



MOUNT CRAWFORD FOREST RESERVE
KAISERSTUHL NATIVE FOREST RESERVE
MANAGEMENT PLAN

September 2016



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INTRODUCTION

Kaiserstuhl Native Forest Reserve (NFR) consists of 204.5 hectares of native vegetation that has been disturbed in the past by grazing, timber cutting and fire, and forms part of the Mount Crawford Forest Reserve in the Barossa Ranges, Southern Mount Lofty Ranges. The area is recognised as a significant conservation area representative of both the original vegetation in the area, and local geological features. The area covered by this plan is not officially gazetted as a Native Forest Reserve under the *Forestry Act* 1950 but it has been identified as an area suitable for gazettal. For the purpose of this plan it will be referred to as an NFR.

The Mount Lofty Ranges Forest Reserves Management Plan (ForestrySA 2014) is the overarching plan for management of forest reserves in the Mount Lofty Ranges and describes the management context and planning framework in greater detail. The Kaiserstuhl Native Forest Reserves Management Plan provides a statement of purpose for the area based upon an assessment of its natural features, management philosophies and community use. It is intended to replace these plans in the future with conservation management plans which will cover the management of all conservation areas within a forest reserve.

The Management Program identifies priority tasks for the reserve. The natural resources data (Appendices 1-2) provides the latest available information on flora and fauna.

Purpose of Reserve

Kaiserstuhl NFR will be managed and protected to conserve their biodiversity by sustaining its indigenous plant and animal communities as an enduring and dynamic ecosystem.

ForestrySA currently manages approximately 4 000 hectares of native forest reserve in the Mount Lofty Ranges gazetted under the *Forestry Act* 1950.

Location

Kaiserstuhl NFR is locally identified by Kaiserstuhl peak, which occurs on the western boundary of the reserve as the second highest point in the Barossa Valley, 600m above sea level. The whole forest locality is known as Pewsey Vale. The reserve is located approximately 13km north-east of Williamstown (Figure 1), adjacent the western boundary of Kaiserstuhl Conservation Park (Figure 2). The reserve comprises part Sections 578, 579 and Allotment 1 (closed Government road between Sections 578 and 579) in the Hundred of Moorooroo, in the District Council of Barossa.

The reserve is shown in the Emergency Services Map book Mount Lofty Ranges, (Edition 3, 2014), Grid Reference – 173 700 Map 179C. Map of Kaiserstuhl is displayed in Figure 2.

The north-south ridge formation of Kaiserstuhl NFR is surrounded by pine plantations managed by ForestrySA. The major area of native vegetation within the reserve is contiguous with Kaiserstuhl Conservation Park to the north-east, and privately owned Heritage Agreement land to the north. The western boundary is cleared farmland used for stock grazing. Parts of the western boundary of Kaiserstuhl peak contain an old, dry stone wall, erected by early settlers.

Administration and Access

The area is under the management control of the Mount Crawford Forest Office, located at 745 Warren Road (Williamstown to Gumeracha) 7km south-east of Williamstown. Pedestrian access is permitted during daylight hours except on days when a Total Fire Ban is imposed or where erected signs or notices restrict access to specified areas.

Pedestrian access to all areas is permitted during daylight hours except on days when a Total Fire Ban is imposed or where erected signs or notices restrict access to specified areas.

Vehicle access to Kaiserstuhl NFR is via Brownes Road, approximately 11km east of Lyndoch, or 8.5km north of the Mount Crawford Forest Information Centre. Access through NFRs by ForestrySA vehicles and vehicles of contractors employed by ForestrySA on existing tracks and firebreaks, will be permitted for management purposes, including fire prevention and suppression, and pest plant and animal control. Access through NFRs for ForestrySA plantation harvesting transport will be permitted if an acceptable route can be found that minimises disturbance to the biodiversity values of the reserve.

Vehicular access to the public is restricted by provision of the Regulations under the *Forestry Act 1950*.

Management Objectives

ForestrySA manages some of the few remnant areas of native forest, woodland and wetland predominantly in the higher rainfall areas of South Australia, together with their associated fauna. These areas contribute significantly to the natural assets of the State and have been managed as Forest Reserves under the *Forestry Act 1950* by the former Woods and Forests Department (now ForestrySA) which was established in 1882.

The primary management objective for areas of native forest under its control is to conserve and enhance native flora and fauna, and preserve biodiversity for the long-term benefit of the South Australian community.

In managing native forests, ForestrySA:

- recognises that the size and relative isolation of many native forest reserves increases the risk of species loss due to fire, drought or disease, where isolation is a barrier to re-colonisation;
- recognises that native forest reserves contribute to the conservation of valuable remnant habitats for many species and provide, in part, a representation of land cover before clearance and other changes following European settlement;
- recognises ecosystems will continue to change with time;
- will make decisions for the management of ecosystems, communities and processes, based on the information available;
- will use the least disturbed sites as scientific benchmark areas to monitor changes due to natural succession, and as reference sites for restoration of adjacent disturbed areas;
- will vary management programs, as required, to maximise biological diversity; and
- may involve regional co-ordination with neighbouring landowners (private individuals, Local Government and other Government agencies) to maximise the conservation value of an area.

Prior to the early 1950s, most areas were disturbed by activities such as timber cutting, grazing, fire and invasion by introduced plants and animals. Since then, most of these areas have remained relatively undisturbed. Compared with other remnant areas of native vegetation in South Australia, those managed by ForestrySA are often the least disturbed due to their long history of consistent land tenure. Areas of native vegetation may require specific management prescriptions to achieve management objectives, depending upon their disturbance histories.

VALUES AND CURRENT USES

Conservation

- Kaiserstuhl Native Forest Reserve is an IUCN (International Union for the Conservation of Nature & Natural Resources 2005) Category IV Reserve. Category IV Reserves are habitat or species management areas, protected areas managed mainly for conservation through management intervention to ensure the maintenance of habitats and/or to meet the requirements of species.
- The reserve conserves remnant native vegetation characteristic of the region where it is estimated less than 15% of the original vegetation remains (Long 1999).
- The reserve conserves remnant grassy woodland, now considered to be a highly threatened natural ecosystem in Australia.
- The reserve is contiguous with Kaiserstuhl Conservation Park and a Heritage Agreement area on the reserve's northern boundary contributing significantly to regional biodiversity by creating a reserved area of high biodiversity value of approximately 730 hectares.
- The elevated sites and granite outcrops provide unique niches for fauna and plants that are not found in abundance elsewhere, such as reptiles, mosses and lichens.
- The reserve contains many mature eucalypts containing hollows, vital for many fauna species as breeding and nesting sites.
- The native vegetation enhances water quality at the headwaters of one of the major tributaries of the Jacobs Creek (North Para sub-catchment) which flows through the Barossa Valley.

Cultural Heritage

- Parts of the western boundary contain an old, dry stone wall erected by early settlers of the area.
- According to Tindale (1974), the reserve is a part of the land once used by the Peramangk Aboriginal people and is a remnant example of the flora and fauna that provided food and shelter. An alternative name for the Kaiserstuhl peak is "patpoori", the Aboriginal word meaning "little grass tree" presumably *Xanthorrhoea quadrangulata*, the rock grass-tree, which is found in the reserve.

Many archeological deposits have cultural significance for Aboriginal people today and many may have scientific significance. Certain sites have landforms that are more likely to contain evidence of Aboriginal occupation than others, such as claypans; rocky outcrops; dunes; and bush or forested areas. A site may also be important for historic events that occurred there. Such places may contain no archeological evidence, but can have great significance to Aboriginal people.

The South Australian Government is responsible for the protection and preservation of sites, objects and remains of sacred, ceremonial, mythological or historical significance to Aboriginal people. Known sites of significance to Aboriginal archaeology, anthropology, history and tradition are listed on the Register of Aboriginal Sites and Objects (*Aboriginal Heritage Act 1988*). There are no known registered sites within these reserves.

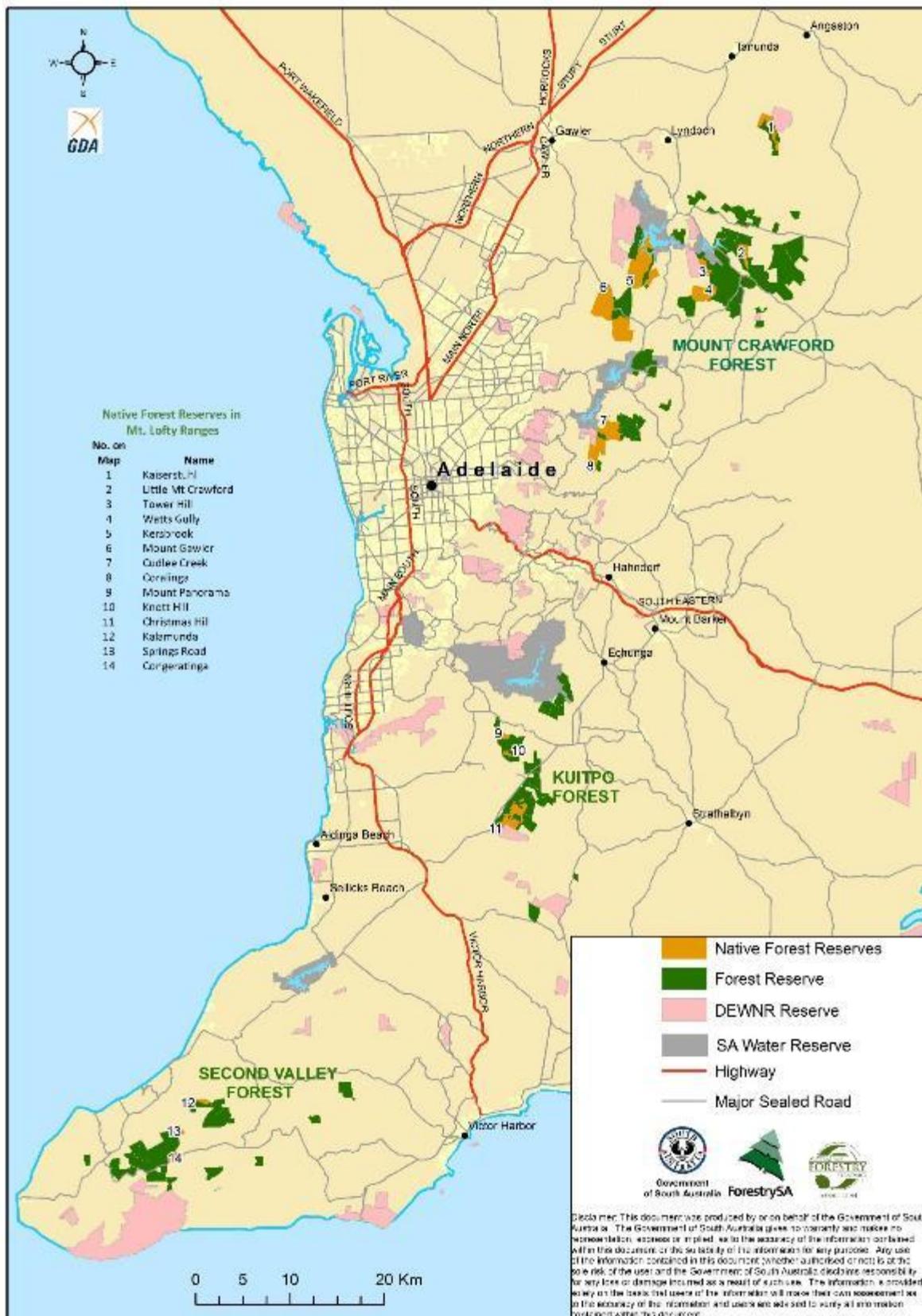
Recreation

- The Heysen Trail is a long-distance walking trail, which traverses the Mount Lofty Ranges, extending from Cape Jervis in the south to the Flinders Ranges in the north. This trail passes

