Vegetation Survey and Mapping: Gundabooka National Park and State Conservation Area

NPWS / DPIE

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Template 2.8.1

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Abbreviations

Abbreviation	Description
ANOSIM	Analysis of Similarity
API	Aerial Photo Interpretation
ASC	Australian Soil Classification
BAM	Biodiversity Assessment Method
BCACT	NSW Biodiversity Conservation Act 2016
BOM	Bureau of Meterology
CASA	Civil Aviation Safety Authority
DECC	NSW Department of Environment and Conservation (former)
DEM	Digital Elevation Model

Abbreviation	Description
DMR	Department of Mineral Resources
DPI	NSW Department of Primary Industries
DPIE	NSW Department of Industry and Environment
EEC	Endangered Ecological Community
ELA	Eco Logical Australia
EPBC	Federal *Environment Protection and Biodiversity Conservation Act 1999*
GIS	Geographic Information System
IBRA	Interim Biogeographic Regionalisation for Australia
LGA	Local Government Area
LLS	Local Land Service
LMZ	Land Management Zone
NPWS	NSW National Parks and Wildlife Service
NSW	New South Wales
OEH	NSW Office of Environment and Heritage (former)
PCT	Plant Community Type
RDP	Rapid Data Point
RFS	Rural Fire Service
ROTAP	Rare or Threatened Australian Plants
SFAZ	Strategic Fire Advantage Zones
TEC	Threatened Ecological Community
VIS	Vegetation Information System

Executive Summary

Eco Logical Australia was commissioned by the NSW Parks and Wildlife Service and the NSW Department of Planning, Industry and Environment to undertake vegetation survey, analysis and mapping of Gundabooka National Park and State Conservation Area.

Gundabooka National Park and State Conservation Area is of special significance to the Aboriginal people of western NSW and is the traditional lands of the Ngemba and Paakandji people who have strong cultural links to the area. The Gundabooka Range was a vital resource for Aboriginal people during dry periods, with creeks in the range being one of the few locations on the Cobar Peneplain that provide water during times of drought.

Gundabooka National Park and State Conservation Area are located in north western New South Wales 50 km south west of Bourke and just south of the Darling River, covering an area of 90,473 hectares within the Cobar Peneplain and Darling Riverine Plains bioregions. Prior to gazettal in 1996, Gundabooka National Park consisted of three pastoral stations: Belah, Ben Lomond and Mulgowan Stations. In 2006 the nearby Yanda Station was gazetted and became the Gundabooka State Conservation Area.

This project reviews and expands upon existing data and mapping and aligns vegetation communities with the current state-wide Plant Community Type classification through the collection of strategic data on floristic and structural diversity.

Existing vegetation surveys and mapping were reviewed and supplemented with over 240 rapid data points. Vegetation community mapping was undertaken at a scale of between 1:5,000 and 1:25,000 using a range of datasets. Development of vegetation community linework and attribution of Plant Community Types was undertaken in three dimensions using high resolution stereo ADS40 imagery. The final mapped product is considered accurate at a 1:25,000 scale.

A total of 410 species from 76 plant families were recorded, of which 8% were exotic (one being a priority weed). Four threatened plant species are now known to occur, with new localities identified for *Pterostylis cobarensis* and *Lepidium monoplocoides*.

A total of 35 unique vegetation communities (totalling 89,210 hectares) were mapped and described. These 35 vegetation communities are equivalent to 25 Plant Community Types. The vast majority of vegetation falls within the Semi-Arid Woodlands and Arid Shrublands Vegetation Formations. One Threatened Ecological Community, namely *Coolibah-Black Box Woodland* was mapped across three Plant Community Types on the floodplains of the Darling River.

A range of management considerations are discussed including: grazing pressure from feral animals; erosion and loss of topsoil; inappropriate fire regimes; priority and environmental weeds; historical clearing and land degradation; and extensive Eucalypt dieback.

The following recommendations have been developed:

- Conduct detailed research into the fire ecology of each PCT including recent and likely historic fire regimes as well as sensitive species to better inform fire management requirements.

- Review and update relevant fire management plans taking into consideration the minimum fire intervals, mosaic cultural burning practises, the adequacy of existing trail networks, management of fire in long unburnt shrublands and woodlands and consideration of impacts to conservation significant species.
- Control priority and environmental weeds.
- Control feral animals including goats, rabbits and pigs.
- Undertake erosion control works in identified areas to mitigate against continual erosion and landscape degradation.
- Undertake an investigation into Eucalypt dieback to ascertain root causes and potential controls which could be implemented to ensure positive ecosystem recovery.
- Undertake restoration works in areas disturbed as a result of historical agricultural practices (e.g. holding yards)
- Establish a biodiversity monitoring program to measure change as a result of positive environmental actions being undertaken in the reserve (e.g. weed and feral control, erosion control works, cultural burning) as well as any adverse effects of climate change (increase fire risk, less frequent rainfall, increased storms, less frequent flooding in riparian zones etc.)
- Undertake spring surveys for rare and threatened species including orchids in areas of suitable habitat.

1. Introduction

Eco Logical Australia (ELA) was commissioned by the NSW Parks and Wildlife Service (NPWS) and the NSW Department of Planning, Industry and Environment (DPIE) to undertake vegetation survey, analysis and mapping of Gundabooka National Park and State Conservation Area (the reserve).

This project seeks to review and expand upon existing data and mapping and align vegetation communities with the current state-wide Plant Community Type (PCT) classification through the collection of strategic data on floristic and structural diversity.

The reserve is located in north western New South Wales (NSW) 50 km south west of Bourke and just south of the Darling River (Figure 1). The reserve covers an area of 90,473 hectares (ha) and is contained within the Cobar Peneplain and Darling Riverine Plains Interim Biogeographic Regionalisation for Australia (IBRA) regions (Figure 1).

Information developed as part of this project will be used in park planning, operations and environmental assessments. It provides a basis for managing species of conservation significance, preparation of weed control strategies, plans of management and rehabilitation plans, as well as developing appropriate fire management strategies for the protection of life and property on and surrounding the reserve.

1.1 Background

The reserve includes Gundabooka National Park and Gundabooka State Conservation Area. Prior to gazettal in 1996 Gundabooka National Park consisted of three pastoral stations: Belah, Ben Lomond and Mulgowan Stations (Westbrook, et al., 2005). In 2006 the nearby Yanda Station was gazetted and became the Gundabooka State Conservation Area (NPWS, 2005). The reserve sits within the Western Local Land Service (LLS) area, which conforms to the Bourke Shire Council Local Government Area (LGA).

The reserve is of special significance to the Aboriginal people of western NSW and is the traditional lands of the Ngemba and Paakandji people who have strong cultural links to the area (NPWS, 2005). The Gundabooka Range was a vital resource for Aboriginal people during dry periods, with creeks in the range being one of the few locations on the Cobar Peneplain that provide water during times of drought (NPWS, 2005). The Gundabooka Range and adjoining Yanda Creek were used as part of an extensive travel network linking the mountain with creeks, waterholes and the Darling River (NPWS, 2005). Important physical archaeological evidence in the form of art sites, stone quarries, open camp sites and scarred trees survives in the reserve, with important rock art sites listed on the Register of the National Estate (NPWS, 2005).

Aboriginal people were displaced by European settlers who grazed the reserve as part of four separate pastoral leases ‘Ben Lomond’, ‘Belah’, ‘Mulgowan’ and ‘Yanda’. These leases were subdivisions of larger leases which date from the early 1900s, with grazing of sheep and cattle being the main land use since the mid-19th century (NPWS, 2005). Since the gazettal of Gundabooka National Park (comprising the former pastoral leases ‘Ben Lomond’ and ‘Belah’) in 1996, the reserve was expanded to include the former pastoral lease ‘Mulgowan’ in 2002. More recently Gundabooka State Conservation Area (comprising the former pastoral lease ‘Yanda’) was gazetted in 2005.

A major feature of the reserve is the Gunderbooka Range (500 m) that dramatically rises from the southern end of the reserve and is strikingly contrasted against the flat riverine plains found in the rest of the reserve (120-140 m). Within the reserve are four ephemeral creeks (Yanda, Gundabooka, Mulareenya and Ben Lomond Gorge) that flow following major rainfall events (Westbrook, et al., 2005).

Vegetation surveys and mapping have previously been undertaken across the reserve on behalf of the NSW NPWS in 2005 (Westbrook, et al., 2005). Prior to these surveys little botanical data for the reserve existed. Twenty-one vegetation communities were identified and mapped, the most widespread being *Eucalyptus populnea*/*Acacia aneura/Acacia excelsa* open woodland and *Acacia aneura* tall shrubland (Westbrook, et al., 2005). A full list of the vegetation communities described by Westbrook et al. (2005) is located in Appendix A.

A State Vegetation Type Map for the Western Region in NSW was produced by DPIE in 2019 at a scale of 1:25,000 using the best available imagery, site survey records and environmental information (DPIE, 2019). Thirty eight PCTs were identified in the reserve, the most widespread being 'Poplar Box – Mulga – Ironwood woodland on red loam soils on plains in the Cobar Peneplain Bioregion and north-eastern Mulga Lands Bioregion' (PCT 109: 55,149 ha) and 'Mulga – Ironwood shrubland on loams and clays mainly of the Cobar Peneplain Bioregion' (PCT 125: 15,951 ha). A full list of the PCTs mapped within the reserve is located in Appendix B.

Westbrook, et al. (2005) reported that there has been a loss of perennial tussock grasses in the reserve due to its pastoral history and increased grazing by introduced and native herbivores. The reserve is isolated from other protected areas and is largely surrounded by pastoral lands. Three species of conservation significance have been recorded in the reserve prior to this survey, including *Acacia curranii*, *Pterostylis cobarensis* and *Oldenlandia galioides*.

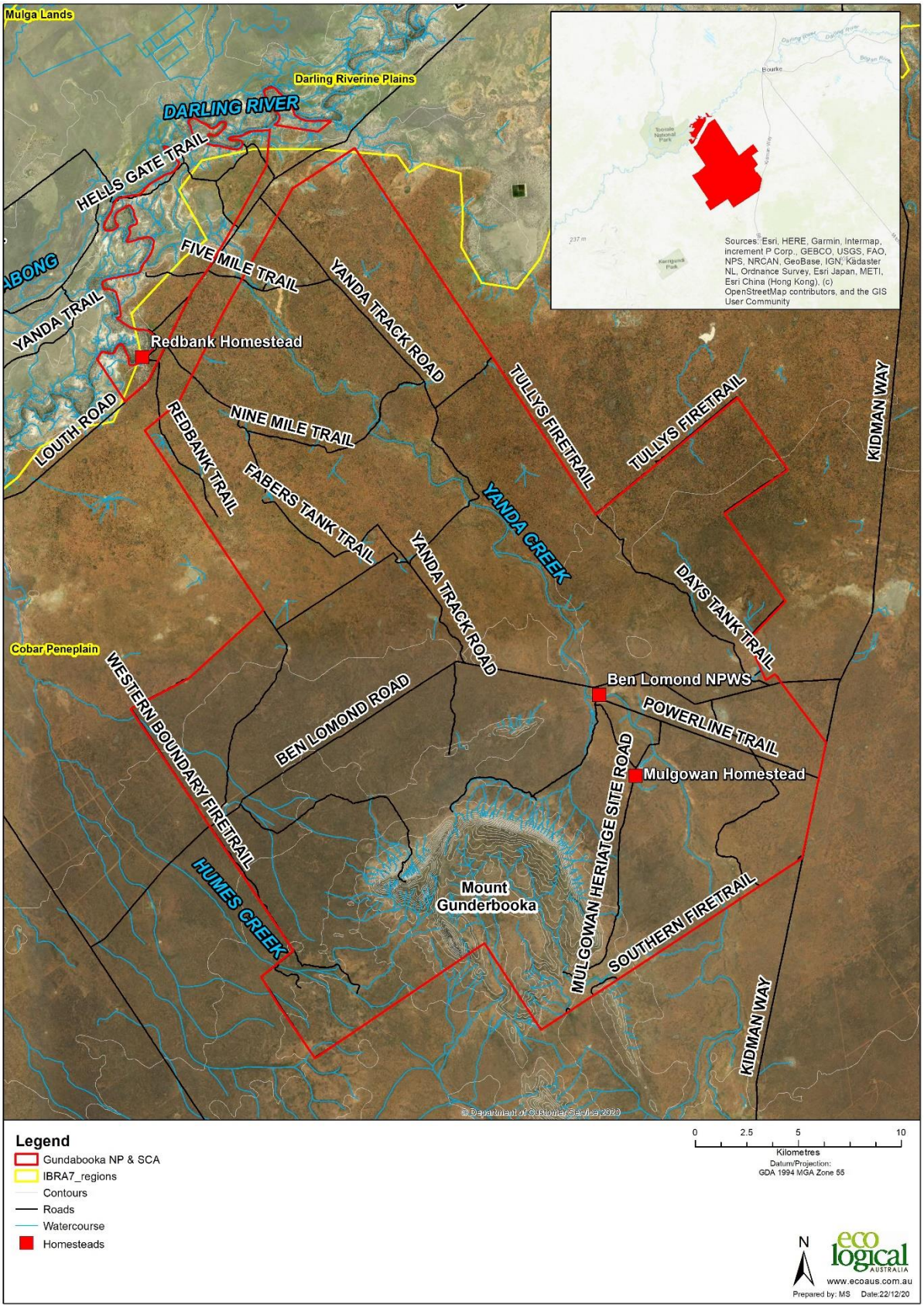

Figure 1: Locality

1.2 Climate

The reserve is primarily comprised of the Cobar Peneplain Bioregion with a small portion of the northern end of the site falling within the Darling Riverine Plains Bioregion (Figure 1). The Cobar Peneplain Bioregion lies in central NSW west of the Great Dividing Range and extends from south of Bourke to north of Griffith (DPIE, 2016a). This bioregion is characterised by a persistently dry semi-arid climate. The Darling Riverine Plains Bioregion occurs in northern NSW and Qld, from just north of the Qld border to north west of Trundle, NSW (DPIE, 2016b). The bioregion then extends south west from Bourke as a corridor along the Darling River and is characterised by a semi-arid, hot and persistently dry climate.

The nearest Bureau of Meteorology (BOM) weather station at Bourke (Bourke Airport), at an elevation of 107 m, has recorded an annual mean maximum temperature of 28.3 °C, mean minimum temperature of 13.5 °C and mean annual rainfall of 295.3 mm (BOM, 2020).

1.3 Geology and soil landscapes

Mount Gunderbooka is an outcrop of Devonian sandstone and is located at the junction of two large geological zones, the Girilambone Anticlinorial Zone and the Great Artesian Basin. The Gunderbooka range is an example of an isolated syncline that formed as a result of tectonic movements over millions of years (NPWS, 2005). Geology of the reserve is shown on Figure 2 with detailed descriptions of units provided in Appendix C.

The geology of the reserve spans 480 million years from the Ordovician period in the Palaeozoic era right through to the present. The vast majority of sediments (>80% of the reserve) are of recent Quaternary origin.

The south of the reserve is characterised by Mount Gunderbooka (unit Dm) which consists of quartzose sandstone of Devonian age with oligomictic quartz pebble conglomerate and gravel bands; infrequent thin intervals of siltstone, mudstone or shale (DMR, 2005). Surrounding Mount Gunderbooka are residual sandy eluvial soils and veneers of residual and colluvial lithic waste (unit Qr) of more recent quaternary age (DMR, 2005). The eluvial soils are surrounded by a broad band of quaternary alluvial deposits (unit Qa) with extensive undifferentiated areas of colluvium: silt, clayey sand, deep neutral red earths, frequent hardpan and occasional polymictic gravel (DMR, 2005). Of particular interest in the south is Little Mountain which is of Ordovician age (unit Ogm) consisting of sandstone, pebbly sandstone, polymictic conglomerate and minor shale (DMR, 2005). Metasediments also Odovician age (unit Og) consisting of quartzose and quartz-lithic sandstone, pelite and chert occur principally west of Little Mountain with small outliers to the east and northeast (DMR, 2005). Metamorphism, generally more severe in the east, has converted the clastic rocks to psammitic (DMR, 2005). In the extreme southeast there is moderate sized areas of undifferentiated concealing granite (unit Cz/Pzg) of Silurian age.

In the north, the reserve is dominated by deep red acid to calcareous loamy to sandy soil of quaternary age (unit Qd) which has formed undulating sand plains with abundant small internal drainage areas (DMR, 2005). Of interest enclosed within the sandplains are numerous claypans of quaternary age (unit Qcp) consisting of red, yellow or dark-grey clay (DMR, 2005). Recent quaternary riverine floodplain sediments (unit Qrs) consisting of pink, grey and black clayey silt and mud with minor loamy sand occur along Yanda Creek which traverses the reserve from the southeast to the north west (DMR, 2005). These

sediments also occur along the floodplain of the Darling River in the north. Small areas of other units of varying lithology and geological age including limestone also occur in the reserve.

Soil landscapes of the reserve have been mapped at 1:250,000 and 1:500,000 scale and assigned an appropriate Australian Soil Classification (ASC) class by DPIE (2020b). Soil and landscape data are limited in the western region of NSW and so ASC mapping should be used as a guide only. Soil landscapes of the reserve are shown on Figure 3.

The reserve features four different ASC orders: Kandosols (lacking strong texture contrast and defined horizons), Calcarosols (calcareous throughout the profile), Rudosols and Tenosols (young soils with weak pedologic organisation) and Vertosols (clay soils) (Isbell, 2016). Kandosols are the most widespread order in the reserve, broadly representing the sand plains in the northern half, with outliers in the southeast and central west. Calcarosols are second most dominant, being associated with Quaternary alluvium surrounding Mount Gunderbooka to the north and east, along Yanda Creek and other older more elevated parts of the Darling River floodplain. Rudosols and Tenosols are largely confined to Mount Gunderbooka, Little Mountain and surrounding areas to the northwest, whilst Vertosols are restricted to the active floodplain of the Darling River.

1.4 NSW Landscapes

NSW Landscapes are a system of ecosystem classification mapped at the 1:250,000 scale, based on a combination of soils, topography and vegetation (DECC, 2008). NSW Landscapes are used in regional conservation planning in NSW and form a basis for the threatened component of the Biodiversity Assessment Methodology (BAM) under the NSW *Biodiversity Conservation Act 2016* (BC Act). Six Mitchell Landscapes have been mapped within the reserve (Figure 4, Table 1).

Cobar Plains is the most extensive unit mapped covering more than 58,000 hectares, or 64% of the reserve. The Cobar Plains unit includes both colluvial and alluvial plains, small areas of low stony rises and poorly defined drainage lines with occasional larger swamps (DECC, 2008). Soils are moderate to deep red earths and gravels (DECC, 2008). Vegetation is dominated by *Acacia aneura* (Mulga), with *Eucalyptus intertexta* (Red Box), *Eucalyptus populnea* (Poplar Box), *Acacia excelsa* (Ironwood) and a variety of native shrubs and grasses with wetland plants in swamps (DECC, 2008). Cobar Plains are dissected by the Cobar Incised Streams landscape which include major drainage lines flowing west to the Darling River. Streams are characterised by shrubby and grassy woodlands dominated by *Eucalyptus populnea* (Poplar Box).

Cobar Downs represents the second dominant unit covering more than 12,000 hectares, or 13% of the reserve. The Cobar Downs unit is characterised by slightly undulating rounded ridges and a variety of Ordovician and Silurian sedimentary and metamorphic rocks (DECC, 2008). General relief is greater than Cobar Plains (10-20m), with more well-defined drainage lines (DECC, 2008). Soils are typically shallow, gravelly loams, or ferruginous clays on ridges which grade into deeper acid and neutral red earths down slope and calcareous red earths in drainage lines (DECC, 2008). Vegetation is generally similar to Cobar Plains where soils are similar, with the notable exception of *Acacia aneura* (Mulga) and *Casuarina pauper* (Black Oak) on shallow soils on crests.

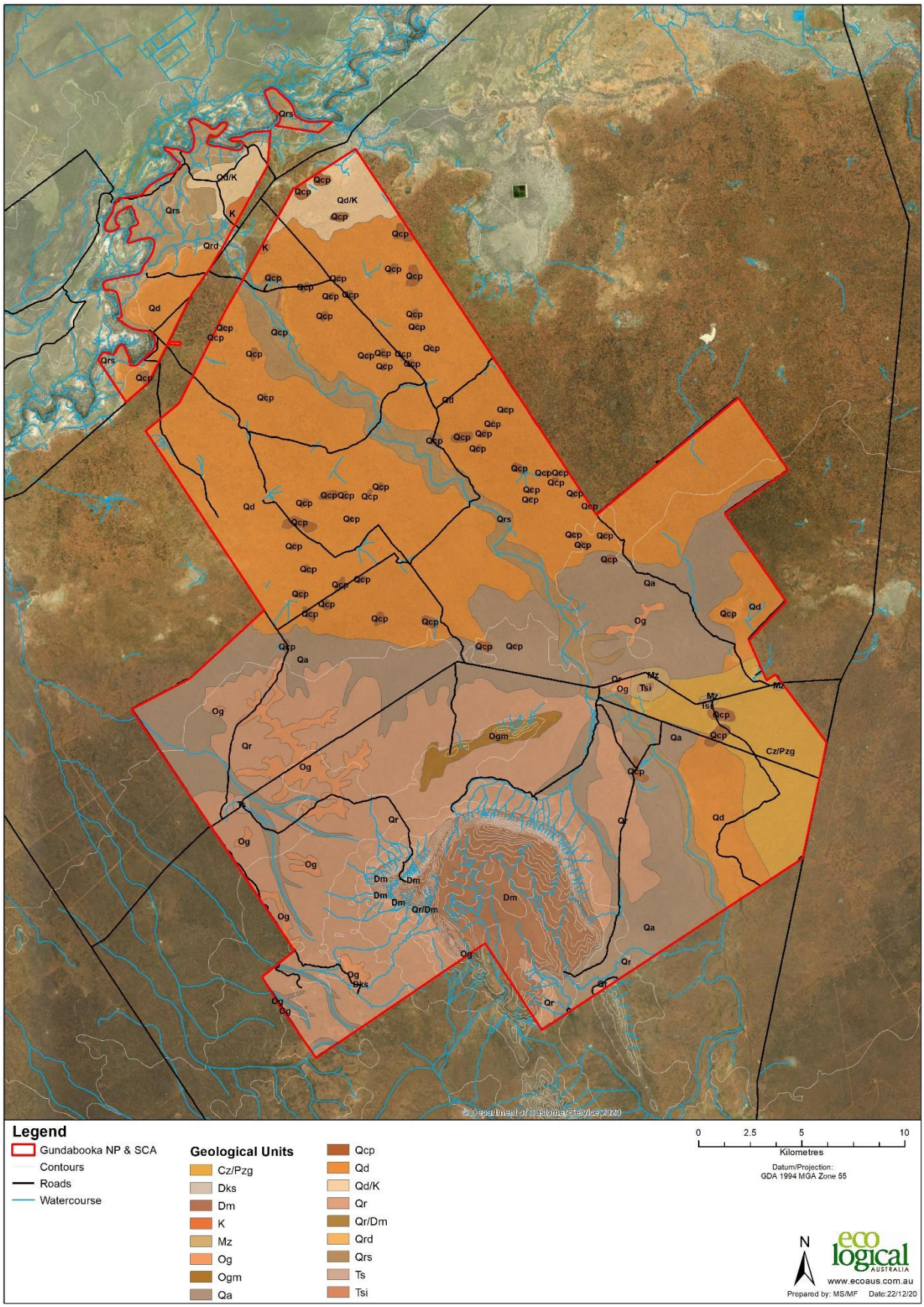

Figure 2: Geology

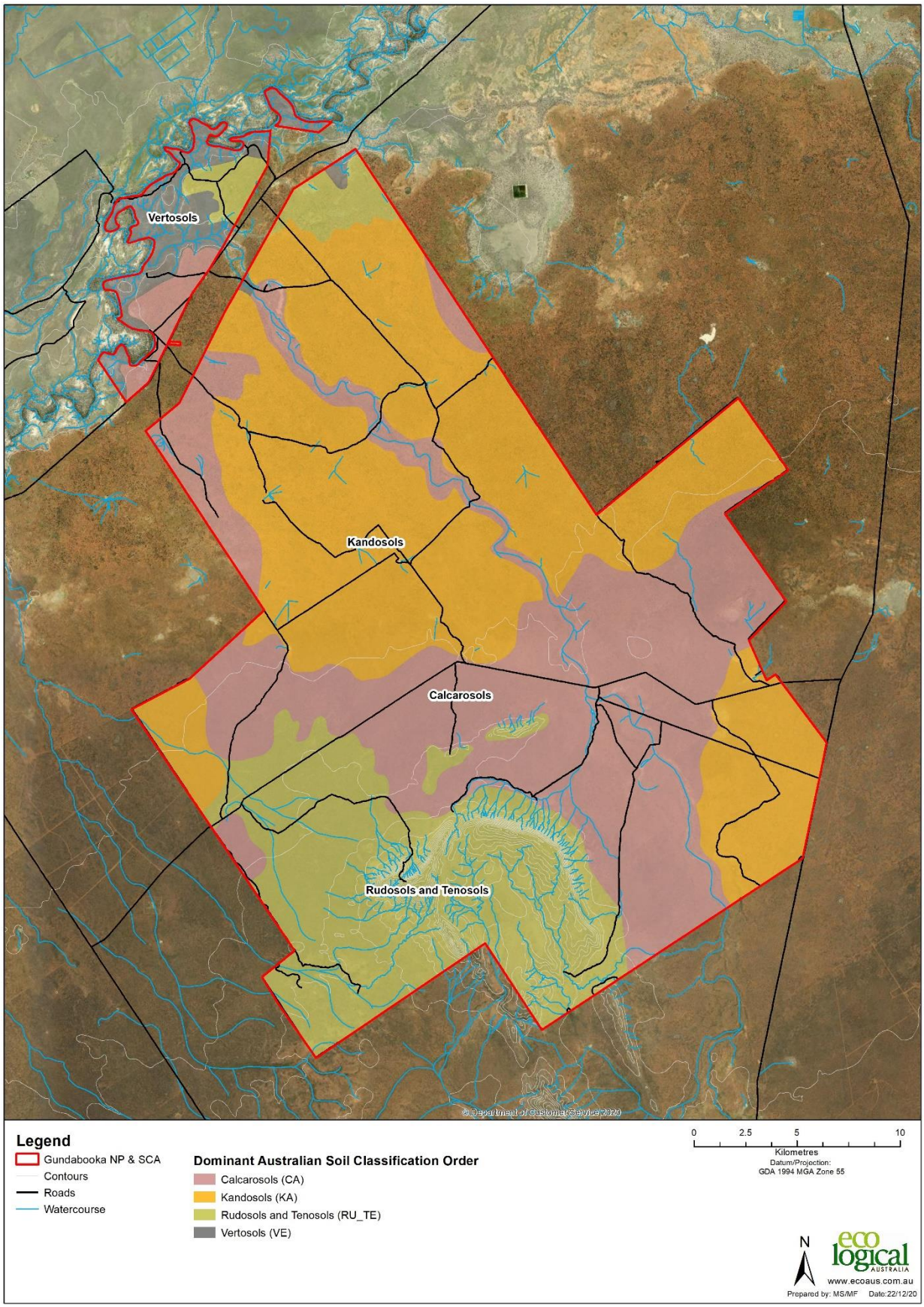

Figure 3: Soils

The Gunderbooka Range is the third dominant unit covering over 8,000 hectares, or 10% of the reserve. This unit includes the prominent range of Devonian quartzite, conglomerate and shale folded into a shallow syncline with high rocky cliffs, stepped stones and debris slopes (DECC, 2008). Relief is significant (to 300m). Soils range from bare rock and skeletal sandy lithosols to better developed soils downslope (DECC, 2008). Vegetation is dominated by *Acacia aneura* (Mulga) and *Callitris glaucophylla* (White Cypress Pine) with occasional *Eucalyptus morrisii* (Grey Mallee) on upper slopes, shrublands on scarps and grassland on lower slopes (DECC, 2008). Drainage lines are characterised by *Eucalyptus camaldulensis* (River Red Gum), *Eucalyptus populnea* (Poplar Box) and *Callitris glaucophylla* (White Cypress Pine) (DECC, 2008).

The northern part of the reserve includes both the Mid-Darling Channels and Floodplains and Mid-Darling Plains units which collectively cover more than 7,000 hectares, or 7% of the reserve. Soils of these systems are quaternary alluvium ranging from heavy grey cracking clays closer to the Darling River, with Calcareous sandy to loamy red earths on plains and cracking or plastic grey to brown clays in swamps set back from the river (DECC, 2008). These landscapes are characterised by highly sinuous intermittently flowing anabrances with channels, lateral floodouts and terraces with relief up to 10-15 m in incised channels (DECC, 2008). Vegetation is characterised by *Eucalyptus coolabah* (Coolibah) and *Eucalyptus largiflorens* (Black Box) with extensive saltbush shrublands closer to the Darling, with *Eucalyptus populnea* (Poplar Box), *Casuarina pauper* (Black Oak) and *Acacia excelsa* (Ironwood) on poorer soils (DECC, 2008).

