area for this species.

Black Gum *Eucalyptus aggregata* is a tree and clearly does not occur on the study area, where there are no indigenous trees at all.

The orchid Buttercup Doubletail *Diuris aequalis* occurs about 13 kilometres to the east of Bungendore. The habitats on the current study area totally exclude the presence of this species, as it is very unlikely to be present in these highly disturbed habitats.

No threatened plant species were located in the study area at North Bungendore; no species have previously been recorded near Bungendore. Given the extensive modification to the natural vegetation and the long grazing history of the land, including pasture improvement, it is very unlikely that any of these plant species occur on the land.

5.2 THREATENED ANIMALS

Threatened animal species are listed under the *Threatened Species Conservation Act 1995*, where they are classified in the same manner as threatened plant species; see **Section 5.1**. Information on the distribution of threatened animal species in New South Wales can be found in the NSW Wildlife Atlas, maintained by the NSW National Parks and Wildlife Service (NPWS).

The Wildlife Atlas and other sources were scanned for records of threatened animals from the local area, within about 10 kilometres of Bungendore. Several threatened fauna species were found to have been recorded within 10 kilometres of the study area. These species are listed in **Table 4**. Notes in that table provide a summary assessment of the potential of each species to occur in the study area.

Table 4		
<i>Threatened animal species known to occur in the Bungendore Area</i>		
Species	TSC Act ¹	Potential to occur on the Site
Birds		
Speckled Warbler <i>Chthonicola sagittata</i>	V	Very unlikely. No woodland habitat is present.
Spotted Harrier <i>Circus assimilis</i>	V	Possible. A rather rare visitor to the region, may occur from time to time. No special habitat present.
Little Eagle <i>Hieraaetus morphnoides</i>	V	Possible. Thinly distributed in the region, probably occurs from time to time. No special habitat present.
Australasian Bittern <i>Botaurus poiciloptilus</i>	V	Very unlikely. There is no suitable habitat present. Recorded on Lake George.

Table 4 cont...
Threatened animal species known to occur in the Bungendore Area

Species	TSC Act ¹	Potential to occur on the Site
Diamond Firetail <i>Stagonopleura guttata</i>	V	Possible. Recorded in the general area. Probably occurs in the study area from time to time, although the habitat is marginal.
Freckled Duck <i>Stictonetta naevosa</i>	V	Very unlikely. The small dams do not provide suitable habitat. Recorded on Lake George and possibly the STP at Bungendore.
Gang-gang Cockatoo <i>Callocephalon fimbriatum</i>	V	Very unlikely. No forest or woodland habitat occurs in the study area.
Regent Honeyeater <i>Xanthomyza Phrygia</i>	CE	Very unlikely. No forest or woodland habitat occurs in the study area.
Varied Sittella <i>Daphoenositta chrysoptera</i>	V	Very unlikely. No forest or woodland habitat occurs in the study area.
Scarlet Robin <i>Petroica boodang</i>	V	Possible. Recorded in the general area. Probably occurs in the study area from time to time, although the habitat is marginal.
Flame Robin <i>Petroica phoenicea</i>	V	Possible. Recorded in the general area. Probably occurs in the study area from time to time, although the habitat is marginal.
Reptiles		
Little Whip Snake <i>Suta flagellum</i>	V	Recorded about 15 km northeast of Bungendore. Unlikely to occur on land as there is no natural habitat.
Frogs		
Green and Golden Bell Frog <i>Litoria aurea</i>	E	There is no habitat in the area for this frog.
Yellow-spotted Tree Frog <i>Litoria castanea</i>	CE	There is no habitat in the area for this frog.

1. CE – critically endangered; E – endangered; V = vulnerable, under the *Threatened Species Conservation Act 1995*.

It is concluded that the only threatened animal species likely to occur in the study area are those woodland species that range widely outside their breeding habitat, particularly in the cooler months. These species are the Diamond Firetail, Scarlet Robin, Flame Robin and Little Eagle.

5.3 ENDANGERED ECOLOGICAL COMMUNITIES

Endangered ecological communities are listed under the *Threatened Species Conservation Act 1995* (Schedule 1, Part 3). The Yellow Box – Red Gum Woodland community that

probably originally covered the upper parts of the study area, is listed as a part of the endangered ecological community complex known as White Box - Yellow Box - Blakely's Red Gum Woodland. Under the Final Determination from the NSW Scientific Committee, secondary grassland, that is grassland understorey where the trees have been removed, is still a part of the identified endangered community. Note that natural temperate grassland is not a listed endangered ecological community in New South Wales.

Grassland quality can be measured using a combination of native plant diversity (number of species) and native cover. The number and abundance of exotic species is a secondary consideration. Rehwinkel (2007) provided a "quantitative method that enables the assessment of the relative values of sites containing any of the communities within the grassy ecosystems found in the Southern Tablelands of NSW".

The vast majority of the study area is exotic grassland where few native plant species are found. Except for Speargrasses *Austrostipa* spp. there are almost no native to be found in most areas. Native pasture occurs in a few places, invariably dominated by Speargrass *Austrostipa* spp. with few other natives; see plant survey plots NBUN01 and NBUN03. These areas are mostly the result of colonisation by *Austrostipa* spp. into unmanaged paddocks. In contrast, three areas in the east where there is a relatively high number of native species are remnants of the original native grassland; see plant survey plots NBUN04, 05 and 06. The quality of the grassland elsewhere in the study area, as measured by the scheme developed by Rehwinkel (2007) and the relative native plant diversity compared to other sites in the region, is very low. Another consideration in terms of conservation value is the isolation of a site and its size. Small isolated areas of habitat are very difficult to manage to maintain their conservation values.

