

Department for Environment and Heritage
Management Plan



Geegeela Conservation Park
2006



Government
of South Australia

This plan of management was adopted on **2 July 2006** and was prepared pursuant to section 38 of the *National Parks and Wildlife Act 1972*.



Government of South Australia

Department for Environment
and Heritage

Published by the Department for Environment and Heritage, Adelaide, Australia

© Department for Environment and Heritage, 2006

ISBN: 1 921238 12 7

Cover photography: Blue Gum/Pink Gum Woodland
(Courtesy of Tim Bond, DEH)

This document may be cited as 'Department for Environment and Heritage (2006) *Geegeela Conservation Park Management Plan*, Adelaide, South Australia'.

FOREWORD

Geegeela Conservation Park protects 858 hectares of ecologically diverse native vegetation in the Upper South East of South Australia. A number of the vegetation communities within the park are threatened, as are many of the 90 or more native bird species that can be found there. The park contributes to the conservation of at least two nationally endangered bird species, the South-Eastern Red-tailed Black Cockatoo and the Swift Parrot. This park has a high biodiversity, with over 240 different plant species recorded thus far, and is considered to be of great conservation significance within the region.

The plan defines objectives and strategies for the future management of this reserve and facilitates the development and implementation of high quality conservation programs. Many people have contributed to the development of this plan of management. Their interest and helpful suggestions are gratefully acknowledged.

I now formally adopt the plan of management for Geegeela Conservation Park under the provisions of section 38 of the *National Parks and Wildlife Act 1972*. I encourage you to read the plan and appreciate the important conservation values of this park.



HON GAIL GAGO MLC

MINISTER FOR ENVIRONMENT AND CONSERVATION



TABLE OF CONTENTS

FOREWORD.....	i
1 PARK LOCATION AND FEATURES	1
2 LEGISLATIVE FRAMEWORK	4
2.1 National Parks and Wildlife Act 1972.....	4
2.2 Native Title Act 1993	5
3 VISION	6
4 MANAGING NATURAL HERITAGE.....	7
4.1 Geology, Soils and Landform	7
4.2 Hydrology	7
4.3 Native Vegetation	8
4.4 Native Fauna	11
4.5 Introduced Plants.....	13
4.6 Introduced Animals.....	14
5 MANAGING FIRE	15
6 MANAGING CULTURAL HERITAGE	17
6.1 Indigenous Heritage	17
7 MANAGING TOURISM AND RECREATION.....	18
7.1 Visitor Use and Access.....	18
7.2 Commercial Tourism	18
8 INVOLVING THE COMMUNITY	20
9 MANAGING RESERVE TENURE	22
SUMMARY OF MANAGEMENT STRATEGIES	23
REFERENCES AND BIBLIOGRAPHY	27
APPENDIX A: CONSERVATION STATUS CODES.....	28

LIST OF FIGURES

Figure 1: Location	2
Figure 2: Park Features.....	3

ACKNOWLEDGEMENTS

The contributions made by members of the local South East community, particularly input from the Tatiara Aboriginal Community, was very much appreciated.

1 PARK LOCATION AND FEATURES

Geegeela Conservation Park was proclaimed on 21 July 2005 under the *National Parks and Wildlife Act 1972*, without access under state mining legislation, to conserve a diverse and significant area of native vegetation in the Upper South East of South Australia. The park was purchased with the assistance of the Australian Government's Natural Heritage Trust.

The 858 hectare park comprises Sections 22 and 25, Hundred of Geegeela and is located about 12 kilometres north-west of Frances (Figure 1). Due to its location the park is traditionally associated with the Potaruwutj people and is of interest to the Tatiara Aboriginal Community (Tindale, 1974).

The park is ecologically diverse, supporting ten different vegetation associations, some of which are on the heavier soils preferred for agriculture and as a consequence, largely cleared elsewhere. The park primarily consists of a mixture of Desert Banksia (*Banksia ornata*) heath, Blue Gum (*Eucalyptus leucoxylon*)/Pink Gum (*Eucalyptus fasciculosa*) Open Woodland, Brown Stringybark (*Eucalyptus baxteri*) Open Woodland and wetlands. There are also some small patches of woodland dominated by Rough-barked Manna Gum (*Eucalyptus viminalis* ssp. *cygnetensis*), River Red Gum (*Eucalyptus camaldulensis* var. *camaldulensis*) and Buloke (*Allocasuarina luehmannii*).

Probably most significantly, the park provides breeding and foraging habitat for the South-Eastern Red-tailed Black Cockatoo (*Calyptorhynchus banksii graptogyne*), a nationally endangered species. This bird breeds in Blue Gum Woodland and feeds in Brown Stringybark and Buloke Woodlands.

In addition to the South-Eastern Red-tailed Black Cockatoo, the park provides important habitat for a number of other threatened plants, birds and vegetation communities. There are approximately 243 native plant species recorded within this park, which provide habitat for 90 native avifauna species and five mammal species of state conservation significance, indicating a very high level of biodiversity. Many of the native plant and bird species are of state and regional conservation significance.

Overall, the park environment is in good condition and appears unaffected by dryland salinity or a rising water table. The majority of the property has not been grazed for over 20 years and there is little evidence of past grazing impact. Geegeela Conservation Park is relatively weed-free, with 19 introduced species recorded, primarily along the park's boundaries. It is also noteworthy that only two introduced birds have been recorded from the site. The park has few visitors and generally receives little attention, aside from sporadic visits by ornithologists and local people.

The South East region experiences cool, wet winters and warm, dry summers. Major land uses in the region include grazing, plantation forestry, viticulture and cropping. Other National Park and Wildlife Act reserves in the vicinity of Geegeela Conservation Park include Bangham Conservation Park (three kilometres to the east), Pine Hill Soak Conservation Park to the north and Padthaway Conservation Park to the west (Figure 1). There are also a number of privately-owned Heritage Agreement areas within the vicinity of the park, three of which are directly adjacent to it (Figure 2). Because so much of the Upper South East region has been cleared, this area of remnant habitat is particularly valuable.

Geegeela Conservation Park was formerly part of a larger farming property and in the 1960s approximately 200 hectares was cleared in the south-western corner. Although never sown to pasture, the native grasses were grazed for a number of years. In about 1970, attempts were made to cultivate approximately 70 hectares, reputedly with limited success. Subsequently, the property has not been used for agriculture and the cleared area has been allowed to revegetate.

The land was declared a private Heritage Agreement area in 1986 under the then *Native Vegetation Management Act 1985*. The previous landowners purchased the property in the early 1990s and recognising its biodiversity value, retained it as a private conservation area for the decade prior to park proclamation. The property had been a Sanctuary for a short time in the early 1970s. This status was renewed in 1992 and was in place up until Geegeela Conservation Park was proclaimed.

