SECOND VALLEY FOREST RESERVE

KALAMUNDA, SPRINGS ROAD & CONGERATINGA NATIVE FOREST RESERVES MANAGEMENT PLAN

September 2016

Government of South Australia

ForestrySA

AUSTRALIAN FORESTRY STANDARD

ISBN 978-0-7308-7427-0

Citation:
ForestrySA 2016, *Kalamunda, Springs Road & Congeratinga Native Forest Reserves Management Plan*, ForestrySA, South Australia.

Cover photo: ForestrySA-Kalamunda Native Forest Reserve

INTRODUCTION

Kalamunda, Springs Road and Congeratinga Native Forest Reserves (NFRs) form part of the Second Valley Forest Reserve in the Southern Mount Lofty Ranges. In total they comprise 250 hectares of native vegetation, disturbed in the past by activities such as grazing and timber cutting, but still recognised by ForestrySA as significant remnants of the original vegetation. They have therefore been proclaimed as Native Forest Reserves under the *Forestry Act* 1950.

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 Kalamunda, Springs Road and Congeratinga 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

The NFRs 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

Kalamunda NFR is located approximately 6km south of the township of Yankalilla and covers 82.9 hectares. The reserve comprises part Sections 90, 101 and 109 in the Hundred of Yankalilla in the District Council of Yankalilla (Figure 2). The boundaries to the west, south and east are contiguous with pine plantations managed by ForestrySA. A large area of privately owned native vegetation on the northern boundary is under Heritage Agreement. Kalmunda NFR is shown in the Emergency Services Map book Mount Lofty Ranges, (Edition 3, 2014), Grid Reference 552 665 – Map 94A.

Springs Road NFR is approximately 2km north-west of the Range Road and Springs Road intersection and covers 89.6 hectares. The reserve comprises Part Section 1636 in the Hundred of Yankalilla, within the District Council of Yankalilla (Figure 2). The reserve is contiguous with pine plantations managed by ForestrySA to the south-west, and privately owned grazing paddocks to the east and south-east. A large area of privately owned native vegetation is contiguous with the north-western boundary of the reserve, which links to a Heritage Agreement area. Springs Road NFR is shown in the Emergency Services Map book Mount Lofty Ranges, (Edition 3, 2014), Grid Reference 535 636– Map 94A.

Congeratinga NFR is located adjacent Range Road, approximately 2km south-west of the Range Road and Springs Road intersection and covers 77.3 hectares. The reserve comprises Section 304 in the Hundred of Yankalilla, within the District Council of Yankalilla (Figure 2). The reserve has commercial pine plantations administered by ForestrySA on the western boundary of the reserve. All other boundaries are adjacent private property, primarily used for grazing. Congeratinga NFR is shown in the Emergency Services Map book Mount Lofty Ranges, (Edition 3, 2014), Grid Reference 535 605– Map 94A.

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

- Springs Road and Congeratinga NFRs conserve areas of Fleurieu Peninsula Swamp which is a Threatened Ecological Community under the Commonwealth *Environment Protection and Biodiversity Conservation Act* (EPBC) 1999.
- The Mount Lofty Ranges Southern emu-wren (*Stipiturus malachurus intermidius*), which is listed as endangered under the *EPBC Act* (1999) has been recorded in swamp in Congeratinga NFR.
- The nationally endangered Southern brown bandicoot (*Isoodon obesulus obesulus*) has been recorded at Springs Road NFR and suspected to also be in Congeratinga NFR.
- The reserves contain plant species with high conservation significance, including the Nationally Vulnerable species, *Glycine latrobeana* (Clover glycine) present in Kalamunda NFR.
- The reserves conserve remnant native vegetation characteristic of the Mount Lofty Ranges region, where it is estimated less than 15% of the original vegetation remains (Long 1999).

- The reserves are IUCN (International Union for the Conservation of Nature & Natural Resources, 2005) Category IV Reserves. Category IV Reserves are habitat or species management areas, "*a protected area managed mainly for conservation through management intervention to ensure the maintenance of habitats and/or to meet the requirements of species".*

- Kalamunda NFR contains areas of *Eucalyptus fasciculosa* Woodland (Pink gum) and *E. viminalis ssp. cygnetensis* Grassy Woodland (Rough-bark manna gum), which is not well conserved on the Fleurieu Peninsula. All three reserves have large areas of *E. obliqua* Open Forest (Messmate stringybark), forest that once commonly occurred throughout South Australia

- Springs Road NFR has been relatively undisturbed by timber harvesting so the overstorey structure is relatively intact. It is also an example of one of the localities in the district with a long absence of fire.

- The reserves contain many mature eucalypts containing hollows, vital for many fauna species as breeding and nesting sites.

- The NFRs, combined with nearby Heritage Agreement private remnants, and Deep Creek Conservation Park, increase the area of land reserved for conservation on the Fleurieu Peninsula. Deep Creek Conservation Park, which abuts the southern part of the Second Valley Forest Reserve, contains 4 554 hectares.

Cultural Heritage

- The reserves are part of the land once used by the Kaurna and, most likely the Ngarrindjeri Aboriginal people, as the approximate boundary of both these tribes is close to the reserves. Blackfellows Creek, presumably named in recognition of use by the Aboriginal community in the past, runs through Kalamunda NFR.

  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 sitemay 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 currently no sites recorded on the Register for any of the NFRs. However, Mount Hayfield, located 1km south-east of Kalamunda NFR, has been reported as a significant mythological site.

Recreation

- The reserves provide opportunities for a range of passive recreation-based activities. As the Second Valley Forest Reserve is further away from major urban centres it does not get as much use as other Forest Reserves.

- ForestrySA recognises the demand for forest based recreational activities for a variety of users, by providing basic, low impact facilities to ensure there is no adverse impacts on the sustainability of the NFRs. Walking and cycling is only permitted on fire tracks. Horses and motorised vehicles are not permitted. There are no facilities for camping in these reserves. Ingalalla Falls picnic area, a popular area for visitors, is located within Mount Hayfield forest locality off Range Road, east of Kalamunda NFR.

- ForestrySA permits other events like orienteering or motor sport events in suitable locations, as part of the broader community use management strategy for NFRs. All events are managed to ensure 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.

Administration and Access

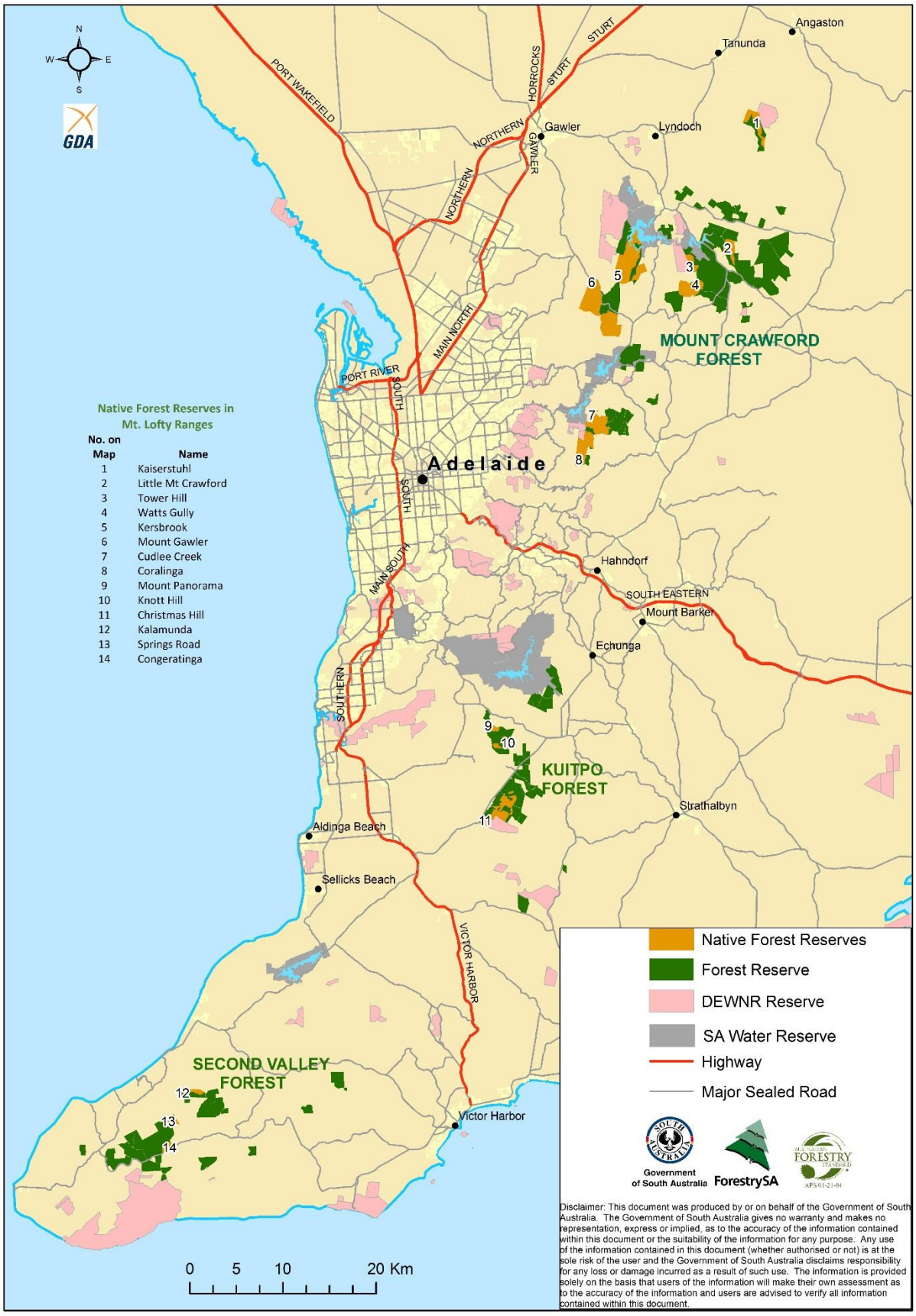
The area is under the central management control of the Mount Crawford Forest Office located at 745 Warren Road (Williamstown to Gumeracha) 7km south-east of Williamstown, but is locally managed through the Kuitpo Forest Office, located at 495 Brookman Road, approximately 8km south-west of Meadows (Figure 1). There is no manned office located in Second Valley but there is an old depot located on Forest Road used for storage and stand by for fire fighting.

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.

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.

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

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.

These Second Valley NFRs are part 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. In the Fleurieu/Second Valley region ForestrySA has a long involvement in the Fleurieu Peninsula Swamps & Southern Emu-wren Recovery Team and also liases regularly with the Fleurieu NRM Board on weed and pest control programs.