The only areas worthy of retention for flora and fauna values are the three areas of native grassland around plots NBUN04, 05 and 06, as shown on **Figure 2**. The remainder of the land has little to no conservation value for native biota.

A map provided to Cocunil by the DECCW shows much of the study area as "potential high vegetation conservation value". That map is based on satellite imagery with broad scale checking in the field. For individual sites, detailed ground surveys must be undertaken to determine the true status of the grassland and its conservation value. That exercise has been undertaken in this study. The result, as set out above, is that although there are a few small areas of native grassland, the vast majority of the land has little to no conservation value.

The only areas that we believe would satisfy the criteria of the above endangered woodland community are the four grassland areas shown on **Figure 2**. This grassland was described in **Section 4**. The remainder of the land does not meet the criteria of native grassland, even though some areas are dominated by the native Speargrasses *Austrostipa* spp.

5.4 *ENDANGERED POPULATIONS*

Endangered populations are listed under the TSC Act (Schedule 1, Part 2). No endangered populations have been declared in the Bungendore area.

5.5 *CRITICAL HABITAT*

Critical habitat refers only to those areas of land listed in the Registers of Critical Habitat. No critical habitat has been declared in the Bungendore area.

5.6 *ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT*

The small areas of native grassland are Natural Temperate Grassland or White Box - Yellow Box - Blakely's Red Gum Woodland and Derived Grassland under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. Any impact upon these areas would need to be assessed at the time of a development application.

6 *CONCLUSION*

This report has provided descriptions of the flora and fauna associated with a parcel of land on the northern edge of the town of Bungendore. A detailed study was undertaken of the grassland covering the land, with particular attention being given to identifying native grassland and investigating its conservation value.

This investigation found that the study area is mostly covered in exotic grassland. Four sites were identified that support native grassland. Each site is quite small, less than one (1) hectare.

Threatened plant species are very unlikely to occur in the study area. There is no special habitat on the land for threatened animals. The only threatened fauna likely on the site are wandering woodland birds that are known from the general area and could visit the site from time to time.

If the land is to be developed, the identified native grassland sites should be assessed under the provisions of the NSW *Threatened Species Conservation Act 1995* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. If any of these areas are found to be significant and to warrant retention, appropriate provisions should be made for their conservation in the long term.

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Appendix 1

Alphabetical List of Plant Species for the Bungendore Study Area

Native Species

<i>Acaena ovina</i>	Sheep's Burr
<i>Alternanthera denticulata</i>	Lesser Joyweed
<i>Alternanthera</i> sp. A	Joyweed
<i>Asperula conferta</i>	Common Woodruff
<i>Austrodanthonia carphoides</i>	Short Wallaby Grass
<i>Austrodanthonia racemosa</i>	Wallaby Grass
<i>Austrodanthonia setacea</i>	Small-flowered Wallaby Grass
<i>Austrostipa bigeniculata</i>	Tall Speargrass
<i>Austrostipa scabra</i>	Corkscrew
<i>Bothriochloa macra</i>	Red-leg Grass
<i>Bulbine bulbosa</i>	Bulbine Lily
<i>Calocephalus citreus</i>	Lemon Beautyheads
<i>Chenopodium pumilio</i>	Clammy Goosefoot
<i>Chloris truncata</i>	Windmill Grass
<i>Chrysocephalum apiculatum</i>	Common Everlasting
<i>Convolvulus erubescens</i>	Australian Bindweed
<i>Crassula sieberiana</i>	Stonecrop
<i>Cymbonotus lawsonianus</i>	Austral Bears-ear
<i>Cynodon dactylon</i>	Couch Grass
<i>Cynoglossum suaveolens</i>	Sweet Hound's Tongue
<i>Desmodium varians</i>	Slender Tick-trefoil
<i>Dichondra repens</i>	Kidney Weed
<i>Dichopogon fimbriatus</i>	Nodding Chocolate Lily
<i>Eleocharis acuta</i>	Common Spike-rush
<i>Elymus scaber</i>	Wheatgrass
<i>Enneapogon nigricans</i>	Nineawn Grass
<i>Epilobium billardierianum</i>	Willowherb
<i>Erodium crinitum</i>	Blue Heron's-bill
<i>Eryngium rostratum</i>	Blue Devil
<i>Euchiton sphaericus</i>	Cudweed
<i>Glycine tabacina</i>	Vanilla Glycine
<i>Goodenia pinnatifida</i>	Scrambled Eggs
<i>Hypericum gramineum</i>	Small St John's Wort
<i>Juncus</i> sp,	Rush
<i>Leptorhynchus squamatus</i>	Scaly Buttons
<i>Lissanthe strigosa</i>	Peach Heath
<i>Lomandra bracteata</i>	Mat-rush
<i>Lomandra filiformis</i>	Wattle Mat-rush
<i>Lomandra multiflora</i>	Many-flowered Mat-rush
<i>Lythrum hyssopifolia</i>	Hyssop Loosestrife
<i>Microtis unifolia</i>	Common Onion Orchid
<i>Oxalis radicata</i>	Wood Sorrel
<i>Panicum effusum</i>	Hairy Panic
<i>Paspalum distichum</i>	Water Couch