Table 1: Mitchell Landscapes

Mitchell Landscape	Description	Area (ha)	Proportion of study area
Cobar Downs	Cobar Downs ecosystem includes parts of seven land systems: *Cobar, Coolabah, Ironstone, Killala, Kopyje, Pirillie* and *Prattenville.* A landscape complex of slightly undulating rounded ridges and higher residuals of many Ordovician and Silurian sedimentary and metamorphic rocks, undulating rounded Devonian sandstone ridges or low plateau, rounded ridges with siliceous and ferruginous stones from Cretaceous or Tertiary conglomerates. Occasional overlying sand dune. Well defined dendritic drainage lines vary from broad to narrow, relief 10 to 20 m. Scattered rock outcrop on ridges, stony surfaces common on slopes. Shallow gravelly loamy soils, or ferruginous clay loam on ridges, grading to deeper acid and neutral red earths with hardpan down slope and calcareous red earths with areas of gilgai in drainage lines. Deep sands, sandy earths, and red earths on dunes. Moderate to dense mulga, green mallee, pointed mallee, belah on crests. White cypress pine, bimble box, red box, wilga, turpentine, budda, punty bush, yarran, coolabah apple, emu bush, whitewood, hopbushes, yarran and ironwood with many other woody species and grasses on slopes. Bimble box, white cypress pine, broad-leaved hopbush, budda and curly windmill grass along drainage lines. Coolabah apple and quinine bush on dunes.	12,063	13%

Mitchell Landscape	Description	Area (ha)	Proportion of study area
Cobar Incised Streams	Cobar Incised Streams ecosystem is made up of part of the *Yanda* land system. Major drainage lines flowing to the Darling River off the Cobar Peneplain. Floodplains of Quaternary alluvium with stable incised slightly sinuous channels, small stony rises, relief to 3 m. Deep red earths with hardpan on plains with scattered to dense bimble box, white cypress pine, rosewood, mulga, turpentine, budda, wiregrass, variable spear grass, Queensland blue grass, red-leg grass, and panics. Dense bimble box, white cypress pine, budda and lignum in the creek lines. Ironwood and mulga on stony rises.	4,287	5%
Cobar Plains	Cobar Plains ecosystem includes parts of two land systems: *Coronga* and *Kenilworth.* Colluvial and alluvial plains, low stony rises and poorly defined drainage lines with few larger swamps with lunettes, overall relief to 3 m locally to 10 m on some swamps and lunettes. Moderate to deep neutral red earths with hardpan and gravel. Dense to moderate mulga, red box, bimble box, ironwood, white cypress pine, punty bush, turpentine, budda, emu bush, wiregrass, variable spear grass, kerosene grass on plains. Bimble box, turpentine and grasses in drainage lines. Grey cracking clays with gilgai, and red texture-contrast soils in larger swamps with scattered to dense, bimble box, lignum, wiregrass, woollybutt, windmill grass, kangaroo grass, dark roly-poly, medics and burr.	58,197	64%
Gunderbooka Range	Gunderbooka Range ecosystem includes parts of two land systems: *Booroondarra* and *Mineshaft.* Prominent range of Devonian quartzite, conglomerate and shale folded into a shallow syncline with high rocky cliffs, stepped slopes and surrounding debris slopes, relief to 300 m. Extensive areas of bare rock and sandy lithosols becoming deeper and better developed down slope, narrow valleys of red earths, incised drainage tracts with bare rock. Shallow gravelly loamy soils grading to deeper acid and neutral red earths with hardpan down slope and in drainage lines. Moderate to dense mulga, green mallee, and white cypress pine on upper slopes. Moderate to dense mallee, currawong, white cypress pine, red box, mulga and green fuchsia bush on upper slopes and scarps; abundant mulga, moderate silver cassia, narrow-leaf wax flower and other shrubs with long greybeard grass, wire grass, and purple love grass on lower slopes. White cypress pine, river red gum and bimble box along creeks.	8,848	10%

Mitchell Landscape	Description	Area (ha)	Proportion of study area
Mid-Darling Channels and Floodplains	Mid-Darling Channels and Floodplains ecosystem includes parts of six land systems: *Acres Billabong, Budda, Hermidon, Long Meadow, Mid-Darling* and *Nelyambo.* Active floodplain with highly sinuous intermittently flowing anabranches with channels, and lateral floodouts, terrace patches with recent and ancient dunes. Channels incised 10 to 15 m. Quaternary alluvium of heavy grey cracking clays with some sandy earths and sands within channel loops, terrace plains with sandy yellow texture-contrast, red or yellow sands in dunes. Mainly open with scattered clumps of coolibah and black box, isolated rosewood, whitewood, swamp wilga, lignum, nitre goosefoot, neverfail, Warrego summer-grass, copperburr, annual saltbushes and forbs. Sparse to moderate coolibah and black box, with river red gum along channel banks. Lignum, canegrass and swamp wilga in pans. Terrace plains with sparse whitewood, black box, prickly wattle, clumps of narrow-leaf hopbush, turpentine, bottlewashers and annual forbs. Dunes with fringing black box, coolibah, sparse prickly wattle and occasional clumps of narrow-leaf hopbush, annual forbs, tall kerosene grass and variable spear grass.	3,161	3%
Mid-Darling Plains	Mid-Darling Plains ecosystem is made up of part of the *East Toorale* land system. Plains of Quaternary alluvium with poorly defined drainage lines, small internally draining sinks and swamps, relief to 5 m. Calcareous sandy to loamy red earths, red and brown texture-contrast soils with cracking or plastic grey to brown clays in swamps. Scattered to dense belah, ironwood, bimble box, mulga, coolibah, some gidgee, turpentine, budda, warrior bush, narrow-leaf hopbush on plains. Bimble box, coolibah, bluebush; cotton bush, neverfail, copperburrs, galvanised burr and forbs on floodplain, swamps and sinks.	3,917	4%

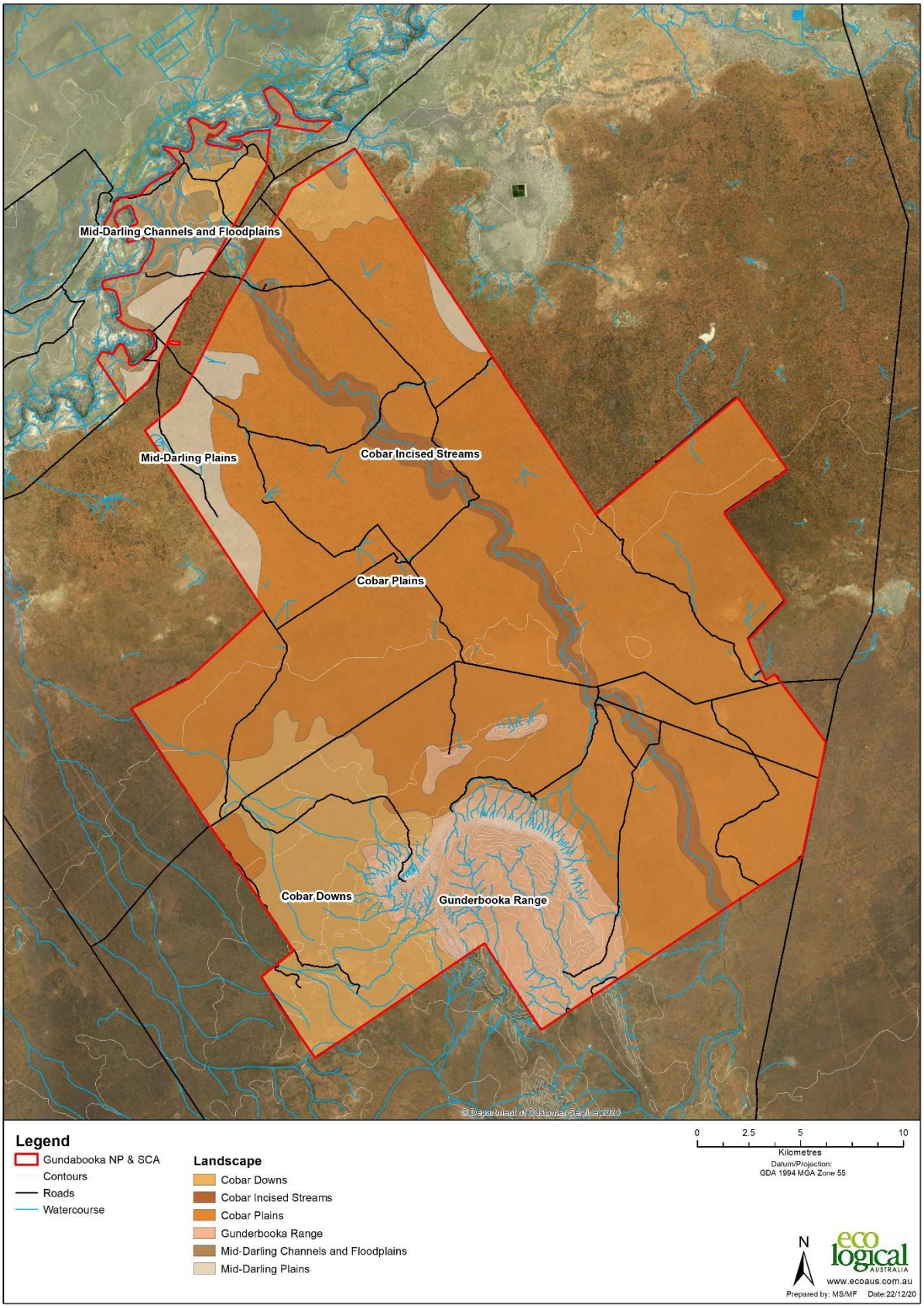

Figure 4: NSW Landscapes

2. Methodology

2.1 Previous surveys and mapping

2.1.1 Vegetation survey

Vegetation surveys have previously been undertaken across the reserve through various vegetation survey and mapping programs by NPWS and DPIE. A total of 177 full floristic vegetation plots were identified from the Vegetation Information System (VIS) flora survey module within the BioNet Atlas (DPIE, 2020a) that were suitable for inclusion in this project (Figure 5). Additional individual flora records were obtained from BioNet (DPIE, 2020a) to assist in the attribution of Plant Community Types (PCT) (Figure 5).

Existing floristic plots were extracted using multiple techniques from VIS as the data contained is from a variety of surveys using different methodologies (e.g. cover scores, cover-abundance scores, or simply abundance scores). Existing survey data is well replicated and adequately stratified across the landscape (Figure 5).

2.1.2 Vegetation mapping

Three principal vegetation mapping projects were identified which partly or wholly covered the reserve:

- State Vegetation Type Maps:
  - Western Region v1.0. VIS_ID 4492 (DPIE, 2019)
  - Vegetation Formations and Classes of NSW (version 3.03-200 m Raster) – David A. Keith and Christopher C. Simpson. VIS_ID 3848 (DPIE, 2012)
- Local vegetation maps:
  - Gundabooka National Park vegetation. VIS_ID 3969 (Westbrooke, et al., 2005)

A review of these mapping products identified that the State Vegetation Type – Western Region map was most suitable for identification and likely distribution of potential Plant Community Types, whilst the NSW BioNet Flora Survey Data Collection (including the 2005 survey by Westbrooke et al.) was most suitable for preliminary survey stratification.

2.2 Datasets utilised

A range of datasets were used in this project including high resolution (50 cm) stereo Airborne Digital Sensor (ADS40) imagery, existing vegetation mapping, contour and elevation mapping, drainage mapping, full floristic vegetation plot data and rapid data point (RDP) data (**Table 2**).

Table 2: Data sources

Data	Purpose
High resolution (50 cm) stereo ADS40 imagery	Distinct patterns in the imagery representing vegetation community boundaries were identified, linework created and attributed.
Digital Elevation Model (DEM)	A DEM was utilised to ensure high vertical positional accuracy was acquired during the creation of linework. This

Data	Purpose
	was particularly important for areas with high elevation and/or significant relief (e.g. the Gunderbooka Range).
Vegetation mapping products obtained from SEED https://www.seed.nsw.gov.au/edphome/home.aspx	Existing vegetation mapping was used as a guide to the occurrence, boundaries and extent of vegetation communities, as well as the assignment of PCTs.
Previous vegetation survey data obtained from the VIS (DPIE, 2020a)	Floristics from previous surveys was utilised in the development of species lists and PCTs.
Rapid Data Points	Field survey data was used to identify and assign PCTs.
Contours and drainage (Spatial Services, 2012)	Topography, drainage and landscape position.
Soil landscape mapping (DPIE, 2020b)	Soil mapping used to assist in identifying boundaries between PCTs.

2.3 Preliminary Plant Community Types

Each of the 177 existing full floristic vegetation plots extracted from the VIS database were assigned an initial PCT based on a quantitative analysis of plot data by comparing site data against the vegetation descriptions, characteristic species in the upper, mid and ground structural layers, vegetation structure, soils, landform and other relevant data contained within the VIS Classification database.

Potential PCTs were identified from both existing mapping datasets, and through a review of the PCT database. The PCT database was searched for PCTs containing 'Gundabooka Range', 'Gundabooka' and 'Gunderbooka Mountain' in the title or description to identify PCTs associated with the area. All PCTs identified as potentially occurring in the reserve were combined into a single dataset for quantitative analysis.

Quantitatively analysing plot data against the PCT database is problematic for a number of reasons. Firstly, the PCT database includes communities which have been described from a range of datasets, each of variable scale and quality. Secondly, while some PCTs have excellent descriptions and characteristic species lists (particularly those described by Benson in the Brigalow Belt South), many have very basic descriptions and depauperate species lists. Finally, the name of some communities does not appear to fit well with the list and order of characteristic species included. Further compounding any quantitative analysis against the existing PCT classification were the floristics from the 2005 study (Westbrook, et al., 2005) which were collected in December (typically very hot and dry) resulting in relatively low species diversity (averaging 15 species per plot), and the floristic similarity between PCTs for non-dominant species biasing analysis.

2.4 Sampling strategy

A sampling strategy was developed to supplement existing surveys with strategic data to describe the floristic and structural diversity of the reserve. The sampling strategy was devised based on the existing vegetation units present and the number of existing vegetation plots in each unit. A moderate level of redundancy was incorporated into the design to allow for modification and refinement during field surveys.

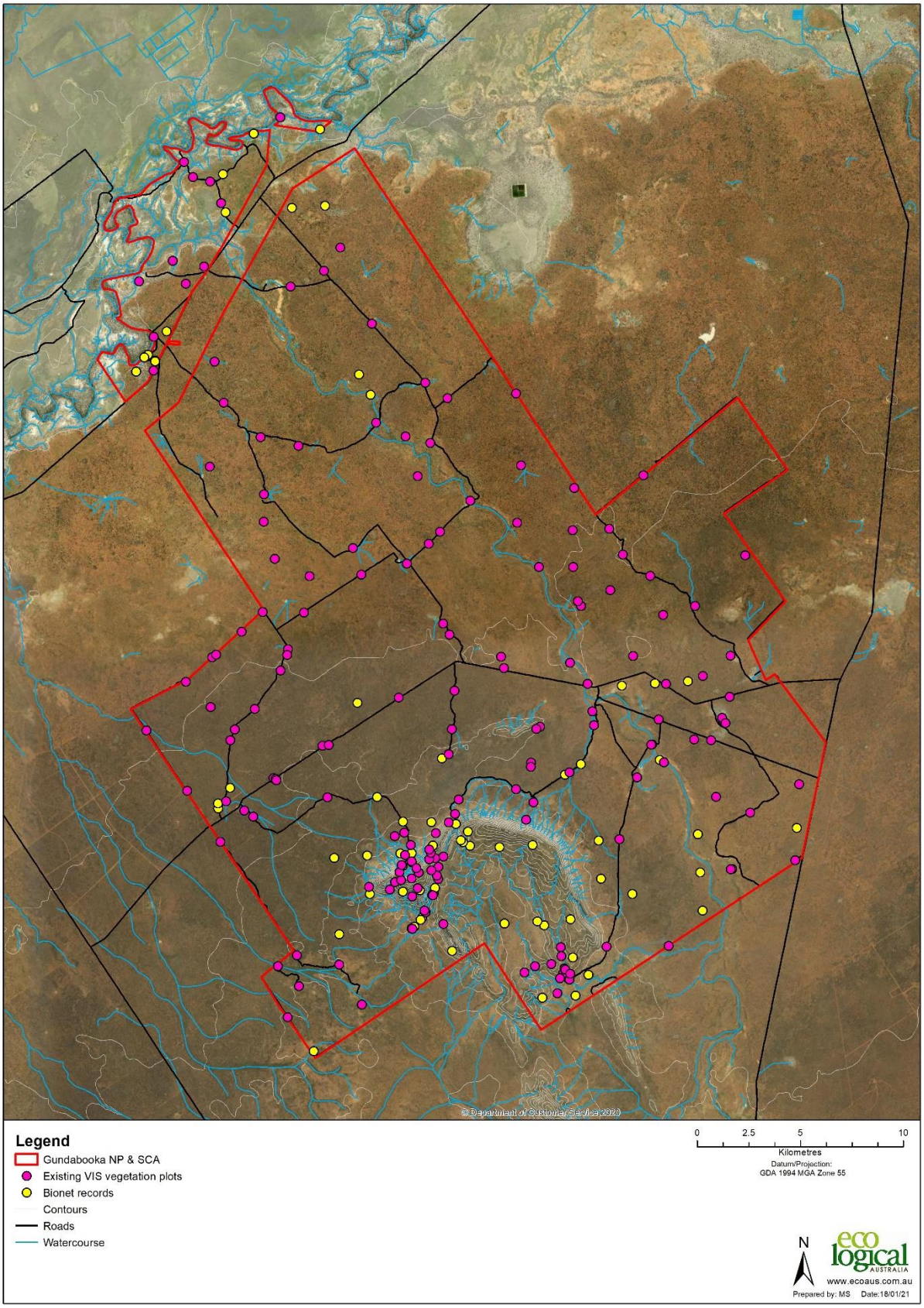

Figure 5: Existing floristic survey data

2.5 Field survey

A total of 203 Rapid Data Points (RDPs) were surveyed as part of this project across the reserve, as well as 39 vegetation community points (Figure 6). Surveys were undertaken between 25 and 29 October 2020 by ELA botanists Martin Sullivan and Michelle Frolich.

In the nine months' proceeding the survey, approximately 259 mm of rain was recorded at the Bourke Airport Automated Weather Station, located approximately 40 km to the north of the reserve (BOM, 2021). The distance from the weather station and the geographic extent of the reserve means total rainfall in the reserve is likely to have varied considerably. Rainfall in western NSW is irregular and comparisons with monthly averages is unreliable, nevertheless, recorded rainfall at Bourke was still 39 mm more than the long-term average (BOM, 2021). Of particular note were significant rainfall events in March and April 2020 which resulted in nearly 70 mm above the average for those months. In the lead up to winter, this created exceptional seasonal conditions through winter and spring resulting in ideal conditions for the identification of plant communities.

Vegetation surveys were undertaken in the field using mobile devices loaded with Collector for ArcGIS software and relevant Geographic Information System (GIS) datasets (existing plots, aerial photography, vegetation mapping, drainage, contours etc.). At each RDP the dominant canopy, midstorey and groundcover species; structural cover classes; vegetation structure; PCT; priority or environmental weed species and cover; threatened species and count; soil texture; fire history; vegetation condition; landform element and pattern; notes; photo number; surveyor; and date were recorded. Up to six canopy, eight mid and 12 dominant groundcover species were recorded at each RDP. RDPs are less comprehensive than full floristic vegetation plots, however they allow for rapid identification of PCTs which could then be interpreted through Aerial Photographic Interpretation (API). Due to time constraints, vegetation community points simply recorded the name of the community present, with no additional data.

Targeted surveys for threatened flora species were not specifically undertaken as part of this project, however any observations of conservation significant flora were recorded.

2.5.1 Unmanned Aerial Vehicle survey

An Unmanned Aerial Vehicle, commonly referred to as a 'drone' was utilised to enhance the accuracy of PCT Mapping. A DJI Mavic Air was flown by a registered operator in accordance with the Civil Aviation Safety Authority (CASA) standard operating conditions. The drone was used in the following manner:

- Thirteen high quality (4K) aerial video transects were flown at discreet locations within the reserve to capture a variety of images to support mapping. The video transects allowed for post flight analysis of dominant canopy species, vegetation structure, condition, and transitions between PCTs.
- Approximately 619 high resolution photographs were taken across the reserve. Aerial photographs captured allowed for post flight analysis of dominant canopy species, vegetation structure, condition and interpretation of cover of various PCTs. Aerial photographs were captured at a variety of angles including oblique and top-down to provide additional information not available in existing aerial photography.

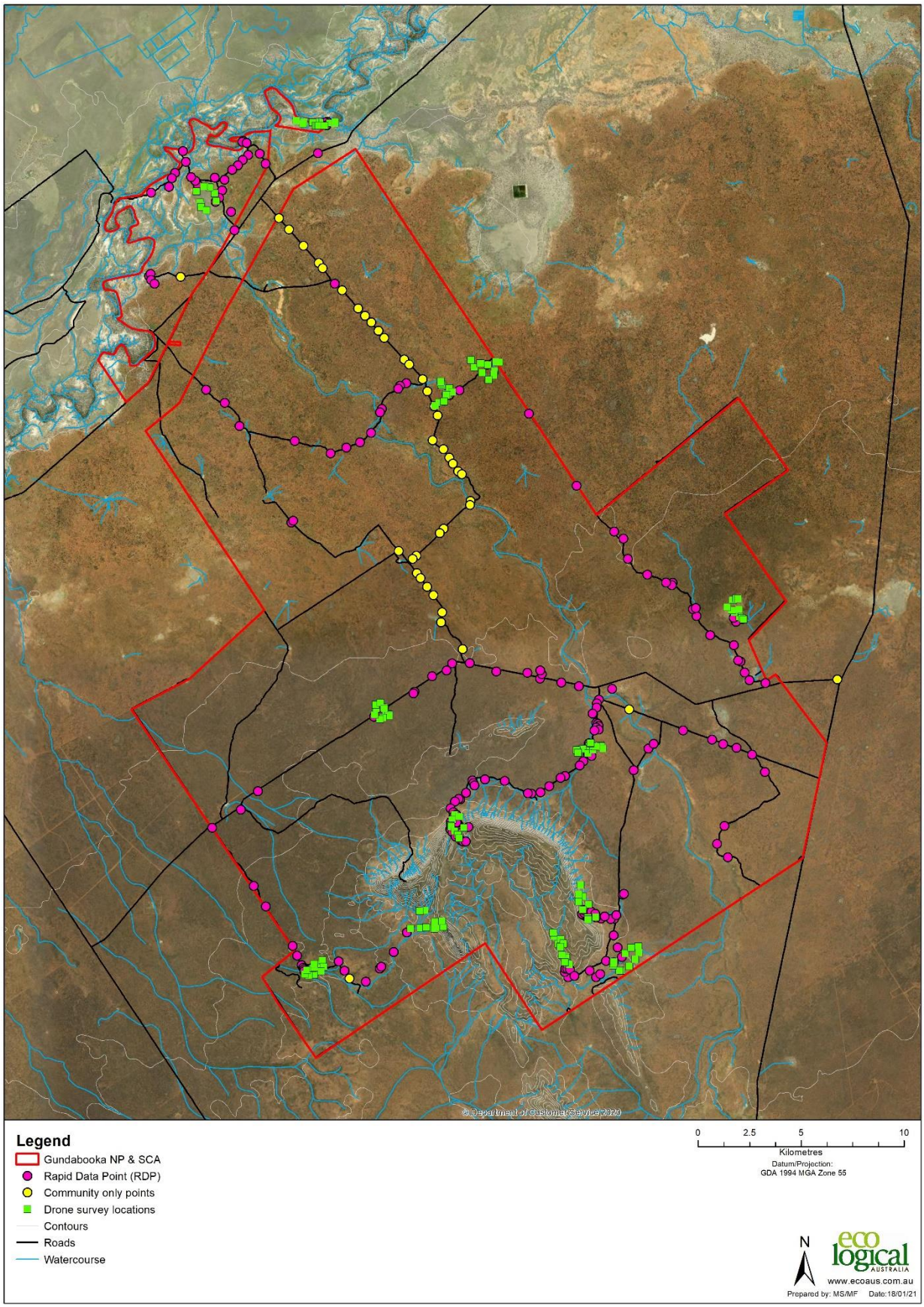

Figure 6: Field survey data

While drones have been previously utilised in vegetation mapping projects (e.g. (Cruzan, et al., 2016)), they typically have been used to create high resolution aerial photography mosaics, DEMs or spectral imagery. The use of a drone to support vegetation mapping in the manner undertaken for this project has allowed far greater coverage of vegetated areas than possible using traditional means, especially in largely inaccessible areas below cliffs and on steep slopes. Drone photos and video have allowed detailed interpretation of aerial imagery where uncertainty occurs (e.g. in Mulga areas with emergent Eucalypt canopies). Furthermore, in combination with both high resolution stereo API and on-ground vegetation survey, the final accuracy of mapping across the reserves is exceptional.

2.6 Plant Community Type mapping

Vegetation mapping was undertaken using an on-screen digitising approach in ArcGIS10.7.1 and Summit Evolution at a scale of between 1:5,000 and 1:25,000. Spatial data were loaded into the Geographic Information System (GIS) and RDPs were combined with full floristic vegetation plots to form a combined dataset which was overlain on the high resolution three-dimensional (3D) ADS40 (50 cm) imagery.

RDPs and vegetation plots were used as an initial guide to identify PCTs. API was then used to generate linework in 3D based on distinct patterns in the imagery representing vegetation community boundaries with the most appropriate community attributed.

The final mapped product is considered accurate at a 1:25,000 scale. Supplementary datasets such as the DEM were used to help inform the API and to delineate boundaries between vegetation communities. Attributing and mapping vegetation communities in three dimensions (3D) provides a level of accuracy unable to be achieved in two dimensions (i.e. standard orthorectified imagery). Individual tree species, canopy height, midstorey structure as well as grassy/shrubby understoreys are readily identifiable in 3D, with landscape position, elevation and topographical features greatly assisting in the accurate identification of vegetation communities.

The fine scale nature of the available imagery and the features of mapping in 3D allowed for the identification of PCTs across the landscape based on landscape position, signature and structure.

PCTs were attributed in accordance with VIS Classification database (OEH, 2019a). Where possible, PCTs were assigned based on a quantitative comparison of vegetation plot and RDP data with the vegetation descriptions, characteristic species in the upper, mid and ground structural layers, vegetation structure, soils, landform and other relevant data contained within the VIS Classification database (OEH, 2019a).

Each polygon was assigned the following attributes:

- VEGID –Vegetation community code
- VEGCOMMUNITY – Vegetation community name
- PCTID – PCT identification code
- PCTNAME – PCT community name
- CONFIDENCE – mapping confidence for each polygon:
    - 1 – field validated
    - 2 – high confidence API only
    - 3 – moderate confidence API only
- CLASS – Vegetation class

- FORMATION – Vegetation formation
- PCCLEARED – Percent cleared
- BCACT – BC Act TEC Name
- EPBCACT – EPBC Act TEC Name
- FIREREGIME – Notes on fire regime
- FIREMIN- Minimum fire interval
- FIREMAX- Maximum fire interval
- HECTARES – Area of polygon in hectares

2.6.1 Vegetation community classification

Data from each RDP and existing VIS plot was processed and then analysed using PATN version 4.0 (Blatant Fabrications Pty Ltd, 2013). Data for RDPs and existing VIS plots were analysed separately due to the different data collection methods (i.e. rapids vs. plots).

Data analysis included Bray and Curtis associations, agglomerative hierarchical fusion using flexible UPGMA (beta value of -0.1) and a 3D ordination (cutoff value of 0.9, 10 random starts, random seed of 1235 and 50 iterations). Data was evaluated through an Analysis of Similarity (ANOSIM) based on PATN generated groups (100 iterations with a seed value of 1245) and comparison undertaken between all groups. 20 initial groups were identified through PATN analysis. Subsequent analysis of data identified a further 16 floristic groups (n=36) based on manual review and refinement of initial PATN grouping. Each group is considered equivalent to a local vegetation community, readily identified in the field based on characteristic species, structure, soil and landscape position.

Summary data for each group was produced, including:

- Number of sites
- Average canopy, mid and ground cover (%) and height (m) including standard error
- Vegetation structure
- Soil texture and colour
- Landform element and pattern
- Fire history
- Vegetation condition

Comparison between communities and the VIS Classification Database (OEH, 2019a) was undertaken to assign the best fit PCT to each group. Plant Community Type profiles were developed for each group and are included in Appendix D.

2.7 Fire ecology

Fire is a naturally occurring element in the Australian landscape, one which was mastered by the Aboriginal people and has shaped the evolution, survival and reproductive responses of many plants and animals (NPWS, 2005). The landscape within the reserve would have been shaped to improve mobility, hunting opportunities, seed collecting areas; for signalling; and to manage the overall health of the landscape including reducing the threat of large bushfires (NPWS, 2005). Historical records indicate that the Aboriginal burning regime maintained open grassy woodland areas (NPWS, 2005), which are largely restricted today. Displacement of the Aboriginal people, grazing and pastoralism, and then removal of this pressure is likely to have significantly altered vegetation structure and communities within the reserve over the past 200 years.

There is limited knowledge of fire history in the reserve, with anecdotal accounts of fire in the 1940s and the 1980s (NPWS, 2005). Fire occurs infrequently despite extreme fire weather being frequently observed during the fire season due to a general lack of ground fuel (NPWS, 2005). Changes in management through a reduction in grazing are considered likely to have resulted in an increase in shrubbiness (particularly from *Acacia aneura* (Mulga)). When combined with exceptional seasonal conditions producing extensive grassy swards, the general thickening of vegetation may pose increased wildfire risk.

The fire ecology for each PCT was briefly reviewed as part of this project. It is acknowledged that the current understanding of fire in relation to the plants, animals and vegetation communities present in the reserve is lacking. Pertinent information relevant to the management of each community including whether they are threatened by fire, notes on fire ecology, recommended fire intervals and minimum fire intervals for landscape management were determined. A search of sentinel hotspots within the reserve was undertaken to determine the frequency of lightning strikes (or other causes) initiating wildfires (Geoscience Australia, 2021).

General notes on fire ecology and recommended fire intervals were sourced from the VIS (OEH, 2019a) and minimum fire intervals for state-wide vegetation formations were sourced from the NSW Biodiversity Strategy (NSW Government, 2004) and NSW RFS (RFS, 2006). Vegetation formation fire intervals are given for land management zones (LMZ) which are optimal for biodiversity, and strategic fire advantage zones (SFAZ), which are optimal for asset protection and hazard reduction.

3. Results

3.1 Floristic diversity

A total of 410 species from 76 plant families have been recorded from the reserve (**Appendix E**). The average number of species per plot was 15, with the highest being 35 and the lowest being 5. The families which had the greatest representation include Poaceae (50 species), Chenopodiaceae (48 species), Asteraceae (41 species), Myrtaceae (19 species), Malvaceae (18 species), Myoporaceae (18 species), Fabaceae (Mimosoideae) (15 species) and Brassicaceae (10 species). The remaining 67 families had less than 10 species each, with 41 families being represented by only one or two species.

Of the 410 species, 32 (8%) were exotic, which is marginally less than the percentage of exotic species on nearby Toorale National Park and Toorale State Conservation Area, which has 32 (10%) exotic species of the 304 species recorded within the park (CEM, 2012). Only twelve exotic species were recorded at 34 of the 203 (17%) sites surveyed as part of this study and where present, they had an average cover of 4% (range 1% to 25%). The most recorded exotic species in this study include *Sisymbrium irio* (London Rocket), *Medicago laciniata* (Cut-leaf Medic), *Lysimachia arvensis* (Scarlet Pimpernel), *Cenchrus ciliaris* (Buffel Grass), *Lycium ferocissimum* (African Boxthorn), *Malvastrum americanum* (Spiked Malvastrum) and *Carthamus lanatus* (Saffron Thistle). Most of these weeds, with the exception of Buffel Grass and African Boxthorn are largely cosmopolitan weeds that are frequently recorded in native vegetation and generally pose no risk to ecosystem health in small numbers. Further information on weed species is reported in Section 3.5.

3.1.1 Conservation significant species

Three species of conservation significance have been previously recorded in the reserve (Figure 7). This study identified an additional species of conservation significance not previously known from the reserve, and potential additional locations of one of the previously known species (Figure 7). Species of conservation significance are included in Table 3. Photographs for a selection of conservation significant species are included as Plate 1 to Plate 3.

Four threatened plant species listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) or the Federal *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) are now known to occur in the reserve, with an additional five species being of conservation significance as defined by inclusion on the former Rare or Threatened Australian Plants (ROTAP) list. For ease of reference, the ROTAP codes are included in Table 4.

As part of this study, two potential new localities for *Pterostylis cobarensis* (Greenhood Orchid) with more than 10 individuals total were discovered, which increases the number of localities to three within the reserve. One of the new localities was similar in nature to the known existing population (i.e. in a sheltered gorge), however the other locality was in a shrubby *Eucalyptus populnea* (Poplar Box) woodland. Due to the previous experience of the surveyors with *Pterostylis cobarensis* there is a reasonable degree of confidence in the identification of this species at these two new localities, however surveys were undertaken towards the end of the flowering season, and all flowers had wilted or dropped completely which required forensic botany which creates uncertainty. Additional surveys earlier in the flowering season (September-October) at these localities is required to confirm the presence of this species. It is considered likely that with further targeted survey, additional populations of this species would be located in the reserve.

As part of this study, 18 new localities for *Lepidium monoplocoides* (Winged Peppercress) with a total population in excess of 365 individuals were discovered. This species was located in a broad range of habitats but appeared to favour claypan habitat and other areas subject to semi-regular inundation. It is considered likely that with further targeted survey, significant additional populations of this species would be located in the reserve.

An important population of *Acacia curranii* (Curly-bark Wattle) is known on Mount Gunderbooka and is being actively managed by NPWS, including the recent expansion of grazing exclusion fencing.

Coordinates for the species of conservation significance located as part of this study are provided in Appendix F.

Table 3: Species of conservation significance

Species	Common Name	BC Act	EPBC Act	ROTAP
Acacia curranii	Curly-bark Wattle	Vulnerable	Vulnerable	
Oldenlandia galioides		Endangered	Not listed	
Pterostylis cobarensis	Greenhood Orchid	Vulnerable	Not listed	
Lepidium monoplocoides	Winged Peppercress	Endangered	Endangered	
Brachyscome lineariloba	Hard-headed Daisy	Not listed	Not listed	Ci
Goodenia pusilliflora		Not listed	Not listed	2KC-
Gratiola pumilo		Not listed	Not listed	3K
Lomandra patens	Irongrass	Not listed	Not listed	3RCa
Schoenus centralis		Not listed	Not listed	3KC-

Table 4: Rare or Threatened Australian Plants (RoTAP) codes

Category	Coding	Definition
Plant Distribution	1	Known only from the type collection
	2	Restricted distribution - range extending over less than 100km
	3	Range more than 100km but in small populations
Conservation Status	X	Presumed extinct - not collected for 50 years or the only known populations destroyed
	E	Endangered - at serious risk in the short term (one or two decades)
	V	Vulnerable - at risk over a longer period (20-50 years)
	R	Rare but with no current identifiable threat
	K	Poorly known species suspected of being at risk
Reservation Status	C	Species is known to occur within a proclaimed reserve
	a	Species is considered to be adequately reserved. 1000 or more plants occur within a proclaimed reserve
	i	Species is considered to be inadequately reserved. Less than 1000 plants occur within a proclaimed reserve
	-	Species is recorded from a reserve but the population size is unknown

Category	Coding	Definition
	t	Total known species population is within a reserve
	+	Species also occurs outside of Australia

Plate 1 ***Lepidium monoplocoides***

Plate 2 ***Acacia curranii***

Plate 3 ***Pterostylis cobarensis***

3.2 Vegetation communities

Thirty-seven vegetation communities are described and mapped for the reserve (Figure 8, Table 5, Appendix D). Vegetation communities were identified based on dominant species, vegetation structure, soil types and landscape position. Vegetation communities were mapped in addition to PCTs due to the broad nature of PCTs with observable (and mappable) variation within PCTs allowing for finer scale definition and resolution of plant communities.