through the Kaiserstuhl NFR in a north/south direction. Rossiter's Hut, an old shepherd's hut that has been renovated, is located along the trail for overnight camping for walkers. Camping is permitted from 1 April until 1 December each year. A permit is required in advance and is available from the Mount Crawford Forest Information Centre.

Horse riding and dogs are not permitted in NFR's and cycling is only allowed on fire tracks. Recently there has been an increase in mountain bike activity in the reserve which currently seems to be restricted to plantation areas, however it will need to be monitored. Other recreational events like orienteering and rogaining will only be allowed if there is no adverse impact on the sustainable management of the reserve. Particularly sensitive areas, including sites with threatened flora and fauna species, significant plant associations and areas posing high risk of damage due to terrain or condition must be avoided during events. Access to compartments KS5 and KS6 is restricted and access to KS1 and KS2 is totally prohibited. The intensity and frequency of organised events throughout a year will also determine management decisions.

Figure 1-Location of Native Forest Reserves in Mt. Lofty Ranges



PLANNING AND MANAGEMENT FRAMEWORK

Land use within forest reserves is defined through a forest zoning agreement with the Department for Environment - Native Vegetation Council which identifies three main management zones-

- General Forestry zone – commercial plantation areas exempt from requirements of the *Native Vegetation Act 1991*
- Conservation zone – includes gazetted native forest reserves and other areas of remnant native vegetation managed for conservation
- Transition zone – areas of former plantation managed to increase conservation value through removal of pine and other weeds with the ultimate goal to transfer to conservation zone.

Kaiserstuhl NFR is one of fourteen NFRs in the Mount Lofty Ranges. Significant biodiversity assets are also contained within other areas of native vegetation outside of native forest reserves managed as conservation zone Annual operational plans are prepared for all forest reserves targeting pest plants and animals.

Planning for community use covers both commercial plantation forest and native forest areas. Community use of forest reserves is not restricted to specific areas, but determined according to compatibility and level of impact.

The management objectives for the NFRs complement existing state and regional plans, including:

- Our Place. Our Future, State Natural Resources Management Plan, South Australia 2012-2017.
- Adelaide and Mount Lofty Ranges Natural Resources Management Plan 2014-15 to 2023-24
- Informing Biodiversity Conservation for the Adelaide and Mount Lofty Ranges Region South Australia.
- Regional Recovery Plan for Threatened Species and Ecological Communities of Adelaide and the Mount Lofty Ranges, South Australia.

ForestrySA maintains certification to the AFS (AS 4708) via the Forest Management System (FMS), which provides a framework of sustainable forest management practices and processes.

A large part of ensuring appropriate management of these forests is to understand, identify, assess and manage environmental aspects and impacts. ForestrySA achieves this through a formal process identified within the FMS and records the details of these in its Risk Register. The controls from this process flow into management procedures and actions on the ground.

Community Engagement

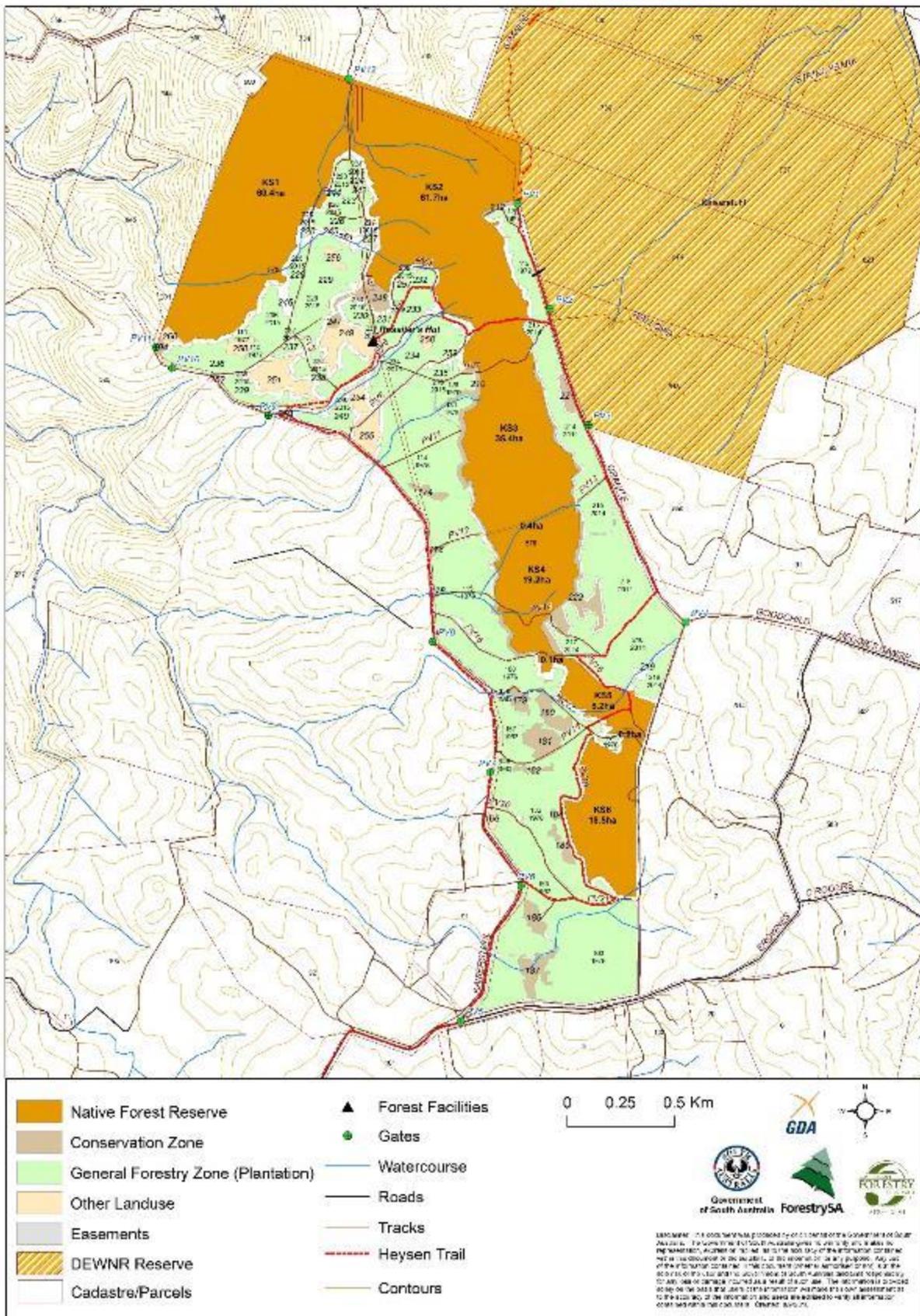
There is regular engagement with other agencies and community projects to implement integrated work programs and to foster cross agency and community relationships. ForestrySA has a long working relationship with the North Para Project, now managed under the Adelaide & Mount Lofty Ranges Natural Resources Management (AMLNRM) Board, who have provided funding for weed control in the reserve.

The Friends of Kaiserstuhl Conservation Park hold regular working bees in the forest reserve doing weed control and monitoring and contribute many hundreds of volunteer hours every year on the ground.

There is also a long working relationship with Urrbrae TAFE who utilise forest areas for study purposes every year while providing ForestrySA with useful on-ground resources.

ForestrySA also runs a community focussed Friends of the Forest volunteer program which engages community volunteers to undertake various tasks in the forest including feral animal control, weed control, flora and fauna surveys and other monitoring.

Figure 2 – Kaiserstuhl Native Forest Reserve



NATURAL RESOURCES

Climate

The area typically experiences a climate with cool, wet winters and warm dry summers. The reserve receives an average rainfall of 750mm, in which approximately 80% falls in the seven months from April to October. During the period of record, the lowest recorded rainfall of 406mm occurred in 1914, one of the worst drought years on record in southern Australia. The impact of intermittent drought may have significant impact on plant regeneration in these elevated areas with shallow soils.

The summer of 2000 was the driest since the drought of 1914. However, the winter of 2001 was the wettest for a similar period.

Typical of the Mount Lofty Ranges, the average maximum temperatures exist from November to March and are between 20°C and 28°C, but with periods of over 35°C in hotter years. Winter temperatures are recognised as some of the coldest in the Mount Lofty Ranges, with frequent days of less than 8°C.

Detailed climatological information has been collected at the Mount Crawford Forest office since 1954. This information is available on the Bureau of Meteorology website (<http://www.bom.gov.au>).

Geomorphology and Soils

The geology of the area dates back to the Proterozoic – Palaeozoic period, about 1.4 million years ago. The underlying rocks belong to the Barossa complex, which constitutes a number of small inliers throughout the Mount Lofty Ranges. The dominant rock type of the area is granite and gneiss, and many outcrops can be seen throughout the area. Both the geology and soils of the region effect the distribution and composition of the vegetation.

