

PICCANINNIE PONDS CONSERVATION PARK MANAGEMENT PLAN

South East

SOUTH AUSTRALIA



NATIONAL PARKS AND WILDLIFE SERVICE
DEPARTMENT OF ENVIRONMENT AND PLANNING



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FOREWORD

This document is the Management Plan for Piccaninnie Ponds Conservation Park, and has been adopted under provisions of the *National Parks and Wildlife Act, 1972*.

Piccaninnie Ponds Conservation Park fulfils several major roles: it is a world renowned cave-diving location offering a recreational experience that attracts people from both Australia and overseas, it provides a permanent wetland habitat utilised by a diversity of waterbird species for breeding and refuge, and it conserves rare coastal fen environments which were once extensive between Cape Northumberland and Nelson.

Water in the wetland is supplied by freshwater springs which discharge alkaline groundwater from the Gambier limestone. An extensive cave system has been formed by springs at Piccaninnie Ponds, with parts of the cave system believed to be over 80 m deep. This cave system is particularly attractive to cave divers because of its excellent water clarity and aquatic vegetation.

This Plan outlines proposals to effectively balance the recreational use of the Park with conservation of the habitat of the ponds and surrounding ecosystems.

The draft of this document was placed on public exhibition in 1990. Six public submissions were received regarding the draft, and these were taken into consideration in the preparation of this document. Advice has also been received from the Reserves Advisory Committee, and some changes to the draft have been made.

(Susan M. Lenehan)

MINISTER FOR ENVIRONMENT AND PLANNING

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1 MANAGEMENT CONTEXT

1.1 Planning Process

This Management Plan has been prepared in accordance with the *National Parks and Wildlife Act, 1972*.

Section 38 of the Act states that a management plan is required for each reserve (or park), and should 'set forth proposals' for the management and improvement of the reserve and the methods by which it is aimed to accomplish the objectives of the Act in relation to the reserve.

Upon completion of a draft plan an announcement is made in the *Government Gazette* and the plan is placed on public exhibition for at least two months. During this period any interested person may make submissions which are then referred with the plan to the Reserves Advisory Committee for their comments and suggestions.

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

Once a plan of management is adopted, its provisions must be carried out in relation to the reserve in question and no operations undertaken unless they are in accordance with the plan. However, the Act does make provision for amending adopted plans, and this process is similar to the one described above.

1.2 Conservation Parks in South Australia

The *National Parks and Wildlife Act, 1972* states that conservation parks are lands that have been set aside 'for the purpose of conserving any wildlife or the natural or historic features of those lands'.

1.3 Location and Regional Context

The south east of South Australia has been extensively modified since European settlement, by agricultural, silvicultural, pastoral and urban development. Loss of wetland through drainage for agriculture has been substantial. Approximately 11% of former wetlands in the south east still exist, but only 14% of this area of remaining wetlands contain permanent open water. The wetlands within this Park are therefore of particular conservation importance.

Piccaninnie Ponds Conservation Park is 30 km south east of Mount Gambier on the Nelson Road, and approximately 490 km from Adelaide. The Park adjoins the South Australian - Victorian border, making it the most south eastern part of South Australia (Figure 1). The Park comprises Sections 598, 692, 694 and 695 Hundred of Caroline, County of Grey. It covers an area of 397 ha with four kilometres of coastline.

