



**Mount Barker
Summit
Conservation
Reserve**

**Management
Plan
2011**



**ECOLOGICAL
EVALUATION**



Contents

| | |
|--|----|
| ACKNOWLEDGEMENTS..... | 3 |
| EXECUTIVE SUMMARY | 4 |
| Purpose of this Plan..... | 4 |
| Reserve Values | 4 |
| Management Objectives..... | 4 |
| Priority Actions..... | 5 |
| 1. RESERVE IDENTIFICATION..... | 6 |
| 2. RESERVE HISTORY..... | 7 |
| 2.1 Aboriginal Heritage | 7 |
| 2.2 Early European History..... | 8 |
| 2.3 Recent European History | 8 |
| 3. RESERVE DESCRIPTION..... | 10 |
| 3.1 Topography / Landform | 10 |
| 3.2 Geology | 10 |
| 3.3 Climate..... | 10 |
| 3.4 Biodiversity | 11 |
| 4. RESERVE MANAGEMENT..... | 37 |
| 4.1 Management Issues and Recommendations | 37 |
| 4.2 Summary of Management Actions (Table 3)..... | 52 |
| 4.3 Documentation, Monitoring and Review of Management Actions..... | 59 |
| 5. References | 60 |
| 6. Appendices & Figures | 62 |
| Appendix 1. Plant species recorded at Mt Barker Summit, compiled from various sources | |
| Appendix 2. Fauna records | |
| Appendix 3. Summary Scoresheets for vegetation associations identified during the 2011 survey. | |
| Appendix 4. Extract from 'Geological Monuments in South Australia', Part 2 (S. Toteff and E.M. McBriar, eds. (1979)) | |
| Figure 1. Mount Barker Summit Conservation Reserve Topography, Cadastre, Trails | |
| Figure 2. Mount Barker Summit Conservation Reserve Vegetation Associations | |
| Figure 3. Mount Barker Summit Conservation Reserve Weeds & Plants of Conservation Significance | |

ACKNOWLEDGEMENTS

Thanks go to Dr Caroline Crawford for the production of the original Management Plan for the Summit Reserve (on which this plan is based) and for her advice. Ben McCallum helped in the field, assisted with plant identification and took the majority of photographs, including the cover photos. Graham Carpenter and Rosemary Taplin provided expert advice on birds and plants. Bea Rogers and Rob Wallace gave invaluable guidance with respect to content and formatting from a Department of Environment and Natural Resources perspective, and Eva Squire provided administrative assistance. A very big thank you to Angela Cullen and her Bush For Life Team who have spent many hours at the Summit, have contributed much knowledge and have made substantial improvements in the condition of the vegetation.

Tanya Milne

EAC – Ecological Evaluation Pty Ltd

This report can be cited as “Mount Barker Summit Conservation Reserve Management Plan 2011” prepared for the District Council of Mount Barker. T. Milne (2011), EAC – Ecological Evaluation Pty Ltd.

EXECUTIVE SUMMARY

Purpose of this Plan

This plan has been produced to assist the District Council of Mount Barker in the definition and prioritisation of general actions required to manage the Mount Barker Summit Conservation Reserve. **As a part of the annual reporting and planning process for offset areas (refer below), the District Council of Mount Barker will be expected to provide the Native Vegetation Council with a list of more specific actions for each upcoming year. This Management Plan will assist in the development and implementation of these more specific actions, the timing of which will be dependent on annual budgets, funding availability, volunteer capacity, success of previous years' works and other factors.**

Reserve Values

The Mount Barker Summit Conservation Reserve is an area of Crown land, under part care and control of the District Council of Mount Barker. The reserve is located east of the Mount Barker township in the Mount Lofty Ranges of South Australia. The summit (517m) is a major geographical and biological feature that is also valued for its Aboriginal and European heritage.

The reserve provides facilities for passive recreation, tourism and education.

In recognition of its high conservation value, including a significant plant species diversity and the presence of flora and fauna species of conservation significance, Mount Barker Council is looking to place the reserve under Heritage Agreement with the Minister for Environment and Conservation in the near future. The reserve has also been approved as a "Credit Bank" by the Native Vegetation Council (subject to conditions including implementation and review of this Management Plan) for Council to utilise as an offset for future native vegetation clearance required for various developments.

Management Objectives

1. The long term conservation of the indigenous flora and fauna of the Mount Barker Summit Conservation Reserve.
2. The recognition and conservation of the historical significance, both Aboriginal and European, of the Mount Barker Summit.
3. The promotion of the recreational and educational values of Mount Barker Summit.

Priority Actions

- ❖ Construction of sign at main entrance gate.
- ❖ Upgrade and maintenance of picnic area including weed control.
- ❖ Continued control of Freesia, Soursob & Perennial Veldt Grass in revegetation area south of tower complex.
- ❖ Continued control of Cotton Bush, South African Daisy & Pusssytail Grass in Trig Point area.
- ❖ Formalisation of trail between carpark and SL/Link Trail to minimise risk of visitors walking on road.
- ❖ Maintenance of vehicle tracks (firetracks) and gates, incorporating 'best practice' training for Council staff to minimise effects on native vegetation.
- ❖ Addressing of erosion/deposition issues along Access Track.
- ❖ Support of Bush For Life plans and works.
- ❖ Eradication of small outlying populations/plants of Bridal Creeper and Olive as mapped, and monitoring for regrowth.
- ❖ Management of Gorse regrowth.
- ❖ Management of population of Bridal Creeper and Gorse in NW corner of reserve.
- ❖ Management of African Weed-orchid population near the junction of the Rotary Loop/Link Trail; commencement of works on second African Weed-orchid population, monitoring of picnic area for regrowth.
- ❖ Continued liaison with neighbouring landholders in relation to issues such as weed control.
- ❖ Purchase of surrounding land if available and feasible.
- ❖ Monitoring of vegetation condition, including regeneration of Manna Gum and Silver Banksia and presence of *Phytophthora*; re-mapping of weeds in 3-5 years.

1. RESERVE IDENTIFICATION

| | |
|----------------------------------|---|
| Reserve name | Mount Barker Summit Conservation Reserve |
| Owner | Crown/District Council of Mount Barker |
| Local Government Area | District Council of Mount Barker, Wistow Ward |
| Environmental Association | Scotts Hill Environmental Association (3.2.8); Hahndorf Environmental Association (3.2.16) (Laut et al, 1977) |
| NRM Region | SA Murray-Darling Basin |
| Parcel details | Hundred of Macclesfield Sections 70, 142, 143, 144 Hundred of Kanmantoo Sections 1, 54, 55, 58. D46065 Q123 & Q122 (Refer to Figure 1) |
| Location | Summit Road. 11km E of Mount Barker township; 4.5km S of Nairne township. |
| Size | 46.2 hectares |

2. RESERVE HISTORY

2.1 Aboriginal Heritage

Early European settlers in the Mount Barker district recorded the presence of the “Mount Barker Tribe” of Aborigines (Draper, 1985; Schmidt, 1983). These people are believed to have belonged to the Peramangk people whose land extended along the eastern side of the Mount Lofty Ranges; from Myponga north to Gawler and Angaston, east to Wright Hill, Strathalbyn, Kanmantoo and along the eastern scarp of the range to near Towitta (Draper, 1985).

As the agricultural development of the district advanced, many of the Aboriginal inhabitants were displaced from the area or succumbed to diseases introduced by the Europeans. There exists very little documentation of the “Mount Barker Tribe” beyond the 1850’s (Draper, 1985). It is believed that the survivors moved northwards to where European settlement was proceeding less rapidly, or sought refuge with the Aboriginal people of the lower Murray near Point McLeay or with the Kurna on the Adelaide Plains (Draper, 1985).

Likewise, very little of the Peramangk language has been recorded. Local place names which have survived are Kuitpo to the west, Tungkillo to the east (Draper, 1985) and Yaktanga for the Summit itself. A second Aboriginal place name for Mount Barker Summit, Wommamukurta meaning “mountain on the plain”, is from the Kurna people (Draper, 1985).

In 1984, the construction of a communications tower on Mount Barker Summit raised community concern that Aboriginal heritage values of the site would be compromised. In response, the South Australian Public Buildings Department commissioned an assessment of the significance of Aboriginal heritage associated with Mount Barker Summit. A detailed study by Draper (1985) involved two major aspects:

- (i) documentation of available ethnological evidence concerning Aboriginal utilisation of the Mount Barker area and, in particular, of the mountain itself and
- (ii) an archaeological survey of the Mount in order to locate, identify and record the material remains of Aboriginal utilisation.

From an extensive literature review, Draper (1985) suggests that the several hundred Aborigines recorded camped along Mount Barker Creek and out towards the Summit by the Mount Barker Springs (Schmidt, 1983) were part of an inter-tribal gathering. Mount Barker Summit is a significant geographical feature providing a landmark and suitable vantage point. The nearby Mount Barker Creek would have provided sufficient water supply for large gatherings of people, and the northern section of the Summit provided a source of ochre pigments for ceremonial decoration (Draper, 1985).

While Draper was unable to locate any direct historical references of the significance of Mount Barker Summit to the Peramangk people or of the activities they may have conducted there, his archaeological survey did identify several Aboriginal heritage sites including several small rock shelters and debris from the manufacture of stone tools. This was despite modifications to the Summit

environs, caused by fire (including major fires in 1934 and 1955) and importation of rock material for pathways and landfill.

Draper (1985) concluded that Mount Barker Summit should be regarded as a significant site of Aboriginal heritage for the following reasons:

- scattered, task-specific archaeological loci such as “look-outs” are just as valid as a scientific and heritage resource as any other kind of site;
- no Peramangk archaeological sites of any kind have been scientifically excavated to (his) knowledge – and very little detailed information is known about these people from an archaeological perspective;
- very little is known about this functional category of archaeological site in Australia generally.

2.2 Early European History

The first recorded European sighting of Mount Barker was made by Captain Charles Sturt in 1830 when, from Lake Alexandrina, he misidentified the double-peaked mountain as Mount Lofty. This mistake was rectified by Captain Collett Barker during a subsequent survey of the district in 1831. Sturt renamed the mountain in honour of Captain Collett Barker who was killed by Aborigines while exploring near the mouth of the River Murray later that same year (Schmidt, 1983).

Captain Sturt reported favourably on the agricultural potential of the district but it was not until late in 1837 that any further exploration was undertaken. A party comprising John Morphett, John Barton Hack, Samuel Stephens, John Wade and local bushman Tom Davies, first climbed the Summit while investigating the district. The group was most impressed by the rich soils and luxuriant native pastures of the surrounding undulating hills and plains (Schmidt, 1983).

A second party comprising Robert Cock, Willam Finlayson, A. Wyatt and G. Barton, explored the Onkaparinga Valley between Mount Lofty and Mount Barker during December 1837. They were similarly impressed with the agricultural potential and natural beauty of the terrain recording Kangaroo grass growing chest high and large Blue Gums thriving on rich soils. They climbed Mount Barker Summit on 27th December, 1837.

The First Special Survey of the Mount Barker District was opened to prospective buyers in March, 1840 (Schmidt, 1983). The Summit was an important landmark for the developing district; the lower slopes were cleared as the surrounding rich agricultural land was developed for grazing and crop production.

2.3 Recent European History

As part of his study into Aboriginal heritage of Mount Barker, Draper (1985) researched modifications to its natural environment since European settlement. He recorded a range of activities including:

- a celebratory bonfire during the Royal visit of Prince Albert in 1867
- artillery target practice, 1900-1910

- survey vantage point involving the establishment of a trigonometric reference point and tree-logging to maintain views
- military observation post during World War II involving tree-logging
- military training site. The area south of the car park was used for the exercises; the remains of stone walls constructed at the heads of some gullies are still evident. Stone walls were also constructed along the spine of the mountain which was used as an observation area. The top car park (now picnic area) was used as a communications area; vehicles, personnel and camouflaged equipment were dispersed over the area surrounding the main car park. It is estimated that perhaps 2000 military personnel at a time were involved in some of these exercises. The larger scale exercises incorporating the ridge top of the Summit ceased approximately 1955, those in the southern area ceased approximately 1980 (Draper, 1985).

The northern end of Mount Barker was owned by two generations of the Fiora Family (Draper, 1985). The area was worked by Emerald Quarry Industries Pty Ltd for the production of quartzite concrete aggregate and road metal. Emerald Quarry was purchased by the Highways Department in 1973 to provide an improved road alignment and rock surfacing material (Department of Road Transport, 1992). During the construction of the South Eastern Freeway, earth and rocks from nearby road cuttings were deposited in a gully on the lower NW slopes of the Summit (Draper, 1985; Gilbert, 1997). A number of tracks were developed within the reserve and along the northern boundary during the mid 1970's, presumably associated with this deposition of excess rockfill (refer to Appendix 4).

Three major wildfires have been recorded for Mount Barker Summit; 1934 (Draper, 1985), 1955 (Black Sunday) when apparently all of the Summit was burnt (Gilbert, 1997) and in the 1970s when sections of the western slopes (possibly just the SW section?) were burnt. A small fire in 1993 SE of the carpark (lit by vandals) favoured the regeneration of *Acacia paradoxa* (Gilbert, 1997). A one-in-twenty-year storm event in October 1997 uprooted numerous trees.

In 1966 the District Council of Mount Barker established a directional cairn on the peak of the Summit, just north of the trigonometric survey point. In 1969 the Mount Barker Rotary Club developed the main car park, the upper car park (now picnic area), and walking trails (Trig Point Trail and Rotary Loop Trail). These developments, to enhance the use of the reserve for recreation and tourism, are commemorated by a plaque sited at the commencement of the Loop Trail on the eastern side of the car park.

The police communications tower, located in the carpark, was completed in 1985, with extensions since that time. The tower was originally planned to be located at the peak of the Summit, but the local community believed that this would compromise both the Aboriginal heritage values and the aesthetic values of the Summit.

Aerial photography highlights a marked decrease in vegetation cover on the most southern sections of the Summit and adjacent property and on the lower eastern slopes between 1949 and 1995 (Crawford, 1997). This was presumably clearance for grazing. The 1973 photo shows that a small area in the NW corner was also cleared (possibly when fill was deposited during development of the SE Freeway) and accessed by a track along the western boundary. The 1963 photo suggests that grazing is occurring in the southern section, and that the vegetation in the southern and SE sections (this includes the current Kangaroo Thorn (*Acacia paradoxa*) patch) is less dense. Further observations from historical aerial photography relating to vegetation clearance and infrastructure are listed in Crawford (1997).

In 1995, with the assistance of a \$28,000 State Government open space grant, the District Council of Mount Barker purchased an additional 15.4ha on the south eastern face of the Summit (Section 115, Hd Kanmantoo). Grazing reportedly had ceased on the most southerly section of the addition in the mid 1980's; grazing then ceased on the section adjacent to the Summit Reserve Access Road during 1997.

3. RESERVE DESCRIPTION

3.1 Topography / Landform

Mount Barker Summit rises steeply from the surrounding low hills to an altitude of 516.6 metres (1695 feet) above sea level. The Summit is located within the Scotts Hill Environmental Association (3.2.8) of the Mount Lofty Block (Laut et al, 1977), which is characterised by steep strike ridges on metasediments. The reserve encompasses most of the long north-south ridge of the mountain. To the south of the reserve the ridge line extends to link Little Mount/Twin Peak (480 metres above sea level) on the adjoining property to the south west. The ridge line falls away abruptly to both the west (to 405 metres at the entrance from Williams Road) and the east (405 metres on the lower slopes of the eastern boundary).

3.2 Geology

The north-south trending ridge which forms Mount Barker Summit has resulted from differential weathering between the hard Mount Barker Quartzite and the adjacent, less resistant, phyllites and grey wackes. The Mount Barker Quartzite is one of the southernmost equivalents of the extensive ABC Quartzite which makes up a large proportion of the peaks and ridges of the Flinders Ranges.

On the eastern side of the mountain there is a north-south fault line known as the Nairne Fault, marking the boundary between the Lower Cambrian Kanmantoo Group to the east and the Upper Precambrian Marino Group to the west. The Nairne Fault has been clearly exposed within the adjacent Emerald Quarry. It is the only known exposure of the fault and is the only locality other than the south coast of the Fleurieu Peninsula where the Kanmantoo Group and older rocks are seen in actual contact. The exposure within Emerald Quarry has been recorded as a geological monument (Toteff and McBriar, 1979 – refer to Appendix 4.)

3.3 Climate

The Mount Barker District experiences cool wet winters and hot, mostly dry summers. The mean annual rainfall is 764.6 millimetres (Bureau of Meteorology website); the mean monthly temperatures range from max. 27.0° min. 12.0° in January to max. 12.9° min. 4.4° in July (Central Hills Soil Conservation Board, 1991).

3.4 Biodiversity

Vegetation Associations

Mount Barker Summit lies close to the boundary which divides the Hahndorf Environmental Association (3.2.16) and the Scotts Hill Environmental Association (3.2.8) (Laut et al 1977). The remnant vegetation of the reserve contains many species representative of the higher rainfall Hahndorf Association as well as many representative of the low rainfall mallee vegetation typical of the Scotts Hill environment.

As a whole, the reserve could be described¹ as a *Eucalyptus viminalis* ssp. *viminalis* (Manna Gum), *E. viminalis* ssp. *cygnetensis* (Rough-barked Manna Gum), *E. leucoxylon* ssp. *leucoxylon* (South Australian Blue Gum) +/- *E. camaldulensis* var. *camaldulensis* (River Red Gum) Open Woodland to Very Open Woodland with small areas of *Allocasuarina verticillata* (Drooping Sheoak) Woodland.

A subcanopy layer is present in most of the Eucalypt woodland areas in the form of *A. verticillata* (Drooping Sheoak). The understorey varies from a dense shrub layer characterised by *Acacia pycnantha* (Golden Wattle), *A. paradoxa* (Kangaroo Thorn), *Correa glabra* var. *turnbullii* (Rock Correa) and/or *Dodonaea viscosa* ssp. *spatulata* (Sticky Hopbush) to a very sparse shrub component of mainly *A. pycnantha* and/or *Olearia ramulosa*. The introduced grass *Pentstemonis pallida* (Pussytail) dominates the groundcover throughout the reserve, but also present are scattered individuals and patches of native grass (e.g. *Themeda triandra* (Kangaroo Grass), *Austrodanthonia racemosa* var. *racemosa* (Slender Wallaby Grass) and *Austrostipa setacea* (Corkscrew Speargrass)). Additional groundcover dominants, some seasonal, are *Cheilanthes austrotenuifolia* (Rock Fern), *Gonocarpus elatus* (Hills Raspwort), *Hibbertia crinita* (Guinea-flower), *Astroloma humifusum* (Native Cranberry), *Lomandra densiflora* (Soft Tussock Mat Rush), and *Caesia calliantha* (Blue-grass Lily).

For the purposes of Biodiversity Assessment and scoring, the reserve was divided at a finer scale into seven Vegetation Associations (refer to Figure 2), with a “benchmark” Vegetation Community Type identified for each². Summary scores for Vegetation Condition, Conservation value and Landscape Context for each of these Vegetation Associations, along with identification of their benchmark Vegetation Community Types, are presented in Table 1. Full descriptions of the associations are given in the pages following, with scores for each biodiversity attribute assessed using the BushRAT³ method (refer to “Overall Biodiversity Value” below) in Appendix 3.

Overall Biodiversity Value

The methodology by which the author undertook assessments/calculations of Total Biodiversity Score in each recorded vegetation association (and constituent scores Vegetation Condition, Conservation Value and Landscape Context) follows that of the Department of Environment and Natural Resources (DENR) “BushRAT” Rapid Assessment Technique (Hodder and Milne, in prep.), currently being developed for assessment of Heritage Agreement, clearance application and offset, and alleged illegal clearance areas in South Australia. BushRAT has been adapted from the Nature

¹ Note that the Dept of Environment’s Veg.SA mapping layer does not accurately represent the vegetation present at the site either currently or likely historically and so is not included here.

² As per Croft et al. (2005).

³ Native Vegetation & Biodiversity Management Unit.

⁴ For details on this methodology and derivation of scores contact the Native Vegetation and Biodiversity Management Unit, Department of Environment and Natural Resources or DC Mt Barker.

Conservation Society of South Australia's Bushland Condition Monitoring (Croft et al. 2005) which was developed to guide assessment of vegetation condition state-wide. The version of the method used for this project was as at 1/9/2011. Copies of the data sheets will sit with the District Council of Mount Barker and the Native Vegetation and Biodiversity Management Unit (DENR) in the case that Council wishes to rescore the data in line with further development of the method.

In keeping with the BushRAT method, the Vegetation Associations described within the Summit Reserve were found to align with the following two broad Vegetation Community Types, which are further described in Croft (2005):

SMLR2 Forests & Woodlands with an Open Sclerophyll Shrub Understorey.

SMLR 3.2 Box-bark Eucalypt & Small Tree Woodlands with an Open Understorey.

Attributes measured for the seven recorded vegetation associations did not vary significantly across the seven recorded vegetation associations. This is reflected in the similarity of the scores for the three categories "Vegetation Condition", "Conservation Significance" and "Landscape Context" and the Total Biodiversity Scores for each vegetation association (refer to Table 1 below). Vegetation Association 5 scored the highest Total Biodiversity (influenced largely by a high Conservation Significance Score), and Vegetation Association 6 scored the lowest, due primarily to poorer vegetation condition.

Table 1. Summary of Biodiversity Scores

| Vegetation Association | "Benchmark" Vegetation Community Type | Vegetation Condition Score | Conservation Significance Score | Landscape Context Score | Total Biodiversity Score |
|-------------------------------|--|-----------------------------------|--|--------------------------------|---------------------------------|
| 1 | SMLR 2 | 50 | 12 | 9 | 71 |
| 2 | SMLR 2 | 50 | 12 | 9 | 71 |
| 3 | SMLR 3.2 | 53 | 16 | 9 | 78 |
| 4 | SMLR 3.2 | 53 | 12 | 9 | 74 |
| 5 | SMLR 3.2 | 56 | 18 | 9 | 83 |
| 6 | SMLR 3.2 | 47 | 12 | 9 | 68 |
| 7 | SMLR 3.2 | 46 | 14 | 9 | 69 |

Vegetation Condition

Plant species diversity, structural diversity

⁵Approximately 218 indigenous plant species have been recorded from Mt Barker Summit Reserve from 5-6 sources (refer to Appendix 1 for this full list). The current survey recorded 125 indigenous

⁵ It is difficult to cite an exact number when not all identifications are to species level and there have been numerous name changes.

plant species. Plant species diversity exceeded fifty species for every vegetation association except one (for which it was just below fifty).

Despite extensive weed invasion, the reserve still carries a diversity of plant life forms including ferns, climbers and mistletoe, and additional habitat structure and value in the form of fallen logs, leaf litter, rock outcrops and tree hollows.

Vegetation health and recruitment

Crawford (1997) describes significant dieback of Manna Gum within the reserve. Some of these dead trees have fallen, some are still standing. Dieback is still occurring. The BushRAT method includes a score for tree health, but long-dead trees are not included in the dieback figures used (the method measures current condition but notes features that may be indicative of past events without those features contributing to current scores). Crawford states that "this species is struggling with the harsh environmental conditions which, coupled with the clearance and repeated disturbance caused by past activities on the Summit is resulting in significant dieback". *Phytophthora cinnamomi* (Root-rot Fungus) does not appear to be present within the reserve and is not recorded nearby (Biological Databases of SA, 2011⁶). Angela Cullen (pers. comm.) from Bush For Life reports recent dieback in Silver Banksia in Vegetation Association 7. Mistletoe occurs on Blue Gums on the western slopes but is not contributing to dieback. Crawford reports little recruitment of juveniles in 1997. The current survey observed good regeneration of Manna Gum in addition to other tree and shrub species in most areas, although lacking on upper South Eastern slope (refer to Section 4.4).

Weed infestation

Weeds are considered the most significant management issue for the reserve. Sixty-eight weed species have been recorded for the reserve, with 48 recorded during the current survey and 16 of them considered more specifically for management in this plan. Pushtail Grass (*Pentaschistis pallida*) is the most widespread weed and was found in all environments within the reserve including the rockface. Slightly lower densities occurred further down the slopes.

A map showing the extent of weed infestation is included as Figure 3. Vegetation Associations 1, 2 and 6 scored most poorly for weed infestation.

The main areas where works are required are the NW corner (Gorse, Bridal Creeper, African Weed Orchid), upper Southern Link Trail (Cotton Bush), lower eastern slopes (Cotton Bush, African Daisy) and the carpark and picnic areas (Soursob, Perennial Veldt). Two large Gorse infestations in the vicinity of the Link Trail have been controlled in the past and have now been reduced to a small number of seedlings only.

Conservation Value

Remnancy

Remnancy figures for the Hahndorf Environmental Association (3.2.16), the Scott's Hill Environmental Association (3.2.8) (Laut, 1977), and the Hundreds of Kanmantoo and Macclesfield are 8.3%, 10%, 7.3% and 8.8% respectively, i.e. the reserve has extremely high value as a remnant of vegetation in an area that has been extensively cleared.

Vegetation Associations of Conservation Significance

Allocasuarina verticillata Grassy Low Woodland on clay loams of low hills in the district is considered to be a State Vulnerable plant association (DENR, unpubl. and provisional list). This association occurs on parts of both the western and eastern slopes of the reserves (refer to Figure 2) and attracted higher scores under the BushRAT method.

Wildlife Habitat value

The Mount Barker Summit Conservation Reserve is providing potential habitat for many wildlife species due largely to its large size (for the district) and diverse structure. However, the isolation of the reserve from other remnants may affect the ability of certain species to persist. A search of the Biological Databases of SA for the Summit Reserve and immediate surrounds resulted in 184 wildlife species (3764 records)(refer to Appendix 2).

Flora and fauna of Conservation Significance

Twenty-eight plant species recorded for the Mount Barker Summit Reserve have a current conservation rating (refer to Appendix 1). Figure 3 shows locations of a number of these species. Scoring for species of conservation significance under the BushRAT method includes consideration of whether suitable habitat is present for particular species as well as current and past records and observations during the current survey.

State significance

Eucalyptus viminalis ssp. *viminalis* (Manna Gum) and *Deyeuxia densa* (Heath Bent-grass) are considered to be Rare for the state and were recorded during the current survey (NPW Act, 1972). The environment in which the Manna Gum is growing at the Summit Reserve (rock, shallow soil, and in conjunction with the other subspecies of Manna Gum *E. viminalis* ssp. *cygnetensis*) is unusual for this species and represents one of very few sites of this nature.

The reserve has been identified as providing suitable habitat for the following bird species of state conservation significance: Painted Button-quail (*Turnix varia*, rated State Rare), Elegant Parrot (*Neophema elegans*, rated State Rare), Scarlet Robin (*Petroica boodang*, rated State Rare) and Diamond Firetail (*Stagonopleura guttata*, rated State Vulnerable)(G. Carpenter, DENR, pers comm.). The latter two have been recorded in or near the reserve.

The Brown Toadlet (*Pseudophryne bibronii*) and Common Brushtail Possum (*Trichosurus vulpecula*) have also been recorded in or near the reserve. Both are rated State Rare.

Regional Significance

Nineteen plant species of conservation significance⁷ for the Southern Lofty Region were recorded from the site during the current survey (refer to Vegetation Association descriptions). Several other plant species of regional significance (including many orchids) have been recorded during past surveys (refer below and to Appendix 1).

The most significant regional records are one specimen of *Lepidium hyssopifolium* (no common name, rated as regionally Endangered) recorded from the rock face NW of the Trig Point, and one specimen of *Cassinia arcuata* (Drooping Cassinia, rated as regionally Vulnerable) first recorded from the Reserve in 1972, recorded in the 1997 survey and relocated in the current survey. This latter species is favoured by disturbance or fire, hence the lack of recruitment. The photograph below is a current photo of this plant, with seedhead. Recent Gorse control near this plant is apparent and was prescribed in the original Management Plan. Regeneration of Manna Gum and Blue Gum is also occurring in the immediate vicinity of the plant. Pegs were sighted near to the plant, and it is possible

⁷ Current regional ratings from Lang & Kraehenbuehl (1997) supplied by DENR are dated, but are still adopted in this document and those species that possess these ratings highlighted as important ecologically.

that fallen limbs/boughs have been cleared from around the plant as per 1997 recommendations. A new GPS point was taken (310393E 6117503N, datum WGS 84).

Other regionally significant species of note are:

Blanket Fern (*Pleurosorus rutifolius*), rated as Uncommon for the Southern Lofty region - recorded at one (unknown) location during the 1997 survey and one location (on rocks, Vegetation Association 4) in the current survey.

Corkscrew Speargrass (*Austrostipa setacea*, photograph below) and Short-crest Speargrass (*A. curticoma*) – the former represented by several large stands throughout the reserve, the latter by one population in Vegetation Association 6, both considered Uncommon for the Southern Lofty region and both unrecorded for the reserve.



Cassinia arcuata photographs taken July 2011.



Seed from Corkscrew Speargrass (*Austrostipa setacea*) still encased within glumes.

Rock Correa (*Correa glabra* var. *turnbullii*), rated Rare for the Southern Lofty region – this species characterises the understorey of large parts of the reserve and is a well-known feature. It was recorded in six out of seven vegetation associations mapped within the reserve during the current survey.

Downy Bursaria (*Bursaria spinosa* ssp. *lasiophylla*) – considered Rare for the Southern Lofty region. This species occurred along the southern portion of the ridgeline, in Vegetation Association 7. In other parts of the reserve the more common subspecies of *Bursaria* was recorded.

The site is considered to be providing suitable habitat for eight bird species of regional conservation significance (refer to vegetation association descriptions below). While many bird common species were observed (not recorded) during the current survey, a species of note, present on two visits in the same location, was the Boobook Owl (*Ninox novaeseelandiae*).

Landscape Context

No significant stands of vegetation occur within 5 kilometres of the Summit Reserve. However, many of the surrounding properties support a relatively dense scattering of paddock trees, and some of the roadsides linked to the Summit possess remnant vegetation, albeit in poor condition. All recorded vegetation associations received the same score for landscape context.

Vegetation Association 1

Aspect: West to SW-facing slope

Area: 7.6 ha

Proportion of Reserve: 16.5%

Management issues: Gorse – two large infestations have been reduced to scattered individuals as part of a long-term control program. Bridal Creeper – one occurrence. Pussytail Grass – throughout. Erosion – steep sections of Link Trail.



Description

Eucalyptus viminalis ssp. *viminalis* (Manna Gum), *E. viminalis* ssp. *cygnetensis* (Rough-barked Manna Gum) +/- *E. leucoxylon* ssp. *leucoxylon* (South Australian Blue Gum) +/- *E. camaldulensis* var. *camaldulensis* (River Red Gum) Open Woodland over shrubs, herbs, ferns and mixed native/introduced grasses. Benchmark Vegetation Community: SMLR2 Forests & Woodlands with an Open Sclerophyll Shrub Understorey.

Allocasuarina verticillata (Drooping Sheoak) is present as a subcanopy, but is sparse. The dominant shrubs are *Acacia pycnantha* (Golden Wattle) and *A. paradoxa* (Kangaroo Thorn), the latter including some dense patches possibly as a result of a fire event. Groundcover comprises *Hibbertia crinita* (Guinea-flower), *Gonocarpus elatus* (Hills Raspwort), and the introduced *Pentstemonis pallida* (Pussytail), which decreases in cover further down the slope. Indigenous plants represent approximately 70% of the understorey biomass. Some small hollows are present in dead and live trees, significant fallen timber is present. Dieback is in the 26-50% category, but this does not include long-dead trees. In addition to this, many long-dead trees are present (refer to photo above). Significant regeneration is occurring in the form of a large number of individuals of several different tree and shrub species.