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 – Kalamunda Native Forest Reserve

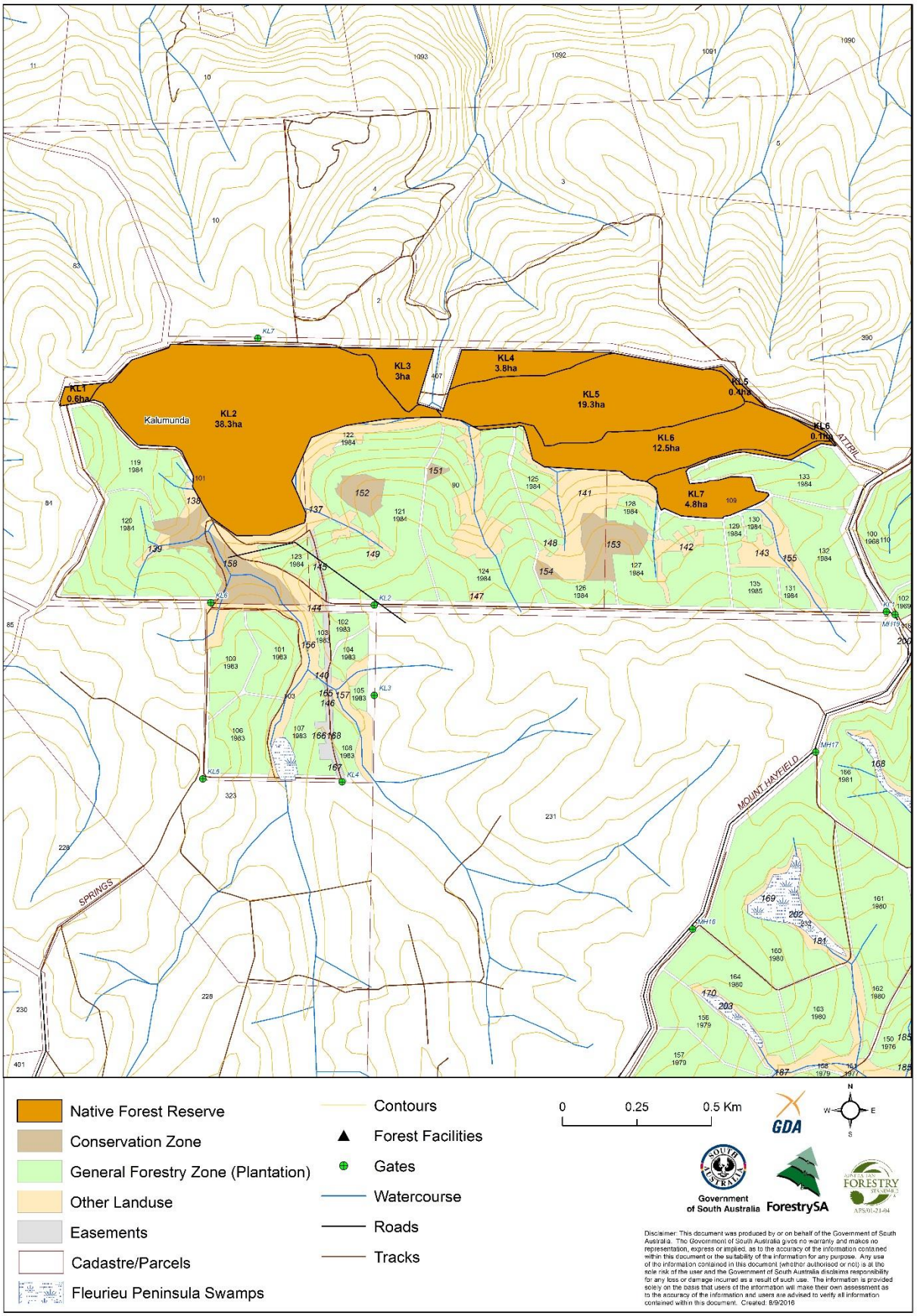
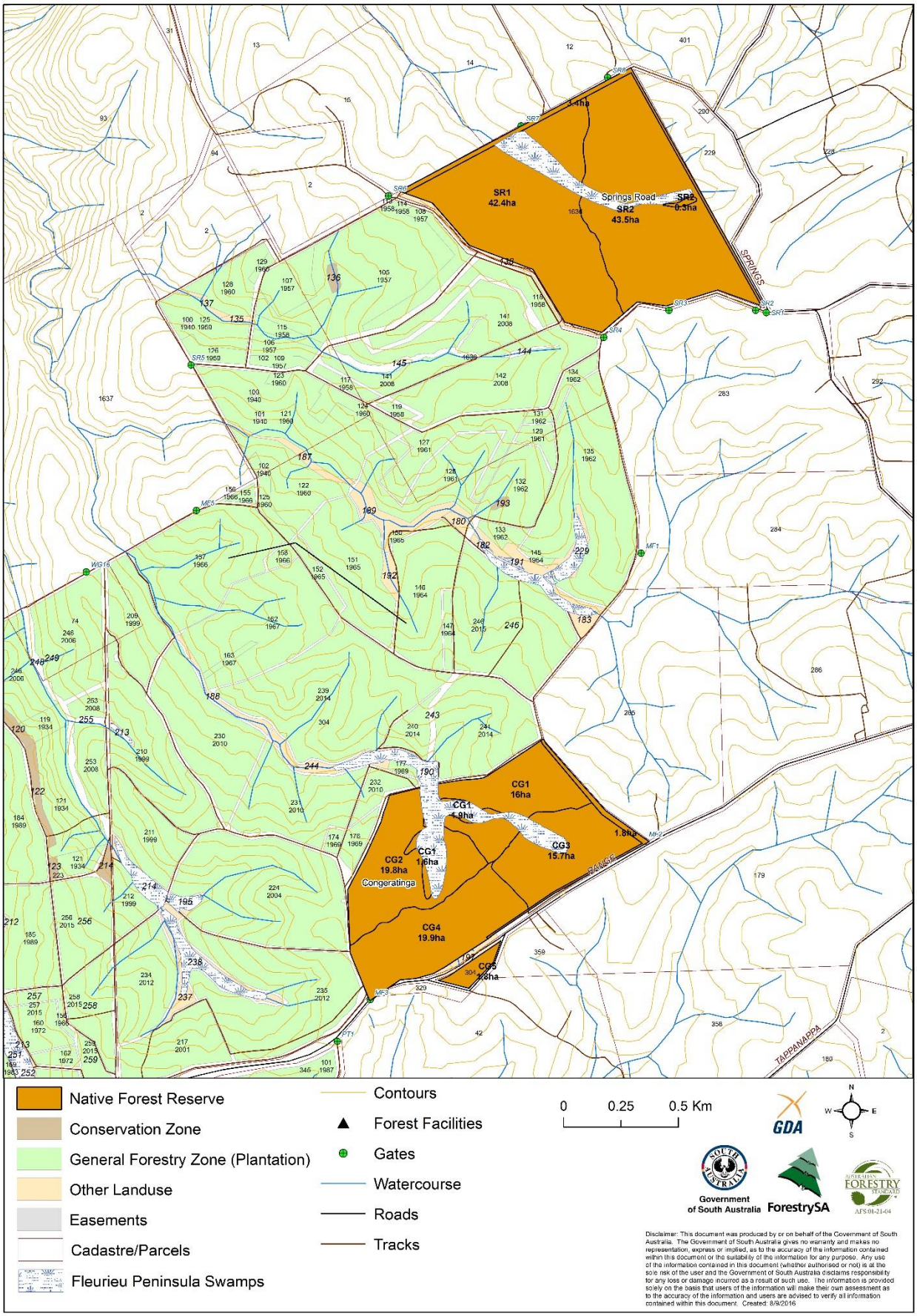


Figure 3 – Springs Road and Congertinga Native Forest Reserves



NATURAL RESOURCES

Climate

The area is unique climatically in the Mount Lofty Ranges due to its geographical location. The area is adjacent the central ridge, 380m above sea level, of the Fleurieu Peninsula, where the local climate is influenced by the presence of the sea to the north and south. The area is therefore characterised by cool, wet winters with an average annual rainfall between 700-950 mm, and temperatures around 14^0C. Summers are relatively mild with an average of 27^0C due to the influence of sea breezes from both sides of the Fleurieu Peninsula plateau. Droughts have been recorded in 1914, 1939, 1956, 1977, 1983, 2000 and 2002. Severe droughts are declared by State Government and predominately relate to rainfall deficiency that is among the lowest five per cent within a given time period.

Detailed climatological information is available on the Bureau of Meteorology website (http://www.bom.gov.au).

Geomorphology and Soils

The geology and geomorphology of the Fleurieu Peninsula has been extensively described in the book, "*Natural History of the Adelaide Region*" (Twidale et. al. 1976). In 1977, Laut et. al. described four major land form types in this region of the Fleurieu Peninsula, three of which are applicable in general terms to these NFRs.

- tableland/ridgetop which is predominantly derived from laterite;
- valley sideslopes soils derived from sandstones; and
- valley floors of alluvial origin.

An extensive laterite crust formerly blanketed much of the region comprising the reserves, which was the product of leaching and consolidation during the Tertiary period. Subsequent dissection of the topography by watercourses as drainage patterns developed, produced the present landforms.

The erosion of haematite and bauxite-rich components of the laterite during weathering, and their subsequent accumulation in the bottom of the valley side soil, has led to deep, friable orange clays. Valley floor soils are light grey clays of alluvial origin, with high organic surface content. These soils likely have similar origins as the orange clays, but have been reduced in the acid conditions of the creekbed.

Hydrology and Topography

Kalamunda NFR is topographically complex being comprised of two ridge crests of almost equal height above sea level (320m). Short and steep, predominantly south facing slopes, are bisected by Blackfellows Creek, which flows northward into the Yankalilla River, part of the Yankalilla River Catchment. A small section of the reserve in the north-east corner drains into the Little Gorge Catchment. There is no permanent water present, although the steep slopes and sheltered south facing aspects create micro-environments where moisture is retained well into the summer periods. This is reflected by the occurrence of many riparian plant species.

Springs Road NFR forms one of the headwaters of the Anacotilla River, which drains north-west into St Vincent Gulf. There is no permanent water in the native forest although two dams are present on the creekline upstream and downstream in the adjoining farmland. Minor drainage lines are present which direct water into the main creek (Figure 4). The area is formed of moderate slopes (10^0) with aspect north and south either side of the major drainage line.

Congeratinga NFR is located at the headwaters of the Congeratinga River, which flows northward into St Vincent Gulf. Gentle slopes drain east, west and north into two drainage lines. A permanent spring feeds the dam in compartment CG2, near an old nursery site.

Vegetation

There have been numerous formal vegetation surveys in Kalamunda NFR dating back to 1979 when Lamprey and Mitchell surveyed part of Kalamunda NFR and a nearby Heritage Agreement area when documenting aspects of the geomorphology and biology of the Fleurieu Peninsula. In 1988, a vegetation survey was undertaken by private collectors. In 1999, members of the Nature Conservation Society of South Australia carried out a vegetation inventory within the reserve. In 2003 the grassy woodland area within the reserve was surveyed by Roche. In 2012/13, as part of a $600,000 five year Commonwealth Government Biodiversity Fund grant for Second Valley Forest, Rural Solutions South Australia were engaged to undertake project plans for most of the conservation areas in Second Valley Forest, including Kalamunda NFR.

Plant associations in Kalamunda NFR include:

***Eucalyptus fasciculosa* Woodland**

Eucalyptus fasciculosa (Pink gum) is the most common association within Kalamunda NFR. Understorey is sparse, with little species diversity (Plates 1-2). There are scattered occurrences of *Acacia paradoxa* (Kangaroo thorn) and *Allocasuarina muelleriana* (Common oak bush), introduced grasses and herbs. This association can be found on the majority of the midslopes of the north and south facing aspects of compartments KL2, KL3, KL5 and KL7.

***Eucalyptus obliqua* Open Forest**

This forest occurs on the higher elevations with an understorey dominated by *Xanthorrhoea semiplana* (Yacca), between 0.5-2 m in height.

***Eucalyptus viminalis* ssp*. cygnetensis*, *E. leucoxylon*+/- *E. ovata* Open Forest**

Eucalyptus viminalis ssp*. cygnetensis* (Rough-bark manna gum) and *E. leucoxylon* (Blue gum) occur predominantly in the drainage lines, with scattered occurrences of *E. ovata* (Swamp gum). These species also extend into higher elevated drainage lines. Some isolated *E. leucoxylon* are up to 1 metre in diameter and approximately 20 metres high in sheltered drainage lines. Scattered amongst *Xanthorrhoea semiplana* on the south facing slopes, are numerous mosses and lichens (Plate 3). The mosses, in particular, provide symbiotic niches for many species of orchids.

Many of the trees between 60-100 cm in diameter contain nesting hollows and are an important resource for hollow-dependent fauna. *E. fasciculosa* in the reserve, however, is generally less than 40 cm in diameter and these trees do not contain hollows. Hollows are also present in mature *E. obliqua* and *E. viminalis* ssp*. cygnetensis*. Amongst these species, there is an almost total absence of regeneration possibly due to grazing pressure.

Plates 1 - 3: South facing slope in Kalamunda NFR predominantly comprising *E. fasciculosa* Woodland within the reserve; and mossy groundcover.

Springs Road NFR
An early survey by the Department of Lands in 1904 described the general Springs Road area as, "*hilly country heavily timbered with large stringybark and thick undergrowth of yaccas and ferns*". The gullies were "*low tea tree swamp with light, sandy soils*". The area closely resembles early descriptions of stringybark forest in the Mount Lofty Ranges, made by Adamson and Osborne in 1924.

Four main vegetation associations have been identified, their distribution influenced by aspect, soil type and moisture content:

***Eucalyptus obliqua* Open Forest**
E. obliqua dominates throughout most of the reserve (Plate 4). The lower shrub stratum is variable, with *Leptospermum continentale* and *Xanthorrhoea semiplana* generally dominant. *Xanthorrhoea semiplana* commonly appears on lighter textured soils at higher elevations. *Leptospermum continentale* dominates on clay soils on lower elevations, forming a dense thicket at the base of the slope in areas along the southern side of the creek. Other species common in this stratum are *Banksia marginata*, *Hakea rostrata, Acacia myrtifolia* and *A. pycnantha*. The ground-layer varies, with *Epacris impressa* and *Platylobium obtusangulum* dominating the ridges and *Acrotriche serrulata* the lower slopes.