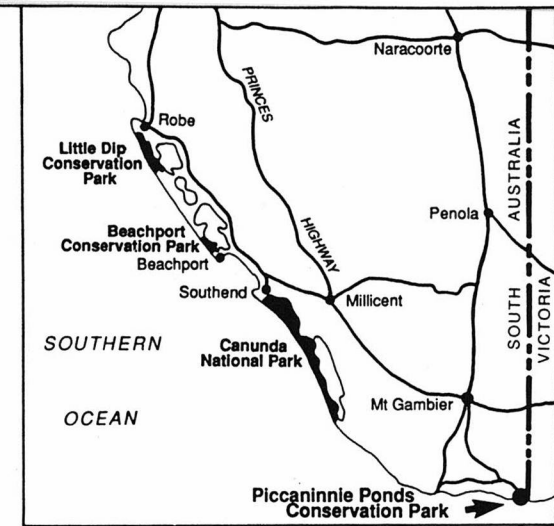
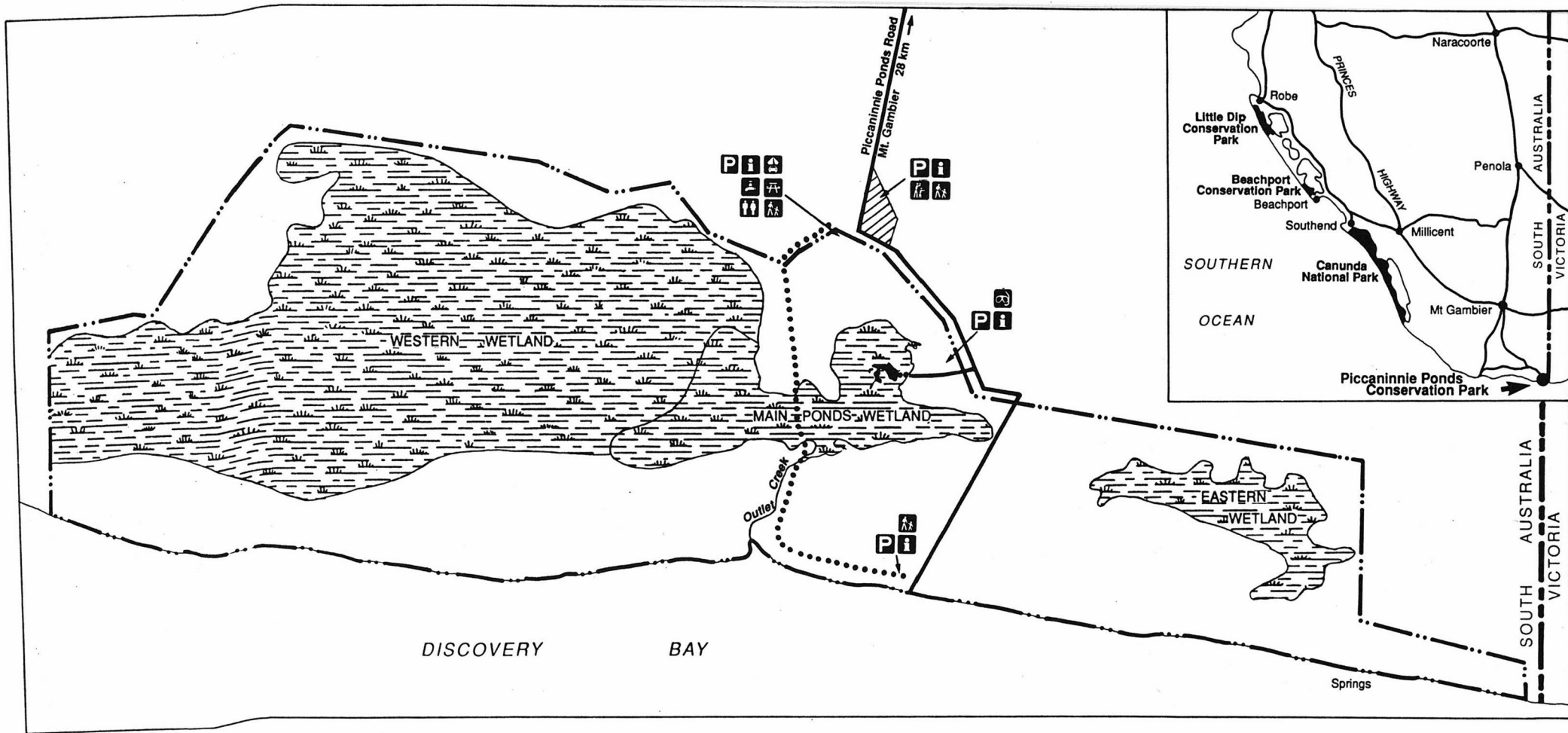
1.4 Objectives of Management

The *National Parks and Wildlife Act, 1972* describes the general objectives of managing conservation parks in South Australia as:

- preserving and managing wildlife;
- preserving historic sites, objects and structures of historic or scientific interest;
- preserving features of geographical, natural or scenic interest;
- destroying dangerous weeds and eradicating or controlling noxious weeds and exotic plants;
- controlling vermin and exotic animals;
- controlling and eradicating disease of animals and vegetation;
- preventing and suppressing bush fires and other hazards;
- encouraging public use and enjoyment of reserves, and education in, and a proper understanding and recognition of their purpose and significance; and
- generally promoting the public interest.