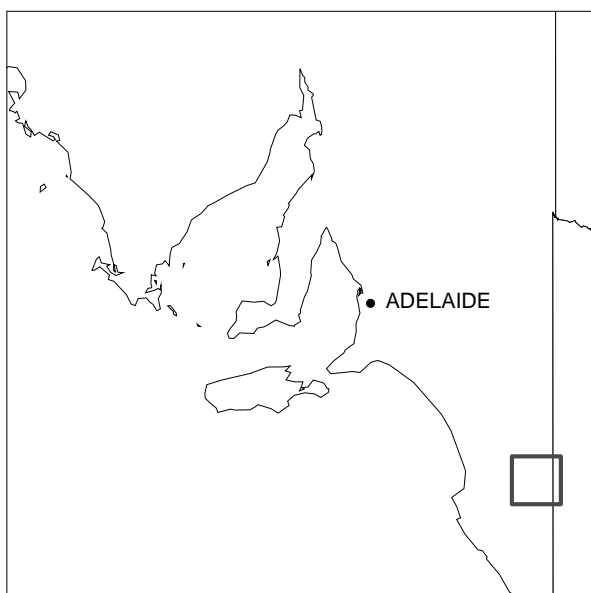
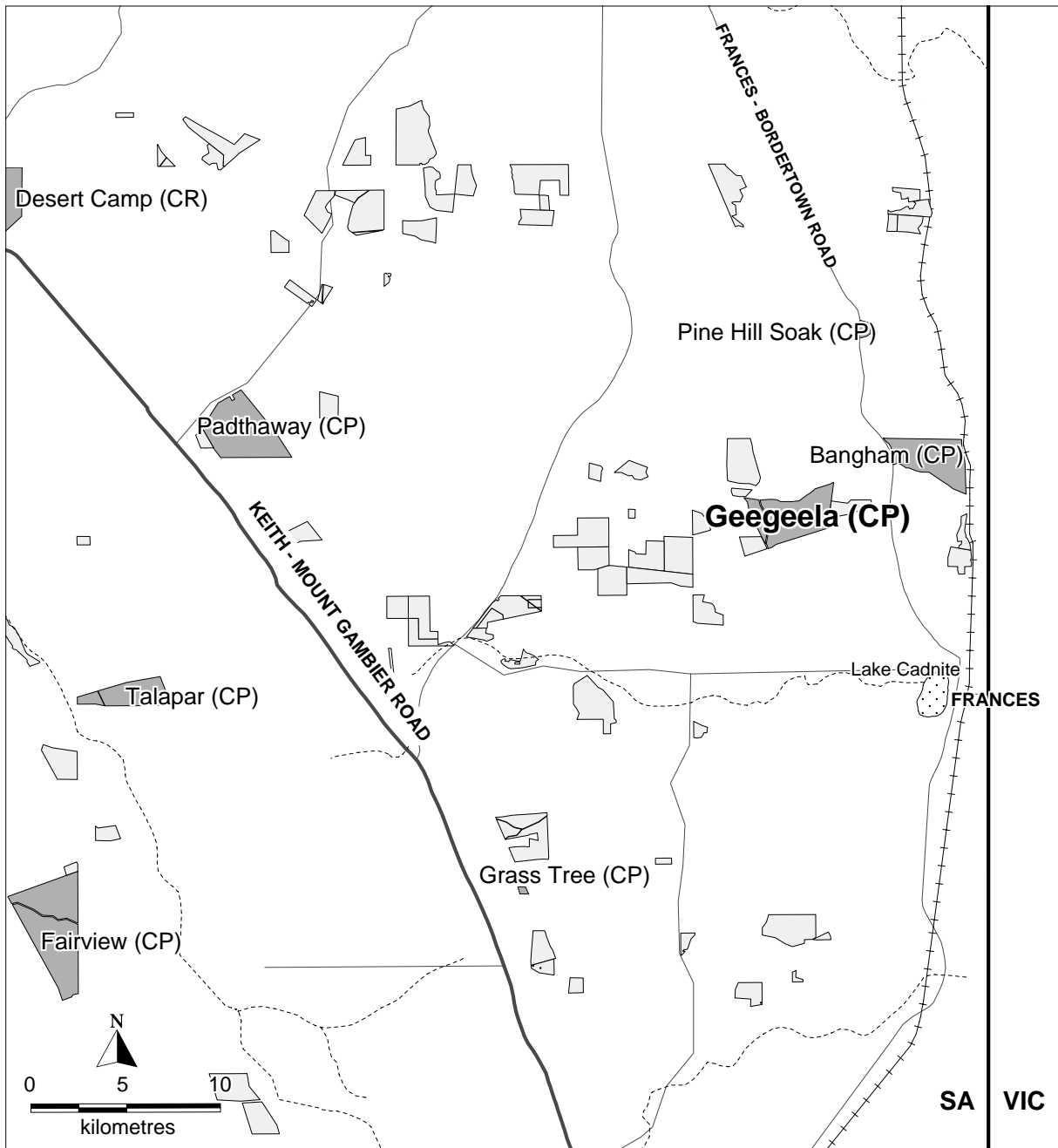


Figure 1

Geegeela Conservation Park

LEGEND

- | | | | |
|------|--------------------------|-------|-------------|
| (CP) | Conservation Park | — | Road |
| (CR) | Conservation Reserve | — | Main Road |
| | State Parks and Reserves | ++++ | Railway |
| | Heritage Agreement | ----- | River/Creek |
| | Lake | | |

Map Produced from PAMS
 Projection: MGA Zone 54 (GDA 94)
 Date: 10 May, 2005



LEGEND







- | | | | |
|---|---------------------------------|---|--------------|
|  | Geegeela Conservation Park |  | Land Parcels |
|  | Heritage Agreement |  | Dirt Tracks |
|  | Artificial Dams | | |
|  | Wetland Vegetation Associations | | |

Figure 2

Geegeela Conservation Park

Features

Map Produced from PAMS
 Projection: MGA Zone 54 (GDA 94)
 Date: 10 May, 2005

2 LEGISLATIVE FRAMEWORK

2.1 National Parks and Wildlife Act 1972

The Director of National Parks and Wildlife manages reserves subject to any direction by the Minister for Environment and Conservation or the Chief Executive of the Department for Environment and Heritage (DEH). When managing reserves, the Director is required under section 37 of the *National Parks and Wildlife Act 1972* to have regard to, and provide actions that are consistent with the following objectives of management stated in the Act:

- preservation and management of wildlife;
- preservation of historic sites, objects and structures of historic or scientific interest within reserves;
- preservation of features of geographical, natural or scenic interest;
- destruction of dangerous weeds and the eradication or control of noxious weeds and exotic plants;
- control of vermin and exotic animals;
- control and eradication of disease of animals and vegetation;
- prevention and suppression of bush fires and other hazards;
- encouragement of public use and enjoyment of reserves and education in, and a proper understanding and recognition of, their purpose and significance;
- generally, the promotion of the public interest; and
- preservation and protection of Aboriginal sites, features, objects and structures of spiritual or cultural significance within reserves.

Section 38 of the Act states that a management plan is required for each reserve. A management plan should set forth proposals in relation to the management and improvement of the reserve and the methods by which it is intended to accomplish the objectives of the Act in relation to that reserve.

DEH is responsible for preparing management plans and undertaking the prescribed community consultation process. A standard management planning process is mandated, to ensure that all statutory obligations are met. Help and guidance with plan preparation is sought and obtained from individuals, community groups or relevant advisory committees, although ultimately the decision on whether or not to adopt a management plan remains a ministerial prerogative.

The draft plan for Geegeela Conservation Park was released for public exhibition in February 2006. At the close of the comment period, five submissions were received, raising issues with regards to pest animal and plant control, fire management and park access. All comments and concerns were considered by the South East Consultative Committee and forwarded to the South Australian National Parks and Wildlife Council for advice before the plan was presented to the Minister for adoption.

In accordance with the Act, once formally adopted, the provisions of this plan must be carried out and no actions undertaken unless they are in accordance with the plan. In order to achieve this, each year park managers, taking regional and district priorities into account, draw up work programs to implement the strategies proposed in management plans. Implementation of these projects is determined by, and subject to, the availability of resources.

2.2 Native Title Act 1993

Native Title describes the rights and interests Aboriginal and Torres Strait Islander People have in land and waters according to their traditional laws and customs. Commonwealth legislation, in the form of the *Native Title Act 1993* was enacted to:

- provide for the recognition and protection of native title;
- establish ways in which future dealings affecting native title may proceed and to set standards for those dealings;
- establish a mechanism for determining claims to native title; and
- provide for, or permit, the validation of past acts, and intermediate period acts, invalidated because of the existence of native title.

This management plan is released and will be adopted subject to any native title rights and interests that may continue to exist in relation to the land and/or waters. Before undertaking any acts that might affect native title, DEH will follow the relevant provisions of the *Native Title Act 1993*.

3 VISION

The vision for Geegeela Conservation Park is a park that protects an important remnant of diverse and threatened ecological communities in the Upper South East and supports the long-term survival of the South-Eastern Red-tailed Black Cockatoo, Swift Parrot and other important threatened species.

4 MANAGING NATURAL HERITAGE

4.1 Geology, Soils and Landform

Geegeela Conservation Park is located within a region that is characterised by undulating sand plains with local ferruginous cappings, overlain by dunes and sheets of aeolian sand (Laut et al., 1977). This park is situated within the Murray Basin, which underlies most of the Upper South East region (Rogers, 1995). The transect of a geological cross-section which is within the vicinity of the park indicates that the upper geological formations typical of the park are Modern-Quaternary Molineaux Sand, underlain by Tertiary Parilla and Loxton Sand (Rogers, 1995). The formations found between these upper layers and the basement rock, in descending order are Tertiary Gambier Limestone, Buccleuch and Olney Formations (Rogers, 1995). The basement rock formation found under Geegeela Conservation Park is Early Palaeozoic Kanmantoo Group with associated rocks (Rogers, 1995). As would be expected from the description of the underlying geology, the soils are mostly sandy in nature.

Park managers need to take soil type into consideration when making decisions on track construction and maintenance. There is the possibility that in some parts of the park seasonal inundation (in winter) or dry sand (in summer) may impede vehicular access at various times of the year. For example, the boundary-access tracks, and the "through-track", are typically sandy tracks that require 4WD-capable vehicles for reliable access (Figure 2). Any on-park activities that could cause or accelerate soil erosion should be avoided.