Vegetation Association 1.



Dense stand of *Themeda triandra* (Kangaroo Grass).

Plant Species List – Vegetation Association 1

| Species | Common Name | Conservation Status | | |
|---|---------------------------|---------------------|----|----|
| | | AUS | SA | SL |
| <i>Acacia paradoxa</i> | Kangaroo Thorn | | | |
| <i>Acacia pycnantha</i> | Golden Wattle | | | |
| <i>Acacia retinodes</i> | Wirilda | | | |
| <i>Acaena echinata</i> | Sheep's Burr | | | |
| <i>Allocasuarina verticillata</i> | Drooping Sheoak | | | |
| <i>Aristida behriana</i> | Brush Wire-grass | | | U |
| <i>Arthropodium strictum</i> | Common Vanilla-lily | | | |
| <i>Astroloma humifusum</i> (both forms) | Cranberry Heath | | | |
| <i>Austrodanthonia eriantha</i> | Hill Wallaby-grass | | | U |
| <i>Austrodanthonia racemosa</i> var. <i>racemosa</i> | Slender Wallaby-grass | | | |
| <i>Austrostipa hemipogon</i> | Half-beard Spear-grass | | | U |
| <i>Austrostipa mollis</i> | Soft Spear-grass | | | |
| <i>Austrostipa semibarbata</i> | Fibrous Spear-grass | | | |
| <i>Banksia marginata</i> | Silver Banksia | | | |
| <i>Billardiera cymosa</i> | Sweet Apple-berry | | | |
| <i>Burchardia umbellata</i> | Milkmaids | | | |
| <i>Caesia calliantha</i> | Blue Grass-lily | | | |
| <i>Carex breviculmis</i> | Short-stem Sedge | | | |
| <i>Cassinia arcuata</i> | Drooping Cassinia | | | V |
| <i>Cheilanthes austrotenuifolia</i> | Annual Rock-fern | | | |
| <i>Convolvulus</i> sp. | Convolvulus | | | |
| <i>Correa glabra</i> var. <i>turnbullii</i> | Rock Correa | | | R |
| <i>Corybas</i> sp. (likely <i>diemenicus</i>) | Veined Helmet-orchid | | | |
| <i>Cynoglossum suaveolens</i> | Sweet Hound's-tongue | | | U |
| <i>Deyeuxia quadriseta</i> | Reed Bent-grass | | | |
| <i>Dianella brevicaulis</i> | Short-stem Flax-lily | | | |
| <i>Dichondra repens</i> | Kidney Weed | | | |
| <i>Dodonaea viscosa</i> | Sticky Hop-bush | | | |
| <i>Drosera macrantha</i> ssp. <i>planchonii</i> | Climbing Sundew | | | |
| <i>Elymus scaber</i> var. <i>scaber</i> | Native Wheat-grass | | | |
| <i>Eucalyptus camaldulensis</i> var. <i>camaldulensis</i> | River Red Gum | | | |
| <i>Eucalyptus leucoxylon</i> ssp. <i>leucoxylon</i> | South Australian Blue Gum | | | |
| <i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i> | Rough-bark Manna Gum | | | |
| <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> | Manna Gum | | R | R |
| <i>Exocarpos cupressiformis</i> | Native Cherry | | | |
| <i>Galium leptogonium</i> | Bedstraw | | | |
| <i>Geranium solanderi</i> var. <i>solanderi</i> | Austral Geranium | | | |
| <i>Gonocarpus elatus</i> | Hill Raspwort | | | |
| <i>Gonocarpus tetragynus</i> | Small-leaf Raspwort | | | |
| <i>Hibbertia crinita</i> | Guinea-flower | | | |
| <i>Kennedia prostrata</i> | Scarlet Runner | | | |
| <i>Lachnagrostis aemula</i> | Blown-grass | | | |
| <i>Lagenophora huegelii</i> | Coarse Bottle-daisy | | | |
| <i>Lepidosperma curtisiae</i> | Little Sword-sedge | | | |
| <i>Lomandra densiflora</i> | Soft Tussock Mat-rush | | | |
| <i>Lomandra micrantha</i> | Small-flower Mat-rush | | | |
| <i>Lomandra nana</i> | Small Mat-rush | | | |
| <i>Lomandra sororia</i> ? | Sword Mat-rush | | | U |
| <i>Microlaena stipoides</i> var. <i>stipoides</i> | Weeping Rice-grass | | | |
| <i>Olearia ramulosa</i> | Twiggy Daisy-bush | | | |

| Species | Common Name | Conservation Status | | |
|---|--------------------------------------|---------------------|-----------------|-----------------|
| | | AUS | SA | SL |
| Orchidaceae sp. | Orchid Family | | | |
| Oxalis perennans | Native Sorrel | | | |
| Plantago gaudichaudii | Narrow-leaf Plantain | | | U |
| Poa sp. (likely labillardieri var. labillardieri) | Common Tussock-grass | | | |
| Poranthera microphylla | Small Poranthera | | | |
| Scaevola albida | Pale Fanflower | | | |
| Schoenus apogon | Common Bog-rush | | | |
| Senecio picridioides | Purple-leaf Groundsel | | | |
| Senecio spanomerus | Variable Groundsel | | | |
| Senecio quadridentatus | Cotton Groundsel | | | |
| Stackhousia aspericocca | Bushy Candles | | | |
| Thelymitra sp. | Sun-orchid | | | |
| Themeda triandra | Kangaroo Grass | | | |
| Thysanotus patersonii | Twining Fringe-lily | | | |
| Tricoryne elatior | Yellow Rush-lily | | | |
| Wahlenbergia stricta ssp. stricta | Tall Bluebell | | | |
| | | | | |
| Weed Species | Common Name | | Red Alert Weed? | Declared Plant? |
| | | | | |
| *Anthoxanthum odoratum | Sweet Vernal Grass | | | |
| *Arctotheca calendula | Cape Weed | | | |
| *Asparagus asparagoides | Bridal Creeper | | Y | Y |
| *Briza maxima | Large Quaking-grass | | | |
| *Centaurium sp. | Centaury | | | |
| *Crataegus sp. | Hawthorn | | | Y |
| *Cynosurus echinatus | Rough Dog's-tail Grass | | | |
| *Dactylis glomerata | Cocksfoot | | | |
| *Disa bracteata | Monadenia, South African Weed Orchid | | Y | |
| *Ehrharta longiflora | Annual Veldt Grass | | | |
| *Gomphocarpus cancellatus | Broad-leaf Cotton-bush | | | |
| *Holcus lanatus | Yorkshire Fog | | | |
| *Hypochaeris sp. | Cat's Ear | | | |
| *Paspalum sp. | Paspalum | | | |
| *Pentaschistis pallida | Pussy Tail | | Y | |
| *Phalaris sp. | Canary Grass | | Y | |
| *Plantago lanceolata | Ribwort | | | |
| *Senecio pterophorus | African Daisy | | Y | |
| *Solanum nigrum | Black Nightshade | | | |
| *Sonchus oleraceus | Common Sow-thistle | | | |
| *Ulex europaeus | Gorse | | Y | Y |



19
Female Golden Whistler



Plantago gaudichaudii (Narrow-leaf Plantain), rated regionally Uncommon, forming a dense groundcover. This species occurs amongst introduced *Plantago lanceolata* (Ribwort).



Astroloma humifusum (Native Cranberry), shrub and prostrate forms present in reserve.

Vegetation Association 2

Aspect: Ridgetop and steep upper eastern slope

Area: 9.5 ha

Proportion of Reserve: 20.6%

Management Issues: visitor impacts including trail proliferation, Pussytail Grass (throughout).

Description

Allocasuarina verticillata (Drooping Sheoak) Very Open Woodland with emergent *E. viminalis* ssp. *viminalis* (Manna Gum) and *E. viminalis* ssp. *cygnetensis* (Rough-barked Manna Gum) over shrubs, ferns tussocks and introduced grasses. Benchmark Vegetation Community: SMLR2 Forests & Woodlands with an Open Sclerophyll Shrub Understorey.

The top of the ridge is exposed and supports a sparse canopy and shrub layer. Dominant shrubs on the slopes are *Xanthorrhoea quadrangulata* (Rock Grass Tree), *Correa glabra* ssp. *turnbullii* (Rock Correa), *Dodonaea viscosa* ssp. *spatulata* (Sticky Hopbush), *Gonocarpus elatus* (Hills Raspwort), *Lomandra densiflora* (Soft Tussock Mat Rush), *Cheilanthes australis* (Rock Fern), and the introduced *Pentaschistis pallidus* (Pussytail), which is colonising all areas including rock crevices. Other weeds, once prevalent, have been controlled to low levels. The site includes a long expanse of rockface on the western side, as well as scattered rocky outcrops on the eastern side. The shrub layer is dense for most of the area except the very top of the ridge and a large clearing on the slope near to the eastern boundary of the site. Some of the Sheoaks are in poor health, resulting in the tree health score of the site in the 10-25% category. Past dieback is significant but is not included in the current tree health assessment. The site is somewhat disturbed through trampling.



Vegetation just north of the directional cairn



Upper eastern slope

Vegetation Association 2 - Plant Species List

| Species | Common Name | Conservation Status | | |
|---|----------------------------|---------------------|----|----|
| | | AUS | SA | SL |
| <i>Acacia paradoxa</i> | Kangaroo Thorn | | | |
| <i>Acacia pycnantha</i> | Golden Wattle | | | |
| <i>Allocasuarina verticillata</i> | Drooping Sheoak | | | |
| <i>Amphipogon strictus</i> var. <i>setifer</i> | Spreading Grey-beard Grass | | | |
| <i>Arthropodium strictum</i> | Common Vanilla-lily | | | |
| <i>Asplenium flabellifolium</i> | Necklace Fern | | | |
| <i>Astroloma humifusum</i> (both forms) | Cranberry Heath | | | |
| <i>Austrodanthonia geniculata</i> | Knead Wallaby-grass | | | |
| <i>Austrodanthonia racemosa</i> var. <i>racemosa</i> | Slender Wallaby-grass | | | |
| <i>Austrostipa elegantissima</i> | Feather Spear-grass | | | U |
| <i>Austrostipa flavescens</i> | Coast Spear-grass | | | |
| <i>Austrostipa hemipogon</i> ? | Half-beard Spear-grass | | | U |
| <i>Austrostipa mollis</i> | Soft Spear-grass | | | |
| <i>Austrostipa scabra</i> ssp. <i>falcata</i> | Slender Spear-grass | | | |
| <i>Banksia marginata</i> | Silver Banksia | | | |
| <i>Billardiera cymosa</i> ssp. <i>cymosa</i> | Sweet Apple-berry | | | |
| <i>Burchardia umbellata</i> | Milkmaids | | | |
| <i>Bursaria spinosa</i> ssp. <i>spinosa</i> | Sweet Bursaria | | | |
| <i>Caesia calliantha</i> | Blue Grass-lily | | | |
| <i>Caladenia</i> sp. | Spider-orchid | | | |
| <i>Calandrinia</i> sp. | Purslane/Parakeelya | | | |
| <i>Centrolepis aristata</i> | Pointed Centrolepis | | | |
| <i>Centrolepis strigosa</i> ssp. <i>strigosa</i> | Hairy Centrolepis | | | |
| <i>Chamaescilla corymbosa</i> var. <i>corymbosa</i> | Blue Squill | | | |
| <i>Cheilanthes austrotenuifolia</i> | Annual Rock-fern | | | |
| <i>Correa glabra</i> var. <i>turnbullii</i> | Rock Correa | | | R |
| <i>Corybas</i> sp. (likely <i>diemenicus</i>) | Veined Helmet-orchid | | | |
| <i>Dichelachne crinita</i> | Long-hair Plume-grass | | | |
| <i>Diuris</i> sp. | Wallflower Donkey-orchid | | | |
| <i>Dodonaea viscosa</i> ssp. <i>spatulata</i> | Sticky Hop-bush | | | |
| <i>Drosera macrantha</i> ssp. <i>planchonii</i> | Climbing Sundew | | | |
| <i>Drosera whittakeri</i> ssp. <i>whittakeri</i> | Scented Sundew | | | |
| <i>Einadia nutans</i> ssp. <i>nutans</i> | Climbing Saltbush | | | |
| <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> | Manna Gum | | R | R |
| <i>Exocarpos cupressiformis</i> | Native Cherry | | | |
| <i>Galium gaudichaudii</i> | Rough Bedstraw | | | |
| <i>Geranium</i> sp. | Geranium | | | |
| <i>Glycine rubiginosa</i> | Twining Glycine | | | |
| <i>Gonocarpus elatus</i> | Hill Raspwort | | | |
| <i>Gonocarpus tetragynus</i> | Small-leaf Raspwort | | | |
| <i>Hardenbergia violacea</i> | Native Lilac | | | |
| <i>Lepidium pseudohyssopifolium</i> | No Common Name | | | E |
| <i>Lomandra densiflora</i> | Soft Tussock Mat-rush | | | |
| <i>Lomandra nana</i> | Small Mat-rush | | | |
| <i>Lomandra sororia</i> ? | Sword Mat-rush | | | U |
| <i>Muehlenbeckia adpressa</i> | Climbing Lignum | | | |
| <i>Myoporum</i> sp. <i>Petiolatum</i> (R.Taylor 484) | Sticky Boobialla | | | U |
| <i>Olearia ramulosa</i> | Twiggy Daisy-bush | | | |
| <i>Ophioglossum lusitanicum</i> | Austral Adder's-tongue | | | U |
| <i>Poa</i> sp. (likely <i>labillardieri</i> var. <i>labillardieri</i>) | Common Tussock-grass | | | |

| Species | Common Name | Conservation Status | | |
|----------------------------|------------------------|---------------------|-----------------|-----------------|
| | | AUS | SA | SL |
| Pterostylis sp. | Greenhood | | | |
| Schoenus apogon | Common Bog-rush | | | |
| Senecio glomeratus | Swamp Groundsel | | | |
| Senecio spanomerus | Variable Groundsel | | | |
| Thysanotus patersonii | Twining Fringe-lily | | | |
| Wurmbea dioica | Early Nancy | | | |
| Xanthorrhoea quadrangulata | Rock Grass-tree | | | |
| | | | | |
| Weed Species | Common Name | | Red Alert Weed? | Declared Plant? |
| | | | | |
| *Arctotheca calendula | Cape Weed | | | |
| *Asparagus asparagoides | Bridal Creeper | | Y | Y |
| *Avena barbata | Bearded Oat | | | |
| *Brachychiton sp. | | | | |
| *Brassica tournefortii | Wild Turnip | | | |
| *Briza maxima | Large Quaking-grass | | | |
| *Centaurea melitensis | Malta Thistle | | | |
| *Centaurium sp. | Centaury | | | |
| *Cotoneaster sp. | Cotoneaster | | | |
| *Cynosurus echinatus | Rough Dog's-tail Grass | | | |
| *Dactylis glomerata | Cocksfoot | | | |
| *Ehrharta calycina | Perennial Veldt | | Y | |
| *Ehrharta longiflora | Annual Veldt Grass | | | |
| *Freesia cultivar | Freesia | | | |
| *Fumaria capreolata | White-flower Fumitory | | | |
| *Fumaria muralis | Wall Fumitory | | | |
| *Galium sp. (aparine?) | Cleavers | | | |
| *Gomphocarpus cancellatus | Broad-leaf Cotton-bush | | | |
| *Heliotropium europaeum | Common Heliotrope | | | |
| *Hypochaeris sp. | Cat's Ear | | | |
| *Oxalis pes-caprae | Soursob | | Y | Y |
| *Pentaschistis pallida | Pussy Tail | | Y | |
| *Plantago bellardii | Hairy Plantain | | | |
| *Poa annua | Winter Grass | | | |
| *Romulea sp. | Onion-grass | | | |
| *Silybum marianum | Variiegated Thistle | | | |
| *Solanum nigrum | Black Nightshade | | | |
| *Sonchus oleraceus | Common Sow-thistle | | | |

Western slope - rockface



22

Hardenbergia violaceae (Native Lilac)



Upper eastern slope



Vegetation Association 3

Aspect: Lower western slope

Area: 11.9 ha

Proportion of Reserve: 25.8%

Management Issues: Bridal Creeper, Briar, several weed species along western boundary

Description

Allocasuarina verticillata (Drooping Sheoak) Woodland with emergent *Eucalyptus leucoxylon* ssp. *leucoxylon* (South Australian Blue Gum) over dense Sheoak leaf litter and very sparse understorey including shrubs, herbs, ferns and grasses. Benchmark Vegetation Community: SMLR 3.2 Box-bark Eucalypt & Small Tree Woodlands with an Open Understorey.

Scattered shrubs and groundcovers include *Olearia ramulosa* (Twiggy Daisy-bush), *Gonocarpus elatus* (Hills Raspwort) and patches of the seasonal *Caesia calliantha* (Blue-grass Lily), *Calostemma purpureum* (Garland Lily) and *Cheilanthes austrotenuifolia* (Rock Fern). Native grasses are sparse and include the rare *Deyeuxia densa* (Heath Bent Grass). The introduced *Pentaschistis pallidus* (Pussytail Grass) persists despite the dense leaf litter. Dieback is high in Eucalypts and Sheoaks, and there is evidence that this has been a long-standing problem at this site. However, some regeneration is occurring. Indigenous plants represent approximately 60-70% of the understorey biomass. Larger trees contain hollows. Vegetation community considered to be State Vulnerable.



View of site from Summit

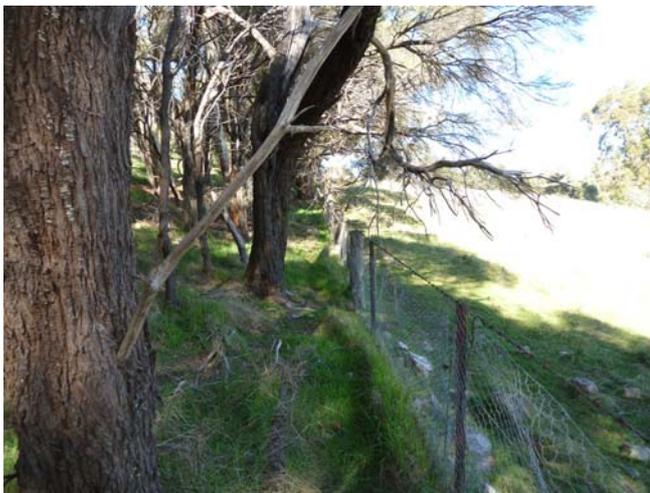


Billardiera versicolor (Yellow-flower Appleberry)

Vegetation Association 3 - Plant Species List

| Species | Common Name | Conservation Status | | |
|---|---|---------------------|----|------------------|
| | | AUS | SA | SL |
| <i>Acacia paradoxa</i> | Kangaroo Thorn | | | |
| <i>Acacia pycnantha</i> | Golden Wattle | | | |
| <i>Acaena echinata</i> | Sheep's Burr | | | |
| <i>Allocasuarina verticillata</i> | Drooping Sheoak | | | |
| <i>Amphipogon strictus</i> var. <i>setifer</i> | Spreading Grey-beard Grass | | | |
| <i>Amyema miquelii</i> | Box Mistletoe | | | |
| <i>Arthropodium fimbriatum</i> | Nodding Vanilla-lily | | | |
| <i>Arthropodium strictum</i> | Common Vanilla-lily | | | |
| <i>Astroloma humifusum</i> | Cranberry Heath | | | |
| <i>Austrodanthonia geniculata</i> | Knead Wallaby-grass | | | |
| <i>Austrodanthonia racemosa</i> var. <i>racemosa</i> | Slender Wallaby-grass | | | |
| <i>Austrostipa curticomata</i> | Short-crest Spear-grass | | | U |
| <i>Austrostipa elegantissima</i> | Feather Spear-grass | | | U |
| <i>Austrostipa flavescens</i> | Coast Spear-grass | | | |
| <i>Austrostipa hemipogon</i> ? or <i>semibarbata</i> | Half-beard Spear-grass ? or Fibrous Spear-grass | | | U (A. hemipogon) |
| <i>Austrostipa mollis</i> | Soft Spear-grass | | | |
| <i>Billardiera cymosa</i> ssp. <i>cymosa</i> | Sweet Apple-berry | | | |
| <i>Billardiera versicolor</i> | Yellow-flower Apple-berry | | | R |
| <i>Bossiaea prostrata</i> | Creeping Bossiaea | | | |
| <i>Burchardia umbellata</i> | Milkmaids | | | |
| <i>Bursaria spinosa</i> ssp. <i>spinosa</i> | Sweet Bursaria | | | |
| <i>Caesia calliantha</i> | Blue Grass-lily | | | |
| <i>Calostemma purpureum</i> | Pink Garland-lily | | | |
| <i>Chamaescilla corymbosa</i> var. <i>corymbosa</i> | Blue Squill | | | |
| <i>Cheilanthes austrotenuifolia</i> | Annual Rock-fern | | | |
| <i>Clematis microphylla</i> var. <i>microphylla</i> | Old Man's Beard | | | |
| <i>Convolvulus</i> sp. | Convolvulus | | | |
| <i>Correa glabra</i> var. <i>turnbullii</i> | Rock Correa | | | R |
| <i>Cynoglossum suaveolens</i> | Sweet Hound's-tongue | | | U |
| <i>Deyeuxia densa</i> | Heath Bent-grass | | R | R |
| <i>Deyeuxia quadriseta</i> | Reed Bent-grass | | | |
| <i>Dianella brevicaulis</i> | Short-stem Flax-lily | | | |
| <i>Dianella revoluta</i> var. <i>revoluta</i> | Black-anther Flax-lily | | | |
| <i>Dichondra repens</i> | Kidney Weed | | | |
| <i>Drosera whittakeri</i> ssp. <i>whittakeri</i> | Scented Sendew | | | |
| <i>Eucalyptus leucoxylon</i> ssp. <i>leucoxylon</i> | South Australian Blue Gum | | | |
| <i>Exocarpos cupressiformis</i> | Native Cherry | | | |
| <i>Galium leptogonium</i> | Bedstraw | | | |
| <i>Gonocarpus elatus</i> | Hill Raspwort | | | |
| <i>Gonocarpus tetragynus</i> | Small-leaf Raspwort | | | |
| <i>Hibbertia crinita</i> | Guniea-flower | | | |
| <i>Kennedia prostrata</i> | Scarlet Runner | | | |
| <i>Lachnagrostis aemula</i> | Blown-grass | | | |
| <i>Lagenophora huegelii</i> | Coarse Bottle-daisy | | | |
| <i>Olearia ramulosa</i> | Twiggy Daisy-bush | | | |
| <i>Poa</i> sp. (likely <i>labillardieri</i> var. <i>labillardieri</i>) | Common Tussock-grass | | | |
| <i>Scaevola albida</i> | Pale Fanflower | | | |
| <i>Schoenus apogon</i> | Common Bog-rush | | | |
| <i>Senecio glomeratus</i> | Swamp Groundsel | | | |
| <i>Senecio picridioides</i> | Purple-leaf Groundsel | | | |

| Species | Common Name | Conservation Status | | |
|------------------------------|------------------------|---------------------|-----------------|-----------------|
| | | AUS | SA | SL |
| Stackhousia aspericocca | Bushy Candles | | | |
| Thelymitra sp. | Sun-orchid | | | |
| Themeda triandra | Kangaroo Grass | | | |
| Xanthorrhoea quadrangulata | Rock Grass-tree | | | |
| Weed Species | Common Name | | Red Alert Weed? | Declared Plant? |
| *Arctotheca calendula | Cape Weed | | | |
| *Asparagus asparagoides | Bridal Creeper | | Y | Y |
| *Briza maxima | Large Quaking-grass | | | |
| *Centaurium sp. | Centaury | | | |
| *Cotoneaster sp. | Cotoneaster | | | |
| *Ehrharta longiflora | Annual Veldt Grass | | | |
| *Fumaria capreolata | White-flower Fumitory | | | |
| *Gomphocarpus cancellatus | Broad-leaf Cotton-bush | | | |
| *Olea europaea ssp. europaea | Olive | | | |
| *Oxalis pes-caprae | Soursob | | Y | Y |
| *Pentstemonis pallida | Pussy Tail | | Y | |
| *Plantago lanceolata | Ribwort | | | |
| *Romulea sp. | Onion-grass | | | |
| *Rosa sp. | Wild Rose/Briar | | | |
| *Senecio pterophorus | African Daisy | | Y | |
| *Silybum marianum | Variegated Thistle | | | |
| *Solanum nigrum | Black Nightshade | | | |
| *Sonchus oleraceus | Common Sow-thistle | | | |
| *Ulex europaeus | Gorse | | Y | Y |



Western fenceline



Patch of *Calostemma purpureum* (Pink Garland Lily)

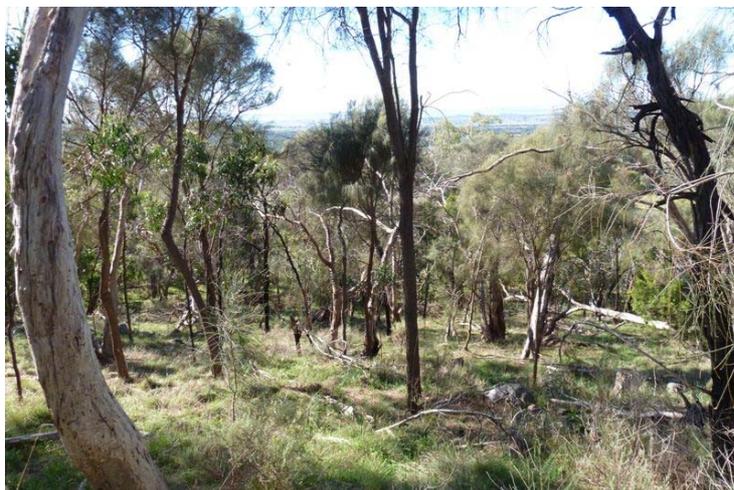
Vegetation Association 4

Aspect: Lower eastern slopes, including rock outcrops

Area: 7 ha

Proportion of reserve: 15.2%

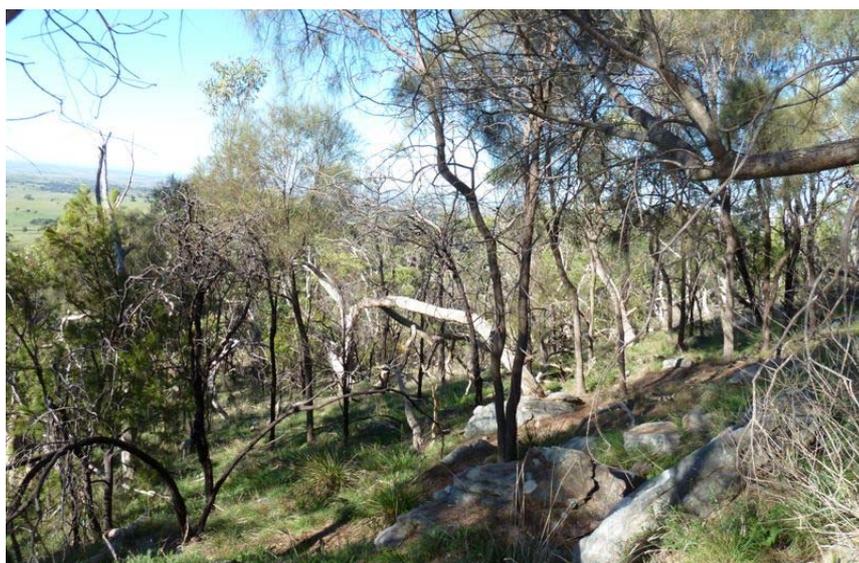
Management Issues: Large numbers of Cotton Bush, one small patch of Bridal Creeper, scattered South African Daisy, fence maintenance.



Description

Eucalyptus viminalis ssp. *viminalis* (Manna Gum), *E. viminalis* ssp. *cygnetensis* (Rough-barked Manna Gum), Very Open Woodland over *Allocasuarina verticillata* (Drooping Sheoak), shrubs, herbs and ferns. Benchmark Vegetation Community: SMLR 3.2 Box-bark Eucalypt & Small Tree Woodlands with an Open Understorey.

The site was probably an Open Woodland before extensive dieback occurred in the Eucalypts and Sheoaks, placing the site in a category of 51-75% dieback in live trees. *A. verticillata* forms a dense subcanopy in some patches, and in other parts of the site there are dense thickets of tall shrubs such as *Acacia paradoxa*. Regeneration of tall shrubs and Eucalypts is high. Groundcover is largely comprised of *Hibbertia crinita* (Guinea-flower), *Gonocarpus elatus* (Hills Raspwort), *Astroloma humifusum* (Native Cranberry), *Cheilanthes austrotenuifolia* (Rock Fern) and the introduced *Pentstemon palustris* (Pussytail Grass), with approximately half the understorey biomass represented by native species. Shrubs dense in patches, less dense where Sheoak dominates. The lower-lying north-eastern corner (possibly more recently grazed) opens out to an area of *Lepidosperma viscidum* (Sticky Sword-sedge) sedges under tall healthy Eucalypts with numerous hollows, but with few shrubs and little structural diversity. The main management issue is Cotton Bush. A small patch of Bridal Creeper also occurs, and some scattered Olives.



Lower eastern slope – typical vegetation structure.

