

Woakwine Conservation Reserve Management Plan

South East

South Australia



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December 2000

Department for Environment and Heritage

This plan of management has been prepared
and adopted in pursuance of section 38 of
the *National Parks and Wildlife Act 1972*.

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Foreword

This management plan sets out objectives and actions for the Woakwine Conservation Reserve constituted under the *Crown Lands Act, 1929*. The Reserve is of considerable conservation value and is managed by National Parks and Wildlife South Australia (NPWSA), a unit of the Department for Environment and Heritage.

Located east of Robe in the Lower South East of South Australia, the Woakwine Conservation Reserve was dedicated for its remnant area of mallee vegetation, and associated wildlife. The Reserve is one of a few in the district conserving a population of the *rare* Red-necked Wallaby. Several plant species and other fauna exist which are of a high conservation value, including the Common Fringe-lily and Rufous Bristlebird. Woakwine Conservation Reserve also supports the regionally rare Blue Gum/Pink Gum open woodland association. Management is aimed at conserving these significant natural values of the Reserve.

This rugged inland dunal area of predominantly mallee vegetation offers excellent bird watching and bush walking opportunities for field naturalists and the local community, coupled with outstanding panoramic views of the coastal district.

This plan of management was released in draft form for public review in January 2000. At the close of the period for public consultation, four written submissions had been received. Those comments, and the draft plan, were subsequently reviewed by the Reserve Planning and Management Advisory Committee of the South Australian National Parks and Wildlife Council, resulting in a number of changes being made to the plan text. These changes were subsequently endorsed by Council. Public involvement in the planning process makes a worthwhile contribution to better park management, and those who took the time to make representations are thanked for their efforts.

The management objectives and actions for Woakwine Conservation Reserve have not been prepared in isolation but rather in consultation with other agencies and community groups. The location of other DEH reserves and areas of remnant vegetation have also been considered to ensure that Woakwine Conservation Reserve is managed in a regional context.

The plan of management for the Woakwine Conservation Reserve is now formally adopted under the provisions of section 38 of the National Parks and Wildlife Act, 1972.



The Hon. IAIN EVANS, BAppSc (Building Technology), MP

MINISTER FOR ENVIRONMENT AND HERITAGE
MINISTER FOR RECREATION, SPORT AND RACING

Acknowledgements

This reserve management plan has been prepared in consultation with other agencies, community groups and individuals.

NPWSA staff from Mt Gambier, Robe, and Adelaide have provided considerable assistance, advice and information which has been included in this management plan. The Upper South East Consultative Committee was involved in its development, and their input is appreciated.

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1.0 Introduction

1.1 Planning Process

The Woakwine Conservation Reserve has been dedicated pursuant to the *Crown Lands Act, 1929* under the care, control and management of the Minister for Environment and Heritage. This dedication is considered an interim tenure before the land is proclaimed a reserve under the *National Parks and Wildlife Act, 1972*. The *Crown Lands Act, 1929* makes no directions in regard to the preparation of management plans. However, as the ultimate legislative framework for the land is likely to be the *National Parks and Wildlife Act, 1972*, this management plan has been set forth with management proposals consistent to the requirements under that Act. Upon the formal constitution of the reserve under the provisions of the *National Parks and Wildlife Act 1972*, this document shall come into effect as the adopted plan of management as per Section 38 of the Act. In the interim, the plan will serve as the official guide to the management of the reserve, and its provisions will be carried out.

There is a requirement under Section 38 of the *National Parks and Wildlife Act 1972*, to prepare a management plan for each reserve constituted under the Act. Such plans set forth proposals to manage and improve reserves and the means by which the objectives of the Act will be accomplished. A management plan provides the framework for management of the park by stating the philosophy on which management should be based and by setting out objectives and actions for management. The objectives related to management of reserves are stated in Section 37 of the Act as:

- preservation and management of wildlife
- preservation of historic sites, objects and structures of historic or scientific interest within reserves
- preservation of features of geological, natural or scenic interest
- destruction of dangerous weeds and the 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 and
- generally, the promotion of the public interest.

National Parks and Wildlife South Australia (NPWSA) as a matter of policy invites comments from key agencies, groups and individuals before draft management plans are formally released for comment from the general public. This stage aims to gain a measure of understanding amongst various stakeholders before the subsequent public exhibition period. The Upper South East Consultative Committee was consulted during the preparation of this plan.

Once a draft management plan has been prepared, an announcement is made in the *Government Gazette* and the plan is placed on public exhibition for at least three months. Any person may make submissions in relation to the plan.

The plan and submissions are then referred to the National Parks and Wildlife Council who may make further comments or recommendations to the Minister.

The Minister, after considering all representations, may then adopt the plan with or without alterations. Notice of adoption is published in the *Government Gazette* and copies of the plan are made available to the public.

Once a plan is adopted, the provisions will be carried out in relation to the reserve in question, and no activities will be undertaken in conflict with the management plan. A similar process applies for any amendment proposed to a management plan.

1.2 Park Classification

The classification which a reserve receives on being dedicated under the *National Parks and Wildlife Act 1972* is a general statement of the purpose for which that area was acquired. Examples of such classifications can be found below.

National Parks are areas considered to be of national significance by reason of wildlife or features of that land.