Three vegetation communities account for approximately half of all vegetation mapped in the reserve, namely map unit 19 Mulga Low Forest (20%), map unit 14 Ironwood Mulga Shrubland (14%) and map unit 13 Ironwood Low Open Woodland (13%). A further three vegetation communities account for more than 5% of the total each, namely map unit 27 Red Box Mulga Ironwood (9%), map unit 22 Poplar Box Mulga Grassy Woodland (8%), and map unit 24 Poplar Box Shrubby Low Open Woodland (6%). While the remaining vegetation communities account for 30% of the total area, they each contribute less than 5% of the total reserve area, with 22 communities making up less than 1% of the total reserve area each.

Table 5: Vegetation communities

Unit	Name	Hectares
1	Dead Finish Shrubland	8.3
2	Belah Woodland	7.0
3	Black Box Chenopod Low Open Woodland / Claypan	134.2
4	Black Oak Open Woodland	423.5
5	Black Roly Poly Chenopod Shrubland	348.6
6	Bloodwood Grassy Open Woodland	205.9
7	Chenopod Claypan Shrubland	410.2
8	Chenopod Shrubland	705.0
9	Coolabah Chenopod Low Open Floodplain Woodland	1,731.9
10	Coolabah Lignum Chenopod Open Woodland Wetland	358.2
11	Emu Bush Hop Bush Senna Shrubland	3,144.7
12	Manara Hills Red Gum Cypress Shrubby Low Open Woodland	1,043.0
13	Ironwood Low Open Woodland	11,087.1
14	Ironwood Mulga Shrubland	12,365.6
15	Leopardwood Low Open Woodland	3,696.2
16	Leopardwood Ironwood Mulga Woodland	2,683.5
17	Grey Mallee Cypress Low Woodland	195.5
18	Mixed Grassland Herbland	154.7
19	Mulga Low Open Forest	18,274.6
20	Poplar Box Riparian Woodland	3,066.7
21	Poplar Box Low Grass/Herb Woodland	726.3
22	Poplar Box Mulga Grassy Woodland	7,530.3
23	Poplar Box River Red Gum Herby Woodland	65.2
24	Poplar Box Shrubby Low Open Woodland	5,159.8
25	Poplar Box Wilga Grassy Woodland	315.0
26	Poplar Box Wilga Wetland Woodland	4.6
27	Red Box Mulga Ironwood	8,129.7
28	Red Box Open Woodland	2,400.6
29	River Red Gum Coolabah Open Forest	56.2

Unit	Name	Hectares
30	River Red Gum Riparian Woodland	81.3
31	Rosewood Low Open Forest	1,083.4
32	Rough Barked Apple Shrub/Grass Low Open Woodland	13.4
33	Speargrass Grassland / Chenopod Wetland Mosaic	78.4
34	White Cypress Pine Shrub/Grass Low Open Woodland	2,354.9
35	Whitewood Shrubby Low Open Woodland	409.7
36	Wax Flower Grassy Shrubland	336.9
37	Mountain Wanderrie Grass Grassland	420.3
Total		**89,210.7**

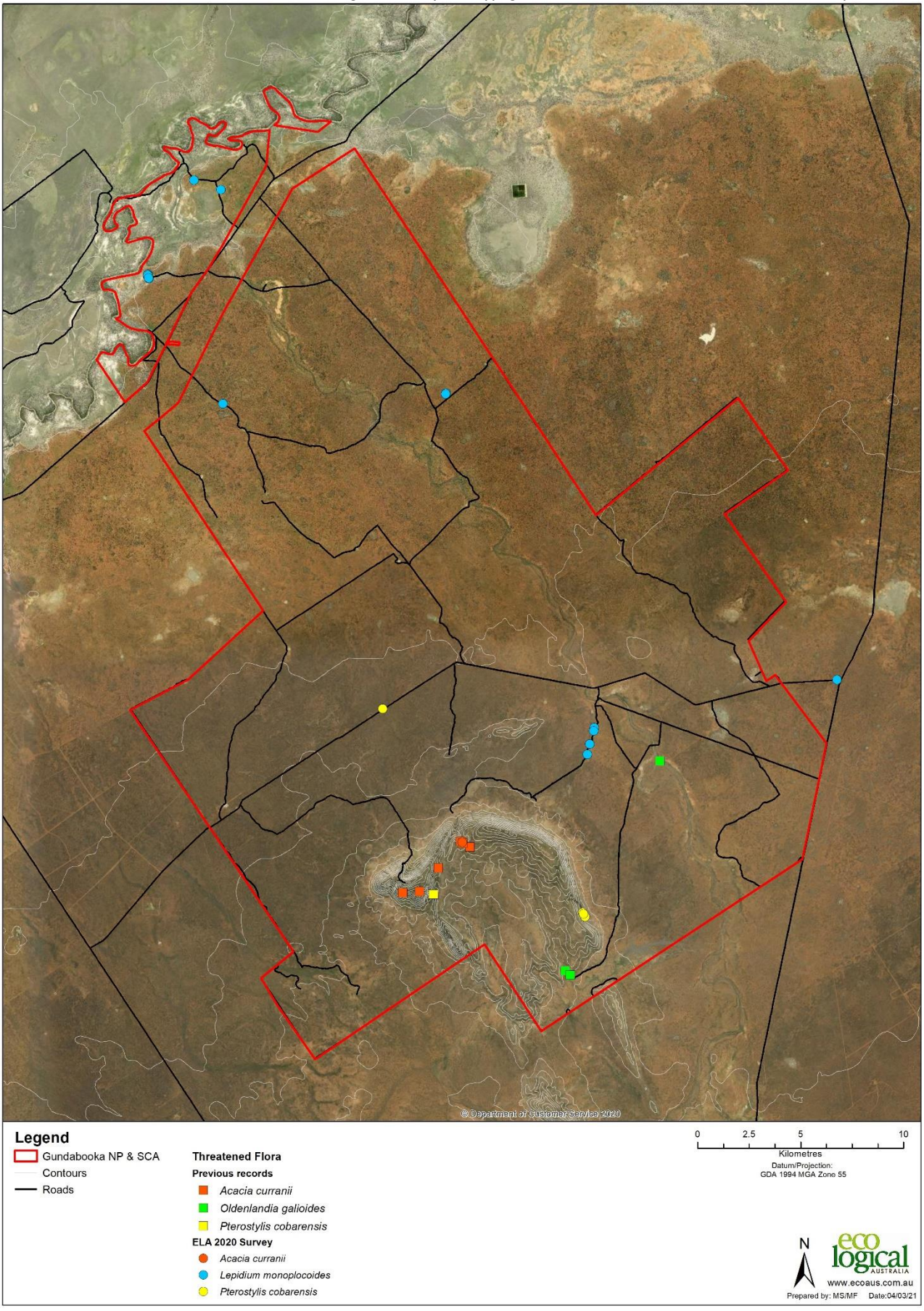

Figure 7: Threatened Flora Species

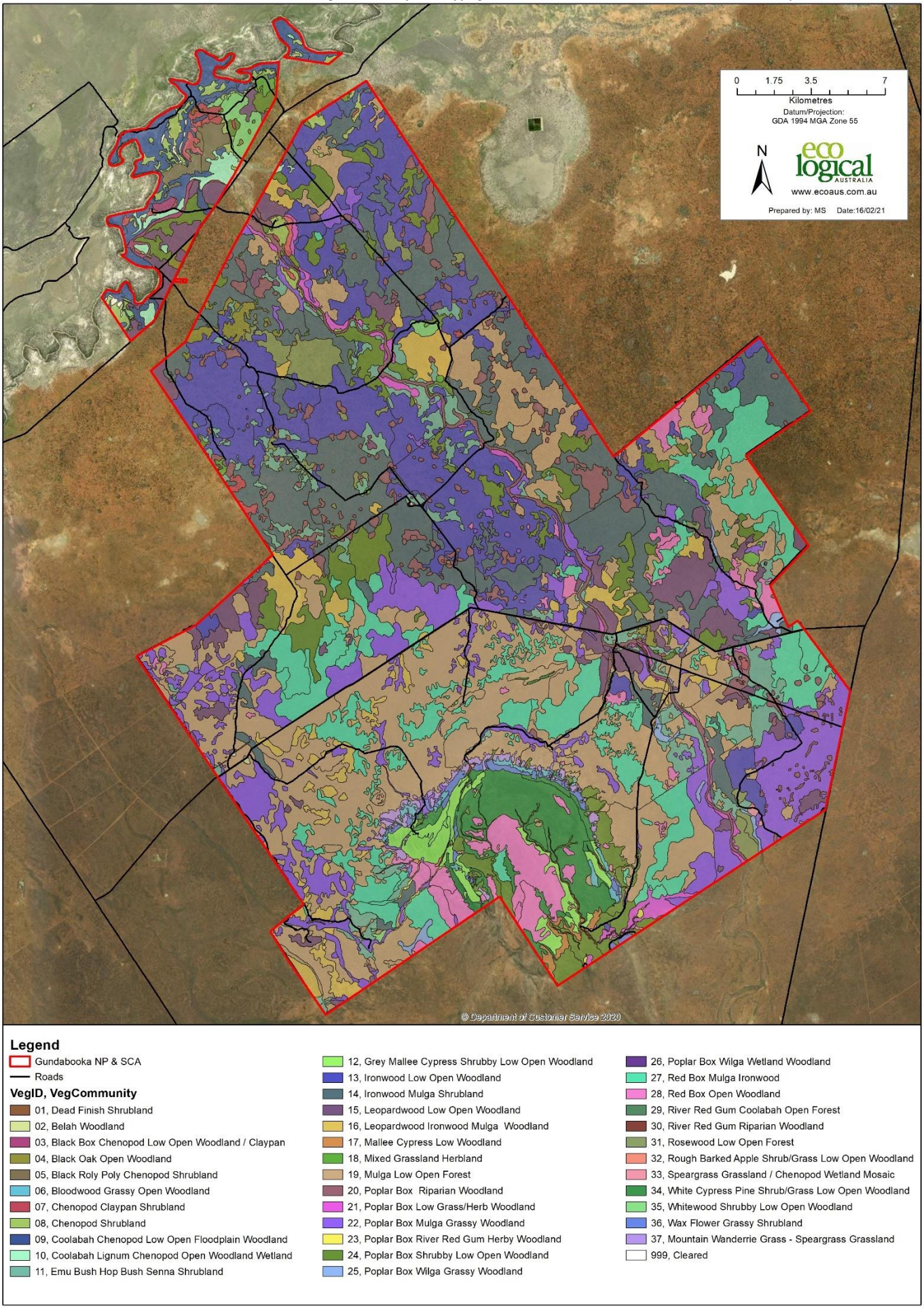

Figure 8: Vegetation Communities

3.3 Plant Community Types

The thirty-five Vegetation Communities mapped are equivalent to twenty-five PCTs (Table 6, Figure 9). These twenty-five PCTs occur within thirteen vegetation classes which are contained within six vegetation formations.

Three PCTs account for more than 50% of all vegetation mapped in the reserve, namely PCT 125 Mulga - Ironwood shrubland (34%), PCT 134 Ironwood woodland (12%) and Gum Coolabah - Mulga open woodland (9%). A further three PCTs account for more than 5% of the total each, namely PCT 109 Poplar Box - Mulga - Ironwood woodland (8%), PCT 144 Leopardwood low woodland (7%), and PCT 103 Poplar Box - Gum Coolabah - White Cypress Pine shrubby woodland (6%). The remaining 19 PCTs account for 23% of all vegetation in the reserve, with 11 PCTs making up less than 1% of the total reserve area each.

Table 6: Plant Community Types

PCTID	PCT Name	Class	Formation	Hectares
36	River Red Gum tall to very tall open forest / woodland wetland on rivers on floodplains mainly in the Darling Riverine Plains Bioregion	Inland Riverine Forests	Forested Wetlands	56.2
37	Black Box woodland wetland on NSW central and northern floodplains including the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion.	North-west Floodplain Woodlands	Semi-arid Woodlands (Grassy sub-formation)	134.2
39	Coolabah - River Coobah - Lignum woodland wetland of frequently flooded floodplains mainly in the Darling Riverine Plains Bioregion	North-west Floodplain Woodlands	Semi-arid Woodlands (Grassy sub-formation)	358.2
40	Coolabah open woodland wetland with chenopod/grassy ground cover on grey and brown clay floodplains	North-west Floodplain Woodlands	Semi-arid Woodlands (Grassy sub-formation)	1,731.9
59	Belah/Black Oak - Western Rosewood - Leopardwood low open woodland on sandplain and sandy flats in semi arid (hot) and arid climate zones	Semi-arid Sand Plain Woodlands	Semi-arid Woodlands (Shrubby sub-formation)	430.5
100	Desert Bloodwood - Mulga low woodland of the semi-arid plains	Desert Woodlands	Semi-arid Woodlands (Shrubby sub-formation)	205.9
103	Poplar Box - Gum Coolabah - White Cypress Pine shrubby woodland mainly in the Cobar Peneplain Bioregion	Western Peneplain Woodlands	Semi-arid Woodlands (Shrubby sub-formation)	5,159.8
104	Gum Coolabah woodland on sedimentary substrates mainly in the Cobar Peneplain Bioregion	Inland Rocky Hill Woodlands	Semi-arid Woodlands (Shrubby sub-formation)	2,400.6
105	Poplar Box grassy woodland on flats mainly in the Cobar Peneplain Bioregion and Murray Darling Depression Bioregion	Western Peneplain Woodlands	Semi-arid Woodlands (Shrubby sub-formation)	726.3
106	White Cypress Pine - Mulga low woodland on siliceous rocky ranges mainly of the Cobar Peneplain Bioregion	Inland Rocky Hill Woodlands	Semi-arid Woodlands (Shrubby sub-formation)	3,307.7
108	Gum Coolabah - Mulga open woodland on gravel ridges of the Cobar Peneplain Bioregion	Western Peneplain Woodlands	Semi-arid Woodlands (Shrubby sub-formation)	8,129.7
109	Poplar Box - Mulga - Ironwood woodland on red loam soils on plains in the Cobar Peneplain Bioregion and north-eastern Mulga Lands Bioregion	Western Peneplain Woodlands	Semi-arid Woodlands (Shrubby sub-formation)	7,530.3
123	Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion	Stony Desert Mulga Shrublands	Arid Shrublands (Acacia sub-formation)	8.3

PCTID	PCT Name	Class	Formation	Hectares
125	Mulga - Ironwood shrubland on loams and clays mainly of the Cobar Peneplain Bioregion	North-west Plain Shrublands	Arid Shrublands (Acacia sub-formation)	30,640.2
134	Ironwood woodland of the semi-arid plains	Western Peneplain Woodlands	Semi-arid Woodlands (Shrubby sub-formation)	11,087.1
137	Whitewood - Western Rosewood low woodland of the NSW north western plains	Gibber Transition Shrublands	Arid Shrublands (Acacia sub-formation)	1,493.1
143	Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.	Sand Plain Mulga Shrublands	Arid Shrublands (Acacia sub-formation)	3,144.7
144	Leopardwood low woodland mainly on clayey soils in the semi-arid zone	North-west Plain Shrublands	Arid Shrublands (Acacia sub-formation)	6,379.7
165	Derived corkscrew grass grassland/forbland on sandplains and plains in the semi-arid (warm) climate zone	Riverine Chenopod Shrublands	Arid Shrublands (Chenopod sub-formation)	78.4
207	Poplar Box grassy low woodland of drainage lines and depressions of the semi-arid (hot) and arid zone climate zones	North-west Floodplain Woodlands	Semi-arid Woodlands (Grassy sub-formation)	3,066.7
208	River Red Gum low woodland of rocky gorges and creeks in the Cobar Peneplain	Inland Floodplain Woodlands	Semi-arid Woodlands (Grassy sub-formation)	94.8
212	Chenopod low open shrubland - ephemeral partly derived forbland saline wetland on occasionally flooded pale clay scalds in the NSW North Western Plains	Riverine Chenopod Shrublands	Arid Shrublands (Chenopod sub-formation)	1,618.6
218	Grey Mallee - Mulga shrubland of the north-western Cobar Peneplain Bioregion	Inland Rocky Hill Woodlands	Semi-arid Woodlands (Shrubby sub-formation)	1,043.0
233	River Red Gum - Poplar Box grassy woodland wetland on Quaternary alluvial sandy-loam soils of the Cobar Peneplain	Inland Riverine Forests	Forested Wetlands	65.2
244	Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone of central NSW (wheatbelt).	Floodplain Transition Woodlands	Grassy Woodlands	319.6
Total				**89,210.7**

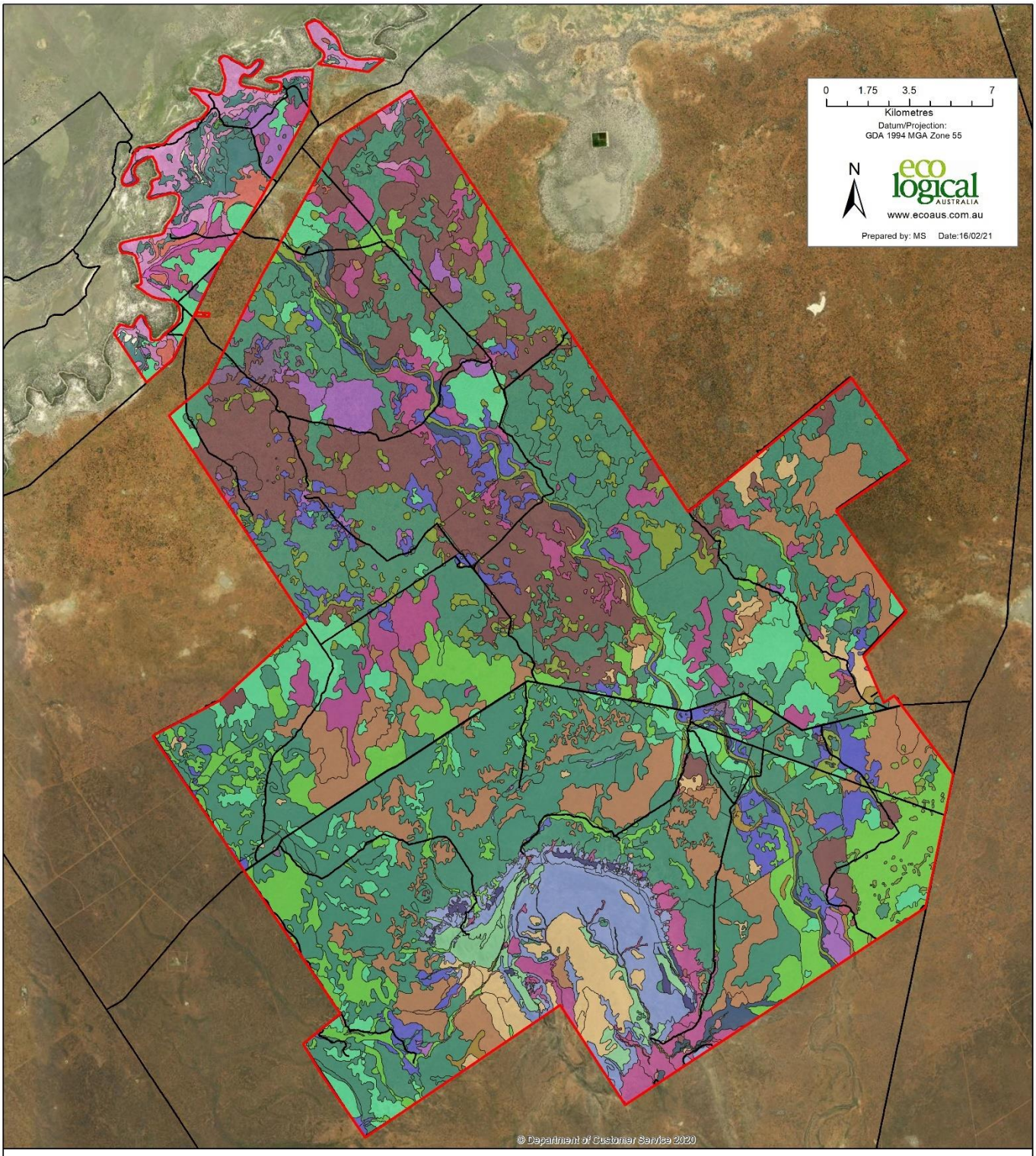

Figure 9: Plant Community Types

3.4 Threatened ecological communities

Three PCTs are equivalent to a single Threatened Ecological Community (TEC) (Figure 10), namely *Coolibah-Black Box Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain and Mulga Lands Bioregions* (BC Act) / Coolibah – Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions (EPBC Act). The PCTs which are included as this TEC are detailed in Table 7. All of these communities are located on the floodplains of the Darling River and are dominated by either *Eucalyptus coolabah* (Coolibah), *Eucalyptus largiflorens* (Black Box), or a combination of both. *Eucalyptus coolabah* occurs on more frequently inundated floodplains on cracking clay soils directly adjoining the Darling River, whilst *Eucalyptus largiflorens* tends to occur on less frequently inundated floodplains generally at some distance from the Darling River on slightly poorer soils.

Table 7: Threatened Ecological Communities

PCTID	PCT Name	TEC	BC Act	EPBC Act	Hectares
37	Black Box woodland wetland on NSW central and northern floodplains including the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion.	Coolibah-Black Box Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain and Mulga Lands Bioregions.	EEC	EEC	2,224
39	Coolabah - River Coobah - Lignum woodland wetland of frequently flooded floodplains mainly in the Darling Riverine Plains Bioregion.				
40	Coolabah open woodland wetland with chenopod/grassy ground cover on grey and brown clay floodplains.				

3.5 Priority weeds

Only one of the 32 exotic species recorded in the reserve is considered a 'priority weed' under the NSW *Biosecurity Act 2015*, namely *Lycium ferocissimum* (African Boxthorn). The recommended management measure for this species is for land managers to mitigate the risk of the plant spreading from their land and reduce the impact of the plant on priority assets (riparian areas and floodplains) (NSW DPI, 2021). This species was observed at three locations across the reserve (Figure 11).

Of particular concern was the identification of *Cenchrus ciliaris* (Buffel Grass) at three locations (Figure 11). Buffel grass is an invasive agricultural grass which proliferates on a range of soil types and aggressively colonises native habitats which can displace and alter native vegetation. Compared with the native groundcover in the reserve, Buffel Grass also has the potential to carry wildfire. It is strongly recommended that Buffel Grass is actively targeted, suppressed and if possible removed from the reserve.

In general, most other weeds occurred as isolated individuals and aren't of particular concern from a biodiversity perspective (i.e. they are unlikely to proliferate and dominate). *Sisymbrium irio* (London Rocket) is common and occasionally abundant in riparian areas, however due to its abundance and sensitive location, control may be impractical. Management through fire may reduce populations over time.

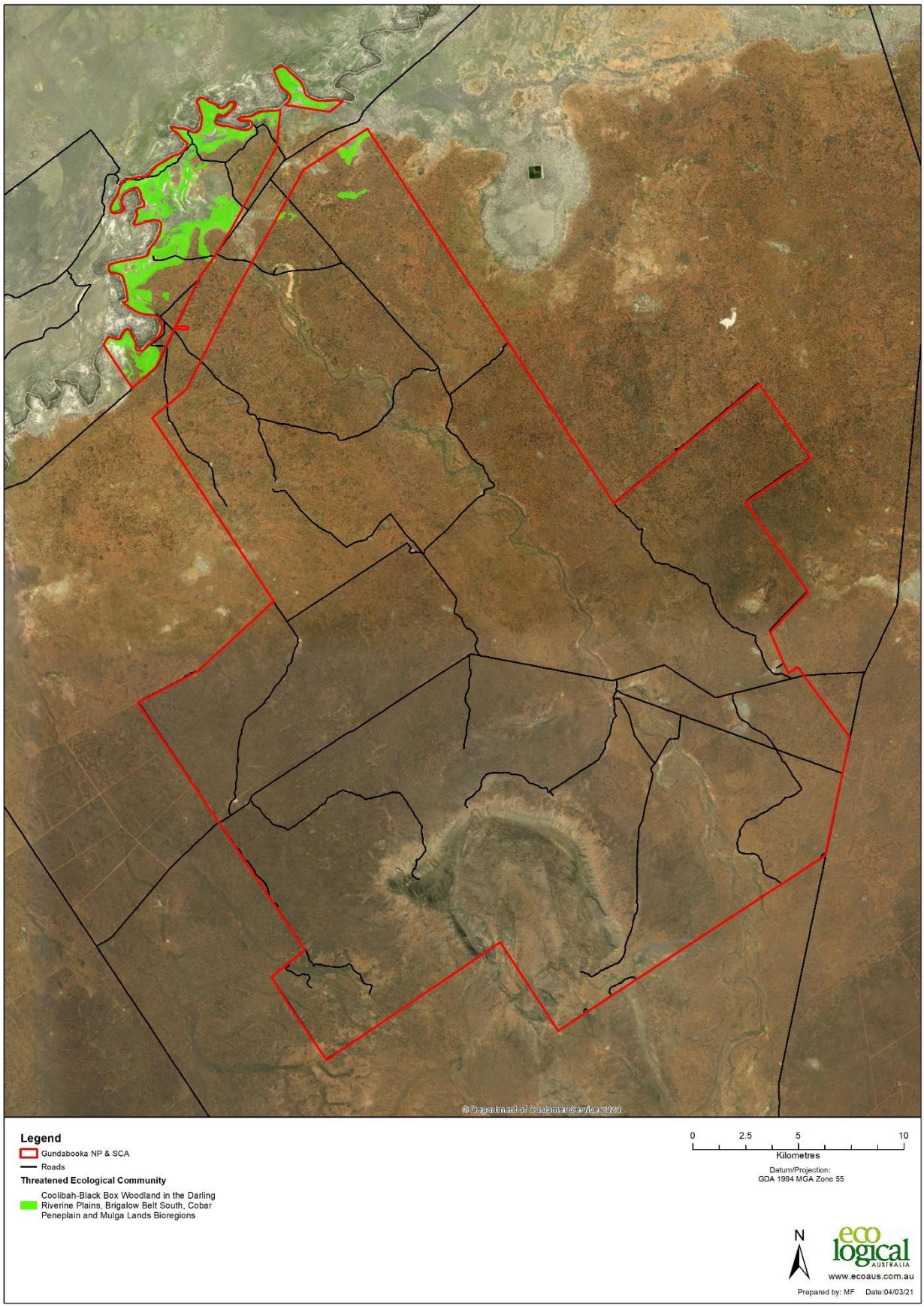

Figure 10: Threatened Ecological Communities

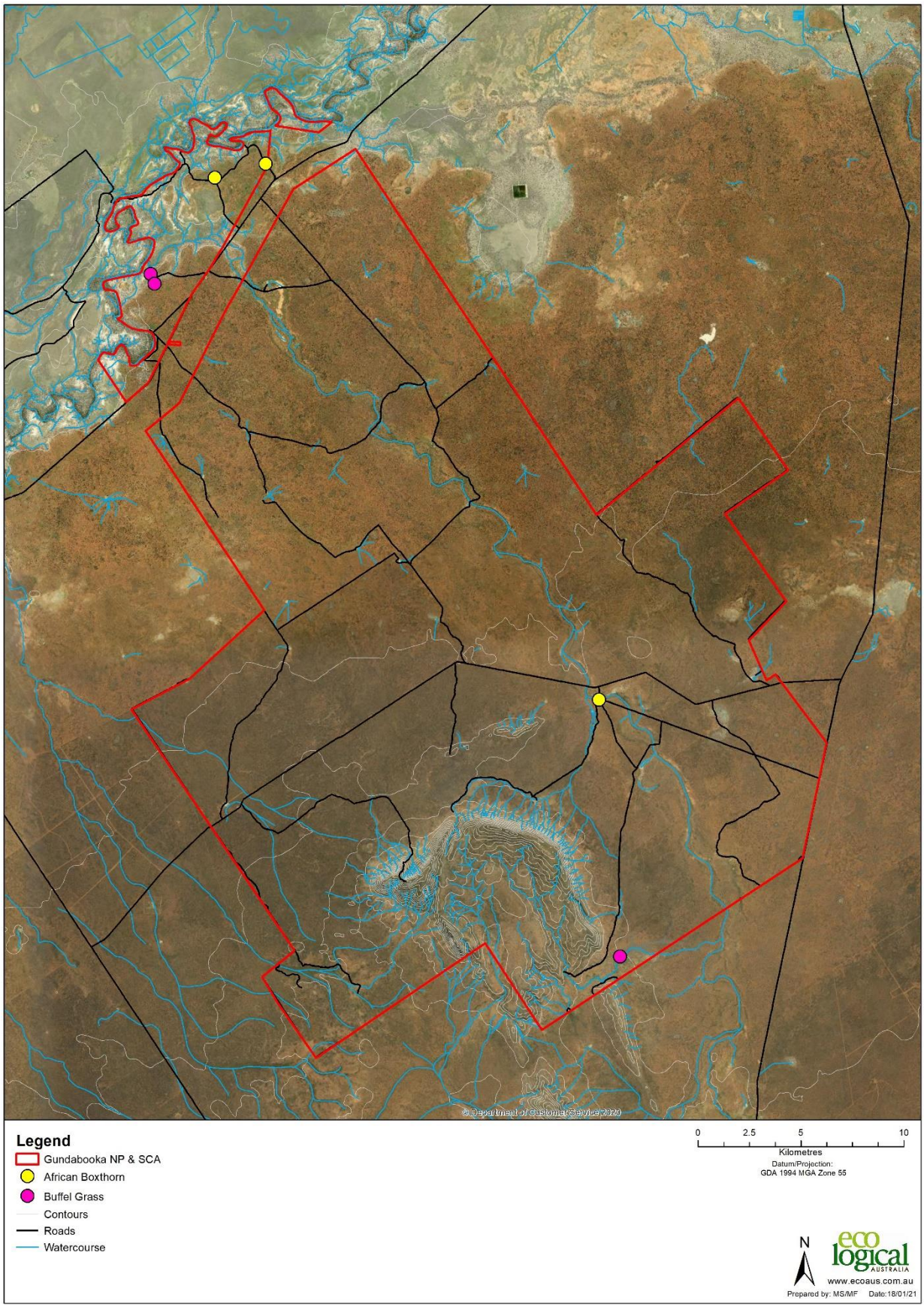

Figure 11: Priority weeds

3.6 Fire ecology

No evidence of recent or historical fire was observed during this study, however there is anecdotal evidence of at least two large wildfires in the last century, as well as a number of prescribed management burns undertaken by NPWS (Figure 12). Prescribed burns were undertaken by NPWS in 2001-02 and 2013-14 covering more than 10,000 hectares of the reserve, with two small wildfires occurring in 2012-13 and 2017-2018 which burnt less than 2 hectares of the reserve.

A search of sentinel 'hotspots' within the reserve showed hotspots from 2008, 2012, 2013, 2019, 2020 and 2021 scattered across the reserve (Geoscience Australia, 2021). None of these hotspots resulted in the generation of a wildfire. All of the PCTs mapped in the reserve are unlikely to burn on regular intervals or seasonally due to a lack of ground cover as a result of vegetation community composition, seasonal conditions and grazing. There is however potential for catastrophic wildfire to occur due to the general thickening of vegetation which may carry fire, particularly when optimal seasonal conditions produce more extensive grassy swards.