Increasing soil salinity is a major issue of concern in the Upper South East. Although at the time of park acquisition there was little indication of soil salinity problems, regular monitoring should continue to ascertain what, if any, changes are occurring over time. Park managers should work cooperatively with the local authorities that have responsibility for soil conservation (eg the South East Natural Resources Management Board) with regard to dryland salinity.

Objective

Conserve the soils within the park.

Strategies

- Consider soil types and properties, particularly erosion potential, when planning for future management tracks or visitor access.
- When constructing new tracks, incorporate design features that minimise soil erosion and reduce the risk of accelerating the soil erosion process.
- Undertake soil conservation and rehabilitation management programs to mitigate any existing or potential degradation.
- Work cooperatively with the South East Natural Resources Management Board with regard to soil conservation measures.

4.2 Hydrology

The slow natural drainage pattern of the Upper South East that prevailed in historic times (ie from south-east to north-west along the interdunal flats) has been substantially modified by the construction of an extensive system of drains. Although some low-lying areas still remain subject to seasonal inundation, large volumes of drainage water are now redirected to the coast. There are also permanent water bodies in certain places. The long-term effects of artificial drainage on the ecology of the Upper South East are still incompletely known, but the changes to the landscape would appear to be quite significant.

The Upper South East has been identified as an area where landscape and associated biodiversity and agricultural values are particularly vulnerable to rising water tables and the adverse impacts of dryland salinity. However, the risks in the vicinity of the park are considered to be low and the park and nearby vegetated areas are playing an important role in mitigating those effects. It is important, in the context of hydrology, that the health of the native vegetation in the area and thus the existing hydrology be maintained.

Park managers can have little direct influence over of the park's hydrology, given that drainage and dryland salinity management are regional initiatives. However, it is still important for liaison to be maintained with the responsible authorities (eg the South East Natural Resources Management Board) to be involved in the preservation of natural hydrological regimes and processes as far as possible and thereby achieve the best outcomes for local biodiversity conservation.

There are no permanent water holes within Geegeela Conservation Park. During wetter years some small, natural water holes have been known to appear and other areas of the park that support wetland vegetation associations become inundated, providing important wetland habitat (Figure 2). In addition to these natural water resources there are two constructed semi-permanent dams. One of these is in the centre of the property and is believed to be almost silted over, while the other is in the north-eastern corner adjoining the My Mi Mi Road and still has a relatively good water-holding capacity (Figure 2). The second of these water holes used to be a sand quarry and was used when the My Mi Mi Road was constructed over 30 years ago. Both of these semi-permanent dams help sustain both introduced and native fauna. The future of these artificial sources of water needs to be assessed in the context of them sustaining feral animal populations and their potential for creating an over-abundance of some native species.

Objective

Conserve the park's natural hydrological systems such that they continue to support the native vegetation and fauna of the park.

Strategies

- Monitor changes to ecosystems that may be the result of a change in hydrological regimes.
- Participate in regional water management programs to ensure any hydrological management schemes are designed and implemented with minimal negative impacts to the park's hydrology and natural values.
- Monitor the role of artificial water points in sustaining introduced and native fauna, and rehabilitate if required.

4.3 Native Vegetation

Geegeela Conservation Park is considered to be of high biodiversity value and is identified as being part of the regionally significant Desert Camp-Bangham District Large Remnant Area (Croft et al., 1999). The park is the core area of remnant native vegetation in the district.

The park is also diverse in terms of the ecosystems it protects and many of these are considered threatened at a national, state or regional level. For example, the Buloke (*Allocasuarina luehmannii*) Woodland community protected by the park is nationally endangered. Six of the vegetation associations are considered threatened at a state level and eight are classified as threatened at a regional level (DEH, 2001). Many of the vegetation associations listed below are at the western and northern extremities of their ranges in South Australia and have been largely cleared in the surrounding region. Apart from Desert Banksia (*Banksia ornata*) Open Shrubland, all of the vegetation associations conserved by the park are considered to be vulnerable to threatening processes.

The vegetation associations in Geegeela Conservation Park are:

- Silver Banksia (*Banksia marginata*) Low Woodland;
- Bare Twig Rush (*Baumea juncea*)/Black Bristle-rush (*Chorizandra enodis*) Sedgeland;
- Grey Box (*Eucalyptus microcarpa*) Woodland;
- Buloke (*Allocasuarina luehmannii*) Woodland;
- Blue Gum (*Eucalyptus leucoxylon*)/Pink Gum (*Eucalyptus fasciculosa*) Woodland;
- Slender Honey-myrtle (*Melaleuca gibbosa*)/Dwarf Wrinkled Hakea (*Hakea rugosa*) Shrubland;
- River Red Gum (*Eucalyptus camaldulensis* var. *camaldulensis*) Woodland;
- Rough-barked Manna Gum (*Eucalyptus viminalis* ssp. *cygnetensis*) Woodland;
- Brown Stringybark (*Eucalyptus baxteri*) Open Woodland; and
- Desert Banksia (*Banksia ornata*) Open Shrubland.

At least three sites within the park have been recorded as having two of these regionally endangered vegetation associations (Bare Twig Rush/Black Bristle-rush sedgeland and Slender Honey-myrtle/Dwarf Wrinkled Hakea shrubland) found together in wetland communities (Figure 2).

Some 243 native plant species have been recorded in the park. Of these, one species is endangered at a national level, 14 species are rated as threatened at a state level under the *National Parks and Wildlife Act 1972* and 40 species have an identified conservation rating within the South East region (Table 1).

The native vegetation is in relatively good condition, but should be monitored and steps taken to manage any threats that may arise during the term of this management plan. In particular, large Blue Gums are important nesting habitat for cockatoos and should be retained and protected, even if dead or moribund.

Phytophthora

Phytophthora is a generic name for a group of parasitic soil-borne root-rot fungi (most commonly *Phytophthora cinnamomi*) that cause disease and death in a range of native plant species. Phytophthora attacks the root system of a plant and reduces or stops the movement of water and nutrients; there is no cure for Phytophthora and once an area is infested, it remains infested. The Australian Government Department of the Environment and Heritage has identified Phytophthora as a key threatening process and a National Threat Abatement Plan has been developed (Environment Australia, 2001).

The South East is classified as being at Moderate Risk from the threat of Phytophthora fungus (Phytophthora Technical Group, 2003). One of the key factors that puts the South East at risk is that it receives 400 mm or more of average yearly rainfall. Although there is yet to be any confirmation of Phytophthora within the parks of the South East, many plant species within the region are known to be susceptible to the fungus (Phytophthora Technical Group, 2003). It is highly important that the disease is prevented from establishing in the reserves of the South East.

The fungus prefers moist, warm soils with a low to neutral pH, poor drainage and low nutrient concentrations (Phytophthora Technical Group, 2003). The soil found throughout the majority of Geegeela Conservation Park is alkaline and freely draining, due to its sandy consistency and underlying geology. These soil conditions are not conducive to the establishment of Phytophthora. Although, it should be noted that the park protects a number of species that are susceptible to the fungus (DEH, 2002): Myrtle Wattle (*Acacia myrtifolia*); Cushion Ground-berry (*Acrotriche serrulata*); Yellow Gland-flower (*Adenanthos terminalis*); Silver Banksia (*Banksia marginata*); Desert Banksia (*Banksia ornata*); Leafless Bitter-pea (*Daviesia brevifolia*); Common Heath (*Epacris impressa*); Brown Stringybark (*Eucalyptus baxteri*); Beaked Hakea (*Hakea rostrata*); Guinea-flower (*Hibbertia* sp.); Horny Cone-bush (*Isopogon ceratophyllus*); and Tea-tree (*Leptospermum* sp.).

Phytophthora can be spread through transfer of infested soil material on vehicles or foot wear (DEH, 2002). The threat of Phytophthora needs to always be kept in mind and measures need to be taken to prevent infected plant material entering the park. For example, prior to entering the park any vehicles that have been in infected areas should be washed down using a pressurised spray containing specialised disinfectants to prevent the spread of Phytophthora (DEH, 2002). The DEH *Standard Operating Procedures for Phytophthora Threat Management* (2002) should be referred to when undertaking management activities to create awareness of the precautions that need to be taken to avoid the introduction of Phytophthora.