The additional specific objectives which apply to this Park are:

- to provide access and a range of recreation facilities in appropriate sites to facilitate visitor enjoyment;
- to develop interpretation and education programs and provide information on recreation opportunities, resources and management;
- to contribute to regional and State tourism while protecting the natural values of the Park; and
- to provide managed recreation opportunities for cave diving in the Park.



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|--|---------------------------|--|------------------------|
| | Park boundary | | Camping |
| | Unsealed road | | Lookout |
| | Walking track | | Walking track |
| | Proposed Land Acquisition | | Cave Diving, Snorkling |
| | Wetlands | | |
| | Piccaninnie Pond | | |
| | Information | | |
| | Parking | | |
| | Toilets | | |
| | Drinking water | | |
| | Picnic area | | |



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Figure 1

PICCANINNIE PONDS CONSERVATION PARK
Location and Concept Diagram

2 PARK DESCRIPTION

The coast along the south east of South Australia has a mediterranean climate with cool wet winters and warm dry summers. The moderating effect of the ocean result in temperatures that are generally mild with a marked summer drought in coastal areas and evaporation exceeding rainfall for all except the winter months. The average yearly rainfall is 700 mm of which 70% falls between May and October.

The prevailing winds along the coast are from the south west to south east and strong winds are frequent, particularly during spring. The coastline is subject to moderate to high wave energy.

The extensive coastal plain of the lower south east is formed by the Gambier Embayment of the Otway Sedimentary Basin. This Basin extends in a south easterly direction along the South Australian coast to the Otway Ranges in Victoria. Lowering of the sea level during the mid Tertiary (about 20 to 40 million years ago) led to deposition of sediments in a shallow marine environment, forming the Gambier Limestone.

During the Pleistocene era tectonic uplift caused the level of the Gambier Embayment to rise. This uplift, and numerous variations in sea level, superimposed a series of sub-parallel calcareous sandstone dunes over the Gambier Limestone. Erosion of the Gambier Limestone during this period produced the karst features, including caves, cenotes and surface karren, of the lower south east.

Today water from the south east coastal plains drains underground through the Gambier Limestone in a south to south easterly direction towards the coastal discharge zone, between Port MacDonnell and the Glenelg River.

Swamps and lagoons occur in those areas where the water table intersects the surface, or where surface water is restricted from draining to the sea by a coastal dune barrier.

The permanent freshwater ponds within the Piccaninnie Ponds Conservation Park are bounded by a stable coastal sand dune system to the south and a low calcarenite dune range to the north. The pond water levels are often above the water table level. Organic material trapped behind the calcarenite dunes prevents the water draining through the limestone.

The deep-water section of the Ponds system was formed as dissolution of the limestone along a fault line formed caverns and tunnels.

Three separate wetlands can be identified in the Park:

- eastern wetland, fed by several springs forming the Hammerhead Pond, and supporting closed reedland-closed sedgeland vegetation associations;
- western wetland, supporting a closed shrub association dominated by tea-tree species, and discharging water to the west of the Park; and
- the main pond and surrounding ponds and wetlands.

Prior to 1906 water from the main ponds wetland flowed east, fed the eastern wetland and discharged into the Glenelg River. However, it now flows south to the coast via a channel cut through the foredune between 1917 and 1945, called the Piccaninnie Ponds Outlet, and also known as Ellards Creek.

The main ponds wetland discharges water at a relatively constant rate of 0.9 cubic metres per second, of which about two thirds is discharged by springs in Piccaninnie Ponds releasing water from the underground aquifer.

Water in the ponds has a high concentration of calcium carbonate and dissolved oxygen, low nutrient levels and a neutral to slightly alkaline pH. The water temperature in the ponds remains constant at about 16°C throughout the year.