Vegetation Association 4 - Plant Species List

| Species | Common Name | Conservation Status | | |
|---|------------------------|---------------------|----|----|
| | | AUS | SA | SL |
| <i>Acacia paradoxa</i> | Kangaroo Thorn | | | |
| <i>Acacia pycnantha</i> | Golden Wattle | | | |
| <i>Acaena echinata</i> | Sheep's Burr | | | |
| <i>Acianthus pusillus</i> | Mosquito Orchid | | | |
| <i>Allocauarina verticillata</i> | Drooping Sheoak | | | |
| <i>Amyema miquelii</i> | Box Mistletoe | | | |
| <i>Arthropodium strictum</i> | Common Vanilla-lily | | | |
| <i>Asplenium flabellifolium</i> | Necklace Fern | | | |
| <i>Astroloma humifusum</i> both forms | Cranberry Heath | | | |
| <i>Austrodanthonia racemosa</i> var. <i>racemosa</i> | Slender Wallaby-grass | | | |
| <i>Austrostipa hemipogon</i> | Half-beard Spear-grass | | | U |
| <i>Austrostipa mollis</i> | Soft Spear-grass | | | |
| <i>Austrostipa nodosa</i> | Tall Spear-grass | | | |
| <i>Austrostipa semibarbata</i> | Fibrous Spear-grass | | | |
| <i>Billardiera cymosa</i> | Apple berry | | | |
| <i>Bulbine bulbosa</i> | Bulbine-lily | | | |
| <i>Burchardia umbellata</i> | Milkmaids | | | |
| <i>Caesia calliantha</i> | Blue Grass-lily | | | |
| <i>Caladenia</i> sp. | Spider-orchid | | | |
| <i>Carex breviculmis</i> | Short-stem Sedge | | | |
| <i>Cheilanthes austrotenuifolia</i> | Annual Rock-fern | | | |
| <i>Clematis microphylla</i> var. <i>microphylla</i> | Old Man's Beard | | | |
| <i>Convolvulus</i> sp. | Convolvulus | | | |
| <i>Cynoglossum suaveolens</i> | Sweet Hound's-tongue | | | U |
| <i>Dianella brevicaulis</i> | Short-stem Flax-lily | | | |
| <i>Dianella revoluta</i> var. <i>revoluta</i> | Black-anther Flax-lily | | | |
| <i>Dichondra repens</i> | Kidney Weed | | | |
| <i>Diuris</i> sp. | Donkey-orchid | | | |
| <i>Drosera macrantha</i> ssp. <i>planchonii</i> | Climbing Sundew | | | |
| <i>Drosera whittakeri</i> ssp. <i>whittakeri</i> | Scented Sundew | | | |
| <i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i> | Rough-bark Manna Gum | | | |
| <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> | Manna Gum | | R | R |
| <i>Exocarpos cupressiformis</i> | Native Cherry | | | |
| <i>Galium leptogonium</i> | Bedstraw | | | |
| <i>Gonocarpus elatus</i> | Hill Raspwort | | | |
| <i>Hardenbergia violacea</i> | Native Lilac | | | |
| <i>Helichrysum leucopsidium</i> | Satin Everlasting | | | U |
| <i>Hibbertia crinita</i> | Guinea-flower | | | |
| <i>Kennedia prostrata</i> | Scarlet Runner | | | |
| <i>Lepidosperma viscidum</i> | Sticky Sword-sedge | | | |
| <i>Lomandra densiflora</i> | Soft Tussock Mat-rush | | | |
| <i>Lomandra nana</i> | Small Mat-rush | | | |
| <i>Lomandra sororia</i> | Sword Mat-rush | | | U |
| <i>Luzula meridionalis</i> | Common Wood-rush | | | |
| <i>Neurachne alopecuroidea</i> | Fox-tail Mulga-grass | | | |
| <i>Olearia ramulosa</i> | Twiggy Daisy-bush | | | |
| <i>Pleurosorus rutifolius</i> | Blanket Fern | | | U |
| <i>Poa</i> sp. (likely <i>labillardieri</i> var. <i>labillardieri</i>) | Common Tussock-grass | | | |
| <i>Poranthera microphylla</i> | Small Poranthera | | | |
| <i>Pterostylis</i> sp. | Greenhood | | | |

| Species | Common Name | Conservation Status | | |
|---|------------------------|---------------------|-----------------|-----------------|
| | | AUS | SA | SL |
| <i>Scaevola albida</i> | Pale Fanflower | | | |
| <i>Senecio picridioides</i> | Purple-leaf Groundsel | | | |
| <i>Senecio spanomerus</i> | Variable Groundsel | | | |
| <i>Senecio quadridentatus</i> | Cotton Groundsel | | | |
| <i>Thelymitra</i> sp. | Sun-orchid | | | |
| <i>Thysanotus patersonii</i> | Twining Fringe-lily | | | |
| <i>Tricoryne elatior</i> | Yellow Rush-lily | | | |
| <i>Wahlenbergia stricta</i> ssp. <i>stricta</i> | Tall Bluebell | | | |
| <i>Xanthorrhoea quadrangulata</i> | Rock Grass-tree | | | |
| | | | | |
| Weed Species | Common Name | | Red Alert Weed? | Declared Plant? |
| | | | | |
| * <i>Anagallis arvensis</i> | Pimpernel | | | |
| * <i>Arctotheca calendula</i> | Cape Weed | | | |
| * <i>Asparagus asparagoides</i> | Bridal Creeper | | Y | Y |
| * <i>Avena barbata</i> | Bearded Oat | | | |
| * <i>Briza maxima</i> | Large Quaking-grass | | | |
| * <i>Cirsium vulgare</i> | Spear Thistle | | | |
| * <i>Conyza albida</i> | Tall Fleabane | | | |
| * <i>Gomphocarpus cancellatus</i> | Broad-leaf Cotton-bush | | | |
| * <i>Helminthotheca echioides</i> | Ox-tongue | | | |
| * <i>Hypochaeris</i> sp. | Cat's Ear | | | |
| * <i>Lolium</i> sp. | Ryegrass | | | |
| * <i>Lycium ferocissimum</i> | African Boxthorn | | Y | Y |
| * <i>Olea europaea</i> ssp. <i>europaea</i> | Olive | | Y | Y |
| * <i>Pentaschistis pallida</i> | Pussy Tail | | Y | |
| * <i>Phalaris</i> sp. | Canary Grass | | Y | |
| * <i>Plantago lanceolata</i> | Ribwort | | | |
| * <i>Romulea</i> sp. | Onion-grass | | | |
| * <i>Senecio pterophorus</i> | African Daisy | | Y | |
| * <i>Solanum nigrum</i> | Black Nightshade | | | |
| * <i>Sonchus oleraceus</i> | Common Sow-thistle | | | |



Scaevola albida (Fan-flower)



Xanthorrhoea quadrangulata
(Rock Grass-tree)

Vegetation Association 5

Aspect: mid eastern slope

Area: 6 ha

Proportion of reserve: 13%

Management Issues: Pussy-tail Grass

Description

Allocasuarina verticillata (Drooping Sheoak)
Woodland with emergent *E. viminalis* ssp.
cygnetensis (Rough-barked Manna Gum)
and *E. leucoxylo* ssp. *leucoxylo* (South
Australian Blue Gum) over shrubs, tussocks, herbs and ferns.



Understorey consists of sparse shrubs and a groundcover of *Gonocarpus elatus* (Hills Raspwort), *Caesia calliantha* (Blue Grass Lily), *Cheilanthes austrotenuifolia* (Rock Fern), *Chamaescilla corymbosa* (Blue Squill) *Lomandra densiflora* (Soft Tussock Mat rush), *Astroloma humifusum* (Native Cranberry) and large expanses of moss. Canopy is not as dense as the western slope – this is apparent on site and is also visible on aerial photography. There are fewer problem weeds present, and the cover of *Pentstemonis* is lower than at some of the other sites. Current and past dieback is evident, resulting in much fallen timber now being utilised as habitat. Shrubs and trees are regenerating well in the more northern half. There is little regeneration in the southern half, and few remaining live adult Manna Gum. Benchmark Vegetation Community: SMLR 3.2 Box-bark Eucalypt & Small Tree Woodlands with an Open Understorey.



Top photograph 1997: Vegetation Association 5 - Vegetation at GPS Point "MTBGIS01" - 310400E 6117400N No datum recorded,

Bottom photograph 2011: Vegetation Association 5 - Vegetation at same location but new GPS Point 310562E 6117613N Datum WGS84 ; peg still present



Vegetation Association 5 - Plant Species List

| Species | Common Name | Conservation Status | | |
|---|----------------------------|---------------------|----|----|
| | | AUS | SA | SL |
| <i>Acacia paradoxa</i> | Kangaroo Thorn | | | |
| <i>Acacia pycnantha</i> | Golden Wattle | | | |
| <i>Allocasuarina verticillata</i> | Drooping Sheoak | | | |
| <i>Amphipogon strictus</i> var. <i>setifer</i> | Spreading Grey-beard Grass | | | |
| <i>Arthropodium strictum</i> | Common Vanilla-lily | | | |
| <i>Astroloma humifusum</i> | Cranberry Heath | | | |
| <i>Austrostipa elegantissima</i> | Feather Spear-grass | | | U |
| <i>Austrostipa hemipogon</i> | Half-beard Spear-grass | | | U |
| <i>Austrostipa mollis</i> | Soft Spear-grass | | | |
| <i>Austrostipa setacea</i> | Corkscrew Spear-grass | | | U |
| <i>Bulbine bulbosa</i> | Bulbine-lily | | | |
| <i>Burchardia umbellata</i> | Milkmaids | | | |
| <i>Caesia calliantha</i> | Blue Grass-lily | | | |
| <i>Calandrinia</i> sp. | Purslane/Parakeelya | | | |
| <i>Chamaescilla corymbosa</i> var. <i>corymbosa</i> | Blue Squill | | | |
| <i>Cheilanthes austrotenuifolia</i> | Annual Rock-fern | | | |
| <i>Correa glabra</i> var. <i>turnbullii</i> | Rock Correa | | | R |
| <i>Deyeuxia densa</i> | Heath Bent-grass | | R | R |
| <i>Dianella brevicaulis</i> | Short-stem Flax-lily | | | |
| <i>Dianella revoluta</i> var. <i>revoluta</i> | Black-anther Flax-lily | | | |
| <i>Dichelachne</i> sp. | Plume-grass | | | |
| <i>Diuris</i> sp. | Wallflower Donkey-orchid | | | |
| <i>Dodonaea viscosa</i> ssp. <i>spatulata</i> | Sticky Hop-bush | | | |
| <i>Drosera macrantha</i> ssp. <i>planchonii</i> | Climbing Sundew | | | |
| <i>Drosera whittakeri</i> ssp. <i>whittakeri</i> | Scented Sundew | | | |
| <i>Eucalyptus leucoxylon</i> ssp. <i>leucoxylon</i> | South Australian Blue Gum | | | |
| <i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i> | Rough-bark Manna Gum | | | |
| <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> | Manna Gum | | R | R |
| <i>Exocarpos cupressiformis</i> | Native Cherry | | | |
| <i>Gonocarpus elatus</i> | Hill Raspwort | | | |
| <i>Hibbertia crinita</i> | Guniea-flower | | | |
| <i>Hibbertia riparia</i> | Bristly Guinea-flower | | | |
| <i>Hybanthus floribundus</i> ssp. <i>floribundus</i> | Shrub Violet | | | |
| <i>Lagenophora huegelii</i> | Coarse Bottle-daisy | | | |
| <i>Lepidosperma carphoides</i> | Black Rapier-sedge | | | |
| <i>Lomandra densiflora</i> | Soft Tussock Mat-rush | | | |
| <i>Lomandra micrantha</i> | Small-flower Mat-rush | | | |
| <i>Lomandra multiflora</i> ssp. <i>dura</i> | Hard Mat-rush | | | |
| <i>Neurachne alopecuroidea</i> | Fox-tail Mulga-grass | | | |
| <i>Olearia ramulosa</i> | Twiggy Daisy-bush | | | |
| <i>Oxalis perennans</i> | Native Sorrel | | | |
| <i>Poa</i> sp. (likely <i>labillardieri</i> var. <i>labillardieri</i>) | Common Tussock-grass | | | |
| <i>Pterostylis</i> sp. (likely <i>nana</i>) | Dwarf Greenhood | | | |
| <i>Senecio spanomerus</i> | Variable Groundsel | | | |
| <i>Senecio quadridentatus</i> | Cotton Groundsel | | | |
| <i>Senecio glomeratus</i> | Swamp Groundsel | | | |
| <i>Thelymitra</i> sp. | Sun-orchid | | | |
| <i>Trachymene pilosa</i> | Dwarf Trachymene | | | |
| <i>Tricoryne elatior</i> | Yellow Rush-lily | | | |
| <i>Wahlenbergia stricta</i> ssp. <i>stricta</i> | Tall Bluebell | | | |
| <i>Xanthorrhoea quadrangulata</i> | Rock Grass-tree | | | |

| Species | Common Name | Conservation Status | | |
|---------------------------------------|------------------------|---------------------|-----------------|-----------------|
| | | AUS | SA | SL |
| Xanthorrhoea semiplana ssp. semiplana | Yacca | | | |
| | | | | |
| Weed Species | Common Name | | Red Alert Weed? | Declared Plant? |
| *Agapanthus praecox ssp. orientalis | Agapanthus | | | |
| *Anagallis arvensis | Pimpernel | | | |
| *Asparagus asparagoides | Bridal Creeper | | Y | Y |
| *Briza maxima | Large Quaking-grass | | | |
| *Euphorbia peplus | Petty Spurge | | | |
| *Freesia cultivar | Freesia | | | |
| *Gomphocarpus cancellatus | Broad-leaf Cotton-bush | | | |
| *Oxalis pes-caprae | Soursob | | Y | Y |
| *Pentaschistis pallida | Pussy Tail | | Y | |
| *Plantago lanceolata | Ribwort | | | |
| *Romulea sp. | Onion-grass | | | |
| *Senecio pterophorus | African Daisy | | Y | |
| *Silybum marianum | Variegated Thistle | | | |
| *Solanum nigrum | Black Nightshade | | | |

Vegetation Association 6

Aspect: lower western slope in NW corner of reserve

Area: 1.5 ha

Proportion of reserve: 3.2%

Management Issues: Weed issues along northern and western boundary, in particular Gorse, African Weed Orchid and Bridal Creeper

Description

E. leucoxylon ssp. *leucoxylon* (SA Blue Gum) Very Open Woodland, with +/- *E. viminalis* ssp. *viminalis* (Manna Gum) and *E. camaldulensis* var. *camaldulensis* (River Red Gum). Benchmark Vegetation Community: SMLR 3.2 Box-bark Eucalypt & Small Tree Woodlands with an Open Understorey.

Understorey is sparse *Allocasuarina verticillata* (Drooping Sheoak), herbs and mixed native/introduced grasses, including *Caesia calliantha* (Blue Grass Lily), *Danthonia racemosa* (Slender Wallaby Grass), *Microlaena stipioides* (Weeping Rice Grass), and the weedy grasses *Ehrharta longiflora* (Annual Veldt Grass), *Briza maxima* (Quaking Grass) and *Pentaschistis pallida* (Pussytail Grass). Tree health is poor, and many fallen trees are present. The area was apparently cleared/disturbed in the past in association with works involving the adjacent quarry. Native understorey biomass is in the 31-40% category, but regeneration of shrubs (and trees) is occurring. Weeds are highest along the disturbed boundaries.



View across most of the small site



E. viminalis ssp. *cygnetensis* (Rough-bark Manna Gum) and *E. camaldulensis* var. *camaldulensis* (River Red Gum) in NW corner



View south along Quarry Track that runs along the western boundary.

Vegetation Association 6 - Plant Species List

| Species | Common Name | Conservation Status | | |
|---|---|---------------------|----|----|
| | | AUS | SA | SL |
| <i>Acacia pycnantha</i> | Golden Wattle | | | |
| <i>Acaena echinata</i> | Sheep's Burr | | | |
| <i>Acaena novae-zelandiae</i> | Biddy-biddy | | | |
| <i>Allocasuarina verticillata</i> | Drooping Sheoak | | | |
| <i>Amyema miquelii</i> | Box Mistletoe | | | |
| <i>Arthropodium strictum</i> | Common Vanilla-lily | | | |
| <i>Astroloma humifusum</i> | Cranberry Heath | | | |
| <i>Austrodanthonia pilosa</i> | Velvet Wallaby-grass | | | |
| <i>Austrodanthonia racemosa</i> var. <i>racemosa</i> | Slender Wallaby-grass | | | |
| <i>Austrostipa curticomma</i> | Short-crest Spear-grass | | | U |
| <i>Austrostipa elegantissima</i> | Feather Spear-grass | | | U |
| <i>Austrostipa flavescens</i> | Coast Spear-grass | | | |
| <i>Austrostipa hemipogon</i> ? or <i>A. semibarbata</i> | Half-beard Spear-grass ? or Fibrous Spear-grass | | | U |
| <i>Austrostipa mollis</i> ? | Soft Spear-grass | | | |
| <i>Austrostipa nodosa</i> | Tall Spear-grass | | | |
| <i>Austrostipa setacea</i> | Corkscrew Spear-grass | | | U |
| <i>Billardiera cymosa</i> ssp. <i>cymosa</i> | Sweet Apple-berry | | | |
| <i>Caesia calliantha</i> | Blue Grass-lily | | | |
| <i>Carex breviculmis</i> | Short-stem Sedge | | | |
| <i>Cheilanthes austrotenuifolia</i> | Annual Rock-fern | | | |
| <i>Clematis microphylla</i> var. <i>microphylla</i> | Old Man's Beard | | | |
| <i>Convolvulus</i> sp. | Convolvulus | | | |
| <i>Correa glabra</i> var. <i>turnbullii</i> | Rock Correa | | | R |
| <i>Cynoglossum suaveolens</i> | Sweet Hound's-tongue | | | U |
| <i>Dianella brevicaulis</i> | Short-stem Flax-lily | | | |
| <i>Dichondra repens</i> | Kidney Weed | | | |
| <i>Elymus scaber</i> var. <i>scaber</i> | Native Wheat-grass | | | |
| <i>Eucalyptus camaldulensis</i> var. <i>camaldulensis</i> | River Red Gum | | | |
| <i>Eucalyptus leucoxydon</i> ssp. <i>leucoxydon</i> | South Australian Blue Gum | | | |
| <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> | Manna Gum | | R | R |
| <i>Exocarpos cupressiformis</i> | Native Cherry | | | |
| <i>Geranium potentilloides</i> var. <i>potentilloides</i> | Downy Geranium | | | Q |
| <i>Geranium</i> sp. | Geranium | | | |
| <i>Gonocarpus elatus</i> | Hill Raspwort | | | |
| <i>Gonocarpus tetragynus</i> | Small-leaf Raspwort | | | |
| <i>Hibbertia crinita</i> | Guinea-flower | | | |
| <i>Hybanthus floribundus</i> ssp. <i>floribundus</i> | Shrub Violet | | | |
| <i>Juncus subsecundus</i> | Finger Rush | | | |
| <i>Lepidosperma curtisiae</i> | Little Sword-sedge | | | |
| <i>Lomandra densiflora</i> | Soft Tussock Mat-rush | | | |
| <i>Lomandra micrantha</i> | Small-flower Mat-rush | | | |
| <i>Microlaena stipoides</i> var. <i>stipoides</i> | Weeping Rice-grass | | | |
| <i>Neurachne alopecuroidea</i> | Fox-tail Mulga-grass | | | |
| <i>Olearia ramulosa</i> | Twiggy Daisy-bush | | | |
| <i>Oxalis perennans</i> | Native Sorrel | | | |
| <i>Plantago gaudichaudii</i> | Narrow-leaf Plantain | | | U |
| <i>Poa labillardieri</i> var. <i>labillardieri</i> | Common Tussock-grass | | | |
| <i>Scaevola albida</i> | Pale Fanflower | | | |

| Species | Common Name | Conservation Status | | |
|------------------------------|--------------------------------|---------------------|-----------------|-----------------|
| | | AUS | SA | SL |
| Senecio spanomerus | Variable Groundsel | | | |
| Themeda triandra | Kangaroo Grass | | | |
| Thysanotus patersonii | Twining Fringe-lily | | | |
| Tricoryne elatior | Yellow Rush-lily | | | |
| | | | | |
| Weed Species | Common Name | | Red Alert Weed? | Declared Plant? |
| | | | | |
| *Asparagus asparagoides | Bridal Creeper | | | |
| *Avena barbata | Bearded Oat | | | |
| *Briza maxima | Large Quaking-grass | | | |
| *Bromus sp. | Brome | | | |
| *Centaurium sp. | Centaury | | | |
| *Cynosurus echinatus | Rough Dog's-tail Grass | | | |
| *Disa bracteata | Monadenia, African Weed Orchid | | Y | |
| *Ehrharta longiflora | Annual Veldt Grass | | | |
| *Gomphocarpus cancellatus | Broad-leaf Cotton-bush | | | |
| *Lolium sp. | Ryegrass | | | |
| *Olea europaea ssp. europaea | Olive | | Y | y |
| *Oxalis pes-caprae | Soursob | | Y | Y |
| *Pentstemonis pallida | Pussy Tail | | Y | |
| *Plantago lanceolata | Ribwort | | | |
| *Rosa sp. | Wild Rose/Briar | | | |
| *Senecio pterophorus | African Daisy | | Y | |
| *Sonchus oleraceus | Common Sow-thistle | | | |
| *Ulex europaeus | Gorse | | Y | Y |

Vegetation Association 7

Aspect: ridge top at the lower altitude (southern) end of the reserve, and eastern upper slope

Area: 2.7 ha

Proportion of reserve: 5.8%

Management Issues: substantial stands of Cotton Bush, fence maintenance.

Description

Eucalyptus viminalis ssp. *viminalis* (Manna Gum), *E. viminalis* ssp. *cygnetensis* (Rough-barked Manna Gum) Very Open Woodland over sparse *Allocasuarina verticillata* (Drooping Sheoak), sparse low shrubs, herbs and introduced grasses.

This site possibly originally supported an Open Woodland with the canopy now sparse due to dieback, which is currently still occurring. Native understorey represents only approximately thirty percent of the biomass due mainly to *Pentstemonis pallida* (Pussytail Grass) infestation, and the site lacks structural diversity. Dominant native understorey plants are *Allocasuarina verticillata* (Drooping Sheoak) (still sparse), *Cheilanthes austrotenuifolia* (Rock Fern), *Hibbertia crinita* (Guinea-flower), *Gonocarpus elatus* (Hills Raspwort) and *Astroloma humifusum* (Native Cranberry). Some regeneration is occurring.



Typical view of this vegetation association, note dieback and groundcover of *Pentstemonis pallida* (Pussy Tail)



Vegetation impacting upon southern boundary fence



Boobook Owl, sighted on two occasions in daylight in this vegetation association.



Healthy *Banksia marginata* (Silver Banksia)

Vegetation Association 7 - Plant Species List

| Species | Common Name | Conservation Status | | |
|---|---------------------------|---------------------|------------------------|------------------------|
| | | AUS | SA | SL |
| <i>Acacia paradoxa</i> | Kangaroo Thorn | | | |
| <i>Acacia pycnantha</i> | Golden Wattle | | | |
| <i>Acaena echinata</i> | Sheep's Burr | | | |
| <i>Allocasuarina verticillata</i> | Drooping Sheoak | | | |
| <i>Arthropodium strictum</i> | Common Vanilla-lily | | | |
| <i>Astroloma humifusum</i> both forms | Cranberry Heath | | | |
| <i>Austrodanthonia geniculata</i> | Knead Wallaby-grass | | | |
| <i>Austrostipa elegantissima</i> | Feather Spear-grass | | | U |
| <i>Austrostipa hemipogon</i> | Half-beard Spear-grass | | | U |
| <i>Austrostipa mollis</i> | Soft Spear-grass | | | |
| <i>Banksia marginata</i> | Silver Banksia | | | |
| <i>Burchardia umbellata</i> | Milkmaids | | | |
| <i>Bursaria spinosa</i> ssp. <i>lasiophylla</i> | Downy Bursaria | | | R |
| <i>Caesia calliantha</i> | Blue Grass-lily | | | |
| <i>Cheilanthes austrotenuifolia</i> | Annual Rock-fern | | | |
| <i>Clematis microphylla</i> var. <i>microphylla</i> | Old Man's Beard | | | |
| <i>Convolvulus</i> sp. | Convolvulus | | | |
| <i>Correa glabra</i> var. <i>turnbullii</i> | Rock Correa | | | R |
| <i>Dianella revoluta</i> var. <i>revoluta</i> | Black-anther Flax-lily | | | |
| <i>Drosera macrantha</i> ssp. <i>planchonii</i> | Climbing Sundew | | | |
| <i>Eucalyptus leucoxylon</i> ssp. <i>leucoxylon</i> | South Australian Blue Gum | | | |
| <i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i> | Rough-bark Manna Gum | | | |
| <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> | Manna Gum | | R | R |
| <i>Exocarpos cupressiformis</i> | Native Cherry | | | |
| <i>Geranium solanderi</i> var. <i>solanderi</i> | Austral Geranium | | | |
| <i>Gonocarpus elatus</i> | Hill Raspwort | | | |
| <i>Hibbertia crinita</i> | Guniea-flower | | | |
| <i>Lomandra densiflora</i> | Soft Tussock Mat-rush | | | |
| <i>Lomandra nana</i> | Small Mat-rush | | | |
| <i>Neurachne alopecuroidea</i> | Fox-tail Mulga-grass | | | |
| <i>Olearia ramulosa</i> | Twiggy Daisy-bush | | | |
| Orchidaceae sp. | Orchid Family | | | |
| <i>Oxalis perennans</i> | Native Sorrel | | | |
| <i>Podotheca angustifolia</i> | Sticky Long-heads | | | |
| <i>Senecio spanomerus</i> | Variable Groundsel | | | |
| <i>Thysanotus patersonii</i> | Twining Fringe-lily | | | |
| <i>Tricoryne elatior</i> | Yellow Rush-lily | | | |
| <i>Triptilodiscus pygmaeus</i> | Small Yellow-heads | | | U |
| <i>Vittadinia gracilis</i> | Woolly New Holland Daisy | | | |
| <i>Wahlenbergia stricta</i> ssp. <i>stricta</i> | Tall Bluebell | | | |
| <i>Xanthorrhoea quadrangulata</i> | Rock Grass-tree | | | |
| Weed Species | Common Name | | Red Alert Weed? | Declared Plant? |
| * <i>Briza maxima</i> | Large Quaking-grass | | | |
| * <i>Gomphocarpus cancellatus</i> | Broad-leaf Cotton-bush | | | |
| * <i>Hypochaeris</i> sp. | Cat's Ear | | | |
| * <i>Pentaschistis pallida</i> | Pussy Tail | | Y | |

4. RESERVE MANAGEMENT

4.1 Management Issues and Recommendations

The issues and recommendations below are also summarised in Table 2 (Summary of Management Actions) at the end of this section.

Vandalism

The reserve is subject to vandalism, with actions such as illegal wood collection, rock collection, rubbish dumping, bonfires, bottle and rock throwing, off-road driving and graffiti having impacted on the conservation and recreation values of the site. Vandalism activities are now less frequent following actions such as installation of bins and locked gates, including the gate locked nightly on Summit Reserve Access Road. Bush For Life volunteers currently pick up rubbish from the picnic area during their visits, and have reported garden refuse dumping to Council in the past (Council have promptly removed). The current upgrade (August 2011) to the visitor area should further deter vandalism.

Proposed Actions:

- No immediate further actions proposed

Lack of visitor facilities/aesthetics in main visitor area

Maintenance of the central visitor area will "promote the custodial role of the local council and community for the reserve" (Crawford (1997)).

The visitor area (car park and picnic area north of car park) was upgraded in 1993 with contribution from a Landcare and Environment Action Program (LEAP) grant, and included installation of signage in 1994 and picnic tables in 1997. These facilities are now dated and will be upgraded again in 2011 including new picnic tables, a formalised path to the picnic tables, resurfacing of the parking area, creation of formal parking spaces, removal of the permapine post and rail (but replacement with strategic revegetation to separate the car park from the native vegetation), and new signage including clear maps of trail locations.

Boom gates were installed at the start of the Rotary and Southern Loop Trails to restrict vehicle and horse access, and redevelopment of sections of the walking trails was undertaken by the Friends of Mt Barker Summit, including screening of excess trails with fallen timber to discourage access (Crawford, 1997).

The police communications tower complex takes up a large proportion of the carpark area and is visually intrusive. Crawford (1997) recommended Council undertake plantings to screen the four cages, transformer box and tower building itself. Three of four cages now have some screening by vegetation (it is unclear whether this was planted or has regenerated).

The LEAP program revegetated an area immediately south of the tower, but this area was disturbed during extension works. Optus Communications subsequently provided Council with funding to further rehabilitate the area, and this work was carried out successfully by private contractors (Bush Regeneration Services). The photograph below shows the extent of growth of this revegetation.

Bush For Life have been working on an infestation of Freesia and Perennial Veldt Grass south of the Tower complex. The Trig Point Trail and lookout area, carpark and picnic area are slashed annually by Council and/or Bush For Life volunteers.



Revegetation area at south end of carpark and tower complex, 1997 (above) and 2011 (below), showing extent of vegetation growth.

Proposed Actions:

- Revegetation around the transformer box and on the eastern and possibly northern sides of the tower building (where it is visible from the main car park) is still recommended. Seed has been collected over the last 12 months from native plants from all strata surrounding the carpark area for revegetation and screening projects during the new carpark up-grade by Bush For Life. Bush For Life will be propagating plants over the coming growing season and collecting cuttings from *Correa glabra* for later establishment.
- Continuation of work on the eradication of Perennial Veldt Grass and Freesia from the revegetation area south of the carpark and tower complex by Bush For Life.

Damage to Summit/Trig Point area

Damage to the native vegetation and to aboriginal sites at the Summit itself has occurred directly and indirectly (weed invasion) by visitors creating multiple tracks to obtain views. This long-standing problem has been discussed on several occasions and the result, as part of the current upgrade, will be construction of a low profile (1 metre high), small (approximately 2m x 4m) viewing platform incorporating the directional cairn. This was recommended in the original Management Plan (Crawford 1997) as the preferred of three proposed concepts to reduce the ongoing degradation along the ridge line of the Summit. The proposed platform is to be in the shape of a Peramangk shield. Construction will be undertaken when funds become available (no budget at present).

A survey of the proposed work areas was undertaken by Bush For Life in Spring 2010 to assist in the prevention of damage to native plants during track and carpark up-grade. Weed control was also undertaken in this area (refer below).

Proposed Actions:

- Monitor the success of platform installation in reducing visitor impacts to the area.

Recreational and Educational Use

Mount Barker Summit is a popular destination for regular local visitors, tourists, school groups and a small number of horse-riders. Pamphlets available from the local council provide an excellent summary of the conservation values and walking trails of the reserve.

Due to the potential for introduction/spread of weeds and *Phytophthora cinnamoni* (Root-rot Fungus), and direct damage to native vegetation, horse riding has been restricted to the road and Southern Loop track (by way of installation of boom gates). Any future Heritage Agreement will require a clause in the agreement allowing access to any part of the reserve that is not road reserve. Dogs are currently allowed on leash.

Walking trails which are well designed and maintained can heighten the visitor experience, provide valuable educational input and protect remnant vegetation by directing walkers onto designated routes. Some upgrading of trails has occurred since the original Management Plan was produced in 1997. New signage incorporating a trails map and instructions for trail use has been designed as part of the current upgrade, and will be constructed as soon as funds become available. Further works and actions are recommended below, largely in keeping with the recommendations made in

Crawford (1997) and with the aim to enhance the visitor experience and decrease damage to vegetation including that occurring due to track erosion.

Bush For Life volunteers are currently developing a digital and hard-copy herbarium of the site that will hopefully be available in some form to members of the public.

Proposed Actions:

- Continuation of pruning program to cut back any encroaching vegetation.
- Installation of directional posts at strategic points on all trails (especially the northern end of the Rotary Loop Trail where it is difficult to follow), including all trail junctions. Junction of Link Trail and Quarry Track is particularly unclear.
- Assessment of junction of the Link Trail and Quarry Track to determine whether steps are required.
- Reinstatement of badly eroded sections of the Rotary Loop Trail (as pictured below). This will require infilling with non-erodible material and the installation of strategically placed hardwood steps. The steps should be set on a slight angle to enable the water collected on each step to be shed sideways down the natural slope of the hillside and not to be channelled down the pathway as is currently occurring (see photograph below).
- Continuation of herbarium preparation.



Steps along Link Trail/Rotary Loop Trail nearing top of slope where it joins to the Southern Loop Track, showing erosion.

- Formalisation of the proposed return link to the car park from the junction of the Southern Loop track and Link Trail (following the current informal track, see photograph below) to minimise the occurrence of visitors walking on the road.



Looking south along existing informal trail from south end of car park through the revegetated area to the junction of the Link Trail and Southern Loop Track. Use of this trail avoids the need to walk on the road.

- installation of a stile/gateway for pedestrian access at the Williams Rd/Firetrack entrance.
- Production of a self-guided nature trail pamphlet used in conjunction with numbered marker posts along the Rotary Loop Trail. This 2km trail traverses both the eastern and western faces of the mountain. The panoramic views and the local topography provide opportunities for discussion of the regional geography and geology. Differences in the structure of the vegetation associations encountered are clearly evident, interesting plant species occur close to the trail and wildlife is frequently sighted.
- a guided interpretative walk on the Aboriginal history of the region and local district. This would need to be developed in consultation with representatives of Aboriginal community.
- link to proposed geological interpretative trail (if it eventuates, see below) within Emerald Quarry, with caution taken to minimise risk of weed spread (e.g. African Weed Orchid present in the NW corner of the Summit Reserve).