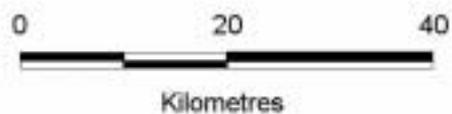
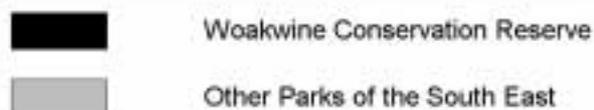
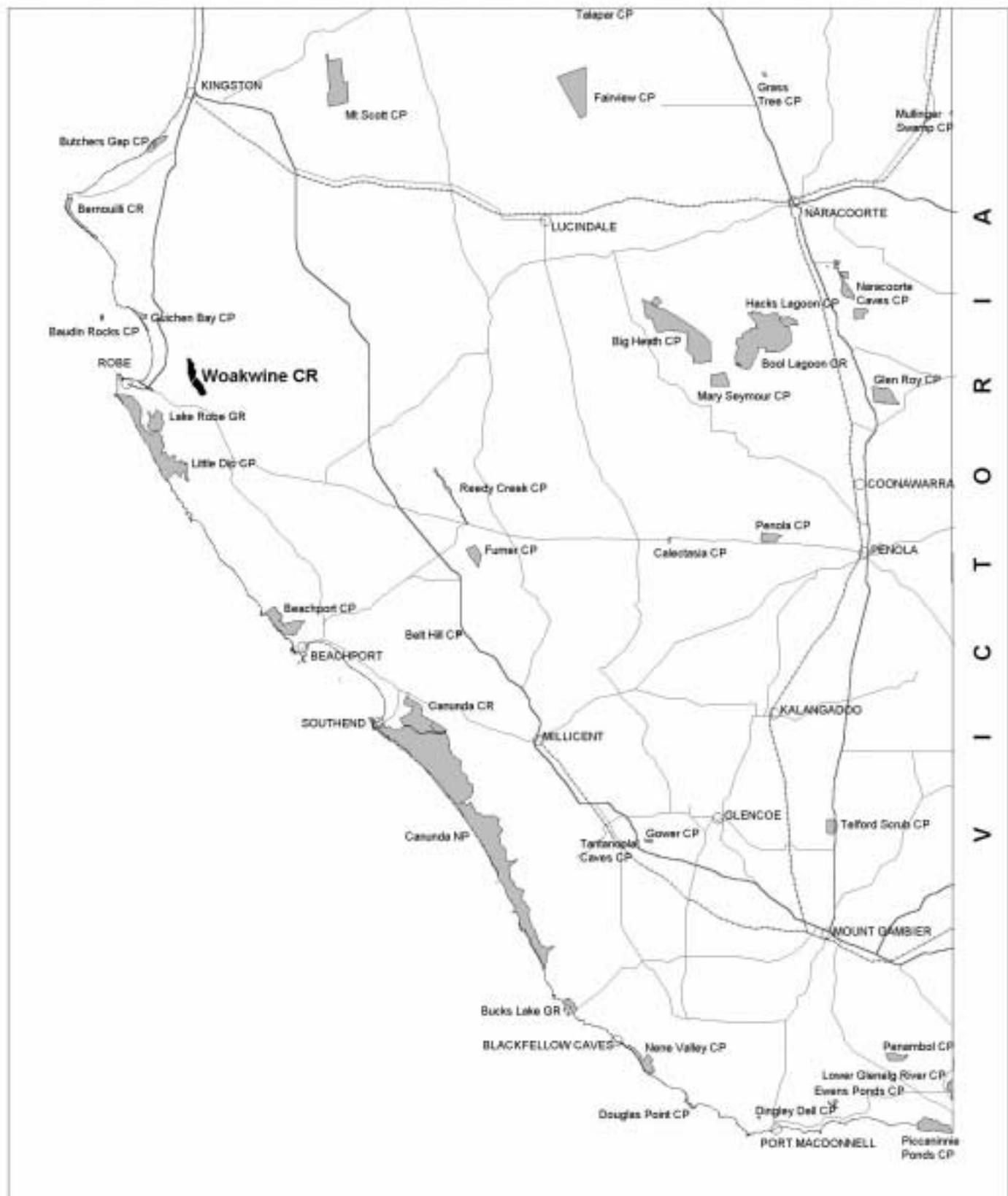
Conservation Parks are areas of land protected for the purpose of conserving any wildlife or the natural or historical features of that land. The development of visitor facilities in conservation parks tends to be kept to a minimum.

Game Reserves are established to conserve wildlife and manage game species. They have an important conservation role and may be declared open at prescribed times for strictly controlled hunting.

Recreation Parks conserve areas of significance that are managed for public recreation and enjoyment.

Regional Reserves are areas proclaimed for the purpose of conserving any wildlife or the natural or historical features of that land while, at the same time, permitting the utilisation of the natural resources of that land (i.e. mining).

Conservation Reserves are areas set aside for conservation purposes under the *Crown Lands Act, 1929* and held under the care, control and management of the Minister for Environment and Heritage. They are areas with significant conservation values that for various reasons were not proclaimed under the *National Parks and Wildlife Act, 1972*.



Reserves under NP&W Act
 CP Conservation Park
 NP National Park
 GR Game Reserve

Reserves under the Crown Lands Act
 CR Conservation Reserve

Figure 1

PARKS OF THE LOWER SOUTH EAST
 Location Map

2.0 Management Framework

2.1 Park Description

The Woakwine Conservation Reserve is located 8 kilometres east of Robe in the Lower South East of South Australia (Figure 1). The Reserve covers an area of 424 hectares in Allotments 3 and 5 of the Hundred of Waterhouse (Figure 2). Moves to establish this reserve began in the mid 1980's following applications for vegetation clearance through the Native Vegetation Branch. The applications were refused, and subsequently the Minister for Environment and Planning purchased the land. These allotments were proclaimed and gazetted in 1993 as the Woakwine Conservation Reserve primarily to "conserve a remnant area of mallee vegetation".