Mundulla Yellows

Mundulla Yellows is a syndrome that affects eucalypts and other native plants, resulting in the death of the affected plants over several years. It is characterised by progressive yellowing and die-back of foliage and can look similar to lime-induced chlorosis or iron-induced chlorosis (leaf yellowing due to lime intolerant plants striking limestone). A great deal of research has been conducted into the cause of Mundulla Yellows. Numerous biotic causes have been suspected and were either unconfirmed or dismissed (Mundulla Yellows Task Group, 2004; Luck et al., 2004). The latest theory suggests that the symptoms of Mundulla Yellows are caused by a complex interaction of soil properties (texture and parent material), nutrients, soil compaction, water availability, increased alkalinity and salinity, and the accumulation of bicarbonate in the soil solution (Luck et al., 2004).

Table 1: Plant species of conservation significance recorded in Geegeela Conservation Park

Scientific name	Common name	Conservation Status Codes*		
		AUS	SA	South East
<i>Acacia acinacea</i>	Wreath Wattle			U
<i>Acacia brachybotrya</i>	Grey Mulga-bush			U
<i>Actinobole uliginosum</i>	Flannel Cudweed			U
<i>Allittia uliginosa</i>	Wet-heath Daisy		R	R
<i>Allocasuarina luehmannii</i>	Buloke			U
<i>Aphelia gracilis</i>	Slender Aphelia			R
<i>Baumea acuta</i>	Pale Twig-rush		R	R
<i>Brachycome cardiocarpa</i>	Swamp Daisy		R	R
<i>Caladenia colorata</i>	Coloured Spider-orchid	E	E	E
<i>Caladenia cucullata</i>	Hooded Caladenia		R	R
<i>Caladenia reticulata</i>	Veined Spider-orchid			K
<i>Callitris gracilis</i>	Southern Cypress Pine			R
<i>Calochilus robertsonii</i>	Purplish Beard-orchid			R
<i>Comesperma polygaloides</i>	Small Milkwort			U
<i>Corybas incurvus</i>	Slaty Helmet-orchid			U
<i>Cynoglossum suaveolens</i>	Sweet Hounds Tongue			Q
<i>Drosera whittakeri</i> ssp. <i>aberrans</i>	Scented Sundew		R	U
<i>Eryngium rostratum</i>	Blue Devil		V	T
<i>Haloragis aspera</i>	Rough Raspwort			U
<i>Hypoxis vaginata</i> var. <i>vaginata</i>	Yellow Star			U
<i>Isolepis fluitans</i>	Floating Club-rush			U
<i>Leptomeria aphylla</i>	Leafless Currant-bush			U
<i>Leucopogon clelandii</i>	Cleland's Beard-heath		R	R
<i>Leucopogon woodsii</i>	Modding Bearth-heath			U
<i>Lobelia pratioides</i>	Poison Lobelia		R	R
<i>Lomandra micrantha</i> ssp. <i>tuberculata</i>	Small-flower Mat-rush			U
<i>Melaleuca gibbosa</i>	Slender Honey-myrtle			R
<i>Microtis atrata</i>	Yellow Onion-orchid		R	R
<i>Microtis orbicularis</i>	Onion-orchid		R	V
<i>Myriocephalus rhizocephalus</i> var. <i>rhizocephalus</i>	Woolly Heads			U
<i>Ophioglossum lusitanicum</i>	Austral Adders Tongue			U
<i>Phylloglossum drummondii</i>	Pigmy Clubmoss		R	R
<i>Plantago</i> aff. <i>debilis</i>	Shade Plantain			R
<i>Pterostylis tasmanica</i>			V	
<i>Pultenaea laxiflora</i>	Loose-flower Bush-pea			V
<i>Ranunculus pachycarpus</i>	Thick-fruit Buttercup			R
<i>Solenogyne dominii</i>	Smooth Solenogyne			R
<i>Stylidium perpusillum</i>	Tiny Trigger-plant			R
<i>Styphelia adscendens</i>	Golden Heath			U
<i>Utricularia dichotoma</i>	Purple Bladderwort			U
<i>Utricularia violacea</i>	Violet Bladderwort		R	R

* Refer to Appendix A for the definition of the Conservation Status Codes

Mundulla Yellows symptoms are primarily recognised in trees that are situated along roadsides, natural and man-made watercourses and sparsely separated trees in pastured paddocks (Croft et al., 1999). According to the Mundulla Yellows Task Group (2004), Wattle (*Acacia farinosa*), Bursaria (*Bursaria* sp.), Flax-lily (*Dianella* sp.), Dune Stringybark (*Eucalyptus arenacea*), Brown Stringybark (*Eucalyptus baxteri*), Pink Gum (*Eucalyptus fasciculosa*), South Australian Blue Gum (*Eucalyptus leucoxylon*), Muntries (*Kunzea pomifera*), Short-leaf Honey-myrtle (*Melaleuca brevifolia*), and Grass-tree (*Xanthorrhoea* sp.), which are found in Geegeela Conservation Park, have been diagnosed with Mundulla Yellows in the Upper South East region.

Given that the soil found in the park can be of an alkaline or saline nature, which is known to be one of the influences that can result in Mundulla Yellows, these species should be monitored for signs of Mundulla Yellows in the park. To date, none of the plants within the park have been found with Mundulla Yellows symptoms.

In an effort to keep Geegeela Conservation Park free from Mundulla Yellows general plant hygiene guidelines for planting, pruning and disposal should be adhered to, as all of the factors that contribute to the syndrome are yet to be confirmed. The management and hygiene practices used for preventing the spread of Phytophthora should be employed, tools should be sterilised and cut material should not be removed from a site. Additionally, when revegetating local seed from trees that are not affected by Mundulla Yellows should be used for new plantings, rather than seedlings that have been raised in another area, since even if the plants appear healthy they could still be affected.

Objective

Conserve and restore the native vegetation in the park and minimise the threats to biodiversity, particularly to plants and communities of conservation significance.

Strategies

- Monitor changes in vegetation communities, with particular focus on areas that appear degraded or have experienced significant understorey change. Encourage research into observed vegetation community changes, especially those that include vegetation associations that are threatened, and utilise the outcomes of this research to guide management.
- Manage threats to the park's vegetation communities, particularly in those areas that contain plant species that are listed as threatened or are important as threatened species habitat.
- Consider the threat of Mundulla Yellows and Phytophthora and take steps to prevent the introduction of either whenever practicable, report and investigate suspected infections, and treat whenever possible.

4.4 Native Fauna

Although no mammals have been recorded within Geegeela Conservation Park to date (2006), the park is believed to provide habitat that is suitable for four mammal species that are listed as rare in South Australia under the *National Parks and Wildlife Act 1972*. These are the Eastern Grey Kangaroo (*Macropus giganteus*), Sugar Glider (*Petaurus breviceps*), Western Pygmy-possum (*Cercartetus concinnus*), Red-necked Wallaby (*Macropus rufogriseus*) and Common Wombat (*Vombatus ursinus*). There is also the possibility that the Squirrel Glider (*Petaurus norfolcensis*) utilises the park, as specimens found in the Bordertown area have recently been confirmed through DNA testing to be Squirrel Gliders rather than Sugar Gliders, which are only half the size. Squirrel Gliders do not have a very large distribution and are considered endangered at a state level.

The park provides habitat for more than 90 native bird species, with the number of recorded species likely to increase over time with further survey work. Sixteen of these species are known to be threatened at a state level, under the *National Parks and Wildlife Act 1972*, and 29 have an identified conservation rating at a regional level (Table 2).

The park provides critical habitat for the South-Eastern Red-tailed Black Cockatoo (*Calyptorhynchus banksii graptogyne*) and the Swift Parrot (*Lathamus discolor*), which are endangered at a national level and are the subjects of a national recovery plans under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth of Australia, 2005; Swift Parrot Recovery Team, 2001).