Three main soil types occur in the Park: coastal sand dunes, peat soils and dryland soils. The coastal dunes comprise alkaline sand of low nutrient levels with minimal soil development. These sands are very prone to drift if stabilising vegetation is removed. The foredune is well developed and stable; to the west of the outlet it is steeply sloped, while to the east it is generally rounded and fronted by an incipient dune.

Three types of peat soils occur in the low-lying areas of the Park, and are differentiated by their surface structure. Shallow dark grey to black loamy soils, with smaller areas of transitional swamp soils interspersed with calcrete outcrops occur along the northern boundary of the Park where a rise in the Gambier Limestone lifts this area above the level of the wetland.

Six vegetation communities have been identified in the Park. Of particular significance are those associated with the unique wetland fen environments, as they are poorly conserved in other reserves in South Australia. These significant communities include the western wetland fen vegetation of silky tea-tree (*Leptospermum lanigerum*) and bottlebrush tea-tree (*Melaleuca squarrosa*) which occurs in about 36% of the Park, and the aquatic plant communities of the permanent freshwater ponds (*Potamogeton*, *Myriophyllum*, etc.).

Also of significance is a small area of kangaroo grass (*Themeda australis*) and *Danthonia* sp. tussock grassland on the western boundary.

Other vegetation communities include:

- reed and sedge swamp (*Phragmites australis*, *Typha angustifolia*) fringing permanent freshwater ponds of the main ponds and eastern wetlands;
- successive coastal dune vegetation - open heath (*Acacia longifolia* var. *sophorae*, *Leucopogon parviflorus*, *Olearia axillaris*) on consolidated dunes and recolonised disturbed areas, and tussock grassland (*Spinifex sericeus*, *Festuca littoralis*, *Isolepis nodosa*) in swales and on foredunes; and
- open heath (*A. pycnantha*, *L. parviflorus* with scattered *Eucalyptus ovata* and *Allocasuarina verticillata*) on the outer dryland fringes of the western fen on the northern Park boundary.

In addition, 24 known species which occur in the Park are at risk in South Australia because of their limited ranges. The Park also conserves the western range extensions of several flora species including *Leptospermum glabrescens*, *Cotula reptans*, *Gentianella diemensis*, *Scavola pallida*, and *Pterostylis tenuissima*.

Over 60 species of birds have been recorded in the area, many of these live and breed in the Park. However, only five species of native mammals have been recorded in the Park. Of note are the swamp antechinus (*Antechinus minimus*), a critically endangered species once widespread in coastal wetlands of the south east, and the water rat (*Hydromys chrysogaster*).

Several fish species have been recorded in the Ponds including the short-finned eel, southern pigmy perch, and Yarra pigmy perch. The South Australian occurrence of the Yarra pigmy perch is based on a single specimen taken from the ponds, and represents an extension of its known westerly range.

Prior to European settlement, Aborigines from the Bunganditj group occupied the land around Piccaninnie Ponds in large numbers.

Most visitors to Piccaninnie Ponds are day visitors, and cave diving and snorkelling are the most common activities. Sightseeing, beach fishing and bird watching are also popular. A small number of visitors use the camping area, usually for stays of less than three nights. Park use is concentrated around the Christmas to early January period and during Easter.

Facilities in the Ponds area include a carpark, boardwalk, floating jetty and interpretive signs.

The Cave Divers Association of Australia (CDAA) has a system of categorising diving sites according to the difficulty of the dive. Prior to May 1985, as the result of several deaths in the Ponds, Piccaninnie Ponds was classified a Category II dive. Dive permit issue was restricted to members of the CDAA who held Category II cards. Snorkel permits were also issued, however neither of these permits restricted the number of dives that a permit holder could make.

In May 1985 an unknown factor caused the aquatic flora in the ponds to die off. The ponds were subsequently closed to diving from November 1985 until late 1988 to allow the vegetation to regenerate.

The re-opening of the ponds coincided with the introduction of a regulated diving/snorkelling permit system to control numbers, and therefore restrict impact. The system incorporated the following features:

- only Category II and above, or 'Sink Hole' categorised CDAA members are issued dive permits, visiting overseas divers are accredited by CDAA;
- snorkellers and divers are restricted to the first pond and chasm area;
- a minimum of two and maximum of four persons per dive;
- maximum one hour dive time and minimum two hour rest time between dives;
- only permit holders may use the ponds;
- time slots must be booked in advance;
- special arrangements may be made for navy or police divers to train; and
- appropriate fees are set for snorkel and scuba permits.