Pimelea curviflora
Plantago varia
Poa sieberiana
Pseudognaphalium luteoalbum
Rumex brownii
Rumex dumosus
Senecio quadridentatus
Solenogyne dominii
Themeda australis
Tricoryne elatior
Velleia paradoxa
Vittadinia cuneata
Vittadinia gracilis
Vittadinia muelleri
Wahlenbergia communis
Wahlenbergia gracilis
Wahlenbergia luteola

Exotic Species

**Acetosella vulgaris*
 **Aira elegantissima*
 **Amaranthus* sp.
 **Anagallis arvensis*
 **Arctotheca calendula*
 **Avena* sp.
 **Briza minor*
 **Bromus cartharticus*
 **Bromus diandrus*
 **Bromus hordaceus*
 **Carthamus lanatus*
 **Centaureum erythraea*
 **Chenopodium album*
 **Chondrilla juncea*
 **Cirsium vulgare*
 **Conyza* sp.
 **Crataegus monogyna*
 **Cynosurus echinatus*
 **Dactylis glomerata*
 **Echium plantagineum*
 **Eleusine tristachya*
 **Erodium botrys*
 **Erodium cicutarium*
 **Eucalyptus* sp.
 **Gamochaeta americana*
 **Gamochaeta calviceps*
 **Hirschfeldia incana*
 **Holcus lanatus*
 **Hordeum* sp.

Curved Rice-flower
 Variable Plantain
 Poa Tussock
 Jersey Cudweed
 Swamp Dock
 Wiry Dock
 Cotton Fireweed
 Smooth Solenogyne
 Kangaroo Grass
 Yellow Rush-lily
 Spur Velleia
 Fuzzweed
 Woolly New Holland Daisy
 Narrow-leaf New Holland Daisy
 Tufted Bluebell
 Australian Bluebell
 Yellowish Bluebell

Sheep Sorrel
 Delicate Hairgrass
 Amaranth
 Blue Pimpernel
 Capeweed
 Oats
 Lesser Quaking Grass
 Prairie Grass
 Great Brome
 Soft Brome
 Saffron Thistle
 Common Centaury
 Fat Hen
 Skeleton Weed
 Spear Thistle
 Fleabane
 Hawthorn
 Rough Dog's-tail
 Cocksfoot
 Paterson's Curse
 Goose Grass
 Long Stork's-nill
 Common Stork's-bill
 Gum
 American Cudweed
 Cudweed
 Hairy Brassica
 Yorkshire Fog
 Barley Grasses

* <i>Hypericum perforatum</i>	St John's Wort
* <i>Hypochaeris radicata</i>	Flatweed
* <i>Juncus bufonius</i>	Toad Rush
* <i>Lactuca serriola</i>	Prickly Lettuce
* <i>Lepidium</i> sp.	Peppercress
* <i>Lolium</i> sp.	Ryegrass
* <i>Lycium ferocissimum</i>	African Boxthorn
* <i>Malva parviflora</i>	Small-flowered Mallow
* <i>Modiola caroliniana</i>	Red-flowered Mallow
* <i>Nassella neesiana</i>	Chilean Needle Grass
* <i>Onopordium acanthium</i>	Scotch Thistle
* <i>Parentucellia latifolia</i>	Common Bartsia
* <i>Paronychia brasiliensis</i>	Chilean Whitlow Wort
* <i>Pentstemon airoides</i>	False Hairgrass
* <i>Petrorhagia nanteuillii</i>	Proliferous Pink
* <i>Phalaris</i> sp.	Phalaris
* <i>Pinus radiata</i>	Radiata Pine
* <i>Plantago lanceolata</i>	Ribbed Plantain
* <i>Poa bulbosa</i>	Bulbous Bluegrass
* <i>Polygonum aviculare</i>	Wireweed
* <i>Prunus</i> sp.	Plum
* <i>Robinia pseudoacacia</i>	Black Locust
* <i>Rubus fruticosus</i> sp. agg.	Blackberry
* <i>Solanum ? nigrum</i>	Black Nightshade
* <i>Solanum triflorum</i>	Three-flowered Nightshade
* <i>Sonchus asper</i> subsp. <i>glaucescens</i>	Prickly Sowthistle
* <i>Sonchus oleraceus</i>	Common Sowthistle
* <i>Spergularia rubra</i>	Sandspurry
* <i>Trifolium arvense</i>	Haresfoot Clover
* <i>Trifolium dubium</i>	Yellow Suckling Clover
* <i>Trifolium glomeratum</i>	Clustered Clover
* <i>Trifolium subterraneum</i>	Subterranean Clover
* <i>Triticum aestivum</i>	Wheat
* <i>Ulmus</i> sp.	Elm
* <i>Urtica urens</i>	Small Nettle
* <i>Verbascum virgatum</i>	Twiggy Mullein
* <i>Vulpia myuros</i>	Fescue

Appendix 2

List of Plant Species by Family for the Bungendore Study Area

GYMNOSPERMAE (Conifers)

PINACEAE

<i>*Pinus radiata</i>	Radiata Pine
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ANGIOSPERMAE (Flowering Plants)

AMARANTHACEAE

<i>Alternanthera denticulata</i>	Lesser Joyweed
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<i>Alternanthera</i> sp. A	Joyweed
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<i>*Amaranthus</i> sp.	Amaranth
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AMYGDALACEAE

<i>*Prunus</i> sp.	Plum
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ANTHERICACEAE

<i>Dichopogon fimbriatus</i>	Nodding Chocolate Lily
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<i>Tricoryne elatior</i>	Yellow Rush-lily
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APIACEAE

<i>Eryngium rostratum</i>	Blue Devil
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ASPHODELACEAE