Table 2: Birds of conservation significance recorded in Geegeela Conservation Park

Scientific name	Common name	Conservation Status Codes*		
		AUS	SA	South East
<i>Anas rhynchotis</i>	Australasian Shoveler		R	R
<i>Calyptorhynchus banksii grapotgyne</i>	South-Eastern Red-tailed Black Cockatoo	E	E	E
<i>Cacatua galerita</i>	Sulphur-crested Cockatoo			U
<i>Calyptorhynchus funereus</i>	Yellow-tailed Black Cockatoo		V	V
<i>Chrysococcyx lucidus</i>	Shining Bronze-cuckoo		R	R
<i>Coracina papuensis robusta</i>	White-bellied Cuckoo-shrike			R
<i>Cormobates leucophaeus</i>	White-throated Treecreeper			U
<i>Coturnix ypsilophora</i>	Brown Quail		V	V
<i>Drymodes brunneopygia</i>	Southern Scrub Robin			U
<i>Entomyzon cyanotis</i>	Blue-faced Honeyeater		R	R
<i>Falco peregrinus</i>	Peregrine Falcon			R
<i>Falcunculus frontatus</i>	Crested Shrike-tit		V	V
<i>Glossopsitta pusilla</i>	Little Lorikeet		V	V
<i>Grus rubicunda</i>	Brolga		V	E
<i>Hylacola pyrrhopygia</i>	Chestnut-rumped Heathwren		V	V
<i>Lathamus discolor</i>	Swift Parrot	E	V	V
<i>Malurus lamberti assimilis</i>	Variegated Fairy-wren			U
<i>Microeca leucophaea (fascinans) leucophaea</i>	Jacky Winter			U
<i>Melithreptus gularis</i>	Black-chinned Honeyeater		V	V
<i>Neophema chrysostoma</i>	Blue-winged Parrot		V	V
<i>Pachycephala pectoralis</i>	Golden Whistler			U
<i>Pardalotus punctatus punctatus</i>	Spotted Pardalote			U
<i>Petroica multicolor boodang</i>	Scarlet Robin			U
<i>Petroica phoenicea</i>	Flame Robin		R	R
<i>Phylidonyris melanops</i>	Tawny-crowned Honeyeater			U
<i>Pomatostomus superciliosus superciliosus</i>	White-browed Babbler			U
<i>Stagonopleura guttata</i>	Diamond Firetail		V	E
<i>Strepera versicolor melanoptera</i>	Grey Currawong			U
<i>Turnix varia</i>	Painted Button-quail		V	V

*Refer to Appendix A for the definition of the Conservation Status Codes

The distribution of the South-Eastern Red-tailed Black Cockatoo is within the South East of South Australia and the South West of Victoria (Foulkes and Heard, 2003). Although its former distribution may never have been much greater than this, the extent of its occurrence within this range has declined significantly due to habitat loss. Around 80% of its habitat has been destroyed in South Australia and it is thought that less than 1,000 individuals of the species are left (Croft et al., 1999; Foulkes and Heard, 2003). These birds breed in the hollows of old Blue Gums and eat the seeds of Brown Stringybarks and Bulokes, and they prefer nesting sites that are located within two kilometres of feeding areas. In one year, as many as five breeding pairs of these cockatoos have used nesting hollows in the big, old Blue Gums in the park, which is central to and complements some nearby areas of native vegetation, collectively vital to the survival of this threatened species.

The park also provides habitat that is suitable for the nationally endangered Malleefowl (*Leipoa ocellata*), which has been observed within three kilometres of the park (1992). Further ornithological surveys are required to monitor avifauna trends.

Currently, there are few clear threats to fauna habitat or to priority species in the park, but South-Eastern Red-tailed Black Cockatoos breeding in large hollow trees may face competition from the Brushtail Possum (*Trichosurus vulpecula*), Galah (*Cacatua roseicapilla*) or Starling (*Sturnus vulgaris*). Steps have already been taken to "possum-proof" some of the nesting trees by girdling them with sheet metal as a means of deterring climbing animals. The usefulness of this strategy to breeding success should be assessed and any need for additional measures determined.

It would be expected that the park is important for the long-term survival of a variety of reptiles, amphibians and invertebrates. In the interests of gaining more information, park managers should support any future biological surveys of the area. Fauna management activities carried out in the park should be integrated with any broader-based recovery programs for threatened species. A regional perspective should be taken when managing the park as habitat for native fauna.

Objective

Identify and protect native fauna species, especially those of conservation significance.

Strategies

- Survey and monitor the number of native fauna species found on the park.
- Encourage approved volunteer groups and individuals to conduct fauna surveys and undertake population monitoring and management activities. Encourage surveys focussed on fauna species not recorded in the park and determine the habitat requirements of any new species sighted.
- Identify and protect significant fauna habitats and integrate habitat management and restoration/revegetation activities with introduced plant and animal management programs. Concentrate on the protection of the South-Eastern Red-tailed Black Cockatoo and the Swift Parrot.
- Undertake on-park biodiversity conservation projects in association with threatened species recovery programs, particularly those of national importance.

4.5 Introduced Plants

The park's vegetation is in generally good condition and relatively free of introduced species, with only 19 species recorded in the park, mostly along the perimeter. Of these 19 species, Thistle (*Carduus* spp.) and Veldt Grass (*Ehrharta* sp.) were the only introduced plants of prominence seen during an inspection in February 2005. Since this site visit, other introduced plant species have been found to be prevalent in certain areas of the park. These include South African Weed Orchid (*Disa bracteata*) and two priority pest plant species, Olive (*Olea* sp.) and Bridal Creeper (*Asparagus asparagoides*). It is possible that a more thorough survey would reveal other introduced species in the park.

There is a good opportunity, given the relatively weed-free environment, to instigate a management regime that will maintain this situation. However, to effectively manage the threat of weed invasion a regionally-integrated approach needs to be taken, involving surrounding property owners/managers, the Tatiara District Council and the South East Natural Resources Management Board.

Weed control activities should be coordinated according to priorities determined in a DEH district pest plant management program and should recognise the legal requirements of the *Natural Resources Management Act 2004*.

Objective

Control and if possible eliminate proclaimed plants, as well as control and minimise the adverse impacts of introduced plant species on the park's biodiversity.

Strategies

- Develop partnerships with local land managers, including the South East Natural Resources Management Board, and contribute to integrated regional weed control programs.
- Establish pest plant control priorities and actions, and combine weed control activities on the park with any pest plant control/native plant revegetation initiatives taking place on neighbouring land.

4.6 Introduced Animals

There are only two species of introduced birds recorded for the park, the Starling (*Sturnus vulgaris*) and the European Goldfinch (*Carduelis carduelis*), suggesting that the park environment is currently (2006) in relatively good condition.

It has been observed that feral populations of the European Bee (*Apis mellifera*) are a threat within the park, in terms of competing with native avifauna for tree hollows, which could possibly have an impact on the South-Eastern Red-Tailed Black Cockatoo (*Calyptorhynchus banksii graptogyne*).

In terms of introduced mammals, the Red Fox (*Vulpes vulpes*) and Feral Goat (*Capra hircus*) are believed to be the most abundant. Other introduced mammals believed to use the park include the Feral Cat (*Felis catus*), European Rabbit (*Oryctolagus cuniculus*), Deer (*Cervus* spp.) and Brown Hare (*Lepus capensis*). A more detailed survey would be likely to reveal the presence of other introduced fauna species (small rodents in particular). Rabbits, hares, goats and deer are all exotic grazing animals that can impact adversely on the natural environment. Introduced predators such as foxes and cats have had and continue to have a detrimental effect on native animals, birds, reptiles and invertebrates. Careful management through integrated pest control programs is the best way to ensure that the numbers of introduced animals are reduced with minimal impact on native flora and fauna, until some long-term biological control alternative is found.

From a DEH perspective, currently foxes are a key priority for animal control (eg fox baiting) as is the removal of feral goats. As with introduced plants, pest fauna control activities should be integrated with those of district-wide programs and neighbouring property managers to gain maximum benefit. Deer are not a major problem but should be culled on an opportunistic basis.

Artificial water points within the park provide water to introduced animals and because of this the future of these water holes needs to be considered (refer to Section 4.2 Hydrology).

Objective

Undertake measures to control introduced animals in the park, preferably as a component of regional initiatives.

Strategies

- Devise pest/introduced animal control programs in accordance with regional priorities, taking into account the possible adverse impacts of such programs on native wildlife and other off-target species.
- Work in cooperation with adjoining landowners, the South East Natural Resources Management Board and the Tatiara District Council to achieve effective pest animal control on a regional basis.

5 MANAGING FIRE

Geegeela Conservation Park is not known to have experienced a fire within the last 75 years, however prior to this the fire history of the park is unknown.

A fire management plan will be prepared that addresses fire management for the park. The fire management zones designated within this fire management plan will be consistent with the primary purpose of conserving the biodiversity values of the park.

The park is relatively small and it is believed that currently there is adequate access for fire-fighting purposes. While there are some boundary tracks, the majority of fire management access is from adjacent land, which is predominantly cleared agricultural property, and along the track that runs through the western part of the park (Figure 2). This "through-track" also provides local CFS units with quick access to the southern side of the park and surrounding areas and is believed to act as an evacuation route for people living to the west and south of the park. One of the key fire management strategies to be pursued for the term of this management plan will be to bring the boundary access tracks up to adequate standards and maintain them. There are no firebreaks on the park, although the access track on the eastern boundary serves as a break to some extent. Logically, fire fighting would occur on adjacent, cleared farmland. There may be advantages in DEH supporting adjoining property owners in creating firebreaks on their land to prevent the need to clear native vegetation.