There are three principal soil types in the area: grey-brown podzolic soils; yellow podzolic soils and skeletal soils. The grey-brown podzolic soils are gravelly with stony, light sandy loam topsoil approximately 30cm thick found over mottled plastic clay subsoils, usually 25 - 38cm thick. This soil type is commonly found on the lower ridges. The yellow podzolic soils are coarse-textured, often with loose sandy topsoil 25 - 30cm thick. They overlay mottled yellow, red and grey, soapy clay subsoil 75 -150cm thick containing decomposed rock materials. The parent material consists of white quartz, often split affected by previous lateritic processes. This soil type exists in the high ridges and long tapering slopes. The skeletal soils on the peaks and upper slopes of steep ridges contain light grey-brown to grey loose sand, over broken rock at approximately 30 - 38cm in depth. The parent material, common to these soils, includes white quartz gneisses and schists with variable outcrops of granite.

The north-south plateau forms the crest of a ridge and contains numerous fractured, weathered and eroded granite outcrops. In these areas the soils are shallow and highly erodible.

Hydrology and Topography

The area is dominated by Kaiserstuhl peak 600m above sea level. A tributary of the Jacob Creek subdivides this formation from an elongated north-south plateau intersected by short, steep seasonal streams that flow westward. Jacob Creek is a sub-catchment of the North Para river within the Gawler River catchment. Each sub-catchment area is relatively small, however, rainfall events produce some water flow. The steepness of the sides of these drainage lines results in the retention of moisture for a considerable time, as they are protected from sun and wind.

A permanent spring is present in one compartment influencing the presence of plants. Other permanent soaks are present, indicated by the occurrence of sedges and rushes at high elevations.

Varying aspects, drainage patterns, underlying geomorphology and soil types, create diverse examples of micro-climates, reflected in the variety of vegetation communities occurring in the reserve.

Vegetation

The reserve provides an example of the higher elevation vegetation associations occurring on skeletalised soils, which are now scarce in the Mount Lofty Ranges. It contains many mature eucalypts, which provide nesting hollows for fauna and contains plant species that are not well represented or conserved elsewhere, many with high conservation significance. The reserve area is at the intersection of three botanical zones, as described by the State Herbarium of South Australia. These are the Murray, Southern Lofty and the Northern Mount Lofty Botanical Regions. The native vegetation associations are more closely aligned to the Southern Lofty Botanical Region, therefore conservation ratings have been assigned for this zone.

In 1999 the Friends of Kaiserstuhl Conservation Park undertook an extensive vegetation inventory of Kaiserstuhl NFR. This survey found that Kaiserstuhl NFR contains plant species that do not occur in the contiguous Heritage Agreement land or Kaiserstuhl Conservation Park. Compartment KS6 was surveyed as part of a regional grassy woodland survey in 2003 (Roche 2003) and further surveys were done in 2005 by R Bates. A list of flora found in the reserve is attached in Appendix 1.

The reserve contains a number of vegetation communities including woodland, grassy woodland shrubland, grassland, herbland and sedgeland. These diverse areas provide a variety of habitat types. The following broad vegetation associations have been identified:.

***Eucalyptus viminalis* ssp. *cygnetensis* (Manna gum)** is the dominant overstorey woodland species across the reserve occurring in association with *Allocasuarina verticillata* (Drooping sheoak) and *Callitris gracilis* (Native pine) over a variety of sclerophyllous shrubs, including *Acacia pycnantha* (Golden wattle), *Xanthorrhoea semiplana* (Yacca) and *Daviesia* spp.

***Eucalyptus baxteri* (Brown stringybark) Woodland** occurs in the northern part of the reserve with understorey species including *Astroloma* spp. and *Prostanthera* spp.

***Banksia marginata* (Silver banksia) Low Woodland** occurs in scattered patches across the northern section of the reserve. This plant association is poorly conserved in South Australia.

Shrubby woodland communities above occur on the ridges, upper slopes and steep rocky areas where soils are poor and shallow (Plate1).

The grassy woodland communities below are concentrated in the more fertile, low lying areas and along watercourses.

- ***Eucalyptus camaldulensis* (Red gum) Grassy Woodland** found along the larger watercourses and on rich soils.
- ***Eucalyptus leucoxylon* (Blue gum) Grassy Woodland** found in the north-west section of the reserve below Kaiserstuhl peak.
- ***Allocasuarina verticillata* Grassy Woodland** found on the valley floors in the northern section.
- ***Acacia retinodes* (Wirilda wattle) Grassy Woodland** found in the north-west section.
- ***Eucalyptus viminalis* ssp. *cygnetensis* Grassy Woodland** found in the south-east part of the reserve. This area was surveyed by Roche (2003).

The taller shrubland communities are dominated by *Banksia marginata*, *Acacia* spp., and *Meliccytus dentatus*. There are low shrubland communities dominated by *Calytrix tetragona*, *Hibbertia* spp. and *Spyridium parvifolium* with herbaceous understorey. These shrublands may result from past

disturbance from grazing and tree felling (Bates 2005), but they still contribute to the complexity of different habitat types.

There are also patches of open herbland and grassland, which may have been partly modified by past disturbances (Plate 2). Grassland communities are generally dominated by *Danthonia* spp., *Microleana stipoides* or *Aristida behriana*. Wetter areas, along watercourses, ephemeral streams and soaks contain a variety of sedges and ferns.



Plate 1 – Woodland vegetation with diverse shrubby understorey



Plate 2 – Open, grassy area within the reserve

Bates (2005) suggests that up to 20 orchid species may have been lost from past grazing pressure, however there are still over 30 different species of orchids present, with nearly half of these being from the *Thelymitra* genus (Plate 3).



Plate 3: *Thelymitra grandiflora* (Great sun-orchid)

Due to the proximity of the reserve to Kaiserstuhl Conservation Park, the vegetation communities in the reserve could be regarded as an extension of those identified in the Conservation Park. However, several of the broad associations occurring in Kaiserstuhl NFR are poorly represented in the adjacent Conservation Park. These include the *Eucalyptus leucoxyton* and *E. viminalis* ssp. *cygnetensis* woodland associations.

It was also found there are species occurring in much larger numbers in the reserve than in the other two land tenures. For example, *Leptospermum myrsinoides* is present in greater numbers than in the Conservation Park, where only a few isolated plants occur. The survey also recorded a greater number of areas within the reserve containing *Correa* aff. *aemula* (Hairy correa) which tends to grow amongst the large granite outcrops. (Friends of Kaiserstuhl Conservation Park 1999). This plant is rated rare for South Australia.

The survey also found that various sites contained differing numbers of plant species, reflecting the variety of habitats, with some species occurring only in one habitat. This would suggest the

importance of these habitats within the reserve and highlights the requirement for adaptive management.

Introduced Plants

Occasional large infestations of Blackberry (*Rubus fruticosus*) can be found in open, grassy areas and along creek lines throughout the reserve. Blackberry can form dense thickets that exclude indigenous vegetation. They provide shelter to pest animals such as rabbits and foxes and can increase the fire hazard of infested bushland (Muyt 2001). Olives (*Olea europaea*) and Briar roses (*Rosa* spp.) are scattered throughout the reserve and are a priority for control.

Phalaris sp. and Salvation Jane (*Echium plantagineum*), occurs along internal tracks, boundary fencelines and in open grassy areas. St. John's wort (*Hypericum* sp.) has been identified by the Friends of Kaiserstuhl Conservation Park as an introduced species beginning to spread throughout the reserve and requiring control especially adjacent to the Kaiserstuhl Conservation Park. A priority weed for monitoring and control is *Pennisetum setaceum* (Fountain grass). This invasive perennial grass is present in the private land adjacent to the north-west corner of the reserve. Some plants have been found in the forest reserve and have been controlled but ongoing monitoring is required to ensure that it does not spread.

Fauna

No formal surveys have been undertaken in Kaiserstuhl NFR. Due to the proximity of the area to Kaiserstuhl Conservation Park, it is expected that most species recorded in the Conservation Park would occur in the reserve. Fauna species lists are included in Appendix 2. Pine plantations adjacent the NFR also provide habitat for many species of insectivorous birds and shelter for kangaroos.

Birds

Incidental observations by ForestrySA staff and the Friends of Kaiserstuhl Conservation Park, have detected 52 species of bird (Appendix 1), including the Bassian thrush (*Zoothera lunulata*), which has a conservation status of rare in South Australia and endangered for the region, This species is known to feed extensively in pine plantations. The mosaic of plantations and native vegetation create habitat for many species of insectivorous birds that can both feed and nest in pine plantations. In the adjacent Kaiserstuhl Conservation Park more than double the amount bird species have been recorded, with many of these species likely to visit the NFR.

Mammals

Two species of macropod, the Western-grey kangaroo (*Macropus fuliginosus*) and the Euro (*Macropus robustus*) are known to occur in both the NFR and Conservation Park. The presence of the Euro was first detected in 1976 and was then the most southerly known occurrence of this species. Since 1976, the Euro has also been detected in Sandy Creek Conservation Park and sections of Para Wirra Recreation Park. These three locations are important sites for its protection throughout the Mount Lofty Ranges. Anecdotal reports suggest that Red kangaroos (*Macropus rufus*) and Koalas also inhabit the management area.

Other mammals present in the Conservation Park, and likely to occur in the NFR include the Short-beaked Echidna (*Tachyglossus aculeatus*) and two species of Possum, the Common brushtail (*Trichosurus vulpecula*) and Common ringtail (*Pseudocheirus peregrinus*).

Due to the presence of numerous dams in the surrounding vineyards, and mature trees with hollows, it is expected that most species of bats known to occur in the Mount Lofty Ranges would also be present in the reserve.

Reptiles and Amphibians

Incidental observations have recorded eight species of reptile (Appendix 2). Due to the variety of niches present in the locality that range from seasonal creeks, permanent springs, dams and rocky outcrops, it is expected that most species known to occur in other reserves in this region of the Mount Lofty Ranges would also be present in the NFR.

Introduced Animals

Goats (*Capra hircus*), red fox (*Vulpes vulpes*), European rabbit (*Oryctolagus cuniculus*), Brown hare (*Lepus capensis*), Fallow deer (*Cervus dama*) and Cats (*Felix catus*), have been reported in the reserve. Sheep are occasionally seen possibly from adjoining grazing properties.

Goats seem to have been eradicated from the reserve due to control efforts over many years. They can cause extensive and serious damage to native vegetation in a relatively short period, especially to more palatable shrubs and can rapidly increase in numbers if conditions are suitable. Goat presence needs to be monitored.

Deer numbers have greatly increased across the region in recent times. The presence of continuous cover and food, in both pine plantations and native vegetation, enables deer to disperse over a wide area of native forest and throughout farmed areas. As well as increasing total grazing pressure deer also cause extensive physical damage to native vegetation, especially during the rutting season (early autumn) when saplings or tall shrubs with stem diameter 3-5cm (e.g. *Banksia marginata*) may be ringbarked or broken off by bucks. Another major concern is the potential for feral deer to act as carriers for livestock diseases. There are ongoing control efforts in place for deer control using Friends of the Forest volunteers.