<i>Bulbine bulbosa</i>	Bulbine Lily
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ASTERACEAE

<i>Calocephalus citreus</i>	Lemon Beautyheads
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<i>Chrysocephalum apiculatum</i>	Common Everlasting
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<i>Cymbonotus lawsonianus</i>	Austral Bears-ear
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<i>Euchiton sphaericus</i>	Cudweed
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<i>Leptorhynchus squamatus</i>	Scaly Buttons
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<i>Pseudognaphalium luteoalbum</i>	Jersey Cudweed
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<i>Senecio quadridentatus</i>	Cotton Fireweed
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<i>Solenogyne dominii</i>	Smooth Solenogyne
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<i>Vittadinia cuneata</i>	Fuzzweed
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<i>Vittadinia gracilis</i>	Woolly New Holland Daisy
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<i>Vittadinia muelleri</i>	Narrow-leaf New Holland Daisy
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<i>*Arctotheca calendula</i>	Capeweed
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<i>*Carthamus lanatus</i>	Saffron Thistle
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<i>*Chondrilla juncea</i>	Skeleton Weed
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<i>*Cirsium vulgare</i>	Spear Thistle
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<i>*Conyza</i> sp.	Fleabane
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<i>*Gamochaeta americana</i>	American Cudweed
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<i>*Gamochaeta calviceps</i>	Cudweed
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<i>*Hypochaeris radicata</i>	Flatweed
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<i>*Lactuca serriola</i>	Prickly Lettuce
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**Onopordium acanthium*
**Sonchus asper* subsp. *glaucescens*
**Sonchus oleraceus*

Scotch Thistle
Prickly Sowthistle
Common Sowthistle

BORAGINACEAE

Cynoglossum suaveolens
**Echium plantagineum*

Sweet Hound's Tongue
Paterson's Curse

BRASSICACEAE

**Hirschfeldia incana*
**Lepidium* sp.

Hairy Brassica
Peppercress

CAMPANULACEAE

Wahlenbergia communis
Wahlenbergia gracilis
Wahlenbergia luteola

Tufted Bluebell
Australian Bluebell
Yellowish Bluebell

CARYOPHYLLACEAE

**Paronychia brasiliensis*
**Petrorhagia nanteuillii*
**Spergularia rubra*

Chilean Whitlow Wort
Proliferous Pink
Sandspurry

CHENOPODIACEAE

Chenopodium pumilio
**Chenopodium album*

Clammy Goosefoot
Fat Hen

CLUSIACEAE

Hypericum gramineum

Small St John's Wort

CONVOLVULACEAE

Convolvulus erubescens
Dichondra repens

Australian Bindweed
Kidney Weed

CRASSULACEAE

Crassula sieberiana

Stonecrop

CYPERACEAE

Eleocharis acuta

Common Spike-rush

EPACRIDACEAE

Lissanthe strigosa

Peach Heath

FABACEAE

Faboideae (subfamily)

Desmodium varians
Glycine tabacina
**Robinia pseudoacacia*
**Trifolium arvense*
**Trifolium campestre*