Woakwine Conservation Reserve consists of a consolidated dune ridge of shallow well-drained uniform sands. It is a remnant area of mallee on the Woakwine Range that varies from coastal mallee, to Blue Gum, and Pink Gum woodlands from north to south. Limestone outcrops are features in the western section of the Reserve.

The Reserve forms an integral part of the Woakwine Range which is an area almost completely cleared of natural vegetation (Laut *et al*, 1977). The Reserve is bisected by Drain L which moves surface waters south-westerly from Lake Hawdon North, to the ocean at Robe. This drain divides the Reserve and was completed in 1918 as part of the Scheme Act drains (South Eastern Drainage Board, 1980). The cutting created for the drain provided the first interpretation of the Pleistocene geological strata (Spriggs, 1952).

The Woakwine Conservation Reserve is an important habitat for the *vulnerable* (SA) Painted Button-Quail and Rufous Bristlebird, and the *rare* (SA) Red-necked Wallaby, Common Wombat, Beautiful Firetail and Peregrine Falcon (*NP&W Act, 1972*).

The Blue Gum/Pink Gum Open Woodland association of the Reserve is considered a vulnerable association by Croft *et al.* (1999). Several plant species are also of conservation significance.

Past land use in the Reserve was predominantly agricultural production, with activities including vegetation clearance and stock grazing up until the late 1970's.

Low impact recreational activities, including bushwalking, bird watching and natural history study, enable visitors to appreciate and experience the natural values of the Reserve.

2.2 Park Significance

Woakwine Conservation Reserve conserves a unique area of remnant vegetation and associated species in the Woakwine Range. The Reserve offers bushwalking and bird watching opportunities in a picturesque, natural setting adjacent to the Kangaroo Hill Cutting.

The Biodiversity Plan for the South East of South Australia (Croft et al. 1999) identifies the area containing Woakwine Conservation Reserve as predicted habitat for the Crested Shrike-tit (*Falcunculus frontatus frontatus*) and the *vulnerable* (SA) Southern Brown Bandicoot (*Isodon obesulus*). The plan details regional threats and actions for these species and the Common Wombat and Red-necked Wallaby, which have been recorded in the Reserve. Woakwine Conservation Reserve conserves the only representative of the vulnerable Blue Gum/Pink Gum open woodland association in the reserve system of the Lower South East. The Reserve does not contribute to a Key Biodiversity Area for conservation as specified by Croft et al.

Natural Values

- Represents 12% of the remaining vegetation (3533 hectares) in the Woakwine Environmental Association.
- Represents 7.5% of the remaining vegetation (5653 hectares) in the Hundred of Waterhouse.
- Supports the only representative of the vulnerable Blue Gum/Pink Gum open woodland association in the reserve system in the Lower South East.
- Conserves populations of state vulnerable and rare plants and animals, including Tuber Fringe-lily, Common Wombat and Rufous Bristlebird.

Cultural Values

- Inhabited by the Meitangk tribe of the Kingston, Robe to Naracoorte region, for thousands of years.
- Is bisected by the Kangaroo Hill Cutting, excavated in the early 1900's.
- Preserves the ruins of a stone wall and building built in the early settler era of the Woakwine area.

Tourism and Recreational Values

- Recreationally important for visitors to experience and appreciate the natural and cultural features of the Reserve.
- Offers opportunities to bushwalk amongst open woodland vegetation situated on limestone outcrops.
- Enables birdwatchers to study a variety of bird species, including several of conservation importance.
- The Reserve allows visitors to take in panoramic views of the surrounding coastal district.
- Opportunities to view the Kangaroo Hill Cutting.

2.3 Management Obligations

2.3.1 Conservation Reserve Mining Access

As a dedicated reserve under the *Crown Lands Act, 1929*, Woakwine Conservation Reserve is subject to mining access under the *Mining Act 1971* (Section 57). Part IX of the *Mining Act 1971* (Entry upon land, compensation and restoration) details the responsibilities of mining operators and the rights of landowners.

Mining operators wishing to enter upon land for prospecting, exploration and mining must:

- at least 21 days prior to entering upon land notify the landowner, in writing, of their intention to enter upon the owner's land and detail the proposed operations to be carried out;
- implement measures to minimise damage to the land, environments, vegetation or wildlife, and to preserve objects and sites of historic, scientific or cultural significance; and
- restore the ground disturbed by the use of declared equipment in the course of mining operations.

Prior to the implementation of mineral exploration activities, companies are required under the *Act* to seek approval from Primary Industries and Resources South Australia (PIRSA). In their process of approval, PIRSA give consideration to the protection of flora and fauna, objects and features of historical and scientific interest, and other appropriate factors affected by the proposed activities. In the submission of a proposal for mineral exploration in conservation reserves, companies are required to submit a "Declaration of Environmental Factors", that outlines:

- the environment that may be at risk from proposed exploration activities;
- the potential impacts that exploration activities will have on the environment;
- measures the company proposes to minimise the impact of the program on the environment; and
- the process the company will undertake to rehabilitate the area after the mineral exploration is complete.

PIRSA undertakes a consultation process before approval for mineral exploration is granted. The Department for Environment and Heritage is involved in this consultation process.