Abundant Native Animals

Western grey kangaroos (*Macropus fuliginosus*) live mostly in native vegetation, but often feed on adjacent pastures. In large numbers they may damage fences when moving to and from feeding or drinking sites and prevent regeneration of native vegetation.

Control for abundant native species occurs only when there are regional control programs in place involving private landholders and other public land managers. Private landholders can obtain destruction permits under the *National Parks & Wildlife Act* from DEWNR, which allows the shooting of a prescribed number of animals.

Introduced Disease

Many root pathogens are known to cause root-rot disease in Australian flora species, but the introduced *Phytophthora cinnamomi* (Pc) has had the greatest effect and poses the greatest threat. Dieback caused by *Phytophthora cinnamomi* is listed as a key threatening process under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (Commonwealth of Australia 2014)

Pc grows in a thread-like fashion through the roots and trunks of infected plants. The only outward sign of its presence is sickness, or death, of the infected plant. Infestation is permanent – spores are long-lived and can remain dormant in cool, dry soils, until conditions are right for fungal growth. It is dispersed by water and other vectors, such as native animals, vehicles and bushwalkers. Yaccas and Banksias are particularly sensitive and have been regarded as indicator species.

Observations have been made of dead *Xanthorrhoea semiplana*, adjacent to wet areas, in the southern section of the reserve. The disease has not been confirmed, but is symptomatic of Pc. Symptoms of Pc have also been detected in the adjacent Conservation Park in 2001, adjacent to walking trails and drainage lines. However, subsequent soil testing for the disease failed to detect the pathogen.

The whole of the Mount Lofty Ranges is deemed to be a High Risk Area, where Pc is known to be present, or is likely to become established (Phytophthora Technical Group 2003). Within the region there are Risk Management Zones that have been designated by DEWNR. Kaiserstuhl NFR falls within a Moderate to High Risk Management Zone, The adoption of management strategies appropriate to the zone, and any activities in that zone, can minimise the spread of Pc. These strategies, as outlined in the *Phytophthora Management Guidelines* (Government of South Australia 2006), must be incorporated into the planning of high-risk activities.

LAND USE

Acquisition and Name

Land Tenure, which includes the area now reserved, was held as Credit Agreement, Land Grant or Certificate of Title from 1863, until dedicated as a Forest Reserve in 1977 (Appendix 3).

The area comprising the reserve was purchased from the adjacent landowner by the former Woods and Forests Department for the establishment of commercial pine plantations. Plantations of *Pinus radiata* were progressively established between 1977 and 1983 on areas that were suitable for growing this species.

The reserve takes its name from Kaiserstuhl peak, being a major geographical feature of the area. Joseph Menge, a German geologist, named the peak after a hill near Bismarck, Germany.

In 1942 a Dragon Rapide aeroplane flying from Renmark to Adelaide crashed into the Kaiserstuhl peak and killed 11 people. Due to the density of the vegetation, searching was difficult and involved many of the people living at Flaxmans Glen, 5km to the east. A local resident carried the bodies out with a horse and cart, and was paid two pounds. Later, a cairn was erected on the southern slopes of the peak as a memorial to the people who lost their lives.

Timber Cutting

Most of the area containing *Eucalyptus camaldulensis* was extensively cut for railway sleepers and mining timber in the past. The only large trees remaining occur in the drainage lines of steep gullies. Most of the other trees, particularly the *E. baxteri*, were extensively cut as fuelwood for furnaces at the Yalumba Winery, and brick kilns at Nuriootpa. This ceased in the early 1950s as other fuel sources became available. Until the early 1950s most of the area of *E. baxteri* was uncleared. Extensive clearing occurred after World War II as bulldozers became available. As a consequence of this cutting, many of the trees are multi-stemmed coppice regrowth.

Grazing

Evidence of dead ring-barked trees is present in adjacent farmland and throughout the reserve. When the area was purchased for sheep grazing in the 1930s, it is believed the landowners ring-barked most trees to provide more grass for grazing animals. Scattered amongst the areas of remnant native vegetation and granitic outcrops are areas where the soil is more fertile due to topography and aspect. These areas contain introduced pasture grasses as a consequence of the agricultural history of the reserve.

The area continued to be grazed until the mid 1970s when purchased by ForestrySA. Sections of the reserve were leased for sheep grazing up until 2000 when grazing leases were terminated. The area has a long history of grazing by feral goats, which seem now to be eradicated.

Declining numbers of mature *Banksia marginata* is a factor of senescence, but the large number of native and introduced herbivores are affecting regeneration of this species. Many seedlings germinate and are grazed continuously, so only a small number of plants develop and mature. Banksias are particularly important for nectar-feeding birds, as very few nectar-providing plant species are present in some areas of the reserve. For example, only a few *Astroloma*

conostephioides (Flame heath) plants, a large nectar producer, occur in the southern area of the reserve, in comparison with Kaiserstuhl Conservation Park, the Heritage Agreement land and compartment KS1.

Grazing has had an impact on the recruitment of many species of trees and shrubs within the reserve. There are young seedlings present, but second year and older regrowth is scarce in some areas. This contrasts with Kaiserstuhl Conservation Park, where there is regeneration and a gradient of age levels of those plants not palatable to kangaroos, particularly the eucalypts and several acacia species.

Fire

A number of wildfires have occurred in the area since 1926 when there was a very large fire that burnt the whole area, including the reserve. Other major fires in the area occurred in the early 1940s and again in the early 1960s. Since then, the area has remained unburnt. There are no short term plans to implement prescribed burning in the reserve.

Kaiserstuhl NFR is within the planning area covered in the *South Para Collaborative Fire Management Plan* (DEWNR 2015), a plan developed through a partnership between State Government land management agencies (ForestrySA, DEWNR & SA Water) and the South Australian Country Fire Service (CFS) to promote collaborative bushfire risk mitigation.

ForestrySA is also a member of the Mt Lofty Ranges Fire Cooperative, which includes DEWNR, SA Water, and the CFS. This cooperative seeks to integrate prescribed burning programs and to coordinate bushfire responses in the region.

MANAGEMENT PROGRAM

The Management actions proposed will be carried out in accordance with guidelines contained in the relevant procedural policies. In determining priority for management of the reserve's natural or physical resources, it is considered that:

- 1 = High priority; threat has a high capacity to degrade the resource;
- 2 = Medium priority;
- 3 = Low priority; threat has a low capacity to degrade the resource.

OBJECTIVE: Conservation Management		Priority for Action
Goals	Performance Indicator(s)	
Manage the reserve for the conservation of biodiversity.	No loss of species identified within the survey results.	1
Continue occasional biological monitoring to assist in long term management decisions	Maintain monitoring programs .	1
New survey information is provided to DEWNR for inclusion in Biological Database of SA	Survey data is supplied to DEWNR and is available to ForestrySA and other agencies/groups/individuals for retrieval	1

OBJECTIVE: Community Use		Priority for Action
Goals	Performance Indicator(s)	
Provide visitors with appropriate information regarding the reserve values.	Educational material available at reserve and/or Mount Crawford Forest Information Centre. Signs erected at appropriate locations.	2
Maintain walking trails and signage to acceptable specified standards.	Condition of walking trails and signage in the reserve - trails should be free from erosion, clear and accessible. Signs maintained in good condition. Trails relocated if required.	3

OBJECTIVE: Protection		Priority for Action
Goals	Performance Indicator(s)	
Implement management actions to reduce the spread of <i>Phytophthora</i> , other plant pathogens and weed seeds within the reserve.	Area affected by <i>Phytophthora</i> does not increase. No new pathogens or weed species introduced.	1
Minimise the impact of wildfire using a range of fire protection measures.	Annual wildfire prevention programs are completed. Fire-breaks are maintained. Public access and use is regulated in periods of high fire danger.	1
Identify activities with the potential for deleterious impacts and facilitate monitoring programs, including activities resulting from forest operations in adjacent forest reserves.	Impacts of permitted activities are monitored and reported by recreation users or ForestrySA.	1

OBJECTIVE: Protection		Priority for Action
Goals	Performance Indicator(s)	
Minimise the impact of introduced plants and/or animals on the conservation values of the reserve.	A reduction in the distribution and number of introduced plant and animal species in the reserve. Annual weed control program in place.	2
	Continue implementation of wild pine control programs within the reserve	1
Continue to maintain boundary fences.	Boundary fence line is in a serviceable condition.	3

OBJECTIVE: Rehabilitation		Priority for Action
Goals	Performance Indicator(s)	
Rehabilitate and/or revegetate degraded areas within the reserve.	Number of hectares rehabilitated relative to the previous year	2
Rehabilitate and/or revegetate tracks and/or firebreaks no longer required for vehicle access.	Number of tracks and/or firebreaks relative to previous year.	3
Remove infrastructure, e.g. fence, wire, posts no longer in use	Redundant infrastructure removed from reserve	3

OBJECTIVE: Stakeholder Involvement	Performance Indicator(s)	Priority for Action
Goals		
Maintain links with other natural resource and environmental agencies, and community groups – their programs, activities and/or projects.	Established and/or maintained links with other agencies and groups.	2
Maintain communication with adjacent landholders and pursue opportunities for co-operative management.	Number of complaints received regarding management.	As required
Encourage involvement by volunteers and community groups in the control of pest plants and animals, and rehabilitation and monitoring of sites within the reserve.	Participation of volunteers and community groups.	1