***Eucalyptus fasciculosa* Low Open Forest**
Eucalyptus fasciculosa fringes the creek and extends into the creek bed over dense sedges. *Melaleuca decussata* is the most common shrub in the fringing understorey. Most of the trees in the sedgeland are dead, possibly as a result of waterlogging which has occurred from the damming of the lower reaches of the creek, adjacent the north-western boundary of the reserve.

***Eucalyptus baxteri L*ow Open Forest**
Eucalyptus baxteri appears in two areas, comprising large trees, just north of and parallel to the creek, and as stunted and twisted trees on the ridge in the south-eastern corner. At the latter site,

lateritic nodules have been recorded in the soil profile, and a dense shrub understorey in which *Pultenaea involucrata* and *Hibbertia spp*. are common. Part of this area appears to have been previously cleared (although there are no records), with the result that a dense scrubland with few trees has regenerated.

Sedgeland

The creek bed comprises a sedgeland dominated by *Lepidosperma spp., Gahnia trifida*, *Baumea articulata* and *Typha domingensis* (Plate 5). *Goodenia ovata* and a number of herbaceous species occur on the drier fringes. Drainage lines also contain some remnant *Eucalyptus ovata*, now scarce in the region.

Pickett (2003) identified a section of swamp near the eastern boundary of Springs Road NFR as Fleurieu Peninsula Swamp, under criteria defined for listing under the Commonwealth *Environment Protection & Biodiversity Conservation Act* 1999. The swamp vegetation community within Springs Road is described as '*Leptospermum continentale* shrubland with sedge and fern understorey'.

Plate 4: *E. obliqua O*pen Forest in Springs Road

Plate 5: *Typha/Baumea* sedgeland.

Congeratinga NFR

The first survey by the Department of Lands in 1904, described the vegetation as "*low, scrubby range with shallow red soil and ironstone*" and the drainage lines as *"inferior with low tea tree*". In 1930, Wood described the stunted form of *E. baxteri* and *E. obliqua*, which occurs within the management area. In 1985 the former Woods and Forests Department conducted a broad vegetation survey in which two transects were established to construct landform profiles, and to describe the dominant plant species. Two vegetation inventory plots were also established, in the creek-line and mid-slope vegetation communities. Other monitoring sites were established by DEWNR in the 1990s and a site action plan was produced in 2013 by Rural Solutions SA.

A larger area of Fleurieu Peninsula Swamp occurs in Congeratinga NFR located along drainage lines near the northern boundary of the reserve. The swamp vegetation community is described as '*Leptospermum continentale* closed shrubland and tall closed shrubland with sedge understorey'. (Pickett 2003).

Eucalyptus obliqua and *E.* baxteri dominate the tree layer over a typical sclerophyllous understorey predominantly comprised of *Pultenea* spp., *Hakea* spp*., Xanthorrhoea semiplana* ssp*. tateana, Leptospermum* spp*.* and *Hibbertia* spp*.* (Plate 6).

In the creek-lines, swampy areas of *E. ovata* can be found over an understorey of *Leptospermum* spp., *Gahnia trifida*, *Melaleuca decussata* and *Baumea* spp*.* (Plate 7). The Southern emu-wren

(*Stipiturus malachurus intermedius*) (Plate 8) was known to inhabit these swampy areas but the last recorded sighting here was in 2003. The reserve was identified by Littlely (1997, unpubl. report) as, "*a priority swamp for linking to several other swamps in the region*."

Plate 6: *E. obliqua/E. baxteri* Woodland in Congeratinga NFR

Plate 7: *E. ovata* swamp in Congeratinga NFR

It has been observed that the *E. baxteri* on the southern and eastern ridges in the reserve, appears to be a 'stunted' form of this species (Plate 9). Observations from other sites along Range Road and planting trials indicate this 'stunted' form is likely to be a local genotype. There has been no significant increase in height from trees grown in paddocks, which have been treated with superphosphate to improve pasture. These paddock trees do, however, have the same form but larger trunks.

Evidence of coppice regeneration is present, although there appears to be no historical record of timber cutting or clearing, at least since 1934 when the area was burnt in a wildfire. Coppice regeneration may have resulted from this fire, and slow growth rates may be a result of the poor soil on laterite ridges.

Plate 8: Male Emu-wren

Photo 9: Stunted form of *Eucalyptus baxteri*

Introduced Plants

Gorse (*Ulex europeaus*) is the most widespread woody weed in the NFR's. Gorse has the potential to form dense thickets that eventually exclude all indigenous vegetation and provides shelter for rabbits and foxes. It can however also provide important refuges for native animals and eradication of large areas should be staged. It acidifies the soil and produces nitrogen-rich leaf litter, which alters the nutrient composition of the soil, affecting the persistence of many indigenous species. Thickets are a serious fire hazard, burning readily due to the large amount of dried material they accumulate. Other woody weeds present include Montpellier Broom (*Genista monspessulana*), Blackberry (*Rubus* sp.) and Wild Rose (*Rosa* sp.). All woody weeds in the NFR's have had primary control implemented and receive regular follow up.

Other priority weeds are Arum lily (*Zantedeschia aethiopica*), Wild Pine (*Pinus* sp.), Bridal Creeper (*Asparagus asparagoides*) and Cape Tulip (*Moraea flaccida*).

Weed control efforts in swamps demand special care and attention due to the fragility of the ecosystem and work is guided by the principles outlined in the '*Swamp Management Guidelines for the Fleurieu Peninsula'* (Duffield & Hill 2002).

Annual weed control within the reserves is carried out by contractors. ForestrySA ensures on-going review and evaluation of pest management and control strategies and priority weed locations are recorded in a Geographical Information System.

Fauna

There are no formal survey sites in Kalamunda NFR. The predominantly woodland structure of the plant communities will likely influence the presence of both birds and small ground dwelling mammals, as species that depend upon dense and continuous shrub cover will be less common or absent.

Five surveys were carried out in Springs Road NFR in the late 1970s; Woods and Forests Department staff conducted a detailed bird survey within the reserve; in 1983, University of Adelaide Natural Resources Management students conducted a ground dwelling mammal study; in 1985 Woods and Forests staff conducted an ecological survey within the reserve and in 2000 DEWNR included one vertebrate site when conducting the Southern Mount Lofty Ranges biological survey. Urrbrae TAFE Conservation & Land Management staff and students did a biological survey in Springs Road in 2012 and 2014. The main aim was to try and trap the Southern brown bandicoot *(Isoodon obesulus obesulus)* , which has only been confirmed from diggings in the reserve, but unfortunately no bandicoots were trapped, possibly due to low numbers being present.

Three survey sites have been established within Congeratinga NFR by DEWNR: In 2000, the University of Adelaide erected hairtubes in Congeratinga and Springs Road NFRs in an attempt to detect the brush-tailed phascogale (*Phascogale tapoatafa*), but no recordings were made.

Birds

In Kalamunda NFR bird sightings have detected species that are characteristic of open woodland with a sparse understorey. This is supported by the absence of one species, notably the brown thornbill, a dense shrub dweller, and low abundance of both superb fairy-wren and white-browed scrub-wren, also dependent upon abundant understorey for food and shelter, although superb-fairy wrens also require open areas for feeding.

Springs Road NFR is a survey site for the long running annual Nature Conservation Society (NCS) Mount Lofty Ranges Woodland Bird Survey. In 2014 ForestrySA commissioned NCS to undertake an analysis of the bird survey data to try and determine any population trends. Analysis was done on data from 2001-2012 but no trends in bird abundance or species richness were apparent at Springs Road.

The Southern Emu-wren has been historically confirmed (1920-1993) from surveys at six sites within five swamps across ForestrySA's Second Valley Forest Reserve. Surveys in 2003 revealed their presence in only two of the six locations, within Congeratinga NFR and in Biddles locality. Follow up surveys in 2008 did not record any sightings on ForestrySA lands. The 2010 survey report suggested that the emu-wren is now thought to be extinct within all ForestrySA reserves. This is commensurate with an overall decline across all historical sites on the Fleurieu Peninsula. The largest emu-wren sub-population persists in Deep Creek Conservation Park with an estimated 240 birds. Surveys are implemented through the Fleurieu Peninsula Swamps & Mount Lofty Ranges Emu-wren Recovery Team.

Mammals

The only formal mammal recording in Kalamunda NFR is the Western grey Kangaroo (*Macropus fuliginous),* but it is likely that many of the more common mammal species would also occur here.

The most significant species detected within all of the reserves is the Southern-brown Bandicoot (*Isoodon obesulus obesulus)*, which has been recorded in Springs Road NFR, but had not been confirmed since 1983. In 2005 DEWNR undertook a survey across 32 sites in the Mount Lofty Ranges and Fleurieu Peninsula to clarify bandicoot distributions across the region. Two transect survey sites were located in Springs Road NFR and two in Congeratinga NFR. While results from hairtubes and tracking tunnels did not confirm bandicoot presence, observations of diggings at both sites suggest bandicoot presence.

Two bat species have also been formally identified here, the Chocolate-wattled Bat (*Chalinolobus morio*) and Lesser long-eared Bat (*Nyctophilus geoffroyi*). It is likely that most bat species known to occur in the Mount Lofty Ranges would be present in all of the NFRs.

Other recordings within Congeratinga and Springs Road NFRs confirm the occurrence of the Bush Rat (*Rattus fuscipes),* Swamp Rat *(Rattus lutreolus);* Yellow-footed Antechinus *(Antechinus flavipes),* Western grey Kangaroo (*Macropus fuliginosus*) and Short-beaked Echidna (*Tachyglossus aculeatus)*.

Incidental observations by ForestrySA staff in Congeratinga NFR suggest that the Western Pygmy Possum (*Cercatetus concinnus*), a species with limited distribution in South Australia, may occur in the area. However, this has not been confirmed. The Common Brushtail (*Trichosurus vulpecula*) and Ringtail Possum (*Pseudocheirus peregrinus*) are also likely to occur in all areas. Mammal species recordings area listed in Appendix 2.

Reptiles and Amphibians

Most species known to occur in the Mount Lofty Ranges are likely to be present in the reserves due to the diverse range of aquatic and terrestrial habitats.

Repeated sightings between 1974-1985 have been made of the Heath goanna (*Varanus rosenbergi*) along the northern boundary of Congeratinga NFR. This species is now regarded as rare in the South Australia, but its presence has not been confirmed since 1985.

Official recordings for reptiles and amphibians for Springs Road and Congeratinga NFRs only are included in Appendix 2.

Introduced Animals

Fallow Deer (*Cervus dama*) are present throughout Second Valley region. The presence of continuous cover and food, in both pine plantations and native vegetation, could enable 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 may be ringbarked or broken off by bucks. Another major concern is the potential for feral deer to act as carriers for livestock diseases.

Deer are subject to an on-going control program throughout the forest in conjunction with Friends of the Forest volunteers engaged through the Sporting Shooters' Association - Hunting and Conservation Branch and the Australian Deer Association and some limited contract control is also done funded through the Commonwealth Biodiversity Fund grant up to 2017.

Feral Sheep and Goats are also occasional seen generally escapees from neighbouring grazing properties.

In Springs Road NFR there are recordings of the Black Rat (*Rattus rattus*), European Rabbit (*Oryctolagus cuniculus*), House Mouse (*Mus musculus*) and Red Fox (*Vulpes vulpes*). These species are also likely to occur in the other reserves.

Abundant Native Animals

By providing permanent water and pasture, agriculture has increased the food and water resources available to kangaroos and other native animals needing more open areas, while nearby remnant native vegetation provides shelter and havens for breeding. Native animals may increase to a population size that a remnant block of native vegetation is no longer capable of supporting. Fences may also be damaged or undermined to an extent where they cease to be effective in excluding stock.

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.

Investigation and soil testing has confirmed the presence of Pc in Deep Creek and Waitpinga Conservation Parks, south of the reserves. Soil samples were collected from the southern boundary of Congeratinga NFR in 2000. Subsequent testing did not detect Pc, but this does not conclusively rule out the presence of Pc as there is evidence of dead and dying yaccas throughout the reserve.