A similar process of approval and consultation is undertaken for mining proposals.

2.4 Management History

Woakwine Conservation Reserve is managed by NPWSA, South East Region. Staff are located at Mount Gambier, Tantanoola, Southend and Robe.

NPWSA utilise a broad range of resources to assist in the management of Woakwine Conservation Reserve. This workforce includes rangers, construction and maintenance workers, contract employees, volunteers (Friends of Parks Inc.), and other organisations i.e. Correctional Services, Australian Trust for Conservation Volunteers, Green Corps, and Family and Community Services. The Upper South East Consultative Committee provides NPWSA with a means of obtaining public input to park management.

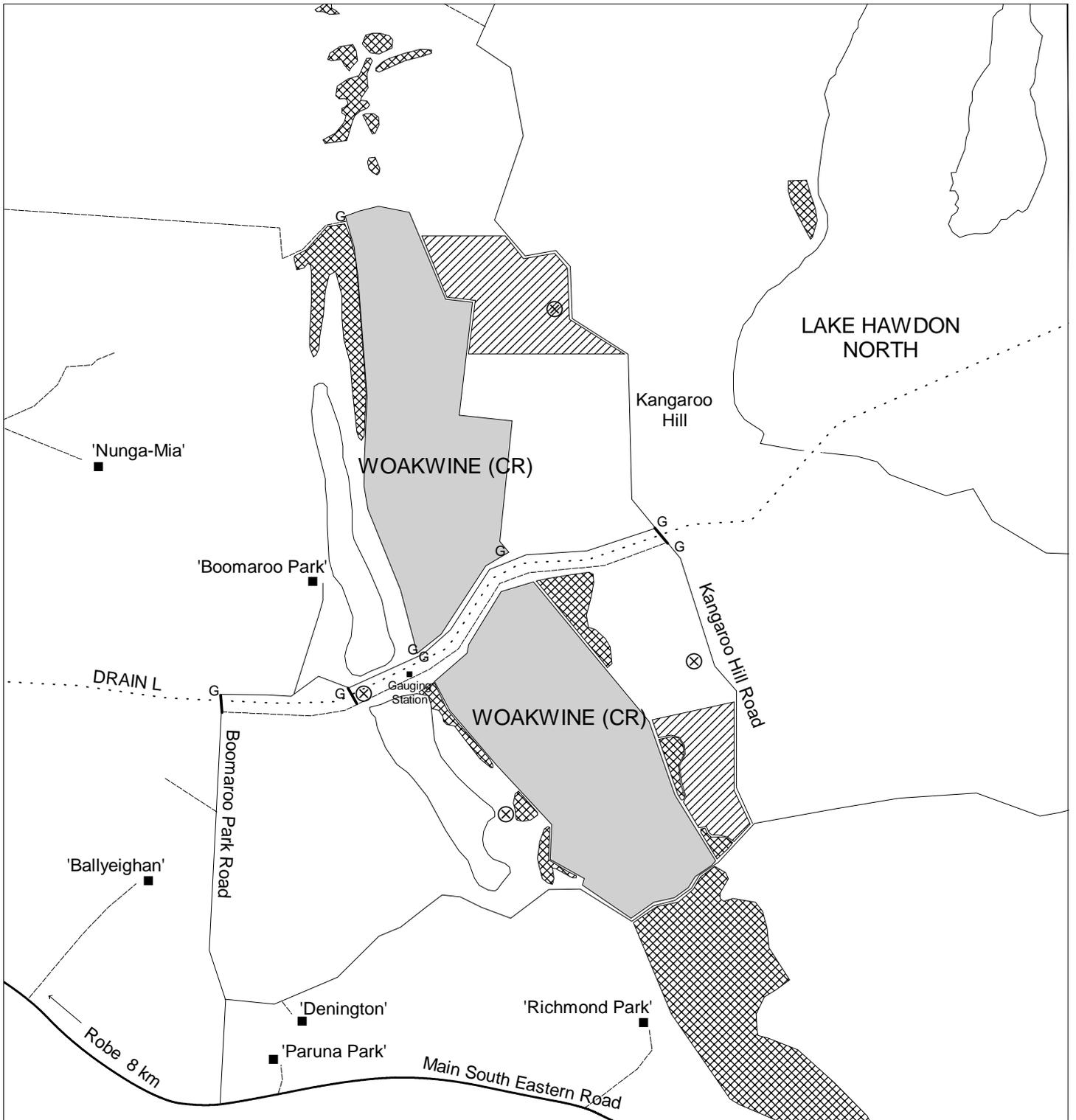
The assistance provided by the above volunteers and organisations has assisted the NPWSA in achieving management objectives and actions in the past, and their future involvement will help in implementing this plan of management.

Past management within Woakwine Conservation Reserve has focused upon the amelioration of the threats posed by the presence of weed and vermin pests. Horehound, False Caper, and Cape Tulip are targeted on an annual basis. Annual control works aimed at Horehound and False Caper has caused a reduction in the abundance of these weeds. In 1998 an increase in Cape Tulip numbers was observed. However, control operations now have the weed under control.

Vermin management is aimed at the control and reduction of foxes and rabbits. In addition to reducing the impact that these species have on the environment, foxes have been targeted to protect a population of Red-necked Wallabies in the Reserve. Kangaroo and wallaby surveys were carried out in late 1998, as part of a District initiative. The monitoring program has not been implemented long enough to determine the impact of fox control operations on macropod populations.