APPENDIX 1 FLORA SPECIES LIST

*Weed

	SPECIES	COMMON NAME	AUS	SA	AMLR	FAMILY
*	<i>Acacia baileyana</i>	Cootamundra wattle				Leguminosae
	<i>Acacia calamifolia</i>	Wallowa				Leguminosae
	<i>Acacia melanoxyton</i>	Blackwood				Leguminosae
	<i>Acacia myrtifolia</i>	Myrtle wattle				Leguminosae
	<i>Acacia paradoxa</i>	Kangaroo thorn				Leguminosae
	<i>Acacia pycnantha</i>	Golden wattle				Leguminosae
	<i>Acacia retinodes</i> var. <i>retinodes</i>	Wirilda				Leguminosae
	<i>Acacia verniciflua</i>	Varnish wattle			RA	Leguminosae
	<i>Acaena echinata</i>	Sheep's burr				Rosaceae
	<i>Acaena novae-zelandiae</i>	Biddy-biddy				Rosaceae
	<i>Acaena ovina</i>	Downy sheep's burr				Rosaceae
*	<i>Acetosella vulgaris</i>	Sorrel				Polygonaceae
	<i>Acianthus pusillus</i>	Mosquito orchid				Orchidaceae
	<i>Acrotriche depressa</i>	Native currant			RA	Epacridaceae
	<i>Acrotriche serrulata</i>	Cushion ground-berry				Epacridaceae
	<i>Adiantum aethiopicum</i>	Common maiden-hair				Adiantaceae
*	<i>Aira caryophyllea</i>	Silvery hair-grass				Gramineae
	<i>Allocasuarina muelleriana</i> ssp. <i>muelleriana</i>	Common oak-bush				Casuarinaceae
	<i>Allocasuarina verticillata</i>	Drooping sheoak				Casuarinaceae
	<i>Amphibromus archeri</i>	Pointed swamp wallaby-grass		R	RA	Gramineae
	<i>Amphipogon strictus</i>	Spreading grey-beard grass				Gramineae
	<i>Amyema pendulua</i> ssp. <i>pendula</i>	Drooping mistletoe			NT	Loranthaceae
*	<i>Anagallis arvensis</i>	Pimpernel				Primulaceae
*	<i>Anagallis minima</i>	Chaffweed				Primulaceae
	<i>Anogramma leptophylla</i>	Annual fern		R	RA	Adiantaceae
	<i>Aphanes australiana</i>	Australian piert				Rosaceae
	<i>Aphelia gracilis</i>	Slender aphelia			RA	Centrolepidaceae
	<i>Aphelia pumilio</i>	Dwarf aphelia				Centrolepidaceae
*	<i>Arctotheca calendula</i>	Cape weed				Compositae
	<i>Aristida behriana</i>	Brush wire-grass				Gramineae
	<i>Arthropodium fimbriatum</i>	Nodding vanilla-lily				Liliaceae
	<i>Arthropodium strictum</i>	Common vanilla-lily				Liliaceae
*	<i>Asclepias rotundifolia</i>	Broad-leaf cotton-bush				Asclepiadaceae
	<i>Asplenium flabellifolium</i>	Necklace fern				Aspleniaceae
	<i>Astroloma conostephioides</i>	Flame heath				Epacridaceae
	<i>Astroloma humifusum</i>	Cranberry heath				Epacridaceae
	<i>Austrostipa densiflora</i>	Fox-tail spear grass		R	RA	Gramineae
	<i>Austrostipa elegantissima</i>	Feather spear grass				Gramineae
	<i>Austrostipa hemipogon</i>	Half-beard spear grass				Gramineae
	<i>Austrostipa mollis</i>	Soft spear grass				Gramineae

	SPECIES	COMMON NAME	AUS	SA	AMLR	FAMILY
	<i>Austrostipa nodosa</i>	Tall spear grass				Gramineae
	<i>Austrostipa scabra</i> group	Falcate-awn spear grass				Gramineae
	<i>Austrostipa trichophylla</i>	Spear-grass				Gramineae
*	<i>Avena barbata</i>	Bearded oat				Gramineae
	<i>Banksia marginata</i>	Silver banksia				Proteaceae
	<i>Blechnum minus</i>	Soft water-fern			NT	Blechnaceae
	<i>Blennospora drummondii</i>	Dwarf button-flower				Compositae
	<i>Bossiaea prostrata</i>	Creeping bossiaea				Leguminosae
*	<i>Briza maxima</i>	Large quaking-grass				Gramineae
*	<i>Briza minor</i>	Lesser quaking-grass				Gramineae
	<i>Brunonia australis</i>	Blue pincushion				Goodeniaceae
	<i>Bulbine bulbosa</i>	Bulbine lily				Liliaceae
	<i>Burchardia umbellata</i>	Milkmaids				Liliaceae
	<i>Bursaria spinosa</i>	Sweet bursaria				Pittosporaceae
	<i>Caesia calliantha</i>	Blue grass-lily				Liliaceae
	<i>Caladenia carnea</i>	Pink fingers				Orchidaceae
	<i>Caladenia latifolia</i>	Pink caladenia			NT	Orchidaceae
	<i>Caladenia prolata</i>	Shy caladenia			RA	Orchidaceae
	<i>Caladenia reticulata</i>	Veined spider-orchid			VU	Orchidaceae
	<i>Caladenia vulgaris</i>	Plain caladenia		R	EN	Orchidaceae
	<i>Calaladenia leptochila</i>	Narrow-lip spider-orchid				Orchidaceae
	<i>Calandrinia calyptrata</i>	Pink purslane			NT	Portulacaceae
	<i>Calandrinia granulifera</i>	Pygmy purslane			NT	Portulacaceae
*	<i>Callitriche stagnalis</i>	Common water starwort				Callitrichaceae
	<i>Callitris gracilis</i>	Southern cypress pine			LC	Cupressaceae
	<i>Calochilus robertsonii</i>	Purplish beard-orchid				Orchidaceae
	<i>Calostemma purpureum</i>	Pink garland-lily				Amoryllidaceae
	<i>Calytrix tetragona</i>	Common fringe-myrtle				Myrtaceae
	<i>Carex appressa</i>	Tall sedge				Cyperaceae
	<i>Carex breviculmis</i>	Short-stem sedge				Cyperaceae
	<i>Carex tereticaulis</i>	Rush sedge				Cyperaceae
	<i>Cassytha glabella</i> f. <i>dispar</i>	Slender dodder-laurel				Lauraceae
	<i>Centrolepis aristata</i>	Pointed centrolepis				Centrolepidaceae
	<i>Centrolepis cephalophormis</i> ssp. <i>cephalophormis</i>	Cushion centrolepis		R		Centrolepidaceae
	<i>Centrolepis polygyna</i>	Wiry centrolepis				Centrolepidaceae
	<i>Centrolepis strigosa</i> ssp. <i>strigosa</i>	Hairy centrolepis				Centrolepidaceae
	<i>Chamaescilla corymbosa</i> var. <i>corymbosa</i>	Blue squill				Liliaceae
	<i>Chamaesyce drummondii</i>	Caustic weed				Euphorbiaceae
	<i>Cheilanthes austrotenuifolia</i>	Annual rock-fern				Adiantaceae
	<i>Cheilanthes sieberi</i> ssp. <i>sieberi</i>	Narrow rock-fern				Adiantaceae
	<i>Cheiranthra alternifolia</i>	Hand flower				Pittosporaceae
	<i>Chenopodium pumilio</i>	Clammy goosefoot				Chenopodiaceae

	SPECIES	COMMON NAME	AUS	SA	AMLR	FAMILY
*	<i>Cicendia filiformis</i>	Slender cicendia				Gentianaceae
*	<i>Cicendia quadrangularis</i>	Square cicendia				Gentianaceae
	<i>Convolvulus angustissimus</i> <i>ssp.angustissimus</i>	Australian bindweed				Convolvulaceae
	<i>Convolvulus remotus</i>	Grassy bindweed				Convolvulaceae
	<i>Correa aemula</i>	Hairy correa		R	VU	Rutaceae
	<i>Correa reflexa var. reflexa</i>	Common correa				Rutaceae
	<i>Corybas dilatatus</i>	Common helmet-orchid				Orchidaceae
	<i>Corybas incurvus</i>	Slaty helmet-orchid			NT	Orchidaceae
	<i>Cotula australis</i>	Common cotula				Compositae
	<i>Craspedia sp.</i>	Billy-buttons				Compositae
	<i>Crassula closiana</i>	Staked crassula				Crassulaceae
	<i>Crassula decumbens var. decumbens</i>	Spreading crassula				Crassulaceae
	<i>Crassula tetramera</i>	Australian stonecrop				Crassulaceae
	<i>Cryptandra tomentosa</i>	Heath cryptandra				Rhamnaceae
	<i>Cyanicula deformis</i>	Bluebeard orchid				Orchidaceae
	<i>Cymbonotus preissianus</i>	Austral bear's-ear			RA	Compositae
	<i>Cynoglossum suaveolens</i>	Sweet hound's-tongue			NT	Boraginaceae
*	<i>Cynosurus echinatus</i>	Rough dog's-tail grass				Gramineae
	<i>Cyperus gunnii ssp. gunnii</i>	Flecked flat-sedge			NT	Cyperaceae
	<i>Cyperus tenellus</i>	Tiny flat-sedge				Cyperaceae
	<i>Cyperus vaginatus</i>	Stiff flat-sedge				Cyperaceae
	<i>Daucus glochidiatus</i>	Native carrot				Umbelliferae
	<i>Daviesia leptophylla</i>	Narrow-leaf bitter-pea				Leguminosae
	<i>Daviesia ulicifolia ssp. incarnata</i>	Gorse bitter-pea				Leguminosae
	<i>Dianella longifolia var. grandis</i>	Pale flax-lily		R	VU	Liliaceae
	<i>Dianella revoluta var. revoluta</i>	Black-anther flax-lily				Liliaceae
	<i>Dichondra repens</i>	Kidney weed				Convolvulaceae
	<i>Dillwynia hispida</i>	Red parrot-pea				Leguminosae
*	<i>Disa bracteata</i>	South-African orchid				Orchidaceae
	<i>Diuris orientis</i>	Bulldog orchid				Orchidaceae
	<i>Diuris pardina</i>	Spotted donkey-orchid				Orchidaceae
	<i>Diuris x palachila</i>	Broad-lipped donkey-orchid				Orchidaceae
	<i>Dodonaea viscosa ssp. spatulata</i>	Sticky hop-bush				Sapindaceae
	<i>Drosera auriculata</i>	Tall sundew				Droseraceae
	<i>Drosera glanduligera</i>	Scarlet sundew				Droseraceae
	<i>Drosera macrantha ssp. planchonii</i>	Climbing sundew				Droseraceae
	<i>Drosera peltata</i>	Pale sundew				Droseraceae
	<i>Drosera whittakeri ssp. whittakeri</i>	Scented sundew				Droseraceae
*	<i>Echium plantagineum</i>	Salvation Jane				Boraginaceae
*	<i>Ehrharta calycina</i>	Perennial veldt grass				Gramineae
	<i>Einadia nutans ssp. nutans</i>	Climbing saltbush				Chenopodiaceae