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. Kalamunda and Springs Road NFRs fall within a Low Risk Management Zone. Due to the suspected Pc presence in

Congeratinga NFR the test site and surrounds are deemed to be in a High Risk Zone, while the remainder of the reserve is in a Moderate Risk 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

History

The natural history of the region has been broadly described in the "*Natural History of the Adelaide Region*" published by the Royal Society of SA in 1976. More detail is provided in Lamprey and Mitchell (1979), "*Biogeographical and Landform Survey of Fleurieu Peninsula, South Australia*."

Acquisition and Name

The name Kalamunda originates from the property from which the land was purchased in the 1970s. It is an Aboriginal term referring to, "place of many hills". Although the language is not one of the Kaurna or Ngarrindjeri tribes that once inhabited this area, the name has been retained as it reflects the topography of the area. Springs Road NFR takes its name from Springs Road, which passes the reserve on its eastern boundary. Congeratinga NFR takes its name from the Congeratinga River. The headwaters of this river are located within the reserve and flow north into St Vincent Gulf. Land tenure information is detailed in Appendix 3.

Timber Cutting & Resource Use

Kalamunda and Springs Road NFRs are one of the few areas on the southern Fleurieu Peninsula that were not extensively cut over for timber. Some areas were selectively cleared, presumably for local fence posts and firewood. Many other areas of native bush in the region were extensively cut during the First World War, when the wood was carted to Rapid Bay by horse drawn wagons for shipment to Broken Hill.

Prior to the First World War most of the southern Fleurieu Peninsula was harvested for Yacca (*Xanthorrhoea semiplana*) gum. Picric acid is the main constituent of the gum, which was exported to Germany for the manufacture of gun powder. Some tall yaccas, particularly in Kalamunda and Springs Road NFRs, still show the angular axe cuts along their stems where fronds and shards were removed, then separated by winnowing. The smaller yaccas, "carried larger flakes of gum and were prized" (Williams 1986).

In 1966, in Springs Road NFR, a fertiliser application trial was jointly established by the Woods and Forests Department and CSIRO Division of Forest Research. The trial site was located in the south-eastern corner of the reserve and comprised of treated and un-treated plots. The trial investigated the uptake of superphosphate by *Pinus radiata* planted on lateritic soils. Laterite binds phosphates, thereby reducing fertiliser availability to trees, in turn affecting their growth. This trial has concluded and the trees have been removed from the site enabling regeneration of native vegetation.

In Congeratinga NFR in the late 1960s, a small area (approximately 0.5 ha) in the centre of the reserve was cleared to establish a pine seedling nursery for planting in Second Valley Forest Reserve. Seedlings from here were also sold to the local community, primarily for windbreak plantings. The site has been unused since 1983, when pine seedlings were provided from a nursery in the South East. The reserve was locally known as the 'nursery scrub'.

Grazing

In Kalamunda NFR in the late 1800s and early 1900s, larger trees were ringbarked to promote growth of grasses for stock grazing. This was a widespread procedure adopted by the early settlers to remove competition from grasses. Some old, dead *Eucalyptus fasciculosa* still show these scars. This opening up of the original forest often stimulated regrowth of shrubs and trees, which

subsequently created a denser area of smaller diameter, and short trees. This structure is particularly apparent in compartment KL2 in Kalamunda NFR.

Sheep grazing also prevented regrowth from the original stumps, as shoots were eaten as they appeared beneath the axe cut band. During periods of drought in 1914 and 1939, sheep were fed on the green 'hearts' of yaccas, specifically cut for this purpose. To further clear the land for grazing, the centre of yaccas were damaged to cause them to die.

George Putland purchased the Kalamunda property in the early 1940s. At this time the area was used for intensive sheep grazing and holding' sheep (up to 2 000 wethers) for shearing in the shed that was built, and later removed when pines were first established adjacent the reserve in 1983. When the Bonython's owned the property after the Second World War, the intensive grazing continued which helped maintain the open structure of the reserve. This is particularly noticeable in areas of *Eucalyptus fasciculosa* in compartment KL2. This impact would have been exacerbated in the southern half of the reserve, fenced to contain sheep grazing. An old fence crossing compartments KL6 and KL7 still remains and separates these areas which contain more *E. obliqua* and *E. viminalis* ssp*. cygnetensis*. Grazing was terminated in 1983 when the adjacent plantations were established.

Springs Road NFR was available for grazing by both sheep and cattle for many years. There was no intensive stocking as it was a long paddock extension of the neighbouring property on the northern boundary. Grazing was formally terminated in 1975 when an intensive bird study commenced in the area. At this time there was little visual evidence of grazing, which suggests grazing had ceased some years before.

Congeratinga NFR was grazed until early 1950s and has not been grazed since then.

Fire

In the 1920-40s sections of Kalamunda NFR were intentionally burnt to provide green pick or regrowth for grazing. There was an extensive wildfire in 1934 which burnt much of the Fleurieu Peninsula. It is unclear if Kalamunda and Springs Road were burnt out but Congeratinga NFR was completely burnt. Small areas of this reserve may also have been burnt to stimulate wattle regrowth, or provide access for yacca gum harvesting (Williams 1986).

Fire protection works are regularly undertaken in all reserves involving track maintenance. Prescribed burning both for fuel reduction and habitat management has been carried out in Congeratinga and Springs Road NFR. Fire protection works in Springs Road NFR have consisted of track maintenance, and a prescribed burning program for habitat management and to reduce fuel loads. Prescribed burning in the reserve was undertaken in 1967, 1968, 1974 and 1980.

Prescribed burning was carried out in Congeratinga in 1963 (compartment CG1) and 1968 (compartment CG2). There has not been any prescribed burning in the reserve since 1968. Fire protection works have primarily consisted of track maintenance.

ForestrySA has supplied fire history information to DEWNR and it is available online at 'NatureMaps'. There are no short terms plans to implement prescribed burning in any of the NFRs.

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 **Goals**	**Performance Indicator(s)**	**Priority for Action**
Manage the reserve for the conservation of biodiversity.	No loss of species identified within the survey results.	1
Continue 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 **Goals**	**Performance Indicator(s)**	**Priority for Action**
Provide visitors with appropriate information regarding forest reserve values.	Educational material available at Forest Information Centres Signs erected at appropriate locations.	2
Maintain signage and other infrastructure to acceptable specified standards.	Condition of signage and othe infrastructure in the reserve -	3

OBJECTIVE: Protection **Goals**	**Performance Indicator(s)**	**Priority for Action**
Implement management actions to reduce the spread of *Phytophthora*, other plant pathogens and weed seeds within the reserve.	Area affected by *Phytophthora* 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 Goals	Performance Indicator(s)	Priority for Action
Reduce the impacts resulting from fragmentation and/or edge effects between and adjacent to sections of NFR.	Possible options identified for rehabilitation of adjoining areas. Where possible adjoining landholders engaged in conservation works (through existing community / natural resource management programs)	2
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 external fences.	Boundary fences are in a serviceable condition.	3

OBJECTIVE: Rehabilitation Goals	Performance Indicator(s)	Priority for Action
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 Goals	Performance Indicator(s)	Priority for Action
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 Locations – Kal-Kalamunda; Sp Rd-Springs Road; Con-Congeratinga

	SPECIES	COMMON NAME	AUS	SA	AMLR	Kal	Sp Rd	Con	FAMILY
	Acacia melanoxylon	Blackwood				•	•	•	Leguminosae
	Acacia myrtifolia	Myrtle wattle				•	•	•	Leguminosae
	Acacia paradoxa	Kangaroo thorn				•	•	•	Leguminosae
	Acacia pycnantha	Golden wattle				•	•	•	Leguminosae
	Acacia retinodes var. *retinodes*	Wirilda				•		•	Leguminosae
	Acacia rupicola	Rock wattle			RA	•			Leguminosae
	Acacia verticillata	Prickly Moses				•	•	•	Leguminosae
	Acaena echinata	Sheep's burr				•	•	•	Rosaceae
	Acaena novae-zelandiae	Biddy-biddy				•	•	•	Rosaceae
	Acaena ovina	Downy sheep's burr				•	•	•	Rosaceae
	Acaena X anserovina	Hybrid burr				•			Rosaceae
*	*Acetosella vulgaris*	Sorrel				•		•	Polygonaceae
	Acianthus caudatus	Mayfly orchid				•	•	•	Orchidaceae
	Acianthus pusillus	Mosquito orchid				•	•	•	Orchidaceae
	Acrotriche affinis	Ridged ground-berry			RA		•		Epacridaceae
	Acrotriche depressa	Native currant			RA		•		Epacridaceae
	Acrotriche serrulata	Cushion ground-berry				•	•	•	Epacridaceae
	Adiantum aethiopicum	Common maiden-hair				•	•		Adiantaceae
*	*Aira caryophyllea*	Silvery hair-grass				•	•	•	Gramineae
*	*Aira cupaniana*	Small hair-grass				•			Gramineae
	Allocasuarina muelleriana ssp. *muelleriana*	Common oak-bush				•	•	•	Casuarinaceae
	Allocasuarina striata	Stalked oak-bush					•	•	Casuarinaceae
	Allocasuarina verticillata	Drooping sheoak				•			Casuarinaceae
	Amphibromus sp.	Swamp wallaby-grass						•	Gramineae
	Amphipogon strictus	Spreading grey-beard grass						•	Gramineae
	Amyema miquelii	Box mistletoe				•			Loranthaceae
	Amyema pendulum ssp. *pendula*	Drooping mistletoe			NT	•	•	•	Loranthaceae
*	*Anagallis arvensis*	Pimpernel					•		Primulaceae
*	*Anagallis minima*	Chaffweed						•	Primulaceae
	Aphelia gracilis	Slender aphelia			RA			•	Centrolepidaceae
	Aphelia pumilio	Dwarf aphelia				•			Centrolepidaceae
	Apodasmia brownii	Coarse twine-rush			RA			•	Restionaceae
*	*Arctotheca calendula*	Cape weed				•			Compositae
	Arthropodium fimbriatum	Nodding vanilla-lily				•			Liliaceae
	Arthropodium strictum	Common vanilla-lily				•	•	•	Liliaceae
*	*Asclepias rotundifolia*	Broad-leaf cotton-bush				•			Asclepiadaceae
*	*Asparagus asparagoides*	Bridal creeper				•	•	•	Asparagaceae
	Asperula conferta	Common woodruff					•		Rubiaceae
*	*Aster subulatus*	Aster weed				•			Compositae
	Astroloma humifusum	Cranberry heath				•	•	•	Epacridaceae
	Austrostipa mollis	Soft spear grass				•	•	•	Gramineae