Slender Tick-trefoil
Vanilla Glycine
Black Locust
Haresfoot Clover
Hop Clover

**Trifolium glomeratum*
**Trifolium subterraneum*

Clustered Clover
Subterranean Clover

GENTIANACEAE

**Centaurium erythraea*

Common Centaury

GERANIACEAE

Erodium crinitum
**Erodium botrys*
**Erodium cicutarium*

Blue Heron's-bill
Long Stork's-bill
Common Stork's-bill

GOODENIACEAE

Goodenia pinnatifida
Velleia paradoxa

Scrambled Eggs
Spur Velleia

HYPERICACEAE

Hypericum gramineum
**Hypericum perforatum*

Small St John's Wort
St John's Wort

JUNCACEAE

Juncus sp.
**Juncus bufonius*

Rush
Toad Rush

LOMANDRACEAE

Lomandra bracteata
Lomandra filiformis
Lomandra multiflora

Mat-rush
Wattle Mat-rush
Many-flowered Mat-rush

LYTHRACEAE

Lythrum hyssopifolia

Hyssop Loosestrife

MALVACEAE

**Malva parviflora*
**Modiola caroliniana*

Small-flowered Mallow
Red-flowered Mallow

MYRTACEAE

**Eucalyptus* sp.

Gum

ONAGRACEAE

Epilobium billardierianum

Willowherb

ORCHIDACEAE

Microtis unifolia

Common Onion Orchid

OXALIDACEAE

Oxalis radicata

Wood Sorrel

PLANTAGINACEAE

Plantago varia

**Plantago lanceolata*

Variable Plantain

Ribbed plantain

POACEAE

Austrodanthonia carphoides

Austrodanthonia racemosa

Austrodanthonia setacea

Austrostipa bigeniculata

Austrostipa scabra

Bothriochloa macra

Chloris truncata

Cynodon dactylon

Elymus scaber

Enneapogon nigricans

Panicum effusum

Paspalum distichum

Poa sieberiana

Themeda australis

**Aira elegantissima*

**Avena* sp.

**Briza minor*

**Bromus cartharticus*

**Bromus diandrus*

**Bromus hordaceus*

**Cynosurus echinatus*

**Dactylis glomerata*

**Eleusine tristachya*

**Holcus lanatus*

**Hordeum* sp.

**Lolium* sp.

**Nassella neesiana*

**Pentaschistis airoides*

**Phalaris* sp.

**Poa bulbosa*

**Triticum aestivum*

**Vulpia myuros*

Short Wallaby Grass

Wallaby Grass

Small-flowred Wallaby Grass

Tall Speargrass

Corkscrew

Red-leg Grass

Windmill Grass

Couch Grass

Wheatgrass

Nineawn Grass

Hairy Panic

Water Couch

Poa Tussock

Kangaroo Grass

Delicate Hairgrass

Oats

Lesser Quaking Grass

Prairie Grass

Great Brome

Soft Brome

Rough Dog's-tail

Cocksfoot

Goose Grass

Yorkshire Fog

Barley Grasses

Ryegrass

Chilean Needle Grass

False Hairgrass

Phalaris

Bulbous Bluegrass

Wheat

Fescue

POLYGONACEAE

Rumex brownii

Rumex dumosus

**Acetosella vulgaris*

**Polygonum aviculare*

Swamp Dock

Wiry Dock

Sheep Sorrel

Wireweed

PRIMULACEAE

**Anagallis arvensis*

Blue Pimpernel

ROSACEAE*Acaena ovina***Crataegus monogyna***Rubus fruticosus* sp. agg.

Sheep's Burr

Hawthorn

Blackberry

RUBIACEAE*Asperula conferta*

Common Woodruff

SCROPHULARIACEAE**Parentucellia latifolia***Verbascum virgatum*

Common Bartsia

Twiggy Mullein

SOLANACEAE**Solanum triflorum***Lycium ferocissimum***Solanum ? nigrum*

Three-flowered Nightshade

African Boxthorn

Black Nightshade

THYMELAEACEAE*Pimelea curviflora*

Curved Rice-flower

ULMACEAE**Ulmus* sp.

Elm

URTICACEAE**Urtica urens*

Small Nettle

Appendix 3
Plant Survey Sheets for the Study Area

Survey Sheet - Vegetation Plot		Plot Size: 20m x 20m Kevin Mills & Associates	
Site Name: North Bungendore		Plot No. NBUN01	Photo: yes
Location: Paddock 1 (far west).			Recorder: Kevin Mills
Date: 07.11.10	Community: Native pasture.		
GPS(centre): 55 0722667 6097564 (WGS84)		Soil: Clayey and sandy.	
Land Tenure: Freehold	Alt: 705 m	Geology: Old alluvium.	
Slope: Gentle.	Aspect: South.	Topography: Lower slope.	
Species Cover: 1:<5% (uncommon); 2:<5% (common), 3:5-25%; 4:25-50%; 5:50-75%; 6:75-100%.			
Natives		Exotics	
<i>Austrostipa scabra</i>	6	<i>Acetosella vulgaris</i>	4
<i>Crassula sieberiana</i>	3	<i>Avena</i> sp.	1
<i>Oxalis radicata</i>	1	<i>Bromus hordeaceus</i>	2
<i>Panicum effusum</i>	1	<i>Chondrilla juncea</i>	2
		<i>Dactylis glomerata</i>	2
		<i>Hirschfeldia incana</i>	1
		<i>Hypocheiros radicata</i>	2
		<i>Lepidium</i> sp.	1
		<i>Onopordium acanthium</i>	2
		<i>Paronychia brasiliensis</i>	2
		<i>Pentaschistis airoides</i>	3
		<i>Poa bulbosa</i>	1
		<i>Spergularia rubra</i>	1
		<i>Trifolium arvense</i>	2
		<i>Trifolium glomeratum</i>	3
		<i>Vulpia myuros</i>	5
Site quality score	0		
No. species	4	No. species	16
Cover	70%	Cover	90%



Photo of Plot NBUN01

Site dominated by Speragrass *Austrostipa scabra*, with very few other species.



Photo of Plot NBUN02

Site dominated by Speragrass *Austrostipa bigeniculata*; other natives are quite uncommon.

Survey Sheet - Vegetation Plot		Plot Size: 20m x 20m		Kevin Mills & Associates	
Site Name: North Bungendore			Plot No. NBUN02		Photo: yes
Location: Paddock 2 (central west).				Recorder: Kevin Mills	
Date: 07.11.10	Community: Native grassland				
GPS(centre): 55 0722988 6097622 (WGS84)			Soil: Clayey, gravelly.		
Land Tenure: Freehold		Alt: 730 m		Geology: Ordovician metasediments.	
Slope: Moderate.		Aspect: West.		Topography: Upper slope.	
Species Cover: 1:<5% (uncommon); 2:<5% (common), 3:5-25%; 4:25-50%; 5:50-75%; 6:75-100%.					
Natives			Exotics		
Austrodanthonia setacea		1	Acetosella vulgaris		1
Austrostipa bigeniculata		6	Bromus hordeaceus		1
Austrostipa scabra		3	Carthamus lanatus		1
Convolvulus erubescens		1	Conyza sp.		1
Euchiton spaericus		1	Dactylis glomerata		3
Oxalis radicata		1	Gamochaeta calviceps		1
Pancum effusum		1	Hypocheiros radicata		2
Rumex brownii		1	Nassella neesiana		1
			Pentaschistis airoides		1
			Phalaris sp.		1
			Poa bulbosa		1
			Sonchus asper		1
			Trifolium arvense		1
			Trifolium glomeratum		3
			Vulpia myuros		3
Site quality score		0			
No. species		8	No. species		15
Cover		95%	Cover		20%