Planning/broader conservation perspective

Management of the Summit Reserve will contribute toward a number of actions stated as required to achieve Resource Condition Targets (RCDs) outlined in the Murray Darling Basin Natural Resources Management Plan. The relevant RCDs and associated actions are listed in Table 2 over the page.

The site was approved in 2010 by the Native Vegetation Council for use as a Significant Environmental Benefit ('SEB') area and "credit bank" to offset future native vegetation clearance by Council. In addition, Council initiated Heritage Agreement⁸ proceedings on the reserve.

⁸ A perpetual agreement between the landowner and the Minister for Environment and Conservation providing for ongoing conservation of the land, administered through the Department of Environment and Natural Resources.

Table 2. Resource Condition Targets and contributing actions from the SAMDB NRM Plan that relate to management of the Summit Reserve

| RCD | Required Action |
|---|--|
| P2.1 increase awareness and understanding of Aboriginal culture | Develop and implement awareness-raising activities for culturally significant species and sites, and their management. |
| P2.3 Protect and restore cultural sites and assets | Protect and rehabilitate heritage sites; protect and manage culturally significant species and their habitats. |
| P3.6 Manage the risks to natural resources from recreational activities | Raise awareness by recreation users and tourists of the Region's natural resources and the threats of inappropriate use; support new infrastructure to support sustainable recreation and tourism. |
| B1.1 Protect and manage priority remnant native ecosystems | Provide assistance to protect remnants through management, plans and formal agreements. |
| B1.3 Improve the condition of existing native ecosystems | Undertake and support ecosystem restoration programs in priority areas; determine what is adequate condition for priority ecosystems; develop a condition layer for vegetation mapping and implement monitoring programs. |
| B1.4 Improve community appreciation of native ecosystems and species | Raise awareness and provide technical information about ecosystem services, native ecosystems and the protection and management of native species; build community skills knowledge and capacity to protect and manage native ecosystems and species; conserve biodiversity in places of social, recreational and cultural significance. |
| B3.1 Manage critical threats to threatened species | Undertake biological surveys; undertake programs to extend habitat, link priority habitats and improve condition. |
| L1.4 Manage the impacts of pest plants and animals | Collect and manage information required to undertake pest plant and animal control programs; undertake animal and plant control compliance under the NRM Act; provided integrated control of pest plants and animals; implement action plans for identified pest plants and animals. |
| Monitoring | Monitoring data collected under this management plan will contribute to the pool of data compiled to assist evaluation of progress toward the goals and targets of the NRM plan under the ⁹ MERI Plan. |

The reserve is all Crown Land, but the western side is under Council's care and control whereas the Trig reserve (including a long narrow portion extending south and north from the reserve) and eastern side is under care and control of the Crown. Council is in the process of consolidating the multiplicity of titles (involving the closure of sections of unmade road reserve and removal of reserve status over the Trig Point area) and having the land placed all in Council's care and control. Council also plans to re-zone the Mt Barker Conservation Reserve as a Conservation Zone via the Plan Amendment Report process and to ensure that the adjacent primary production areas incorporate principles which will act to further protect and enhance the reserve.

The District Council of Mount Barker Recreational Trails Strategy 2006-2010 (District Council of Mount Barker, 2007) recognises the Summit trail system as a part of the district's existing trail network and has identified potential links to the Mount Barker and Nairne townships. The Strategy cites The Summit as "a popular walking and cycling destination" and states that "the opportunity to gain safe access to this destination, preferably on dedicated walking and cycling paths could be a long term objective".

The Trails Strategy outlines key issues associated with both managing current trails in the Mount Barker district and establishing and managing new trails and links. This includes recognition of environmental

⁹ Monitoring, Evaluation, Reporting, Improvement

issues/values, the potential for increasing environmental awareness and the possibility of harnessing community support and involvement.

The Strategy has identified that inherent to the trail development process will be the creation and maintenance of an inventory of existing trails, their condition, associated infrastructure, main user groups and ongoing management issues. The Strategy also states that trails will be planned, designed, implemented and managed "to protect and enhance environmental values which includes environmental assessments of new trails and vegetation management plans".

Rehabilitation of Emerald Quarry, if undertaken, would enable an integrated management approach for the entire Mount Barker Summit. Indigenous vegetation is regenerating in areas of the quarry reserve immediately adjacent to the Summit Reserve and on the upper benches of the quarry itself.

Proposed Actions:

- Local sourcing of seed should active revegetation be undertaken as part of the rehabilitation of Emerald Quarry.
- Link from Emerald Quarry to the Summit Reserve walking trail system via the Quarry Track (western boundary) investigated, if plans for the interpretative geological trail progress. Possibility of safe parking within the quarry reserve further investigated (eg. consideration must be given to weed issues in the degraded NE section of the reserve).
- Consideration of purchase of property to NE, or other adjoining properties, if the opportunity arises.
- Continuation of liaison with adjoining landholders to promote an integrated land management approach, in particular with respect to weed invasion.
- Regular review of proposed actions and progress in relation to the SAMDB NRM Plan; ensure baseline and monitoring data is contributing to the pool of data used to evaluate the Plan.
- If formalised, links to the townships of Mt Barker and Nairne, and discussion of associated management issues, incorporated into updates of the Mt Barker Summit Conservation Reserve Management Plan.
- Incorporation of any standards developed as a part of the broader trails planning for the district into updates of the Mountt Barker Summit Conservation Reserve Management Plan where relevant.

Maintenance of Fences & Vehicle Tracks

Summit Reserve Access Road, the Southern Loop Track and the Quarry Track are currently used and maintained as fire access tracks (designated for use by the CFS and maintenance vehicles only). However, Crawford (1997) described damage to vegetation as a result of track maintenance procedures, and subsequently recommended future maintenance in accordance with "Best Practice Guidelines for conservation of remnant vegetation".

Council Road Maintenance staff completed a "Best Practice" course organized through the MLR Catchment Centre (Mitchell, 1997). The Summit Reserve may provide a good demonstration site for road maintenance/vegetation/other best practice issues (including walking trail maintenance).

During the current survey erosion problems were observed, notably along the Summit Reserve Access Road where soil deposition is occurring some distance into vegetation (see photograph below).



Soil washing into vegetation from Access Track corner (below carpark)

Crawford (1997) recommended "reconstruction to allow for deposition of sediment and for adequate dispersal of water to prevent erosion" at this site.

Some internal fencing is still present within the reserve, with sections hazardous to visitors. Boundary fencing is in disrepair in some sections, with fallen trees and encroaching vegetation.

Proposed Actions:

- Removal of damaged/unsafe internal fencing;
- Fixing of boundary fencing where damaged by vegetation (in particular SE fence) and maintenance to a standard necessitated by adjacent land use (i.e. if no stock then maintain for the purpose of property boundary delineation only, if stock present maintain as stock-proof fence (may require clearance 1m either side to 10cm height or similar).
- Maintenance of vehicle tracks, gates, turn-around areas.
- Reconstruction of drainage works to enable adequate water dispersal and prevent erosion/deposition along Access Track as per 1997 recommendations.
- Promotion of "best practice guidelines" within Council, including vehicle hygiene, demonstration of the effects of stockpiling materials, off-road turn-around, etc. on native vegetation and bank stabilisation. Organisation of "best practice" courses for Council staff regularly.
- Monitoring of stability of banks and undertaking of weed control and, where no colonisation of native species is occurring, strategic planting to assist bank stabilisation.

Fire prevention & Management

Emergency vehicle access through the Summit Reserve is possible via the Southern Loop Track, which can be accessed via the Summit Access Rd at one end and Williams Road (Summit Firetrack) at the other. These two entrances have locked gates to prevent unauthorised use. No other firebreaks are maintained within the park, although the Quarry track (no through road to rest of reserve) provides access to the north western part of the reserve and the Emerald Quarry, and acts as a partial firebreak.

The suggestion of a cool burn to manage fuel loads and/or help in the regeneration of vegetation has been put to Council on occasion by residents. This action requires careful consideration, consultation and expert advice.

See also vehicle track maintenance.

Proposed Actions:

- Maintain current fire access tracks and gates to enable safe and efficient movement of vehicles and between eastern and western faces of the mountain in the event of a wildfire
- Consider the establishment of turn-around areas at Emerald Quarry and Williams Rd (Summit Firetrack) gates, including an assessment of potential damage to good quality vegetation.

Vegetation health

Tree health is poor throughout the reserve (refer to Vegetation Association descriptions). Substantial dieback, both past and current, is evident in Manna Gums and Drooping Sheoaks, and more recently in Silver Banksia in a patch along the old N-S fenceline in Vegetation Association 7 (Angela Cullen, pers. comm.). No signs of *Phytophthora cinnamomi* (Root-rot Fungus) were recorded during the current survey, so it can be surmised that poor tree health is a result of drought and other environmental stresses. The SE section of the reserve was grazed until mid-1997 but has shown signs of good regeneration.

Proposed Actions:

- Undertaking of monitoring, including revisits to area of Silver Banksia dieback (refer to Monitoring section)

Pests

Minor presence of foxes, rabbits and hares, is evident in the reserve by droppings and grazing damage to native vegetation (particularly in drought years, Angela Cullen, pers. comm.). No rabbit warrens were observed during the current survey, but have been observed at other times (Angela Cullen, pers. comm.), in one instance underneath piled dead Gorse. No rabbit or fox control has been undertaken in the reserve in recent times.

Proposed Actions:

- Opportunistic monitoring for warrens, apparent increase in pest numbers or in grazing damage to native vegetation. Develop action plan in the case that these situations arise.

Weeds

Section 3.4 summarises the extent of weed infestation within the Reserve. Weed species recorded in each vegetation association during the current survey are listed in Section 3.4. Priority weeds are mapped in Figure 3. Weed species classified as Red Alert Weeds (Croft et al., 2005), as well as Cotton Bush (due to its prevalence in the reserve) are discussed further below, including changes to the populations within the Summit Reserve since 1997. General recommendations for management as well as proposed actions specific to the reserve are given. The Minimum Disturbance approach, outlined briefly below, is suited to the nature of the weed infestation in the reserve and should form the basis of the weed control actions. Councils have a legal responsibility under the *Natural Resources Management Act 2004* to control declared plants on Council land.

Minimum Disturbance Approach

Restoration of indigenous vegetation is most effectively achieved through the Minimum Disturbance Approach, based on the work of Robertson (1984) in South Australia, and Bradley (1988) in eastern Australia. The main principles of this approach are **to create minimum disturbance to the natural plant and soil community** and **to work to strengthen the natural plant community by promoting natural regeneration**. This is achieved by working in the 'best' areas of indigenous vegetation first, removing outlying pest species before they become well established.

The method advocates hand removal of pest species as the principal method of control, 'cut and swab' stump treatment where necessary for woody weeds, careful replacement of soil, natural mulch and, where appropriate, broken up weed debris (no propagules) as mulch, and careful spot-spraying of particular species. Thorough follow-up is recommended.

Bridal Creeper

Red Alert, Declared under NRM Act 2004, Weed of National Significance.

Bridal Creeper (*Asparagus asparagoides*) is a member of the Liliaceae family and is regarded as the most serious environmental weed in South Australia. The plants survive over summer as a dense mat of underground stems with many dormant tubers, making it difficult to eradicate, and it produces prolific crops of berries which are spread rapidly by birds. Spot-spraying has traditionally been the preferred method of control, but in 2000 the biological control agent *Puccinia myrsiphylli* (Rust Fungus¹⁰) was approved for use for Bridal Creeper control and now large infestations are often treated using this method.

Several populations of Bridal Creeper were located on the Summit during the current survey (refer to Figure 3) in more or less similar locations to those described in Crawford (1997). With the exception of the infestation in the NW corner, these populations do not appear to have spread extensively, or have been subject to control.

Gorse

Red Alert, Declared under NRM Act 2004.

Gorse (*Ulex europaeus*) is spiny, evergreen shrub in the family Leguminosae.

¹⁰ further information - www.csiro.au/resources/Bridal-Creeper-Rust-Fungus.html).

Crawford (1997) describes it as “a major pest species within the Summit Reserve”, with “scattered plants and small populations ... across the entire western slopes of the mountain below the Rotary Loop Trail” and in particular “two particularly large and dense populations” for which she recommended immediate eradication. Instances recorded on the eastern slopes in 1997 have been eradicated.

Crawford states that the two dense populations are the result of fire, one following a spray/burn effort by Mid Hills Animal and Plant Control Board in Autumn 1992. Surviving adults as well as regrowth following the Control Board’s actions were treated by bushcare workers (currently followed up by Bush For Life volunteers) and now only scattered young individuals remain. The second population has been substantially reduced, with primary clearance occurring in 2009 by Trees For Life Bushcare contractors. Work has continued in 2011 by a large group of Bush For Life volunteers.

It should be noted that one of these infestations is in close proximity to the only specimen of *Cassinia arcuata* recorded within the reserve and district.

The largest population of Gorse at present occurs in the NW corner and along the western boundary, with plants occurring on both sides of the Quarry track and extending into the neighbouring properties to the W and N (Emerald Quarry).

South African Weed Orchid

Red Alert

The South African weed orchid, *Disa bracteata* (formerly *Monadenia bracteata*), is a serious environmental weed with the ability to spread rapidly into good quality vegetation and displace native orchids lilies and other groundcovers. The orchid grows from an underground tuber. It appears each spring and usually requires three years growth before flowering. It is self pollinated and produces a large quantity of fine seed. It is easily dispersed by wind, water, human and animal contact and by slashing/grading equipment.

Crawford states in 1997 that this species has been recorded from two sites within the Summit Reserve and adjoining Emerald Quarry. It is unknown where these two sites occurred, but the current survey recorded two populations (quarry not inspected) - one very small population in Vegetation Association 1 near the Rotary Loop/Link Trail junction, and one large population across the eastern half of Vegetation Association 6. A third population, in the picnic area, has been recorded by Angela Cullen of Bush For Life (pers. Comm.). Bush For Life has removed many plants from the Rotary Loop/Link Trail junction population in the past, resulting in only 3 plants recorded in 2011. Bush For Life has also removed plants from the picnic area population in recent years.

Olive

Red Alert, Declared under NRM Act 2004

The locations of several Olives (*Olea europea*), were recorded in the “Reserve File” in 1997 and were recommended to be removed by cut and swab as soon as possible (Crawford, 1997). The current survey recorded only three populations of less than 5 individuals each in the Reserve (refer to Figure 3).

South African Daisy and Cotton Bush

South African Daisy is Red Alert

Scattered plants of both South African Daisy (*Senecio pterophorus*) and Cotton Bush (*Asclepias rotundifolia* (now *Gomphocarpus cancellatus*)) were found in 1997 (Crawford, 1997) and again during the current survey throughout the entire reserve, but with a greater number in Vegetation Associations 7 and 4 on the ridgeline south of the carpark and on the lower eastern slopes.

Freesia, Soursob

Soursob is Red Alert & Declared under NRM Act 2004

These two species are often widespread and placed in the "too-hard basket". However, they occur only as relatively minor instances (at least in the interior) within the Summit Conservation Reserve. Volunteers and BFL staff have begun the removal of Freesia from the site south of the tower complex, working systematically on scattered outbreaks and along weed-fronts. Additional (unmapped) Soursob possibly occurs in other locations along the Reserve boundaries that were not visited.

Blackberry

Red Alert & Declared under NRM Act 2004

Very little Blackberry remains in the reserve. Bush For Life have repeatedly removed small populations emerging on the S and SW slopes (Vegetation Association 1) and have treated a large outbreak above the firetrack gate.

Pussytail Grass, Perennial Veldt Grass, Phalaris

Red Alert

The reserve is surrounded by agriculturally developed land and hence is and has been susceptible to invasion by a wide range of exotic grasses. The three Red Alert Weed grass species recorded in the reserve are Pussytail Grass (*Pentaschistis pallida*), Perennial Veldt Grass (*Ehrharta calycina*) and Phalaris (*Phalaris* sp.).

Pussytail Grass is the most widely established weed in the reserve. A native of southern Africa, *Pentaschistis pallida* was first recorded in South Australia in 1917. Whether it was introduced deliberately or inadvertently, in association with other pasture grass species, is not known. It is a hardy perennial species which is often mistaken for indigenous Wallaby Grass (*Austrodanthonia* spp.), and is being increasingly reported as an invasive species in remnant vegetation. Its spread throughout the Mount Barker Summit Conservation Reserve may have been facilitated by past wildfires (Crawford, 1997). Each plant produces quantities of fine seed during early summer when many indigenous herbaceous species are dying off. The 1997 Management Plan reports Pussytail Grass as widespread throughout the reserve and implies that the species occurs at high density/cover at most locations. This is still the case currently. It is unknown how this species has affected native plant and animal species diversity and plant cover to date, but there is the potential for serious affects via colonisation of groundcover including intertussock spaces important to the functioning of Grassy Woodland ecosystems. Some management of this species has occurred by Angela Cullen and Bush For Life volunteers, in particular in the vicinity of the Trig Point where Council are hoping to improve amenity and bush condition.

Phalaris occurs as minor instances in the reserve, as does Cocksfoot (*Dactylis glomerata*, a similar but non - Red Alert weed).

One population of Perennial Veldt Grass was recorded in the Reserve, in the revegetated area south of the carpark where soil was disturbed and material dumped. It is likely that the species established from the dumped soil. Bush For Life are working on this population. This species is easily confused with Annual Veldt Grass, which is not a Red Alert Weed. Annual Veldt Grass was also recorded during the current survey.

Crawford (1997) recommends control of introduced grasses in general along the lower verge and culvert discharge zones of the Summit Reserve Access Road and along the SW boundary in the vicinity of the Williams Rd/Fire Track gate (see photograph below)

Other weeds

Scattered individuals (low numbers only) of a number of weed species not defined as Red Alert Weeds were recorded in the reserve (for example *Cotoneaster* sp., Salvation Jane). Numbers of many of these weeds are considerably lower as a result of hours of volunteer work. An example is the eradication of Wild Turnip (*Brassica tournefortii*) and Slender Thistle (*Carduus* sp.) from the carpark area and along the trail between the carpark and picnic area since 2008 by Bush For Life.



Introduced grasses (including Phalaris) occur on both sides of the Southern Loop track at this location along the SW boundary.

Proposed actions:

- Bridal Creeper – eradication of population on rocks below Trig Point, Eastern Slope first, and fire track gate first, followed by NW corner population, using a combination of hand-pulling very young plants (removing all corms), spot-spraying with Glyphosate 360 and possibly use of the Rust Fungus for the NW corner population. The infestation is still at a level whereby complete eradication is possible.
- Gorse – continued removal of young Gorse plants in the two populations referred to above (and located in the vicinity of the Link Trail on Figure 3.). Crawford (1997) recommends hand removal as the most cost effective and ecologically sound method of control in this case. Removal (also by hand, or cut and swab of larger plants) of scattered individuals on W slope. Following this, management of larger infestation along W boundary and in NW corner, in conjunction with adjacent landholders. Some spot-spraying may be necessary due to problems with accessing all plants by hand, or cut and swab working from outside – in may be possible.
- South African Weed Orchid – control and monitoring of population near Link/Rotary Trail junction as a priority. Commencement of control of other population, either by digging up tubers (with careful disposal) well before seeding or, if time does not permit, breaking off flowering stalks as an interim measure to prevent further spread. Population in Emerald Quarry located and also controlled.
- Olive – removal of remaining individuals in reserve by cut and swab.
- Cotton Bush and South African Daisy – most plants are easily handpulled, therefore it is recommended that this is undertaken opportunistically by bushcare workers, Bush For Life volunteers and/or Council staff when working on other weeds/issues in the park. Larger plants can be cut and swabbed. Works on these two species is not considered as high a priority as control of those species discussed above, except in areas where Council/Bush For Life are working on improving amenity, such as surrounding the Trig Point and Trig Point Trail, or where

extensive works have been undertaken and a seed bank may persist, such as SA Daisy in Vegetation Association 1.

- Freesia and Soursob- continued work on Freesia population south of the tower complex. Attempted eradication of both species from this site and Trig Point Trail (including just north of summit), Vegetation Associations 2 and 5.
- Blackberry – continued monitoring for regrowth of recently controlled populations in Vegetation Association 1.
- Pussytail Grass, Phalaris and Perennial Veldt Grass - Advice from PIRSA NRM Biosecurity Unit confirms that a realistic goal for Pussytail Grass management is to control in the vicinity of threatened plants (species is too widespread in good condition vegetation to achieve broader eradication). Bush For Life plans to follow this advice, but in addition undertake opportunistic removal (each visit) of plants that are smothering small natives in areas where other works are being carried out (in particular on the lower S slope Vegetation Association 1, and maintain efforts in Trig Point area. Attempted eradication in Perennial Veldt population south of Tower Complex and continued control in the vicinity of the Trig Point. Continued control of Phalaris and Perennial Veldt as a low priority along the Southern Loop Trail.
- Non Red Alert Weeds present in low numbers (e.g. Briar)- remove opportunistically to prevent spread, including those species/areas where effort has been expended to date (e.g. removal of Wild Turnip from carpark area), but not at the expense of the higher priority weeds which need to be tackled in a more strategic manner.
- in the event of a wildfire, it is recommended that funding is made available for at least a three-year period, to optimise control of pest plants that may experience high levels of regeneration and significantly reduce the long-term costs of vegetation management.
- Ensure Council staff and contractors have completed training that includes vehicle hygiene, appropriate use of chemicals, minimisation of impacts, effects of stockpiling and turning vehicles around in vegetation.

General Revegetation

The need for revegetation has possibly reduced since the recommendations made in the 1997 Plan. The sites now identified as possibly requiring revegetation (because they appear slow to regenerate) are: the tower complex, the clearing near the Williams Rd/Fire Track gate, the western boundary (understorey only), and the more southerly large Gorse site infestation.

Revegetation at these locations is considered a **low priority for management compared to control of weeds** and monitoring for regeneration.

Proposed Actions:

- Continued monitoring followed by revegetation using local seed, rootstock or cuttings, and in consultation with Bush For Life and/or a revegetation consultant. Species planted should be suited to the soil types at each respective site. Additional detail relating to species, numbers, preparation should be submitted to the Native Vegetation Council as a part of the annual reporting and action planning process.

Species of Conservation Significance

Monitoring of plant and animal species of conservation significance is covered in Section 4.3.

Additional recommended actions:

- Removal of any weeds that emerge in the immediate vicinity of the single *Cassinia arcuata* plant, plus recording and removal (if possible) of other threats (e.g. check for signs of Phytophthora or heavy grazing by native herbivores).
- Search for (and/or opportunistic recordings of) additional populations of species of conservation significance (e.g. Blanket Fern as recommended in 1997 Management Plan, *Lepidium hyssopifolium*, currently recorded as one individual, *Bursaria spinosa* ssp. *lasiophylla* – several plants but recorded from one locality only) and *Deyeuxia densa*.
- Propagation of *A. rupicola* (this species was not relocated during the current survey but is likely to be present) and *Cassia arcuata* as per 1997 Management Plan. Seed from the latter should be collected fresh then divided and (1) sown under controlled conditions to determine viability (specialist advice should be sought from the Black Hill Flora Centre); (2) “direct seeded” in an area previously cleared of gorse and within a marked plot.
- Consideration of liaison with owner of Heritage Agreement at Monarto supporting the nearest population of *Cassinia arcuata*; ascertaining the size/condition of the population and the possibility of (limited) seed collection to enable further trials as listed above.
- Informing of all personnel closely involved with the management of vegetation of Mount Barker Summit as to the identification characteristics, and locations of, plant species of conservation significance. Prescription of special precautions for personnel working in the vicinity of species of these species.

4.2 Summary of Management Actions (Table 3)

RL = Rotary Loop; SL = Southern Loop; 1997 MP = Crawford (1997) Mount Barker Conservation Reserve Management Plan; BDBSA = Biological Databases of SA; NVBMU = Native Vegetation and Biodiversity Management Unit (DENR); DENR = Department of Environment & Natural Resources; BFL = Bush For Life (Trees For Life).



| Issue | Status 1997 | Status 2011 | Actions completed | Current Actions | More proposed actions |
|---|--|---|---|--|---|
| Vandalism | No bin in carpark | 2 Bins in carpark | Installed bins; (Council) removed dumped garden waste promptly on notification from BFL. | General upgrade of visitor facilities (see below); volunteers and BFL staff collect rubbish during each visit. | Maintenance of new visitor facilities (see below) |
| | No restrictions to vehicle access | No vehicle access after hours, to fire track access restricted to authorised vehicles; no vehicle access to trails. | Installed locked gate along fire track/ Williams Rd; Summit Access road gate locked nightly (installed approx. 1993); boom gates installed at start of RL & SL Trails | - | - |
| Lack of visitor facilities /poor aesthetics in main visitor area | Interpretative sign present in car park; entrance sign recommended in 1997 MP. | Interpretative sign dated; no entrance sign. | Interpretative signage erected (1994) | Upgrade of signage in car park will include European and Aboriginal history; Signs (including entrance signs) have been designed but there is no budget to install at present. | Installation of all proposed signs, including signs at main entrance gate and Williams Rd entrance. |
| | Unattractive area S of tower (damaged during tower extensions) | Area S of tower replanted, now blends in well with remnant vegetation | Revegetation & weed control (local species). | Volunteers and BFL staff have begun the removal of Perennial Veldt Grass and Freesia, working systematically on scattered outbreaks and along weed-fronts. | Continued control of Freesia, Soursob & Perennial Veldt Grass in this reasonably confined area. |
| | 1997 MP advised planting to screen exposed tower complex | Still no screening present around tower or transformer box. 3 of the 4 cages are screened by | Regeneration/revegetation around 3 of the cages. | Planting to be undertaken in 2012 using plants propagated by BFL from seed from all stratum surrounding the | Planting of <i>Correa glabra</i> (currently being propagated by BFL) on east side of tower complex, 4th cage screened using similar |

| Issue | Status 1997 | Status 2011 | Actions completed | Current Actions | More proposed actions |
|--|---|---|--|---|---|
| | | vegetation. | | carpark area | species to that used for the other 3 cages. |
| | Parking areas not defined | Parking area delineated by post and rail fence | Post and rail fence constructed | Upgrade is including removal of permapipe post and rail, creation of formal car parks, resurfacing of car park. | Sensitive planting of propagated plants and weed control to encourage natural regeneration in areas where permapipe fencing has been removed |
| | Unattractive and underutilised picnic area - 1997 MP recommended upgrade & revegetation. | Picnic tables present, no bin, no revegetation. Evidence of weed control on adjacent slope –this is improving the general 'look' of the area to the general public. | Picnic tables constructed (1997); large number of cotton-bush removed W of stone wall and surrounding areas. Other weed control undertaken, including Wild Turnip and Slender Thistle (see also Weeds sections below). | Further upgrade including new tables, revegetation, formal path from trail to tables; control of Pusstail Grass and other weeds (which began in 2010) to beautify the area (see also weeds sections below) and to highlight the presence of orchids and other high profile plants to the public, and encourage natural regeneration; slashing of weedy grasses by BFL.. | Continued weed control/slashing, mainly the unsightly area approximately 2m x 20m on W side of stone wall, but also in other areas as judged by BFL to be important from an environmental and public interface perspective. Revegetation not required. |
| Damage to Summit/ Trig Point area | Proliferation of trails to gain views, resulting in weed invasion, direct damage to vegetation & to sites of Aboriginal significance. Recommended construction of viewing platform. | Informal trails still present including between car park & picnic area, picnic area and Summit | Survey of the proposed work areas undertaken by BFL in Spring 2010 to assist in the prevention of damage to native plants during track and carpark up-grade; weed control undertaken (refer to weed section) | A low profile (1m high), small (approx. 2m x 4m) viewing platform (in the shape of a Peramangk shield) has been recently designed, incorporating the Directional Cairn. New signage to highlight effects of straying from formal paths; weed control works as outlined below. | Construction of platform as soon as funds become available. Further barriers constructed at locations where the most obvious straying from formal paths is occurring (could use formal barriers, fallen branches or revegetation); maintenance of weeded areas as outlined below. |
| Recreational and Educational Use | Inadequate trails maps, 1997 MP recommended installing directional posts along trails plus directional signage at SL and Link Trail junctions. | As in 1997 | Maintenance pruning of encroaching vegetation to help define trails (as per Regulation 5(1)(t) Native Vegetation Act 1991) | New signage in carpark has been designed and incorporates trail locations. | New signage constructed as soon as funds available. Directional posts with simple signage installed at commencement of trails & and trail junctions, directional posts at other locations where needed; continuation of maintenance pruning |
| | 1997 MP recommended formalising the 'trail' between car park & SL/Link Trail junction to avoid walking on road. | Informal trail still regularly used. | - | - | Trail formalised (signposted, path defined using logs, rocks, &/or directional posts). |
| | Erosion along trails; sections of trails hard | Erosion along trails, in particular | It appears that further Permapipe has been | Trig trail will be graded and narrowed, | Horses prohibited from reserve or restricted |

| Issue | Status 1997 | Status 2011 | Actions completed | Current Actions | More proposed actions |
|--|--|--|--|--|---|
| | to negotiate due to combination of steep slope and erosion e.g. 1997 MP recommended installation of stone steps at junction of the Link Trail & Quarry Track | top of Link Trail & some sections of Trig Trail, no stone steps at Link Trail/Quarry Track junction. | added to existing top steps along Link Trail for reinforcement. However, erosion is still significant. | steps installed | to fire tracks (or, if new fire tracks are installed, prevented from using certain tracks); reconstruction of top of Link Trail, assessment of junction of Link/Quarry Trail to see if steps are required as per 1997 MP. |
| | No easy pedestrian access via Williams Rd/Firetrack, 1997 MP recommended installation of stile or similar | As in 1997 | - | - | Installation of stile or similar at entrance to Quarry Track and Williams Rd/Firetrack gate. |
| | No formal link with Emerald Quarry area – may be beneficial if the Quarry develops geological interpretive trail | As in 1997 | - | - | Link with Quarry via Quarry Track only be established if DTEI establish geological interpretive trail, & only with consideration of conservation issues (e.g. spread of African Weed Orchid NW corner of reserve) |
| | Reserve is not being maximised as an educational resource. 1997 MP recommended development of a self-guided walk, an Aboriginal guided walk, plus a link into Quarry geological interpretive trail (see above) | No information about the reserve's heritage, conservation or geological values is available on Council website. No guided walks developed. | - | BFL volunteers are currently developing a digital and hard-copy herbarium of the site. | Production of self-guided walk, as recommended in 1997 MP, with pamphlet and in combination with numbered directional posts. Pamphlet made available from Council, on website, or in an established weatherproof box. Further development of digital herbarium for use by members of the public. Information relating to conservation, heritage and/or geological values of the site placed on Council website. |
| Planning/Broader conservation perspective | 1997 Plan recommended nomination for National Estate. | Proposed as a "credit bank" to offset future native vegetation clearance by Council. National Estate status no longer relevant. | - | Credit bank finalisation subject to approval of this MP. Heritage Agreement process initiated. | Regular update of MP, consistency with Emerald Quarry management objectives if any are developed in future. |
| | Friends of Mt Barker Summit active volunteer group. | Bush For Life site active and growing volunteer group. | Bush For Life site established. | Bush For Life conduct regular visits to site and undertake bushcare works including weed control and revegetation. | Continued support from Council for BFL in the management of this relatively new BFL site and its growing band of volunteers. |
| | Reserve is Crown Land, part Care & Control of Council, part Care & Control | As in 1997. | - | In process of consolidating titles, putting all land in Council's Care and Control, | - |