Boundary fence lines have been maintained and fire access tracks slashed on an annual basis.

The Reserve receives minimal visitors each year, and as a result facilities have not been developed. Signage has been established.



- Two Lane Access (sealed, unsealed)
- - - Single Lane Access
- ⋯ Existing Drainage
- G Gate
- / Bridge
- ⊗ Water Source
- ▨ Vineyards

- ▨ Native Vegetation
- Wetland/Ephemeral Lake

0 1 2
Kilometres

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N

Figure 2
WOAKWINE CONSERVATION RESERVE

3.0 Park Management Plan

3.1 Biodiversity

3.1.1 Co-operative Management

Woakwine Conservation Reserve is one of two reserves contained within the Woakwine Environmental Association (Laut *et al*, 1977). The Reserve represents 12% of the remaining native vegetation (3533 hectares) in this association. Woakwine Conservation Reserve also represents 7.5% of the remaining native vegetation (5653 hectares) in the Hundred of Waterhouse (Department of Environment and Planning, 1987). Included in this Hundred are the Little Dip Conservation Park and the Lake Robe Game Reserve, both to the south-west of the Reserve (Figure 1).

Woakwine Conservation Reserve is relatively isolated from other vegetation blocks; the nearest of any appreciable size are Mt Benson and Bagdad Native Forest Reserves, Lake Robe Game Reserve and Little Dip Conservation Park. The isolated nature of the Reserve restricts the movement of wildlife and therefore essential interactions of neighbouring populations. The problem is exacerbated by the bisection of the Reserve by Drain L and viticulture developments adjacent to the reserve. The situation may heighten the plight of species such as the *rare* (SA) Red-necked Wallaby, Common Wombat and other ground-dwelling species.

It is well recognised throughout Australia that the achievement of conservation goals can not be achieved through the reservation of public land alone, but its dependent on the conservation efforts of private landowners and other non-government organisations.

NPWSA encourages landowners to consider a co-operative approach to the management of remnant vegetation and other habitat in the vicinity of parks, particularly where it adjoins the park boundary.

Co-operative management arrangements can vary from the development of formal joint management plans to informal voluntary meetings between park managers and park neighbours to discuss issues of common interest. Benefits include more effective pest plant and pest animal control programs through an integrated approach, practical fire prevention and fencing arrangements, opportunities for landowners to contribute to park management and improved biodiversity.

The maintenance of the biological diversity of Woakwine Conservation Reserve would benefit from such an approach. The Reserve conserves vegetation in the northern extreme of the Woakwine Range, which in the past has experienced extensive clearing activities, resulting in little remnant vegetation remaining. Surrounding the Reserve, to the west and south particularly, is wetland and native shrubland habitat. Managed co-

operatively, this area has the opportunity to enhance biodiversity values and threatened species survival.

Objectives

- To achieve cooperation in the management of biodiversity.
- Maintain the biodiversity and community integrity of the Reserve.

Actions

- Liaise with adjoining landowners to identify opportunities for co-operative management arrangements.

3.1.2 Fire Management

The Australian biodiversity has evolved and adapted to the event of fire, and many ecosystems now rely upon its influence to maintain the community composition and structure. A change in fire regime can modify this by favouring either fire dependant or fire sensitive species, depending on whether frequency is increased or decreased. Too frequent fires can also impact negatively on fire dependant species by not allowing enough time for recruitment. Intensity and seasonality are also significant factors.

It is not considered feasible to apply prescribed burning programs to small areas of vegetation because of the high probability of burning the whole area or an unacceptable percentage of a particular vegetation association. The role of fire in biodiversity management at Woakwine Conservation Reserve has not been investigated but it is possible that some species require fire to maintain their integrity.

Fire management (prevention and suppression) in NPWSA reserves is based on guidelines and objectives contained in the Fire Management and Protection Manual (1989) and Bushfire Prevention Plans. The Fire Management and Protection Manual is an internal report which sets out objectives of fire management and fire policy and guidelines.

The objectives of fire management as stated in the Manual are to:

- Protect human life and the assets of properties adjacent to parks;
- Foster sound land use planning in relation to fire hazard;
- Maintain diversity of native plant and animal communities;
- Protect special features including cultural sites and park facilities; and
- Manage fire, thus protecting the land from degradation by erosion and subsequent invasion by weeds.

Croft *et al.*, (1999) list the following as important factors to benchmark fire management:

- prevent a single fire event from burning an entire vegetation island;
- restrict the burning of any one vegetation community to less than 25%; and
- prevent a fire entering a community that has experienced wildfire in the last 20 years.

In accordance with the *Country Fires Act, 1989* a Bushfire Prevention Plan has been developed for the Reserve. The plan summarises the risks and hazards associated with and surrounding the Reserve. Fire suppression and prevention strategies outlined within the plan provide management direction for NPWSA staff and the Country Fire Service.

Objectives

- Maintain the biodiversity and community integrity of the Reserve.
- Protect people and property from damage by wildfire.

Actions

- Encourage research into the likely plant and animal responses to fire, in particular the needs of rare and vulnerable species.
- Implement and maintain fire prevention strategies as outlined in the Bushfire Prevention Plan.
- Review the Bushfire Prevention Plan to address the benchmark criteria specified by Croft *et al.* (1999).

3.1.3 Native Animals

The Woakwine Conservation Reserve provides habitat suitable for a variety of animal species including birds, mammals, reptiles and invertebrates.