	SPECIES	COMMON NAME	AUS	SA	AMLR	FAMILY
	<i>Eleocharis acuta</i>	Common spike-rush				Cyperaceae
	<i>Elymus scaber</i> var. <i>scaber</i>	Native wheat-grass				Gramineae
	<i>Enneapogon nigricans</i>	Black-head grass				Gramineae
	<i>Epilobium billardierianum</i> ssp. <i>billardierianum</i>	Robust willow-herb				Onagraceae
	<i>Epilobium hirtigerum</i>	Hairy willow-herb				Onagraceae
	<i>Eriochilus cucullatus</i>	Parson's bands				Orchidaceae
	<i>Eucalyptus baxteri</i>	Brown stringybark				Myrtaceae
	<i>Eucalyptus camaldulensis</i> var. <i>camaldulensis</i>	River red gum				Myrtaceae
	<i>Eucalyptus leucoxylon</i> ssp. <i>leucoxylon</i>	South Australian blue gum				Myrtaceae
	<i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i>	Rough-bark manna gum				Myrtaceae
	<i>Euchiton collinus</i>	Creeping cudweed				Compositae
	<i>Euchiton involucratus</i>	Star cudweed				Compositae
	<i>Exocarpos cupressiformis</i>	Native cherry				Santalaceae
	<i>Fincinia nodosa</i>	Knobby club-rush				Cyperaceae
	<i>Galium gaudichaudii</i> ssp. <i>gaudichaudii</i>	Rough bedstraw				Rubiaceae
	<i>Galium migrans</i>	Loose bedstraw				Rubiaceae
	<i>Geranium retrorsum</i>	Grassland geranium				Geraniaceae
	<i>Geranium solanderi</i> var. <i>solanderi</i>	Austral geranium				Geraniaceae
	<i>Gleichenia microphylla</i>	Coral fern		R	RA	Gleicheniaceae
	<i>Glossodia major</i>	Purple cockatoo				Orchidaceae
	<i>Glycine rubiginosa</i>	Twining glycine				Leguminosae
	<i>Gnaphalium</i> sp.	Cudweed				Compositae
	<i>Gonocarpus elatus</i>	Hill raspwort				Haloragaceae
	<i>Gonocarpus mezianus</i>	Broad-leaf raspwort				Haloragaceae
	<i>Gonocarpus tetragynus</i>	Small-leaf raspwort				Haloragaceae
	<i>Goodenia blackiana</i>	Native primrose				Goodeniaceae
	<i>Goodenia geniculata</i>	Bent goodenia				Goodeniaceae
	<i>Gratiola peruviana</i>	Austral brooklime				Scrophulariaceae
	<i>Grevillea lavandulacea</i> var. <i>lavandulacea</i>	Spider flower				Proteaceae
*	<i>Gynandris setifolia</i>	Thread iris				Iridaceae
	<i>Hakea rostrata</i>	Beaked hakea				Proteaceae
	<i>Haloragis heterophylla</i>	Variable raspwort			RA	Haloragaceae
	<i>Helichrysum leucopsideum</i>	Satin everlasting				Compositae
	<i>Hibbertia exutiacies</i>	Prickly guinea-flower				Dilleniaceae
*	<i>Holcus lanatus</i>	Yorkshire fog				Gramineae
	<i>Hyalosperma demissum</i>	Dwarf sunray				Compositae
	<i>Hyalosperma semisterile</i>	Sunray				Compositae
	<i>Hybanthus floribundus</i> ssp. <i>floribundus</i>	Shrub violet				Violaceae
	<i>Hydrocotyle callicarpa</i>	Tiny pennywort				Umbelliferae
	<i>Hydrocotyle foveolata</i>	Yellow pennywort				Umbelliferae

	SPECIES	COMMON NAME	AUS	SA	AMLR	FAMILY
	<i>Hydrocotyle laxiflora</i>	Stinking pennywort				Umbelliferae
	<i>Hydrocotyle plebeya</i>	Pennywort				Umbelliferae
	<i>Hypericum gramineum</i>	Small St John's wort				Guttiferae
*	<i>Hypericum perforatum</i>	St. Johns wort				Guttiferae
*	<i>Hypochaeris glabra</i>	Smooth cat's ear				Compositae
*	<i>Hypochaeris radicata</i>	Rough cat's ear				Compositae
	<i>Hypoxis glabella</i> var. <i>glabella</i>	Tiny star				Hypoxidaceae
	<i>Hypoxis vaginata</i> var. <i>vaginata</i>	Yellow Star				Hypoxidaceae
	<i>Iseotopsis graminifolia</i>	Grass cushion				Compositae
	<i>Isolepis fluitans</i>	Floating club-rush			NT	Cyperaceae
	<i>Isolepis inundata</i>	Swamp club-rush				Cyperaceae
	<i>Isolepis marginata</i>	Little club-rush				Cyperaceae
	<i>Ixodia achilloides</i> ssp. <i>alata</i>	Hills daisy				Compositae
	<i>Juncus bufonius</i>	Toad rush				Juncaceae
*	<i>Juncus capitatus</i>	Dwarf rush				Juncaceae
	<i>Juncus holoschoenus</i>	Joint-leaf rush				Juncaceae
	<i>Juncus kraussii</i>	Sea rush				Juncaceae
	<i>Juncus pallidus</i>	Pale rush				Juncaceae
	<i>Juncus pauciflorus</i>	Loose-flower rush				Juncaceae
	<i>Juncus planifolius</i>	Broad-leaf rush				Juncaceae
	<i>Juncus subsecundus</i>	Finger rush				Juncaceae
	<i>Kennedia prostrata</i>	Running postman				Leguminosae
	<i>Lachnagrostis filiformis</i>	Common blown-grass				Gramineae
	<i>Lagenophora huegelii</i>	Coarse bottle-daisy				Compositae
	<i>Laxmannia orientalis</i>	Dwarf wire-lily				Liliaceae
*	<i>Leontodon taraxacoides</i> ssp. <i>taraxacoides</i>	Lesser hawkbit				Compositae
	<i>Lepidosperma carphoides</i>	Black rapier-sedge				Cyperaceae
	<i>Lepidosperma laterale</i>	Tall sword-sedge			LC	Cyperaceae
	<i>Lepidosperma semiteres</i>	Wire rapier-sedge				Cyperaceae
	<i>Lepidosperma viscidum</i>	Sticky sword-sedge				Cyperaceae
	<i>Leptoceras menziesii</i>	Hare orchid				Orchidaceae
	<i>Leptorhynchos squamatus</i> ssp. <i>squamatus</i>	Scaly buttons				Compositae
	<i>Leptospermum continentale</i>	Prickly tea-tree				Myrtaceae
	<i>Leptospermum myrsinoides</i>	Heath tea-tree				Myrtaceae
	<i>Leucopogon virgatus</i>	Common beard-heath				Epacridaceae
	<i>Levenhookia dubia</i>	Hairy stylewort				Stylidiaceae
	<i>Lobelia anceps</i>	Angled lobelia				Campanulaceae
*	<i>Lolium perenne</i>	Perennial ryegrass				Gramineae
	<i>Lomandra collina</i>	Sand mat-rush				Liliaceae
	<i>Lomandra densiflora</i>	Soft tussock matt-rush				Liliaceae
	<i>Lomandra fibrata</i>	Mount Lofty matt-rush				Liliaceae
	<i>Lomandra micrantha</i> ssp. <i>micrantha</i>	Small-flower mat-rush				Liliaceae

	SPECIES	COMMON NAME	AUS	SA	AMLR	FAMILY
	<i>Lomandra micrantha</i> ssp. <i>tuberculata</i>	Small-flower mat-rush				Liliaceae
	<i>Lomandra multiflora</i> ssp. <i>dura</i>	Hard mat-rush				Liliaceae
	<i>Lomandra nana</i>	Small mat-rush				Liliaceae
	<i>Lomandra sororia</i>	Sword mat-rush			NT	Liliaceae
	<i>Luzula meridionalis</i>	Common wood-rush				Juncaceae
	<i>Luzula ovata</i>	Clustered wood-rush		R	EN	Juncaceae
	<i>Lythrum hyssopifolia</i>	Lesser loosestrife				Lythraceae
*	<i>Medicago</i> sp.	Medic				Leguminosae
	<i>Melicytus dentatus</i>	Tree violet			RA	Violaceae
*	<i>Melilotus indica</i>	King Island lemilot				Fabaceae
	<i>Mentha satureioides</i>	Native pennyroyal		R	EN	Labiatae
	<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping rice-grass				Gramineae
	<i>Microseris lanceolata</i>	Yam daisy				Compositae
	<i>Microtis arenaria</i>	Notched onion-orchid				Orchidaceae
	<i>Microtis frutetorum</i>	Onion orchid				Orchidaceae
	<i>Microtis parviflora</i>	Slender onion-orchid			LC	Orchidaceae
	<i>Microtis unifolia</i> complex	Onion-orchid				Orchidaceae
	<i>Millotia muelleri</i>	Common bow-flower				Compositae
	<i>Myoporum viscosum</i>	Sticky boobialla				Myoporaceae
	<i>Myosotis australis</i>	Austral forget-me-not			RA	Boraginaceae
	<i>Neurachne alopecuroidea</i>	Fox-tail mulga-grass				Gramineae
*	<i>Olea europaea</i> ssp. <i>europaea</i>	Olive				Oleaceae
	<i>Olearia ramulosa</i>	Twiggy daisy-bush				Compositae
	<i>Opercularia turpis</i>	Twiggy stinkweed				Rubiaceae
	<i>Opercularia varia</i>	Variable stinkweed				Rubiaceae
	<i>Ophioglossum lusitanicum</i>	Austral adder's-tongue			NT	Ophioglossaceae
	<i>Oxalis perennans</i>	Native sorrel				Oxalidaceae
*	<i>Oxalis pes-caprae</i>	Soursob				Oxalidaceae
*	<i>Parentucellia latifolia</i>	Red bartsia				Scrophulariaceae
	<i>Parietaria debilis</i>	Smooth-nettle				Urticaceae
	<i>Pelargonium australe</i>	Australian pelargonium			RA	Geraniaceae
*	<i>Pennisetum setaceum</i>	Fountain grass				Gramineae
*	<i>Pentachistis airoides</i>	False hair-grass				Gramineae
	<i>Pentapogon quadrifidus</i> var. <i>quadrifidus</i>	Five-awn spear-grass		R	VU	Gramineae
*	<i>Pentaschistis pallida</i>	Pussy tail				Gramineae
*	<i>Petrorhagia nanteuilii</i>	Proliferous pink				Caryophyllaceae
*	<i>Phalaris aquatica</i>	Phalaris				Gramineae
*	<i>Phalaris minor</i>	Lesser canary-grass				Gramineae
	<i>Pheladenia deformis</i>	Blue fairies				Orchidaceae
	<i>Phyllangium divergens</i>	Wiry mitrewort				Loganiaceae
	<i>Pimelea humilis</i>	Low riceflower				Thymelaeaceae
*	<i>Pinus halapensis</i>	Aleppo pine				Pinaceae