	SPECIES	COMMON NAME	AUS	SA	AMLR	Kal	Sp Rd	Con	FAMILY
	Austrostipa muelleri	Tangled spear-grass						•	Gramineae
	Austrostipa scabra ssp.scabra	Rough Spear-grass					•		Gramineae
	Austrostipa semibarbata	Fibrous spear-grass				•	•	•	Gramineae
	Austrostipa sp.	Spear-grass					•		Gramineae
*	*Avena barbata*	Bearded oat				•			Gramineae
	Azolla filiculoides	Pacific azolla						•	Azollaceae
	Banksia marginata	Silver banksia					•	•	Proteaceae
	Banksia ornata	Desert banksia					•		Proteaceae
*	*Batrachium trichophyllum*	Water buttercup					•		Ranunculaceae
	Baumea articulata	Jointed twig-rush			RA		•		Cyperaceae
	Baumea juncea	Bare twig-rush				•	•	•	Cyperaceae
	Baumea laxa	Lax twig-rush		R	VU			•	Cyperaceae
	Baumea rubiginosa	Soft twig-rush			RA		•		Cyperaceae
	Baumea sp.	Twig-rush						•	Cyperaceae
	Baumea tetragona	Square twig-rush			NT			•	Cyperaceae
	Billarderia cymosa	Apple-berry				•	•	•	Pittosporaceae
	Billardiera sericophora	Sweet apple-berry				•	•	•	Pittosporaceae
	Billardiera uniflora	One-flower apple-berry			VU			•	Pittosporaceae
	Blechnum minus	Soft water-fern			NT	•	•	•	Blechnaceae
	Blechnum wattsii	Hard water-fern		R	RA		•	•	Blechnaceae
	Bossiaea prostrata	Creeping bossiaea				•	•	•	Leguminosae
*	*Briza maxima*	Large quaking-grass				•	•	•	Gramineae
*	*Briza minor*	Lesser quaking-grass				•	•	•	Gramineae
*	*Bromus diandrus*	Great brome				•			Gramineae
*	*Bromus hordeaceus ssp. hordeaceus*	Soft brome				•			Gramineae
*	*Bromus madritensis*	Compact brome				•			Gramineae
	Brunonia australis	Blue pincushion				•			Goodeniaceae
	Burchardia umbellata	Milkmaids				•	•	•	Liliaceae
	Caesia calliantha	Blue grass-lily				•	•	•	Liliaceae
	Caladenia carnea	Pink fingers				•	•	•	Orchidaceae
	Caladenia prolata	Shy caladenia			RA	•			Orchidaceae
	Caladenia sp.	Spider orchid				•			Orchidaceae
	Caladenia tentaculata	King spider-orchid				•	•	•	Orchidaceae
*	*Callitriche stagnalis*	Common water starwort				•			Callitrichaceae
	Calochilus robertsonii	Purplish beard-orchid					•		Orchidaceae
	Calochilus sp.	Beard-orchid						•	Orchidaceae
*	*Carduus tenuiflorus*	Slender thistle				•			Cyperaceae
	Carex appressa	Tall sedge				•	•	•	Cyperaceae
	Carex breviculmis	Short-stem sedge				•	•	•	Cyperaceae
	Carex fascicularis	Tassle sedge			RA			•	Cyperaceae
	Carex gunniana	Mountain sedge		R	VU			•	Cyperaceae
	Carex inversa var. inversa	Knob sedge			VU	•	•		Cyperaceae
	Carex tereticaulis	Rush sedge				•	•		Cyperaceae
	Cassytha glabella f. dispar	Slender dodder-laurel				•	•	•	Lauraceae

	SPECIES	COMMON NAME	AUS	SA	AMLR	Kal	Sp Rd	Con	FAMILY
	Cassytha pubescens	Downy dodder-laurel					•		Lauraceae
*	*Centaurium erythraea*	Common centaury				•	•	•	Gentianaceae
*	*Centaurium tenuiflorum*	Branched centaury					•		Gentianaceae
	Centella cordifolia	Native centella			RA		•	•	Umbelliferae
	Centrolepis aristata	Pointed centrolepis				•	•	•	Centrolepidaceae
	Centrolepis strigosa ssp. strigosa	Hairy centrolepis				•			Centrolepidaceae
*	*Chamaecytisus palmensis*	Tree lucerne				•			Leguminosae
	Chamaescilla corymbosa var. corymbosa	Blue squill				•	•	•	Liliaceae
	Cheilanthes austrotenuifolia	Annual rock-fern				•	•		Adiantaceae
	Chorizandra enodis	Black bristle-rush						•	Cyperaceae
*	*Cirsium vulgare*	Spear thistle				•			Compositae
	Convolvulus angustissimus ssp.angustissimus	Australian bindweed				•			Convolvulaceae
	Coronidium scorpioides	Button everlasting				•	•	•	Compositae
	Correa calycina var. calycina	Hindmarsh correa	VU	V	VU	•			Rutaceae
	Correa eburnea	Deep Creek correa		V	VU	•			Rutaceae
	Corybas diemenicus	Veined helmut-orchid				•	•	•	Orchidaceae
	Corymbas dilatatus	Common helmut-orchid				•			Orchidaceae
*	*Cotula coronopifolia*	Water buttons				•	•	•	Compositae
	Cotula vulgaris var. *australasica*	Slender cotula			K	•			Compositae
	Craspedia variabilis	Billy-buttons				•	•	•	Compositae
	Crassula closiana	Staked crassula				•			Crassulaceae
	Crassula colligata	Crassula				•			Crassulaceae
	Crassula decumbens var. *decumbens*	Spreading crassula				•	•	•	Crassulaceae
	Crassula tetramera	Australian stonecrop				•			Crassulaceae
*	*Critesion marinum*	Sea barley grass				•			Gramineae
	Cryptandra hispidula	Rough cryptandra			RA			•	Rhamnaceae
	Cymbonotus preissianus	Austral bear's-ear			RA	•			Compositae
	Cynoglossum suaveolens	Sweet hound'-tongue			NT	•			Boraginaceae
*	*Cynosurus echinatus*	Rough dog's-tail grass				•	•	•	Gramineae
	Cyperus tenellus	Tiny flat-sedge				•			Cyperaceae
	Cyperus vaginatus	Stiff flat-sedge				•			Cyperaceae
	Cyrtostylis reniformis	Small gnat-orchid				•	•		Orchidaceae
	Daucus glochidiatus	Native carrot				•	•	•	Umbelliferae
	Daviesia brevifolia	Leafless bitter-pea				•	•	•	Leguminosae
	Daviesia leptophylla	Narrow-leaf bitter-pea				•	•		Leguminosae
	Daviesia ulicifolia ssp. incarnata	Gorse bitter-pea				•	•	•	Leguminosae
	Deyeuxia minor	Small bent-grass		V	VU			•	Gramineae
	Deyeuxia quadriseta	Reed bent-grass				•	•	•	Gramineae
	Dianella revoluta var. revoluta	Black-anther flax-lily				•	•	•	Liliaceae
	Dichelachne crinita	Long-hair plume-grass				•			Gramineae
	Dichondra repens	Kidney weed				•	•	•	Convolvulaceae
	Dillwynia hispida	Red parrot-pea					•	•	Leguminosae
	Dipodium pardalinum	Leopard hyacinth-orchid		V	CR				Orchidaceae

	SPECIES	COMMON NAME	AUS	SA	AMLR	Kal	Sp Rd	Con	FAMILY
	Dipodium roseum	Pink hyacinth orchid				•	•	•	Orchidaceae
*	*Dittrichia graveolens*	Stinkweed				•	•	•	Compositae
	Diuris brevifolia	Short-leaf donkey orchid		E	VU			•	Orchidaceae
	Diuris orientis	Bulldog orchid				•	•	•	Orchidaceae
	Drosera auriculata	Tall sundew				•	•	•	Droseraceae
	Drosera glanduligera	Scarlet sundew				•			Droseraceae
	Drosera macrantha ssp. *planchonii*	Climbing sundew				•			Droseraceae
	Drosera peltata	Pale sundew				•	•	•	Droseraceae
	Drosera whittakeri ssp. whittakeri	Scented sundew				•	•	•	Droseraceae
	Eleocharis acuta	Common spike-rush				•	•	•	Cyperaceae
	Elocharis gracilis	Slender spike-rush			RA		•	•	Cyperaceae
	Elymus scaber var. *scaber*	Native wheat-grass				•			Gramineae
	Empodisma minus	Tangle rope-rush			RA			•	Restionaceae
	Epacris impressa	Common heath				•	•	•	Epacridaceae
	Epiliobium pallidiflorum	Showy willow-herb			RA		•		Onagraceae
	Epilobium billardierianum ssp. *billardierianum*	Robust willow-herb				•	•	•	Onagraceae
	Epilobium hirtigerum	Hairy willow-herb				•			Onagraceae
	Epilobium pallidiflorum	Showy willow-herb			RA			•	Onagraceae
*	*Erodium botrys*	Long heron's-bill				•			Geraniaceae
	Eucalyptus baxteri	Brown stringybark					•	•	Myrtaceae
	Eucalyptus fasciculosa	Pink gum		R	NT	•	•	•	Myrtaceae
	Eucalyptus leucoxylon ssp. *leucoxylon*	South Australian blue gum				•			Myrtaceae
	Eucalyptus obliqua	Messmate stringybark				•	•	•	Myrtaceae
	Eucalyptus ovata ssp. ovata	Swamp gum			VU	•	•	•	Myrtaceae
	Eucalyptus viminalis ssp. *cygnetensis*	Rough-bark manna gum				•			Myrtaceae
	Eucalyptus viminalis x ovata	Hybrid				•			Myrtaceae
	Euchiton collinus	Creeping cudweed				•	•	•	Compositae
	Euromyrtus ramosissima ssp. ramosissima	Rosy baeckea					•	•	Myrtaceae
	Exocarpos cupressiformis	Native cherry				•	•	•	Santalaceae
*	*Festuca arundinacea*	Tall meadow-fescue				•	•	•	Gramineae
*	*Freesia hybrid*	Freesia				•			Iridaceae
	Gahnia sieberiana	Red-fruit cutting-grass			NT			•	Cyperaceae
	Gahnia trifida	Cutting grass			RA		•	•	Cyperaceae
	Galium gaudichaudii ssp. gaudichaudii	Rough bedstraw				•			Rubiaceae
	Galium migrans	Loose bedstraw				•	•		Rubiaceae
*	*Geranium dissectum*	Cut-leaf geranium				•			Geraniaceae
	Geranium potentilloides var. *potentilloides*	Downy geranium			LC	•			Geraniaceae
	Geranium retrorsum	Grassland geranium				•			Geraniaceae
*	*Geranium robertianum*	Geranium				•			Geraniaceae
*	*Gladiolus* sp.	Gladiolus				•			Iridaceae
	Glossodia major	Purple cockatoo				•	•	•	Orchidaceae
	Glyceria australis	Australian sweet grass			VU		•		Gramineae
	Glycine clandestina var. clandestina	Twining glycine				•			Leguminosae

	SPECIES	COMMON NAME	AUS	SA	AMLR	Kal	Sp Rd	Con	FAMILY
	Glycine latrobeana	Clover glycine	VU	V	RA	•			Leguminosae
	Gnaphalium sp.	Cudweed						•	Compositae
	Gompholobium ecostatum	Dwarf wedge-pea						•	Leguminosae
	Gonocarpus mezianus	Broad-leaf raspwort				•			Haloragaceae
	Gonocarpus micranthus ssp. micranthus	Creeping raspwort		R	VU		•		Haloragaceae
	Gonocarpus tetragynus	Small-leaf raspwort				•	•	•	Haloragaceae
	Goodenia blackiana	Native primrose				•	•	•	Goodeniaceae
	Goodenia ovata	Hop goodenia				•	•	•	Goodeniaceae
	Goodia medicaginea	Western golden-tip				•			Leguminosae
	Gratiola peruviana	Austral brooklime					•	•	Scrophulariaceae
	Grevillea lavandulacea var. lavandulacea	Spider flower					•		Proteaceae
	Hakea carinata	Erect hakea						•	Proteaceae
	Hakea rostrata	Beaked hakea				•	•	•	Proteaceae
	Haloragis brownii	Swamp raspwort		R	VU		•	•	Haloragaceae
	Hibbertia exutiacies	Prickly guinea-flower				•	•	•	Dilleniaceae
	Hibbertia pallidflora	Scrambling guinea-flower			CR		•	•	Dilleniaceae
	Hibbertia riparia	Bristly guinea-flower			LC	•	•	•	Dilleniaceae
	Hibbertia sericea	Silky Guinea-flower			NT		•		Dilleniaceae
*	*Holcus lanatus*	Yorkshire fog				•	•	•	Gramineae
	Hydrocotyle callicarpa	Tiny pennywort				•	•		Umbelliferae
	Hydrocotyle foveolata	Yellow pennywort				•			Umbelliferae
	Hypericum gramineum	Small St John's wort				•	•	•	Guttiferae
	Hypericum japonicum	Matted St. John's wort		R	VU			•	Guttiferae
*	*Hypericum perforatum*	St. Johns wort				•	•	•	Guttiferae
*	*Hypochaeris glabra*	Smooth cat's ear				•			Compositae
*	*Hypochaeris radicata*	Rough cat's ear				•	•	•	Compositae
	Isoetes sp.	Quillwort						•	Isoetaceae
	Isolepis cemua	Nodding club-rush				•			Cyperaceae
	Isolepis fluitans	Floating club-rush			NT		•	•	Cyperaceae
	Isopogon ceratophyllus	Horny cone-bush				•	•	•	Proteaceae
*	*Juncus articulatus*	Jointed rush				•	•	•	Juncaceae
	Juncus bufonius	Toad rush				•	•	•	Juncaceae
	Juncus caespiticius	Grassy rush				•	•	•	Juncaceae
*	*Juncus capitatus*	Dwarf rush				•	•	•	Juncaceae
	Juncus holoschoenus	Joint-leaf rush					•		Juncaceae
	Juncus kraussii	Sea rush				•	•	•	Juncaceae
	Juncus pallidus	Pale rush				•	•	•	Juncaceae
	Juncus pauciflorus	Loose-flower rush				•	•	•	Juncaceae
	Juncus planifolius	Broad leaf-rush						•	Juncaceae
	Juncus sarophorus	Rush						•	Juncaceae
	Juncus subsecundus	Finger rush				•	•		Juncaceae
	Kennnedia prostrata	Running postman				•	•	•	Leguminosae
	Lachnagrostis aemula	Blown grass				•	•		Gramineae
	Lachnagrostis filiformis	Common blown-grass				•	•	•	Gramineae