Modern management of fire in terms of prescribed burns and management units will be difficult due to the nature of the communities present. Further investigation of fire ecology through research and engagement with the Aboriginal community in relation to traditional land management using fire is required. Holistic management of the landscape which may include the use of fire to naturally manage fuel loads in discrete areas (i.e. patch/mosaic burning) may be achievable with appropriate community engagement and support.

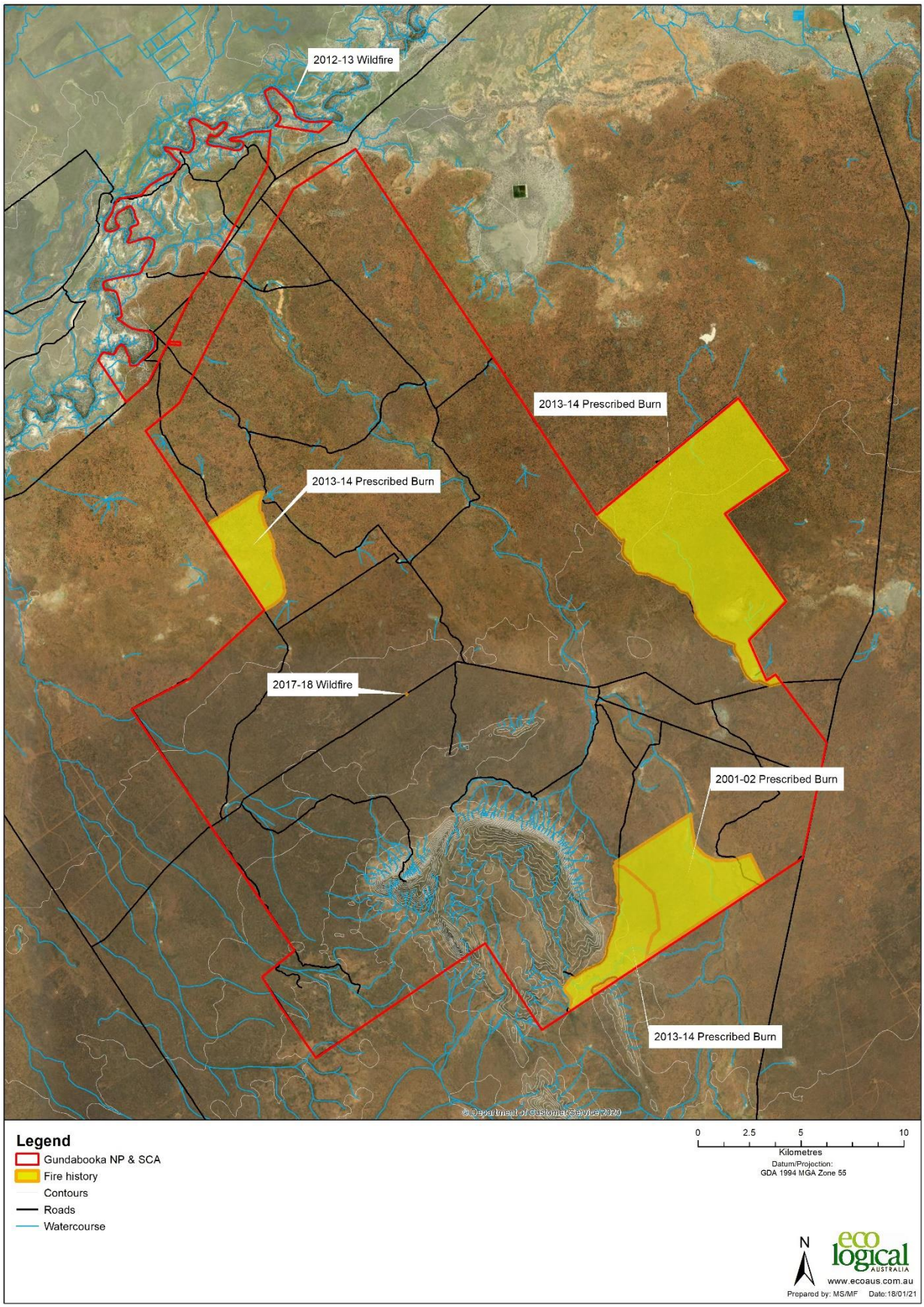

Figure 12: Fire history

Despite a wide variety of PCTs and six vegetation formations, the recommended fire intervals available through the literature are similar (Table 8). Recommended minimum and maximum fire intervals of between 6 years and 40 years were identified in the NSW Biodiversity Strategy (NSW Government, 2004). Considering the general lack of fire within the reserve to date, and the nature of the vegetation generally precluding seasonal fire management, further research is required to understand the effect of fire on vegetation communities, and the best way and timing to undertake burns to improve biodiversity values.

Table 8: Fire regime and intervals

PCTID	PCT Name	Formation	Fire regime	Fire interval (min)	Fire interval (max)	Note
123	Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion	Arid Shrublands (Acacia sub-formation)	Rarely burnt and may be damaged by intense fire as some Acacia species such as Mulga may be killed and resprouting vegetation may be grazed by stock and goats. Appropriate fire intervals may be greater than 50 years.	6	40	There was insufficient data to give definite intervals. Available data indicates minimum intervals should be at least 5-6 years, and maximum intervals approximately 40 years. A minimum of 10-15 years should apply to communities containing Callitris. Fire should be avoided in Chenopod shrublands
125	Mulga - Ironwood shrubland on loams and clays mainly of the Cobar Peneplain Bioregion	Arid Shrublands (Acacia sub-formation)	Fires are uncommon. Mulga may be killed by intense fire so frequent intense fires could threaten this community.	6	40	
137	Whitewood - Western Rosewood low woodland of the NSW north western plains	Arid Shrublands (Acacia sub-formation)	Unknown. Rarely burns due to lack of ground cover with grazing.	6	40	
143	Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.	Arid Shrublands (Acacia sub-formation)	Unknown but the main species in this community regenerate from seed after fire and it is likely that fire will encourage germination and possible expansion of this community.	6	40	
144	Leopardwood low woodland mainly on clayey soils in the semi-arid zone	Arid Shrublands (Acacia sub-formation)	Unknown - Leopardwood may be susceptible to intense fire.	6	40	
165	Derived corkscrew grass grassland/forbland on sandplains and plains in the semi-arid (warm) climate zone	Arid Shrublands (Chenopod sub-formation)	Rarely burns.	6	40	
212	Chenopod low open shrubland - ephemeral partly derived forbland saline wetland on occasionally flooded pale clay scalds in the NSW North Western Plains	Arid Shrublands (Chenopod sub-formation)	Rarely if ever burns. No requirement for fire.	6	40	

PCTID	PCT Name	Formation	Fire regime	Fire interval (min)	Fire interval (max)	Note
36	River Red Gum tall to very tall open forest / woodland wetland on rivers on floodplains mainly in the Darling Riverine Plains Bioregion	Forested Wetlands	Infrequent due to fragmentation and occurrence near rivers.	N/A	N/A	No information provided in the NSW Biodiversity Strategy for Forested Wetlands
233	River Red Gum - Poplar Box grassy woodland wetland on Quaternary alluvial sandy-loam soils of the Cobar Peneplain	Forested Wetlands	Rarely burns. Perhaps some patch burning in grassy areas in pre-European times.	N/A	N/A	
244	Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone of central NSW (wheatbelt).	Grassy Woodlands	Unknown. This mostly grassy ecological community was possibly patch burnt every so often by Aborigines before European settlement. Fire is now rare due to fragmentation and stock grazing having removed ground level biomass.	5	40	Occasional intervals greater than 15 years may be desirable
37	Black Box woodland wetland on NSW central and northern floodplains including the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion.	Semi-arid Woodlands (Grassy sub-formation)	Rarely burns due to low ground biomass and bare ground.	6	40	There was insufficient data to give definite intervals. Available data indicates minimum intervals should be at least 5-10 years, and maximum intervals approximately 40 years
39	Coolabah - River Coobah - Lignum woodland wetland of frequently flooded floodplains mainly in the Darling Riverine Plains Bioregion	Semi-arid Woodlands (Grassy sub-formation)	Fire is rare. Little is known about fire regimes however, an appropriate inter-fire period may be decades.	6	40	
40	Coolabah open woodland wetland with chenopod/grassy ground cover on grey and brown clay floodplains	Semi-arid Woodlands (Grassy sub-formation)	Fires are rare. An appropriate fire regime may be decades between burns given the occurrence of chenopod species that are often fire sensitive.	6	40	
207	Poplar Box grassy low woodland of drainage lines and depressions of the semi-arid (hot) and arid zone climate zones	Semi-arid Woodlands (Grassy sub-formation)	Appropriate fire regime may be 10-40 years with some unburnt patches for longer (Hunter & Fallavoliiita 2003a).	6	40	
208	River Red Gum low woodland of rocky gorges and creeks in the Cobar Peneplain	Semi-arid Woodlands (Grassy sub-formation)	Unknown, but rarely burns due to lack of ground cover.	6	40	

PCTID	PCT Name	Formation	Fire regime	Fire interval (min)	Fire interval (max)	Note
59	Belah/Black Oak - Western Rosewood - Leopardwood low open woodland on sandplain and sandy flats in semi arid (hot) and arid climate zones	Semi-arid Woodlands (Shrubby sub-formation)	Infrequent due to a lack of ground cover. Fires may stimulate sucking of shrubs and trees such as Belah, Western Rosewood and Leopardwood. fire interval should be minimum of 15 years or longer (Hunter & Fallavollita (2003).	6	40	
100	Desert Bloodwood - Mulga low woodland of the semi-arid plains	Semi-arid Woodlands (Shrubby sub-formation)	Unknown - apparently infrequently burnt due to lack of ground fuel due to grazing pressure. Bloodwood would probably survive fire with epicormic growth but severe fire can kill Mulga.	6	40	
103	Poplar Box - Gum Coolabah - White Cypress Pine shrubby woodland mainly in the Cobar Peneplain Bioregion	Semi-arid Woodlands (Shrubby sub-formation)	Irregularly burnt due to lack of ground cover.	6	40	
104	Gum Coolabah woodland on sedimentary substrates mainly in the Cobar Peneplain Bioregion	Semi-arid Woodlands (Shrubby sub-formation)	Rarely burns partly due to a lack of dense grass cover due to woody shrub growth. A minimum fire regime may be 6 years and maximum about 40 years (Kenny et al. 2003). Too-frequent fires should be avoided to allow vegetation to recover especially during drought.	6	40	
105	Poplar Box grassy woodland on flats mainly in the Cobar Peneplain Bioregion and Murray Darling Depression Bioregion	Semi-arid Woodlands (Shrubby sub-formation)	Rarely burnt. Fire may have trouble carrying due to lack of ground cover due to grazing pressure. May have been patch burnt by Aborigines prior to European settlement but this was not documented. Appropriate fire regime may be 8-30 years.	6	40	
106	White Cypress Pine - Mulga low woodland on siliceous rocky ranges mainly of the Cobar Peneplain Bioregion	Semi-arid Woodlands (Shrubby sub-formation)	Rarely burnt, probably burnt irregularly depending on ground fuel levels.	6	40	

PCTID	PCT Name	Formation	Fire regime	Fire interval (min)	Fire interval (max)	Note
108	Gum Coolabah - Mulga open woodland on gravel ridges of the Cobar Peneplain Bioregion	Semi-arid Woodlands (Shrubby sub-formation)	Irregularly burnt and due to a lack of grass cover, fire does not carry easily. Appropriate fire frequency may be variable between 10-50 years (Kenny et al. 2003) but post-fire recovery may be slow due to climatic and grazing pressures.	6	40	
109	Poplar Box - Mulga - Ironwood woodland on red loam soils on plains in the Cobar Peneplain Bioregion and north-eastern Mulga Lands Bioregion	Semi-arid Woodlands (Shrubby sub-formation)	Unknown - irregularly burnt and fire does not carry easily without a build-up of ground cover after some wet seasons.	6	40	
134	Ironwood woodland of the semi-arid plains	Semi-arid Woodlands (Shrubby sub-formation)	Rarely burns and ground cover has been reduced by stock grazing. Intense fire may kill young trees.	6	40	
218	Grey Mallee - Mulga shrubland of the north-western Cobar Peneplain Bioregion	Semi-arid Woodlands (Shrubby sub-formation)	Unknown, Rarely burns - perhaps there are 1-3 fires per century.	6	40	

4. Management considerations

The Ngemba and Paakandji Aboriginal people actively utilised and managed the reserve for thousands of years before European colonisation. Grazing pressure from livestock (and feral animals including goats, rabbits and pigs) has had a detrimental effect on both natural and cultural values, with topsoil having been lost as a result of subsequent soil erosion (NPWS, 2005).

Undoubtably plant communities have changed with shifting land uses over the past 200 years. Grazing is likely to have reduced cover and diversity and increased soil erosion, and when combined with altered fire regimes may have resulted in the increased 'shrubbiness' of the reserve. Construction of dwellings and associated infrastructure such as outbuildings, fencing, roads, pipelines; ground tanks, and holding yards have also had a small-scale impact on the native plant communities of the reserve. Changes to the hydrological regime of the Darling River and its catchment, which are well outside the influence of NPWS at a reserve scale, are likely to be significantly impacting the survival of floodplain vegetation, now and into the future.

The reserve includes significant populations of State and Nationally listed threatened flora, fauna, and ecological communities that require effective management to ensure their ongoing survival. The Plan of Management for the reserve outlines the key objectives and actions required to sustainably manage the reserve into the future. The specific objectives of the Plan of Management for the reserve are:

1. Maintain and improve the park's landscape and ecological values through minimising erosion, control of feral animals and weeds, encouragement of revegetation, and appropriate fire regimes;
2. Protect, promote and interpret the Aboriginal and non-Aboriginal cultural heritage of the park in partnership with the traditional owners and the local community;
3. Interpret the landscape, native plants and animals, and changes to natural systems within the park and semi-arid Australia; and
4. Manage the park as a place for ecologically sustainable nature / cultural tourism and recreation.

With reference to the long and varied history of the reserve, observations during the preparation of this study, and the objectives of the management plan, the following key management issues have been identified:

- **Grazing pressure from feral animals**. Large flocks of feral goats were observed in and around Mount Gunderbooka. Goats are a known threat to Curly-bark Wattle which is actively being managed by NPWS.
- **Erosion and loss of topsoil**. Ongoing grazing pressure is likely to continue to result in the loss of topsoil which has flow on effects to the structure and composition of plant communities. Two specific areas of significant track erosion were observed around Mount Gunderbooka where access tracks have eroded either into adjoining drainage lines, or have themselves become drainage lines as a result of overland flow (Ben Lomond Gorge Trail and an eastward unnamed track off Buckleys Tank Trail). Not all tracks were driven as part of this study, so there are potentially other areas of significant erosion. Other areas of erosion were observed on the footslopes of Mount Gunderbooka where the loss of native vegetation has resulted in gully erosion becoming extensive due to highly erodible soils.

- **Inappropriate fire regimes** may alter the floristic composition and structure of vegetation communities.
- **Priority and environmental weeds** including African Boxthorn and Buffel Grass. In particular Buffel Grass infestations pose a significant current and future risk to the plant communities of the reserve. Populations of African Boxthorn pose a risk to riparian areas and current known populations are small and easy to control.
- **Historical clearing and land degradation** are apparent at a number of locations surrounding old homesteads and outbuildings. Opportunities for restoration of native plant communities exist.
- **Extensive Eucalypt dieback** was observed in two areas of *Eucalyptus populnea* (Poplar Box) to the south and south-west of Mount Gunderbooka. The area south has potentially been affected by a long history of grazing, and the area to the south-west appears to have been storm affected.

5. Recommendations

Following the completion of PCT mapping across the reserve the following recommendations have been developed.

- Conduct detailed research into the fire ecology of each PCT including recent and likely historic fire regimes as well as sensitive species to better inform fire management requirements.
- Review and update relevant fire management plans taking into consideration the minimum fire intervals, mosaic cultural burning practises, the adequacy of existing trail networks, management of fire in long unburnt shrublands and woodlands and consideration of impacts to conservation significant species.
- Control priority and environmental weeds.
- Control feral animals including goats, rabbits and pigs.
- Undertake erosion control works in identified areas to mitigate against continual erosion and landscape degradation.
- Undertake an investigation into Eucalypt dieback to ascertain root causes and potential controls which could be implemented to ensure positive ecosystem recovery.
- Undertake restoration works in areas disturbed as a result of historical agricultural practices (e.g. holding yards)
- Establish a biodiversity monitoring program to measure change as a result of positive environmental actions being undertaken in the reserve (e.g. weed and feral control, erosion control works, cultural burning) as well as any adverse effects of climate change (increase fire risk, less frequent rainfall, increased storms, less frequent flooding in riparian zones etc.)
- Undertake spring surveys for rare and threatened species including orchids in areas of suitable habitat.

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Appendix A Vegetation Communities Mapped by Westbrook et al. (2003)

Table 9: Vegetation units described and mapped in 2003 surveys.

Unit Code	Unit Name	Hectares
6	Bimblebox/Redbox Open Wood.	12,635
9	Ironwood/Redbox Open Wood. 1	11,488
6b	Redbox(+Bimblebox)OpenWood.1	7,190
3	Mulga Low Woodland	3,252
SBC	Southern Belah Complex	2,304
6a	Bimblebox(+Redbox)Open Wood.	2,299
9a	Ironwood/Redbox Open Wood. 2	1,522
MC	Mountain Complex	967
6c	Redbox(+Bimblebox)OpenWood.2	939
12	Bloodwood/Redbox Open Wood.	554
1	Bimblebox/Wilga Woodland	537
15a	Pine Woodland	529
13	Bloodwood Open Woodland	356
2	Bimblebox/Acacia Woodland	326
1a	Bimblebox Woodland	299
16	Mallee/Pine/Acacia Woodland	288
15	Pine/Tall Shrub Open Wood.	238
4a	Bimblebox Open Wood./Mulga	195
???	Untyped Veg	186
18	Mulga/Box Low Open Woodland	117
10	Belah Open Woodland	83
19	Open Shrubland	41
14	Coolabah Apple Open Woodland	39
20	Grassland	13
Total		46,397

Appendix B PCTs Identified in State Vegetation Mapping – Western Region

Table 10: PCTs mapped within the reserve by State Vegetation Type Map - Western Region (DPIE, 2019)

PCT ID	PCT Name	Hectares
109	Poplar Box - Mulga - Ironwood woodland on red loam soils on plains in the Cobar Peneplain Bioregion and north-eastern Mulga Lands Bioregion	55,149
125	Mulga - Ironwood shrubland on loams and clays mainly of the Cobar Peneplain Bioregion	15,951
137	Whitewood - Western Rosewood low woodland of the NSW north western plains	3,749
134	Ironwood woodland of the semi-arid plains	3,211
40	Coolabah open woodland wetland with chenopod/grassy ground cover on grey and brown clay floodplains	2,143
59	Belah/Black Oak - Western Rosewood - Leopardwood low open woodland on sandplain and sandy flats in semi arid (hot) and arid climate zones	1,961
108	Gum Coolabah - Mulga open woodland on gravel ridges of the Cobar Peneplain Bioregion	1,513
218	Grey Mallee - Mulga shrubland of the north-western Cobar Peneplain Bioregion	1,414
106	White Cypress Pine - Mulga low woodland on siliceous rocky ranges mainly of the Cobar Peneplain Bioregion	1,273
105	Poplar Box grassy woodland on flats mainly in the Cobar Peneplain Bioregion and Murray Darling Depression Bioregion	455
39	Coolabah - River Coobah - Lignum woodland wetland of frequently flooded floodplains mainly in the Darling Riverine Plains Bioregion	390
43	Mitchell Grass grassland - chenopod low open shrubland on floodplains in the semi-arid (hot) and arid zones	360
36	River Red Gum tall to very tall open forest / woodland wetland on rivers on floodplains mainly in the Darling Riverine Plains Bioregion	287
103	Poplar Box - Gum Coolabah - White Cypress Pine shrubby woodland mainly in the Cobar Peneplain Bioregion	254
208	River Red Gum low woodland of rocky gorges and creeks in the Cobar Peneplain	237
174	Mallee - Gum Coolabah woodland on red earth flats of the eastern Cobar Peneplain Bioregion	223
118	Gidgee chenopod woodland on red-brown clays in the semi-arid (hot) climate zone mainly in the Mulga Lands Bioregion.	202
87	Poplar Box - Coolabah floodplain woodland on light clay soil mainly in the Darling Riverine Plains Bioregion	158

PCT ID	PCT Name	Hectares
98	Poplar Box - White Cypress Pine - Wilga - Ironwood shrubby woodland on red sandy-loam soils in the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion	109
37	Black Box woodland wetland on NSW central and northern floodplains including the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion.	64
120	Mulga shrubland on stony rises in the arid and semi-arid climate zones, mainly in the Mulga Lands Bioregion	50
143	Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.	36
233	River Red Gum - Poplar Box grassy woodland wetland on Quaternary alluvial sandy-loam soils of the Cobar Peneplain	34
119	Sandplain Mulga tall shrubland - open shrubland of the semi-arid and arid climate zones	33
0	Not native vegetation	33
212	Chenopod low open shrubland - ephemeral partly derived forbland saline wetland on occasionally flooded pale clay scalds in the NSW North Western Plains	29
25	Lignum shrubland wetland on floodplains and depressions of the Mulga Lands Bioregion, Channel Country Bioregion in the arid and semi-arid (hot) climate zones	25
69	White Cypress Pine - Mulga shrubland on plains and sandplains in the arid and semi-arid (hot summer) climate zones.	21
207	Poplar Box grassy low woodland of drainage lines and depressions of the semi-arid (hot) and arid zone climate zones	20
144	Leopardwood low woodland mainly on clayey soils in the semi-arid zone	19
24	Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	6
173	Sandplain mallee of central NSW	4
245	Pine - Belah low open woodland of the western Cobar Peneplain and northern Murray Darling Depression Bioregion	2
68	White Cypress Pine - Mulga low open woodland on the stony ranges of the arid zone (far north western NSW).	2
238	Permanent and semi-permanent freshwater lakes wetland of the inland slopes and plains	1
170	Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	1
171	Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion	0
246	Pine shrubland of the western Cobar Peneplain Bioregion	0
	Total	**89,421**

Appendix C Geological units

Table 11: Geological units within the reserve

Unit	Name	Description	Period	Rock Type	Dominant Lithology	Process
Cz/Pzg	unnamed	Cainozoic, undifferentiated, concealing granite	Silurian	clastic sediment	granite	fluvial
Dks	undifferentiated	Limestone at Stoney Tank. Dark-grey stromatoporoidal biomicrite, probably thin bedded (Poorly exposed)	Devonian	chemical sediment	limestone	shallow marine
Dm	Mulga Downs Group	Quartzose sandstone with oligomictic quartz pebble conglomerate and gravel bands; infrequent thin intervals of siltstone, mudstone or shale. Dispersed argillaceous intraclasts, massive bedding, thin flaggy bedding and crossbedding all present. Sandstone	Devonian	clastic sediment	sandstone, conglomerate, gravel	fluvial
K	Rolling Downs Group	Grey mudstone with siltstone and fine sandstone in exposures north of and along Darling River valley; elsewhere hardened and partially calcreted grey clayey regolith Interpreted as slaked unstable mudstone	Cretaceous	clastic sediment	mudstone, siltstone, sandstone	shallow marine
Mz	unnamed	?Mesozoic, undifferentiated	Cretaceous	clastic sediment	sandstone and shale	shallow marine
Og	Girilambone Group	Quartzose and quartz-lithic sandstone, pelite and chert; with minor intercalations of polymictic conglomerate, quartzite, and mafic and intermediate volcanics. Metamorphism, generally more severe in the east, has converted the clastic rocks to psammitic	Ordovician	metasediment	sandstone, pelite, chert	deep marine basinal turbidites
Ogm	unnamed	Sandstone, pebbly sandstone, polymictic conglomerate and minor shale. Clasts range from pebbles to cobbles, with boulders rare. Clasts include quartzite, sandstone, mudstone, vein quartz, angular chert fragments and rare granite. Pelitic clasts may be fl	Ordovician	clastic sediment	sandstone, conglomerate	deep marine basinal turbidites
Qa	unnamed	Alluvial deposits with extensive undifferentiated areas of colluvium: silt, clayey sand, deep neutral red earths, frequent hardpan and occasional polymicitc gravel	Quaternary	clastic sediment	alluvium, colluvium, silt, sand	alluvials
Qcp	unnamed	Red, yellow or dark-grey clay and silt in internal drainage areas or clay pans, frequently gypsiferous	Quaternary	clastic sediment	clay, silt	claypans
Qd	unnamed	Sand plain. Deep red acid to calcareous loamy to sandy soil forming undulating plain with abundant small internal drainage areas and vegetated hummocks	Quaternary	clastic sediment	sand and soil	sand plains
Qd/K	undifferentiated	Sand plain concealing mudstone	Cretaceous	clastic sediment	mudstone	sand plains

Unit	Name	Description	Period	Rock Type	Dominant Lithology	Process
Qr	unnamed	Areas marked by sandy eluvial soils and veneers of residual and colluvial lithic waste	Quaternary	clastic sediment	soil	residuals
Qr/Dm	undifferentiated	Areas marked by sandy eluvial soils and veneers of residual and colluvial lithic waste OVERLIES Quartzose sandstone with oligomictic quartz pebble conglomerate and gravel bands; infrequent thin intervals of siltstone, mudstone or shale. Dispersed argilla	Quaternary	clastic sediment	soil	residuals
Qrd	unnamed	Dunefield deposits comprising indistinct sand ridges and rises, including sets of ill-formed low east-west longitudinal dunes, with duneforms more distinct in the west. sand grains coated by red Iron oxide	Quaternary	clastic sediment	sand	floodplain
Qrs	unnamed	Riverine floodplain sediments: pink, grey and black clayey silt and mud; minor loamy sand	Quaternary	clastic sediment	silt, mud	floodplain
Ts	unnamed	Crossbedded quartzose sandstone and quartz pebble conglomerate, commonly kaolinitic; local arkosic sandstone in areas overlying granite; kaolin deposits in Compton Downs - Gongolgon area.	Tertiary	clastic sediment	sandstone, conglomerate	fluvial
Tsi	unnamed	Silcrete and occasional porcellanite; less frequent silicified weathered grainte or arkose	Tertiary	regolith	silcrete	shallow marine

Appendix D Vegetation Type Profiles

1. Dead Finish Shrubland	
Description	Tall shrubland dominated by *Acacia tetragonophylla* (Dead Finish). Generally no midstorey present. The understorey is dominated by *Portulaca oleracea* (Pigweed), *Salsola australis*, *Sclerolaena diacantha* (Grey Copperburr) and *Sclerolaena eriacantha*. The community is most frequently encountered on reddish brown fine sandy loam soils on flat plains, with no evidence of previous fires. The vegetation condition is low-moderate and could represent a derived community

Strata	Canopy	Mid	Ground
Cover	20 % (±0 %)	0 % (±0 %)	1 % (±0 %)
Height	3 m (±0 m)	0 m (±0 m)	0.2 m (±0 m)
Vegetation formation	Arid Shrublands (Acacia sub-formation)		
Vegetation class	Stony Desert Mulga Shrublands		
Vegetation structure	Tall shrubland		
Conservation status	Not listed		
Area mapped	8.3 ha		
Characteristic trees	*Acacia tetragonophylla*		
Characteristic midstorey	Not present		
Characteristic groundcovers	*Portulaca oleracea, Salsola kali, Sclerolaena diacantha, Sclerolaena eriacantha*		

1. Dead Finish Shrubland	
Soil texture and colour	Reddish brown fine sandy loam
Landform element and pattern	Flat plain
Mean native richness	N/A
Fire history	No evidence
Condition	Low - moderate
No. sites sampled	1

2. Belah Woodland	
Description	Woodland to low woodland dominated by *Casuarina cristata* (Belah) and/or *Casuarina pauper* (Black Oak). The midstorey consists of *Myoporum montanum* (Western Boobialla), *Acacia oswaldii* (Umbrella Wattle), *Apophyllum anomalum* (Warrior Bush), *Atalaya hemiglauca* (Whitewood), *Eremophila sturtii* (Narrow-leaf Emu-bush), *Flindersia maculosa* (Leopardwood) and *Geijera parviflora* (Wilga). The understorey is made up of *Enchylaena tomentosa* (Ruby Saltbush), *Einadia nutans* subsp. *oxycarpa, Scaevola spinescens* (Maroon Bush), *Sclerolaena bicornis* var. *bicornis* (Goathead Burr) and *Sclerolaena birchii* (Galvanised Burr). The community is most frequently encountered on reddish brown – very dark red, clay to fine sandy loam soils on flats and also crests in rocky landsacpes. No evidence of fire recorded, and the vegetation condition varied from low-moderate, to moderate-high.

Strata	Canopy	Mid	Ground
Cover	23 % (±3 %)	15 % (±10 %)	6 % (±5 %)
Height	9.5 m (±2.5 m)	0 m (±0 m)	0.2 m (±0 m)
Vegetation formation	Semi-arid Woodlands (Shrubby sub-formation)		
Vegetation class	Semi-arid Sand Plain Woodlands		
Vegetation structure	Woodland – Low Woodland		
Conservation status	Not listed		
Area mapped	7.0		
Characteristic trees	*Casuarina cristata* (Belah) and *Casuarina pauper* (Black Oak)		
Characteristic midstorey	*Myoporum montanum, Acacia oswaldii, Apophyllum anomalum, Atalaya hemiglauca, Eremophila sturtii, Flindersia maculosa* and *Geijera parviflora*		

2. Belah Woodland	
Characteristic groundcovers	*Enchylaena tomentosa, Einadia nutans* subsp. *Oxycarpa, Scaevola spinescens, Sclerolaena bicornis* var. *bicornis* and *Sclerolaena birchii*
Soil colour and texture	Reddish brown – very dark red, clay loam – fine sandy loam
Landform element and pattern	Flat plain to a crest
Fire history	No evidence
Condition	Low-moderate-high
No. sites sampled	2

3. Black Box – Chenopod Low - Open Woodland/Claypan	
Description	Low open woodland dominated by *Eucalyptus largiflorens* (Black Box) and less frequently featuring *Eucalyptus coolabah* (Coolibah). The midstorey is dominated by *Eremophila sturtii* (Narrow-leaf Emu-bush) and may also contain *Exocarpos aphyllus* (Leafless Ballart), *Myoporum montanum* (Western Boobialla), *Dodonaea viscosa* var. *arborescens, Eremophila polyclada* (Twiggy Emu-bush), *Flindersia maculosa* (Leopardwood) and *Pimelea sp*. The understorey is dominated by chenopods, namely *Sclerolaena diacantha* (Grey Copperburr), *Sclerolaena birchii* (Galvanised Burr) and *Sclerolaena tricuspis* (Giant Redburr). The understorey consists of *Abutilon leucopetalum, Atriplex spongiosa* (Pop Saltbush), *Chenopodium desertorum, Ptilotus sessilifolius* (Silver-tails) and *Rutidosis helichrysoides* (Grey Wrinklewort). The community is most frequently encountered on brown loamy sand to sandy clay loam soils on flats in on plains well back from the Darling River. No evidence of fire was recorded, and the vegetation condition is moderate-high.

Strata	**Canopy**	**Mid**	**Ground**
Cover	10 % (±3 %)	12 % (±4 %)	12 % (±7 %)
Height	8 m (±1.2 m)	1.8 m (±0.2 m)	0.3 m (±0.1 m)
Vegetation formation	Semi-arid Woodlands (Grassy sub-formation)		
Vegetation class	North-west Floodplain Woodlands		
Vegetation structure	Low open woodland		
Conservation status	State and Federal EEC		
Area mapped	134.2 ha		
Characteristic trees	*Eucalyptus largiflorens* and *Eucalyptus coolabah*		
Characteristic midstorey	*Eremophila sturtii, Exocarpos aphyllus, Myoporum montanum, Dodonaea viscosa* var. *arborescens, Eremophila polyclada, Flindersia maculosa, Pimelea* spp.		