| Issue | Status 1997 | Status 2011 | Actions completed | Current Actions | More proposed actions |
|---|---|--|--|--|---|
| | Crown (including separate Trig Reserve). | | | eliminating Trig Point Reserve, re-zoning as a Conservation Zone in its own right. | |
| | 1997 MP recommended purchase of neighbouring land if feasible | No recent purchases. | SE section purchased just prior to 1997 MP. | Council open to purchasing land to the NE if resources and opportunity arise. | Purchase of surrounding land if available & if feasible. |
| | 1997 MP recommended integrated land management approach with neighbours (including Emerald Quarry) and in keeping with Bremer Barker Catchment Plan, Mt Barker Creek Linear Reserve, SE Highway Roadside Environment MP | - | Consultation with neighbours re visitor area planning. | Ongoing liaison with landholder to south of property; current actions are consistent with proposed actions recommended to contribute to Resource Condition Targets under the SAMDB NRM Plan. Maintenance of Buffers For Biodiversity area on southern boundary by landholders. | Continuation of current actions. |
| Fencing/track maintenance | General vegetation damage resulting from track maintenance procedures, including specific damage along Summit Access Rd, for which 1997 MP recommended 'reconstruction to allow for deposition of sediment and for adequate dispersal of water to prevent erosion'. | displaced road surface material observed in vegetation near corner along Summit Reserve Access Rd (ongoing problem from 1997). | | | Maintenance of vehicle tracks and gates using 'best practice' approach. Run 'best practice' courses for Council staff; fix erosion/deposition along Access Track as per 1997 recommendations. |
| | Internal fencing present. | Some internal fencing still present, some possibly cleared, damage to boundary fences (fallen trees, etc.); | - | - | Assessment of damaged and potentially unsafe internal fencing (i.e. that which is close to walking trails); fix /maintain damaged boundary fencing (in partic. SE section fence) where necessary, i.e. if stock can access the site. |
| Fire Prevention & Management | Emergency vehicle access along Access Rd and Williams Rd. | Unchanged since 1997. | Maintenance of current firetracks. | Maintenance of current firetracks. | Maintenance of current firetracks. Consideration of formal turnaround areas at end of Quarry Track and Williams Rd gate in the event of a review of fire issues. |
| Vegetation | General tree health poor, reasons cited as 'harsh environmental conditions... | Current and past dieback evident, regeneration present through | Controlled burn to assist vegetation recovery suggested by member of the | General monitoring by BFL. | (Refer to Monitoring section) |

| Issue | Status 1997 | Status 2011 | Actions completed | Current Actions | More proposed actions |
|---|---|--|---|---|--|
| Health | clearance and repeated disturbance'; evidence of severe grazing; storm damage in SE (recently purchased) section. | most of reserve, less in upper SE slopes, no Phytophthora records from within 5km of reserve, no signs observed during current survey. Relatively recent dieback of Silver Banksia near old N/S fence-line. | public. Refer also to Monitoring section. | | |
| Pests | 1997 MP mentions minor presence of foxes, rabbits and hares. | Rabbit/hare droppings observed Vegetation Association 7, warrens observed (low incidence). | - | - | Monitoring for increase in rabbit/hare numbers &/or rabbit warren establishment |
| Weeds (general) (refer to Fig. 3 weed map, see also Monitoring) | 1997 MP recommends "implement specialized pest plant removal programs... for Bridal Creeper, African Weed Orchid and Gorse as a matter of urgent priority" | These 3 weeds (plus <i>Pentstemon</i> <i>pallida</i> below) still the main management problems in the reserve | Extensive works undertaken by Bush For Life volunteers, including Gorse, SA Daisy, Cotton Bush, Pusstail Grass, Bridal Creeper, Wild Turnip, Slender Thistle. | Weed management works progressing as detailed below. | Proposed weed management actions as below. |
| Bridal Creeper | 'several small populations away from walking trails'. 1997 MP Recommended eradication of Bridal Creeper as a priority. | Large infestation western boundary; small infestation on rocks below Trig Point; E slope, SW slope. | Small isolated outbreaks have been hand dug, swabbed or sprayed through Veg. Assoc. 1 by BFL. | BFL volunteers to begin treatment of large infestation in the NW corner (Veg. Assoc. 6) in late Oct 2011. | Eradication of small pop'ns as mapped, followed by NW corner. Hand-pulling of very young plants, spot-spraying of remainder, consideration of biological control NW corner. |
| Gorse | 2 dense pop'ns W slope – near junction RL /Link Trail (near <i>C. arcuata</i> plant) and S of fire track gate (1997 MP recommended eradicating the former first); scattered juvs in 'SW Zone' and NW corner | Pop'n near RL/Link Trail reduced to scattered seedlings only; pop'n S of fire track gate still significant but reduced; scattered individuals Veg. Assoc. 1 west slope; significant infestations Veg. Assoc. 6 NW corner | 1992 spraying organised by Mid Hills Animal & Plant Control Board – partial kill plus subsequent burn. Dense regrowth observed in 1997 as a result. Bushcare/BFL work RL/Link Trail pop'n and fire track gate pop'n has reduced large infestations; E slopes plants eradicated. Adjoining property owners on S boundary treated gorse through their property and within Buffer For Biodiversity area in 2009. | Continued cutting and swabbing of adults in all previously treated areas by BFL volunteers. | Continued control of RL/Link and fire trail pop'ns, also spot-spraying or cut/swab scattered juvs W slopes, commencement of work on NW corner pop'n |
| South African Weed Orchid | 2 sites "in the Reserve and Quarry". 1997 MP recommended implementing plan to eradicate | small pop'n in Veg. Assoc. 1 near junction RL/Link Trail; large pop'n Veg. Assoc. 6. | BFL removed many plants from junction RL/Link Trail in recent years. BFL removed many plants from picnic area in 2010. | BFL follow-junction RL/Link Trail - only 3 plants present, i.e. small number compared to previous population. | Eradication of pop'n near RL/Link Trail; commencement of works on second pop'n immediately; monitoring of picnic area. |

| Issue | Status 1997 | Status 2011 | Actions completed | Current Actions | More proposed actions |
|---|---|---|---|--|---|
| Olive | 'Several' (locations listed in Reserve File), 1997 MP recommended removal of one plant in SW zone | Three populations of less than 5 plants observed | Olive in 'SW Zone' (Veg. Assoc. 1) appears to have been removed. BFL removed 3 olives from SW corner August 2011. | Drill and fill of remaining large Olive in Veg. Assoc. 1 | Removal of remaining plants in reserve (Veg. Assoc. 4), monitoring for seedlings in Veg. Assocs. 4 & 1) |
| Cotton Bush & SA Daisy | Throughout entire reserve – 1997 MP recommended removal by hand | Significant infestations Veg. Assoc. 4, 5, & 7 (E slope & southern ridgetop); isolated plants only on W slope, very few individuals in vicinity of Trig Point | Removal of Cotton Bush in vicinity of Trig Point (Veg. Assoc. 2) by BFL resulting in significant visible change in the area; removal of 20 Cotton Bush from area surrounding carpark early 2011; Cotton Bush Infestation removed along Summit Track by TFL bushcare contractors from 2008-2011; many plants removed from rocky W slope between carpark and lookout by BFL; Cotton Bush removed from areas surrounding picnic area 2009. | Continued removal of large, old cotton bush in the vicinity of the Trig Point throughout 2010/11. Continued removal of SA Daisy on SW slope (Veg. Assoc. 1); current Cotton Bush removal from SW corner, S slope and S of lower carpark. | Eradication from Trig Point area and surrounds (Veg Assoc. 2 & 5), then control of pop'ns in Veg Assoc. 7 & 4. Weed Popper may be a useful tool. Continued opportunistic removal from SW slope. |
| Freesia & Soursob | - | Main interior infestations along Trig Trail, north of Trig Point on ridgetop, in revegetation area south of carpark, other instances possibly along Reserve boundaries. | - | - | Control of Freesia pop'n in area S of tower complex mentioned above as high priority. Control of interior populations as a medium priority. |
| Blackberry | "Various infestations SW zone" | None recorded during current survey, but populations still present in Veg. Assoc 1 (Angela Cullen, pers. comm.) | BFL have repeatedly removed small populations emerging on S and SW slopes (Veg. Assoc. 1). Treated large outbreak above firetrack gate. | Population on lower S slope (Veg. Assoc. 1) treated by BFL Aug 2011). | Monitoring for reinfestation/regrowth of plants recently treated by BFL. |
| Pussytail Grass, Phalaris, Perennial Veldt Grass | Pussytail Grass throughout reserve; Phalaris (and other exotic grasses) along lower verge of Summit Access Rd and near gate SW boundary; Perennial Veldt not mentioned. | Pussytail Grass dense throughout reserve, possibly slightly less cover on some lower slopes; Phalaris minor instances only as in 1997, Perennial Veldt in revegetation area S of carpark. | Concentrated removal of Pussytail Grass from the Trig Point area, working out from the cairn (BFL) | Continued Pussytail Grass control (BFL) in Trig Point area and Picnic area (Veg. Assoc. 2); opportunistic removal (during each visit) of Pussytail Grass plants that are smothering small natives and any smaller or isolated outbreaks, particularly on lower S slope Veg. Assoc. | As per PIRSA advice, Pussytail Grass control in immediate vicinity of threatened plants or other areas where works are being undertaken + monitoring for weed regrowth in these areas; eradication of Phalaris & Perennial Veldt as low priority (slashing then spot-spraying of regrowth in larger infestation along SL Trail where unlikely to |

| Issue | Status 1997 | Status 2011 | Actions completed | Current Actions | More proposed actions |
|---|--|---|---|---|--|
| | | | | 1. | cause off-target damage). |
| General revegetation (see also – Visitor Area, Trig Point area, Fencing/Firetracks) | 1997 MP recommended revegetation of lower SW slopes, buffer along W & SW boundaries including lower verge of SL track, entry points of unwanted tracks, lower verge Access Rd, tower complex. | Areas slow to regenerate – revegetation still an option. | Recommended revegetation has not been implemented, except possibly around tower complex cages. Revegetation area S of carpark successfully completed. | - | If resources available, revegetation is recommended <i>in conjunction with weed control along W & SW boundaries (entire SL lower verge unnecessary), in vicinity of Williams Rd/Firetrack gate including Gorse patch S of fence.</i> |
| Species of Conservation Significance (see also Monitoring) | Several plant species of regional significance recorded. 1997 MP recommended weed control and revegetation attempts at <i>Acacia rupicola</i> and <i>Cassinia arcuata</i> sites. | 28 plant species recorded for the reserve have a current conservation rating. | Weed control appears to have been undertaken in the vicinity of the <i>Cassinia arcuata</i> . <i>Cassinia</i> area pegged. Unknown if there has been revegetation attempts, but no juvenile plants are present. | - | Weed control & revegetation as per Crawford (1997); Search for (or opportunistically record) additional pop'ns, in particular of <i>P. rutifolius</i> , <i>L. pseudohyssopifolia</i> and <i>B. spinosa</i> ssp. <i>lasiophylla</i> & <i>D. densa</i>); informing & educating of personnel involved with works within the Reserve as to identification & locations of listed species; regularly monitor status of populations. |
| Monitoring/review (see also plants of conservation significance and individual weeds) | 1997 MP recommended monitoring of plants of conservation significance; 3 photopoints established 1997, including one in vicinity of large Gorse patch & one in area of high dieback. 1997 Plan recommends revisiting photopoints, repeating Biological Survey data collection; site info & opportunistic data stored in "Reserve File", monitoring of visitor impacts, regular update of MP. | - | 1 photopoint revisited 2011, others not found; <i>Cassinia arcuata</i> revisited 2011; areas of concentrated weed control revisited 2011; visitor impts observed 2011. | Monitoring of weed levels/regrowth is constantly undertaken by BFL volunteers as part of their planned works programme. | Vegetation Condition monitoring by DENR using BushRAT methodology; Bush Condition Monitoring undertaken to satisfy SEB requirements; monitor regeneration of Silver Banksia Veg. Assoc. 7; re-mapping of weeds in 3-5 years, expecting noticeable change following extensive current works by BFL; other weed monitoring as outlined above; optional -repeat Biological Survey; monitor for <i>Phytophthora</i> presence; new photopoints established in areas of planned works. |

4.3 Documentation, Monitoring and Review of Management Actions

The District Council of Mt Barker will undertake monitoring as advised by the Native Vegetation Council. It is understood that this monitoring is likely to be classified as "Level 3" monitoring and will involve:

- Repeat of photographs at already established photopoints (if they can be relocated⁸). One photopoint was relocated during the current survey by referring to the photograph in Crawford (1997) and a photo was taken (refer to Vegetation Association 5). The new GPS point given to this photopoint is: 310562E 6117613N Datum WGS84
- Establishment of new photopoints in areas of expected change, including dieback area in Vegetation Association 7¹¹, Gorse control areas in Vegetation Association 1 (note that one photopoint was established in the 1990s to record changes to indigenous vegetation following gorse removal, this photopoint was not relocated in the current survey), and weed control areas along N boundary and/or W boundary. A photopoint in Vegetation Association 3 is also recommended – the area has good sight distance due to a lack of mid-storey, and is likely to demonstrate substantial change visible in photographs in the case of fire.
- Annual submission of photopoints and works records sheets, comments on success of the year's actions and proposals for the following year's actions.
- Annual bushland condition monitoring following Croft et al. (2005)¹², submission of cumulative results every five years.

Note that repeated BushRAT scoring by DENR may also provide an idea of the extent and rate of change to Vegetation Condition, Conservation Value and landscape context (the robustness of this method in the context of observer bias and environmental variability is yet to be tested).

An update of this Management Plan is recommended in approximately ten years' time, including repeated weed mapping.

In addition to monitoring required by the Native Vegetation Council, the following will be undertaken:

- Monitoring of the status of populations of plant species of conservation significance. This could be done at the same time as the BCM monitoring to ensure it is completed regularly. Results from the monitoring will feed back into actions listed in Section 4.1.
- Repeat of Biological Survey (optional to carry this out, but if it is undertaken data should be submitted to DENR)
- Monitoring for Phytophthora presence.
- Monitoring of areas where weed management has been successful (e.g. Wild Turnip control) for any flushes of new growth.
- Monitoring for regeneration of Silver Banksia following relatively recent dieback in Vegetation Association 7.

¹¹ Crawford (1997) cites a photopoint as having been established at 310500E 6117350N to document the regeneration of *E. viminalis* following cessation of grazing. This point was not relocated. Datum is not recorded - it may be possible to relocate the point by changing the datum on the GPS. Two further photopoints were established, one was relocated using the photograph in the plan.

¹² Croft, S.J., J.A. Pedler & T.I. Milne (2005). Bushland Condition Monitoring Manual: Southern Mt Lofty Ranges. Nature Conservation Society of South Australia Inc.

5. References

- | | | |
|--|------|---|
| Bradley, J | 1988 | Bringing Back the Bush; the Bradley Method of Bush Regeneration. Landsdowne Press. |
| Carpenter & Reid | | |
| Central Hills Soil Conservation Board (SA) | 1991 | Guidelines to Land Management in the Central Hills District. Mt Lofty Ranges Catchment Centre. |
| Crawford, C.A. | 1997 | Mount Barker Summit Conservation Reserve Management Plan. Prepared for the District Council of Mount Barker, South Australia, with the assistance of a grant from Save the Bush as part of the National Landcare Program (NLP). |
| ¹ Croft, S.J., J.A. Pedler & T.I. Milne | 2005 | Bushland Condition Monitoring Manual: Southern Mt Lofty Ranges. Nature Conservation Society of South Australia Inc. |
| Crompton, A., in Crawford (1997) | 1997 | Mount Barker District Environment Association. Recent land use history of Mount Barker Summit. |
| DENR | 2002 | Remnant vegetation data within Environmental Associations for South Australia, as calculated December 2002. |
| DENR (unpubl.) | | Provisional List of Threatened Ecosystems of South Australia |
| Department of Road Transport | 1992 | Rehabilitation Proposal: Emerald Quarry, Mount Barker South Australia. |
| The District Council of Mount Barker | 2007 | Recreational Trails Strategy 2006-2010 |
| Draper, N | 1985 | Mount Barker Summit: Assessment of Aboriginal Heritage Significance. Unpublished report; South Australian Public Buildings Department. |
| Gilbert, R | 1997 | Friends of Mount Barker Summit. Pers. Comm – recent land use history |
| Hodder, M. & Milne, T (in prep.) | 2011 | Guide to the BushRAT methodology. Native Vegetation and Biodiversity Management Unit, DENR. |
| Lang, P & Kraehenbuehl, DN | 1997 | Plants of Particular Conservation Significance in South Australia's Agricultural Regions: Sept. 1997 Unpublished database; DENR. |

| | | |
|--|------|---|
| Laut, P et al | 1977 | Environments of South Australia, Province 3: Mount Lofty Block. Division of Land Use Research, CSIRO, Canberra. |
| Mitchell, S. (in Crawford 1997) | 1997 | District Council of Mt Barker; Engineering Services; pers. comm. Road maintenance practices. |
| National Parks and Wildlife Act (1972) Schedules | 1972 | South Australian Government |
| Robertson, M | 1994 | Guidelines for preparing vegetation management plans for local government reserves. Native Vegetation Conservation Section, DENR. |
| Schmidt, R | 1983 | Mountain Upon the Plain: A History of Mount Barker and its Surroundings. Publ. DC of Mount Barker. |
| Toteff, S & McBriar, EM | 1979 | Geological Monuments of South Australia. Geological Society of Australia Inc., South Australian Division. |

6. Appendices & Figures

Appendix 1. Plant species recorded at Mt Barker Summit, compiled from various sources

| FAMILY Genus species | Common Name | Conservation Status | | | Source | | | | |
|--|--------------------------|---------------------|----------------------------|--|------------------------------------|--------------------------------------|---|---|---|
| | | AUS | SA (NPW Act 1972) | Southern Lofty Region (Lang & Kraehenbuehl, 1997) | EAC 2011 (current survey) | Native Orchid Society of SA | Biological Databases of SA accessed June 2011 | Mt Barker District Env Assoc. Roadside Survey + related list from SA Herbarium | Crawford 1996- 1997 (incl. 1979 Dept Environment & Planning site) |
| ADIANTACEAE | | | | | | | | | |
| <i>Cheilanthes austrotenuifolia</i> | Annual Rock-fern | | | | x | | x | x | x |
| AMARANATHACEAE | | | | | | | | | |
| <i>Ptilotus erubescens</i> | Hairy Heads | | | | | | | x | x |
| AMARYLLIDACEAE | | | | | | | | | |
| <i>Calostemma purpureum</i> | Pink Garland-lily | | | | x | | | | x |
| APOCYNACEAE | | | | | | | | | |
| * <i>Gomphocarpus cancellatus</i> | Broad-leaf Cotton-bush | | | | x | | x | | x |
| ASPLENIACEAE | | | | | | | | | |
| <i>Asplenium flabellifolium</i> | Necklace Fern | | | | x | | | | x |
| <i>Pleurosorus rufolius</i> | Blanket Fern | | | U | x | | | | x |
| BORAGINACEAE | | | | | | | | | |
| <i>Cynoglossum australe</i> | Australian Hounds tongue | | | | | | | 6x | |
| <i>Cynoglossum suaveolens</i> | Sweet Hound's-tongue | | | U | x | | x | | x |
| * <i>Heliotropium europaeum</i> | Common Heliotrope | | | | x | | | | |
| CAMPANULACEAE | | | | | | | | | |
| <i>Wahlenbergia gracilentia</i> | Annual Bluebell | | | | | | | x | |
| <i>Wahlenbergia stricta</i> ssp. <i>stricta</i> | Tall Bluebell | | | | x | | x | x | x |
| CASUARINACEAE | | | | | | | | | |
| <i>Allocasuarina verticillata</i> | Drooping Sheoak | | | | x | | x | x | x |
| CENTROLEPIDACEAE | | | | | | | | | |
| <i>Aphelia pumilio</i> | Dwarf Aphelia | | | | | | x | | |
| <i>Centrolepis aristata</i> | Pointed Centrolepis | | | | x | | x | x | |
| <i>Centrolepis polygyna</i> | Wiry Centrolepis | | | | | | x | | |
| <i>Centrolepis strigosa</i> ssp. <i>strigosa</i> | Hairy Centrolepis | | | | x | | x | x | |

| FAMILY Genus species | Common Name | Conservation Status | | | Source | | | | |
|--|-----------------------|---------------------|----------------------------|--|------------------------------------|--------------------------------------|---|---|---|
| | | AUS | SA (NPW Act 1972) | Southern Lofty Region (Lang & Kraehenbuehl, 1997) | EAC 2011 (current survey) | Native Orchid Society of SA | Biological Databases of SA accessed June 2011 | Mt Barker District Env Assoc. Roadside Survey + related list from SA Herbarium | Crawford 1996- 1997 (incl. 1979 Dept Environment & Planning site) |
| CHENOPODIACEAE | | | | | | | | | |
| <i>Atriplex semibaccata</i> | Berry Saltbush | | | | | | | | x |
| <i>Einadia nutans</i> ssp. <i>nutans</i> | Climbing Saltbush | | | | x | | | | |
| COMPOSITAE | | | | | | | | | |
| * <i>Arctotheca calendula</i> | Cape Weed | | | | x | | | | |
| <i>Blennospora drummondii</i> | Dwarf Button-flower | | | | | | 5x | x | x |
| * <i>Carduus tenuiflorus</i> | Slender Thistle | | | | | | | | x |
| * <i>Carduus pycnocephalus</i> | Shore Thistle | | | | | | x | | |
| <i>Cassinia arcuata</i> | Drooping Cassinia | | | V | x | | | x | x |
| * <i>Centaurea melitensis</i> | Malta Thistle | | | | x | | | | |
| <i>Chrysocephalum apiculatum</i> | Common Everlasting | | | | | | x | | |
| <i>Chrysocephalum semipapposum</i> | Clustered Everlasting | | | | | | 5x | | |
| * <i>Cirsium vulgare</i> | Spear Thistle | | | | | | x | | |
| * <i>Conyza albida</i> | Tall Fleabane | | | | x | | | | |
| <i>Cotula australis</i> | Common Cotula | | | | | | | x | |
| <i>Gnaphalium</i> sp. | Cudweed | | | | | | | 17x | |
| <i>Helichrysum leucopsidium</i> | Satin Everlasting | | | U | x | | x | | x |
| * <i>Helminthotheca echioides</i> | Ox-tongue | | | | x | | | | |
| <i>Hyalosperma demissum</i> | Dwarf Sunray | | | | | | x | x | |
| * <i>Hypochaeris</i> sp. | Cat's Ear | | | | 19x | | | | |
| * <i>Hypochaeris glabra</i> | Smooth Cat's Ear | | | | | | x | | x |
| * <i>Hypochaeris radicata</i> | Rough Cat's Ear | | | | | | x | | x |
| <i>Lagenophora huegelii</i> | Coarse Bottle-daisy | | | | x | | | x | x |
| <i>Millotia myosotidifolia</i> | Broad-leaved Millotia | | | | | | | x | |
| <i>Millotia tenuifolia</i> var. <i>tenuifolia</i> | Soft Millotia | | | | | | x | | x |
| <i>Olearia ramulosa</i> | Twiggy Daisy-bush | | | | x | | x | x | x |
| <i>Olearia</i> sp. | Daisy-bush | | | | | | | x | |
| <i>Podotheca angustifolia</i> | Sticky Long-heads | | | | x | | | | |
| <i>Pseudognaphalium luteoalbum</i> | Jersey Cudweed | | | | | | | | x |
| <i>Senecio cunninghami</i> | Groundsel | | | | | | | 7x | |
| <i>Senecio glomeratus</i> | Swamp Groundsel | | | | x | | | | x |
| <i>Senecio picridioides</i> | Purple-leaf Groundsel | | | | x | | x | x | x |
| <i>Senecio pinnatifolius</i> var. <i>pinnatifolius</i> | Groundsel | | | | | | 1x | | |
| * <i>Senecio pterophorus</i> | African Daisy | | | | x | | x | | x |
| <i>Senecio quadridentatus</i> | Cotton Groundsel | | | | x | | x | x | x |
| <i>Senecio spanomerus</i> | Variable Groundsel | | | | x | | x | x | x |

| FAMILY Genus species | Common Name | Conservation Status | | | Source | | | | |
|--|--------------------------|---------------------|----------------------------|--|------------------------------------|--------------------------------------|---|---|---|
| | | AUS | SA (NPW Act 1972) | Southern Lofty Region (Lang & Kraehenbuehl, 1997) | EAC 2011 (current survey) | Native Orchid Society of SA | Biological Databases of SA accessed June 2011 | Mt Barker District Env Assoc. Roadside Survey + related list from SA Herbarium | Crawford 1996- 1997 (incl. 1979 Dept Environment & Planning site) |
| <i>Siloxerus multiflorus</i> | Small Wrinklewort | | | | | | x | x | |
| * <i>Silybum marianum</i> | Variiegated Thistle | | | | x | | | | |
| * <i>Sonchus asper</i> ssp. <i>asper</i> | Sow-thistle | | | | x | | x | | |
| * <i>Sonchus oleraceus</i> | Common Sow-thistle | | | | x | | x | | x |
| <i>Stuartina muelleri</i> | Spoon Cudweed | | | | | | x | x | |
| <i>Triptilodiscus pygmaeus</i> | Small Yellow-heads | | | U | x | | x | x | |
| <i>Vittadinia dissecta</i> | Vittadinia | | | | | | | | x |
| <i>Vittadinia gracilis</i> | Woolly New Holland Daisy | | | | x | | | | x |
| CONVOLVULACEAE | | | | | | | | | |
| <i>Convolvulus angustissimus</i> ssp. <i>angustissimus</i> | Australian Bindweed | | | | x | | x | x | x |
| <i>Convolvulus remotus</i> | Grassy bindweed | | | | | | x | | x |
| <i>Dichondra repens</i> | Kidney Weed | | | | x | | x | x | x |
| CRASSULACEAE | | | | | | | | | |
| <i>Crassula decumbens</i> | Spreading Crassula | | | | | | | x | |
| <i>Crassula closiana</i> | Stalked Crassula | | | | | | | x | |
| CRUCIFERAE | | | | | | | | | |
| * <i>Brassica tournefortii</i> | Wild Turnip | | | | x | | | | |
| <i>Lepidium pseudohyssopifolium</i> | | | | | x | | | | |
| CYPERACEAE | | | | | | | | | |
| <i>Carex breviculmis</i> | Short-stem Sedge | | | | x | | | x | x |
| <i>Carex fascicularis</i> | Tassel Sedge | | | | | | | x | |
| * <i>Cyperus tenellus</i> | Tiny Flat-sedge | | | | | | x | | |
| <i>Lepidosperma carphoides</i> | Black Rapier-sedge | | | | x | | | | x |
| <i>Lepidosperma curtisiae</i> | Little Sword-sedge | | | | x | | | | x |
| <i>Lepidosperma semiteres</i> | Wire Rapier-sedge | | | | | | x | x | x |
| <i>Lepidosperma viscidum</i> | Sticky Sword-sedge | | | | x | | x | x | x |
| <i>Schoenus apogon</i> | Common Bog-rush | | | | x | | x | x | x |
| DILLENACEAE | | | | | | | | | |
| <i>Hibbertia crinita</i> | | | | | x | | x | | x |
| <i>Hibbertia exutiacies</i> | Prickly Guinea-flower | | | | | | | x | |
| <i>Hibbertia riparia</i> | Bristly Guinea-flower | | | | x | | | x | |
| <i>Hibbertia sericea</i> var. | Silky Guinea-flower | | | | | | 3x | 3x | |

| FAMILY Genus species | Common Name | Conservation Status | | | Source | | | | |
|---|-----------------------|---------------------|----------------------------|--|------------------------------------|--------------------------------------|---|---|---|
| | | AUS | SA (NPW Act 1972) | Southern Lofty Region (Lang & Kraehenbuehl, 1997) | EAC 2011 (current survey) | Native Orchid Society of SA | Biological Databases of SA accessed June 2011 | Mt Barker District Env Assoc. Roadside Survey + related list from SA Herbarium | Crawford 1996- 1997 (incl. 1979 Dept Environment & Planning site) |
| Hibbertia sp. <i>Glabriuscula</i> (D.J.Whibley 9012) | Smooth Guinea-flower | | | | | | | | x |
| DROSERACEAE | | | | | | | | | |
| <i>Drosera auriculata</i> | Tall Sundew | | | | | | | x | |
| <i>Drosera glanduligera</i> | Scarlet Sundew | | | | | | | x | |
| <i>Drosera macrantha</i> ssp. <i>planchonii</i> | Climbing Sundew | | | | x | | | x | x |
| <i>Drosera peltata</i> | Pale Sundew | | | | | | | | x |
| <i>Drosera whittakeri</i> ssp. <i>whittakeri</i> | Scented Sundew | | | | x | | | x | x |
| EPACRIDACEAE | | | | | | | | | |
| <i>Astroloma humifusum</i> | Cranberry Heath | | | | 8x | | x | x | 8x |
| EUPHORBIACEAE | | | | | | | | | |
| * <i>Euphorbia pepilus</i> | Petty Spurge | | | | x | | | | |
| <i>Poranthera microphylla</i> | Small Poranthera | | | | x | | x | x | x |
| FUMARIACEAE | | | | | | | | | |
| * <i>Fumaria capreolata</i> | White-flower Fumitory | | | | x | | | | |
| * <i>Fumaria muralis</i> | Wall Fumitory | | | | x | | | | |
| GENTIANACEAE | | | | | | | | | |
| * <i>Centaurium</i> sp. | Centaury | | | | x | | | | |
| * <i>Centaurium erythraea</i> | Common Centaury | | | | | | x | | |
| * <i>Centaurium tenuiflorum</i> | Branched Centaury | | | | | | x | | |
| GERANIACEAE | | | | | | | | | |
| <i>Geranium potentilloides</i> var. <i>potentilloides</i> | Downy Geranium | | | Q | x | | | | |
| <i>Geranium retrorsum</i> | Grassland geranium | | | | | | x | | |
| <i>Geranium solanderi</i> var. <i>solanderi</i> | Austral Geranium | | | | x | | | x | x |
| <i>Pelargonium australe</i> | Austral Storks Bill | | | | | | | x | x |
| GOODENIACEAE | | | | | | | | | |
| <i>Brunonia australis</i> | Blue Pincushion | | | | | | | x | |
| <i>Goodenia blackiana</i> | Native Primrose | | | | | | | | |
| <i>Goodenia geniculata</i> | Bent Goodenia | | | | | | | x | x |
| <i>Goodenia ovata</i> | Hop Goodenia | | | | | | | x | |
| <i>Scaevola albida</i> | Pale Fanflower | | | | x | | x | | x |