	SPECIES	COMMON NAME	AUS	SA	AMLR	FAMILY
*	<i>Pinus pinaster</i>	Maritime pine				Pinaceae
*	<i>Pinus radiata</i>	Radiata pine				Pinaceae
*	<i>Plantago bellardii</i>	Hairy plantain				Plantaginaceae
	<i>Plantago gaudichaudii</i>	Narrow-leaf plantain			NT	Plantaginaceae
	<i>Plantago hispida</i>	Native hairy plantain				Plantaginaceae
	<i>Plantago varia</i>	Variable plantain				Plantaginaceae
	<i>Platylobium obtusangulum</i>	Holly flat-pea				Leguminosae
	<i>Pleurosorus rutifolius</i>	Blanket fern			LC	Aspleniaceae
*	<i>Poa annua</i>	Winter grass				Gramineae
*	<i>Poa bulbosa</i>	Bulbous meadow-grass				Gramineae
	<i>Poa clelandii</i>	Matted tussock-grass				Gramineae
	<i>Poa crassicaudex</i>	Thick-stem tussock-grass				Gramineae
	<i>Podolepis tepperi</i>	Delicate copper-wire daisy			NT	Compositae
*	<i>Polycarena heterophylla</i>					Scrophulariaceae
*	<i>Polycarpon tetraphyllum</i>	Four-leaf allseed				Caryophyllaceae
	<i>Poranthera microphylla</i>	Small poranthera				Euphorbiaceae
	<i>Prasophyllum sp.</i>	Leek-orchid				Orchidaceae
	<i>Prostanthera behriana</i>	Downy mintbush			RA	Labiatae
	<i>Pseudognaphalium luteoalbum</i>	Jersey cudweed				Compositae
	<i>Pteridium esculentum</i>	Bracken fern				Dennstaedtiaceae
	<i>Pterostylis nana</i>	Dwarf greenhood				Orchidaceae
	<i>Pterostylis nutans</i>	Nodding greenhood				Orchidaceae
	<i>Pterostylis pedunculata</i>	Maroon-hood				Orchidaceae
	<i>Pterostylis robusta</i>	Large shell-orchid				Orchidaceae
	<i>Ptilotus erubescens</i>	Hairy-tail's		R	RA	Amaranthaceae
	<i>Ptilotus spathulatus forma spathulatus</i>	Pussy-tail's			RA	Amaranthaceae
	<i>Pultenaea pedunculata</i>	Matted bush-pea				Leguminosae
	<i>Quinetia urvillei</i>	Quinetia			NT	Compositae
	<i>Ranunculus pachycarpus</i>	Thick-fruit buttercup				Ranunculaceae
	<i>Ranunculus sessiliflorus var. sessiliflorus</i>	Annual buttercup				Ranunculaceae
*	<i>Romulea rosea var. australis</i>	Common onion-grass				Iridaceae
*	<i>Rosa canina</i>	Dog rose				Rosaceae
*	<i>Rubus fruticosus agg.</i>	Blackberry				Rosaceae
	<i>Rumex brownii</i>	Slender dock				Polygonaceae
*	<i>Rumex sp.</i>	Dock				Polygonaceae
	<i>Rutidosis multiflora</i>	Small wrinklewort				Compositae
	<i>Rytidosperma auriculatum</i>	Lobed wallaby-grass				Gramineae
	<i>Rytidosperma caespitosum</i>	Common wallaby-grass				Gramineae
	<i>Rytidosperma carphoides</i>	Short wallaby-grass				Gramineae
	<i>Rytidosperma geniculatum</i>	Kneed wallaby-grass				Gramineae
	<i>Rytidosperma laeve</i>	Smooth wallaby-grass		R	RA	Gramineae
	<i>Rytidosperma pilosum</i>	Velvet wallaby-grass				Gramineae

	SPECIES	COMMON NAME	AUS	SA	AMLR	FAMILY
	<i>Rytidosperma semiannulare</i>	Wetland wallaby-grass			VU	Gramineae
	<i>Rytidosperma setaceum</i>	Small-flower wallaby-grass				Gramineae
*	<i>Salvia verbenaca form</i>	Wild sage				Labiatae
	<i>Scaevola albida</i>	Pale fanflower				Goodeniaceae
	<i>Schoenus apogon</i>	Common bog-rush				Cyperaceae
	<i>Schoenus breviculmus</i>	Matted bog-rush				Cyperaceae
	<i>Schoenus nanus</i>	Little bog-rush			RA	Cyperaceae
	<i>Sebaea ovata</i>	Yellow sebaea				Gentianaceae
	<i>Senecio dolichocephalus</i>	Woodland groundsel				Compositae
	<i>Senecio glomeratus ssp. glomeratus</i>	Swamp groundsel				Compositae
	<i>Senecio hispidulus</i>	Rough groundsel			LC	Compositae
	<i>Senecio odoratus</i>	Scented groundsel			NT	Compositae
	<i>Senecio phellus</i>	Woodland groundsel				Compositae
	<i>Senecio picridioides</i>	Purple-leaf groundsel				Compositae
*	<i>Senecio pterophorus var. pterophorus</i>	African daisy				Compositae
	<i>Senecio quadridentatus</i>	Cotton groundsel				Compositae
*	<i>Silene gallica</i>	French catchfly				Caryophyllaceae
	<i>Siloxerus multiflorus</i>	Small wrinklewort				Compositae
*	<i>Silybum marianum</i>	Variegated thistle				Compositae
	<i>Solenogyne dominii</i>	Smooth solenogyne			NT	Compositae
	<i>Spyridium parvifolium</i>	Dusty miller				Rhamnaceae
	<i>Stackhousia monogyna</i>	Creamy candles				Stackhousiaceae
*	<i>Stellaria media</i>	Chickweed				Caryophyllaceae
	<i>Stylidium inundatum</i>	Hundreds and thousands				Stylidiaceae
	<i>Thelymitra antennifera</i>	Lemon sun-orchid				Orchidaceae
	<i>Thelymitra aristata</i>	Great sun-orchid				Orchidaceae
	<i>Thelymitra batesii</i>	Sun-orchid				Orchidaceae
	<i>Thelymitra grandiflora</i>	Great sun-orchid		R	RA	Orchidaceae
	<i>Thelymitra ixioides</i>	Spotted sun-orchid				Orchidaceae
	<i>Thelymitra nuda</i>	Scented sun-orchid				Orchidaceae
	<i>Thelymitra pauciflora</i>	Slender sun-orchid				Orchidaceae
	<i>Thelymitra rubra</i>	Salmon sun-orchid				Orchidaceae
	<i>Thelymitra sp.</i>	Sun-orchid				Orchidaceae
	<i>Themeda triandra</i>	Kangaroo grass				Gramineae
	<i>Thysanotus patersonii</i>	Twining fringe-lily				Liliaceae
	<i>Thysanotus tenellus</i>	Fringe-lily		R	VU	Liliaceae
	<i>Tricoryne elatior</i>	Yellow rush-lily				Liliaceae
	<i>Trifolium angustifolium</i>	Narrow-leaf clover				Leguminosae
*	<i>Trifolium dubium</i>	Suckling clover				Leguminosae
*	<i>Trifolium sp.</i>	Clover				Leguminosae
	<i>Triglochin sp.</i>	Water-ribbons				Juncaginaceae
*	<i>Vellereophyton dealbatum</i>	White cudweed				Compositae

	SPECIES	COMMON NAME	AUS	SA	AMLR	FAMILY
	<i>Villarsia umbricola</i> var. <i>umbricola</i>	Lax marsh-flower			RA	Menyanthaceae
	<i>Viola hederacea</i>	Ivy-leaf violet			RA	Violaceae
	<i>Viola sieberiana</i>	Tiny violet				Violaceae
	<i>Vittadinia cervicularis</i>	Waisted New Holland daisy				Compositae
	<i>Vittadinia cuneata</i> var. <i>cuneata</i>	Fuzzy New Holland daisy				Compositae
	<i>Vittadinia gracilis</i>	Woolly New Holland daisy				Compositae
*	<i>Vulpia myuros</i> forma <i>myuros</i>	Rat's tail fescue				Gramineae
	<i>Wahlenbergia gracilentia</i>	Annual bluebell				Campanulaceae
	<i>Wahlenbergia multicaulis</i>	Tadgell's bluebell			RA	Campanulaceae
	<i>Wahlenbergia stricta</i> ssp. <i>stricta</i>	Tall bluebell				Campanulaceae
	<i>Wurmbea dioica</i> ssp. <i>dioica</i>	Early nancy				Liliaceae
	<i>Xanthorrhoea quadrangulata</i>	Rock grass-tree				Liliaceae
	<i>Xanthorrhoea semiplana</i> ssp. <i>semiplana</i>	Yacca				Liliaceae
*	<i>Zaluzianskya divaricata</i>	Spreading night-phlox				Scrophulariaceae

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APPENDIX 2 FAUNA SPECIES LIST**Birds**