The Reserve is possibly a refuge area for the nationally *endangered* Orange-bellied Parrot (*Neophema chrysogaster*). The Parrots have been recorded feeding on Lake Eliza, 2.5 kilometres from the Reserve, and require a quiet area of natural vegetation to roost (Native Vegetation Management Branch, 1989). Lake Hawdon North to the east would supply suitable food for Orange-bellied Parrots.

The following list of birds has been compiled using records from the Native Vegetation Management Branch and the local Friends of Parks Inc. group. The list highlights those species of high conservation value in the Reserve:

Yellow-tailed Black Cockatoo	<i>Calyptorhynchus funereus</i>	Vulnerable (SA & SE)
Rufous Bristlebird	<i>Dasyornis broadbenti</i>	Vulnerable (SA & SE)
Painted Button-quail	<i>Turnix varia</i>	Vulnerable (SA & SE)
White's Thrush	<i>Zoothera lunulata</i>	Vulnerable (SE)
Beautiful Firetail	<i>Stagonopleura bella</i>	Rare (SA & SE)
Peregrine Falcon	<i>Falco peregrinus</i>	Rare (SA & SE)
Eastern Spinebill	<i>Acanthorhynchus tenuirostris</i>	Common (SA & SE)

(SA status from *NP&W Act, 1972*, Regional status from Carpenter and Reid, 1988.)

A comprehensive animal survey has not been undertaken and the list of animal species is likely to increase with further investigation. Significant mammals noted to date include the *rare* Common Wombat (*Vombatus ursinus*) and the *rare* Red-necked Wallaby (*Macropus rufogriseus*). NPWSA has recently initiated a macropod survey for the Reserve to determine the distribution and population numbers of Red-necked Wallabies and other large fauna.

The Red-necked Wallaby is relatively common throughout eastern Australia, and has a wide distribution in the south east, however it is infrequently sighted in this region.

The *vulnerable* Rufous Bristlebird has a limited distribution in this State. In the South East, the species is generally confined to a narrow band within a few kilometres of the coast, and prefers habitats with dense undergrowth.

Introduced animals such as the Feral Cat (*Felis catus*), Red Fox (*Vulpes vulpes*), European Rabbit (*Oryctolagus cuniculus*) and Fallow Deer (*Dama dama*) occur in the Reserve. Predation by foxes on the Red-necked Wallaby population is a high probability in this area, hence the need to continue with the current fox control program. There is currently no indication that the numbers of other introduced animals pose a significant threat to the native flora and fauna in this reserve.

Objectives

- To protect and conserve indigenous fauna with an emphasis on the rare and vulnerable species and their habitats.
- To encourage research into the rare and vulnerable fauna species.
- To increase our knowledge of the fauna in the Reserve.
- To control introduced animals which are an environmental/agricultural threat.

Actions

- Encourage volunteer groups and individuals to conduct fauna surveys and population monitoring.
- Continue surveys to monitor the Red-necked Wallaby population in the Reserve.

-
- Liaise with volunteer groups and tertiary institutions to encourage the implementation of monitoring programs and research into the biology and habitat requirements of rare and vulnerable species in the Reserve.
 - Implement an annual rabbit and fox control program within the Reserve.
 - Liaise with the Robe Animal and Plant Control Board Authorised Officer and adjacent landowners to encourage an integrated approach to pest control operations.

3.1.4 Native Plants

Woakwine Conservation Reserve consists of dense inland dunal mallee vegetation. Two vegetation associations exist in the Reserve as described by the Native Vegetation Management Branch (1989):

- Coastal White Mallee (*Eucalyptus diversifolia*) Open scrub - dominant association in northern and southern sections.
- *Blue Gum (*E. leucoxylon*)/Pink Gum (*E. fasciculosa*) Open woodland - on the sandy swales.

* - Presently a rare association in the South East (Croft and Carpenter, 1998).

Both associations are over a heath understorey of predominantly *Leucopogon* and *Acacia* species.

The Blue Gum/Pink Gum (*Eucalyptus leucoxylon*/*E. fasciculosa*) open woodland association of the Reserve is the only occurrence in the Lower South East District reserves system. The nearest documented site for the association is in Big Heath Conservation Park, 60 kilometres east of the Reserve (Croft and Carpenter, 1998).

The Friends of Butcher Gap Conservation Park have identified 150 native and 25 introduced plant species. Plants of conservation significance recorded in the Reserve include:

		<u>SA Status (NP&W Act, 1972)</u>
Tuber Fringe-lily	<i>Thysanotus tuberosus</i>	Vulnerable
Creeping Boobialla	<i>Myoporum parvifolium</i>	Rare
Small Spike-rush	<i>Eleocharis pusilla</i>	Rare
Hooded Caladenia	<i>Caladenia cucullata</i>	Rare
Small Mat-rush	<i>Lomandra sororia</i>	Rare
Austral Bugle	<i>Ajuga australis</i>	Uncommon
Rock Correa	<i>Correa glabra</i>	Uncommon
Drooping Velvetbush	<i>Lasiopetalum schulzenii</i>	Uncommon
Austral Grass-tree	<i>Xanthorrhoea australis</i>	Uncommon

The *vulnerable* Tuber Fringe-lily has also been recorded in several Native Forest Reserves including Honan's Scrub, Marshes Swamp, McIntyre Swamp, and Diagonal Road (managed by Forestry SA) and Telford Scrub Conservation Park. *Rare* species include the Creeping Boobialla, Hooded Caladenia, Small Mat-rush, and Small Spike-rush. These species have also been recorded in other NPWSA reserves in the region including Fairview, Bangham, Glen Roy and Hacks Lagoon Conservation Parks.