Survey Sheet - Vegetation Plot		Plot Size: 20m x 20m		Kevin Mills & Associates	
Site Name: North Bungendore			Plot No. NBUN03		Photo: yes
Location: Paddock 2 (south central).				Recorder: Kevin Mills	
Date: 07.11.10	Community: Native pasture				
GPS(centre): 55 0723151 6097451 (WGS84)			Soil: Clayey and sandy.		
Land Tenure: Freehold		Alt: 715 m		Geology: Ordovician metasediments.	
Slope: Moderate.		Aspect: Southwest		Topography: Mid-slope.	
Species Cover: 1:<5% (uncommon); 2:<5% (common), 3:5-25%; 4:25-50%; 5:50-75%; 6:75-100%.					
Natives			Exotics		
Austrodanthonia carphoides		1	Acetosella vulgaris		1
Austrodanthonia racemosa		1	Arctotheca calendula		1
Austrostipa bigeniculata		6	Bromus hordeaceus		1
Austrostipa scabra		2	Carthamus lanatus		2
Convolvulus erubescens		1	Conyza sp.		1
Euchiton spaericus		1	Gamochaeta americana		1
Lomandra filiformis		1	Dactylis glomerata		3
Oxalis radicata		2	Hypocheiros radicata		1
			Lolium sp.		1
			Phalaris sp.		3
			Sonchus asper		1
			Trifolium arvense		1
			Trifolium glomeratum		3
			Vulpia myuros		4
			Pentaschistis airoides		2
Site quality score		1			
No. species		8	No. species		15
Cover		95%	Cover		50%



Photo of Plot NBUN03

Site dominated by Speragrasses, *Austrostipa bigeniculata* and *Austrostipa scabra*; few other natives are present.



Photo of Plot NBUN04

Relatively diverse native grassland.

Survey Sheet - Vegetation Plot		Plot Size: 20m x 20m Kevin Mills & Associates	
Site Name: North Bungendore		Plot No. NBUN04	Photo: yes
Location: Paddock 3 (south central).			Recorder: Kevin Mills
Date: 07.11.10	Community: Native grassland		
GPS(centre): 55 0723877 6097207 (WGS84)		Soil: Clayey.	
Land Tenure: Freehold	Alt: 740 m	Geology: Ordovician metasediments.	
Slope: Moderate.	Aspect: South	Topography: Upper slope.	
Species Cover: 1:<5% (uncommon); 2:<5% (common), 3:5-25%; 4:25-50%; 5:50-75%; 6:75-100%.			
Natives		Exotics	
<i>Acaena ovina</i>	1	<i>Aira elegantissima</i>	2
<i>Asperula conferta</i>	1	<i>Briza minor</i>	2
<i>Austrostipa bigeniculata</i>	3	<i>Bromus hordeaceus</i>	3
<i>Austrostipa scabra</i>	2	<i>Centaureum erythraea</i>	2
<i>Bothriochloa macra</i>	1	<i>Cirsium vulgare</i>	1
<i>Calocephalus citreus</i>	1	<i>Conyza</i> sp.	1
<i>Chrysocephalum apiculatum</i>	4	<i>Gamochaeta americana</i>	1
<i>Convolvulus erubescens</i>	2	<i>Hypocheiros radicata</i>	2
<i>Crassula sieberiana</i>	2	<i>Lepidium</i> sp.	1
<i>Cymbonotus lawsonianus</i>	1	<i>Nassella neesiana</i>	2
<i>Cynoglossum suaveolens</i>	1	<i>Parentucellia latifolia</i>	2
<i>Desmodium varians</i>	1	<i>Pentaschistis airoides</i>	1
<i>Dichondra repens</i>	2	<i>Poa bulbosa</i>	1
<i>Dichopogon fimbriatus</i>	1	<i>Sonchus asper</i>	1
<i>Elymus scaber</i>	1	<i>Trifolium arvense</i>	1
<i>Euchiton spaericus</i>	1	<i>Trifolium campestre</i>	1
<i>Glycine tabacina</i>	1	<i>Trifolium glomeratum</i>	3
<i>Hypericum gramineum</i>	1	<i>Trifolium subterranean</i>	1
<i>Leptorhynchos squamatus</i>	1	<i>Vulpia myuros</i>	5
<i>Lomandra filiformis</i>	1		
<i>Lomandra multiflora</i>	1		
<i>Lythrum hyssopifolia</i>	1		
<i>Microtis unifolia</i>	1		
<i>Oxalis radicata</i>	1		
<i>Pancum effusum</i>	2		
<i>Plantago varia</i>	1		
<i>Poa sieberiana</i>	1		
<i>Rumex brownii</i>	1		
<i>Solenogyne dominii</i>	2		
<i>Themeda australis</i>	1		
<i>Vittadinia cuneata</i>	1		
<i>Vittadinia muelleri</i>	1		
<i>Wahlenbergia communis</i>	1		
<i>Wahlenbergia luteola</i>	1		
Site quality score	16		
No. species	34	No. species	19
Cover	70%	Cover	70%