3. Black Box – Chenopod Low - Open Woodland/Claypan	
Characteristic groundcovers	*Sclerolaena diacantha, Abutilon leucopetalum, Atriplex spongiosa, Chenopodium desertorum, Ptilotus sessilifolius, Rutidosis helichrysoides, Sclerolaena birchii, Sclerolaena* spp., *Sclerolaena tricuspis*
Soil colour and texture	Brown loamy sand to sandy, clay-sandy loam
Landform element and pattern	Flat – hillock – lower slope plain
Fire history	No evidence
Condition	Moderate - high
No. sites sampled	3

4. Black Oak Open Woodland	
Description	Open woodland dominated by *Casuarina pauper* (Black Oak) and occasionally *Atalaya hemiglauca* (Whitewood), *Alectryon oleifolius* (Western Rosewood), *Flindersia maculosa* (Leopardwood), *Grevillea striata* (Silver Honeysuckle) and *Ventilago viminalis* (Supplejack). The midstorey is dominated by *Myoporum montanum* (Western Boobialla) and *Eremophila sturtii* (Narrow-leaf Emu-bush). Less frequently found in the midstorey are *Acacia* spp., *Apophyllum anomalum* (Warrior Bush), *Atalaya hemiglauca* (Whitewood), *Casuarina pauper* (Black Oak), *Clematis* spp., *Eremophila mitchellii* (Budda), *Flindersia maculosa* (Leopardwood), *Geijera parviflora* (Wilga), *Myoporum acuminatum* (Boobialla) and *Pimelea* spp. The understorey is dominated by *Austrostipa scabra* (Speargrass), *Atriplex* spp. and *Sclerolaena diacantha* (Grey Copperburr). Also featuring in the understorey is *Atriplex spongiosa* (Pop Saltbush), *Chenopodium pumilio* (Small Crumbweed), *Dissocarpus paradoxus* (Cannonball Burr), *Enchylaena tomentosa* (Ruby Saltbush), *Rhagodia spinescens* (Spiny Saltbush), *Sclerolaena birchii* (Galvanised Burr), *Sclerolaena eriacantha*, *Sclerolaena muricata* (Black Rolypoly), *Sclerolaena tricuspis* (Giant Redburr), *Sida* spp. and *Zygophyllum* spp. The community is most commonly encountered on reddish brown loamy sand - sandy loam soils on flat plains. No evidence of fire recorded and the vegetation is in moderate condition.

Strata	Canopy	Mid	Ground
Cover	16 % (±2 %)	4 % (±1 %)	15 % (±5 %)
Height	7.5 m (±0.3 m)	2.2 m (±0.5 m)	0.2 m (±0 m)
Vegetation formation	Semi-arid Woodlands (Shrubby sub-formation)		
Vegetation class	Semi-arid Sand Plain Woodlands		
Vegetation structure	Low woodland		
Conservation status	Not listed		
Area mapped	423.5 ha		

4. Black Oak Open Woodland	
Characteristic trees	*Casuarina pauper, Atalaya hemiglauca, Ventilago viminalis, Alectryon oleifolius*, *Flindersia* maculosa, *Grevillea striata*
Characteristic midstorey	*Myoporum montanum, Eremophila sturtii, Acacia* spp.*, Apophyllum anomalum, Atalaya hemiglauca, Casuarina pauper, Clematis* spp.*, Eremophila mitchellii, Flindersia maculosa, Geijera parviflora, Myoporum acuminatum, Pimelea* spp.
Characteristic groundcovers	*Austrostipa scabra*, *Atriplex* spp.*, Sclerolaena diacantha*, *Atriplex spongiosa*, *Chenopodium pumilio*, *Dissocarpus paradoxus*, *Enchylaena tomentosa*, *Rhagodia spinescens*, *Sclerolaena birchii*, *Sclerolaena eriacantha*, *Sclerolaena muricata*, *Sclerolaena tricuspis*, *Sida* spp., *Zygophyllum* spp.
Soil colour and texture	Reddish brown loamy sand - sandy loam
Landform element and pattern	Flat plain
Fire history	No evidence
Condition	Moderate
No. sites sampled	6

5. Black Roly Poly Chenopod Shrubland	
Description	Dwarf sparse heathland and dwarf sparse shrubland with no canopy or midstorey present. Understorey dominated by chenopod species, such as *Sclerolaena muricata* (Black Rolypoly), *Chenopodium auricomiforme, Rutidosis helichrysoides* (Grey Winklewort) and *Brachyscome* spp. The community is generally found on dark grey, medium clay soil on open depressions on alluvial plains. There is no evidence of previous fire events and the vegetation is in low-moderate condition.

Strata	**Canopy**	**Mid**	**Ground**
Cover	0 % (±0 %)	0 % (±0 %)	10 % (±0 %)
Height	0 m (±0 m)	0 m (±0 m)	0.2 m (±0 m)
Vegetation formation	Arid Shrublands (Chenopod sub-formation)		
Vegetation class	Riverine Chenopod Shrublands		
Vegetation structure	Dwarf sparse heathland – dwarf sparse shrubland		
Conservation status	Not listed		
Area mapped	348.6 ha		
Characteristic trees	None		
Characteristic midstorey	None		
Characteristic groundcovers	*Brachyscome* spp., *Chenopodium auricomiforme, Rutidosis helichrysoides, Sclerolaena muricata*		
Soil colour and texture	Dark grey medium clay		
Landform element and pattern	Open depression on alluvial plain		

5. Black Roly Poly Chenopod Shrubland	
Fire history	No evidence
Condition	Low-moderate
No. sites sampled	1

6. Bloodwood Grassy Open Woodland	
Description	Low open woodland consisting of *Corymbia tumescens* and *Eucalyptus populnea* (Brimble Box). Frequently occurring midstorey species are *Acacia aneura* (Mulga), *Acacia decora* (Western Silver Wattle), *Acacia tetragonophylla* (Dead Finish), *Callitris glaucophylla* (White Cypress Pine) and *Santalum acuminatum* (Sweet Quandong). Groundcover consists of grasses and burrs, such as *Austrostipa scabra* (Speargrass), *Sclerolaena diacantha* (Grey Copperburr), *Chenopodium pumilio* (Small Crumbweed), *Sclerolaena birchii* (Galvanised Burr), *Sida* spp., *Eriachne mucronata* (Mountain Wandarrie Grass), *Rhodanthe floribunda* (Common White Sunray), *Rumex* spp. and *Thyridolepis mitchelliana* (Mulga Mitchell Grass). The community is generally located on brown to reddish-brown fine sandy loam soils on flat to mid-slope hills and plains. No visible evidence of fire history and the vegetation is in a moderate to high condition.

Strata	**Canopy**	**Mid**	**Ground**
Cover	3 % (±2 %)	4 % (±2 %)	30 % (±0 %)
Height	6.5 m (±0.5 m)	2.8 m (±0.3 m)	0.3 m (±0.1 m)
Vegetation formation	Semi-arid Woodlands (Shrubby sub-formation)		
Vegetation class	Desert Woodlands		
Vegetation structure	Low open woodland		
Conservation status	Not listed		
Area mapped	205.9		
Characteristic trees	*Corymbia tumescens, Eucalyptus populnea*		
Characteristic midstorey	*Acacia aneura, Acacia decora, Acacia tetragonophylla, Callitris glaucophylla, Santalum acuminatum*		

6. Bloodwood Grassy Open Woodland	
Characteristic groundcovers	*Austrostipa scabra*, *Sclerolaena diacantha*, *Chenopodium pumilio*, *Sclerolaena birchii*, *Sida* spp., *Eriachne mucronata, Rhodanthe floribunda, Rumex* spp., *Thyridolepis mitchelliana*
Soil colour and texture	Brown to reddish brown fine sandy loam
Landform element and pattern	Flat to mid slope hills and plains
Fire history	No evidence
Condition	Moderate - high
No. sites sampled	2

7. Chenopod Claypan Shrubland	
Description	Dwarf sparse-open heathland dwarf sparse-open shrubland consisting of *Acacia victoriae, Eremophila mitchelli* (Budda), *Eremophila sturtii* (Turpentine Bush) and, less frequently, *Atalaya hemiglauca* (Whitewood). Commonly occurring midstorey species are *Abutilon leucopetalum, Acacia victoriae, Alternanthera nodiflora* (Common Joyweed), *Centipeda* spp., *Portulaca oleracea* (Pigweed), *Rhagodia spinescens* (Thorny Saltbush), *Rhodanthe floribunda* (Common White Sunray), *Sclerolaena bicornis* (Goathead Burr), *Sclerolaena muricata* (Black Rolypoly) and *Sida cunninghamii* (Ridge Sida). Understorey species consist of *Asteraceae indeterminate* (Daisies), *Neobassia proceriflora* (Soda Bush), *Pimelea trichostachya, Portulaca oleracea* (Pigweed), *Rhodanthe floribunda* (Common White Sunray), *Sclerolaena bicornis* var. *bicornis, Sclerolaena bicornis* var. *horrida* (Goathead Burr), *Sclerolaena calcarata* (Redburr), *Sclerolaena eriacantha* (Silky Copperburr), *Sclerolaena muricata* (Black Rolypoly), *Sida* spp. and *Tetragonia tetragonioides* (New Zealand Spinach). The community generally occurs on brown, fine sandy clay loam to sandy clay, on closed depressions on plains. No visible evidence of fire history and the vegetation is in a low-moderate to moderate-high condition.

Strata	**Canopy**	**Mid**	**Ground**
Cover	1 % (±1 %)	16 % (±14 %)	5 % (±0 %)
Height	5 m (±3 m)	2 m (±0 m)	0.3 m (±0.1 m)
Vegetation formation	Arid Shrublands (Chenopod sub-formation)		
Vegetation class	Riverine Chenopod Shrublands		
Vegetation structure	Dwarf sparse-open heathland dwarf sparse-open shrubland		
Conservation status	Not listed		
Area mapped	410.2		
Characteristic trees	*Acacia victoriae, Eremophila mitchelli, Eremophila sturtii, Atalaya hemiglauca*		

7. Chenopod Claypan Shrubland	
Characteristic midstorey	*Abutilon leucopetalum, Acacia victoriae, Alternanthera nodiflora, Centipeda* spp.*, Portulaca oleracea, Rhagodia spinescens, Rhodanthe floribunda, Sclerolaena bicornis, Sclerolaena muricata, Sida cunninghamii*
Characteristic groundcovers	*Asteraceae indeterminate, Neobassia proceriflora, Pimelea trichostachya, Portulaca oleracea, Rhodanthe floribunda, Sclerolaena bicornis* var. *bicornis, Sclerolaena bicornis* var. *horrida, Sclerolaena calcarata, Sclerolaena eriacantha, Sclerolaena muricata, Sida* spp.*, Tetragonia tetragonioides*
Soil colour and texture	Brown fine sandy clay loam to sandy clay
Landform element and pattern	Closed depression on plain
Fire history	No evidence
Condition	Low-moderate to moderate-high
No. sites sampled	2

8. Chenopod Shrubland	
Description	Dwarf sparse-open heathland dwarf sparse-open shrubland occasionally consisting of *Atalaya hemiglauca* (Whitewood), *Acacia aneura* (Mulga) and *Eucalyptus coolabah* (Coolibah) in the sparse-open canopy. Midstorey species consist of *Acacia victoriae* and *Rhagodia spinescens* (Thorny Saltbush). The understorey is dominated by chenopod species such as *Sclerolaena tricuspis* (Giant Redburr), *Sclerolaena calcarata* (Redburr), *Sclerolaena eriacantha* (Silky Copperburr), *Sclerolaena muricata* (Black Rolypoly), *Sclerolaena diacantha* (Grey Copperburr) and *Neobassia proceriflora* (Soda Bush). Other common understorey species are *Pimelea trichostachya* and *Tetragonia tetragonioides* (New Zealand Spinach). The community can be found on brown to dark grey medium clay soils, on flat alluvial plains. No visible evidence of fire history and vegetation is in a low-moderate condition.

Strata	**Canopy**	**Mid**	**Ground**
Cover	0 % (±0 %)	0 % (±0 %)	18 % (±5 %)
Height	6 m (±1.2 m)	0 m (±0 m)	0.2 m (±0 m)
Vegetation formation	Arid Shrublands (Chenopod sub-formation)		
Vegetation class	Riverine Chenopod Shrublands		
Vegetation structure	Dwarf sparse-open heathland dwarf sparse-open shrubland		
Conservation status	Not listed		
Area mapped	705 ha		
Characteristic trees	*Acacia aneura, Atalaya hemiglauca, Eucalyptus coolabah*		
Characteristic midstorey	*Acacia victoriae, Rhagodia spinescens*		
Characteristic groundcovers	*Sclerolaena tricuspis, Sclerolaena calcarata, Sclerolaena eriacantha, Sclerolaena muricata, Sclerolaena diacantha, Pimelea trichostachya, Tetragonia tetragonioides, Neobassia proceriflora*		

8. Chenopod Shrubland	
Soil colour and texture	Brown to dark grey medium clay
Landform element and pattern	Flat alluvial plain
Fire history	No evidence
Condition	Low-moderate
No. sites sampled	6

9. Coolabah Chenopod Low Open Floodplain Woodland	
Description	Low-open to low woodland dominated by *Eucalyptus coolabah* (Coolibah) and less frequently featuring *Atalaya hemiglauca* (Whitewood), *Eucalyptus populnea* (Bimble Box) and *Ventilago viminalis* (Supple Jack). Common midstorey species include *Acacia stenophylla* (River Cooba), *Atalaya hemiglauca* (Whitewood), *Dodonaea viscosa* var. *arborescens, Eremophila sturtii* (Turpentine Bush) and *Exocarpos aphyllus* (Leafless Ballart). Frequent understorey species are *Tetragonia tetragonioides* (New Zealand Spinach), *Atriplex* spp., *Einadia nutans* subsp. *Nutans* (Climbing Saltbush) and *Rhagodia spinescens* (Thorny Saltbush). Less frequently found in the understory are *Neobassia proceriflora* (Soda Bush), *Salsola kali* (Buckbush), *Sclerolaena diacantha* (Grey Copperburr), *Sclerolaena eriacantha* (Silky Copperburr) and *Sclerolaena muricata* (Black Rolypoly). The community can be found on dark grey medium clay on flat alluvial plains. There is no visible evidence of previous fires and the vegetation condition is high.

Strata	Canopy	Mid	Ground
Cover	10 % (±4 %)	4 % (±3 %)	17 % (±4 %)
Height	7.3 m (±0.6 m)	2 m (±0 m)	0.2 m (±0 m)
Vegetation formation	Semi-arid Woodlands (Grassy sub-formation)		
Vegetation class	North-west Floodplain Woodlands		
Vegetation structure	Low-open to low woodland		
Conservation status	State and Federal EEC		
Area mapped	1,731.9 ha		
Characteristic trees	*Eucalyptus coolabah, Atalaya hemiglauca, Eucalyptus populnea, Ventilago viminalis*		

9. Coolabah Chenopod Low Open Floodplain Woodland	
Characteristic midstorey	*Acacia stenophylla, Atalaya hemiglauca, Dodonaea viscosa* var. *arborescens, Eremophila sturtii, Exocarpos aphyllus*
Characteristic groundcovers	*Tetragonia tetragonioides, Atriplex* spp.*, Einadia nutans* subsp. *Nutans, Rhagodia spinescens, Neobassia proceriflora, Salsola kali, Sclerolaena diacantha, Sclerolaena eriacantha, Sclerolaena muricata*
Soil colour and texture	Dark grey medium clay
Landform element and pattern	Flat alluvial plain
Fire history	No evidence
Condition	High
No. sites sampled	6

10. Coolabah Lignum Chenopod Open Woodland Wetland	
Description	Woodland to open woodland in open depressions on alluvial plains. The canopy is dominated by *Eucalyptus coolabah* (Coolibah) and the midstorey by *Eremophila bignoniiflora* (Eurah). Other common midstorey species are *Eremophila maculata* (Spotted Fuchsia), *Myoporum acuminatum* (Boobialla) and *Myoporum montanum* (Western Boobialla). The understorey most frequently consists of *Muehlenbeckia florulenta* (Lignum). Other less frequent understorey species are *Brachyscome* spp.*, Crinum flaccidum* (Darling Lily)*, Neobassia proceriflora* (Soda Bush)*, Sclerolaena bicornis* var. *bicornis, Sclerolaena diacantha* (Grey Copperburr)*, Sclerolaena stelligera* (Star Copperburr)*, Sclerolaena tricuspis* (Giant Redburr) and *Sclerolaena muricata* (Black Rolypoly). The community can be found on dark grey medium clay soil and shows no evidence of fire history. The vegetation condition is moderate to high.

Strata	**Canopy**	**Mid**	**Ground**
Cover	8 % (±3 %)	13 % (±3 %)	20 % (±10 %)
Height	9 m (±1 m)	2.5 m (±0 m)	0.7 m (±0.4 m)
Vegetation formation	Semi-arid Woodlands (Grassy sub-formation)		
Vegetation class	North-west Floodplain Woodlands		
Vegetation structure	Woodland – open woodland		
Conservation status	State and Federal EEC		
Area mapped	358.2 ha		
Characteristic trees	*Eucalyptus coolabah*		
Characteristic midstorey	*Eremophila bignoniiflora, Eremophila maculata, Myoporum maculata, Myoporum montanum*		

10. Coolabah Lignum Chenopod Open Woodland Wetland	
Characteristic groundcovers	*Brachyscome* spp., *Crinum flaccidum, Muehlenbeckia florulenta, Neobassia proceriflora, Sclerolaena bicornis* var. *bicornis, Sclerolaena diacantha, Sclerolaena stelligera, Sclerolaena tricuspis, Sclerolaena muricata*
Soil colour and texture	Dark grey medium clay
Landform element and pattern	Open depressions on alluvial plains
Fire history	No evidence
Condition	Moderate-high
No. sites sampled	2

11. Emu Bush Hop Bush Senna Shrubland	
Description	Tall open shrubland found on flat plains with reddish brown sandy loam to fine sandy loam soils. Frequently occurring canopy species are *Acacia aneura* (Mulga), *Acacia excelsa* (Ironwood), *Dodonaea viscosa* var. *arborescens* and *Eremophila mitchellii* (Budda). Less frequent canopy species include *Acacia victoriae, Alectryon oleifolius* (Western Rosewood), *Apophyllum anomalum* (Warrior Bush), *Callitris glaucophylla* (White Cypress Pine), *Eremophila longifolia* (Emu Bush), *Eremophila* spp., *Eremophila sturtii* (Turpentine Bush), *Geijera parviflora* (Wilga), *Grevillea striata* (Beefwood) and *Senna artemisioides nothos*ubsp. *Sturtii* (Grey Cassia). Common midstorey species include *Dodonaea viscosa* var. *arborescens, Acacia aneura* (Mulga), *Eremophila* sturtii (Turpentine Bush), *Senna artemisioides* subsp. *artemisioides* (Silver Cassia), *Senna artemisioides* subsp. *filifolia, Eremophila mitchellii* (Budda), *Eremophila* spp. and *Flindersia maculosa* (Leopardwood). The understorey frequently contains *Austrostipa scabra* (Speargrass), and less frequently *Abutilon* spp., *Rhodanthe floribunda* (Common White Sunray), *Sclerolaena birchii* (Galvanised Burr), *Sclerolaena* spp., *Abutilon leucopetalum, Calotis cuneata* var. *pubescens, Chenopodium pumilio* (Small Crumbweed), *Enchylaena tomentosa* (Ruby Saltbush), *Eragrostis eriopoda* (Woollybutt), *Goodenia* spp., *Ptilotus sessilifolius, Sclerolaena bicornis* var. *bicornis* and *Sida cunninghamii* (Ridge Sida). There is no evidence of fire history in this community and the vegetation condition is low-moderate to moderate.

Strata	Canopy	Mid	Ground
Cover	7 % (±3 %)	5 % (±3 %)	20 % (±4 %)
Height	4.2 m (±0.8 m)	1.5 m (±0.2 m)	0.3 m (±0 m)
Vegetation formation	Arid Shrublands (Acacia sub-formation)		
Vegetation class	Sand Plain Mulga Shrublands		
Vegetation structure	Tall open shrubland		
Conservation status	Not listed		

11. Emu Bush Hop Bush Senna Shrubland	
Area mapped	3,144.7 ha
Characteristic trees	*Acacia aneura, Acacia excelsa, Dodonaea viscosa* var. *arborescens, Eremophila mitchellii, Acacia victoriae, Alectryon oleifolius, Apophyllum anomalum, Callitris glaucophylla, Eremophila longifolia, Eremophila* spp.*, Eremophila sturtii, Geijera parviflora, Grevillea striata, Senna artemisioides nitho*subsp. *sturtii*
Characteristic midstorey	*Dodonaea viscosa* var. *arborescens, Acacia aneura, Eremophila sturtii, Senna artemisioides* subsp. *artemisioides, Senna artemisioides* subsp. *filifolia, Eremophila mitchellii, Eremophila* spp.*, Flindersia maculosa*
Characteristic groundcovers	*Austrostipa scabra, Abutilon* spp.*, Rhodanthe floribunda, Sclerolaena birchii, Sclerolaena* spp.*, Abutilon leucopetalum, Calotis cuneata* var. *pubescens, Chenopodium pumilio, Enchylaena tomentosa, Eragrostis eriopoda, Goodenia* spp.*, Ptilotus sessilifolius, Sclerolaena bicornis* var. *bicornis, Sida cunninghamii*
Soil colour and texture	Reddish brown sandy loam to fine sandy loam
Landform element and pattern	Flat plains
Fire history	No evidence
Condition	Low-moderate to moderate
No. sites sampled	12

12. Grey Mallee Cypress Shrubby Low Open Woodland	
Description	Low to very low open woodland found on the upper slopes of hills with brown sandy to fine sandy loam soils. Common canopy species are *Eucalyptus morrisii* (Grey Mallee) and *Callitris glaucophylla* (White Cypress Pine) and occasionally *Eucalyptus intertexta, Alstonia constricta* (Quinine Bush) and *Brachychiton populneus* (Kurrajong). Frequent midstorey species include *Beyeria viscosa* (Sticky Wallaby Bush) and *Acacia decora* (Western Silver Wattle), while *Acacia curranii* (Curly-bark Wattle), *Callitris glaucophylla* (White Cypress Pine), *Micromyrtus ciliata* (Fringed Heath-myrtle) and *Pandorea pandorana* (Wonga Wonga Vine) are less frequent. The understorey generally consists of *Eriachne mucronata* (Mountain Wanderrie Grass), *Thyridolepis mitchelliana* (Mulga Mitchell Grass) and *Chenopodium pumilio* (Small Crumbweed). Occasionally occurring in the understorey are *Austrostipa scabra* (Speargrass), *Aristida caput-medusae* (Many-headed Wiregrass), *Aristida* spp., *Evolvulus alsinoides* (Bindweed) and *Sida cunninghamii* (Ridge Sida). There is no evidence of fire history in the community and the condition of the vegetation is moderate to high.

Strata	**Canopy**	**Mid**	**Ground**
Cover	6 % (±1 %)	11 % (±3 %)	6 % (±2 %)
Height	5.3 m (±0.8 m)	1.3 m (±0.1 m)	0.2 m (±0 m)
Vegetation formation	Semi-arid Woodlands (Shrubby sub-formation)		
Vegetation class	Inland Rocky Hill Woodlands		
Vegetation structure	Low to very low open woodland		
Conservation status	Not listed		
Area mapped	1,043 ha		
Characteristic trees	*Eucalyptus morrisii, Callitris glaucophylla, Eucalyptus intertexta, Alstonia constricta, Brachychiton populneus*		

12. Grey Mallee Cypress Shrubby Low Open Woodland	
Characteristic midstorey	*Beyeria viscosa, Acacia decora, Acacia curranii, Callitris glaucophylla, Micromyrtus ciliata, Pandorea pandorana*
Characteristic groundcovers	*Eriachne mucronata, Thyridolepis mitchelliana, Chenopodium pumilio, Austrostipa scabra, Aristida caput-medusae, Aristida* spp., *Evolvulus alsinoides, Sida cunninghamii*
Soil colour and texture	Brown sandy to fine sandy loam
Landform element and pattern	Upper slopes of hills
Fire history	No evidence
Condition	Moderate-high
No. sites sampled	9

13. Ironwood Low Open Woodland	
Description	Low open woodland occurring on flat plains with reddish brown fine sandy loam to loam fine sandy soils. The canopy frequently consists of *Acacia excelsa* (Ironwood), while *Grevillea striata* (Beefwood) *Ventilago viminalis* (Supple Jack), *Acacia aneura* (Mulga) and *Eucalyptus populnea* (Bimble Box) occur less frequently. The midstorey is often dominated by *Eremophila sturtii* (Turpentine Bush), *Dodonaea viscosa* var. *arborescens* and *Geijera parviflora* (Wilga). Occasionally found in the midstorey are *Acacia aneura* (Mulga), *Senna artemisioides subsp, filifolia, Acacia excelsa* (Ironwood), *Acacia victoriae, Myoporum montanum* (Western Boobialla), *Senna artemisioides* subsp. *artemisioides* (Silver Cassia). Frequently occurring understorey species include *Austrostipa scabra* (Speargrass), *Atriplex sp., Maireana* spp. and *Rhodanthe floribunda* (Common White Sunray). Less common species are *Ptilotus sessilifolius, Abutilon leucopetalum, Ptilotus* spp. and *Sclerolaena* spp. There is no evidence of fire history in the community and the vegetation condition is moderate to high-moderate.

Strata	Canopy	Mid	Ground
Cover	4 % (±1 %)	10 % (±2 %)	9 % (±2 %)
Height	7.6 m (±0.6 m)	2.5 m (±0.4 m)	0.3 m (±0 m)
Vegetation formation	Semi-arid Woodlands (Shrubby sub-formation)		
Vegetation class	Western Peneplain Woodlands		
Vegetation structure	Low open woodland		
Conservation status	Not listed		
Area mapped	11,087 ha		
Characteristic trees	*Acacia excelsa, Grevillea striata, Ventilago viminalis, Acacia aneura, Eucalyptus populnea*		

13. Ironwood Low Open Woodland	
Characteristic midstorey	*Eremophila sturtii, Dodonaea viscosa* var. *arborescens, Geijera parviflora, Acacia aneura, Senna artemisioides* subsp. *artemisioides, Acacia excelsa, Acacia victoriae, Myoporum montanum, Senna artemisioides* subsp. *filifolia*
Characteristic groundcovers	*Austrostipa scabra, Atriplex sp., Maireana* spp.*, Rhodanthe floribunda, Ptilotus sessilifolius, Abutilon leucopetalum, Ptilotus* spp.*, Sclerolaena* spp.
Soil colour and texture	Reddish brown fine sandy loam to loam fine sandy
Landform element and pattern	Flat plain
Fire history	No evidence
Condition	Moderate-high to moderate
No. sites sampled	13

14. Ironwood Mulga Shrubland	
Description	Low to low-open woodland on flat plains with dark red-reddish brown fine sandy loam soils. The canopy is generally dominated by *Acacia excelsa* (Ironwood) and *Acacia aneura* (Mulga), and occasionally features *Eucalyptus populnea* (Bimble Box)*, Alectryon oleifolius* (Western Rosewood)*, Atalaya hemiglauca (*Whitewood), *Grevillea striata* (Beefwood) and *Flindersia maculosa* (Leopardwood). Common midstorey species are *Acacia aneura* (Mulga) and *Eremophila sturtii* (Turpentine Bush). Less frequent midstorey species include *Eremophila longifolia* (Emubush)*, Geijera parviflora* (Wilga)*, Alectryon oleifolius* (Western Rosewood)*, Apophyllum anomalum* (Warrior Bush)*, Dodonaea viscosa* var. *arborescens* and *Eremophila mitchellii* (Budda). Characteristic groundcovers include *Austrostipa scabra* (Speargrass)*, Cheilanthes sieberi* (Rock Fern)*, Maireana* spp.*, Rhodanthe floribunda* (Common White Sunray)*, Rutidosis helichrysoides* (Grey Wrinklewort)*, Senna artemisioides* subsp. *filifolia.* There is no evidence of fire history in the community and the vegetation is in a moderate condition.

Strata	Canopy	Mid	Ground
Cover	12 % (±4 %)	8 % (±3 %)	9 % (±1 %)
Height	7.5 m (±0.5 m)	3.7 m (±0.7 m)	0.2 m (±0 m)
Vegetation formation	Arid Shrublands (Acacia sub-formation)		
Vegetation class	North-west Plain Shrublands		
Vegetation structure	Low – low open woodland		
Conservation status	Not listed		
Area mapped	12,365.6 ha		
Characteristic trees	*Acacia excelsa, Acacia aneura, Eucalyptus populnea, Alectryon oleifolius, Atalaya hemiglauca, Flindersia maculosa, Grevillea striata*		

14. Ironwood Mulga Shrubland	
Characteristic midstorey	*Acacia aneura, Eremophila sturtii, Eremophila longifolia, Geijera parviflora, Alectryon oleifolius, Apophyllum anomalum, Dodonaea viscosa* var. *arborescens, Eremophila mitchellii*
Characteristic groundcovers	*Austrostipa scabra, Cheilanthes sieberi, Maireana* spp.*, Rhodanthe floribunda, Rutidosis helichrysoides, Senna artemisioides* subsp. *filifolia*
Soil colour and texture	Dark red to reddish brown fine sandy loam
Landform element and pattern	Flat plain
Fire history	No evidence
Condition	Moderate
No. sites sampled	24

15. Leopardwood Low Open Woodland	
Description	Low open woodland on flat plains with reddish brown to dark red loam fine sandy soils. Commonly occurring canopy species include *Flindersia maculosa* (Leopardwood) and *Acacia excelsa* (Ironwood). Less frequent species include *Acacia victoriae*, *Acacia aneura* (Mulga), *Atalaya hemiglauca* (Whitewood), *Eucalyptus populnea* (Bimble Box) and *Grevillea striata* (Beefwood). The midstorey generally consists of *Acacia aneura* (Mulga), *Acacia victoriae, Apophyllum anomalum* (Warrior Bush), *Dodonaea viscosa* var. *arborescens, Eremophila mitchellii* (Budda), *Eremophila sturtii* (Turpentine Bush), *Geijera parviflora* (Wilga), *Senna artemisioides* subsp. *filifolia* and *Ventilago viminalis* (Supple Jack). Common understorey species include *Austrostipa scabra* (Speargrass), *Enchylaena tomentosa* (Ruby Saltbush), *Eragrostis eriopoda* (Woollybutt), *Maireana* spp., *Pimelea trichostachya, Ptilotus* spp., *Rhodanthe floribunda* (Common White Sunray), *Sclerolaena bicornis* var. *bicornis, Sclerolaena diacantha* (Grey Copperburr), *Senna artemisioides* subsp. *artemisioides* (Silver Cassia), *Senna artemisioides* subsp. *filifolia* and *Sida* spp. There is no visible evidence of fire history in this community and the vegetation is in a moderate to high condition.