The need to construct any additional vehicle access tracks or firebreaks will be determined through the fire management planning process. However, if new access tracks or firebreaks are required prior to the preparation of the fire management plan, these measures will be considered if they are necessary for the protection of native habitat or public safety.

During the fire management planning process it is important to consider neighbouring remnant native vegetation for the purposes of cooperative fire management. Consequently, relationships with neighbouring property owners need to be established and maintained with regards to fire management.

Until a fire management plan is prepared, applied fire (ie ecological burning) will only be used if the benefits of such a practice are justified upon the basis of scientific principles and if it is required for reducing fuel hazards. Any bushfires should be suppressed as soon as practicable due to the park's relatively small size.

The fire management plan will be prepared in consultation with adjoining Country Fire Service (CFS) Groups and the District Bushfire Prevention Committee, in order to integrate it with fire management in the district. Stakeholders and the wider community will be consulted to ensure an understanding of the fire risks and mitigating actions proposed or undertaken in the park.

Fire management planning will:

- identify natural and cultural heritage values and built assets;
- provide a framework for the management of bushfire suppression, including identification of fire management zones, strategic access and control lines;
- undertake an ecological assessment of the park to provide a framework for prescribed burning if required to assist with ecological management and fuel reduction; and
- identify performance indicators.

Objective

Manage fire to ensure the protection of life and property, the maintenance of biodiversity, and the protection of natural, cultural and built values in and near the park.

Strategies

- Develop, implement and review the fire management plan for the park in association with the CFS and other stakeholders.
- Continue to work with the relevant District Bushfire Prevention Committee and the CFS to minimise risk to life and property within and surrounding the park.

- Work cooperatively with neighbouring landholders to protect nearby areas of remnant native vegetation and the park collectively.
- Suppress all bushfires within the park as soon as practicable.
- Until a fire management plan is prepared:
 - maintain existing fire tracks and only create new tracks or firebreaks if there are no other alternatives that can be used to protect native habitat or for ensuring public safety; and
 - only use applied fire as a management tool if it would be beneficial according to sound scientific principles and is required for fuel reduction purposes.

6 MANAGING CULTURAL HERITAGE

6.1 Indigenous Heritage

The land comprising Geegeela Conservation Park is traditionally associated with the Potaruwutj people (Tindale, 1974). For Aboriginal people, land and waters have many interconnected complex meanings and values. The significance of land and waters is central to their lives: at birth, death, ceremonies and socially, whilst hunting, gathering, camping, and travelling.

Following colonial settlement, Aboriginal populations were substantially reduced as a result of introduced diseases, dispersal, dispossession of their land and water supplies, and sometimes through violent conflict.

The Potaruwutj people had a unique culture and language. Some of the language and traditional stories have been recorded. The full extent of Aboriginal heritage at Geegeela Conservation Park has not been comprehensively researched.

However, due to historical or cultural reasons, any knowledge of the cultural heritage of the region may be privileged to selected Aboriginal people and therefore unable to be recorded. Given the lack of existing information, it is considered important that further research be undertaken in order to gain a better understanding of the Aboriginal occupancy and use of the area to identify any Aboriginal sites, objects and remains.

Aboriginal Heritage Act 1988

The purpose of the *Aboriginal Heritage Act 1988* is to protect and preserve Aboriginal sites, objects and remains. "Aboriginal site" and "Aboriginal object" are defined to mean an area of land or an object that is of significance according to Aboriginal tradition or that is of significance to Aboriginal archaeology, anthropology or history. The Department for Aboriginal Affairs and Reconciliation (DAARE) maintains a Central Archive, including the Register of Aboriginal Sites and Objects.

There are no sites listed on the Central Archive for Geegeela Conservation Park. However, no comprehensive survey of the park has been undertaken and there may be unidentified Aboriginal sites, objects or remains in the park. In carrying out the activities and strategies envisaged in this plan, DEH will ensure that it complies with the *Aboriginal Heritage Act 1988*.

Objective

Ensure that any Aboriginal sites, objects and remains are protected and preserved in accordance with the *Aboriginal Heritage Act 1988*.

Strategies

- Consult with Aboriginal people that have a traditional association with the land, the Tatiara Aboriginal Community and any other relevant Aboriginal heritage authorities, in decisions regarding the management of Aboriginal heritage.
- Identify and protect any Aboriginal sites, objects and remains in cooperation with the Tatiara Aboriginal Community, any other relevant Aboriginal people, DAARE and relevant authorities.
- In consultation with the Tatiara Aboriginal Community and any other relevant Aboriginal people, submit details of sites and stories that relate to the park for inclusion on the DAARE Central Archive.

7 MANAGING TOURISM AND RECREATION

7.1 Visitor Use and Access

Few visitors come to the park at present (2006) and it is not intended that visitors will be actively attracted in the foreseeable future. The park is not intended to be a visitor destination but rather managed for conservation purposes. It is understood that in the past, local people with an interest in nature observation, avian researchers and secondary school students have visited the area. The few visitors who do come to the park only stay for a short time and are self-sufficient.

There are no camping facilities or dedicated day-visit sites and the current pattern of low-key use (ie nature observation and bush walking) is compatible with the primary role of the park for biodiversity conservation. On that basis, there is no immediate demand or requirement for built facilities and none are planned for the term of this management plan. For the majority of the park the only access is by foot and the current level of vehicle access does not appear to be causing problems at this point in time (2006). There are no walking trails as such, and given the low numbers of visitors, there is no requirement for a car parking area. If it is observed that the level of visitor use threatens the conservation values of the park, additional management actions may be required to limit park access. The park should not be actively promoted consistent with this proposed level of access.

The boundary vehicle access tracks are intended for management and fire access purposes and are not suitable for visitor use (Figure 2). A sandy track, which is in the vicinity of an unmade road reserve that cuts through the park, does not follow the surveyed alignment but has been created in accordance with the easiest possible route (Figure 2). Persons with adequate 4WD vehicles can traverse the sandy "through-track" at most times of the year and it is understood that a few local landholders use it occasionally. It is proposed that this "through-track" become an internal park management track, since it is almost entirely within park boundaries and would be completely within the park if the unmade road reserve were closed (see Section 9 Managing Reserve Tenure). The need for allowing public access to this track needs to be evaluated. If it were found that the biodiversity values of the park were threatened due to the general public having access to the track, the option of closing the track would be investigated. Closure of the track would be discussed with local landholders and any other users of the track, particularly with regards to use of the track during a fire (see Section 5 Managing Fire). With this in mind local arrangements could be made if determined necessary.

Objectives

Ensure that visitors who use the park understand and appreciate its natural values, respect its primary role for biodiversity conservation and have minimal impact on the park environment.

Provide visitor access to the park without compromising park values.

Strategies

- Monitor numbers of visitors and their impacts to assist in management of the conservation values of the park.
- Manage the park for low-key visitor use without the requirement of facility development.
- Maintain the "through-track" to 4WD standards as an internal management track.
- Monitor the impact of local users of the "through-track" on the park, and if necessary close the track to the public if this is considered to be an option after consultation with users of the track.

7.2 Commercial Tourism

To date (2006) there has been no interest shown in this park by commercial tour operators. If there were any such proposals in the future that were organised for the benefit of fee or reward the tour operator would need to obtain the requisite Commercial Users Licence. Additionally, tour operators would be required to conduct their operations in a manner that respects park values and that recognised the intention not to promote the reserve for increased visitation. Proposed tour activities would need to be agreed to (by DEH park managers) prior to the issue of a licence by DEH, to ensure that they are in accordance with the principles in this plan of management. Their activities would need to be monitored over time, to ensure compliance with licence conditions.

Objective

Ensure any commercial tourism undertaken on the park has minimal impact on its natural values and makes an appropriate financial contribution to management.

Strategies

- Consider any requests to allow private sector or other parties to undertake commercial tourism ventures on the park.
- Issue Commercial User Licences for appropriate use of the park by tour operators if the proposed activities are consistent with the objectives of this management plan.

8 INVOLVING THE COMMUNITY

Friends and Volunteers

Volunteer support and community-based involvement that conserves and improves biodiversity and cultural values (while achieving effective management of recreational use) has become an essential component of park management. DEH acknowledges and supports the active volunteer contribution of the various Friends of Parks groups towards the good management of parks throughout the state. At this stage (2006) there is no Friends of Parks group involved with Geegeela Conservation Park.