Survey Sheet - Vegetation Plot		Plot Size: 20m x 20m Kevin Mills & Associates	
Site Name: North Bungendore		Plot No. NBUN05	Photo: yes
Location: Paddock 3 (extreme east).			Recorder: Kevin Mills
Date: 07.11.10	Community: Native grassland		
GPS(centre): 55 0724429 6097291 (WGS84)		Soil: Clayey.	
Land Tenure: Freehold	Alt: 710 m	Geology: Ordovician metasediments.	
Slope: Gentle.	Aspect: Southwest	Topography: Mid-slope.	
Species Cover: 1:<5% (uncommon); 2:<5% (common), 3:5-25%; 4:25-50%; 5:50-75%; 6:75-100%.			
Natives		Exotics	
<i>Asperula conferta</i>	1	<i>Bromus hordeaceus</i>	1
<i>Austrodanthonia racemosa</i>	1	<i>Acetosella vulgaris</i>	1
<i>Austrodanthonia carphoides</i>	3	<i>Cirsium vulgare</i>	1
<i>Austrostipa bigeniculata</i>	3	<i>Crataegus monogyna</i>	1
<i>Austrostipa scabra</i>	3	<i>Carthamus lanatus</i>	1
<i>Bothriochloa macra</i>	1	<i>Erodium cicutarium</i>	1
<i>Calocephalus citreus</i>	2	<i>Hypocheiros radicata</i>	1
<i>Chrysocephalum apiculatum</i>	4	<i>Nassella neesiana</i>	4
<i>Convolvulus erubescens</i>	2	<i>Onopordium acanthium</i>	1
<i>Desmodium varians</i>	1	<i>Petrorhagia nanteuillii</i>	1
<i>Dichopogon fimbriatus</i>	1	<i>Sonchus aspera</i>	1
<i>Elymus scaber</i>	1	<i>Trifolium arvense</i>	1
<i>Enneapogon nigricans</i>	1	<i>Trifolium glomeratum</i>	1
<i>Leptorhynchos squamatus</i>	1	<i>Vulpia myuros</i>	3
<i>Lomandra filiformis</i>	1		
<i>Oxalis radicata</i>	1		
<i>Pancum effusum</i>	1		
<i>Pimelea curviflora</i>	1		
<i>Plantago varia</i>	2		
<i>Poa sieberiana</i>	1		
<i>Rumex brownii</i>	1		
<i>Solenogyne dominii</i>	1		
<i>Themeda australis</i>	1		
<i>Velliea paradoxa</i>	1		
<i>Wahlenbergia luteola</i>	1		
Site quality score	10		
No. species	25	No. species	14
Cover	90%	Cover	50%



Photo of Plot NBUN05

Relatively diverse native grassland;
the reddish grass is the noxious Chilean Needle Grass *Nassella neesiana*.



Photo of Plot NBUN06

Site dominated by Speargrass *Austrostipa bigeniculata*,
with a relatively high native species component.

Survey Sheet - Vegetation Plot		Plot Size: 20m x 20m Kevin Mills & Associates	
Site Name: North Bungendore master		Plot No. NBUN06	Photo: yes
Location: Paddock 4 (high ridge).			Recorder: Kevin Mills
Date: 07.11.10	Community: Native pasture.		
GPS(centre): 55 0723544 6097099 (WGS84)		Soil: Clayey.	
Land Tenure: Freehold	Alt: 725 m	Geology: Ordovician metasediments.	
Slope: Flat.	Aspect: North	Topography: Ridge crest.	
Species Cover: 1:<5% (uncommon); 2:<5% (common), 3:5-25%; 4:25-50%; 5:50-75%; 6:75-100%.			
Natives		Exotics	
<i>Alternanthera sp. A</i>	1	<i>Aira elegantissima</i>	1
<i>Austrodanthonia carphoides</i>	1	<i>Avena sp.</i>	1
<i>Austrostipa bigeniculata</i>	6	<i>Acetosella vulgaris</i>	3
<i>Austrostipa scabra</i>	3	<i>Bromus hordeaceus</i>	1
<i>Calocephalus citreus</i>	1	<i>Carthamus lanatus</i>	2
<i>Chrysocephalum apiculatum</i>	2	<i>Centaurium erythraea</i>	1
<i>Convolvulus erubescens</i>	1	<i>Chondrilla juncea</i>	1
<i>Crassula sieberiana</i>	1	<i>Cirsium vulgare</i>	1
<i>Desmodium varians</i>	1	<i>Conyza sp.</i>	2
<i>Dichondra repens</i>	1	<i>Gamochaeta americana</i>	1
<i>Elymus scaber</i>	1	<i>Gamochaeta calviceps</i>	1
<i>Euchiton sphaericum</i>	1	<i>Hirschfeldia incana</i>	1
<i>Glycine tabacina</i>	1	<i>Hordeum sp.</i>	1
<i>Goodenia pinnatifida</i>	1	<i>Hypocheiros radicata</i>	2
<i>Lomandra ? bracteata</i>	1	<i>Lactuca serriola</i>	1
<i>Oxalis radicata</i>	2	<i>Lolium sp.</i>	2
<i>Pancum effusum</i>	2	<i>Nassella neesiana</i>	1
<i>Plantago varia</i>	1	<i>Onopordium acanthium</i>	1
<i>Pseudognaphalium luteoalbum</i>	1	<i>Paronychia brasiliensis</i>	1
<i>Rumex brownii</i>	1	<i>Pentaschistis airoides</i>	1
<i>Senecio quadridentaus</i>	1	<i>Petrorhagia nanteuillii</i>	1
<i>Solenogyne dominii</i>	1	<i>Phalaris sp.</i>	1
<i>Tricoryne elatior</i>	1	<i>Poa bulbosa</i>	1
<i>Wahlenbergia communis</i>	1	<i>Polygonum aviculare</i>	1
<i>Wahlenbergia gracilis</i>	2	<i>Sonchus aspera</i>	1
<i>Wahlenbergia luteola</i>	1	<i>Trifolium arvense</i>	1
		<i>Trifolium glomeratum</i>	1
		<i>Triticum aestivum</i>	1
		<i>Vulpia myuros</i>	3
Site quality score	13		
No. species	26	No. species	29
Cover	100%	Cover	40%

Appendix 4

Control Classes for Noxious Weed Species

(1) The following weed control classes may be applied to a plant by a weed control order:

- (a) Class 1, State Prohibited Weeds,
- (b) Class 2, Regionally Prohibited Weeds,
- (c) Class 3, Regionally Controlled Weeds,
- (d) Class 4, Locally Controlled Weeds,
- (e) Class 5, Restricted Plants.