*introduced species

	Species	Common Name	AUS	SA	AMLR
	<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill			NT
	<i>Acanthiza lineata</i>	Striated Thornbill			
	<i>Acanthiza pusilla</i>	Brown Thornbill			
	<i>Acanthiza reguloides</i>	Buff-rumped Thornbill			
	<i>Acanthorhynchus tenuirostris</i>	Eastern Spinebill			
	<i>Aegotheles cristatus</i>	Australian Owlet-nightjar			RA
	<i>Anthochaera carunculata</i>	Red Wattlebird			
	<i>Aquila audax</i>	Wedge-tailed Eagle			
	<i>Cacatua galerita</i>	Sulphur-crested Cockatoo			
	<i>Cacomantis pallidus</i>	Pallid cuckoo			RA
*	<i>Carduelis chloris</i>	European Greenfinch			
	<i>Chalcites basalus</i>	Horsfield's Bronze Cuckoo			NT
	<i>Colluricincla harmonica</i>	Grey Shrike-thrush			
	<i>Coracina novaehollandia</i>	Black-faced Cuckoo-shrike			
	<i>Corcorax melanorhamphos whitaeta</i>	White-Winged Chough		R	RA
	<i>Cormobates leucophaeus</i>	White-throated Treecreeper			NT
	<i>Corvus mellori</i>	Little Raven			
	<i>Dacelo novaeguineae</i>	Laughing Kookaburra			
	<i>Daphoenositta chrysoptera</i>	Varied Sitella			VU
	<i>Dicaeum hirundinaceum</i>	Mistletoebird			
	<i>Eolophus roseicapilla</i>	Galah			
	<i>Falcunculus frontatus frontatus</i>	Crested Shrike-tit		R	EN
	<i>Glossopsitta concinna</i>	Musk Lorikeet			
	<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet			
	<i>Gymnorhina tibicen</i>	Australian Magpie			
	<i>Hirundo neoxena</i>	Welcome Swallow			
	<i>Lalage suerii</i>	White-winged Triller			
	<i>Lichenostomus chrysops</i>	Yellow-faced Honeyeater			
	<i>Lichenostomus penicillatus</i>	White-plumed Honeyeater			
	<i>Malurus cyaneus leggei</i>	Superb Fairy-wren			
	<i>Melithreptus brevirostris pallidiceps</i>	Brown-headed Honeyeater			NT
	<i>Melithreptus lunatus</i>	White-naped Honeyeater			VU
	<i>Merops ornatus</i>	Rainbow Bee-eater			
	<i>Neochima teporalis</i>	Red-Browed Finch			
	<i>Ninox novaezealandiae</i>	Southern Boobook			
	<i>Pachycephala pectoralis fuliginosa</i>	Golden Whistler			
	<i>Pachycephala rufiventris rufiventris</i>	Rufous Whistler			NT
	<i>Paradalotus striatus</i>	Striated Pardalote			
	<i>Petrochelidon nigricans</i>	Tree Martin			NT
	<i>Petroica boodang boodang</i>	Scarlet Robin			VU
	<i>Phaps chalcoptera</i>	Common Bronzewing			

	Species	Common Name	AUS	SA	AMLR
	<i>Phylidonyris novaehollandiae</i>	New Holland Honeyeater			
	<i>Phylidonyris pyrrhoptera pyrrhoptera</i>	Crescent Honeyeater			
	<i>Platycercus elegans x flaveolus</i>	Adelaide Rosella			
	<i>Pomatostomus superciliosus</i>	White-browed Babbler			
	<i>Rhipidura fuliginosa</i>	Grey Fantail			
	<i>Sericornis frontalis</i>	White-browed Scrub-wren			
	<i>Strepera versicolor</i>	Grey Currawong			
	<i>Todiramphus sanctus santus</i>	Sacred Kingfisher			NT
*	<i>Turdus merula</i>	Common Blackbird			
	<i>Zoothera lunulata</i>	Bassian Thrush		R	EN
	<i>Zosterops lateralis</i>	Silvereye			

Mammals

*introduced species

	Species	Common Name	AUS	SA	AMLR
*	<i>Capra hircus</i>	Goat			
*	<i>Cervus dama</i>	Fallow deer			
*	<i>Lepus capensis</i>	Brown hare			
	<i>Macropus fuliginosus</i>	Western grey kangaroo			
	<i>Mactopus robustus</i>	Euro			
*	<i>Oryctolagus cuniculus</i>	European rabbit			
	<i>Phascolarctos cinereus</i>	Koala			
	<i>Pseudocheirus peregrinus</i>	Common righttail possum			
*	<i>Rattus rattus</i>	Black rat			
	<i>Tachyglossus aculeatus</i>	Short-beaked echidna			NT
	<i>Trichosurus vulpecula</i>	Brush-tail possum			
*	<i>Vulpes vulpes</i>	Fox			

Reptiles and Amphibians

	Species	Common Name	AUS	SA	AMLR
	<i>Christinus marmoratus</i>	Marbled gecko			
	<i>Ctenophorus decresii</i>	Tawny dragon			
	<i>Egernia whitii</i>	White's skink			
	<i>Hemiergis decresiensis</i>	Three-toed earless skink			
	<i>Lerista bougainvillii</i>	Bougainville's skink			
	<i>Pogona barbata</i>	Eastern bearded dragon			
	<i>Pseudechis porphyriacus</i>	Red-bellied black snake			
	<i>Pseudonaja textilis</i>	Eastern brown snake			

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APPENDIX 3 LAND TENURE HISTORY

TENURE	LESSEE/OWNER	TERM
Section 578		
<i>(formerly known as Sections 843, 847, 849, 851, 853, Part 854, 855 and Part 856)</i>		
Section 843:		
Credit Agreement 19513	Carl F.W. Pohlner	17/3/1885 – 12/3/1891
Right to Purchase Lease 3990	Carl F.W. Pohlner	13/3/1891 – 8/12/1899
Land Grant 655/120	Carl F.W. Pohlner	9/12/1899 – 22/8/1910
Transmitted to:	John Dallwitz and Johann Gottlieb Vorwerk (Executors)	23/8/10 – 26/6/12
	Auguste P.M. Grossmann	27/6/12 – 6/12/13
	Carl F.W. Pohlner	7/12/13 – 16/9/23
	Otto H. Pohlner	17/9/23 – 6/7/39
	William H. Thorn	7/7/39 – 5/1/53
Transmitted to:	Ernest R. Feist and Clive R. Thorn (Executors)	6/1/53 – 6/8/53
	Malcolm J. Thorn	7/8/53 – 8/9/53
Certificate of Title 2285/131	Malcolm J. Thorn	9/9/53 – 6/7/55
	Geoffrey B. Angas Parsons and Roland B. Angas Parsons	7/7/55 – 16/3/67
	Alasdair J. McLachlan and Rosetta M. McLachlan	17/3/67 – 15/10/74
Transfer	Crown Land	16/10/1974
Sections 847 and 849 (includes Section 846):		
Land Grant 39/74	Johann M. Henschke and Johann G. Mattner	17/4/1863 – 3/8/1869
	Christian Heppner, Johann G. Crocke and Johann C. Nicolai	4/8/1869 – 10/8/1869
Certificate of Title 133/80	Christian Heppner, Johann G. Crocke and Johann C. Nicolai	11/8/1869 – 16/10/1877
	Johann G. Crocke, Johan Siegesmund, Hermann Henschke, Christian G. Kliche and Gottlieb Falkenberg	17/10/1877 – 14/5/1879
	Carl F. W. Pohlner	15/5/1879 – 26/6/1912
	Auguste P.M. Grossmann	27/6/12 – 6/2/13
	Carl F.W. Pohlner	7/2/13 – 16/9/23
	Otto H. Pohlner	17/9/23 – 16/9/23
	William H. Thorn	7/7/39 – 6/8/53
Certificate of Title 2284/49	Malcolm J. Thorn	7/8/53 – 6/7/55
	Geoffrey B. Angas Parsons and Roland B. Angas Parsons	7/7/55 – 16/3/67
	Alisdair J. McLachlan and Rossetta M. McLachlan	17/3/67 – 15/10/74
Transfer	Crown Land	16/10/74
Section 851:		
Land Grant 65/248	Charles Wallace	5/5/1865 – 5/2/1873
	Carl F.W. Pohlner	6/2/1873 – 16/10/1877

TENURE	LESSEE/OWNER	TERM
	Johann G. Grocke, J. Siegesmund, Herman Henschke, Christian G. Kliche and Gottlieb Falkenberg	17/10/1877 – 14/4/1879
	Carl F.W. Pohlner	15/5/1879 – 26/6/1912
	Auguste P.M. Grossmann	27/6/12 – 6/2/13
	Carl F.W. Pohlner	7/2/13 – 22/10/23
Certificate of Title 1303/46	Carl F.W. Pohlner	23/10/23 – 16/9/23
	Otto H. Pohlner	17/9/23 – 6/7/39
	William H. Thorn	7/7/39 – 6/8/53
	Malcolm J. Thorn	7/8/53 – 6/7/55
	Geoffrey B. Angas Parsons and Roland B. Angas Parsons	7/7/55 – 16/3/67
	Alasdair J. McLachlan and Rossetta M. McLachlan	17/3/67 – 15/10/74
Transfer	Crown Land	16/10/74
Sections 853, 855 and 856:		
Land Grant 170/205	James Heggie	25/10/1872 – 9/6/1874
Certificate of Title 192/29	James Heggie	10/6/1874 – 7/5/1886
Certificate of Title 499/122	James Heggie	8/5/1886 – 10/2/1893
	William A. Heggie	11/2/1893 – 24/4/1904
	James Heggie	25/4/04 – 17/5/08
	James P. Heggie	18/5/08 – 2/9/35
Certificate of Title 2317/106	Colin C. Heggie	3/9/35 – 8/12/55
Certificate of Title 2437/177, then 2682/146	Geoffrey B. Angas Parsons and Roland B. Angas Parsons	9/12/55 – 16/3/67
Certificate of Title 3506/109	Alasdair J. McLachlan and Rossetta M. McLachlan	17/3/67 – 15/10/74
Transfer	Crown Land	16/10/74
Section 854:		
Land Grant 61/82	Michael Starkey	7/1/1865 – 24/11/1872
	James Heggie	25/11/1872 – 9/6/1874
Title cancelled and included in Certificate of Title 192/29	See above for Sections 853, 855 and 856	
Section 579		
<i>(formerly known as Sections 846 and Part 842)</i>		
Section 846:	Refer Section 847	
Part 842:		
Land Grant 75/52	Johann G. Crocke	10/11/1865 – 24/3/1873
	Johann G. Crocke, Christian Heppner, Johann M. Henschke and Johann C. Nicolai	25/3/1873 – 16/10/1877
	Johann G. Grocke, Johann Siegesmund, Hermann Henschke, Christian G. Kliche and Gottlieb Falkenberg	17/10/1877 – 14/5/1879
Certificate of Title 308/132	Carl F.W. Pohlner	15/5/1879 – 26/6/1912
	Auguste P.M. Grossmann	27/6/12 – 6/2/13
	Carl F.W. Pohlner	7/2/13 – 16/9/23
	Otto H. Pohlner	17/9/23 – 6/7/39
	William Harold Thorn	7/7/39 – 6/8/53
	Malcolm J. Thorn	7/8/53 -

TENURE	LESSEE/OWNER	TERM
Certificate of Title 2399/170	Malcolm J. Thorn	
	Geoffrey B. Angas Parsons and Roland B. Angas parsons	7/7/55 – 16/3/67
	Alasdair J. McLachlan and Rossetta M. McLachlan	17/3/67 – 15/10/74
Transfer	Crown Land	16/10/74

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