	SPECIES	COMMON NAME	AUS	SA	AMLR	Kal	Sp Rd	Con	FAMILY
	Lagenophora gracilis	Slender bottle-daisy		V	VU		•		Compositae
	Lagenophora huegelii	Coarse bottle-daisy				•			Compositae
	Lagenophora stipitata	Bottle-daisy			VU		•	•	Compositae
	Laxmannia orientalis	Dwarf wire-lily				•	•	•	Liliaceae
	Lemna disperma	Common duckweed				•			Lemnaceae
*	*Leotodon taraxacoides* ssp. *taraxacoides*	Lesser hawkbit				•			Compositae
	Lepidosperma carphoides	Black rapier-sedge					•	•	Cyperaceae
	Lepidosperma curtisiae	Little sword-sedge					•		Cyperaceae
	Lepidosperma laterale	Tall sword sedge			LC	•			Cyperaceae
	Lepidosperma longitudinale	Pithy sword-sedge					•	•	Cyperaceae
	Lepidosperma semiteres	Wire rapier-sedge				•	•	•	Cyperaceae
	Leporella fimbriata	Fringed hare-orchid				•			Orchidaceae
	Leptoceras menziesii	Hare orchid				•	•	•	Orchidaceae
	Leptospermum continentale	Prickly tea-tree				•	•	•	Myrtaceae
	Leptospermum continentale x lanigerum	Hybrid tea-tree						•	Myrtaceae
	Leptospermum lanigerum	Silky tea-tree			RA		•	•	Myrtaceae
	Leptospermum myrsinoides	Heath tea-tree				•	•	•	Myrtaceae
	Leucopogon concurvus	Scrambling beard-heath					•	•	Epacridaceae
	Leucopogon hirsutus	Hairy beard-heath		R	VU			•	Epacridaceae
	Leucopogon lanceolatus	Lance beard-heath						•	Epacridaceae
	Leucopogon parviflorus	Coast beard-heath						•	Epacridaceae
	Leucopogon virgatus	Common beard-heath				•	•	•	Epacridaceae
	Levenhookia dubia	Hairy stylewort				•			Stylidiaceae
	Lindsaea linearis	Screw fern			NT		•	•	Lindsaeaceae
	Linum marginale	Native flax						•	Linaceae
	Lobelia anceps	Angled lobelia				•	•	•	Campanulaceae
	Logania recurva	Recurved logania			RA		•		Loganiaceae
*	*Lolium regidum*	Wimmera ryegrass				•			Gramineae
	Lomandra fibrata	Mount Lofty mat-rush				•	•	•	Liliaceae
	Lomandra juncea	Desert mat-rush					•		Liliaceae
	Lomandra micrantha ssp. micrantha	Small-flower mat-rush				•	•	•	Liliaceae
	Lomandra micrantha ssp. tuberculata	Small-flower mat-rush				•	•		Liliaceae
	Lomandra multiflora ssp. dura	Hard mat-rush				•	•		Liliaceae
	Lomandra nana	Small mat-rush					•		Liliaceae
	Lomandra sororia	Sword mat-rush			NT		•	•	Liliaceae
*	*Lotus sp.*	Pea-weed					•		Leguminosae
	Luzula meridionalis	Common wood-rush				•	•	•	Juncaceae
	Lysiana exicarpi ssp. *tuberculata*	Harlequin mistletoe				•			Loranthaceae
	Lythrum hyssopifolia	Lesser loosestrife				•	•	•	Lythraceae
	Marianthus bignoniaceus	Orange bell-climber			NT		•	•	Pittosporaceae
	Melaleuca decussata	Totem poles				•	•	•	Myrtaceae
	Micrantheum demissum	Dwarf micrantheum			RA			•	Euphorbiaceae
	Microleana stipoides var. *stipoides*	Weeping rice grass				•	•	•	Gramineae
	Microseris lanceolata	Yam daisy				•	•		Compositae

	SPECIES	COMMON NAME	AUS	SA	AMLR	Kal	Sp Rd	Con	FAMILY
	Microtis arenaria	Notched onion-orchid				•			Orchidaceae
	Microtis frutetorum	Onion orchid				•	•	•	Orchidaceae
	Microtis parviflora	Slender onion-orchid			LC			•	Orchidaceae
	Microtis rara	Sweet onion-orchid		R	CR			•	Orchidaceae
	Microtis sp. 'Shortleaf'					•			Orchidaceae
*	*Moenchia erecta*	Erect chickweed				•			Caryophyllaceae
*	*Moraea flaccida*	One-leaf cape tulip				•			Iridaceae
	Muehlenbeckia gunnii	Coastal climbing lignum				•			Polygonaceae
	Myosotis australis	Austral forget-me-not			RA	•			Boraginaceae
	Myriophyllum amphibium	Broad milfoil		R	VU		•	•	Haloragaceae
	Neurachne alopecuroidea	Fox-tail mulga-grass				•	•		Gramineae
	Olearia grandiflora	Mount Lofty daisy bush			LC	•	•	•	Compositae
	Olearia ramulosa	Twiggy daisy-bush				•	•	•	Compositae
	Olearia teretifolia	Cypress daisy bush			NT		•	•	Compositae
*	*Onopordum acaulon*	Horse thistle				•			Compositae
	Opercularia ovata	Broad-leaf stinkweed			RA	•			Rubiaceae
	Opercularia varia	Variable stinkweed				•	•	•	Rubiaceae
	Oxalis perennans	Native sorrel				•	•	•	Oxalidaceae
*	*Oxalis purpurea*	One o'clock				•			Oxalidaceae
*	*Parapholis incurva*	Curly rye-grass						•	Gramineae
*	*Parentucellia latifolia*	Red bartsia				•	•	•	Scrophulariaceae
*	*Parentucellia viscosa*	Yellow bartsia						•	Scrophulariaceae
	Patersonia fragilis	Short purple-flag			VU			•	Iridaceae
	Patersonia occidentalis	Long purple-flag			RA			•	Iridaceae
	Pelargonium australe	Australian pelargonium			RA	•			Geraniaceae
	Persicaria decipiens	Slender knotweed				•	•	•	Polygonaceae
*	*Phalaris aquatica*	Phalaris				•			Gramineae
	Phyllangium divergens	Wiry mitrewort				•	•		Loganiaceae
	Pimelea curviflora ssp. gracilis	Curved riceflower					•		Thymelaeaceae
	Pimelea glauca	Smooth riceflower					•		Thymelaeaceae
	Pimelea humilis	Low riceflower				•	•		Thymelaeaceae
	Pimelea linifolia ssp. linifolia	Slender riceflower				•	•		Thymelaeaceae
	Pimelea micrantha	Silky riceflower			NT	•			Thymelaeaceae
	Pimelea octophylla	Woolly riceflower					•	•	Thymelaeaceae
	Pimelea phylicoides	Heath riceflower				•	•	•	Thymelaeaceae
*	*Pinus pinaster*	Maritime pine						•	Pinaceae
*	*Pinus radiata*	Radiata pine				•	•	•	Pinaceae
	Plantago australis	Southern plantain					•		Pittosporaceae
*	*Plantago coronopus* ssp. *coronopus*	Buck's horn plaintain				•	•	•	Plantaginaceae
*	*Plantago lanceolata var. lanceolata*	Ribwort						•	Plantaginaceae
	Platylobium obtusangulum	Holly flat-pea				•	•	•	Leguminosae
	Platysace heterophylla var.	Slender platysace					•	•	Umbelliferae
*	*Poa annua*	Winter grass				•	•	•	Gramineae
	Poa clelandii	Matted tussock-grass				•	•	•	Gramineae

	SPECIES	COMMON NAME	AUS	SA	AMLR	Kal	Sp Rd	Con	FAMILY
	Poa tenera	Slender tussock-grass			NT	•			Gramineae
	Poranthera huegelii	Heath poranthea			NT			•	Euphorbiaceae
	Poranthera microphylla	Small poranthera				•	•		Euphorbiaceae
	Pratia concolor	Poison pratia		R		•			Campanulaceae
	Pteridium esculentum	Bracken fern				•	•	•	Dennstaedtiaceae
	Pterostylis foliata	Slender greenhood		R	RA		•		Orchidaceae
	Pterostylis nana	Dwarf greenhood				•	•		Orchidaceae
	Pterostylis nutans	Nodding greenhood				•			Orchidaceae
	Pterostylis pedunculata	Maroon-hood				•	•	•	Orchidaceae
	Pultenaea daphnoides	Large-leaf bush-pea				•	•	•	Leguminosae
	Pultenaea involucrata	Mount Lofty bush-pea			NT		•	•	Leguminosae
	Pultenaea laxiflora	Loose-flower bush-pea						•	Leguminosae
	Pultenaea trinervis	Three-nerve bush-pea						•	Leguminosae
	Ranunculus lappaceus	Native buttercup				•	•		Ranunculaceae
*	*Ranunculus muricatus*	Pricklefruit buttercup				•	•	•	Ranunculaceae
	Ranunculus pachycarpus	Thick-fruit buttercup						•	Ranunculaceae
	Ranunculus sessiliflorus var. *sessiliflorus*	Annual buttercup					•		Ranunculaceae
*	*Romulea rosea* var. *australis*	Common onion grass				•			Iridaceae
*	*Rorippa nasturtium aquaticum*	Watercress				•			Cruciferae
*	*Rorippa palustris*	Yellow marsh-cress				•			Cruciferae
*	*Rosa canina*	Dog rose				•	•	•	Rosaceae
	Rubus parvifolius	Native raspberry			RA	•	•		Rosaceae
*	*Rubus sp.*	Blackberry				•	•	•	Rosaceae
*	*Rubus ulmifolius* var. *ulmifolius*	Blackberry				•			Rosaceae
	Rumex brownii	Slender dock				•			Polygonaceae
*	*Rumex conglomeratus*	Clustered dock				•			Polygonaceae
*	*Rumex crispus*	Curled dock				•			Polygonaceae
	Rutidosis multiflora	Small wrinklewort					•		Compositae
	Rytidosperma caespitosum	Common wallaby-grass						•	Gramineae
	Rytidosperma geniculatum	Kneed wallaby-grass				•	•	•	Gramineae
	Rytidosperma pilosum	Velvet wallaby-grass				•			Gramineae
	Rytidosperma racemosum var. racemosum	Slender wallaby-grass			LC	•			Gramineae
	Rytidosperma semiannulare	Wetland wallaby-grass			VU			•	Gramineae
	Rytidosperma setaceum	Small-flower wallaby-grass					•	•	Gramineae
	Rytidosperma sp.	Wallaby-grass					•	•	Gramineae
	Scaevola albida	Pale fanflower							Goodeniaceae
	Schoenus apogon	Common bog-rush				•	•	•	Cyperaceae
	Schoenus breviculmis	Matted bog-rush				•	•	•	Cyperaceae
	Scuttellaria humilis	Dwarf skullcap		R	VU	•	•		Labiatae
	Sebaea ovata	Yellow sebaea				•			Gentianaceae
	Senecio tenuiflorus	Woodland groundsel				•			Compositae
	Senecio glomeratus ssp. longifructus	Creek groundsel				•	•	•	Compositae
	Senecio glomeratus ssp. glomeratus	Swamp groundsel				•	•		Compositae