If and when a Friends of Parks group becomes involved with this park, it is important that DEH district and regional staff maintain effective communication with any volunteers to ensure that any work done in the park is in accordance with this management plan. Staff should provide volunteers with legal and policy advice, technical support, planning advice and an overall management direction, with regards to the work volunteers do in the park. Involvement in the park by scientists and researchers from tertiary institutions and by staff and students from schools should also be supported and encouraged.

Regional Communities and Park Neighbours

DEH supports and promotes partnerships and cooperative management arrangements to establish integrated natural resource management. This requires the development of effective working relationships with other government agencies, local authorities, non-government organisations and the local community, in particular park neighbours. Integrating park management with similar programs being undertaken by the owners of adjacent vegetated land should be supported, especially to improve ways of strengthening the native vegetation corridor linkages to Bangham Conservation Park and to the other areas of natural habitat in the district.

With regard to Geegeela Conservation Park, this involves forging management links with the Tatiara District Council, the South East Natural Resources Management Board, the immediate park neighbours and community stakeholders.

These partnership arrangements should be developed to provide a positive direction for the shared development and management of the park that fulfil the objectives of this plan. Moreover, with the likelihood of changes in land use occurring in the South East region in the future, it is important for DEH to liaise with the Tatiara District Council and development bodies to ensure that new developments do not adversely impact on biodiversity conservation and park values. For example, the park is currently located within the Primary Industry Zone of the Development Plan for the Tatiara District Council, most recently consolidated in 2004 (Tatiara District Council, 2004). The objectives for the Primary Industry Zone are directed towards supporting the long-term sustainability of primary industries, generally maintaining rural landscape values, preventing pest plant invasion and managing existing pest plant problems (Tatiara District Council, 2004). These objectives are not particularly relevant to conservation management. Therefore it is suggested that the Conservation Zone that now incorporates Bangham Conservation Park, be extended to include Geegeela Conservation Park and possibly other areas of natural habitat nearby when the Tatiara District Council Development Plan is next revised.

Aboriginal Partnerships

DEH is committed to reconciliation and to the development of partnerships with Aboriginal people who may be associated with the park area, including the Tatiara Aboriginal Community, to ensure that the park is managed in a way that respects contemporary and traditional culture, knowledge and skills.

A survey is yet to be undertaken to establish Indigenous heritage values, and a dialogue has not been developed with the appropriate Aboriginal representatives. However, if such a partnership were developed for Geegeela Conservation Park, it might involve the delivery of programs that promoted reconciliation, cultural awareness, Indigenous employment and training, and Indigenous cultural heritage management.

Objective

Maintain cooperative working relationships for conservation outcomes.

Strategies

- Provide opportunities for volunteer and community groups to assist in the management and monitoring of the park by facilitating the implementation of programmed activities.
- Consult with the local council, relevant management boards, the local community and other relevant bodies to explore the benefits of partnership arrangements that will support future management decisions on issues of common interest. Integrate biodiversity management across the region, particularly with Bangham Conservation Park.
- Ensure that the Tatiara District Council considers re-zoning the park to a "Conservation Zone" when the Tatiara District Council Development Plan is next revised.
- Build ongoing partnerships with Aboriginal groups to support the future management of the park.

9 MANAGING RESERVE TENURE

The boundaries of a park should ensure effective biodiversity management and conservation of the values for which the park was dedicated. Within Geegeela Conservation Park, there is an unmade road reserve that cuts the park in two (Figure 2). There may be no need to retain the road reserve as a formal entity and the possibility of closing the unmade road reserve needs to be investigated in conjunction with the Tatiara District Council. The sandy "through-track" that runs through the park in the general vicinity of the road reserve may be incorporated into the park as an internal management track (Figure 2). In order for this track to remain open to the general public the impact that users of the track have on the park's biodiversity values needs to remain minimal (see Section 7.1 Visitor Use and Access).

Objective

Ensure the boundaries of the park are appropriate for the protection and conservation of park values.

Strategy

- Liaise with the Tatiara District Council with a view to closing the unmade road reserve and adding it to the park.

SUMMARY OF MANAGEMENT STRATEGIES

MANAGING NATURAL HERITAGE

Geology, Soils and Landform

- Consider soil types and properties, particularly erosion potential, when planning for future management tracks or visitor access.
- When constructing new tracks, incorporate design features that minimise soil erosion and reduce the risk of accelerating the soil erosion process.
- Undertake soil conservation and rehabilitation management programs to mitigate any existing or potential degradation.
- Work cooperatively with the South East Natural Resources Management Board with regard to soil conservation measures.

Hydrology

- Monitor changes to ecosystems that may be the result of a change in hydrological regimes.
- Participate in regional water management programs to ensure any hydrological management schemes are designed and implemented with minimal negative impacts to the park's hydrology and natural values.
- Monitor the role of artificial water points in sustaining introduced and native fauna, and rehabilitate if required.

Native Vegetation

- Monitor changes in vegetation communities, with particular focus on areas that appear degraded or have experienced significant understorey change. Encourage research into observed vegetation community changes, especially those that include vegetation associations that are threatened, and utilise the outcomes of this research to guide management.
- Manage threats to the park's vegetation communities, particularly in those areas that contain plant species that are listed as threatened or are important as threatened species habitat.
- Consider the threat of Mundulla Yellows and Phytophthora and take steps to prevent the introduction of either whenever practicable, report and investigate suspected infections, and treat whenever possible.

Native Fauna

- Survey and monitor the number of native fauna species found on the park.
- Encourage approved volunteer groups and individuals to conduct fauna surveys and undertake population monitoring and management activities. Encourage surveys focussed on fauna species not recorded in the park and determine the habitat requirements of any new species sighted.
- Identify and protect significant fauna habitats and integrate habitat management and restoration/revegetation activities with introduced plant and animal management programs. Concentrate on the protection of the South-Eastern Red-tailed Black Cockatoo and the Swift Parrot.
- Undertake on-park biodiversity conservation projects in association with threatened species recovery programs, particularly those of national importance.

Introduced Plants
<ul style="list-style-type: none"> • Develop partnerships with local land managers, including the South East Natural Resources Management Board, and contribute to integrated regional weed control programs. • Establish pest plant control priorities and actions, and combine weed control activities on the park with any pest plant control/native plant revegetation initiatives taking place on neighbouring land.
Introduced Animals
<ul style="list-style-type: none"> • Devise pest/introduced animal control programs in accordance with regional priorities, taking into account the possible adverse impacts of such programs on native wildlife and other off-target species. • Work in cooperation with adjoining landowners, the South East Natural Resources Management Board and the Tatiara District Council to achieve effective pest animal control on a regional basis.
MANAGING FIRE
<ul style="list-style-type: none"> • Develop, implement and review the fire management plan for the park in association with the CFS and other stakeholders. • Continue to work with the relevant District Bushfire Prevention Committee and the CFS to minimise risk to life and property within and surrounding the park. • Work cooperatively with neighbouring landholders to protect nearby areas of remnant native vegetation and the park collectively. • Suppress all bushfires within the park as soon as practicable. • Until a fire management plan is prepared: <ul style="list-style-type: none"> - maintain existing fire tracks and only create new tracks or firebreaks if there are no other alternatives that can be used to protect native habitat or for ensuring public safety; and - only use applied fire as a management tool if it would be beneficial according to sound scientific principles and is required for fuel reduction purposes.
MANAGING CULTURAL HERITAGE
Indigenous Heritage
<ul style="list-style-type: none"> • Consult with Aboriginal people that have a traditional association with the land, the Tatiara Aboriginal Community and any other relevant Aboriginal heritage authorities, in decisions regarding the management of Aboriginal heritage. • Identify and protect any Aboriginal sites, objects and remains in cooperation with the Tatiara Aboriginal Community, any other relevant Aboriginal people, DAARE and relevant authorities. • In consultation with the Tatiara Aboriginal Community and any other relevant Aboriginal people, submit details of sites and stories that relate to the park for inclusion on the DAARE Central Archive.