Based on CDAA returns, almost 1000 cave dives were made in the Park each year prior to closure in 1983, with many more snorkel dives being undertaken. Approximately 3000 cave dives and more than 1000 snorkel dives were made annually in the period 1982 - 1984.

3 MANAGEMENT FRAMEWORK

Policies for the management of the Park have been developed within the constraints of:

- the *National Parks and Wildlife Act, 1972* and Regulations;
- State Government policy;
- National Parks and Wildlife Service policies; and
- community attitudes and expectations at State, regional and local level.

3.1 Natural Resources

3.1.1 Vegetation Management

The six vegetation communities in the Park, particularly those associated with the wetlands, will be protected, as will species of special conservation significance.

Policies

- diversity of habitat will be maintained
- aquatic and wetland habitats will be protected
- special protection will be accorded to sensitive and important plant communities

Actions

- encourage scientific research into the Ponds and other habitats to facilitate management decision making
- continue to maintain limited vehicle access
- manage diving/snorkelling activities within the Ponds to ensure the conservation and sustainable use of the environment
- identify and monitor the ecology of and impacts on the vegetation in the Ponds and wetland areas
- control pest plant and animal species which have detrimental effects on the endemic vegetation
- restrict visitor access within the eastern and western wetlands

3.1.2 Fauna Management

Significant fauna habitats occurring in the Park include: the Ponds, which provides a breeding ground for native freshwater fish species, and the closed reedland - closed sedgeland formation dominated by bare twig-rush (*Baumea funcea*), which appears to provide habitat for the swamp antichinus.

Policy

- existing endemic species will be managed

Actions

- prepare and implement a vertebrate pest control program
- protect habitat by controlling access and fire
- encourage investigation of habitat requirements for the maintenance of native fauna populations of the Park

3.1.3 Fire Management

There are no records of wildfire occurring in the Park although small fires were lit by past lessees to control vegetation. Because of this low incidence of fire, any fire could have a significant impact on the vegetation of the Park.

Policy

- fire will be managed to protect life and property in and adjacent to the Park

Actions

- maintain appropriate boundary access tracks, and where additional boundary tracks are required, investigate and implement purchase and/or co-ordinated management of adjacent cleared land in preference to clearing vegetation
- prohibit wood fires in the Park
- suppress fire

3.1.4 Wetland Management

Sometime between 1917 and 1945, probably prior to 1927, an artificial outlet was constructed to drain the wetlands. As a result, the natural drainage of water from the Ponds through Holloway's Swamp to the Glenelg River ceased, significantly reducing the wetlands in the area.

Actions

- monitor water levels in Piccaninnie Ponds and in the outlet channel to detect possible lowering of water levels resulting from erosion
- investigate re-diversion of water from Piccaninnie Ponds to re-establish wetlands to the east, considering effects on adjacent landuse, vegetation types and distribution, and existing modified habitat types, and implement if feasible

4.2 Cultural Resources

Aboriginal camp sites and worked flint deposits have been recorded adjacent to the coast, and flint deposits can be found near the outlet of Piccaninnie Ponds. A shelter in the rise near the Park entrance is a recognised Aboriginal site.

Policy

- sites and objects of Aboriginal occupation in the Park will be protected

Actions

- encourage research programs for the inventory, analysis and assessment of any sites or objects found in the Park
- investigate purchase of land to include the shelter near the Park entrance, and implement if feasible
- liaise with Aboriginal people regarding the management of any sites or objects of significance found in the Park

3.3 Visitor Management**3.3.1 Visitor Use**

The Park is a popular visitor destination, particularly for cave snorkelling and diving.