| FAMILY Genus species | Common Name | Conservation Status | | | Source | | | | |
|--|----------------------------|---------------------|----------------------------|--|------------------------------------|--------------------------------------|---|---|---|
| | | AUS | SA (NPW Act 1972) | Southern Lofty Region (Lang & Kraehenbuehl, 1997) | EAC 2011 (current survey) | Native Orchid Society of SA | Biological Databases of SA accessed June 2011 | Mt Barker District Env Assoc. Roadside Survey + related list from SA Herbarium | Crawford 1996- 1997 (incl. 1979 Dept Environment & Planning site) |
| GRAMINEAE | | | | | | | | | |
| *Aira cupaniana | Small Hair-grass | | | | | | x | | x |
| Agrostis avenacea | Blown Grass | | | | | | | | 18x |
| Amphipogon strictus var. setifer | Spreading Grey-beard Grass | | | | x | | | | x |
| *Anthoxanthum odoratum | Sweet Vernal Grass | | | | x | | | | |
| Aristida behriana | Brush Wire-grass | | | U | x | | | | |
| Austrodanthonia caespitosa | Common Wallaby-grass | | | | | | | x | x |
| Austrodanthonia eriantha | Hill Wallaby-grass | | | U | x | | | | x |
| Austrodanthonia geniculata | Kneed Wallaby-grass | | | | x | | x | | |
| Austrodanthonia pilosa | Velvet Wallaby-grass | | | | x | | x | | |
| Austrodanthonia racemosa var. racemosa | Slender Wallaby-grass | | | | x | | | | |
| Austrostipa curticoma | Short-crest Spear-grass | | | U | x | | | | |
| Austrostipa elegantissima | Feather Spear-grass | | | U | x | | | x | x |
| Austrostipa flavescens | Coast Spear-grass | | | | x | | | | |
| Austrostipa hemipogon | Half-beard Spear-grass | | | U | x | | | | x |
| Austrostipa mollis | Soft Spear-grass | | | | x | | x | x | x |
| Austrostipa nodosa | Tall Spear-grass | | | | x | | | x | x |
| Austrostipa scabra ssp. falcata | Slender Spear-grass | | | | x | | | | |
| Austrostipa semibarbata | Fibrous Spear-grass | | | | x | | x | | x |
| Austrostipa setacea | Corkscrew Spear-grass | | | U | x | | | | |
| *Avena barbata | Bearded Oat | | | | x | | x | | x |
| *Briza maxima | Large Quaking-grass | | | | x | | x | | x |
| *Briza minor | Lesser Quaking-grass | | | | | | x | | |
| *Bromus sp. | Brome | | | | x | | | | |
| Chloris truncata | Windmill Grass | | | | | | | | x |
| *Cynosurus echinatus | Rough Dog's-tail Grass | | | | x | | | | x |
| *Dactylis glomerata | Cocksfoot | | | | x | | | | |
| Deyeuxia densa | Heath Bent-grass | | R | R | x | | x | | |
| Deyeuxia quadriseta | Reed Bent-grass | | | | x | | x | | |
| Dichelachne crinita | Long-hair Plume-grass | | | | x | | | | |
| Echinopogon ovatus | Rough-beard Grass | | | | | | x | | |
| *Ehrharta calycina | Perennial Veldt | | | | x | | | | |
| *Ehrharta longiflora | Annual Veldt Grass | | | | x | | x | | |
| Elymus scaber var. scaber | Native Wheat-grass | | | | x | | | | x |
| *Holcus lanatus | Yorkshire Fog | | | | x | | | | x |
| Lachnagrostis aemula | Blown-grass | | | | x | | x | | |

| FAMILY Genus species | Common Name | Conservation Status | | | Source | | | | |
|--|--------------------------|---------------------|----------------------------|--|------------------------------------|--------------------------------------|---|---|---|
| | | AUS | SA (NPW Act 1972) | Southern Lofty Region (Lang & Kraehenbuehl, 1997) | EAC 2011 (current survey) | Native Orchid Society of SA | Biological Databases of SA accessed June 2011 | Mt Barker District Env Assoc. Roadside Survey + related list from SA Herbarium | Crawford 1996- 1997 (incl. 1979 Dept Environment & Planning site) |
| *Lolium sp. | Ryegrass | | | | x | | | | x |
| *Lolium rigidum | Wimmera Ryegrass | | | | | | x | | |
| Microlaena stipoides var. stipoides | Weeping Rice-grass | | | | x | | | x | x |
| Neurachne alopecuroidea | Fox-tail Mulga-grass | | | | x | | | x | x |
| *Paspalum sp. | Paspalum | | | | x | | | | |
| *Pentaschistis pallida | Pussy Tail | | | | x | | x | | x |
| *Phalaris sp. | Canary Grass | | | | x | | | | |
| *Poa annua | Winter Grass | | | | x | | | | |
| Poa crassicaudex | Thick-stem Tussock-grass | | | | | | x | | |
| Poa sp. labillardieri var. labillardieri | Common Tussock-grass | | | | 12x | | | x | x |
| Themeda triandra | Kangaroo Grass | | | | x | | x | x | x |
| *Vulpia bromoides | Squirrel-tail Fescue | | | | | | x | | |
| HALORAGACEAE | | | | | | | | | |
| Gonocarpus elatus | Hill Raspwort | | | | x | | x | x | x |
| Gonocarpus tetragynus | Small-leaf Raspwort | | | | x | | x | x | x |
| HYPOXIDACEAE | | | | | | | | | |
| Hypoxis glabella | Yellow Star | | | | | | | x | |
| IRIDACEAE | | | | | | | | | |
| *Freesia cultivar | Freesia | | | | 2x | | | | |
| *Romulea rosea var. australis | Common Onion-grass | | | | | | x | | |
| *Romulea sp. | Onion-grass | | | | x | | | | |
| *Sparaxis bulbifera | Sparaxis | | | | | | x | | |
| JUNCACEAE | | | | | | | | | |
| Juncus subsecundus | Finger Rush | | | | x | | x | | |
| Luzula meridionalis | Common Wood-rush | | | | x | | | | |
| JUNCAGINACEAE | | | | | | | | | |
| Triglochin centrocarpum | Dwarf Arrowgrass | | | | | | | 12x | |
| LEGUMINOSAE | | | | | | | | | |
| Acacia paradoxa | Kangaroo Thorn | | | | x | | x | x | x |
| Acacia pycnantha | Golden Wattle | | | | x | | x | x | x |
| Acacia retinodes | Wirilda | | | | x | | | x | x |

| FAMILY Genus species | Common Name | Conservation Status | | | Source | | | | |
|---|------------------------|---------------------|----------------------------|--|------------------------------------|--------------------------------------|---|---|---|
| | | AUS | SA (NPW Act 1972) | Southern Lofty Region (Lang & Kraehenbuehl, 1997) | EAC 2011 (current survey) | Native Orchid Society of SA | Biological Databases of SA accessed June 2011 | Mt Barker District Env Assoc. Roadside Survey + related list from SA Herbarium | Crawford 1996- 1997 (incl. 1979 Dept Environment & Planning site) |
| <i>Acacia rupicola</i> | Rock Wattle | | | | | | 5x | | x |
| <i>Bossiaea prostrata</i> | Creeping Bossiaea | | | | x | | x | x | x |
| <i>Daviesia leptophylla</i> | a Bitter-pea | | | | | | | x | |
| <i>Daviesia ulicifolia</i> ssp. <i>incarnata</i> | a Bitter-pea | | | | | | x | | |
| <i>Dillwynia hispida</i> | Red Parrot-pea | | | | | | | x | x |
| <i>Eutaxia microphylla</i> | Mallee Bush-pea | | | | | | | x | |
| * <i>Genista monspessulana</i> | Montpellier Broom | | | | | | x | | |
| <i>Glycine rubiginosa</i> | Twining Glycine | | | | x | | | x | x |
| <i>Hardenbergia violacea</i> | Native Lilac | | | | x | | x | x | x |
| <i>Kennedia prostrata</i> | Scarlet Runner | | | | x | | x | x | x |
| * <i>Trifolium angustifolium</i> | Narrow-leaf Clover | | | | | | | | x |
| * <i>Ulex europaeus</i> | Gorse | | | | x | | x | | x |
| LILIACEAE | | | | | | | | | |
| * <i>Agapanthus praecox</i> ssp. <i>orientalis</i> | Agapanthus | | | | x | | | | |
| <i>Arthropodium fimbriatum</i> | Nodding Vanilla-lily | | | | x | | | | x |
| <i>Arthropodium strictum</i> | Common Vanilla-lily | | | | x | | x | x | x |
| * <i>Asparagus asparagoides</i> | Bridal Creeper | | | | x | | | | |
| * <i>Asphodelus fistulosus</i> | Onion Weed | | | | | | x | | |
| <i>Bulbine bulbosa</i> | Bulbine-lily | | | | x | | | x | x |
| <i>Burchardia umbellata</i> | Milkmaids | | | | x | | x | x | x |
| <i>Caesia calliantha</i> | Blue Grass-lily | | | | x | | | x | x |
| <i>Caesia parviflora</i> | Pale Grass-lily | | | | | | | 14x | |
| <i>Chamaescilla corymbosa</i> var. <i>corymbosa</i> | Blue Squill | | | | x | | | x | x |
| <i>Dianella brevicaulis/revoluta</i> var. | Black-anther Flax-lily | | | | | | x | | |
| <i>Dianella brevicaulis</i> | Short-stem Flax-lily | | | | x | | | | |
| <i>Dianella revoluta</i> var. <i>revoluta</i> | Black-anther Flax-lily | | | | x | | | x | x |
| <i>Lomandra densiflora</i> | Soft Tussock Mat-rush | | | | x | | x | x | x |
| <i>Lomandra fibrata</i> | Mt Lofty Mat-rush | | | | | | | x | x |
| <i>Lomandra micrantha</i> | Small-flower Mat-rush | | | | x | | | | |
| <i>Lomandra micrantha</i> ssp. <i>micrantha</i> | Small-flower Mat-rush | | | | | | | | x |
| <i>Lomandra multiflora</i> ssp. <i>dura</i> | Hard Mat-rush | | | | x | | x | x | x |
| <i>Lomandra nana</i> | Small Mat-rush | | | | x | | | 15x | x |
| <i>Lomandra sororia</i> | Sword Mat-rush | | | U | x | | | x | x |
| <i>Lomandra</i> sp. | Mat-rush | | | | | | | x | |
| <i>Thysanotus patersonii</i> | Twining Fringe-lily | | | | x | | x | x | x |
| <i>Tricoryne elatior</i> | Yellow Rush-lily | | | | x | | x | x | x |

| FAMILY Genus species | Common Name | Conservation Status | | | Source | | | | |
|---|---------------------------|---------------------|----------------------------|--|------------------------------------|--------------------------------------|---|---|---|
| | | AUS | SA (NPW Act 1972) | Southern Lofty Region (Lang & Kraehenbuehl, 1997) | EAC 2011 (current survey) | Native Orchid Society of SA | Biological Databases of SA accessed June 2011 | Mt Barker District Env Assoc. Roadside Survey + related list from SA Herbarium | Crawford 1996- 1997 (incl. 1979 Dept Environment & Planning site) |
| <i>Wurmbea dioica</i> | Early Nancy | | | | x | | x | x | |
| <i>Xanthorrhoea quadrangulata</i> | Rock Grass-tree | | | | x | | x | x | x |
| <i>Xanthorrhoea semiplana</i> ssp. <i>semiplana</i> | Yacca | | | | x | | | x | x |
| LORANTHACEAE | | | | | | | | | |
| <i>Amyema miquelii</i> | Box Mistletoe | | | | x | | | | x |
| MYOPORACEAE | | | | | | | | | |
| <i>Myoporum</i> sp. <i>Petiolatum</i> (R.Taylor 484) | Sticky Boobialla | | | U | x | | x | | |
| <i>Myoporum viscosum</i> | | | | | | | | 9x | 9x |
| MYRTACEAE | | | | | | | | | |
| <i>Calytrix tetragona</i> | Common Fringe-myrtle | | | | 4x | | x | x | x |
| <i>Eucalyptus camaldulensis</i> var. <i>camaldulensis</i> | River Red Gum | | | | x | | | x | x |
| <i>Eucalyptus fasciculosa</i> | Pink Gum | | | | | | | x | |
| <i>Eucalyptus leucoxylon</i> ssp. <i>leucoxylon</i> | South Australian Blue Gum | | | | x | | x | x | x |
| <i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i> | Rough-bark Manna Gum | | | | x | | x | | x |
| <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> | Manna Gum | | R | R | x | | x | | |
| <i>Eucalyptus viminalis</i> | Manna Gum | | | | | | | x | x |
| <i>Leptospermum myrsinoides</i> | Heath Tea-tree | | | | 4x | | x | x | x |
| OLEACEAE | | | | | | | | | |
| * <i>Olea europaea</i> ssp. <i>europaea</i> | Olive | | | | x | | x | | |
| OPHIOGLOSSACEAE | | | | | | | | | |
| <i>Ophioglossum lusitanicum</i> | Austral Adder's-tongue | | | U | x | | x | | |
| ORCHIDACEAE | | | | | | | | | |
| <i>Acianthus pusillus</i> | Mosquito Orchid | | | | x | | | x | x |
| <i>Caladenia carnea</i> | Pink Fingers | | | | | x | | x | |
| <i>Caladenia dilatata</i> | a Spider Orchid | | | | | | | 16x | |
| <i>Caladenia latifolia</i> | Pink Caladenia | | | | | x | x | | |
| <i>Caladenia leptochila</i> | Narrow-lip Spider Orchid | | | | | x | | | |
| <i>Caladenia</i> sp. | Spider-orchid | | | | x | | | | |
| <i>Caladenia tentaculata</i> | King Spider-orchid | | | | | x | | | x |
| <i>Calochilus robertsonii</i> | Purplish Beard-orchid | | | | | | | x | |
| <i>Corybas diemenicus</i> | Veined Helmet-orchid | | | | x | | | x | |

| FAMILY Genus species | Common Name | Conservation Status | | | Source | | | | |
|--|--------------------------------|---------------------|----------------------------|--|------------------------------------|--------------------------------------|---|---|---|
| | | AUS | SA (NPW Act 1972) | Southern Lofty Region (Lang & Kraehenbuehl, 1997) | EAC 2011 (current survey) | Native Orchid Society of SA | Biological Databases of SA accessed June 2011 | Mt Barker District Env Assoc. Roadside Survey + related list from SA Herbarium | Crawford 1996- 1997 (incl. 1979 Dept Environment & Planning site) |
| <i>Corybas incurvus</i> | Slaty Helmet-orchid | | | U | | x | | | |
| <i>Cyrtostylis reniformis</i> | Small Gnat-orchid | | | | | | | x | |
| <i>Cyrtostylis robusta</i> | Robust Gnat-orchid | | | | | x | | | |
| * <i>Disa bracteata</i> | Monadenia, African Weed Orchid | | | | x | | | | |
| <i>Diuris orientis</i> | Wallflower Donkey-orchid | | | | | x | | x | x |
| <i>Diuris pardina</i> | Spotted Donkey-orchid | | | | | x | | x | x |
| <i>Diuris</i> sp. | Donkey-orchid | | | | x | | | | |
| <i>Glossodia major</i> | Purple Cockatoo | | | | | x | | x | x |
| <i>Microtis arenaria</i> | Notched Onion-orchid | | | | | | x | | x |
| <i>Microtis</i> sp. | Onion-orchid | | | | | x | | | |
| <i>Microtis unifolia</i> complex | Onion-orchid | | | | | x | | x | |
| Orchidaceae sp. | Orchid Family | | | | x | | | | |
| <i>Prasophyllum elatum</i> | Tall Leek-orchid | | | | | | | x | |
| <i>Prasophyllum fitzgeraldii</i> | Fitzgerald Leek-orchid | | | R | | x | | | |
| <i>Pterostylis cynnocephala</i> | Swan-head Greenhood | | | R | | x | | | |
| <i>Pterostylis nana</i> | Dwarf Greenhood | | | | 12x | x | | x | x |
| <i>Pterostylis pedunculata</i> | Maroon-hood | | | | | x | | | |
| <i>Pterostylis robustus</i> | Large Shell-orchid | | | | | x | | | |
| <i>Pterostylis</i> sp. | Greenhood | | | | x | | | x | |
| <i>Thelymitra antennifera</i> | Lemon Sun-orchid | | | | | | | x | |
| <i>Thelymitra aristata</i> | Great Sun-orchid | | | | | | | x | x |
| <i>Thelymitra grandiflora</i> | Great Sun-orchid | | | U | | x | | | |
| <i>Thelymitra ixioides</i> | Spotted Sun-orchid | | | | | | | x | |
| <i>Thelymitra juncifolia</i> | Spotted Sun-orchid | | | | | x | | | |
| <i>Thelymitra nuda</i> | Scented Sun-orchid | | | | | x | | | |
| <i>Thelymitra pauciflora</i> | Slender Sun-orchid | | | | | x | x | x | x |
| <i>Thelymitra rubra</i> | Salmon Sun-orchid | | | | | x | | x | x |
| <i>Thelymitra</i> sp. | Sun-orchid | | | | x | | | | |
| OXALIDACEAE | | | | | | | | | |
| <i>Oxalis perennans</i> | Native Sorrel | | | | x | | x | | x |
| * <i>Oxalis pes-caprae</i> | Soursob | | | | x | | | | |
| PITTOSPORACEAE | | | | | | | | | |
| <i>Billardiera cymosa</i> ssp. <i>cymosa</i> | Sweet Apple-berry | | | | x | | x | | x |
| <i>Billardiera sericophora</i> | Sweet Apple-berry | | | | | | | x | |
| <i>Billardiera versicolor</i> | Yellow-flower Apple-berry | | | R | x | | x | x | x |

| FAMILY Genus species | Common Name | Conservation Status | | | Source | | | | |
|---|----------------------|---------------------|----------------------------|--|------------------------------------|--------------------------------------|---|---|---|
| | | AUS | SA (NPW Act 1972) | Southern Lofty Region (Lang & Kraehenbuehl, 1997) | EAC 2011 (current survey) | Native Orchid Society of SA | Biological Databases of SA accessed June 2011 | Mt Barker District Env Assoc. Roadside Survey + related list from SA Herbarium | Crawford 1996- 1997 (incl. 1979 Dept Environment & Planning site) |
| <i>Bursaria spinosa</i> ssp. <i>lasiophylla</i> | Downy Bursaria | | | R | x | | | | x |
| <i>Bursaria spinosa</i> ssp. <i>spinosa</i> | Sweet Bursaria | | | | x | | x | | x |
| <i>Bursaria spinosa</i> | Sweet Bursaria | | | | | | | x | |
| <i>Cheiranthra alternifolia</i> | Finger-flower | | | | | | | x | |
| PLANTAGINACEAE | | | | | | | | | |
| * <i>Plantago bellardii</i> | Hairy Plantain | | | | x | | | | |
| <i>Plantago gaudichaudii</i> | Narrow-leaf Plantain | | | U | x | | | | x |
| * <i>Plantago lanceolata</i> | Ribwort | | | | x | | | | x |
| <i>Plantago</i> sp. | Plantain | | | | | | | 10x | |
| POLYGALACEAE | | | | | | | | | |
| <i>Comesperma volubile</i> | Love Creeper | | | | | | | x | x |
| POLYGONACEAE | | | | | | | | | |
| * <i>Acetosella vulgaris</i> | Sorrel | | | | | | x | | |
| <i>Muehlenbeckia adpressa</i> | Climbing Lignum | | | | x | | | x | x |
| POTAMOGETONACEAE | | | | | | | | | |
| <i>Potamogeton crispus</i> | Curly Pondweed | | | | | | x | | |
| PRIMULACEAE | | | | | | | | | |
| * <i>Anagallis arvensis</i> | Pimpernel | | | | x | | x | | x |
| PROTEACEAE | | | | | | | | | |
| <i>Banksia marginata</i> | Silver Banksia | | | | x | | x | x | x |
| <i>Grevillea lavandulacea</i> | Lavender Grevillea | | | | | | | x | |
| <i>Hakea carinata</i> | a Hakea | | | | 11x | | | x | |
| <i>Hakea rugosa</i> | Dwarf Hakea | | | | | | | x | x |
| PYROIDEAE | | | | | | | | | |
| * <i>Cotoneaster</i> sp. | Cotoneaster | | | | x | | | | |
| * <i>Crataegus</i> sp. | Hawthorn | | | | x | | x | | x |
| RANUNCULACEAE | | | | | | | | | |
| <i>Clematis microphylla</i> var. <i>microphylla</i> | Old Man's Beard | | | | x | | | | x |
| <i>Ranunculus lappaceus</i> | | | | | | | | x | |

| FAMILY Genus species | Common Name | Conservation Status | | | Source | | | | |
|---|-----------------------|---------------------|----------------------------|--|------------------------------------|--------------------------------------|---|---|---|
| | | AUS | SA (NPW Act 1972) | Southern Lofty Region (Lang & Kraehenbuehl, 1997) | EAC 2011 (current survey) | Native Orchid Society of SA | Biological Databases of SA accessed June 2011 | Mt Barker District Env Assoc. Roadside Survey + related list from SA Herbarium | Crawford 1996- 1997 (incl. 1979 Dept Environment & Planning site) |
| * <i>Ranunculus repens</i> | Creeping Buttercup | | | | | | x | | |
| ROSACEAE | | | | | | | | | |
| <i>Acaena echinata</i> | Sheep's Burr | | | | x | | x | | x |
| <i>Acaena novae-zelandiae</i> | Biddy-biddy | | | | x | | | x | x |
| <i>Aphanes australiana</i> | Australian Piert | | | | | | x | | |
| * <i>Rosa</i> sp. | Wild Rose/Briar | | | | x | | | | |
| * <i>Rubus</i> sp. | Blackberry | | | | | | x | | |
| RUBIACEAE | | | | | | | | | |
| <i>Galium compactum</i> | Compact Bedstraw | | | | | | x | | |
| <i>Galium leptogonium</i> | Bedstraw | | | | x | | | | |
| <i>Galium migrans</i> | Bedstraw | | | | | | | x | x |
| * <i>Galium murale</i> | Small Bedstraw | | | | | | x | | |
| * <i>Galium aparine</i> | Cleavers | | | | x | | x | | |
| <i>Opercularia turpis</i> | Twiggy Stinkweed | | | | | | | | x |
| RUTACEAE | | | | | | | | | |
| <i>Boronia coerulescens</i> | Blue Boronia | | | | | | | x | |
| <i>Correa glabra</i> var. <i>turbullii</i> | Rock Correa | | | R | x | | x | x | x |
| SANTALACEAE | | | | | | | | | |
| <i>Exocarpos cupressiformis</i> | Native Cherry | | | | x | | x | x | x |
| SAPINDACEAE | | | | | | | | | |
| <i>Dodonaea viscosa</i> ssp. <i>spatulata</i> | Sticky Hop-bush | | | | x | | x | x | x |
| SCROPHULARIACEAE | | | | | | | | | |
| * <i>Parentucellia latifolia</i> | Red Bartsia | | | | | | x | | |
| * <i>Zaluzianskya divaricata</i> | Spreading Night-phlox | | | | | | x | | |
| SOLANACEAE | | | | | | | | | |
| * <i>Lycium ferocissimum</i> | African Boxthorn | | | | x | | | | |
| * <i>Solanum nigrum</i> | Black Nightshade | | | | x | | | | |
| STACKHOUSIACEAE | | | | | | | | | |

| FAMILY Genus species | Common Name | Conservation Status | | | Source | | | | |
|--|------------------|--|----------------------------|--|------------------------------------|--------------------------------------|---|---|---|
| | | AUS | SA (NPW Act 1972) | Southern Lofty Region (Lang & Kraehenbuehl, 1997) | EAC 2011 (current survey) | Native Orchid Society of SA | Biological Databases of SA accessed June 2011 | Mt Barker District Env Assoc. Roadside Survey + related list from SA Herbarium | Crawford 1996- 1997 (incl. 1979 Dept Environment & Planning site) |
| Stackhousia aspericocca ssp. Cylindrical inflorescence (W.R. Barker 1418) | Bushy Candles | | | | x | | x | x | x |
| Stackhousia monogyna | Creamy candles | | | | | | | x | |
| STERCULIACEAE | | | | | | | | | |
| *Brachychiton sp. | | | | | x | | | | |
| STYLIDIACEAE | | | | | | | | | |
| Levenhookia dubia | Hairy Stylewort | | | | | | | x | x |
| Levenhookia pusilla | Tiny Stylewort | | | | | | | | |
| THYMELACEAE | | | | | | | | | |
| Pimelea sp. | Rice-flower | | | | | | | | x |
| UMBELLIFERAE | | | | | | | | | |
| Daucus glochidiatus | Native Carrot | | | | | | | | x |
| Hydrocotyle callicarpa | Tiny Pennywort | | | | | | | x | |
| Trachymene pilosa | Dwarf Trachymene | | | | x | | | | x |
| URTICACEAE | | | | | | | | | |
| Parietaria debilis | Smooth-nettle | | | | | | x | | |
| VIOLACEAE | | | | | | | | | |
| Hybanthus floribundus ssp. floribundus | Shrub Violet | | | | x | | x | | x |
| Viola sieberiana | Tiny Violet | | | | | | | x | |
| 1 could be Senecio spanomerus? | | 11 recorded by EAC outside of reserve close to Site 2 | | | | | | | |
| 2 possibly Sparaxis bulbifera | | 12 identification unconfirmed | | | | | | | |
| 3 likely now Hibbertia crinita | | 13 non-current name, likely T. nanum but no records from the area | | | | | | | |
| 4 recorded by EAC outside of reserve close to Site 2 | | 14 not recognised as occurring in this region | | | | | | | |
| 5 location recorded as just outside of Summit Reserve boundary | | 15 recorded as "L. glauca", which is non-current name, likely L. nana or could be L. collina | | | | | | | |
| 6 suspect this species might be suaveolens based on known distribution | | 16 non-current name | | | | | | | |
| 7 suspect this species may be spanomerus based on known distribution | | 17 may = Pseudognaphalium luteoalbum | | | | | | | |
| 8 both forms | | 18 non-current name, could be Lachnagrostis filiformis | | | | | | | |
| 9 likely = M. viscosum | | 19 likely both H. radicata and H. glabra | | | | | | | |
| 10 likely = P. gaudichaudii | | | | | | | | | |
| Indigenous = approx. 218 indigenous , 68 introduced | | | | | | | | | |

Appendix 2. Fauna records

*Denotes introduced species

| CLASSNAME | SPECIES | COMNAME | NPWACTSTATCODE | No. Records |
|-----------|--|-----------------------------------|----------------|-------------|
| AVES | <i>Acanthagenys rufogularis</i> | Spiny-cheeked Honeyeater | | 1 |
| AVES | <i>Acanthiza chrysorrhoa</i> | Yellow-rumped Thornbill | | 42 |
| AVES | <i>Acanthiza lineata</i> | Striated Thornbill | | 27 |
| AVES | <i>Acanthiza nana</i> | Yellow Thornbill | | 1 |
| AVES | <i>Acanthiza pusilla</i> | Brown Thornbill | | 9 |
| AVES | <i>Acanthiza reguloides</i> | Buff-rumped Thornbill | | 11 |
| AVES | <i>Acanthorhynchus tenuirostris</i> | Eastern Spinebill | | 11 |
| AVES | <i>Accipiter cirrocephalus</i> | Collared Sparrowhawk | | 2 |
| AVES | <i>Acrocephalus australis</i> | Australian Reed-Warbler | | 5 |
| AVES | <i>Actitis hypoleucos</i> | Common Sandpiper | Rare | 1 |
| AVES | <i>Aegintha</i> sp. | | | 3 |
| AVES | * <i>Alauda arvensis</i> | Eurasian Skylark | | 1 |
| AVES | <i>Anas castanea</i> | Chestnut Teal | | 12 |
| AVES | <i>Anas gracilis</i> | Grey Teal | | 47 |
| AVES | * <i>Anas platyrhynchos</i> | Northern Mallard | | 10 |
| AVES | <i>Anas rhynchotis</i> | Australasian Shoveler | Rare | 8 |
| AVES | <i>Anas superciliosa</i> | Pacific Black Duck | | 66 |
| AVES | <i>Anas superciliosa</i> x <i>anas platyrhynchos</i> | Pacific Black Duck/Mallard Hybrid | | 5 |
| AVES | <i>Anthochaera carunculata</i> | Red Wattlebird | | 82 |
| AVES | <i>Anthus novaeseelandiae</i> | Australasian Pipit | | 5 |
| AVES | <i>Aphelocephala leucopsis</i> | Southern Whiteface | | 2 |
| REPTILIA | <i>Aprasia striolata</i> | Lined Worm-lizard | | 2 |
| AVES | <i>Aquila audax</i> | Wedge-tailed Eagle | | 13 |
| AVES | <i>Ardea alba</i> | Great Egret | | 2 |
| AVES | <i>Ardea pacifica</i> | White-necked Heron | | 1 |
| AVES | <i>Artamus cyanopterus</i> | Dusky Woodswallow | | 23 |
| AVES | <i>Artamus superciliosus</i> | White-browed Woodswallow | | 1 |
| AVES | <i>Aythya australis</i> | Hardhead | | 23 |
| REPTILIA | <i>Bassiana duperreyi</i> | Eastern Three-lined Skink | | 3 |
| AVES | <i>Biziura lobata</i> | Musk Duck | Rare | 12 |
| MAMMALIA | * <i>Bos taurus</i> | Cattle (European Cattle) | | 1 |
| AVES | <i>Cacatua galerita</i> | Sulphur-crested Cockatoo | | 29 |
| AVES | <i>Cacatua sanguinea</i> | Little Corella | | 12 |
| AVES | <i>Cacatua tenuirostris</i> | Long-billed Corella | | 4 |
| AVES | <i>Cacomantis flabelliformis</i> | Fan-tailed Cuckoo | | 5 |
| AVES | <i>Cacomantis pallidus</i> | Pallid Cuckoo | | 6 |
| AVES | <i>Calyptorhynchus funereus</i> | Yellow-tailed Black-Cockatoo | Vulnerable | 6 |
| AVES | * <i>Carduelis carduelis</i> | European Goldfinch | | 22 |
| MAMMALIA | * <i>Cervus dama</i> | Fallow Deer | | 2 |
| AVES | <i>Chalcites basalis</i> | Horsfield's Bronze-Cuckoo | | 5 |
| AVES | <i>Chalcites lucidus</i> | Shining Bronze-Cuckoo | | 1 |
| REPTILIA | <i>Chelodina longicollis</i> | Common Long-necked Tortoise | | 2 |
| AVES | <i>Chenonetta jubata</i> | Australian Wood Duck | | 65 |
| AVES | * <i>Chloris chloris</i> | Common Greenfinch | | 2 |
| REPTILIA | <i>Christinus marmoratus</i> | Marbled Gecko | | 5 |
| AVES | <i>Chroicocephalus novaehollandiae</i> | Silver Gull | | 3 |
| AVES | <i>Cincloramphus cruralis</i> | Brown Songlark | | 4 |