Strata	Canopy	Mid	Ground
Cover	5 % (±2 %)	10 % (±4 %)	6 % (±3 %)
Height	7.3 m (±0.5 m)	3 m (±1 m)	0.6 m (±0.3 m)
Vegetation formation	Arid Shrublands (Acacia sub-formation)		
Vegetation class	North-west Plain Shrublands		
Vegetation structure	Low open woodland		
Conservation status	Not listed		
Area mapped	3,696.2 ha		

15. Leopardwood Low Open Woodland	
Characteristic trees	*Flindersia maculosa, Acacia excelsa, Acacia victoriae, Acacia aneura, Atalaya hemiglauca, Eucalyptus populnea, Grevillea striata*
Characteristic midstorey	*Acacia aneura, Acacia victoriae, Apophyllum anomalum, Dodonaea viscosa* var. *arborescens, Eremophila mitchellii, Eremophila sturtii, Geijera parviflora, Senna artemisioides* subsp. *filifolia, Ventilago viminalis*
Characteristic groundcovers	*Austrostipa scabra, Enchylaena tomentosa, Eragrostis eriopoda, Maireana* spp., *Pimelea trichostachya, Ptilotus* spp., *Rhodanthe floribunda, Sclerolaena bicornis* var. *bicornis, Sclerolaena diacantha, Senna artemisioides* subsp. *artemisioides, Senna artemisioides* subsp. *filifolia, Sida* spp.
Soil colour and texture	Dark red to reddish brown loam fine sandy
Landform element and pattern	Flat plain
Fire history	No evidence
Condition	Moderate-high
No. sites sampled	4

16. Leopardwood Ironwood Mulga Woodland	
Description	Low open woodland found on flat plains with reddish brown fine sandy loam to loam fine sandy soils. Characteristic canopy species include *Flindersia maculosa* (Leopardwood) and *Acacia excelsa* (Ironwood), with *Acacia aneura* (Mulga)*, Grevillea striata* (Beefwood) and *Geijera parviflora* (Wilga) occurring less frequently. The midstorey is generally dominated by *Eremophila sturtii* (Turpentine Bush) and *Acacia aneura* (Mulga). Less common midstorey species include *Dodonaea viscosa* var. *arborescens, Eremophila longifolia* (Emubush)*, Eremophila* spp.*, Geijera parviflora* (Wilga)*, Myoporum montanum* (Western Boobialla) and *Senna artemisioides* subsp. *filifolia.* The understorey generally consists of *Austrostipa scabra* (Speargrass)*, Enchylaena tomentosa* (Ruby Saltbush) and *Maireana* spp. Less common understorey species include *Abutilon leucopetalum, Acacia aneura, Atriplex* spp.*, Calotis cuneata* var. *pubescens, Cheilanthes sieberi, Chrysocephalum apiculatum, Daucus glochidiatus, Lepidium oxytrichum, Maireana microphylla, Ptilotus sessilifolius, Ptilotus* spp.*, Rutidosis helichrysoides, Sclerolaena bicornis, Sclerolaena* spp.*, Senna artemisioides* subsp. *Filifolia* and *Thyridolepis mitchelliana.* There is no visible evidence of fire history in the community and the vegetation is in a moderate condition.

Strata	Canopy	Mid	Ground
Cover	10 % (±5 %)	13 % (±2 %)	2 % (±1 %)
Height	7.8 m (±0.7 m)	4 m (±0.8 m)	0.3 m (±0.1 m)
Vegetation formation	Arid Shrublands (Acacia sub-formation)		
Vegetation class	North-west Plain Shrublands		
Vegetation structure	Low open woodland		
Conservation status	Not listed		
Area mapped	2,683.5 ha		

16. Leopardwood Ironwood Mulga Woodland	
Characteristic trees	*Flindersia maculosa, Acacia excelsa, Acacia aneura, Grevillea striata, Geijera parviflora*
Characteristic midstorey	*Eremophila sturtii, Acacia aneura, Dodonaea viscosa* var. *arborescens, Eremophila longifolia, Eremophila* spp., *Geijera parviflora, Myoporum montanum, Senna artemisioides* subsp. *filifolia*
Characteristic groundcovers	*Austrostipa scabra, Enchylaena tomentosa, Maireana* spp., *Abutilon leucopetalum, Acacia aneura, Atriplex* spp., *Calotis cuneata* var. *pubescens, Cheilanthes sieberi, Chrysocephalum apiculatum, Daucus glochidiatus, Lepidium oxytrichum, Maireana microphylla, Ptilotus sessilifolius, Ptilotus* spp., *Rutidosis helichrysoides, Sclerolaena bicornis, Sclerolaena* spp., *Senna artemisioides* subsp. *filifolia, Thyridolepis mitchelliana*
Soil colour and texture	Reddish brown fine sandy loam to loam fine sandy
Landform element and pattern	Flat plain
Fire history	No evidence
Condition	Moderate
No. sites sampled	6

17. Mallee Cypress Low Woodland	
Description	Low to low-open woodland occurring on the mid slopes of hills with brown fine sandy loam soils. The canopy generally consists of *Callitris glaucophylla* (White Cypress Pine) and *Eucalyptus vicina*. Less common canopy species are *Angophora melanoxylon* (Coolabah Apple), *Eucalyptus morrisii* (Grey Mallee) and *Pandorea pandorana* (Wonga Wonga Vine). The midstorey is dominated by *Beyeria viscosa* (Sticky Wallaby Bush), while *Acacia decora* (Western Silver Wattle) and *Pandorea pandorana* (Wonga Wonga Vine) occur less frequently. Characteristic groundcovers include *Aristida caput-medusae* (Many-headed Wiregrass), *Austrostipa scabra* (Speargrass), *Cheilanthes sieberi* (Rock Fern), *Chenopodium pumilio* (Small Crumbweed), *Daucus glochidiatus* (Native Carrot), *Eriachne mucronata* (Mountain Wanderrie Grass), *Evolvulus alsinoides* (Bindweed), *Glycine canescens* (Silky Glycine) and *Thyridolepis mitchelliana* (Mulga Mitchell Grass). There is no evidence of fire history in the community and the vegetation condition is high.

Strata	**Canopy**	**Mid**	**Ground**
Cover	13 % (±3 %)	7 % (±3 %)	20 % (±5 %)
Height	6.5 m (±0.5 m)	1.3 m (±0.1 m)	0.3 m (±0.1 m)
Vegetation formation	Semi-arid Woodlands (Shrubby sub-formation)		
Vegetation class	Inland Rocky Hill Woodlands		
Vegetation structure	Low to low-open woodland		
Conservation status	Not listed		
Area mapped	195.5 ha		
Characteristic trees	*Callitris glaucophylla, Eucalyptus vicina, Angophora melanoxylon, Pandorea pandorana, Eucalyptus morrisii*		
Characteristic midstorey	*Beyeria viscosa, Acacia decora, Pandorea pandorana*		

17. Mallee Cypress Low Woodland	
Characteristic groundcovers	*Aristida caput-medusae, Austrostipa scabra, Cheilanthes sieberi, Chenopodium pumilio, Daucus glochidiatus, Eriachne mucronata, Evolvulus alsinoides, Glycine canescens, Thyridolepis mitchelliana*
Soil colour and texture	Brown fine sandy loam
Landform element and pattern	Mid slope on hills
Fire history	No evidence
Condition	High
No. sites sampled	4

18. Mixed Grassland Herbland	
Description	Sparse herbland and tussock grassland occurring on flats and closed depressions on plains with brown to dark brown light sandy clay loam to clay loam. When the canopy is present it often consists of *Acacia aneura* (Mulga) and *Eucalyptus populnea* (Bimble Box). Midstorey species include *Senna artemisioides* subsp. *artemisioides* (Silver Cassia) and *Eremophila* spp. The understorey consists of a mixture of herbs and grasses such as *Calotis cuneata* var. *pubescens, Calotis lappulacea* (Yellow Burr-daisy), *Centipeda* spp., *Euphorbia tannensis, Evolvulus alsinoides* (Bindweed), *Panicum* spp., *Pimelea trichostachya, Ptilotus* spp., *Rhodanthe floribunda* (Common White Sunray), *Sclerolaena bicornis* var. *bicornis, Sclerolaena bicornis* var. *horrida* (Goathead Burr), *Sclerolaena eriacantha* (Silky Copperburr), *Sida* spp., *Wahlenbergia* spp. There is no visual evidence of fire history in the community and the vegetation condition is low to moderate.

Strata	Canopy	Mid	Ground
Cover	3 % (±3 %)	0 % (±0 %)	26 % (±24 %)
Height	4 m (±0 m)	0 m (±0 m)	0.3 m (±0.1 m)
Vegetation formation	Arid Shrublands (Chenopod sub-formation)		
Vegetation class	Riverine Chenopod Shrublands		
Vegetation structure	Sparse herbland – tussock grassland		
Conservation status	Not listed		
Area mapped	154.7 ha		
Characteristic trees	*Acacia aneura, Eucalyptus populnea*		
Characteristic midstorey	*Senna artemisioides* subsp. *artemisioides, Eremophila* spp.		
Characteristic groundcovers	*Calotis cuneata* var. *pubescens, Calotis lappulacea, Centipeda* spp., *Euphorbia tannensis, Evolvulus alsinoides, Panicum* spp., *Pimelea trichostachya, Ptilotus* spp.,		

18. Mixed Grassland Herbland	
	Rhodanthe floribunda, Sclerolaena bicornis var. *bicornis, Sclerolaena bicornis* var. *horrida, Sclerolaena eriacantha, Sida* spp.*, Wahlenbergia* spp.
Soil colour and texture	Brown – dark brown light sandy clay loam to clay loam
Landform element and pattern	Closed depressions and flats on plains
Fire history	No evidence
Condition	Low to moderate
No. sites sampled	2

19. Mulga Low Open Forest	
Description	Low woodland to tall shrubland on flat plains with dark red to reddish brown loam fine sandy soils. The canopy in this community generally consists of *Acacia aneura* (Mulga). Less frequent canopy species include *Acacia excelsa* (Ironwood), *Acacia victoriae, Callitris glaucophylla* (White Cypress Pine)*, Eremophila mitchellii* (Budda) and Eucalyptus *populnea* (Bimble Box). The midstorey consists of *Acacia aneura* (Mulga)*, Acacia brachystachya* (Umbrella Mulga)*, Acacia* spp.*, Eremophila longifolia* (Emubush)*, Eremophila mitchellii* (Budda)*, Eremophila* spp.*, Eremophila sturtii* (Turpentine Bush)*, Geijera parviflora* (Wilga) and *Pittosporum phylliraeoides* (Butterbush). Common understorey species include *Austrostipa scabra* (Speargrass)*, Calotis cuneata* var. *pubescens, Cheilanthes sieberi* (Rock Fern)*, Rhodanthe floribunda* (Common White Sunray) and *Thyridolepis mitchelliana* (Mulga Mitchell Grass). There is no visual evidence of fire history in the community and the vegetation is in a moderate condition.

Strata	Canopy	Mid	Ground
Cover	24 % (±4 %)	4 % (±2 %)	11 % (±3 %)
Height	5.8 m (±0.6 m)	3.3 m (±0.5 m)	0.2 m (±0 m)
Vegetation formation	Arid Shrublands (Acacia sub-formation)		
Vegetation class	North-west Plain Shrublands		
Vegetation structure	Tall shrubland – low woodland		
Conservation status	Not listed		
Area mapped	18,274.6 ha		
Characteristic trees	*Acacia aneura, Acacia excelsa, Acacia victoriae, Callitris glaucophylla, Eremophila mitchellii, Eucalyptus populnea*		

19. Mulga Low Open Forest	
Characteristic midstorey	*Acacia aneura, Acacia brachystachya, Acacia* spp., *Eremophila longifolia, Eremophila mitchellii, Eremophila* spp., *Eremophila sturtii, Geijera parviflora, Pittosporum phylliraeoides*
Characteristic groundcovers	*Austrostipa scabra, Calotis cuneata* var. *pubescens, Cheilanthes sieberi, Rhodanthe floribunda, Thyridolepis mitchelliana*
Soil colour and texture	Dark red to reddish brown loam fine sandy
Landform element and pattern	Flat plains
Fire history	No evidence
Condition	Moderate
No. sites sampled	16

20. Poplar Box Riparian Woodland	
Description	Low woodland occurring in open depressions on alluvial plains with dark red to reddish brown clay loam soils. The canopy frequently includes *Eucalyptus populnea* (Bimble Box) and occasionally *Eucalyptus intertexta. Geijera parviflora* (Wilga) frequently occurs in the midstorey. Less common midstorey species include *Acacia aneura* (Mulga)*, Eremophila mitchellii* (Budda)*, Myoporum montanum* (Western Boobialla)*, Senna artemisioides* subsp. *filifolia, Senna* spp.*, Acacia excelsa* (Ironwood) and *Dodonaea viscosa* var. *arborescens.* The understorey consists of *Rhodanthe floribunda* (Common White Sunray)*, Austrostipa scabra* (Speargrass)*, Eremophila* spp.*, Senna artemisioides* subsp. *filifolia, Wahlenbergia* spp.*, Calotis cuneata* var. *pubescens, Centipeda cunninghamii* (Common Sneezeweed)*, Centipeda* spp.*, Clematis microphylla* (Small-leaved Clematis)*, Dichondra repens* (Kidney Weed)*, Enchylaena tomentosa* (Ruby Saltbush)*, Lachnagrostis filiformis, Myoporum montanum* (Western Boobialla)*, Rumex brownii* (Swamp Dock)*, Senna artemisioides, Senna artemisioides nothos*subsp. *Sturtii* (Grey Cassia) and *Sigesbeckia australiensis*. There is no visual evidence of fire history in the community and the vegetation condition is moderate to high.

Strata	Canopy	Mid	Ground
Cover	22 % (±2 %)	12 % (±6 %)	24 % (±7 %)
Height	9.2 m (±1.2 m)	4.3 m (±0.2 m)	0.9 m (±0.3 m)
Vegetation formation	Semi-arid Woodlands (Grassy sub-formation)		
Vegetation class	North-west Floodplain Woodlands		
Vegetation structure	Low woodland		
Conservation status	Not listed		
Area mapped	3,066.7 ha		
Characteristic trees	*Eucalyptus intertexta, Eucalyptus populnea*		

20. Poplar Box Riparian Woodland	
Characteristic midstorey	*Geijera parviflora, Acacia aneura, Eremophila mitchellii, Myoporum montanum, Senna artemisioides* subsp. *filifolia, Senna* spp., *Acacia excelsa, Dodonaea viscosa* var. *arborescens*
Characteristic groundcovers	*Rhodanthe floribunda, Austrostipa scabra, Eremophila* spp., *Senna artemisioides* subsp. *filifolia, Wahlenbergia* spp., *Calotis cuneata* var. *pubescens, Centipeda cunninghamii, Centipeda* spp., *Clematis microphylla, Dichondra repens, Enchylaena tomentosa, Lachnagrostis filiformis, Myoporum montanum, Rumex brownii, Senna artemisioides, Senna artemisioides nothos*ubsp. *Sturtii, Sigesbeckia australiensis*
Soil colour and texture	Dark red to reddish brown clay loam
Landform element and pattern	Open depressions on alluvial plain
Fire history	No evidence
Condition	Moderate-high
No. sites sampled	7

21. Poplar Box Low Grass/Herb Woodland	
Description	Low woodland associated with dark brown fine sandy clay loam soils on flat plains. The canopy is characterised by *Eucalyptus populnea* (Bimble Box). The midstorey consists of *Acacia excelsa* (Ironwood), *Callitris glaucophylla* (White Cypress Pine), *Dodonaea viscosa* var. *arborescens, Eremophila sturtii* (Turpentine Bush), *Eucalyptus populnea* (Bimble Box), *Geijera parviflora* (Wilga), *Senna artemisioides* subsp. *artemisioides* (Silver Cassia) and *Ventilago viminalis* (Supple Jack). Common understorey species include *Sclerolaena birchii* (Galvanised Burr), *Rhodanthe floribunda* (Common White Sunray), *Austrostipa scabra* (Speargrass), *Abutilon leucopetalum, Calotis lappulacea* (Yellow Burr-daisy), *Centipeda* spp., *Gonocarpus elatus, Myriophyllum* spp., *Rumex brownii* (Swamp Dock), *Sclerolaena* spp., *Sida cunninghamii* (Ridge Sida), *Sida* spp., *Teucrium racemosum* (Grey Germander) and *Wahlenbergia* spp. There is no visual evidence of fire history in the community and the vegetation is in a moderate-high condition.

Strata	Canopy	Mid	Ground
Cover	17 % (±4 %)	2 % (±1 %)	38 % (±4 %)
Height	9.3 m (±1.3 m)	6 m (±1 m)	0.3 m (±0 m)
Vegetation formation	Semi-arid Woodlands (Shrubby sub-formation)		
Vegetation class	Western Peneplain Woodlands		
Vegetation structure	Low woodland		
Conservation status	Not listed		
Area mapped	726.3 ha		
Characteristic trees	*Eucalyptus populnea*		

21. Poplar Box Low Grass/Herb Woodland	
Characteristic midstorey	*Acacia excelsa, Callitris glaucophylla, Dodonaea viscosa* var. *arborescens, Eremophila sturtii, Eucalyptus populnea, Geijera parviflora, Senna artemisioides* subsp. *artemisioides, Ventilago viminalis*
Characteristic groundcovers	*Sclerolaena birchii, Rhodanthe floribunda, Austrostipa scabra, Abutilon leucopetalum, Calotis lappulacea, Centipeda* spp., *Gonocarpus elatus, Myriophyllum* spp., *Rumex brownii, Sclerolaena* spp., *Sida cunninghamii, Sida* spp., *Teucrium racemosum, Wahlenbergia* spp.
Soil colour and texture	Dark brown fine sandy clay loam
Landform element and pattern	Flat plain
Fire history	No evidence
Condition	Moderate-high
No. sites sampled	3

22. Poplar Box Mulga Grassy Woodland	
Description	Woodland associated with dark red, fine sandy loam soils on flat plains. The canopy is dominated by *Eucalyptus populnea* (Bimble Box) and occasionally features *Acacia aneura* (Mulga), *Eucalyptus camaldulensis* (River Red Gum) and *Flindersia maculosa* (Leopardwood). The midstorey frequently contains *Acacia aneura* (Mulga) and *Geijera parviflora* (Wilga). Less frequently found species in the midstorey are *Eremophila sturtii* (Turpentine Bush), *Acacia excelsa* (Ironwood), *Grevillea striata* (Beefwood), *Eremophila longifolia* (Emubush) and *Eremophila mitchellii* (Budda). The understorey is often dominated by *Austrostipa scabra* (Speargrass) but also features *Cheilanthes sieberi* (Rock Fern), *Abutilon* spp., *Calotis cuneata* var. *pubescens, Enchylaena tomentosa* (Ruby Saltbush), *Chenopodium pumilio* (Small Crumbweed), *Rhodanthe floribunda* (Common White Sunray), *Sida* spp. and *Trachymene ochracea* (White Parsnip). There is no visible fire history in the community and the vegetation is in moderate condition.

Strata	Canopy	Mid	Ground
Cover	11 % (±2 %)	12 % (±2 %)	15 % (±2 %)
Height	10 m (±0.5 m)	5 m (±0.4 m)	0.5 m (±0.1 m)
Vegetation formation	Semi-arid Woodlands (Shrubby sub-formation)		
Vegetation class	Western Peneplain Woodlands		
Vegetation structure	Woodland		
Conservation status	Not listed		
Area mapped	7,530.3 ha		
Characteristic trees	*Eucalyptus populnea, Acacia aneura, Flindersia maculosa, Eucalyptus camaldulensis*		

22. Poplar Box Mulga Grassy Woodland	
Characteristic midstorey	*Acacia aneura, Geijera parviflora, Eremophila sturtii, Acacia excelsa, Grevillea striata, Eremophila longifolia, Eremophila mitchellii*
Characteristic groundcovers	*Austrostipa scabra, Cheilanthes sieberi, Abutilon* spp.*, Calotis cuneata* var. *pubescens, Enchylaena tomentosa, Chenopodium pumilio, Rhodanthe floribunda, Sida* spp.*, Trachymene ochracea*
Soil colour and texture	Dark red fine sandy loam
Landform element and pattern	Flat plain
Fire history	No evidence
Condition	Moderate
No. sites sampled	25

23. Poplar Box River Red Gum Herby Woodland	
Description	Woodland associated with brown to reddish brown clay loam – fine sandy loam on flat or open depression on plains or alluvial plains. *Eucalyptus populnea* (Bimble Box) and *Eucalyptus camaldulensis* (River Red Gum) are common canopy species. Midstorey species can include *Acacia decora* (Western Silver Wattle), *Acacia excelsa* (Ironwood), *Alstonia constricta* (Quinine Bush), *Callitris glaucophylla* (White Cypress Pine), *Dodonaea viscosa* subsp. *Mucronata, Geijera parviflora* (Wilga) and *Ventilago viminalis* (Supple Jack). The understorey consists of *Alternanthera* spp., *Austrostipa scabra* (Speargrass), *Cyperus* spp., *Dodonaea* spp., *Eremophila* spp., *Lachnagrostis filiformis, Oxalis* spp., *Panicum* spp., *Rumex brownii* (Swamp Dock), *Wahlenbergia* spp. There is no visible evidence of fire history in the community and the vegetation condition is moderate-high to high.

Strata	Canopy	Mid	Ground
Cover	25 % (±5 %)	10 % (±10 %)	30 % (±10 %)
Height	10 m (±2 m)	6 m (±0 m)	0.8 m (±0.3 m)
Vegetation formation	Forested Wetlands		
Vegetation class	Inland Riverine Forests		
Vegetation structure	Woodland		
Conservation status	Not listed		
Area mapped	65.2		
Characteristic trees	*Eucalyptus populnea, Eucalyptus camaldulensis*		
Characteristic midstorey	*Acacia decora, Acacia excelsa, Alstonia constricta, Callitris glaucophylla, Dodonaea viscosa* subsp. *Mucronata, Geijera parviflora, Ventilago viminalis*		

23. Poplar Box River Red Gum Herby Woodland	
Characteristic groundcovers	*Alternanthera* spp.*, Austrostipa scabra, Cyperus* spp.*, Dodonaea* spp.*, Eremophila* spp.*, Lachnagrostis filiformis, Oxalis* spp.*, Panicum* spp.*, Rumex brownii, Wahlenbergia* spp.
Soil colour and texture	Brown to reddish brown clay loam – fine sandy loam
Landform element and pattern	Flat or open depression on plains or alluvial plains
Fire history	No evidence
Condition	Moderate-high to high
No. sites sampled	2

24. Poplar Box Shrubby Low Open Woodland	
Description	Low open woodland associated with brown to reddish brown sandy loam soils on flat plains. The canopy frequently includes *Eucalyptus populnea* (Bimble Box) and less frequently *Callitris glaucophylla* (White Cypress Pine), *Alstonia constricta* (Quinine Bush) and *Brachychiton populneus* (Kurrajong). The midstorey consists of *Acacia aneura* (Mulga), *Dodonaea viscosa* var. *arborescens, Eremophila mitchellii* (Budda), *Eremophila sturtii* (Turpentine Bush), *Geijera parviflora* (Wilga), *Myoporum montanum* (Western Boobialla) and *Senna artemisioides* subsp. *filifolia.* Frequently occurring understorey species are *Austrostipa scabra* (Speargrass) and *Enchylaena tomentosa* (Ruby Saltbush). Occasionally the understorey consists of *Abutilon leucopetalum, Atriplex* spp., *Centipeda* spp., *Eriachne mucronata* (Mountain Wanderrie Grass), *Rhodanthe floribunda* (Common White Sunray), *Sclerolaena birchii* (Galvanised Burr), *Sclerolaena diacantha* (Grey Copperburr) and *Sclerolaena* spp. There is no evidence of fire history in the community and the vegetation is in a moderate condition.

Strata	Canopy	Mid	Ground
Cover	9 % (±1 %)	9 % (±1 %)	16 % (±2 %)
Height	8.7 m (±0.5 m)	2.9 m (±0.3 m)	0.3 m (±0 m)
Vegetation formation	Semi-arid Woodlands (Shrubby sub-formation)		
Vegetation class	Western Peneplain Woodlands		
Vegetation structure	Low open woodland		
Conservation status	Not listed		
Area mapped	5,159.8 ha		
Characteristic trees	*Eucalyptus populnea, Callitris glaucophylla, Alstonia constricta, Brachychiton populneus*		

24. Poplar Box Shrubby Low Open Woodland	
Characteristic midstorey	*Acacia aneura, Dodonaea viscosa* var. *arborescens, Eremophila mitchellii, Eremophila sturtii, Geijera parviflora, Myoporum montanum, Senna artemisioides* subsp. *filifolia*
Characteristic groundcovers	*Austrostipa scabra, Enchylaena tomentosa, Abutilon leucopetalum, Atriplex* spp., *Centipeda* spp., *Eriachne mucronata, Rhodanthe floribunda, Sclerolaena birchii, Sclerolaena diacantha, Sclerolaena* spp.
Soil colour and texture	Brown to reddish brown sandy loam
Landform element and pattern	Flat plains
Fire history	No evidence
Condition	Moderate
No. sites sampled	31

25. Poplar Box Wilga Grassy Woodland	
Description	Low woodland associated with brown clay loam soils on flat plains. The canopy is generally dominated by *Eucalyptus populnea* (Bimble Box) and the midstorey by *Geijera parviflora* (Wilga). Less frequent midstorey species include *Acacia aneura* (Mulga), *Acacia excelsa* (Ironwood), *Eremophila mitchellii* (Budda), *Eremophila sturtii* (Turpentine Bush), *Flindersia maculosa* (Leopardwood), *Myoporum montanum* (Western Boobialla), *Senna artemisioides* subsp. *artemisioides* (Silver Cassia) and *Senna artemisioides* subsp. *filifolia*. Common understorey species include *Asteraceae indeterminate* (Daisies), *Austrostipa scabra* (Speargrass), *Bulbine semibarbata* (Wild Onion), *Centipeda* spp., *Dodonaea viscosa* var. *arborescens, Eremophila* spp., *Glycine canescens* (Silky Glycine), *Myoporum montanum* (Western Boobialla), *Myriophyllum* spp., *Panicum* spp., *Perotis rara* (Comet Grass), *Ptilotus* spp., *Rhodanthe floribunda* (Common White Sunray), *Sclerolaena birchii* (Galvanised Burr), *Senna artemisioides* subsp. *artemisioides* (Silver Cassia), *Senna artemisioides* subsp. *Filifolia, Sida cunninghamii, Sida* spp., *Sporobolus* spp., *Vittadinia sulcata, Wahlenbergia* spp. There is no visual evidence of fire history in the community and the vegetation is in a moderate to moderate-high condition.

Strata	Canopy	Mid	Ground
Cover	15 % (±4 %)	14 % (±4 %)	26 % (±7 %)
Height	9.3 m (±0.9 m)	4.5 m (±0.3 m)	0.5 m (±0.2 m)
Vegetation formation	Grassy Woodlands		
Vegetation class	Western Peneplain Woodlands		
Vegetation structure	Low woodland		
Conservation status	Not listed		
Area mapped	315 ha		
Characteristic trees	*Eucalyptus populnea*		

25. Poplar Box Wilga Grassy Woodland	
Characteristic midstorey	*Geijera parviflora, Acacia aneura, Acacia excelsa, Eremophila mitchellii, Eremophila sturtii, Flindersia maculosa, Myoporum montanum, Senna artemisioides* subsp. *artemisioides, Senna artemisioides* subsp. *filifolia*
Characteristic groundcovers	*Asteraceae indeterminate, Austrostipa scabra, Bulbine semibarbata, Centipeda* spp.*, Dodonaea viscosa* var. *arborescens, Eremophila* spp.*, Glycine canescens, Myoporum montanum, Myriophyllum* spp.*, Panicum* spp.*, Perotis rara, Ptilotus* spp.*, Rhodanthe floribunda, Sclerolaena birchii, Senna artemisioides* subsp. *artemisioides, Senna artemisioides* subsp. *Filifolia, Sida cunninghamii, Sida* spp.*, Sporobolus* spp.*, Vittadinia sulcata, Wahlenbergia* spp.
Soil colour and texture	Brown clay loam
Landform element and pattern	Flat plains
Fire history	No evidence
Condition	Moderate to moderate-high
No. sites sampled	4

26. Poplar Box Wilga Wetland Woodland	
Description	Woodland community associated with dark brown clay loam soils on closed depressions on plains. The canopy may include *Eucalyptus populnea* (Bimble Box) and the midstorey may feature *Eremophila mitchellii* (Budda), *Eremophila sturtii* (Turpentine Bush), *Eremophila* spp. and *Geijera parviflora* (Wilga). The understorey may consist of *Alternanthera* spp., *Centipeda* spp., *Lachnagrostis filiformis, Marsilea drummondii, Potamogeton* spp. There is no visual evidence of fire history in the community and the vegetation condition is high.

Strata	Canopy	Mid	Ground
Cover	10 % (±0 %)	10 % (±0 %)	30 % (±0 %)
Height	10 m (±0 m)	4 m (±0 m)	0.3 m (±0 m)
Vegetation formation	Grassy Woodlands		
Vegetation class	Western Peneplain Woodlands		
Vegetation structure	Woodland		
Conservation status	Not listed		
Area mapped	4.6 ha		
Characteristic trees	*Eucalyptus populnea*		
Characteristic midstorey	*Geijera parviflora, Eremophila mitchellii, Eremophila sturtii, Eremophila* spp.		
Characteristic groundcovers	*Alternanthera* spp., *Centipeda* spp., *Lachnagrostis filiformis, Marsilea drummondii, Potamogeton* spp.		
Soil colour and texture	Dark brown clay loam		
Landform element and pattern	Closed depression on a plain		

26. Poplar Box Wilga Wetland Woodland	
Fire history	No evidence
Condition	High
No. sites sampled	1

27. Red Box Mulga Ironwood	
Description	Open woodland associated with reddish brown fine sandy loam soils on flat plains. The canopy is generally dominated by *Eucalyptus intertexta* and occasionally includes *Eucalyptus populnea* (Bimble Box) and *Grevillea striata* (Beefwood). The midstorey generally includes *Acacia aneura* (Mulga) and less frequently *Geijera parviflora* (Wilga), *Eremophila sturtii* (Turpentine Bush), *Flindersia maculosa* (Leopardwood), *Acacia brachystachya* (Umbrella Mulga), *Acacia excelsa* (Ironwood) and *Eremophila longifolia* (Emubush). Common understorey species include *Austrostipa scabra* (Speargrass), *Abutilon* spp., *Senna artemisioides* subsp. *filifolia*, *Sida* spp., *Chenopodium pumilio* (Small Crumbweed), *Eremophila* spp., *Maireana* spp., *Ptilotus* spp. and *Senna artemisioides* subsp. *artemisioides* (Silver Cassia). There is no evidence of fire history in the community and the vegetation is in a moderate-high condition.

Strata	Canopy	Mid	Ground
Cover	5 % (±1 %)	16 % (±4 %)	6 % (±1 %)
Height	11.8 m (±0.8 m)	5.4 m (±0.5 m)	0.3 m (±0.1 m)
Vegetation formation	Semi-arid Woodlands (Shrubby sub-formation)		
Vegetation class	Western Peneplain Woodlands		
Vegetation structure	Open woodland		
Conservation status	Not listed		
Area mapped	8,129.7 ha		
Characteristic trees	*Eucalyptus intertexta, Eucalyptus populnea, Grevillea striata*		
Characteristic midstorey	*Acacia aneura, Geijera parviflora, Eremophila sturtii, Flindersia maculosa, Acacia brachystachya, Acacia excelsa, Eremophila longifolia*		

27. Red Box Mulga Ironwood	
Characteristic groundcovers	*Austrostipa scabra, Abutilon* spp.*, Senna artemisioides* subsp. *filifolia, Sida* spp.*, Chenopodium pumilio, Eremophila* spp.*, Maireana* spp.*, Ptilotus* spp.*, Senna artemisioides* subsp. *artemisioides*
Soil colour and texture	Reddish brown fine sandy loam
Landform element and pattern	Flat plains
Fire history	No evidence
Condition	Moderate-high
No. sites sampled	13

28. Red Box Open Woodland	
Description	Open woodland associated with dark red fine sandy loam soils on flat plains and hills. The canopy is generally dominated by *Eucalyptus intertexta* and occasionally includes *Eucalyptus populnea* (Bimble Box), *Grevillea striata* (Beefwood), *Acacia excelsa* (Ironwood) and *Eucalyptus morrisii* (Grey Mallee). The midstorey contains *Geijera parviflora* (Wilga), *Acacia excelsa* (Ironwood), *Callitris glaucophylla* (White Cypress Pine), *Eremophila sturtii* (Turpentine Bush), *Myoporum montanum* (Western Boobialla), *Acacia decora* (Western Silver Wattle), *Dodonaea viscosa* var. *arborescens, Melaleuca glomerata* (Desert Honey-myrtle) and *Ventilago viminalis* (Supple Jack). Common understorey species include *Austrostipa scabra* (Speargrass), *Enchylaena tomentosa* (Ruby Saltbush), *Eragrostis eriopoda* (Woollybutt), *Eremophila* spp., *Eremophila sturtii* (Turpentine Bush), *Micromyrtus ciliata* (Fringed Heath-myrtle), *Myoporum montanum* (Western Boobialla), *Ptilotus* spp., *Rhodanthe floribunda* (Common White Sunray), *Sclerolaena birchii* (Galvanised Burr), *Senna artemisioides, Senna artemisioides* subsp. *filifolia, Sida* spp. and *Thyridolepis mitchelliana* (Mulga Mitchell Grass). There is no evidence of fire history in the community and the vegetation is in a moderate condition.