	SPECIES	COMMON NAME	AUS	SA	AMLR	Kal	Sp Rd	Con	FAMILY
	Senecio glossanthus	Annual groundsel					•		Compositae
	Senecio hispidulus	Rough groundsel			LC	•			Compositae
	Senecio odoratus	Scented groundsel			NT	•			Compositae
	Senecio phellus	Woodland groundsel				•	•	•	Compositae
	Senecio picridioides	Purple-leaf groundsel				•	•	•	Compositae
*	*Senecio pterophorus* var. *pterophorus*	African daisy				•	•	•	Compositae
	Senecio quadridentatus	Cotton groundsel				•	•		Compositae
*	*Sherardia arvensis*	Field madder				•			Rubiaceae
*	*Solanum nigrum*	Black nightshade				•	•	•	Solanaceae
	Spirodela punctata	Thin duckweed			NT			•	Lemnaceae
	Sprengelia incarnata	Pink swamp-heath		R	VU			•	Epacridaceae
	Spyridium thymifolium	Thyme-leaf spyridium					•	•	Rhamnaceae
	Stackhousia aspericocca	Bushy candles				•	•	•	Stackhousiaceae
	Stackhousia aspericocca ssp. "One-sided inflorescence" (W.R. Barker 697)	One-sided candles					•	•	Stackhousiaceae
	Stellaria angustifolia	Swamp starwort				•			Caryophyllaceae
*	*Stellaria media*	Chickweed				•	•	•	Caryophyllaceae
	Stylidium graminifolium	Grass trigger-plant					•	•	Stylidiaceae
	Tetratheca pilosa ssp. pilosa	Hairy pink-bells					•	•	Tremandraceae
	Thelymitra albiflora	White sun-orchid				•	•	•	Orchidaceae
	Thelymitra antennifera	Lemon sun-orchid					•		Orchidaceae
	Thelymitra bracteata	Slender sun-orchid				•	•	•	Orchidaceae
	Thelymitra brevifolia	Short leaf sun-orchid				•	•	•	Orchidaceae
	Thelymitra flexuosa	Twisted sun-orchid		R	NT		•		Orchidaceae
	Thelymitra ixioides	Spotted sun-orchid					•		Orchidaceae
	Thelymitra juncifolia	Spotted sun-orchid				•	•	•	Orchidaceae
	Thelymitra pauciflora	Slender sun-orchid				•	•	•	Orchidaceae
	Thelymitra rubra	Salmon sun-orchid				•			Orchidaceae
	Themeda triandra	Kangaroo grass				•	•		Gramineae
	Thysanotus juncifolius	Rush fringe-lily						•	Liliaceae
	Thysanotus patersonii	Twining fringe-lily				•	•		Liliaceae
	Tricoryne elatior	Yellow rush-lily							Liliaceae
*	*Trifolium angustifolium*	Narrow leaf-clover				•			Leguminosae
*	*Trifolium campestre*	Hop clover				•			Leguminosae
*	*Trifolium dubium*	Suckling clover				•			Leguminosae
	Triglochin procea	Water-ribbons			NT	•		•	Juncaginaceae
	Triglochin striatum	Streaked arrowgrass				•		•	Juncaginaceae
	Typha domingensis	Narrow-leaf bulrush				•	•		Typhaceae
*	*Ulex europaeus*	Gorse				•	•	•	Leguminosae
*	*Vellereophyton dealbatum*	White cudweed						•	Compositae
	Veronica gracilis	Slender speedwell		V	EN	•	•		Scrophulariaceae
	Villarsia umbricola var. *umbricola*	Lax marsh-flower			RA	•	•	•	Menyanthaceae
	Viminaria juncea	Native broom		R	VU	•		•	Leguminosae
	Viola cleistogamoides	Shy violet			RA	•	•		Violaceae
	Viola eminens	Ivy-leaf violet				•			Violaceae

	SPECIES	COMMON NAME	AUS	SA	AMLR	Kal	Sp Rd	Con	FAMILY
	Viola hederacea	Ivy-leaf violet			RA			●	Violaceae
	Viola sieberiana	Tiny violet				●	●	●	Violaceae
	Vittadinia australasica var. australasica	Sticky New Holland daisy					●		Compositae
*	*Vulpia bromoides*	Squirrel-tail fescue				●			Gramineae
	Wahlenbergia gracilenta	Annual bluebell				●			Campanulaceae
	Wahlenbergia gracilis	Sprawling bluebell			RA	●	●	●	Campanulaceae
	Wahlenbergia litticola	Coast bluebell				●	●	●	Campanulaceae
	Wahlenbergia luteola	Yellow-wash bluebell						●	Campanulaceae
	Wahlenbergia multicaulis	Tadgell's bluebell			RA		●		Campanulaceae
	Wahlenbergia preissi	Bluebell					●		Campanulaceae
	Wahlenbergia stricta ssp. stricta	Tall bluebell				●	●		Campanulaceae
	Wolffia australiana	Tiny duckweed						●	Lemnaceae
	Xanthorrhoea semipana ssp. semiplana	Yacca				●	●	●	Liliaceae
	Xanthorrhoea semiplana ssp. tateana	Tate's grass tree		R	RA	●	●	●	Liliaceae
	Xanthosia huegeli	Hairy xanthosia					●	●	Umbelliferae
	Xanthosia tasmanica	Southern xanthosia		R	RA		●	●	Umbelliferae
	Xyris operculata	Tall yellow-eye		R	RA			●	Xyridaceae
*	*Zantedeschia aethiopica*	White arum lily				●	●	●	Araceae

Conservation Status: AUS= *Environment Protection and Biodiversity Conservation Act* (EPBC) 1999,
SA= Schedules of the *National Parks and Wildlife Act* (NPW) 1972,
AMLR (Adelaide & Mount Ranges NRM Region) = Gillam, S. and Urban, R. (2014) Regional Species Conservation Assessment Project, Phase 1 Report: Regional Species Status Assessments, Adelaide and Mount Lofty Ranges NRM Region. Department of Environment, Water and Natural Resources, South Australia.

EPBC Status Codes: EX = extinct; CR = critically endangered; EN = endangered; VU = vulnerable
NPW Status Codes: X = extinct, E = endangered; V = vulnerable, R = rare.
MLR Regional Status Codes: RE = regionally extinct; CR = critically endangered; EN = endangered; VU = vulnerable; RA = rare; NT = near threatened; LC = least concern; DD = data deficient, NE = Not Evaluated.

APPENDIX 2 FAUNA SPECIES LIST

Birds

*introduced species

	Species	Common Name	AUS	SA	AMLR
	Acanthiza chrysorrhoa	Yellow-rumped Thornbill			NT
	Acanthiza lineata	Striated Thornbill			
	Acanthiza pusilla	Brown Thornbill			
	Acanthiza reguloides	Buff-rumped Thornbill			
	Acanthorhynchus tenuirostris	Eastern Spinebill			
	Accipiter fasciatus	Brown Goshawk			
	Anthochaera carunculata	Red Wattlebird			
	Anthochaera chrysoptera	Little Wattlebird			
	Aquila audax	Wedge-tailed Eagle			
	Artamus cyanopterus	Dusky Woodswallow			
	Artamus personatus	Masked Woodswallow			
	Cacatua galerita	Sulphur-crested Cockatoo			
	Cacatua sanguinea	Little Corella			
	Cacomantis flabelliformis	Fan-tailed Cuckoo			NT
	Cacomantis pallidus	Pallid cuckoo			RA
	Calamanthus pyrrhopygia parkeri	Chestnut-rumped Heathwren	E	E	EN
	Calyptorhynchus funereus	Yellow-tailed Black Cockatoo		V	VU
*	*Carduelis chloris*	European Greenfinch			
	Chalcites basalis	Horsfield's Bronze Cuckoo			NT
	Chenonetta jubata	Australian Wood Duck			
	Colluricincla harmonica	Grey Shrikethrush			
	Coracina novaehollandia	Black-faced Cuckooshrike			
	Cormobates leucophaeus	White-throated Treecreeper			NT
	Corvus mellori	Little Raven			
	Dacelo novaeguineace	Laughing Kookaburra			
	Daphoenositta chrysoptera	Varied Sitella			VU
	Dicaeum hirundinaceum	Mistletoebird			
	Elanus axillaris	Black-shouldered Kite			
	Eolophus roseicapilla	Galah			
	Falco cenchroides	Nakeen Kestrel			
	Falcunculus frontatus frontatus	Crested Shriketit		R	EN
	Glossopsitta concinna	Musk Lorikeet			
	Glossopsitta porphyocephala	Purple-crowned Lorikeet			
	Grallina cyanoleuca	Magpie-lark			
	Gymnorhina tibicen	Australian Magpie			
	Haliastur sphenurus	Whistling Kite			VU
	Hieraaetus morphnoides	Little Eagle			
	Hirundo neoxena	Welcome Swallow			
	Lichenostomus chrysops	Yellow-faced Honeyeater			
	Malurus cyaneus leggei	Superb Fairy-wren			
	Melanodryas cucullata cucullata	Hooded Robin			CR
	Melithreptus gularis gularis	Black-chinned Honeyeater			CR

	Species	Common Name	AUS	SA	AMLR
	Melithreptus lunatus	White-naped Honeyeater			VU
	Merops ornatus	Rainbow Bee-eater			
	Neochima teporalis	Red-Browed Finch			
	Neophema elegans	Elegant Parrot		R	VU
	Pachycephala pectoralis fuliginosa	Golden Whistler			
	Pachycephala rufiventris rufiventris	Rufous Whistler			NT
	Paradalotus striatus	Striated Pardalote			
	Pardalotus punctatus punctatus	Spotted Pardalote			NT
	Petrochelidon nigricans	Tree Martin			NT
	Petroica boodang boodang	Scarlet Robin			VU
	Phaps chalcoptera	Common Bronzewing			
	Phaps elegans	Brush Bronzewing			RA
	Phylidonyris novaehollandiae	New Holland Honeyeater			
	Phylidonyris pyrrhoptera pyrrhoptera	Crescent Honeyeater			
	Platycercus elegans x flaveolus	Adelaide Rosella			
	Podargus strigoides	Tawny Frogmouth			NT
	Psephotus haematonotus	Red-rumped Parrot			NT
	Rhipidura fuliginosa	Grey Fantail			
	Rhipidura leucophrys	Willie Wagtail			
	Sericornis frontalis	White-browed Scrub-wren			
	Stipiturus malachurus intermedius	Mt Lofty Ranges Southern Emu-wren	EN	E	CR
	Strepera versicolor	Grey Currawong			
*	*Sturnus vulgaris*	Common Starling			
	Trichoglassus haematodus	Rainbow Lorikeet			
*	*Turdus merula*	Common Blackbird			
	Zoothera lunulata	Bassian Thrush		R	EN
	Zosterops lateralis	Silvereye			

Mammals

*introduced species

	Species	Common Name	AUS	SA	AMLR
	Antechinus flavipes	Yellow-footed antechinus		V	RA
*	*Cervus dama*	Fallow deer			
	Macropus fuliginosus	Western grey kangaroo			
	Isodon obesulus obesulus	Southern-brown bandicoot	E	V	
*	*Mus musculus*	House mouse			
	Nyctophilus geoffroyi	Lesser long-eared bat			
*	*Oryctolagus cuniculus*	European rabbit			
	Pseudocheirus peregrinus	Common ringtail possum			
	Rattus fuscipes	Bush rat			
	Rattus lutereolus	Swamp rat			
*	*Rattus rattus*	Black rat			
	Tachyglossus aculeatus	Short-beaked echidna			NT
	Trichosurus vulpecula	Common brushtail possum		R	RA
*	*Vulpes vulpes*	Fox			

Reptiles and Amphibians

Species	Common Name	AUS	SA	AMLR
Crinia signifera	Common froglet			
Hemiergis decresiensis	Three-toed earless skink			
Lampropholis guichenoti	Garden skink			
Limnodynastes dmerili	Bull frog			
Tiliqua rugosa	Sleepy lizard			

Conservation Status: AUS= *Environment Protection and Biodiversity Conservation Act* (EPBC) 1999,
SA= Schedules of the *National Parks and Wildlife Act* (NPW) 1972,
AMLR (Adelaide & Mount Ranges NRM Region) = Gillam, S. and Urban, R. (2014) Regional Species Conservation Assessment Project, Phase 1 Report: Regional Species Status Assessments, Adelaide and Mount Lofty Ranges NRM Region. Department of Environment, Water and Natural Resources, South Australia.

EPBC Status Codes: EX = extinct; CR = critically endangered; EN = endangered; VU = vulnerable
NPW Status Codes: X = extinct, E = endangered; V = vulnerable, R = rare.
MLR Regional Status Codes: RE = regionally extinct; CR = critically endangered; EN = endangered; VU = vulnerable; RA = rare; NT = near threatened; LC = least concern; DD = data deficient, NE = Not Evaluated.