| | | | | |
|----------|-------------------------------------|----------------------------|------------|-----|
| AVES | <i>Cincloramphus mathewsi</i> | Rufous Songlark | | 5 |
| AVES | <i>Circus assimilis</i> | Spotted Harrier | | 1 |
| AVES | <i>Climacteris picumnus</i> | Brown Treecreeper | | 3 |
| AVES | <i>Colluricincla harmonica</i> | Grey Shrike-thrush | | 52 |
| AVES | * <i>Columba livia</i> | Rock Dove | | 23 |
| AVES | <i>Coracina novaehollandiae</i> | Black-faced Cuckoo-shrike | | 39 |
| AVES | <i>Corcorax melanorhamphos</i> | White-winged Chough | Rare | 3 |
| AVES | <i>Cormobates leucophaea</i> | White-throated Treecreeper | | 5 |
| AVES | <i>Corvus mellori</i> | Little Raven | | 95 |
| AVES | <i>Coturnix pectoralis</i> | Stubble Quail | | 1 |
| AVES | <i>Cracticus torquatus</i> | Grey Butcherbird | | 2 |
| AMPHIBIA | <i>Crinia signifera</i> | Common Froglet | | 374 |
| REPTILIA | <i>Ctenotus robustus</i> | Eastern Striped Skink | | 2 |
| AVES | <i>Cygnus atratus</i> | Black Swan | | 5 |
| AVES | <i>Dacelo novaeguineae</i> | Laughing Kookaburra | | 43 |
| AVES | <i>Daphoenositta chrysoptera</i> | Varied Sittella | | 2 |
| AVES | <i>Dicaeum hirundinaceum</i> | Mistletoebird | | 2 |
| REPTILIA | <i>Egernia striolata</i> | Eastern Tree Skink | | 1 |
| AVES | <i>Egretta novaehollandiae</i> | White-faced Heron | | 44 |
| AVES | <i>Elanus axillaris</i> | Black-shouldered Kite | | 19 |
| AVES | <i>Euseyornis melanops</i> | Black-fronted Dotterel | | 11 |
| AVES | <i>Eolophus roseicapilla</i> | Galah | | 93 |
| AVES | <i>Epthianura albifrons</i> | White-fronted Chat | | 3 |
| AVES | <i>Erythronyx cinctus</i> | Red-kneed Dotterel | | 2 |
| AVES | <i>Falco berigora</i> | Brown Falcon | | 12 |
| AVES | <i>Falco cenchroides</i> | Nankeen Kestrel | | 21 |
| AVES | <i>Falco longipennis</i> | Australian Hobby | | 5 |
| AVES | <i>Falco peregrinus</i> | Peregrine Falcon | Rare | 2 |
| AVES | <i>Falcunculus frontatus</i> | Crested Shrike-tit | Rare | 13 |
| AVES | <i>Fulica atra</i> | Eurasian Coot | | 32 |
| AVES | <i>Gallinago hardwickii</i> | Latham's Snipe | Rare | 2 |
| AVES | <i>Gallinula tenebrosa</i> | Dusky Moorhen | | 11 |
| AVES | <i>Gallirallus philippensis</i> | Buff-banded Rail | | 7 |
| REPTILIA | <i>Gehyra lazelli</i> | Southern Rock Dtella | | 4 |
| REPTILIA | <i>Gehyra sp.</i> | | | 1 |
| AVES | <i>Glossopsitta concinna</i> | Musk Lorikeet | | 42 |
| AVES | <i>Glossopsitta porphyrocephala</i> | Purple-crowned Lorikeet | | 21 |
| AVES | <i>Grallina cyanoleuca</i> | Magpie-lark | | 82 |
| AVES | <i>Gymnorhina tibicen</i> | Australian Magpie | | 111 |
| AVES | <i>Haliaeetus leucogaster</i> | White-bellied Sea-Eagle | Endangered | 1 |
| AVES | <i>Haliastur sphenurus</i> | Whistling Kite | | 4 |
| REPTILIA | <i>Hemiergis decresiensis</i> | Three-toed Earless Skink | | 17 |
| AVES | <i>Hirundo neoxena</i> | Welcome Swallow | | 59 |
| REPTILIA | <i>Lampropholis guichenoti</i> | Garden Skink | | 11 |
| REPTILIA | <i>Lerista bougainvillii</i> | Bougainville's Skink | | 5 |
| AVES | <i>Lewinia pectoralis</i> | Lewin's Rail | Vulnerable | 1 |
| AVES | <i>Lichenostomus chrysops</i> | Yellow-faced Honeyeater | | 22 |
| AVES | <i>Lichenostomus leucotis</i> | White-eared Honeyeater | | 1 |
| AVES | <i>Lichenostomus ornatus</i> | Yellow-plumed Honeyeater | | 1 |
| AVES | <i>Lichenostomus penicillatus</i> | White-plumed Honeyeater | | 59 |
| AVES | <i>Lichenostomus virescens</i> | Singing Honeyeater | | 2 |
| AMPHIBIA | <i>Limnodynastes dumerilii</i> | Banjo Frog | | 150 |
| AMPHIBIA | <i>Limnodynastes tasmaniensis</i> | Spotted Marsh Frog | | 221 |
| AMPHIBIA | <i>Litoria ewingii</i> | Brown Tree Frog | | 189 |
| AMPHIBIA | <i>Litoria peronii</i> | Peron's Tree Frog | | 1 |

| | | | | |
|----------|---|--------------------------|------|-----|
| MAMMALIA | <i>Macropus fuliginosus</i> | Western Grey Kangaroo | | 4 |
| AVES | <i>Malacorhynchus membranaceus</i> | Pink-eared Duck | | 12 |
| AVES | <i>Malurus cyaneus</i> | Superb Fairy-wren | | 59 |
| AVES | <i>Manorina melanocephala</i> | Noisy Miner | | 41 |
| AVES | <i>Megalurus gramineus</i> | Little Grassbird | | 4 |
| AVES | <i>Melithreptus brevirostris</i> | Brown-headed Honeyeater | | 4 |
| AVES | <i>Melithreptus lunatus</i> | White-naped Honeyeater | | 13 |
| AVES | <i>Melopsittacus undulatus</i> | Budgerigar | | 3 |
| REPTILIA | <i>Menetia greyii</i> | Dwarf Skink | | 9 |
| AVES | <i>Microcarbo melanoleucos</i> | Little Pied Cormorant | | 33 |
| AVES | <i>Microeca fascinans</i> | Jacky Winter | ssp | 6 |
| AVES | <i>Mirafra javanica</i> | Horsfield's Bushlark | | 1 |
| REPTILIA | <i>Morethia boulengeri</i> | Common Snake-eye | | 1 |
| MAMMALIA | * <i>Mus musculus</i> | House Mouse | | 17 |
| AVES | <i>Myiagra inquieta</i> | Restless Flycatcher | Rare | 12 |
| AMPHIBIA | <i>Neobatrachus pictus</i> | Burrowing frog | | 5 |
| AVES | <i>Neochmia temporalis</i> | Red-browed Finch | | 22 |
| AVES | <i>Ninox boobook</i> | Southern Boobook | | 10 |
| AVES | <i>Nycticorax caledonicus</i> | Nankeen Night-Heron | | 1 |
| AVES | <i>Nymphicus hollandicus</i> | Cockatiel | | 4 |
| AVES | <i>Ocyphaps lophotes</i> | Crested Pigeon | | 27 |
| MAMMALIA | * <i>Oryctolagus cuniculus</i> | Rabbit (European Rabbit) | | 1 |
| MAMMALIA | * <i>Ovis aries</i> | Sheep (Feral Sheep) | | 1 |
| AVES | <i>Oxyura australis</i> | Blue-billed Duck | Rare | 1 |
| AVES | <i>Pachycephala pectoralis</i> | Golden Whistler | | 18 |
| AVES | <i>Pachycephala rufiventris</i> | Rufous Whistler | | 6 |
| AVES | <i>Pardalotus punctatus</i> | Spotted Pardalote | | 4 |
| AVES | <i>Pardalotus striatus</i> | Striated Pardalote | | 66 |
| AVES | * <i>Passer domesticus</i> | House Sparrow | | 65 |
| AVES | <i>Pelecanus conspicillatus</i> | Australian Pelican | | 5 |
| AVES | <i>Petrochelidon ariel</i> | Fairy Martin | | 4 |
| AVES | <i>Petrochelidon nigricans</i> | Tree Martin | | 43 |
| AVES | <i>Petroica boodang</i> | Scarlet Robin | ssp | 2 |
| AVES | <i>Petroica goodenovii</i> | Red-capped Robin | | 1 |
| AVES | <i>Phalacrocorax carbo</i> | Great Cormorant | | 6 |
| AVES | <i>Phalacrocorax sulcirostris</i> | Little Black Cormorant | | 12 |
| AVES | <i>Phaps chalcoptera</i> | Common Bronzewing | | 7 |
| AVES | <i>Phaps elegans</i> | Brush Bronzewing | | 4 |
| AVES | <i>Phylidonyris novaehollandiae</i> | New Holland Honeyeater | | 29 |
| AVES | <i>Phylidonyris pyrrhopterus</i> | Crescent Honeyeater | | 6 |
| AVES | <i>Platalea flavipes</i> | Yellow-billed Spoonbill | | 4 |
| AVES | <i>Platalea regia</i> | Royal Spoonbill | | 2 |
| AVES | <i>Platycercus elegans</i> | Crimson Rosella | | 104 |
| AVES | <i>Platycercus elegans</i> 'adelaideae' (NC) | 'Adelaide Rosella' | | 2 |
| AVES | <i>Platycercus eximius</i> | Eastern Rosella | | 1 |
| REPTILIA | <i>Pogona barbata</i> | Eastern Bearded Dragon | | 3 |
| AVES | <i>Poliocephalus poliocephalus</i> | Hoary-headed Grebe | | 13 |
| AVES | <i>Pomatostomus superciliosus</i> | White-browed Babbler | | 3 |
| AVES | <i>Porphyrio porphyrio</i> | Purple Swamphen | | 3 |
| AVES | <i>Porzana fluminea</i> | Australian Spotted Crake | | 4 |
| AVES | <i>Porzana pusilla</i> | Baillon's Crake | | 5 |
| AVES | <i>Porzana tabuensis</i> | Spotless Crake | Rare | 10 |
| AVES | <i>Psephotus haematonotus</i> | Red-rumped Parrot | | 40 |
| MAMMALIA | <i>Pseudocheirus peregrinus</i> | Common Ringtail Possum | | 8 |
| REPTILIA | <i>Pseudonaja textilis</i> | Eastern Brown Snake | | 5 |

| | | | | |
|----------|------------------------------------|--------------------------------|------------|----|
| AMPHIBIA | <i>Pseudophryne bibronii</i> | Brown Toadlet | Rare | 1 |
| MAMMALIA | * <i>Rattus rattus</i> | Black Rat (Ship Rat, Roof Rat) | | 1 |
| AVES | <i>Rhipidura albiscapa</i> | Grey Fantail | | 31 |
| AVES | <i>Rhipidura leucophrys</i> | Willie Wagtail | | 72 |
| AVES | <i>Sericornis frontalis</i> | White-browed Scrubwren | | 8 |
| AVES | <i>Stagonopleura guttata</i> | Diamond Firetail | Vulnerable | 10 |
| AVES | <i>Stictonetta naevosa</i> | Freckled Duck | Vulnerable | 4 |
| AVES | * <i>Stigmatopelia chinensis</i> | Spotted Dove | | 7 |
| AVES | <i>Strepera versicolor</i> | Grey Currawong | ssp | 10 |
| AVES | * <i>Sturnus vulgaris</i> | Common Starling | | 88 |
| AVES | <i>Tachybaptus novaehollandiae</i> | Australasian Grebe | | 38 |
| MAMMALIA | <i>Tachyglossus aculeatus</i> | Short-beaked Echidna | | 1 |
| AVES | <i>Taeniopygia guttata</i> | Zebra Finch | | 1 |
| AVES | <i>Threskiornis molucca</i> | Australian White Ibis | | 26 |
| AVES | <i>Threskiornis spinicollis</i> | Straw-necked Ibis | | 31 |
| REPTILIA | <i>Tiliqua rugosa</i> | Sleepy Lizard | | 1 |
| REPTILIA | <i>Tiliqua scincoides</i> | Eastern Bluetongue | | 1 |
| AVES | <i>Tribonyx ventralis</i> | Black-tailed Native-hen | | 14 |
| AVES | <i>Trichoglossus haematodus</i> | Rainbow Lorikeet | | 14 |
| MAMMALIA | <i>Trichosurus vulpecula</i> | Common Brushtail Possum | Rare | 5 |
| AVES | <i>Tringa glareola</i> | Wood Sandpiper | Rare | 1 |
| AVES | * <i>Turdus merula</i> | Common Blackbird | | 27 |
| AVES | <i>Tyto delicatula</i> | Australian Barn Owl | | 1 |
| AVES | <i>Vanellus miles</i> | Masked Lapwing | | 31 |
| MAMMALIA | * <i>Vulpes vulpes</i> | Fox (Red Fox) | | 1 |
| AVES | <i>Zoothera lunulata</i> | Bassian Thrush | Rare | 1 |
| AVES | <i>Zosterops lateralis</i> | Silvereye | | 17 |

Appendix 3. Summary Scoresheets for vegetation associations identified during the 2011 survey.

Methodology is as per Milne and Hodder (in prep.) as at 1 September 2011. Details on this methodology and derivation of scores can be obtained from the Native Vegetation and Biodiversity Management Unit, Department of Environment and Natural Resources, or from DC Mt Barker (who will be provided with a copy of the instruction manual on completion of first draft).

BushRAT Summary Scoresheet

for Vegetation Association 1

| VEGETATION CONDITION SCORE: | score |
|---|-----------|
| Native plant species list score (10 pts) | 10 |
| Weed score (10 pts) | 2 |
| Plant life forms score ² (10 pts) | 8 |
| Native:exotic cover score (10 pts) | 7 |
| Disturbance to ground cover score (5 pts) | 5 |
| Regeneration score (5 pts) | 5 |
| Tree health score (5 pts) | 2 |
| Mistletoe infestation score (5 pts) | 4 |
| Tree size & hollow presence score (5 pts) | 2 |
| Fallen log and trees habitat score (5 pts) | 5 |
| TOTAL (ADD UP ALL POINTS) | 50 |
| If community is naturally treeless multiply TOTAL by 1.25 | |
| ADJUSTED TOTAL SCORE | 50 |

| LANDSCAPE CONTEXT SCORE: | score |
|---|----------|
| Assign 2 pts if Site is only substantial connection between two or more remnants ¹ >20 ha, Assign 1 pt if Site is degraded (scattered trees in part, fragmented etc) | 0 |
| Site shape score Assign 3 pts if Perimeter:Area ³ (km/km ²)<6, 2 pts if P:A 6 to<12, 1pt if P:A 12 to <18 | 2 |
| Size of remnant patch (including native vegetation on adjacent properties) score Patch size less than 2 ha 0 points Patch size between 2 and 5 ha 1 pt Patch size between 5 and 10 ha 2 pts Patch size between 10 and 20 ha 3 pts Patch size 20-100 hectares 4 points Patch size 100-500 hectares 5 points Patch size > 500 hectares 6 points | 4 |
| Distance to core area of more than 50 hectares score > 3km 0 points 1-3km 1 point <1km 2 points contiguous 3 points | 3 |
| LANDSCAPE CONTEXT SCORE | 9 |

Site: Mt Barker Summit 1

Description: *Eucalyptus viminalis* ssp. *viminalis*, *E. viminalis* ssp. *cygnetensis*, +/- *E. leucoxydon* ssp. *leucoxydon* +/- *E. camaldulensis* var. *camaldulensis* Open Woodland over shrubs, herbs, ferns and mixed native/introduced grasses

Size(ha): 7.6 **BCM Code:** SMLR2

Date: May 2001 **Recorder:** T. Milne, B. McCallum

| CONSERVATION SIGNIFICANCE SCORE: | score |
|--|-----------|
| Assign 2 pt for each State-rare, 4 pt for each State-vulnerable, 6 pts for each State-endangered or Nationally-vulnerable, 8 pts for each Nationally-endangered plant community present. | 0 |
| Assign 2 pt for each State-rare, 4 pt for each State-vulnerable, 6 pts for each State-endangered or Nationally-vulnerable, 8 pts for each Nationally-endangered plant species present. | 2 |
| Assign 1 pt for each State-rare, 2 pt for each State-vulnerable, 3 pts for each State-endangered or Nationally-vulnerable, 4 pts for each Nationally-endangered fauna species for which suitable habitat is present. | 7 |
| % native vegetation remaining in IBRA association: 0-2% = 5 pts; >2-5% = 4 pts; >5-10% = 3 pts; >10-20%= 2 pts; >20-50%= 1 pt; >50% = 0 pts | 3 |
| Assign 1 pt if Site contains a riparian zone, Assign 2 pts if Site contains a swamp (+/- riparian zone) | 0 |
| CONSERVATION SIGNIFICANCE SCORE | 12 |

NOTES

¹ **'Remnant'** means contiguous area of native vegetation (links between component patches at least 30m wide). Doesn't include scattered trees over pasture 'Adjacent' means within 30m.

² **Adjust Cover Rating** by subtracting 1 pt unless cover rating = 1

³ The **Perimeter** measurement used is only that which occurs adjacent to cleared or highly degraded land.

Sum adjusted vegetation condition score, conservation significance and landscape context score for the total biodiversity summary score below:

UNIT BIODIVERSITY SUMMARY SCORE

71

**BushRAT Summary Scoresheet
for Vegetation Association 2**

| VEGETATION CONDITION SCORE: | score |
|---|--------------|
| Native plant species list score (10 pts) | 10 |
| Weed score (10 pts) | 2 |
| Plant life forms score ² (10 pts) | 8 |
| Native:exotic cover score (10 pts) | 6 |
| Disturbance to ground cover score (5 pts) | 5 |
| Regeneration score (5 pts) | 4 |
| Tree health score (5 pts) | 4 |
| Mistletoe infestation score (5 pts) | 4 |
| Tree size & hollow presence score (5 pts) | 2 |
| Fallen log and trees habitat score (5 pts) | 5 |
| TOTAL (ADD UP ALL POINTS) | |
| If community is naturally treeless multiply TOTAL by 1.25 | |
| ADJUSTED TOTAL SCORE | 50 |

| LANDSCAPE CONTEXT SCORE: | score |
|---|--------------|
| Assign 2 pts if Site is only substantial connection between two or more remnants ¹ >20 ha, Assign 1 pt if Site is degraded (scattered trees in part, fragmented etc) | 0 |
| Site shape score Assign 3 pts if Perimeter:Area ³ (km/km ²)<6, 2 pts if P:A 6 to<12, 1pt if P:A 12 to <18 | 2 |
| Size of remnant patch (including native vegetation on adjacent properties) score Patch size less than 2 ha 0 points Patch size between 2 and 5 ha 1 pt Patch size between 5 and 10 ha 2 pts Patch size between 10 and 20 ha 3 pts Patch size 20-100 hectares 4 points Patch size 100-500 hectares 5 points Patch size > 500 hectares 6 points | 4 |
| Distance to core area of more than 50 hectares score > 3km 0 points 1-3km 1 point <1km 2 points contiguous 3 points | 3 |
| LANDSCAPE CONTEXT SCORE | 9 |

| |
|---|
| Site: Mt Barker Summit 2 |
| Description: <i>Allocasuarina verticillata</i> (Drooping Sheoak) Very Open Woodland with emergent <i>E. viminalis</i> ssp. <i>viminalis</i> (Manna Gum) and <i>E. viminalis</i> ssp. <i>cygnetensis</i> (Rough-barked Manna Gum) over shrubs, ferns tussocks and introduced grasses. |
| Size(ha): 9.5 BCM Code: SMLR2 |
| Date: June 2001 Recorder: T. Milne, B. McCallum |

| CONSERVATION SIGNIFICANCE SCORE: | |
|--|-----------|
| Assign 2 pt for each State-rare, 4 pt for each State-vulnerable, 6 pts for each State-endangered or Nationally-vulnerable, 8 pts for each Nationally-endangered plant community present. | 0 |
| Assign 2 pt for each State-rare, 4 pt for each State-vulnerable, 6 pts for each State-endangered or Nationally-vulnerable, 8 pts for each Nationally-endangered plant species present. | 2 |
| Assign 1 pt for each State-rare, 2 pt for each State-vulnerable, 3 pts for each State-endangered or Nationally-vulnerable, 4 pts for each Nationally-endangered fauna species for which suitable habitat is present. | 7 |
| % native vegetation remaining in IBRA association: 0-2% = 5 pts; >2-5% = 4 pts; >5-10% = 3 pts; >10-20% = 2 pts; >20-50% = 1 pt; >50% = 0 pts | 3 |
| Assign 1 pt if Site contains a riparian zone, Assign 2 pts if Site contains a swamp (+/- riparian zone) | 0 |
| CONSERVATION SIGNIFICANCE SCORE | 12 |

| |
|--|
| NOTES |
| ¹ 'Remnant' means <i>contiguous area of native vegetation (links between component patches at least 30m wide). Doesn't include scattered trees over pasture 'Adjacent' means within 30m.</i> |
| ² Adjust Cover Rating by subtracting 1 pt unless cover rating = 1 |
| ³ The Perimeter measurement used is <i>only that which occurs adjacent to cleared or highly degraded land.</i> |

Sum adjusted vegetation condition score, conservation significance and landscape context score for the total biodiversity summary score below:

| | |
|--|-----------|
| UNIT BIODIVERSITY SUMMARY SCORE | 71 |
|--|-----------|

**BushRAT Summary Scoresheet
for Vegetation Association 3**

| VEGETATION CONDITION SCORE: | score |
|---|--------------|
| Native plant species list score (10 pts) | 10 |
| Weed score (10 pts) | 4 |
| Plant life forms score ² (10 pts) | 8 |
| Native:exotic cover score (10 pts) | 7 |
| Disturbance to ground cover score (5 pts) | 5 |
| Regeneration score (5 pts) | 4 |
| Tree health score (5 pts) | 3 |
| Mistletoe infestation score (5 pts) | 5 |
| Tree size & hollow presence score (5 pts) | 3 |
| Fallen log and trees habitat score (5 pts) | 4 |
| TOTAL (ADD UP ALL POINTS) | 53 |
| If community is naturally treeless multiply TOTAL by 1.25 | |
| ADJUSTED TOTAL SCORE | 53 |

| LANDSCAPE CONTEXT SCORE: | score |
|---|--------------|
| Assign 2 pts if Site is only substantial connection between two or more remnants ¹ >20 ha, Assign 1 pt if Site is degraded (scattered trees in part, fragmented etc) | 0 |
| Site shape score Assign 3 pts if Perimeter:Area ³ (km/km ²)<6, 2 pts if P:A 6 to<12, 1pt if P:A 12 to <18 | 2 |
| Size of remnant patch (including native vegetation on adjacent properties) score Patch size less than 2 ha 0 points Patch size between 2 and 5 ha 1 pt Patch size between 5 and 10 ha 2 pts Patch size between 10 and 20 ha 3 pts Patch size 20-100 hectares 4 points Patch size 100-500 hectares 5 points Patch size > 500 hectares 6 points | 4 |
| Distance to core area of more than 50 hectares score > 3km 0 points 1-3km 1 point <1km 2 points contiguous 3 points | 3 |
| LANDSCAPE CONTEXT SCORE | 9 |

Site: Mt Barker Summit 3

Description: *Allocasuarina verticillata* (Drooping Sheoak) Woodland with emergent *Eucalyptus leucoxylon* ssp. *leucoxylon* (South Australian Blue Gum) over dense Sheoak leaf litter and very sparse understorey including shrubs, herbs, ferns and grasses.

Size(ha): 11.9 **BCM Code:** SMLR3.2

Date: June 2011 **Recorder:** T. Milne, B. McCallum

| CONSERVATION SIGNIFICANCE SCORE: | |
|--|-----------|
| Assign 2 pt for each State-rare, 4 pt for each State-vulnerable, 6 pts for each State-endangered or Nationally-vulnerable, 8 pts for each Nationally-endangered plant community present. | 4 |
| Assign 2 pt for each State-rare, 4 pt for each State-vulnerable, 6 pts for each State-endangered or Nationally-vulnerable, 8 pts for each Nationally-endangered plant species present. | 2 |
| Assign 1 pt for each State-rare, 2 pt for each State-vulnerable, 3 pts for each State-endangered or Nationally-vulnerable, 4 pts for each Nationally-endangered fauna species for which suitable habitat is present. | 7 |
| % native vegetation remaining in IBRA association: 0-2% = 5 pts; >2-5% = 4 pts; >5-10% = 3 pts; >10-20%= 2 pts; >20-50%= 1 pt; >50% = 0 pts | 3 |
| Assign 1 pt if Site contains a riparian zone, Assign 2 pts if Site contains a swamp (+/- riparian zone) | 0 |
| CONSERVATION SIGNIFICANCE SCORE | 16 |

NOTES

¹ **'Remnant'** means contiguous area of native vegetation (links between component patches at least 30m wide). Doesn't include scattered trees over pasture 'Adjacent' means within 30m.

² **Adjust Cover Rating** by subtracting 1 pt unless cover rating = 1

³ The **Perimeter** measurement used is only that which occurs adjacent to cleared or highly degraded land.

Sum adjusted vegetation condition score, conservation significance and landscape context score for the total biodiversity summary score below:

UNIT BIODIVERSITY SUMMARY SCORE

78

BushRAT Summary Scoresheet

for Vegetation Association 4

| VEGETATION CONDITION SCORE: | score |
|---|-----------|
| Native plant species list score (10 pts) | 10 |
| Weed score (10 pts) | 4 |
| Plant life forms score ² (10 pts) | 10 |
| Native:exotic cover score (10 pts) | 6 |
| Disturbance to ground cover score (5 pts) | 5 |
| Regeneration score (5 pts) | 5 |
| Tree health score (5 pts) | 2 |
| Mistletoe infestation score (5 pts) | 4 |
| Tree size & hollow presence score (5 pts) | 2 |
| Fallen log and trees habitat score (5 pts) | 5 |
| TOTAL (ADD UP ALL POINTS) | |
| If community is naturally treeless multiply TOTAL by 1.25 | |
| ADJUSTED TOTAL SCORE | 53 |

| LANDSCAPE CONTEXT SCORE: | score |
|---|----------|
| Assign 2 pts if Site is only substantial connection between two or more remnants ¹ >20 ha, Assign 1 pt if Site is degraded (scattered trees in part, fragmented etc) | 0 |
| Site shape score Assign 3 pts if Perimeter:Area ³ (km/km ²)<6, 2 pts if P:A 6 to<12, 1pt if P:A 12 to <18 | 2 |
| Size of remnant patch (including native vegetation on adjacent properties) score Patch size less than 2 ha 0 points Patch size between 2 and 5 ha 1 pt Patch size between 5 and 10 ha 2 pts Patch size between 10 and 20 ha 3 pts Patch size 20-100 hectares 4 points Patch size 100-500 hectares 5 points Patch size > 500 hectares 6 points | 4 |
| Distance to core area of more than 50 hectares score > 3km 0 points 1-3km 1 point <1km 2 points contiguous 3 points | 3 |
| LANDSCAPE CONTEXT SCORE | 9 |

| |
|--|
| Site: Mt Barker Summit 4 |
| Description: <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum), <i>E. viminalis</i> ssp. <i>cygnetensis</i> (Rough-barked Manna Gum), Very Open Woodland over <i>Allocasuarina verticillata</i> (Drooping Sheoak), shrubs, herbs and ferns. |
| Size(ha): 7 BCM Code: SMLR3.2 |
| Date: June 2001 Recorder: T. Milne, B. McCallum |

| CONSERVATION SIGNIFICANCE SCORE: | score |
|--|-----------|
| Assign 2 pt for each State-rare, 4 pt for each State-vulnerable, 6 pts for each State-endangered or Nationally-vulnerable, 8 pts for each Nationally-endangered plant community present. | 0 |
| Assign 2 pt for each State-rare, 4 pt for each State-vulnerable, 6 pts for each State-endangered or Nationally-vulnerable, 8 pts for each Nationally-endangered plant species present. | 2 |
| Assign 1 pt for each State-rare, 2 pt for each State-vulnerable, 3 pts for each State-endangered or Nationally-vulnerable, 4 pts for each Nationally-endangered fauna species for which suitable habitat is present. | 7 |
| % native vegetation remaining in IBRA association: 0-2% = 5 pts; >2-5% = 4 pts; >5-10% = 3 pts; >10-20%= 2 pts; >20-50%= 1 pt; >50% = 0 pts | 3 |
| Assign 1 pt if Site contains a riparian zone, Assign 2 pts if Site contains a swamp (+/- riparian zone) | 0 |
| CONSERVATION SIGNIFICANCE SCORE | 12 |

NOTES

¹ **'Remnant'** means contiguous area of native vegetation (links between component patches at least 30m wide). Doesn't include scattered trees over pasture 'Adjacent' means within 30m.

² **Adjust Cover Rating** by subtracting 1 pt unless cover rating = 1

³ The **Perimeter** measurement used is only that which occurs adjacent to cleared or highly degraded land.

Sum adjusted vegetation condition score, conservation significance and landscape context score for the total biodiversity summary score below:

| | |
|--|-----------|
| UNIT BIODIVERSITY SUMMARY SCORE | 74 |
|--|-----------|

BushRAT Summary Scoresheet
for **Vegetation Association 5**

| |
|---|
| Site: Mt Barker Summit 5 |
| Description: <i>Allocasuarina verticillata</i> (Drooping Sheoak) Woodland with emergent <i>E. viminalis</i> ssp. <i>cygnetensis</i> (Rough-barked Manna Gum) and <i>E. leucoxylo</i> ssp. <i>leucoxylo</i> (South Australian Blue Gum) over shrubs, tussocks, herbs and ferns. |
| Size(ha): 6 BCM Code: SMLR3.2 |
| Date: June 2001 Recorder: T. Milne, B. |

| VEGETATION CONDITION SCORE: | score |
|---|--------------|
| Native plant species list score (10 pts) | 10 |
| Weed score (10 pts) | 6 |
| Plant life forms score ² (10 pts) | 10 |
| Native:exotic cover score (10 pts) | 7 |
| Disturbance to ground cover score (5 pts) | 5 |
| Regeneration score (5 pts) | 5 |
| Tree health score (5 pts) | 3 |
| Mistletoe infestation score (5 pts) | 4 |
| Tree size & hollow presence score (5 pts) | 2 |
| Fallen log and trees habitat score (5 pts) | 4 |
| TOTAL (ADD UP ALL POINTS) | 56 |
| If community is naturally treeless multiply TOTAL by 1.25 | |
| ADJUSTED TOTAL SCORE | 56 |

| CONSERVATION SIGNIFICANCE SCORE: | |
|--|-----------|
| Assign 2 pt for each State-rare, 4 pt for each State-vulnerable, 6 pts for each State-endangered or Nationally-vulnerable, 8 pts for each Nationally-endangered plant community present. | 4 |
| Assign 2 pt for each State-rare, 4 pt for each State-vulnerable, 6 pts for each State-endangered or Nationally-vulnerable, 8 pts for each Nationally-endangered plant species present. | 4 |
| Assign 1 pt for each State-rare, 2 pt for each State-vulnerable, 3 pts for each State-endangered or Nationally-vulnerable, 4 pts for each Nationally-endangered fauna species for which suitable habitat is present. | 7 |
| % native vegetation remaining in IBRA association: 0-2% = 5 pts; >2-5% = 4 pts; >5-10% = 3 pts; >10-20% = 2 pts; >20-50% = 1 pt; >50% = 0 pts | 3 |
| Assign 1 pt if Site contains a riparian zone, Assign 2 pts if Site contains a swamp (+/- riparian zone) | 0 |
| CONSERVATION SIGNIFICANCE SCORE | 18 |

| LANDSCAPE CONTEXT SCORE: | score |
|---|--------------|
| Assign 2 pts if Site is only substantial connection between two or more remnants ¹ >20 ha, Assign 1 pt if Site is degraded (scattered trees in part, fragmented etc) | 0 |
| Site shape score Assign 3 pts if Perimeter:Area ³ (km/km ²)<6, 2 pts if P:A 6 to<12, 1pt if P:A 12 to <18 | 2 |
| Size of remnant patch (including native vegetation on adjacent properties) score Patch size less than 2 ha 0 points Patch size between 2 and 5 ha 1 pt Patch size between 5 and 10 ha 2 pts Patch size between 10 and 20 ha 3 pts Patch size 20-100 hectares 4 points Patch size 100-500 hectares 5 points Patch size > 500 hectares 6 points | 4 |
| Distance to core area of more than 50 hectares score > 3km 0 points 1-3km 1 point <1km 2 points contiguous 3 points | 3 |
| LANDSCAPE CONTEXT SCORE | 9 |

| |
|---|
| NOTES |
| ¹ 'Remnant' means contiguous area of native vegetation (links between component patches at least 30m wide). Doesn't include scattered trees over pasture 'Adjacent' means within 30m. |
| ² Adjust Cover Rating by subtracting 1 pt unless cover rating = 1 |
| ³ The Perimeter measurement used is only that which occurs adjacent to cleared or highly degraded land. |

Sum adjusted vegetation condition score, conservation significance and landscape context score for the total biodiversity summary score below:

| | |
|--|-----------|
| UNIT BIODIVERSITY SUMMARY SCORE | 83 |
|--|-----------|

BushRAT Summary Scoresheet

for Vegetation Association 6

| VEGETATION CONDITION SCORE: | score |
|---|-----------|
| Native plant species list score (10 pts) | 10 |
| Weed score (10 pts) | 2 |
| Plant life forms score ² (10 pts) | 8 |
| Native:exotic cover score (10 pts) | 4 |
| Disturbance to ground cover score (5 pts) | 5 |
| Regeneration score (5 pts) | 3 |
| Tree health score (5 pts) | 3 |
| Mistletoe infestation score (5 pts) | 5 |
| Tree size & hollow presence score (5 pts) | 3 |
| Fallen log and trees habitat score (5 pts) | 4 |
| TOTAL (ADD UP ALL POINTS) | 47 |
| If community is naturally treeless multiply TOTAL by 1.25 | |
| ADJUSTED TOTAL SCORE | 47 |

| LANDSCAPE CONTEXT SCORE: | score |
|---|----------|
| Assign 2 pts if Site is only substantial connection between two or more remnants ¹ >20 ha, Assign 1 pt if Site is degraded (scattered trees in part, fragmented etc) | 0 |
| Site shape score Assign 3 pts if Perimeter:Area ³ (km/km ²)<6, 2 pts if P:A 6 to <12, 1pt if P:A 12 to <18 | 2 |
| Size of remnant patch (including native vegetation on adjacent properties) score Patch size less than 2 ha 0 points Patch size between 2 and 5 ha 1 pt Patch size between 5 and 10 ha 2 pts Patch size between 10 and 20 ha 3 pts Patch size 20-100 hectares 4 points Patch size 100-500 hectares 5 points Patch size > 500 hectares 6 points | 4 |
| Distance to core area of more than 50 hectares score > 3km 0 points 1-3km 1 point <1km 2 points contiguous 3 points | 3 |
| LANDSCAPE CONTEXT SCORE | 9 |

| |
|--|
| Site: Mt Barker Summit 6 |
| Description: <i>E. leucoxylon</i> ssp. <i>leucoxylon</i> (SA Blue Gum) Very Open Woodland , with +/- <i>E. viminalis</i> ssp. <i>viminalis</i> (Manna Gum) and <i>E. camaldulensis</i> var. <i>camaldulensis</i> (River Red Gum). |
| Size(ha): 1.5 BCM Code: SMLR3.2 |
| Date: June 2001 Recorder: T.Milne, B. McCallum |

| CONSERVATION SIGNIFICANCE SCORE: | score |
|--|-----------|
| Assign 2 pt for each State-rare, 4 pt for each State-vulnerable, 6 pts for each State-endangered or Nationally-vulnerable, 8 pts for each Nationally-endangered plant community present. | 0 |
| Assign 2 pt for each State-rare, 4 pt for each State-vulnerable, 6 pts for each State-endangered or Nationally-vulnerable, 8 pts for each Nationally-endangered plant species present. | 2 |
| Assign 1 pt for each State-rare, 2 pt for each State-vulnerable, 3 pts for each State-endangered or Nationally-vulnerable, 4 pts for each Nationally-endangered fauna species for which suitable habitat is present. | 7 |
| % native vegetation remaining in IBRA association: 0-2% = 5 pts; >2-5% = 4 pts; >5-10% = 3 pts; >10-20%= 2 pts; >20-50%= 1 pt; >50% = 0 pts | 3 |
| Assign 1 pt if Site contains a riparian zone, Assign 2 pts if Site contains a swamp (+/- riparian zone) | 0 |
| CONSERVATION SIGNIFICANCE SCORE | 12 |

NOTES

¹ 'Remnant' means contiguous area of native vegetation (links between component patches at least 30m wide). Doesn't include scattered trees over pasture 'Adjacent' means within 30m.