Strata	Canopy	Mid	Ground
Cover	9 % (±1 %)	7 % (±2 %)	12 % (±4 %)
Height	12.4 m (±1.2 m)	4.4 m (±1 m)	0.6 m (±0.2 m)
Vegetation formation	Semi-arid Woodlands (Shrubby sub-formation)		
Vegetation class	Western Peneplain Woodlands		
Vegetation structure	Open woodland		
Conservation status	Not listed		
Area mapped	2,400.6 ha		
Characteristic trees	*Eucalyptus intertexta, Eucalyptus populnea, Grevillea striata, Acacia excelsa, Eucalyptus morrisii*		

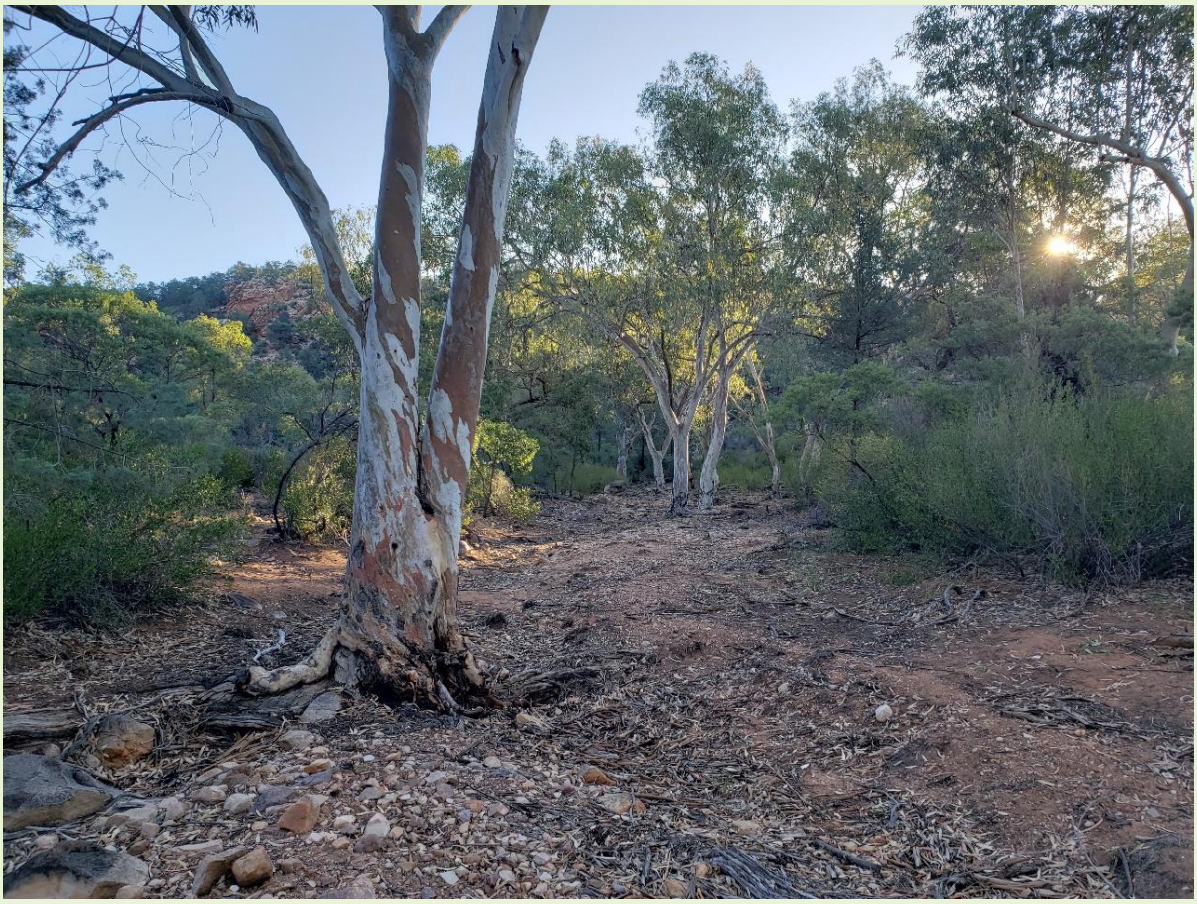
28. Red Box Open Woodland	
Characteristic midstorey	*Geijera parviflora, Acacia excelsa, Callitris glaucophylla, Eremophila sturtii, Myoporum montanum, Acacia decora, Dodonaea viscosa* var. *arborescens, Melaleuca glomerata, Ventilago viminalis*
Characteristic groundcovers	*Austrostipa scabra, Enchylaena tomentosa, Eragrostis eriopoda, Eremophila* spp.*, Eremophila sturtii, Micromyrtus ciliata, Myoporum montanum, Ptilotus* spp.*, Rhodanthe floribunda, Sclerolaena birchii, Senna artemisioides, Senna artemisioides* subsp. *filifolia, Sida* spp.*, Thyridolepis mitchelliana*
Soil colour and texture	Dark red fine sandy loam
Landform element and pattern	Flat plains to hills
Fire history	No evidence
Condition	Moderate
No. sites sampled	7

29. River Red Gum Coolabah Open Forest	
Description	Open forest associated with dark grey medium clay soils in open depressions on alluvial plains. The canopy generally consists of *Eucalyptus camphora* subsp. *camphora* and *Eucalyptus coolabah* (Coolibah). *Acacia stenophylla* (River Cooba) can be found in the midstorey. The understorey includes *Enchylaena tomentosa* (Ruby Saltbush), *Atriplex* spp., *Cynodon dactylon* (Common Couch), *Einadia nutans* subsp. *nutans* (Climbing Saltbush), *Paspalidium* spp., *Sclerolaena muricata* (Black Rolypoly), *Sclerolaena tricuspis* (Giant Redburr), *Tetragonia tetragonioides* (New Zealand Spinach). There is no evidence of fire history in the community and the vegetation is in a high condition.

Strata	Canopy	Mid	Ground
Cover	33 % (±3 %)	4 % (±2 %)	8 % (±7 %)
Height	16 m (±2 m)	7 m (±1 m)	0.2 m (±0 m)
Vegetation formation	Forested Wetlands		
Vegetation class	Western Peneplain Woodlands		
Vegetation structure	Open forest		
Conservation status	State and Federal TEC		
Area mapped	56.2 ha		
Characteristic trees	*Eucalyptus camphora* subsp. *camphora, Eucalyptus coolabah*		
Characteristic midstorey	*Acacia stenophylla*		
Characteristic groundcovers	*Enchylaena tomentosa. Atriplex* spp., *Cynodon dactylon, Einadia nutans* subsp. *nutans, Paspalidium* spp., *Sclerolaena muricata, Sclerolaena tricuspis, Tetragonia tetragonioides*		

29. River Red Gum Coolabah Open Forest	
Soil colour and texture	Dark grey medium clay
Landform element and pattern	Open depression on alluvial plain
Fire history	No evidence
Condition	High
No. sites sampled	2

30. River Red Gum Riparian Woodland	
Description	Woodland community associated with open depressions on hills and brown sandy loam soils. The canopy frequently includes *Eucalyptus camaldulensis* (River Red Gum) and occasionally *Angophora melanoxylon* (Coolabah Apple) and *Eucalyptus vicina*. The midstorey often includes *Acacia decora* (Western Silver Wattle), *Beyeria viscosa* (Sticky Wallaby Bush) and *Callitris glaucophylla* (White Cypress Pine). Less frequent midstorey species are *Acacia aneura* (Mulga), *Acacia victoriae, Alstonia constricta* (Quinine Bush), *Eremophila sturtii* (Turpentine Bush) and *Pandorea pandorana* (Wonga Wonga Vine). The understorey frequently contains *Austrostipa scabra* (Speargrass) and less frequently *Chenopodium pumilio* (Small Crumbweed), *Themeda triandra* (Kangaroo Grass), *Cyperus* spp., *Panicum* spp., *Abutilon leucopetalum, Austrostipa setacea* (Corkscrew Grass), *Centipeda* spp., *Cymbopogon refractus* (Barbed Wire Grass), *Eragrostis eriopoda* (Woollybutt), *Eriachne mucronata* (Mountain Wanderrie Grass), *Lachnagrostis* spp., *Oxalis* spp., *Pandorea pandorana* (Wonga Wonga Vine), *Sclerolaena birchii* (Galvanised Burr) and *Wahlenbergia* spp. There is no visible evidence of fire history in the community and the vegetation is in a high condition.



Strata	Canopy	Mid	Ground
Cover	16 % (±3 %)	14 % (±3 %)	8 % (±2 %)
Height	11.7 m (±1.4 m)	3.9 m (±0.7 m)	0.3 m (±0 m)
Vegetation formation	Semi-arid Woodlands (Grassy sub-formation)		
Vegetation class	Western Peneplain Woodlands		
Vegetation structure	Woodland		
Conservation status	Not listed		
Area mapped	81.3 ha		
Characteristic trees	*Eucalyptus camaldulensis, Angophora melanoxylon, Eucalyptus vicina*		

30. River Red Gum Riparian Woodland	
Characteristic midstorey	*Acacia decora, Beyeria viscosa, Callitris glaucophylla, Acacia aneura, Acacia victoriae, Alstonia constricta, Eremophila sturtii, Pandorea pandorana*
Characteristic groundcovers	*Austrostipa scabra, Chenopodium pumilio, Themeda triandra, Cyperus* spp.*, Panicum* spp.*, Abutilon leucopetalum, Austrostipa setacea, Centipeda* spp.*, Cymbopogon refractus, Eragrostis eriopoda, Eriachne mucronata, Lachnagrostis* spp.*, Oxalis* spp.*, Pandorea pandorana, Sclerolaena birchii, Wahlenbergia* spp.
Soil colour and texture	Brown sandy loam
Landform element and pattern	Open depression on hills
Fire history	No evidence
Condition	High
No. sites sampled	7

31. Rosewood Low Open Forest	
Description	Low open woodland associated with reddish brown sandy loam on flat plains. The canopy is often dominated by *Alectryon oleifolius* (Western Rosewood) and less frequently *Acacia excelsa* (Ironwood), *Atalaya hemiglauca* (Whitewood), *Eremophila mitchellii* (Budda) and *Ventilago viminalis* (Supple Jack). The midstorey consists of *Dodonaea viscosa* var. *arborescens, Eremophila mitchellii* (Budda), *Eremophila sturtii* (Turpentine Bush), *Geijera parviflora* (Wilga), *Myoporum montanum* (Western Boobialla) and *Senna artemisioides* subsp. *filifolia.* The understorey contains *Austrostipa scabra* (Speargrass), *Abutilon leucopetalum, Chenopodium pumilio* (Small Crumbweed), *Enchylaena tomentosa* (Ruby Saltbush), *Portulaca oleracea* (Pigweed), *Rhodanthe floribunda* (Common White Sunray), *Sclerolaena birchii* (Galvanised Burr), *Sclerolaena* spp., *Sida corrugata* (Corrugated Sida) and *Vittadinia cuneata* (A Fuzzweed). There is no visible evidence of fire history in the community and the vegetation is in a moderate-high condition.

Strata	Canopy	Mid	Ground
Cover	13 % (±7 %)	3 % (±1 %)	17 % (±6 %)
Height	5.8 m (±1 m)	2.1 m (±0.9 m)	0.2 m (±0 m)
Vegetation formation	Arid Shrublands (Acacia sub-formation)		
Vegetation class	Gibber Transition Shrublands		
Vegetation structure	Low open woodland		
Conservation status	Not listed		
Area mapped	1,083.4 ha		
Characteristic trees	*Alectryon oleifolius, Acacia excelsa, Atalaya hemiglauca, Eremophila mitchellii, Ventilago viminalis*		

31. Rosewood Low Open Forest	
Characteristic midstorey	*Dodonaea viscosa* var. *arborescens, Eremophila mitchellii, Eremophila sturtii, Geijera parviflora, Myoporum montanum, Senna artemisioides* subsp. *filifolia*
Characteristic groundcovers	*Austrostipa scabra, Abutilon leucopetalum, Chenopodium pumilio, Enchylaena tomentosa, Portulaca oleracea, Rhodanthe floribunda, Sclerolaena birchii, Sclerolaena* spp., *Sida corrugata, Vittadinia cuneata*
Soil colour and texture	Reddish brown sandy loam
Landform element and pattern	Flat plain
Fire history	No evidence
Condition	Moderate-high
No. sites sampled	5

32. Rough Barked Apple Shrub/Grass Low Open Woodland	
Description	Low open woodland associated with reddish brown sandy loam on flat alluvial plains. The canopy is dominated by *Angophora melanoxylon* (Coolabah Apple) and occasionally contains *Acacia excelsa* (Ironwood). Midstorey species include *Dodonaea viscosa* var. *arborescens*, *Eremophila mitchellii* (Budda) and *Acacia aneura* (Mulga). Common understorey species include *Austrostipa scabra* (Speargrass), *Abutilon* spp., *Eragrostis eriopoda* (Woollybutt) and *Sclerolaena* spp. There is no visible evidence of fire history in the community and the vegetation is in a moderate-high condition.

Strata	Canopy	Mid	Ground
Cover	5 % (±0 %)	5 % (±0 %)	20 % (±0 %)
Height	7 m (±0 m)	2 m (±0 m)	0.2 m (±0 m)
Vegetation formation	Semi-arid Woodlands (Grassy sub-formation)		
Vegetation class	Inland Floodplain Woodlands		
Vegetation structure	Low open woodland		
Conservation status	Not listed		
Area mapped	13.4 ha		
Characteristic trees	*Angophora melanoxylon, Acacia excelsa*		
Characteristic midstorey	*Dodonaea viscosa* var. *arborescens, Eremophila mitchellii, Acacia aneura*		
Characteristic groundcovers	*Austrostipa scabra, Abutilon* spp., *Eragrostis eriopoda, Sclerolaena* spp.		
Soil colour and texture	Reddish brown sandy loam		
Landform element and pattern	Flat alluvial plain		

32. Rough Barked Apple Shrub/Grass Low Open Woodland	
Fire history	No evidence
Condition	Moderate-high
No. sites sampled	1

33. Speargrass Grassland	
Description	Open tussock grassland associated with brown loam to fine sandy loam soils on flat plains. If a canopy is present, it may contain *Callitris glaucophylla* (White Cypress Pine), *Acacia victoriae, Eremophila* spp., *Eremophila sturtii* (Turpentine Bush), *Geijera parviflora* (Wilga), *Grevillea striata* (Beefwood) and *Ventilago viminalis* (Supple Jack). The midstorey contains *Acacia spp, Myoporum montanum* (Western Boobialla) and *Senna artemisioides* subsp. *filifolia*. The understorey may consist of *Austrostipa scabra* (Speargrass), *Cheilanthes sieberi* (Rock Fern), *Ptilotus* spp., *Rhodanthe floribunda* (Common White Sunray), *Sclerolaena* spp., *Sida* spp.. There is no visible evidence of fire history in the community and the vegetation is in a moderate condition.

Strata	Canopy	Mid	Ground
Cover	2 % (±1 %)	2 % (±1 %)	15 % (±2 %)
Height	6.8 m (±2.2 m)	1.5 m (±0.2 m)	0.3 m (±0 m)
Vegetation formation	Arid Shrublands (Chenopod sub-formation)		
Vegetation class	Inland Floodplain Woodlands		
Vegetation structure	Open tussock grassland		
Conservation status	Not listed		
Area mapped	78.4 ha		
Characteristic trees	*Acacia victoriae, Eremophila* spp., *Eremophila sturtii, Geijera parviflora, Grevillea striata, Ventilago viminalis*		
Characteristic midstorey	*Acacia* spp., *Beyeria viscosa, Eremophila mitchellii, Myoporum montanum, Senna artemisioides* subsp. *filifolia*		

33. Speargrass Grassland	
Characteristic groundcovers	*Austrostipa scabra, Cheilanthes sieberi, Eriachne mucronata, Evolvulus alsinoides, Ptilotus* spp., *Rhodanthe floribunda, Sclerolaena* spp., *Sida* spp., *Thyridolepis mitchelliana*
Soil colour and texture	Brown loam to fine sandy loam
Landform element and pattern	Flat plain
Fire history	No evidence
Condition	Moderate
No. sites sampled	6

34. White Cypress Pine Shrub/Grass Low Open Woodland	
Description	Low open woodland found on mid slopes to open depressions on hills. Canopy species include *Callitris glaucophylla* (White Cypress Pine) and *Alstonia constricta* (Quinine Bush). Commonly found species in the midstorey are *Beyeria viscosa* (Sticky Wallaby Bush)*, Acacia decora* (Western Silver Wattle) and *Pandorea pandorana* (Wonga Wonga Vine). Common understorey species include *Beyeria viscosa* (Sticky Wallaby Bush), *Cheilanthes sieberi* (Rock Fern)*, Eriachne mucronata* (Mountain Wanderrie Grass)*, Eragrostis lacunaria* (Purple Lovegrass) and *Thyridolepis mitchelliana* (Mulga Mitchell Grass). There is no visible evidence of fire history in the community and the vegetation is a moderate-high condition.

Strata	Canopy	Mid	Ground
Cover	8 % (±3 %)	8 % (±3 %)	8 % (±7 %)
Height	7 m (±1 m)	1.5 m (±0.5 m)	0.7 m (±0.4 m)
Vegetation formation	Semi-arid Woodlands (Shrubby sub-formation)		
Vegetation class	Inland Rocky Hill Woodlands		
Vegetation structure	Low open woodland		
Conservation status	Not listed		
Area mapped	2,354.9 ha		
Characteristic trees	*Callitris glaucophylla, Alstonia constricta*		
Characteristic midstorey	*Beyeria viscosa, Acacia decora, Pandorea pandorana*		
Characteristic groundcovers	*Beyeria viscosa, Cheilanthes sieberi, Eriachne mucronata, Eragrostis lacunaria, Thyridolepis mitchelliana*		
Soil colour and texture	No soil data		

34. White Cypress Pine Shrub/Grass Low Open Woodland	
Landform element and pattern	Mid slope to open depressions on hills
Fire history	No evidence
Condition	Moderate to high
No. sites sampled	2

35. Whitewood Shrubby Low Open Woodland	
Description	Low open woodland associated with reddish brown fine sandy loam soils on flat plains. The canopy is dominated by *Atalaya hemiglauca* (Whitewood) and occasionally contains *Alectryon oleifolius* (Western Rosewood), *Flindersia maculosa* (Leopardwood) and *Acacia excelsa* (Ironwood). The midstorey contains *Eremophila sturtii* (Turpentine Bush), *Dodonaea viscosa* var. *arborescens, Eremophila mitchellii* (Budda), *Myoporum montanum* (Western Boobialla), *Acacia* spp., *Acacia tetragonophylla* (Dead Finish), *Acacia victoriae, Apophyllum anomalum* (Warrior Bush), *Geijera parviflora* (Wilga), *Hakea* spp., *Myoporum acuminatum* (Boobialla), *Santalum acuminatum* (Sweet Quandong), *Sclerolaena diacantha* (Grey Copperburr), *Senna artemisioides* subsp. *filifolia* and *Ventilago viminalis* (Supple Jack). Common groundcover species include *Rhagodia spinescens* (Thorny Saltbush), *Ptilotus sessilifolius, Sclerolaena bicornis* var. *bicornis, Acacia* spp., *Austrostipa scabra* (Speargrass), *Dissocarpus paradoxus* (Cannonball Burr), *Enchylaena tomentosa* (Ruby Saltbush), *Maireana* spp., *Scaevola spinescens* (Thorny Saltbush), *Sclerolaena diacantha* (Grey Copperburr), *Sclerolaena eriacantha* (Silky Copperburr), *Sclerolaena* spp. and *Sida* spp. There is no visible evidence of fire history in the community and the vegetation is a moderate condition.

Strata	Canopy	Mid	Ground
Cover	3 % (±1 %)	9 % (±4 %)	11 % (±3 %)
Height	7.2 m (±0.5 m)	2.7 m (±0.8 m)	0.3 m (±0.1 m)
Vegetation formation	Arid Shrublands (Acacia sub-formation)		
Vegetation class	Gibber Transition Shrublands		
Vegetation structure	Low open woodland		
Conservation status	Not listed		
Area mapped	409.7 ha		
Characteristic trees	*Atalaya hemiglauca, Alectryon oleifolius, Flindersia maculosa, Acacia excelsa*		

35. Whitewood Shrubby Low Open Woodland	
Characteristic midstorey	*Eremophila sturtii, Dodonaea viscosa* var. *arborescens, Eremophila mitchellii, Myoporum montanum, Acacia* spp.*, Acacia tetragonophylla, Acacia victoriae, Apophyllum anomalum, Geijera parviflora, Hakea* spp.*, Myoporum acuminatum, Santalum acuminatum, Sclerolaena diacantha, Senna artemisioides* subsp. *filifolia, Ventilago viminalis*
Characteristic groundcovers	*Rhagodia spinescens, Ptilotus sessilifolius, Sclerolaena bicornis* var. *bicornis, Acacia* spp.*, Austrostipa scabra, Dissocarpus paradoxus, Enchylaena tomentosa, Maireana* spp.*, Scaevola spinescens, Sclerolaena diacantha, Sclerolaena eriacantha, Sclerolaena* spp.*, Sida* spp.
Soil colour and texture	Reddish brown fine sandy loam
Landform element and pattern	Flat plain
Fire history	No evidence
Condition	Moderate
No. sites sampled	5

36. Wax Flower Grassy Shrubland	
Description	Dwarf sparse heathland dwarf sparse shrubland community associated with brown loam soils on the mid slopes of hills. The canopy consists of *Alstonia constricta* (Quinine Bush), *Callitris glaucophylla* (White Cypress Pine) and *Grevillea striata* (Beefwood). *Philotheca linearis* and *Beyeria viscosa* (Wallaby Bush). can be found in the midstorey. Understorey species include *Aristida* spp., *Chamaesyce drummondii* (Caustic Weed), *Cheilanthes sieberi* (Rock Fern), *Eriachne mucronata* (Mountain Wanderrie Grass), *Ptilotus* spp., *Sida* spp. and *Thyridolepis mitchelliana* (Mulga Mitchell Grass). There is no visible evidence of fire history in the community and the vegetation condition is high.

Strata	Canopy	Mid	Ground
Cover	1 % (±0 %)	10 % (±0 %)	15 % (±0 %)
Height	10 m (±0 m)	1 m (±0 m)	0.3 m (±0 m)
Vegetation formation	Semi-arid Woodlands (Shrubby sub-formation)		
Vegetation class	Inland Rocky Hill Woodlands		
Vegetation structure	Dwarf sparse heathland dwarf sparse shrubland		
Conservation status	Not listed		
Area mapped	336.9 ha		
Characteristic trees	*Alstonia constricta, Callitris glaucophylla, Grevillea striata*		
Characteristic midstorey	*Philotheca* spp.		
Characteristic groundcovers	*Aristida* spp., *Chamaesyce drummondii, Cheilanthes sieberi, Eriachne mucronata, Ptilotus* spp., *Sida* spp., *Thyridolepis mitchelliana*		
Soil colour and texture	Brown loam		

36. Wax Flower Grassy Shrubland	
Landform element and pattern	Mid slope on hill
Fire history	No evidence
Condition	High
No. sites sampled	1

37. Mountain Wanderrie Grass Grassland	
Description	A native grassland community associated with brown loam soils on the lower to mid slopes of hills. Occasional emergent canopy species include *Corymbia tumescens, Eucalyptus populnea* (Poplar Box), *Alstonia constricta* (Quinine Bush), *Callitris glaucophylla* (White Cypress Pine) and *Grevillea striata* (Beefwood). Understorey species include *Aristida* spp., *Chamaesyce drummondii* (Caustic Weed), *Cheilanthes sieberi* (Rock Fern), *Eriachne mucronata* (Mountain Wanderrie Grass), *Ptilotus* spp., *Sida* spp. and *Thyridolepis mitchelliana* (Mulga Mitchell Grass). There is no visible evidence of fire history in the community and the vegetation condition is high.

Strata	**Canopy**	**Mid**	**Ground**
Cover	3 % (±1 %)	3 % (±1 %)	3 % (±1 %)
Height	6.8 m (±2.2 m)	6.8 m (±2.2 m)	6.8 m (±2.2 m)
Vegetation formation	Semi-arid Woodlands (Shrubby sub-formation)		
Vegetation class	Inland Rocky Hill Woodlands		
Vegetation structure	Open tussock grassland		
Conservation status	Not listed		
Area mapped	420.3 ha		
Characteristic trees	*Corymbia tumescens, Eucalyptus populnea, Callitris glaucophylla, Grevillea striata, Ventilago viminalis*		
Characteristic midstorey	*Acacia* spp., *Beyeria viscosa, Senna artemisioides* subsp. *filifolia*		
Characteristic groundcovers	*Austrostipa scabra, Cheilanthes sieberi, Eriachne mucronata, Evolvulus alsinoides, Ptilotus* spp., *Rhodanthe floribunda, Sclerolaena* spp., *Sida* spp., *Thyridolepis mitchelliana*		

37. Mountain Wanderrie Grass Grassland	
Soil colour and texture	Brown loam to fine sandy loam
Landform element and pattern	Flat plain
Fire history	No evidence
Condition	Moderate
No. sites sampled	1