APPENDIX 3 LAND TENURE HISTORY

Kalamunda NFR

TENURE	LESSEE/OWNER	TERM
Section 90		
Land Grant 26/128 granted to:	William Heggaton	18/12/1861 – 1/8/1866
Transferred to (Certificate of Title 88/103)	Richard Westlake	2/8/1866 – 28/5/1883
Transferred to (Certificate of Title 422/52)	Charles Morse and Robert Webb	29/5/1883 - 26/7/1901
Transferred to:	George Putland	10/10/1902 – 30/9/1945
Transferred to:	Clive Bonython and Charles Stewart	21/6/1946 – 19/7/1948
Transferred to:	Edith Bonython, Ada Bonython and Clive Bonython	20/7/1948 – 20/4/1954
	Edith Bonython's share transferred to John Bonython	21/4/1954 – 7/3/1965
Certificate of Title 3658/49 transferred to the Crown		18/3/1971
Transferred to Woods & Forest as Forest Reserve		In Gazette 27/1/1972 & 29/5/1975
Section 101		
Land Grant 26/131 granted to:	James Hardman	18/12/1861 – 23/1/1877
Transferred to:	Joseph and Catherine Howard	24/1/1877 – 14/5/1883
Transferred to:	Charles Morse and Robert Webb	29/5/1883
As for Section 90		
Section 109 & 107		
Lease 1625 issued to:	Frederick Graham	1/10/1882
Transferred to:	Charles Morse	1887 - 1897
Right to purchase lease 8730. Land Grant 1727/65 over Sections 107, 108 & 109	George Putland	6/12/1902 21/12/1939
As for Section 90		

Springs Road NFR

TENURE	LESSEE/OWNER	TERM
Section 1636		
Land Grant issued	Edward Stephens	21/7/1854
Purchased as Certificate of Title 196/137 and transferred to:	James Fleming	24/7/1873
Transferred to:	William Sells	22/4/1879 – 30/10/1900
Transferred to:	Hugo Cave	30/9/1908
Transferred to the Crown		1/4/1912
Transferred to Woods & Forest as Forest Reserve		In Gazette 29/5/1975

Congeratinga NFR

TENURE	LESSEE/OWNER	TERM
Section 304 (*formerly Section 224 and part Section 225*)		
Miscellaneous Lease 787	Louis H. Giles	1/10/1883 – 6/10/1886
Transferred and cancelled	William B. Sells	7/10/1886
Miscellaneous Lease 3419	William B. Sells	1/1/1887
Miscellaneous Lease 3419	Transferred Sec. 224 to Frederick A. Sells	1903
Miscellaneous Lease 3419A	Transferred Sec. 225 to Miles F. de Grave Sells	1903
Perpetual Lease 8234	Miles F. de Grave Sells	1/1/1904 – 10/11/1908
Perpetual Lease 8236	Frederick A. Sells	1/1/1904 – 10/11/1908
Both Leases transferred to:	Hugo C. Cave	11/11/1908
Purchased by:	Woods and Forests Department	1911
Section 304 (*formerly Section 1643 and part Section 1644*)		
Granted to:	Richard White	19/1/1854 – 3/8/1855
Transferred to:	Alfred Cleve and George Main	4/8/1855 – 29/4/1864
Transferred to:	George Main	30/4/1864
Leased (with a Right to Purchase):	George Hatcher	May 1864 – 26/10/1875
Certificate of Title 214/244	John Fleming	27/10/1875 – 21/4/1879
	William B. Sells	22/4/1879 – 29/9/1908
	Hugo C. Cave	30/9/1908 – 31/3/1912
Transferred to the Crown:		1/4/1912

REFERENCES & FURTHER READING

Adamson, R.S. and Osborn, T.G.B. 1924, The ecology of the *Eucalyptus* forests of the Mount Lofty Ranges (Adelaide District), South Australia, *Transactions of the Royal Society of South Australia*, 48, 87-144.

Adelaide and Mount Lofty Ranges Natural Resources Management Board 2008, 'Adelaide and Mount Lofty Ranges Natural Resources Management Plan. Volume A - State of the Region Report.' Adelaide and Mount Lofty Ranges Natural Resources Management Board, South Australia.

Adelaide and Mount Lofty Ranges Natural Resources Management Board 2014, 'Adelaide and Mount Lofty Ranges Natural Resources Management Plan. Volume 1 - Part 1. Strategic Plan 2014-15 to 2023-24.' Adelaide and Mount Lofty Ranges Natural Resources Management Board, South Australia.

Armstrong D., Croft S., and Foulkes J. (Eds) 2003, 'A Biological Survey of the Southern Mount Lofty Ranges, South Australia, 2000-2001.' Department for Environment and Heritage: South Australia.

Blackwood, A. & Collard, S. 2014 unpub, Trends in Woodland Bird Populations at ForestrySA sites in the Mount Lofty Ranges, report prepared by Nature Conservation Society of South Australia.

Beckman, G.G. 1964, *The Soil Associations of the Mt. Crawford Forest Reserve*, CSIRO Division of Soils, Divisional Report 4/64, Adelaide.

Blackburn, G. 1958, *Soil Mapping in the Mt. Crawford Forest Reserve*, South Australia, CSIRO Division of Soils,Technical Memo. 3/58.

Bureau of Meteorology website, http://www.bom.gov.au

Commonwealth of Australia 2014*, Threat abatement plan for disease in natural ecosystems caused by Phytophthora cinnamomi*, Department of the Environment, 2014

DEH 2007 'No Species Loss: A Nature Conservation Strategy for South Australia 2007-2017.' Department for Environment and Heritage, Adelaide.

Department for Environment and Heritage *Electronic Flora of South Australi.* Available http://www.flora.sa.gov.au

Department for Environment and Heritage 2008, 'Adelaide and Mount Lofty Ranges Threatened Species Profile, *Phyllanthus striaticaulis*', Biodiversity Conservation Unit, Adelaide Region.

Department for Environment and Heritage 2008, 'Adelaide and Mount Lofty Ranges Threatened Species Profile, *Veronica derwentiana* ssp. *homalodonta'* , Biodiversity Conservation Unit, Adelaide Region.

DEWNR 2015, *South Para Collaborative Fire Management Plan*. Government of South Australia, through Department of Environment, Water and Natural Resources, Adelaide.

Duffield, R. 2001, *Revegetation for the Mount Lofty Ranges Southern Emu-wren and Fleurieu peninsula Swamps*, Conservation Council of South Australia Inc., Adelaide

Duffiield, R. & Hill, B. 2002, *Swamp Management Guidelines for the Fleurieu Peninsula,* Conservation Council of South Australia Inc., Adelaide.

Environment Australia 2001, *Threat Abatement Plan for Dieback caused by the root-rot fungus Phytophthora cinnamomi,* Commonwealth of Australia, Canberra.

ForestrySA 2014, *Mount Lofty Ranges Forest Reserves Management Plan*, ForestrySA, Mount Gambier, South Australia.

Gillam, S. and Urban, R. (2014) *Regional Species Conservation Assessment Project, Phase 1 Report: Regional Species Status Assessments*, Adelaide and Mount Lofty Ranges NRM Region. Department of Environment, Water and Natural Resources, South Australia.

Gordon, S. and Manser, C., n.d., History of Mount Crawford District.

Government of South Australia (2012) 'Our Place. Our Future. State Natural Resources Management Plan. South Australia 2012 - 2017.' Adelaide

Government of South Australia 2006, *Phytophthora Management Guidelines (2nd edition)*, produced by the Phytophthora Technical Reference Group

Hyde, M. 2002, *Grassy Woodlands within ForestrySA Native Vegetation Blocks*, Mount Lofty Ranges, South Australia, Wallowa Mallee Research Books, SA.

International Union for Conservation of Nature & Natural Resources 2005, online. Available: http://www.iucn.org/places/medoffice/old/definicionEN.htm

Jackson, E.A. 1957, *A survey of the soils and their utilisation in portion of the Mt. Lofty Ranges, South Australia,* CSIRO Division of Soils, Soils and Land Use Service, No. 21.

Lamprey, S.E. and Mitchell, L.H. 1979, *Biogeographical and Landform Survey of Fleurieu Peninsula*, South Australia, Australian Heritage Commission.

Littlely, T. 1998, *A Biological Survey of the Fleurieu Peninsula Swamps*, Nature Conservation Society of South Australia Inc.

Long, K. 2005, Clarifying the current distribution of Southern Brown Bandicoots in the Mount Lofty Ranges, South Australia, (Unpublished), Department for Environment and Heritage, Adelaide Region, South Australia.

Long, M. 1999*, A Biological Inventory of the Mount Lofty Ranges South Australia 1999*, Heritage and Biodiversity Section, Department for Environment, Heritage and Aboriginal Affairs, South Australia.

Muyt, A. 2001 *Bush Invaders of South-East Australia: a guide to the identification and control of environmental weeds found in South-East Australia*, R.G. and F.J. Richardson, Victoria.

Neagle, N. 1995, *An Update of the Conservation Status of the Major Plant Associations of South Australia,* Native Vegetation Conservation Section, Department of Environment and Natural Resources, South Australia.

Nicholson, H. 1996, The activity patterns of insectivorous bats in the Mount Crawford region, Adelaide University student project, Department of Environmental Science and Management, Roseworthy.

Owens H., and Graham A. (Eds) 2009 'Census of South Australian Vertebrates (Fourth edn).' (Department of Environment & Natural Resources: South Australia)

Paton, P. 2011, 'The future of Silver Banksia *Banksia marginata* ' Xanthopus, Vol.29, Part 4, available online at http://www.ncssa.asn.au.

Paton, P. 2005, Little Mt. Crawford Native Forest Reserve Grassy Woodland Management Plan, produced for Forestry SA and the Nature Conservation Society of South Australia.

Phytophthora Technical Group 2003, *Phytophthora Management Guidelines*. Government of South Australia, Adelaide.

Pickett, M. 2003, A Survey of the Fleurieu Peninsula Swamp Threatened Ecological Community (EPBC Act 1999) and Distribution of the Mount Lofty Ranges Southern Emu-wren in Second Valley Forest, produced for ForestrySA.

Prescott, A. 1988, *It's Blue with Five Petals. Wildflowers of the Adelaide Region*, Ann Prescott, South Australia.

Roche, M. 2002, Forestry SA Native Forest Reserves Grassy Woodland Management Manual, produced for Forestry SA and the Nature Conservation Society of South Australia.

Roche, M. 2003, ForestrySA Kalamunda Native Forest Reserve Grassy Woodland Management Plan, produced for the Nature Conservation Society of South Australia.

Robinson, A.C., Casperson, K.D. and Hutchinson, M.N. (Eds.) 2000, *A List of the Vertebrates of South Australia*, Department for Environment and Heritage, South Australia.

Rural Solutions SA 2013, Congeratinga Native Forest Reserve Site Plan (unpub), completed as part of the ForestrySA Second Valley Forest Reserve Biodiversity Fund Project.

Rural Solutions SA 2013, Kalamunda Native Forest Reserve Site Plan (unpub), completed as part of the ForestrySA Second Valley Forest Reserve Biodiversity Fund Project

Rural Solutions SA 2013, Springs Road Native Forest Reserve Site Plan (unpub), completed as part of the ForestrySA Second Valley Forest Reserve Biodiversity Fund Project

Specht, R.L. 1972, *The Vegetation of South Australia* (2nd Edition), Handbooks of the Flora and Fauna of South Australia, Government Printer, Adelaide.

Tindale, N.B. 1974*, Aboriginal Tribes of Australia: Their Terrain, Environmental Controls, Distribution, Limits and Proper Names,* Australian National University Press, Canberra.

Twidale, C.R., Tyler, M.J and Webb, B.P. (Eds.) 1976, *Natural History of the Adelaide Region*, Royal Society of South Australia Inc.

Turner, M.S. 2001, *Conserving Adelaide's Biodiversity: Resources, Urban Forest Biodiversity Program,* Adelaide.

Williams, R.F. 1986, *To Find the Way, Yankalilla and District 1836-1986*, Yankalilla and District Historical Society

Willson A., and Bignall J. 2009 'Regional Recovery Plan for Threatened Species and Ecological Communities of Adelaide and the Mount Lofty Ranges, South Australia.' Department for Environment and Heritage, South Australia.

Wood, J.G. 1937, *The vegetation of South Australia*, Government Printer, Adelaide.