Policies

- recreational opportunities will be provided which promote and encourage public use, enjoyment, education and understanding of the Park, in particular, opportunities will be provided that:
 - are consistent with the protection of natural features and processes;
 - encourage the appreciation and understanding of natural features;
 - complement other recreation opportunities in the region; and
 - where appropriate, cater for aged and disabled Park visitors
- management actions adopted within the Park will be consistent with management purposes of the designated areas in Figure 1
- visitor access, facilities and use within the Park will be developed and promoted only in the visitor use areas designated in Figure 1

Actions

- provide visitor use areas and facilities at the Park entrance, Ponds environs, outlet and coastal area, and camping area (proposed developments for these areas are outlined in Sections 3.3.3, 3.3.4, 3.3.5, and 3.3.6)

3.3.2 Access

The Piccaninnie Ponds road and the track from the Park entrance to the coastal foredune are gazetted road reserves currently managed by the Port MacDonnell Council. Arterial tracks to the beach and Ponds carparks within the Park are managed by the SANPWS.

Policies

- coastal ecological and scenic values will be protected
- public use, enjoyment and education regarding the coastal environment will be provided for

Actions

- investigate, and if possible obtain control of the road reserve in the Park to assist management of coastal and wetland environments
- if control of the road reserve is obtained, design a beach access strategy for public enjoyment and use of the beach environment and protection of its intrinsic conservation values
- close all minor vehicle access tracks
- identify and demarcate the eastern and western boundaries of the Park
- encourage research on the significance of the beach for coastal fauna populations, and appropriate management strategies for these populations

3.3.3 Park Entrance

The Park entrance has signs at the boundary but nothing to introduce visitors to the area or show them that they have 'arrived'. It is proposed to alter the current layout of the entrance, however, this may require the acquisition of some adjoining land and would therefore be subject to the support of the affected landholder.

Policies

- facilities will be provided at the Park entrance to introduce visitors to the Park, allowing them to orientate themselves in the landscape and obtain an overview of the Park
- public use and enjoyment of the Park will be promoted through the provision of facilities

Actions

- subject to the purchase of land:
 - provide a car park (10 cars + 1 bus capacity) near the main entrance, incorporate appropriate landscaping, screening and shade vegetation in design;
 - erect interpretive displays in the vicinity of the carpark to introduce visitors to the features of the Park and describe the facilities and activities available to them; and
 - provide a lookout on the crest of the dune south east of the car park, linked to it by an appropriately graded and constructed walking track

3.3.4 Camping Area

A small bush camping area is provided adjacent to the coast. This is used mainly for one or two night stop-overs by divers and fishers. This site is not ideal and the camping area may be better sited nearer the entrance to the Park, where the water table is lower (allowing provision of toilet facilities), facilities could be grouped appropriately for day use, walking trails and campsites, and a more pleasant and sheltered site could be selected.

Policies

- facilities for limited camping use will be provided
- the feasibility of relocating the camping area will be investigated, and if practicable implemented, having regard to:
 - the protection of the natural values of the area;
 - the perceived need for camping; and
 - the provision and use of facilities
- visitor facilities will be designed to minimise interaction between day visitors and campers

Actions

- select appropriate sites for day use and camping facilities
- close and rehabilitate the former camping area

3.3.5 Piccaninnie Ponds Area

The Ponds area is of significant conservation value, and is a focus of visitor activity in the Park.

Policies

- Ponds facilities will introduce visitors to the aquatic environments of the Park
- the ecological values of the ponds area will be protected

Actions

- conduct a survey and inventory of aquatic Pond vegetation to assist in determining acceptable levels of use and impact, and appropriate management
- provide interpretive information, explaining Park wetlands and aquatic flora and fauna

3.3.6 Outlet and Coastal Area

The artificial drainage system traverses a variety of vegetation types between the ponds and the coast. This scenic area is appropriate for the interpretation of wetland and coastal seral succession.

Policies

- protect coastal ecological and scenic values
- promote public use and enjoyment of, and education regarding the wetland, outlet and coastal area

Actions

- provide a loop walking track branching from the track to Piccaninnie Ponds, across the outlet to the coast and back past the divers' access
- provide interpretive information at selected points along this track
- operate the track either as a self-guided walk with pamphlet provided for a fee, or a guided walk led by a SANPWS guide

3.4 Management Support

Effective implementation of this Plan requires:

- an informed community with an understanding of the area's resources, recreation opportunities and management;
- facilities to enable the Service to implement management programs; and
- administrative procedures and support services.