Appendix E Flora species list

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Abutilon fraseri	Dwarf Lantern-flower		Forb (FG)	Malvaceae				
Abutilon leucopetalum			Shrub (SG)	Malvaceae				
Abutilon otocarpum	Desert Lantern		Shrub (SG)	Malvaceae				
Abutilon oxycarpum	Straggly Lantern-bush		Shrub (SG)	Malvaceae				
Acacia aneura	Mulga		Shrub (SG)	Fabaceae (Mimosoideae)				
Acacia brachystachya	Umbrella Mulga		Shrub (SG)	Fabaceae (Mimosoideae)				
Acacia buxifolia subsp. *buxifolia*	Box-leaved Wattle		Shrub (SG)	Fabaceae (Mimosoideae)				
Acacia curranii	Curly-bark Wattle		Shrub (SG)	Fabaceae (Mimosoideae)	Vulnerable	Vulnerable		
Acacia deanei subsp. *paucijuga*	Green Wattle		Shrub (SG)	Fabaceae (Mimosoideae)				
Acacia decora	Western Silver Wattle		Shrub (SG)	Fabaceae (Mimosoideae)				
Acacia excelsa	Ironwood		Tree (TG)	Fabaceae (Mimosoideae)				
Acacia murrayana	Murray's Wattle		Shrub (SG)	Fabaceae (Mimosoideae)				
Acacia oswaldii	Miljee		Tree (TG)	Fabaceae (Mimosoideae)				
Acacia ramulosa var. *ramulosa*	Horse Mulga		Shrub (SG)	Fabaceae (Mimosoideae)				
Acacia rigens	Needle Wattle		Shrub (SG)	Fabaceae (Mimosoideae)				
Acacia stenophylla	River Cooba		Tree (TG)	Fabaceae (Mimosoideae)				
Acacia tetragonophylla	Dead Finish		Shrub (SG)	Fabaceae (Mimosoideae)				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Acacia verticillata subsp. *verticillata*			Shrub (SG)	Fabaceae (Mimosoideae)				
Acacia victoriae subsp. *victoriae*	Elegant Wattle		Shrub (SG)	Fabaceae (Mimosoideae)				
Acetosa vesicaria	Bladder Dock	*		Polygonaceae				
Actinobole uliginosum	Flannel Cudweed		Forb (FG)	Asteraceae				
Alectryon oleifolius subsp. *canescens*			Tree (TG)	Sapindaceae				
Alstonia constricta	Quinine Bush		Tree (TG)	Apocynaceae				
Alternanthera denticulata	Lesser Joyweed		Forb (FG)	Amaranthaceae				
Alternanthera nodiflora	Common Joyweed		Forb (FG)	Amaranthaceae				
Amphipogon caricinus var. *caricinus*	Long Greybeard Grass		Grass & grasslike (GG)	Poaceae				
Amyema lucasii	Yellow-flowered Mistletoe		Other (OG)	Loranthaceae				
Amyema maidenii subsp. *maidenii*			Other (OG)	Loranthaceae				
Amyema miquelii	Box Mistletoe		Other (OG)	Loranthaceae				
Amyema miraculosum subsp. *boormanii*			Other (OG)	Loranthaceae				
Angophora melanoxylon	Coolabah Apple		Tree (TG)	Myrtaceae				
Anthosachne scabra	Wheatgrass, Common Wheatgrass		Grass & grasslike (GG)	Poaceae				
Apophyllum anomalum	Warrior Bush		Shrub (SG)	Capparaceae				
Argemone ochroleuca subsp. *ochroleuca*	Mexican Poppy	*		Papaveraceae				
Aristida caput-medusae	Many-headed Wiregrass		Grass & grasslike (GG)	Poaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Aristida holathera var. *holathera*	Erect Kerosene Grass		Grass & grasslike (GG)	Poaceae				
Aristida jerichoensis var. *jerichoensis*	Jericho Wiregrass		Grass & grasslike (GG)	Poaceae				
Aristida jerichoensis var. *subspinulifera*	Jericho Wiregrass		Grass & grasslike (GG)	Poaceae				
Aristida ramosa	Purple Wiregrass		Grass & grasslike (GG)	Poaceae				
Atalaya hemiglauca	Whitewood		Tree (TG)	Sapindaceae				
Atriplex leptocarpa	Slender-fruit Saltbush		Shrub (SG)	Chenopodiaceae				
Atriplex spongiosa	Pop Saltbush		Forb (FG)	Chenopodiaceae				
Atriplex stipitata	Mallee Saltbush		Shrub (SG)	Chenopodiaceae				
Austrostipa nitida			Grass & grasslike (GG)	Poaceae				
Austrostipa scabra	Speargrass		Grass & grasslike (GG)	Poaceae				
Austrostipa setacea	Corkscrew Grass		Grass & grasslike (GG)	Poaceae				
Azolla filiculoides	Pacific Azolla		Fern (EG)	Azollaceae				
Beyeria viscosa	Sticky Wallaby Bush		Shrub (SG)	Euphorbiaceae				
Boerhavia dominii	Tarvine		Forb (FG)	Nyctaginaceae				
Bonamia media var. *villosa*			Other (OG)	Convolvulaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Bothriochloa bladhii subsp. *bladhii*	Forest Bluegrass		Grass & grasslike (GG)	Poaceae				
Brachychiton populneus subsp. *trilobus*			Tree (TG)	Malvaceae				
Brachyscome ciliaris var. *lanuginosa*	Variable Daisy		Forb (FG)	Asteraceae				
Brachyscome ciliocarpa	Showy Daisy		Forb (FG)	Asteraceae				
Brachyscome lineariloba	Hard-headed Daisy		Forb (FG)	Asteraceae			Ci	
Brassica tournefortii	Mediterranean Turnip	*		Brassicaceae				
Brassicaceae indeterminate	Mustards	*		Brassicaceae				
Bulbine bulbosa	Bulbine Lily		Forb (FG)	Asphodelaceae				
Bulbine semibarbata	Wild Onion		Forb (FG)	Asphodelaceae				
Calandrinia eremaea	Small Purslane		Forb (FG)	Portulacaceae				
Callistemon brachyandrus	Prickly Bottlebrush		Shrub (SG)	Myrtaceae				
Callitris glaucophylla	White Cypress Pine		Tree (TG)	Cupressaceae				
Calotis cuneifolia	Purple Burr-Daisy		Forb (FG)	Asteraceae				
Calotis hispidula	Bogan Flea		Forb (FG)	Asteraceae				
Calotis lappulacea	Yellow Burr-daisy		Forb (FG)	Asteraceae				
Capparis mitchellii	Native Orange		Shrub (SG)	Capparaceae				
Carthamus lanatus	Saffron Thistle	*		Asteraceae				
Cassinia laevis	Cough Bush		Shrub (SG)	Asteraceae				
Casuarina cristata	Belah			Casuarinaceae				
Casuarina pauper	Black Oak		Tree (TG)	Casuarinaceae				
Cenchrus ciliaris	Buffel Grass	*		Poaceae				
Centaurea melitensis	Maltese Cockspur	*		Asteraceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Centaurium tenuiflorum	Branched Centaury, Slender centaury	*		Gentianaceae				
Centipeda cunninghamii	Common Sneezeweed		Forb (FG)	Asteraceae				
Centipeda thespidioides	Desert Sneezeweed		Forb (FG)	Asteraceae				
Centrolepis strigosa subsp. *strigosa*			Grass & grasslike (GG)	Centrolepidaceae				
Chamaesyce drummondii	Caustic Weed		Forb (FG)	Euphorbiaceae				
Cheilanthes austrotenuifolia	Rock Fern		Fern (EG)	Pteridaceae				
Cheilanthes lasiophylla			Fern (EG)	Pteridaceae				
Cheilanthes sieberi subsp. *sieberi*	Rock Fern		Fern (EG)	Pteridaceae				
Chenopodium auricomiforme			Shrub (SG)	Chenopodiaceae				
Chenopodium cristatum	Crested Goosefoot		Forb (FG)	Chenopodiaceae				
Chenopodium curvispicatum			Shrub (SG)	Chenopodiaceae				
Chenopodium desertorum subsp. *anidiophyllum*			Shrub (SG)	Chenopodiaceae				
Chenopodium melanocarpum	Black Crumbweed		Forb (FG)	Chenopodiaceae				
Chenopodium nitrariaceum	Nitre Goosefoot		Shrub (SG)	Chenopodiaceae				
Dysphania pumilio	Small Crumbweed		Forb (FG)	Chenopodiaceae				
Chloris truncata	Windmill Grass		Grass & grasslike (GG)	Poaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Chrysocephalum apiculatum	Common Everlasting		Forb (FG)	Asteraceae				
Chthonocephalus pseudevax	Ground-heads		Forb (FG)	Asteraceae				
Citrullus amarus	Camel Melon	*		Cucurbitaceae				
Clematis microphylla	Small-leaved Clematis		Other (OG)	Ranunculaceae				
Convolvulus erubescens	Pink Bindweed		Other (OG)	Convolvulaceae				
Conyza bonariensis	Flaxleaf Fleabane	*		Asteraceae				
Corymbia tumescens			Tree (TG)	Myrtaceae				
Crassula sieberiana	Australian Stonecrop		Forb (FG)	Crassulaceae				
Crinum flaccidum	Darling Lily		Forb (FG)	Amaryllidaceae				
Cucumis myriocarpus subsp. *leptodermis*	Paddy Melon	*		Cucurbitaceae				
Cullen tenax	Emu-foot		Forb (FG)	Fabaceae (Faboideae)				
Cuphonotus andraeanus			Forb (FG)	Brassicaceae				
Cymbopogon ambiguus	Lemon Grass		Grass & grasslike (GG)	Poaceae				
Cymbopogon obtectus	Silky Heads		Grass & grasslike (GG)	Poaceae				
Cymbopogon refractus	Barbed Wire Grass		Grass & grasslike (GG)	Poaceae				
Cynodon dactylon	Common Couch		Grass & grasslike (GG)	Poaceae				
Hackelia suaveolens			Forb (FG)	Boraginaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Cyperus alterniflorus			Grass & grasslike (GG)	Cyperaceae				
Cyperus gymnocaulos			Grass & grasslike (GG)	Cyperaceae				
Cyperus sanguinolentus			Grass & grasslike (GG)	Cyperaceae				
Daucus glochidiatus	Native Carrot		Forb (FG)	Apiaceae				
Denhamia cunninghamii			Shrub (SG)	Celastraceae				
Dianella longifolia var. *longifolia*			Forb (FG)	Phormiaceae				
Dianella revoluta	Blueberry Lily		Forb (FG)	Phormiaceae				
Dichondra repens	Kidney Weed		Forb (FG)	Convolvulaceae				
Digitaria ammophila	Silky Umbrella Grass		Grass & grasslike (GG)	Poaceae				
Digitaria breviglumis			Grass & grasslike (GG)	Poaceae				
Digitaria brownii	Cotton Panic Grass		Grass & grasslike (GG)	Poaceae				
Digitaria hubbardii			Grass & grasslike (GG)	Poaceae				
Digitaria hystrichoides	Curly Umbrella Grass		Grass & grasslike (GG)	Poaceae				
Dissocarpus paradoxus	Cannonball Burr		Shrub (SG)	Chenopodiaceae				
Dodonaea bursariifolia			Shrub (SG)	Sapindaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Dodonaea petiolaris			Shrub (SG)	Sapindaceae				
Dodonaea viscosa	Sticky Hop-bush		Shrub (SG)	Sapindaceae				
Dodonaea viscosa subsp. *angustissima*	Narrow-leaf Hop-bush		Shrub (SG)	Sapindaceae				
Dodonaea viscosa subsp. *cuneata*	Wedge-leaf Hop-bush		Shrub (SG)	Sapindaceae				
Dodonaea viscosa subsp. *mucronata*			Shrub (SG)	Sapindaceae				
Dodonaea viscosa subsp. *Spatulata*	Broad-leaf Hopbush		Shrub (SG)	Sapindaceae				
Duma florulenta	Lignum		Shrub (SG)	Polygonaceae				
Duperreya halfordii			Other (OG)	Convolvulaceae				
Dysphania littoralis			Forb (FG)	Chenopodiaceae				
Dysphania rhadinostachya subsp. *inflata*			Forb (FG)	Chenopodiaceae				
Einadia nutans	Climbing Saltbush		Forb (FG)	Chenopodiaceae				
Einadia nutans subsp. *nutans*	Climbing Saltbush		Forb (FG)	Chenopodiaceae				
Einadia nutans subsp. *oxycarpa*	Climbing Saltbush		Forb (FG)	Chenopodiaceae				
Einadia trigonos	Fishweed		Forb (FG)	Chenopodiaceae				
Enchylaena tomentosa	Ruby Saltbush		Shrub (SG)	Chenopodiaceae				
Enteropogon acicularis	Curly Windmill Grass		Grass & grasslike (GG)	Poaceae				
Enteropogon ramosus	Curly Windmill Grass		Grass & grasslike (GG)	Poaceae				
Eragrostis australasica	Canegrass		Grass & grasslike (GG)	Poaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Eragrostis brownii	Brown's Lovegrass		Grass & grasslike (GG)	Poaceae				
Eragrostis dielsii	Mallee Lovegrass		Grass & grasslike (GG)	Poaceae				
Eragrostis elongata	Clustered Lovegrass		Grass & grasslike (GG)	Poaceae				
Eragrostis eriopoda	Woollybutt		Grass & grasslike (GG)	Poaceae				
Eragrostis lacunaria	Purple Lovegrass		Grass & grasslike (GG)	Poaceae				
Eragrostis leptocarpa	Drooping Lovegrass		Grass & grasslike (GG)	Poaceae				
Eragrostis microcarpa			Grass & grasslike (GG)	Poaceae				
Eragrostis parviflora	Weeping Lovegrass		Grass & grasslike (GG)	Poaceae				
Eragrostis sororia			Grass & grasslike (GG)	Poaceae				
Eremophila bignoniiflora	Eurah		Shrub (SG)	Myoporaceae				
Eremophila bowmanii	Silver Turkeybush		Shrub (SG)	Myoporaceae				
Eremophila bowmanii subsp. *bowmanii*			Shrub (SG)	Myoporaceae				
Eremophila deserti	Turkeybush		Shrub (SG)	Myoporaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Eremophila duttonii	Harlequin Fuchsia Bush		Shrub (SG)	Myoporaceae				
Eremophila gilesii	Desert Fuchsia		Shrub (SG)	Myoporaceae				
Eremophila glabra	Tar Bush		Shrub (SG)	Myoporaceae				
Eremophila goodwinii	Purple Fuchsia Bush		Shrub (SG)	Myoporaceae				
Eremophila latrobei	Crimson Turkeybush		Shrub (SG)	Myoporaceae				
Eremophila latrobei subsp. *latrobei*			Shrub (SG)	Myoporaceae				
Eremophila longifolia	Emubush		Shrub (SG)	Myoporaceae				
Eremophila maculata	Spotted Fuchsia		Shrub (SG)	Myoporaceae				
Eremophila mitchellii	Budda		Shrub (SG)	Myoporaceae				
Eremophila polyclada	Flowering Lignum		Shrub (SG)	Myoporaceae				
Eremophila serrulata	Green Fuchsia Bush		Shrub (SG)	Myoporaceae				
Eremophila sturtii	Turpentine Bush		Shrub (SG)	Myoporaceae				
Eriachne mucronata	Mountain Wanderrie Grass		Grass & grasslike (GG)	Poaceae				
Eriochloa crebra	Cup Grass, Tall Cupgrass		Grass & grasslike (GG)	Poaceae				
Erodium crinitum	Blue Crowfoot		Forb (FG)	Geraniaceae				
Eryngium paludosum	Long Eryngium		Forb (FG)	Apiaceae				
Eucalyptus camaldulensis	River Red Gum		Tree (TG)	Myrtaceae				
Eucalyptus camphora subsp. *camphora*			Tree (TG)	Myrtaceae				
Eucalyptus coolabah	Coolibah		Tree (TG)	Myrtaceae				
Eucalyptus dwyeri	Dwyer's Red Gum		Tree (TG)	Myrtaceae				
Eucalyptus intertexta	Gum Coolibah		Tree (TG)	Myrtaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Eucalyptus largiflorens	Black Box		Tree (TG)	Myrtaceae				
Eucalyptus morrisii	Grey Mallee		Tree (TG)	Myrtaceae				
Eucalyptus populnea subsp. *bimbil*	Bimble Box		Tree (TG)	Myrtaceae				
Eucalyptus vicina			Tree (TG)	Myrtaceae				
Eucalyptus viridis	Green Mallee		Tree (TG)	Myrtaceae				
Euphorbia tannensis			Shrub (SG)	Euphorbiaceae				
Evolvulus alsinoides	Bindweed		Forb (FG)	Convolvulaceae				
Exocarpos aphyllus	Leafless Ballart		Shrub (SG)	Santalaceae				
Flindersia maculosa	Leopardwood		Tree (TG)	Rutaceae				
Fuirena incrassata			Grass & grasslike (GG)	Cyperaceae				
Geijera parviflora	Wilga		Shrub (SG)	Rutaceae				
Geranium spp.			Forb (FG)	Geraniaceae				
Glinus lotoides	Hairy Carpet-weed		Forb (FG)	Aizoaceae				
Glycine canescens	Silky Glycine		Other (OG)	Fabaceae (Faboideae)				
Gnephosis arachnoidea	Erect Yellow-heads		Forb (FG)	Asteraceae				
Gonocarpus elatus			Forb (FG)	Haloragaceae				
Goodenia fascicularis	Mallee Goodenia		Forb (FG)	Goodeniaceae				
Goodenia havilandii			Forb (FG)	Goodeniaceae				
Goodenia macbarronii	Narrow Goodenia		Forb (FG)	Goodeniaceae				
Goodenia pinnatifida	Scrambles Eggs		Forb (FG)	Goodeniaceae				
Goodenia pusilliflora			Forb (FG)	Goodeniaceae			2KC-	
Gossypium barbadense	Sea Island Cotton	*		Malvaceae				
Gratiola pumilo			Forb (FG)	Scrophulariaceae			3K	
Grevillea striata	Beefwood		Tree (TG)	Proteaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Hakea spp.			Shrub (SG)	Proteaceae				
Haloragis odontocarpa f. octoforma			Forb (FG)	Haloragaceae				
Harmsiodoxa blennodioides			Forb (FG)	Brassicaceae				
Heliotropium supinum	Prostrate Heliotrope	*		Boraginaceae				
Hibiscus sturtii var. *grandiflorus*			Forb (FG)	Malvaceae				
Hibiscus sturtii var. *sturtii*	Hill Hibiscus		Forb (FG)	Malvaceae				
Hyalosperma semisterile			Forb (FG)	Asteraceae				
Hybanthus monopetalus	Slender Violet-bush		Forb (FG)	Violaceae				
Hydrocotyle torquata			Forb (FG)	Apiaceae				
Hydrocotyle trachycarpa	Wild Parsley		Forb (FG)	Apiaceae				
Hypericum japonicum			Forb (FG)	Clusiaceae				
Isoetopsis graminifolia	Grass Cushion		Forb (FG)	Asteraceae				
Isolepis inundata	Club-rush		Grass & grasslike (GG)	Cyperaceae				
Isolepis multicaulis			Grass & grasslike (GG)	Cyperaceae				
Jasminum lineare	Desert Jasmine		Other (OG)	Oleaceae				
Juncus aridicola	Tussock Rush		Grass & grasslike (GG)	Juncaceae				
Juncus bufonius	Toad Rush	*		Juncaceae				
Juncus remotiflorus			Grass & grasslike (GG)	Juncaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Juncus subsecundus	Finger Rush		Grass & grasslike (GG)	Juncaceae				
Kunzea ambigua	Tick Bush		Shrub (SG)	Myrtaceae				
Kunzea occidentalis				Myrtaceae				
Lachnagrostis filiformis			Grass & grasslike (GG)	Poaceae				
Leiocarpa brevicompta	Flat Billy-buttons		Forb (FG)	Asteraceae				
Leiocarpa leptolepis	Pale Plover-daisy		Forb (FG)	Asteraceae				
Leiocarpa websteri			Forb (FG)	Asteraceae				
Lemooria burkittii	Wires-a-wool		Forb (FG)	Asteraceae				
Lepidium oxytrichum			Forb (FG)	Brassicaceae				
Linum marginale	Native Flax		Forb (FG)	Linaceae				
Lobelia darlingensis	Darling Pratia		Forb (FG)	Campanulaceae				
Lomandra leucocephala subsp. *leucocephala*	Woolly Mat-rush		Grass & grasslike (GG)	Lomandraceae				
Lomandra patens	Irongrass		Grass & grasslike (GG)	Lomandraceae			3RCa	
Lotus australis	Australian Trefoil		Forb (FG)	Fabaceae (Faboideae)				
Lotus cruentus	Red-flowered Lotus		Forb (FG)	Fabaceae (Faboideae)				
Lycium australe	Australian Boxthorn		Shrub (SG)	Solanaceae				
Lysiana exocarpi			Other (OG)	Loranthaceae				
Lysiana linearifolia			Other (OG)	Loranthaceae				
Lysimachia arvensis	Scarlet Pimpernel	*		Primulaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Maireana appressa			Shrub (SG)	Chenopodiaceae				
Maireana enchylaenoides	Wingless Fissure-weed		Forb (FG)	Chenopodiaceae				
Maireana microphylla	Small-leaf Bluebush		Shrub (SG)	Chenopodiaceae				
Maireana pentatropis			Shrub (SG)	Chenopodiaceae				
Maireana sclerolaenoides			Shrub (SG)	Chenopodiaceae				
Maireana villosa	Silky Bluebush		Shrub (SG)	Chenopodiaceae				
Malva parviflora	Small-flowered Mallow	*		Malvaceae				
Malva preissiana	Native Hollyhock		Shrub (SG)	Malvaceae				
Malvastrum americanum	Spiked Malvastrum	*		Malvaceae				
Marsdenia australis	Doubah		Other (OG)	Apocynaceae				
Marsilea costulifera			Fern (EG)	Marsileaceae				
Marsilea drummondii	Common Nardoo		Fern (EG)	Marsileaceae				
Medicago laciniata	Cut-leaved Medic	*		Fabaceae (Faboideae)				
Medicago minima	Woolly Burr Medic	*		Fabaceae (Faboideae)				
Medicago polymorpha	Burr Medic	*		Fabaceae (Faboideae)				
Melaleuca glomerata	Desert Honey-myrtle		Shrub (SG)	Myrtaceae				
Melaleuca uncinata	Broombush		Shrub (SG)	Myrtaceae				
Micromyrtus ciliata	Fringed Heath-myrtle		Shrub (SG)	Myrtaceae				
Micromyrtus striata			Shrub (SG)	Myrtaceae				
Mimulus prostratus	Small Monkey-flower		Forb (FG)	Phrymaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Monachather paradoxus	Bandicoot Grass		Grass & grasslike (GG)	Poaceae				
Myoporum acuminatum	Boobialla		Shrub (SG)	Myoporaceae				
Myoporum montanum	Western Boobialla		Shrub (SG)	Myoporaceae				
Myriocephalus pluriflorus	Woolly-heads		Forb (FG)	Asteraceae				
Myriophyllum striatum			Forb (FG)	Haloragaceae				
Myriophyllum verrucosum	Red Water-milfoil		Forb (FG)	Haloragaceae				
Neobassia proceriflora	Soda Bush		Shrub (SG)	Chenopodiaceae				
Nicotiana suaveolens	Native Tobacco		Forb (FG)	Solanaceae				
Oldenlandia galioides			Forb (FG)	Rubiaceae	Endangered			
Osteocarpum acropterum	Water Weed		Forb (FG)	Chenopodiaceae				
Ottelia ovalifolia subsp. *ovalifolia*	Swamp Lily		Forb (FG)	Hydrocharitaceae				
Oxalis corniculata	Creeping Oxalis	*	Forb (FG)	Oxalidaceae				
Oxalis perennans			Forb (FG)	Oxalidaceae				
Pandorea pandorana	Wonga Wonga Vine		Other (OG)	Bignoniaceae				
Pandorea pandorana subsp. *pandorana 'inland form'*			Other (OG)	Bignoniaceae				
Panicum effusum	Hairy Panic		Grass & grasslike (GG)	Poaceae				
Paspalidium constrictum	Knottybutt Grass		Grass & grasslike (GG)	Poaceae				
Perotis rara	Comet Grass		Grass & grasslike (GG)	Poaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Persicaria prostrata	Creeping Knotweed		Forb (FG)	Polygonaceae				
Petalostylis labicheoides	Butterfly Bush		Shrub (SG)	Fabaceae (Caesalpinioideae)				
Phebalium glandulosum subsp. *glandulosum*			Shrub (SG)	Rutaceae				
Philotheca difformis subsp. *difformis*			Shrub (SG)	Rutaceae				
Philotheca linearis			Shrub (SG)	Rutaceae				
Phyllanthus gunnii			Forb (FG)	Phyllanthaceae				
Phyllanthus lacunarius			Forb (FG)	Phyllanthaceae				
Phyllanthus lacunellus			Forb (FG)	Phyllanthaceae				
Pimelea linifolia subsp. *linoides*			Shrub (SG)	Thymelaeaceae				
Pimelea microcephala subsp. *microcephala*	Shrubby Rice-flower		Shrub (SG)	Thymelaeaceae				
Pimelea trichostachya			Shrub (SG)	Thymelaeaceae				
Pittosporum angustifolium	Butterbush		Shrub (SG)	Pittosporaceae				
Plantago cunninghamii	Sago-weed		Forb (FG)	Plantaginaceae				
Plantago drummondii	Dark Sago-weed		Forb (FG)	Plantaginaceae				
Plantago turrifera	Small Sago-weed		Forb (FG)	Plantaginaceae				
Pleurosorus rutifolius	Bristly Cloak Fern		Fern (EG)	Aspleniaceae				
Pluchea dentex	Bowl Daisy		Forb (FG)	Asteraceae				
Podolepis capillaris	Invisible Plant		Forb (FG)	Asteraceae				
Polygonum aviculare	Wireweed	*		Polygonaceae				
Polygonum plebeium	Small Knotweed		Forb (FG)	Polygonaceae				
Portulaca oleracea	Pigweed		Forb (FG)	Portulacaceae				
Potamogeton spp.			Forb (FG)	Potamogetonaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Prostanthera striatiflora	Jockey's Cap		Shrub (SG)	Lamiaceae				
Pseudognaphalium luteoalbum	Jersey Cudweed		Forb (FG)	Asteraceae				
Psydrax latifolia			Shrub (SG)	Rubiaceae				
Psydrax oleifolia			Shrub (SG)	Rubiaceae				
Pterocaulon sphacelatum	Applebush		Forb (FG)	Asteraceae				
Pterostylis cobarensis	Greenhood Orchid		Forb (FG)	Orchidaceae	Vulnerable			
Ptilotus gaudichaudii var. *gaudichaudii*			Forb (FG)	Amaranthaceae				
Ptilotus leucocomus	Small Purple Foxtail		Forb (FG)	Amaranthaceae				
Ptilotus obovatus	Smoke Bush		Shrub (SG)	Amaranthaceae				
Ptilotus obovatus var. *obovatus*	Silver Tails		Shrub (SG)	Amaranthaceae				
Ptilotus polystachyus var. *polystachyus*	Long Tails		Forb (FG)	Amaranthaceae				
Ptilotus sessilifolius var. *sessilifolius*			Forb (FG)	Amaranthaceae				
Ptilotus spathulatus f. spathulatus	Pussy-tails		Forb (FG)	Amaranthaceae				
Rapistrum rugosum	Turnip Weed	*		Brassicaceae				
Rhagodia spinescens	Thorny Saltbush		Shrub (SG)	Chenopodiaceae				
Rhodanthe floribunda	Common White Sunray		Forb (FG)	Asteraceae				
Rhodanthe uniflora			Forb (FG)	Asteraceae				
Rhyncharrhena linearis	Purple Pentatrope		Other (OG)	Apocynaceae				
Rostellularia adscendens var. *adscendens*			Forb (FG)	Acanthaceae				
Rostellularia adscendens var. *pogonanthera*	Pink Tongues		Forb (FG)	Acanthaceae				
Rumex brownii	Swamp Dock		Forb (FG)	Polygonaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Rutidosis helichrysoides	Grey Wrinklewort		Forb (FG)	Asteraceae				
Rytidosperma spp.				Poaceae				
Salsola australis			Shrub (SG)	Chenopodiaceae				
Salvia verbenaca	Vervain	*		Lamiaceae				
Santalum acuminatum	Sweet Quandong		Shrub (SG)	Santalaceae				
Santalum lanceolatum	Northern Sandalwood		Shrub (SG)	Santalaceae				
Sauropus trachyspermus			Forb (FG)	Phyllanthaceae				
Scaevola spinescens			Shrub (SG)	Goodeniaceae				
Schenkia spicata	Spike Centaury		Forb (FG)	Gentianaceae				
Schoenus centralis			Grass & grasslike (GG)	Cyperaceae			3KC-	
Schoenus latelaminatus	Medusa Bog Sedge		Grass & grasslike (GG)	Cyperaceae				
Sclerolaena bicornis	Goathead Burr		Shrub (SG)	Chenopodiaceae				
Sclerolaena bicornis var. *bicornis*			Shrub (SG)	Chenopodiaceae				
Sclerolaena bicornis var. *horrida*	Goathead Burr		Shrub (SG)	Chenopodiaceae				
Sclerolaena birchii	Galvinized Burr		Shrub (SG)	Chenopodiaceae				
Sclerolaena brachyptera	Short-winged Copperburr		Shrub (SG)	Chenopodiaceae				
Sclerolaena calcarata	Redburr		Shrub (SG)	Chenopodiaceae				
Sclerolaena convexula	Tall Copperburr		Shrub (SG)	Chenopodiaceae				
Sclerolaena decurrens	Green Copperburr		Shrub (SG)	Chenopodiaceae				
Sclerolaena diacantha	Grey Copperburr		Shrub (SG)	Chenopodiaceae				
Sclerolaena eriacantha	Silky Copperburr		Shrub (SG)	Chenopodiaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Sclerolaena lanicuspis	Woolly Copperburr		Shrub (SG)	Chenopodiaceae				
Sclerolaena muricata	Black Rolypoly		Shrub (SG)	Chenopodiaceae				
Sclerolaena muricata var. *muricata*	Black Rolypoly		Shrub (SG)	Chenopodiaceae				
Sclerolaena muricata var. *semiglabra*	Black Rolypoly		Shrub (SG)	Chenopodiaceae				
Sclerolaena muricata var. *villosa*	Black Rolypoly		Shrub (SG)	Chenopodiaceae				
Sclerolaena parallelicuspis			Shrub (SG)	Chenopodiaceae				
Sclerolaena patenticuspis			Shrub (SG)	Chenopodiaceae				
Sclerolaena stelligera	Star Copperburr		Shrub (SG)	Chenopodiaceae				
Sclerolaena tricuspis	Giant Redburr		Shrub (SG)	Chenopodiaceae				
Tecticornia spp.			Shrub (SG)	Chenopodiaceae				
Senecio quadridentatus	Cotton Fireweed		Forb (FG)	Asteraceae				
Senna artemisioides subsp. *filifolia*			Shrub (SG)	Fabaceae (Caesalpinioideae)				
Senna artemisioides subsp. *X artemisioides*			Shrub (SG)	Fabaceae (Caesalpinioideae)				
Senna artemisioides subsp. *x petiolaris*	Woody Cassia		Shrub (SG)	Fabaceae (Caesalpinioideae)				
Senna circinnata			Shrub (SG)	Fabaceae (Caesalpinioideae)				
Senna form taxon 'sturtii'			Shrub (SG)	Fabaceae (Caesalpinioideae)				
Sida ammophila	Sand Sida		Forb (FG)	Malvaceae				
Sida corrugata	Corrugated Sida		Forb (FG)	Malvaceae				
Sida cunninghamii	Ridge Sida		Forb (FG)	Malvaceae				
Sida fibulifera	Pin Sida		Forb (FG)	Malvaceae				
Sida filiformis			Forb (FG)	Malvaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Sida phaeotricha			Forb (FG)	Malvaceae				
Sida trichopoda	High Sida		Forb (FG)	Malvaceae				
Sigesbeckia australiensis			Forb (FG)	Asteraceae				
Sisymbrium erysimoides	Smooth Mustard	*		Brassicaceae				
Sisymbrium irio	London Rocket	*		Brassicaceae				
Sisyrinchium rosulatum	Scourweed	*		Iridaceae				
Solanum aviculare	Kangaroo Apple		Shrub (SG)	Solanaceae				
Solanum cleistogamum			Forb (FG)	Solanaceae				
Solanum ellipticum	Velvet Potato Bush		Forb (FG)	Solanaceae				
Solanum esuriale	Quena		Forb (FG)	Solanaceae				
Solanum ferocissimum	Spiny Potato-bush		Shrub (SG)	Solanaceae				
Solanum nigrum	Black-berry Nightshade	*		Solanaceae				
Spartothamnella puberula			Shrub (SG)	Lamiaceae				
Spergularia rubra	Sandspurry	*		Caryophyllaceae				
Sporobolus spp.	Rat's Tail Couch		Grass & grasslike (GG)	Poaceae				
Stellaria angustifolia	Swamp Starwort		Forb (FG)	Caryophyllaceae				
Stemodia florulenta	Bluerod		Forb (FG)	Scrophulariaceae				
Stenopetalum lineare	Threadcress		Forb (FG)	Brassicaceae				
Stenopetalum nutans			Forb (FG)	Brassicaceae				
Swainsona microphylla			Forb (FG)	Fabaceae (Faboideae)				
Templetonia aculeata	Spiny Mallee Pea		Shrub (SG)	Fabaceae (Faboideae)				
Tetragonia eremaea			Forb (FG)	Aizoaceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Tetragonia tetragonioides	New Zealand Spinach		Forb (FG)	Aizoaceae				
Teucrium racemosum	Grey Germander		Forb (FG)	Lamiaceae				
Themeda triandra			Grass & grasslike (GG)	Poaceae				
Thyridolepis mitchelliana	Mulga Mitchell Grass		Grass & grasslike (GG)	Poaceae				
Thyridolepis xerophila			Grass & grasslike (GG)	Poaceae				
Thysanotus patersonii	Twining Fringe-Lily		Other (OG)	Anthericaceae				
Trachymene ochracea	White Parsnip		Forb (FG)	Apiaceae				
Tragus australianus	Small Burrgrass		Grass & grasslike (GG)	Poaceae				
Trianthema triquetra	Small Hogweed		Forb (FG)	Aizoaceae				
Tribulus micrococcus	Spineless Caltrop		Forb (FG)	Zygophyllaceae				
Tribulus terrestris	Cat-head	*		Zygophyllaceae				
Tripogon loliiformis	Fiveminute Grass		Grass & grasslike (GG)	Poaceae				
Velleia glabrata			Forb (FG)	Goodeniaceae				
Ventilago viminalis	Supple Jack		Tree (TG)	Rhamnaceae				
Verbena supina	Trailing Verbena	*		Verbenaceae				
Vittadinia cervicularis var. *cervicularis*			Forb (FG)	Asteraceae				
Vittadinia cuneata			Forb (FG)	Asteraceae				
Vittadinia sulcata			Forb (FG)	Asteraceae				
Vittadinia triloba			Forb (FG)	Asteraceae				

Species	Common Name	Exotic	Growth Form	Family	BC Act	EPBC Act	ROTAP	Priority Weed
Wahlenbergia communis	Tufted Bluebell		Forb (FG)	Campanulaceae				
Wahlenbergia fluminalis	River Bluebell		Forb (FG)	Campanulaceae				
Wahlenbergia gracilis	Sprawling Bluebell		Forb (FG)	Campanulaceae				
Wahlenbergia stricta	Tall Bluebell		Forb (FG)	Campanulaceae				
Waitzia acuminata	Orange Immortelle		Forb (FG)	Asteraceae				
Walwhalleya subxerophila	Gilgai Grass			Poaceae				
Xanthium occidentale	Noogoora Burr	*		Asteraceae				
Xanthium spinosum	Bathurst Burr	*		Asteraceae				
Xerochrysum bracteatum	Golden Everlasting			Asteraceae				
Xerochrysum viscosum	Sticky Everlasting			Asteraceae				
Zygophyllum ammophilum	Sand Twinleaf		Forb (FG)	Zygophyllaceae				
Zygophyllum apiculatum	Common Twinleaf		Forb (FG)	Zygophyllaceae				
Lycium ferocissimum	African Boxthorn	*		Solanaceae				Regional Recommended Measure: Land managers mitigate the risk of the plant spreading from their land. Land managers reduce impact of plant on priority assets (riparian areas and floodplains).

Appendix F Locations of Species of Conservation Significance

Species	Count	Surveyor	Date	Coordinate System	Easting	Northing
Lepidium monoplocoides	2	MS	24/10/2020	GDA 94 MGA 55	383537	6621590
Lepidium monoplocoides	1	MS	24/10/2020	GDA 94 MGA 55	383510	6621450
Lepidium monoplocoides	10	MS	24/10/2020	GDA 94 MGA 55	383275	6620820
Lepidium monoplocoides	10	MS	25/10/2020	GDA 94 MGA 55	383143	6620340
Acacia curranii	>50	MS	25/10/2020	GDA 94 MGA 55	376886	6616440
Pterostylis cobarensis	3	MS	26/10/2020	GDA 94 MGA 55	373404	6623050
Lepidium monoplocoides	>100	MS	27/10/2020	GDA 94 MGA 55	377262	6638070
Lepidium monoplocoides	>100	MS	27/10/2020	GDA 94 MGA 55	377241	6638020
Lepidium monoplocoides	3	MS	27/10/2020	GDA 94 MGA 55	366500	6638140
Pterostylis cobarensis	5	MS	27/10/2020	GDA 94 MGA 55	382613	6612530
Pterostylis cobarensis	2	MS	27/10/2020	GDA 94 MGA 55	382507	6612730
Lepidium monoplocoides	10	MS	29/10/2020	GDA 94 MGA 55	365686	6648960
Lepidium monoplocoides	1	MS	29/10/2020	GDA 94 MGA 55	366952	6648440
Lepidium monoplocoides	7	MS	29/10/2020	GDA 94 MGA 55	363204	6644490
Lepidium monoplocoides	1	MS	29/10/2020	GDA 94 MGA 55	363233	6644550
Lepidium monoplocoides	5	MS	29/10/2020	GDA 94 MGA 55	363212	6644480
Lepidium monoplocoides	1	MS	29/10/2020	GDA 94 MGA 55	363215	6644450
Lepidium monoplocoides	>100	MS	29/10/2020	GDA 94 MGA 55	363258	6644350
Pterostylis cobarensis	1	MF, MS	27/10/2020	GDA 94 MGA 55	382535	6612670
Lepidium monoplocoides	2	MF	29/10/2020	GDA 94 MGA 55	363211	6644540
Lepidium monoplocoides	1	MF	29/10/2020	GDA 94 MGA 55	363223	6644490
Lepidium monoplocoides	1	MF	29/10/2020	GDA 94 MGA 55	363248	6644370
Lepidium monoplocoides	10	MS	29/10/2020	GDA 94 MGA 55	395343	6623280

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