Most areas of the Reserve have been subject to some level of disturbance from previous occupation and activities. These include grazing, fire, and clearance. The northern section has been affected the most by disturbance but has regenerated well.

Several introduced weed species exist in the Reserve. Cape Tulip (*Homeria sp*), Horehound (*Marrubium vulgare*), and False Caper (*Euphorbia terracina*) are three species in particular which have required control in the past, especially in the north-eastern corner of the Reserve. Cape Tulip is currently sprayed each year by NPWSA staff although future work may need to be integrated with work undertaken by neighbours. Weed control is essential to minimise impacts upon biodiversity.

Objectives

- To protect and conserve indigenous flora with an emphasis on poorly conserved species and associated communities.
- To encourage research into the rare and vulnerable flora species.
- To increase our knowledge of the flora in the Reserve.
- To control introduced plants that are an environmental/agricultural threat.

Actions

- Encourage further flora surveys and research into the requirements of the Reserve's flora, particularly rare and vulnerable species.
- Monitor and manage areas that may be susceptible to disturbance and/or weed invasion.
- Monitor the Tuber Fringe-lily population.
- Continue weed control programs that target specific weed species and coordinate with adjacent landowners where necessary.
- Liaise with the Robe Animal and Plant Control Board Authorised Officer and adjacent landowners to develop an integrated approach to pest plant control operations.
- Allow revegetation to take place in degraded areas by managing threats.
- Maintain effective boundary fencing to exclude stock.

3.2 Cultural Heritage

Human habitation of Australia began with the movement of Meganesians down from South East Asia, to Australia at least 40 000 years ago, possibly 60 000 years ago (Flannery, 1994). Flannery (1994) describes the occupation of Australia to have likely been “a rapid and complete invasion by the ancestors of the Aborigines.” The discovery of Aboriginal remains at Lake Mungo, New South Wales (32 000 years old) and south-west Tasmania (35 000 years old) validates this hypothesis of Aboriginal occupation of Australia. Consequently, the establishment of Aboriginal cultures and tribe differentiation, in the Lower South East, took place at least 35 000 years ago.

The Aborigines that inhabited the area of the Woakwine Conservation Reserve were known as the ‘Meitangk’. O’Connor (1992) indicated that the tribe consisted of 7 hordes and that their territory ranged from as far north as Granite Rocks (near Kingston) to Cape Jaffa and Lake Hawdon in the south, and as far inland as Naracoorte. The past misunderstandings of the complex culture of the Meitangk, and the lack of detailed cultural study have restricted the quantity and quality of information available to general details of tribal life.

These indigenous people were mostly coastal but their territory included the many lakes of that district and the north westerly portion of the Woakwine Range. Campbell (1934) described how they commonly used hunting implements made of stone and wood. Most wood implements were made from sheoak and tea tree. Their diet was predominantly kangaroo, possum, emu and fish from the nearby lakes and swamps. Plant roots were also commonly utilised in these areas.

The Reserve is located along the ridge of the Woakwine Range which is the Aboriginal name for “my arm” (Manning, 1990).

The land now occupied by the Woakwine Conservation Reserve was first allotted under Pastoral Lease 215 in 1851. The Hundred of Waterhouse was proclaimed in April 1861. Sections were created in this hundred and those directly affecting the Woakwine Conservation Reserve included Sections 11, 115, 118, 119 of the Hundred of Waterhouse.

From 1888 to 1901 these sections (with the exception of Section 11) were held under an Agricultural and Grazing lease 815. This lease then changed to Perpetual Lease 6299 in 1902 until portions of these sections were subdivided. In 1962 Perpetual Lease 6299 was subdivided with portions south of the Drain Reserve being numbered 388 and 389. Section 11 was held under freehold title prior to 1993.

In 1993 all of the above sections (Sections 11, 115, 118, 119, 388, 389 of the Hundred of Waterhouse) were redesignated as part of Allotments 1, 2, 3, 4, 5, and 6. The areas required to create Allotments 3 and 5 were reverted to the Crown and subsequently

dedicated under the provisions of the *Crown Lands Act, 1929* as the Woakwine Conservation Reserve, subject to an easement to the Electricity Trust of South Australia (Smith, 1998).

Since settlement of the Woakwine area in 1851, predominant land use has been grazing. Large areas of the Reserve were grazed and also cleared. Information relating to vegetation clearance in the Reserve is detailed in Withers (1992) who describes several clearance events occurring between 1958 to 1978. Both sections of the Reserve were influenced by some form of vegetation clearance. The northern section was the most affected with almost total clearance occurring before 1969. Since this time both sections of the Reserve have remained relatively undisturbed.

In the late 1800's a stone wall was constructed in the northern section of the Reserve. The wall was used as a property boundary and to fence in stock. It was constructed from east to west with parts of it still remaining today.

During the construction of Drain L (Figure 2) in the early 1900's a boarding house was built in the Reserve area. It was located near the top of the cutting, set back into the scrub of the northern section, and was open for two years. The boarding house was run by Mrs Owens, a local Aboriginal woman. There is still evidence of the house with the remains of the chimney in the cook house and a rubbish heap containing fragments of old bottles (Withers, 1992).

Objective

- To ensure the protection and preservation of any archaeological relics and cultural sites that exist in the Reserve.
- To record the cultural history of the area.