3.4.1 Interpretation and Environmental Education

Interpretation and environmental education assist in protection of natural and cultural features and are major aspects of managing public use. There is a strong community expectation that information will be available. The Park has a significant role to play as a resource for environmental study and education.

Policy

- interpretation and environmental education programs should seek to assist people to use and enjoy the Park, and understand and appreciate its features and the SANPWS's approach to management

Actions

- provide interpretive signs at appropriate locations
- provide printed interpretive information about the Park
- investigate the feasibility of providing a range of educational activities at selected times and locations, and implement if appropriate
- where appropriate, recover costs of these services by levying fees, and credit recouped funds to the South East Environmental Management Programme of the General Reserves Trust

3.4.2 Research, Inventory and Monitoring

Research assists in the understanding of resources, their use and effective management. Priorities for research are outlined throughout the Plan.

Policies

- provide information, through SANPWS-conducted research, on natural and cultural features, and visitor use to assist management of the Park
- all research will be subject to SANPWS policy and procedure for the granting of scientific permits, the conduct of research and the production of results

Actions

- encourage research which has potential to facilitate better management
- support existing research programs
- grant research applications only where:
 - the research has potential to facilitate better management of the natural environments; and
 - the effect of that research on the natural and cultural features and visitor use of the Park does not conflict with the objectives of management and where the research cannot be undertaken elsewhere

3.4.3 Management Facilities

Certain facilities are required to implement management programs in the Park. Only facilities that cannot be provided outside the Park will be placed in the Park.

Policy

- provide and/or maintain roads, tracks, structures and equipment within the Park for essential management operations

Actions

- undertake an assessment to determine the type and disposition of facilities essential for management operations required to be undertaken by this Plan
- close or rehabilitate all unnecessary management facilities or construct, install or purchase new facilities as required

3.4.4 Staff

Piccaninnie Ponds Conservation Park is a management unit within the SANPWS South East Region. A ranger, responsible for the management of this and other parks in a defined area, works from Mt Gambier, supported by other Regional management, administrative and works staff.

Policies

- management will be provided by Regional staff based in Mt Gambier, with management activity levels being subject to financial constraints and other Regional management needs
- additional project staff may be employed to supplement staff in the implementation of this Plan

Actions

- within Regional constraints, maintain existing staff levels in the Mt Gambier area
- employ additional project staff to implement the provisions of this Plan as required, subject to consideration of Regional priorities, Government Policy and financial constraints

4 IMPLEMENTATION AND PRIORITIES

This Section provides a summary of the key management proposals outlined in the Plan and gives an indication of the priority and duration of each proposal.

Action	Priority	Duration
Flora 3.1.1		
• maintain limited vehicle access	high	ongoing
• monitor numbers of divers/snorkellers	high	ongoing
• monitor pond vegetation	high	ongoing
• prepare and implement pest plant control program	high	ongoing
Fauna 3.1.2		
• prepare and implement vertebrate pest control program	high	ongoing
• control disturbance to habitat	high	ongoing
Fire 3.1.3		
• provide fire management access tracks	high	ongoing
• control fire	high	ongoing
• investigate, and implement if feasible, purchase of, or agreement with landholder for the use of, land for fire access tracks	high	short
• prohibit wood fires	high	short
Wetlands 3.1.4		
• monitor water levels, esp. in Outlet channel	mod	ongoing
• investigate, and implement if appropriate, re-diversion of Outlet water	mod	long
Cultural Resources 3.2		
• encourage research programs	mod	ongoing
• investigate, implement if feasible, purchase of cave area	high	short
• liaise with Aboriginal people	mod	ongoing
Visitors 3.3		
• construct/upgrade vehicle access and car parks	high	short
• construct walking trails and associated facilities	high	medium
• construct lookouts and boardwalks with appropriate facilities	high	medium
• establish a camping area at a nominated site	high	medium
• establish day use areas at nominated sites	high	short
Management Support 3.4		
• provide interpretation facilities and services	high	ongoing
• encourage research to facilitate wetland management	high	ongoing
• support existing research programs	mod	ongoing
• rationalise management facilities	mod	short

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