(2) The characteristics of each class are as follows:

(a) Class 1 noxious weeds are plants that pose a potentially serious threat to primary production or the environment and are not present in the State or are present only to a limited extent.

(b) Class 2 noxious weeds are plants that pose a potentially serious threat to primary production or the environment of a region to which the order applies and are not present in the region or are present only to a limited extent.

(c) Class 3 noxious weeds are plants that pose a serious threat to primary production or the environment of an area to which the order applies, are not widely distributed in the area and are likely to spread in the area or to another area.

(d) Class 4 noxious weeds are plants that pose a threat to primary production, the environment or human health, are widely distributed in an area to which the order applies and are likely to spread in the area or to another area.

(e) Class 5 noxious weeds are plants that are likely, by their sale or the sale of their seeds or movement within the State or an area of the State, to spread in the State or outside the State.

(3) A noxious weed that is classified as a Class 1, 2 or 5 noxious weed is referred to in this Act as a *notifiable weed*.

(4) Legal Requirements

Class 1. The plant must be eradicated from the land and the land must be kept free of the plant.

Class 2. The plant must be eradicated from the land and the land must be kept free of the plant.

Class 3. The plant must be fully and continuously suppressed and destroyed.

Class 4. The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority.

Class 4*. The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority and the plant may not be sold, propagated or knowingly distributed.

Class 5. The requirements in the *Noxious Weeds Act* for a notifiable weed must be complied with.

APPENDIX 5

List of Animal Species for the Bungendore Study Area

Group/Species		1 ¹	2 ²
Mammals			
Brown Hare*	<i>Lepus capensis</i>	1	
Domestic Sheep*	<i>Ovis aries</i>		2
European Rabbit*	<i>Oryctolagus cuniculus</i>		2
Eastern Grey Kangaroo	<i>Macropus giganteus</i>	1	2
Birds			
Australasian Grebe	<i>Tachybaptus novaehollandiae</i>	1	
Australian Magpie	<i>Gymnorhina tibicen</i>	1	2
Australian Raven	<i>Corvus coronoides</i>	1	2
Australian White Ibis	<i>Threskiornis molucca</i>	1	2
Australian Wood Duck	<i>Chenonetta jubata</i>	1	2
Black-shouldered Kite	<i>Elanus axillaris</i>	1	
Brown Falcon	<i>Falco berigora</i>	1	
Brown Songlark	<i>Cincloramphus cruralis</i>	1	
Brown Thornbill	<i>Acanthiza pusilla</i>		2
Chestnut Teal	<i>Anas castanea</i>	1	
Common Blackbird*	<i>Turdus merula</i>	1	2
Common Starling*	<i>Sturnus vulgaris</i>	1	2
Crested Pigeon	<i>Ocyphaps lophotes</i>	1	2
Crimson Rosella	<i>Platycercus elegans</i>	1	
European Goldfinch*	<i>Carduelis carduelis</i>	1	
Galah	<i>Cacatua roseicapilla</i>	1	2
Golden-headed Cisticola	<i>Cisticola exilis</i>	1	
Grey Currawong	<i>Strepera versicolor</i>	1	
Grey Fantail	<i>Rhipidura fuliginosa</i>		2
Grey Shrike-thrush	<i>Colluricincla harmonica</i>	1	
Grey Teal	<i>Anas gracilis</i>	1	
Hardhead	<i>Aythya australis</i>	1	
House Sparrow*	<i>Passer domesticus</i>	1	2
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>	1	
Little Pied Cormorant	<i>Phalacrocorax melanoleucos</i>	1	
Magpie-lark	<i>Grallina cyanoleuca</i>	1	2
Nankeen Kestrel	<i>Falco cenchroides</i>		2
Pacific Black Duck	<i>Anas superciliosa</i>	1	
Pallid Cuckoo	<i>Cuculus pallidus</i>	1	
Pied Currawong	<i>Strepera graculina</i>	1	2
Red Wattlebird	<i>Anthochaera carunculata</i>	1	2
Red-rumped Parrot	<i>Psephotus haematonotus</i>		2
Richard's Pipit	<i>Anthus novaeseelandiae</i>	1	2
Silvereye	<i>Zosterops lateralis</i>	1	
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	1	2
Superb Fairy-wren	<i>Malurus cyaneus</i>	1	2
Welcome Swallow	<i>Hirundo neoxena</i>	1	2

White-faced Heron	<i>Egretta novaehollandiae</i>	1	
White-throated Needletail	<i>Hirundapus caudacutus</i>	1	
White-winged Chough	<i>Corcorax melanorhamphos</i>	1	
Willie Wagtail	<i>Rhipidura leucophrys</i>	1	2
Yellow Thornbill	<i>Acanthiza nana</i>		2
Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>	1	2

Reptiles

Three-toed Skink	<i>Hemiergis decresiensis</i>	1	
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Frogs

Spotted Grass Frog	<i>Limnodynastes tasmaniensis</i>		2
Froglet	<i>Crinia parinsignifera</i>		2

* Introduced species.

1. Recorded previously on and near the study area (Kevin Mills & Associates 2002; 2004)
2. Recorded on and near the study area in December 2010.