Action

- Consult with the Aboriginal community and Division of State Aboriginal Affairs to improve knowledge of the area and to determine if sites of cultural significance exist in the Reserve.
- Consult with the Aboriginal community prior to any works that may impact on cultural sites.
- Further research and record local European history for use in interpretive material.
- Encourage volunteer projects to maintain the ruin site and to provide interpretation of local history for the area.

3.3 Recreation and Tourism

The Woakwine Conservation Reserve offers recreation opportunities such as bushwalking and bird watching amongst the areas of mallee and inland dunal vegetation. The presence of Drain L in the Reserve also allows visitors the opportunity to study the region's history and geology. Vehicle access is for management and emergency vehicles only. Access for visitors is by foot with field naturalists being common visitors to this reserve.

It is important that the use of this reserve, whether by individuals or groups, is appropriate and in accordance with the *National Parks and Wildlife Act, 1972*, and the management objectives and actions outlined in this management plan.

Low impact special interest activities that increase the appreciation and understanding of the natural environment are encouraged in this area. Woakwine Conservation Reserve is currently managed as a day visitor area. This is due to its proximity to Robe and the Little Dip Conservation Park, which cater for a broad range of activities and provide accommodation and camping facilities.

Objectives

- To provide recreation opportunities for day visitors where a need is demonstrated and where those activities maximise the appreciation of the natural values of the Reserve.
- To increase public awareness, appreciation and understanding of the Reserve's values.

Actions

- Provide basic day visitor facilities (i.e. car park and signage) to accommodate existing need.
- Provide specific information signs in strategic locations regarding public safety and access.
- Investigate opportunities for increasing public awareness and understanding of the Reserve's values through the establishment of walking trails or designated routes.
- Monitor impacts of activities in the Reserve and make changes to management practices if considered necessary.

4.0 Summary of Management Actions

This section provides a summary of the management proposals outlined in the plan and gives an indication of the priority and duration of each proposal.

Actions	Priority	Duration
3.1 Biodiversity		
3.1.1 Co-operative Management		
<ul style="list-style-type: none"> • Liaise with adjoining landowners to identify opportunities for co-operative management arrangements. 	High	Ongoing
3.1.2 Fire Management		
<ul style="list-style-type: none"> • Encourage research into the likely plant and animal responses to fire, in particular the needs of rare and vulnerable species. 	High	Ongoing
<ul style="list-style-type: none"> • Implement and maintain fire prevention strategies as outlined in the Bushfire Prevention Plan. 	High	Ongoing
<ul style="list-style-type: none"> • Review the Bushfire Prevention Plan to address the benchmark criteria specified by Croft <i>et al</i> (1999). 	Med.	Short
3.1.3 Native Animals		
<ul style="list-style-type: none"> • Encourage volunteer groups and individuals to conduct fauna surveys and population monitoring. 	Med.	Ongoing
<ul style="list-style-type: none"> • Continue surveys to monitor the Red-necked Wallaby population in the Reserve. 	High	Ongoing
<ul style="list-style-type: none"> • Liaise with volunteer groups and tertiary institutions to encourage the implementation of monitoring programs and research into the biology and habitat requirements of rare and vulnerable species in the Reserve. 	Med.	Ongoing
<ul style="list-style-type: none"> • Implement an annual rabbit and fox control program within the Reserve. 	High	Ongoing
<ul style="list-style-type: none"> • Liaise with the Robe Animal and Plant Control Board Authorised Officer and adjacent landowners to encourage an integrated approach to pest control operations. 	Med.	Ongoing
3.1.4 Native Plants		
<ul style="list-style-type: none"> • Encourage further flora surveys and research into the requirements of the Reserve's flora, particularly rare and vulnerable species. 	Med.	Ongoing
<ul style="list-style-type: none"> • Monitor and manage areas that may be susceptible to disturbance and/or weed invasion. 	High	Ongoing
<ul style="list-style-type: none"> • Monitor the Tuber Fringe-lily population. 	High	Ongoing
<ul style="list-style-type: none"> • Continue weed control programs that target specific weed species and coordinate with adjacent landowners where necessary. 	High	Ongoing
<ul style="list-style-type: none"> • Liaise with the Robe Animal and Plant Control Board Authorised Officer and adjacent landowners to develop an integrated approach to pest control operations. 	Med.	Ongoing
<ul style="list-style-type: none"> • Allow revegetation to take place in degraded areas by 	High	Ongoing

managing threats.		
• Maintain effective boundary fencing to exclude stock.	High	Ongoing
3.2 Cultural Heritage		
• Consult with the Aboriginal community and Division of State Aboriginal Affairs to improve knowledge of the area and to determine if sites of cultural significance exist in the Reserve.	High	Short
• Consult with the Aboriginal community prior to any works that may impact on cultural sites.	High	Short
• Further research and record local European history for use in interpretative material.	Med.	Ongoing
• Encourage volunteer projects to maintain the ruin site and to provide interpretation of local history for the area.	Med.	Ongoing
3.3 Recreation and Tourism		
• Provide basic day visitor facilities (i.e. car park and signage) to accommodate existing need.	Med.	Ongoing
• Provide specific information signs in strategic locations regarding public safety and access.	High	Ongoing
• Investigate opportunities for increasing public awareness and understanding of the Reserve's values through the establishment of walking trails or designated routes.	Med.	Ongoing
• Monitor impacts of activities in the Reserve and make changes to management practices if considered necessary.	High	Ongoing

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