MANAGING TOURISM AND RECREATION
Visitor Use and Access
<ul style="list-style-type: none"> • Monitor numbers of visitors and their impacts to assist in management of the conservation values of the park. • Manage the park for low-key visitor use without the requirement of facility development. • Maintain the “through-track” to 4WD standards as an internal management track. • Monitor the impact of local users of the “through-track” on the park, and if necessary close the track to the public if this is considered to be an option after consultation with users of the track.
Commercial Tourism
<ul style="list-style-type: none"> • Consider any requests to allow private sector or other parties to undertake commercial tourism ventures on the park. • Issue Commercial User Licences for appropriate use of the park by tour operators if the proposed activities are consistent with the objectives of this management plan.
INVOLVING THE COMMUNITY
<ul style="list-style-type: none"> • Provide opportunities for volunteer and community groups to assist in the management and monitoring of the park by facilitating the implementation of programmed activities. • Consult with the local council, relevant management boards, the local community and other relevant bodies to explore the benefits of partnership arrangements that will support future management decisions on issues of common interest. Integrate biodiversity management across the region, particularly with Bangham Conservation Park. • Ensure that the Tatiara District Council considers re-zoning the park to a “Conservation Zone” when the Tatiara District Council Development Plan is next revised. • Build ongoing partnerships with Aboriginal groups to support the future management of the park.
MANAGING RESERVE TENURE
<ul style="list-style-type: none"> • Liaise with the Tatiara District Council with a view to closing the unmade road reserve and adding it to the park.

REFERENCES AND BIBLIOGRAPHY

- Commonwealth of Australia (2005) *National Recovery Plan for the South-eastern Red-tailed Black-Cockatoo* (*Calyptorhynchus banksii graptogyne*) - *Draft*. Department of the Environment and Heritage, Canberra. <http://www.deh.gov.au/biodiversity/threatened/publications/recovery/c-banksii/index.html>.
- Croft, T. and Carpenter, G. A. (2001) *Biological Resources of the South East of South Australia*. DEH, Adelaide. (Unpublished report).
- Croft, T. Carruthers, S., Possingham, H., and Inns, B. (1999) *Biodiversity Plan for the South East of South Australia*. DEHAA, Adelaide.
- Department for Environment and Heritage (DEH) (2001) *Provisional List of Threatened Ecosystems of South Australia*, Department for Environment and Heritage, South Australia, unpublished.
- Department for Environment and Heritage (DEH) (2002) *Biodiversity Conservation Program Standard Operating Procedure (SOP-002) Phytophthora Threat Management*. Department for Environment and Heritage, South Australia, Adelaide.
- Environment Australia (2000) *Revision of the Interim Biogeographic Regionalisation of Australia (IBRA) and the Development of Version 5.1 – Summary Report*. Environment Australia, Canberra. <http://www.ea.gov.au/parks/nrs/ibra/version5-1/summary-report/index.html>.
- Environment Australia (2001) *National Threat Abatement Plan for Dieback caused by the root-rot fungus Phytophthora cinnamomi*. Commonwealth of Australia, Canberra.
- Foulkes, J. N. and Heard, L. M. B. (Eds.) (2003) *A Biological Survey of the South East, South Australia. 1991 and 1997*. Department for Environment and Heritage, South Australia.
- Laut, P., Heyligers, P. C., Keig, G., Löffler, C., Margules, C., Scott, R.M., and Sullivan, M. E. (1977) *Environments of South Australia - Province I South East*. CSIRO, Canberra.
- Luck, J., Crnov, R., Czerniakowski, B., Smith, I. W., Sinclair, S., Cheal, D., Thomson, F., Franz, P. and Moran, J. (2004) *Mundulla Yellows in Eucalyptus: An abiotic or biotic disorder? A multi-disciplinary investigation of an unknown etiology*. South Australian Department for Environment and Heritage and the Federal Department of the Environment and Heritage. Retrieved 30 August 2005, from http://www.environment.sa.gov.au/biodiversity/pdfs/mundulla_yellows.pdf.
- Mundulla Yellows Task Group (2004) *A report On Mundulla Yellows in Australia*. Department of the Environment and Heritage, Retrieved 26 August, 2005, from <http://www.deh.gov.au/biodiversity/invasive/publications/mundulla-yellows/>.
- Paton, D. C. and Cutten, J. (2000) "Mundulla Yellows: A Growing Concern". *Danthonia: The Newsletter of the Australian*, vol. 8, no. 4, Retrieved 6 September, 2005, from <http://www.anbg.gov.au/anpc/danv8n4.html>.
- Phytophthora Technical Group (2003) *Phytophthora Management Guidelines*. Government of South Australia, Retrieved 5 September, 2005, from http://www.environment.sa.gov.au/biodiversity/pdfs/pc_management_guidelines.pdf.
- Rogers, P. A. (1995) *Geology of the South-East, South Australia*. Second Edition. Geological Survey of South Australia, Adelaide.
- Swift Parrot Recovery Team (2001) *Swift Parrot (Lathamus discolor) Recovery Plan 2001-2005*. Department of Primary Industries, Water and Environment, Hobart. <http://www.deh.gov.au/biodiversity/threatened/publications/recovery/swift-parrot/index.html>.
- Tatiara District Council (2004) *Development Plan*, <http://www.planning.sa.gov.au/edp/pdf/TAT.PDF>.
- Tindale, N. B. (1974) *Aboriginal Tribes of Australia*, ANU Press, Canberra.

APPENDIX A: CONSERVATION STATUS CODES

Australian Conservation Status Codes

The following codes are based on the current listing of species under section 179 of the *Environment Protection and Biodiversity Conservation Act 1999*.

- EX Extinct:** there is no reasonable doubt that the last member of the species has died.
- EW Extinct in the Wild:** known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
- CE Critically Endangered:** facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
- E Endangered:** facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
- V Vulnerable:** facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
- CD Conservation Dependent:** the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

Note: Prescribed criteria as defined under the IUCN Red List of Threatened Species.

South Australian Conservation Status Codes

The following codes are based on the current listing of species under Schedules of the *National Parks and Wildlife Act 1972*, as amended in 2000.

- E Endangered:** (Schedule 7) in danger of becoming extinct in the wild.
- V Vulnerable:** (Schedule 8) at risk from potential or long term threats which could cause the species to become endangered in the future.
- R Rare:** (Schedule 9) low overall frequency of occurrence (may be locally common with a very restricted distribution or may be scattered sparsely over a wider area). Not currently exposed to significant threats, but warrants monitoring and protective measures to prevent reduction of population sizes.

Regional Status Codes

The categories below apply to the species distribution at a regional level.

Mammals, Reptiles & Amphibians

There are no regional conservation status categories developed for mammals, reptiles or amphibians to date (2004).

Birds

Regional conservation status for birds follow Carpenter and Reid (1998) *The Status of Native Birds in the Agricultural Areas of South Australia*.

The regions are defined as follows:

ML	Mount Lofty	MN	Mid-North	SE	South-Eastern	KI	Kangaroo Island
MM	Murray Mallee	EP	Eyre Peninsula	YP	Yorke Peninsula		

Plants

Regional conservation ratings for plants follow:

- Lang, P. J. & Kraehenbuehl, D. N. (2001) *Plants of Particular Conservation Significance in South Australia's Agricultural Regions*.
- January (2001) update of unpublished database: *Florlist*. Department for Environment and Heritage.

The regions are as defined by the State Herbarium (Plant Biodiversity Centre), illustrated in the back cover of *Census of South Australian Vascular Plants (Edition V)* (Eds. Barker, B., Barker, R., Jessop, J. and Vonow, H., (2005)).

NW	North-Western	FR	Flinders Ranges	NL	Northern Lofty	SL	Southern Lofty
LE	Lake Eyre	EA	Eastern	MU	Murray	KI	Kangaroo Island
NU	Nullarbor	EP	Eyre Peninsula	YP	Yorke Peninsula	SE	South-Eastern
GT	Gairdner-Torrens						

In order of decreasing conservation significance:

- X Extinct/Presumed extinct:** not located despite thorough searching of all known and likely habitats; known to have been eliminated by the loss of localised population(s); or not recorded for more than 50 years from an area where substantial habitat modification has occurred.
- E Endangered:** rare and in danger of becoming extinct in the wild.
- T Threatened:** (*Plants only*) likely to be either endangered or vulnerable but insufficient data available for more precise assessment.
- V Vulnerable:** rare and at risk from potential threats or long term threats that could cause the species to become endangered in the future.
- K Uncertain:** likely to be either threatened or rare but insufficient data available for a more precise assessment.
- R Rare:** has a low overall frequency of occurrence (may be locally common with a very restricted distribution or may be scattered sparsely over a wider area). Not currently exposed to significant or widespread threats, but warrants monitoring and protective measures to prevent reduction of population sizes.
- U Uncommon:** less common species of interest but not rare enough to warrant special protective measures.
- Q Not yet assessed:** but flagged as being of possible significance.
- N Not of particular significance:** (*Plants only*) Also indicated by a blank entry.
- C Common:** (*Birds only*) Also indicated by a blank entry.
- O Occasional Visitor Only:** (*Birds only*) Not considered of conservational status.