² Adjust Cover Rating by subtracting 1 pt unless cover rating = 1

³ The **Perimeter** measurement used is only that which occurs adjacent to cleared or highly degraded land.

Sum adjusted vegetation condition score, conservation significance and landscape context score for the total biodiversity summary score below:

| | |
|--|-----------|
| UNIT BIODIVERSITY SUMMARY SCORE | 68 |
|--|-----------|

BushRAT Summary Scoresheet
for **Vegetation Association 7**

| VEGETATION CONDITION SCORE: | score |
|---|--------------|
| Native plant species list score (10 pts) | 10 |
| Weed score (10 pts) | 6 |
| Plant life forms score ² (10 pts) | 8 |
| Native:exotic cover score (10 pts) | 3 |
| Disturbance to ground cover score (5 pts) | 5 |
| Regeneration score (5 pts) | 2 |
| Tree health score (5 pts) | 3 |
| Mistletoe infestation score (5 pts) | 4 |
| Tree size & hollow presence score (5 pts) | 2 |
| Fallen log and trees habitat score (5 pts) | 3 |
| TOTAL (ADD UP ALL POINTS) | 46 |
| If community is naturally treeless multiply TOTAL by 1.25 | |
| ADJUSTED TOTAL SCORE | 46 |

| LANDSCAPE CONTEXT SCORE: | score |
|---|--------------|
| Assign 2 pts if Site is only substantial connection between two or more remnants ¹ >20 ha, Assign 1 pt if Site is degraded (scattered trees in part, fragmented etc) | 0 |
| Site shape score Assign 3 pts if Perimeter:Area ³ (km/km ²)<6, 2 pts if P:A 6 to<12, 1pt if P:A 12 to <18 | 2 |
| Size of remnant patch (including native vegetation on adjacent properties) score Patch size less than 2 ha 0 points Patch size between 2 and 5 ha 1 pt Patch size between 5 and 10 ha 2 pts Patch size between 10 and 20 ha 3 pts Patch size 20-100 hectares 4 points Patch size 100-500 hectares 5 points Patch size > 500 hectares 6 points | 4 |
| Distance to core area of more than 50 hectares score > 3km 0 points 1-3km 1 point <1km 2 points contiguous 3 points | 3 |
| LANDSCAPE CONTEXT SCORE | 9 |

| |
|--|
| Site: Mt Barker Summit 7 |
| Description: <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum), <i>E. viminalis</i> ssp. <i>cygnetensis</i> (Rough-barked Manna Gum) Very Open Woodland over sparse <i>Allocasuarina verticillata</i> (Drooping Sheoak), sparse low shrubs, herbs and introduced grasses. |
| Size(ha): 2.7 BCM Code: SMLR3.2 |
| Date: June 2001 Recorder: T. Milne, B. McCallum |

| CONSERVATION SIGNIFICANCE SCORE: | |
|--|-----------|
| Assign 2 pt for each State-rare, 4 pt for each State-vulnerable, 6 pts for each State-endangered or Nationally-vulnerable, 8 pts for each Nationally-endangered plant community present. | 0 |
| Assign 2 pt for each State-rare, 4 pt for each State-vulnerable, 6 pts for each State-endangered or Nationally-vulnerable, 8 pts for each Nationally-endangered plant species present. | 4 |
| Assign 1 pt for each State-rare, 2 pt for each State-vulnerable, 3 pts for each State-endangered or Nationally-vulnerable, 4 pts for each Nationally-endangered fauna species for which suitable habitat is present. | 7 |
| % native vegetation remaining in IBRA association: 0-2% = 5 pts; >2-5% = 4 pts; >5-10% = 3 pts; >10-20%= 2 pts; >20-50%= 1 pt; >50% = 0 pts | 3 |
| Assign 1 pt if Site contains a riparian zone, Assign 2 pts if Site contains a swamp (+/- riparian zone) | 0 |
| CONSERVATION SIGNIFICANCE SCORE | 14 |

| |
|---|
| NOTES |
| ¹ 'Remnant' means contiguous area of native vegetation (links between component patches at least 30m wide). Doesn't include scattered trees over pasture 'Adjacent' means within 30m. |
| ² Adjust Cover Rating by subtracting 1 pt unless cover rating = 1 |
| ³ The Perimeter measurement used is only that which occurs adjacent to cleared or highly degraded land. |

Sum adjusted vegetation condition score, conservation significance and landscape context score for the total biodiversity summary score below:

| | |
|--|-----------|
| UNIT BIODIVERSITY SUMMARY SCORE | 69 |
|--|-----------|

Appendix 4. Extract from 'Geological Monuments in South Australia', Part 2 (S. Toteff and E.M. McBriar, eds. (1979))

This report was prepared for the S.A. Div. of the Geological Society of Australia Inc. and is an unpublished report that was financed by the National Estate Programme 1977/78.

GEOLOGICAL SOCIETY OF AUSTRALIA

S.A. DIVISION

FILE NO. OM 20 – SOUTH EAST FREEWAY (MOUNT BARKER TO CALLINGTON)

- Item: (1) The only exposure of the Nairne Fault.
- (2) Road cutting through the "Nairne Pyrite".

General description and precise locality

The localities of interest are along the newly (1977) constructed part of the Southeast Freeway, east of Mount Barker. Item (1) is located just north of Mount Barker Summit on the south side of the freeway and approximately 10 metres above the bitumen. The area of the rock face concerned is approximately 25 square metres. Grid reference of Mount Barker is 138°155'E, 35°4'S. Item (2) occurs 4.8 kilometres southeast along the freeway from item (1). The cutting is approximately 8 metres high and 150 metres in length, on the northern side of the freeway.

Access

Item (1) (the Nairne Fault) is most conveniently reached from the south, above the freeway; stopping along the freeway is forbidden. Leaving the freeway at Littlehampton and travelling east to Nairne, proceed to the eastern outskirt of Nairne and take the last turn right. This road crosses the freeway at an overpass approximately 1.5 kilometres to the south. The locality lies immediately to the west of the overpass.

Item (2) is most conveniently reached along the freeway.

Geological interest

Item (1) The Nairne Fault

General

The Kanmantoo Group, of early Cambrian age, is a sequence of metamorphosed sedimentary rocks which occupies much of the eastern Mount Lofty Ranges and Kangaroo Island. It is the youngest succession of strata to be deposited in the Adelaide Geosyncline, an area which underwent gradual subsidence during late Proterozoic and early Palaeozoic time, accumulating vast thicknesses of sediment. The sediments were then disrupted and folded by the Delamerian orogeny late in the Cambrian period.

Since the earliest mention of the Kanmantoo Group (then Kanmantoo Series) by Sprigg, Whittle and Campana in 1951 on the Adelaide 1:63,360 geological map sheet and the definition of the type area on the south coast of Fleurieu Peninsula (Sprigg and Campana, 1953), there has been much controversy as to the nature of the contact in the eastern Mount Lofty Ranges between this sequence and older rocks to the west. North of the type area, where the Kanmantoo Group is conformable on older Cambrian rocks (Daily and Milnes, 1971), the contact was first interpreted as a fault (the "Nairne Fault") by Sprigg, Whittle and Campana (1951). East of the fault, all sedimentary rocks deposited in the Adelaide Geosyncline were shown to belong to the Kanmantoo Group.

Subsequently many dismissed the fault hypothesis in favour of an unconformity (Campana and Horwitz, 1965; Thomson, 1969) or a combination of conformity and unconformity (Horwitz, Thomson and Webb, 1959). Detailed mapping by Kleeman and Skinner (1959) disproved the inferred position of the Nairne Fault as shown on part of the Echunga 1:63,360 geological map sheet (Sprigg and Wilson 1954). For this area, in the vicinity of Strathalbyn and Macclesfield, and elsewhere on the Echunga 1:63,360 geological map sheet, Kleeman and Skinner proposed conformity between the Kanmantoo Group and older rocks to the west.

Reviewing earlier work Daily and Milnes (1971) again inferred a fault contact, retaining the name Nairne Fault. Remapping of critical areas by Marlow (1975) and Toteff (1977) has shown that many of the interpretations made by the proponents of an unconformable (or locally conformable) contact are incorrect and the Nairne Fault must exist, though in detail there are deviations from its original position shown on the Adelaide 1:63,360 and Echunga 1:63,360 geological map sheets.

The recent exposure of a major fault exactly at the inferred position of the Nairne Fault is additional and indisputable evidence of a fault contact at the western limit of the Kanmantoo Group in the eastern Mount Lofty Ranges. This is the only locality other than the south coast of Fleurieu Peninsula where the Kanmantoo Group and older rocks are seen in actual contact. Critical areas have consistently poor outcrop which has been a great hindrance to the understanding of the geology, and the importance of this locality cannot be overstated.

Detailed geology

The fault marks the boundary between the Lower Cambrian Kanmantoo Group to the east and the Upper Precambrian Marino Group to the west. The upper levels of the lowermost formation of the Kanmantoo Group, the Carrickalinga Head Formation (Daily and Milnes, 1971) represents the oldest rocks of the Kanmantoo Group in the immediate vicinity (Toteff, 1977). They consist of finely laminated metasilstones with thin intervals rich in scapolite particularly in the lower parts. Towards the contact these are increasingly kaolinized and bleached. The youngest formation of the Marino Group at this locality is the Mount Barker Quartzite, a white orthoquartzite with thin interbeds of feldspathic metasandstones and metasilstones. Immediately below the quartzite (which is approximately 30 metres thick) are layered calc-silicates. A conformable contact was observed prior to landscaping of this part of the cutting.

The upper boundary of the Mount Barker Quartzite is faulted against the Carrickalinga Head Formation with the approximately north-south trending fault plane dipping more steeply east than the Mount Barker Quartzite. Drag along the fault, however, has increased the dip of the Mount Barker Quartzite and the sense of movement indicates a normal fault. Extreme weathering of the Carrickalinga Head Formation immediately adjacent to the fault has obliterated the bedding.

A brecciated zone 3 to 4 metres in width marks of the Nairne Fault. Within this zone are angular quartzite fragments up to 1.5 metres in length set in a kaolinized matrix. There is a sharp lower boundary against the Mount Barker Quartzite however, weathering has partly obscured the upper or eastern boundary.

Approximately 2 metres of partly ferruginous Tertiary sands and conglomerates rest unconformably on the Carrickalinga Head Formation on the downthrown side of the fault. There are boulders, probably of Mount Barker Quartzite, up to 0.5 metres in diameter. Unfortunately excavations have removed material from above the Mount Barker Quartzite and it is not known if sands were also present on the upthrown side of the fault.

Item (2) Nairne Pyrite

Within easterly dipping fine metasandstones and metasilstones is a 60 metre thick interval of predominantly pyritic very fine metasandstones and metasilstones. These pyritic rocks are correlated with part of the Talisker Calc-siltstone of the Kanmantoo Group (Daily and Milnes, 1972) and in this

area are referred to as the "Nairne Pyrite". At Brukunga approximately 10 kilometres to the north, the Nairne Pyrite is much thicker and until recently was quarried for its pyrite content.

The rocks in the freeway cutting show the characteristic weathering behaviour of sulphide-bearing metasilstones. Rocks are locally ferruginized and locally bleached. Relict pyrite is found in some whilst external moulds of cubic pyrite crystals are abundant. Pale yellow jarosite, the product of interacting silicates and solutions formed during the breakdown of sulphides, is very common, occurring mainly as irregular veins which are discordant to the bedding.

State of preservation

All items are in excellent condition as excavations were completed in 1977. The cuttings are all steep and will not be grassed over as has been the case with many in the western sections of the freeway. Unfortunately the Nairne Fault (item 1) has been partly covered by approximately 15 tonnes of rubble which was pushed over the top of the cutting during cleaning up of the surrounding hillside.

Recommendations

The Nairne Fault (item 1) is worthy of classification as a geological monument. It is desirable that the rubble which now partly obscures the fault be removed, as the item is certainly worthy of such an effort. A buffer zone, with its greater part above the item is recommended. Including the area of rock face containing the fault (approximately 25 square metres) the total area required for adequate protection is about 400 square metres.

Reference

- Campana, B., and Horwitz, R.C. (1956): The Kanmantoo Group of South Australia considered as a transgressive sequence. *Aust. J. Sci.*, 18, 128-129
- Daily, B., and Milnes, A.R. (1971): Stratigraphic notes on Lower Cambrian fossiliferous metasediments between Campbell Creek and Tunkalilla Beach in the type section of the Kanmantoo Group, Fleurieu Peninsula, South Australia. *Trans. R.Soc. S. Aust.*, 95, 199-214.
- Daily, B., and Milnes, A.R. (1972): Revision of the stratigraphic nomenclature of the Cambrian Kanmantoo Group, South Australia. *J. Geol. Soc. Aust.* 19, 197-202.
- Horwitz, R.C., Thomson, B.P., and Webb, B.P. (1959): The Cambrian – Precambrian boundary in the eastern Mount Lofty Ranges region: South Australia. *Trans. R. Soc. S. Aust.*, 92, 205 – 218.
- Kleeman, A.W., and Skinner, B.J. (1959): The Kanmantoo Group in the Strathalbyn – Harrogate region, South Australia. *Trans. R. Soc. S. Aust.*, 82, 61-71.
- Marlow, P.C. (1975): Structural investigations near Macclesfield, South Australia. M.Sc. thesis. Univ. Adelaide (unpublished).
- Sprigg, R.C., and Campana, B. (1953): The age and facies of the Kanmantoo Group. *Aust. J. Sci.*, 16, 12-14.
- Sprigg, R.C., Whittle, A.W.G., and Campana, B. (1957): Adelaide map sheet, Geological Atlas of South Australia, 1: 63,360 series. (Geol. Surv. S. Aust., Adelaide).
- Sprigg, R.C., and Wilson, B. (1954): Echunga map sheet, Geological Atlas of South Australia, 1:63,630 series. (Geol. Surv. S. Aust., Adelaide).
- Thomson, B.P. (1969): Adelaide Map Sheet, Geological Atlas of South Australia, 1:250,000 series. (Geol. Surv. S. Aust., Adelaide).
- Toteff, S. (1977): Geology of the upper Adelaidean and lower Kanmantoo Group sequences in the eastern Mount Lofty Ranges. Ph.D. thesis, Univ. Adelaide (unpublished).

Appendix 5. Control methods for common pest plants occurring on Mount Barker Summit Conservation Reserve and nearby roadsides

(adapted from Crawford (1997))

Hand pulling and digging

Suitable when soil is moist for:

- all seedlings of woody weeds (eg. Gorse, Broom and African Daisy),
- small annual grasses (eg. Quaking Grass),
- small clumps of perennial grasses (eg. Pusstail Grass),
- small populations of Watsonia and other plants with corms or bulbs,
- small infestations of blackberry.

Hand pull or dig before flowering and seed set. Take care to:

- replace soil, mulch then tamp down,
- not to leave weeds on top of indigenous vegetation,
- not leave any plant material which could propagate (eg. blackberry runners, flower-heads of gorse or broom with ripe seeds present lower down the stem).

Cut and Swab treatment

Suitable for woody weeds which would be difficult to dig out due to their size, their location (within indigenous vegetation in good condition, adjacent to species of particular conservation significance, or on a site susceptible to erosion).

Suitable species include Gorse, Olive, Cotton bush, Blackberry and Broom.

- cut down plant as close to the ground as practicable (if the plant is very large, it may need to be cut down in sections),
- remove all live green shoots from the trunk (or multiple trunks); leave only the stump of each trunk,
- if the stump has a diameter greater than a 10 cent coin, chip away the bark; ie. frill the stump.
- paint on the herbicide immediately,
- dispose of the plant debris,
- if appropriate, break up foliage and use as mulch
- do not lay on top of indigenous vegetation,
- do not mulch with any plant material which could propagate; remove berries, seeds or runners.
- stockpile debris for burning or collection by Council staff only if necessary; arrange prior to undertaking the work and choose a previously disturbed site.

- do not use cut and swab treatment in wet weather or if rain is expected within 2 hours.

Suitable Herbicide for Cut and Swab Treatment

Triclopyr 600gm/litre – Trade Name “Garlon”

- dilute 1:30 with diesel
- follow the manufacturer’s instructions
- wear protective clothing
- use a red dye to indicate where stems have been adequately treated.

Spot spraying

Suitable for infestations of exotic grasses (e.g. Pushtail Grass, Phalaris), widespread small patches of Blackberry and plants with corms, bulbs and tubers (eg. Watsonia, Wild Garlic, Bridal Creeper and South African Weed Orchid)

- work only during suitable weather – fine, still conditions
- check each location for small indigenous species
- use equipment which has an adjustable and accurate spray nozzle
- if necessary, use a protective sheet or board under/alongside the pest plant in order to prevent off-target damage to sensitive indigenous species.

Suitable Herbicide for Spot Spraying

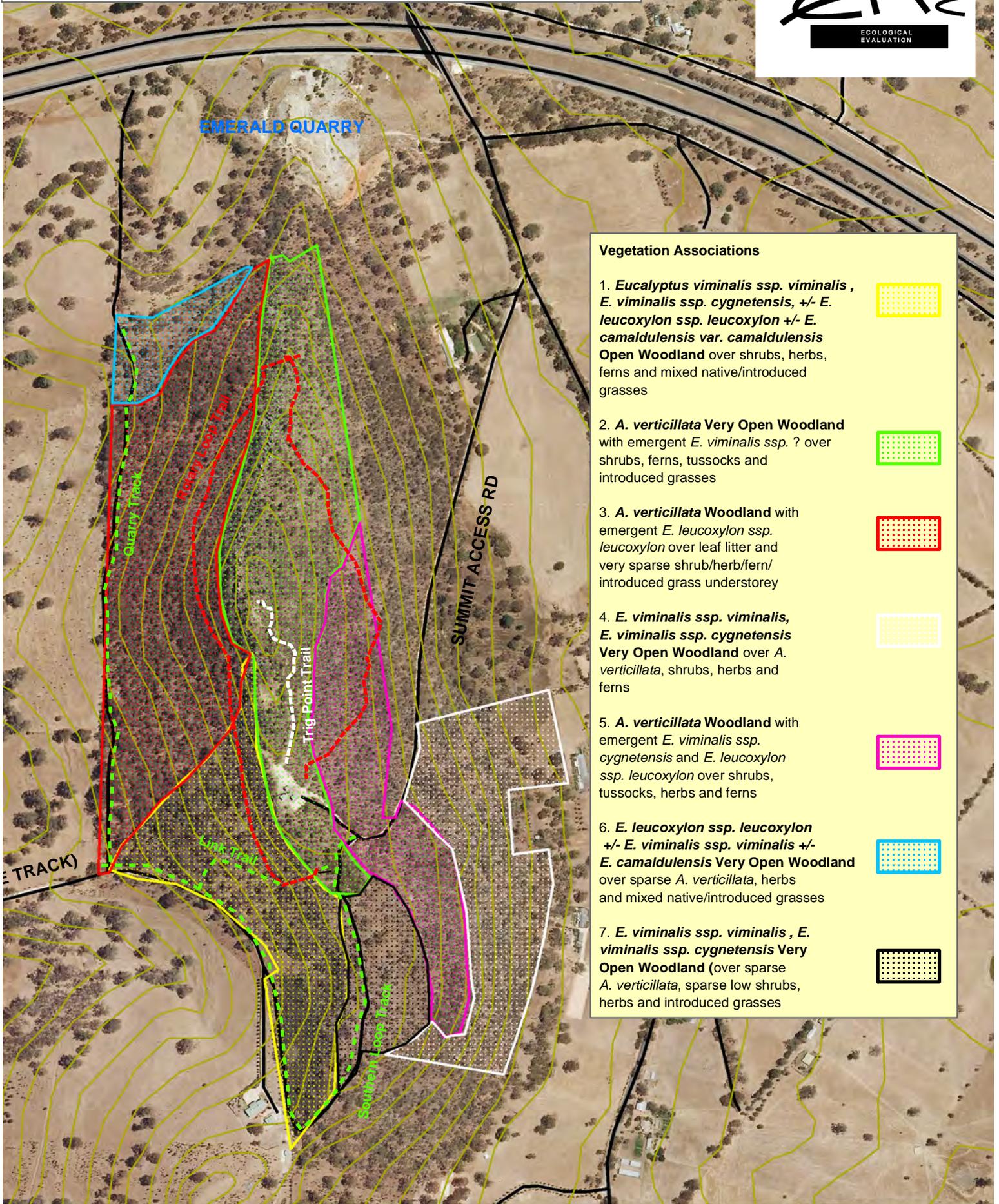
Glyphosate 360gm/litre

- dilute 1:100 with water
- follow the manufacturer’s instructions
- use protective clothing
- use a dye to indicate where the spray has been applied.
- for Watsonia it is advisable to use a wetting agent to aid the up-take of the herbicide.

Care must be taken when using herbicides or wetting agents in areas adjacent to waterways. Chemicals should not be applied to vegetation close to or overhanging the waterway, or if rain is expected within 24 hours.

Detailed explanations of bushland weeding strategies, techniques and herbicides are given in “Stop Bushland Weeds” by Meg Robertson (1994), Nature Conservation Society of SA Inc.

Figure 2. Mount Barker Summit Conservation Reserve Vegetation Associations

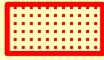


Vegetation Associations

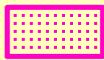
- Eucalyptus viminalis* ssp. *viminalis* ,
E. viminalis ssp. *cygnetensis* , +/- *E. leucoxylon* ssp. *leucoxylon* +/- *E. camaldulensis* var. *camaldulensis*
Open Woodland over shrubs, herbs, ferns and mixed native/introduced grasses


- A. verticillata* **Very Open Woodland** with emergent *E. viminalis* ssp. ? over shrubs, ferns, tussocks and introduced grasses

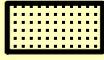

- A. verticillata* **Woodland** with emergent *E. leucoxylon* ssp. *leucoxylon* over leaf litter and very sparse shrub/herb/fern/introduced grass understorey


- E. viminalis* ssp. *viminalis* ,
E. viminalis ssp. *cygnetensis*
Very Open Woodland over *A. verticillata*, shrubs, herbs and ferns


- A. verticillata* **Woodland** with emergent *E. viminalis* ssp. *cygnetensis* and *E. leucoxylon* ssp. *leucoxylon* over shrubs, tussocks, herbs and ferns


- E. leucoxylon* ssp. *leucoxylon* +/- *E. viminalis* ssp. *viminalis* +/- *E. camaldulensis* **Very Open Woodland** over sparse *A. verticillata*, herbs and mixed native/introduced grasses


- E. viminalis* ssp. *viminalis* , *E. viminalis* ssp. *cygnetensis* **Very Open Woodland** (over sparse *A. verticillata*, sparse low shrubs, herbs and introduced grasses



Date of Imagery: 2006

Datum: GDA94

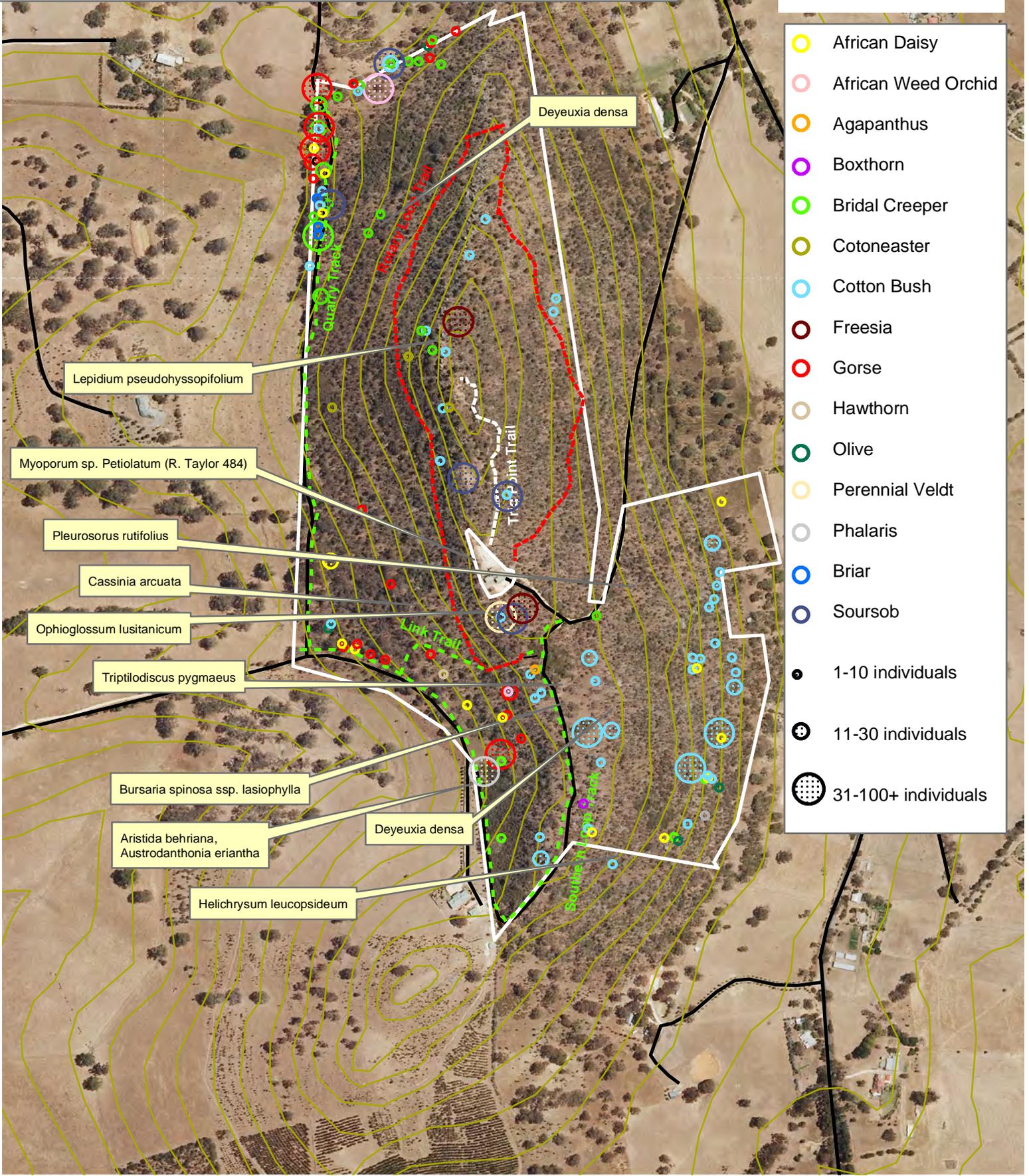
0 60 120 180 240 300 Meters

Scale: 1:7000



Figure 3. Weeds mapped in Mount Barker Summit Conservation Reserve during 2011 survey. Plants of Conservation Significance observed during 2011 survey

(single occurrences or small populations, does not include species that are widespread in reserve)



| | |
|--|---------------------|
| | African Daisy |
| | African Weed Orchid |
| | Agapanthus |
| | Boxthorn |
| | Bridal Creeper |
| | Cotoneaster |
| | Cotton Bush |
| | Freesia |
| | Gorse |
| | Hawthorn |
| | Olive |
| | Perennial Veldt |
| | Phalaris |
| | Briar |
| | Soursob |
| | 1-10 individuals |
| | 11-30 individuals |
| | 31-100+ individuals |

Lepidium pseudohyssopifolium

Myoporum sp. Petiolatum (R. Taylor 484)

Pleurosorus rufifolius

Cassinia arcuata

Ophioglossum lusitanicum

Triptilodiscus pygmaeus

Bursaria spinosa ssp. lasiophylla

Aristida behriana,
Austrodanthonia eriantha

Helichrysum leucopsideum

Deyeuxia densa

Deyeuxia densa

Date of Imagery: 2006

Datum: GDA94



Scale: 1:7000