

NARACOORTE CAVES CONSERVATION PARK MANAGEMENT PLAN

South East

SOUTH AUSTRALIA

**This plan of management has been prepared and
adopted in pursuance of Section 38 of the
*National Parks and Wildlife Act, 1972-81.***

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1 INTRODUCTION

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

Section 38 of the Act states that management plans are required for all reserves and that such plans should "set forth proposals" to manage and improve the reserve, to accomplish the objectives of the Act.

On 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. These submissions 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 adoption is published in the *Government Gazette*, and copies of the plan are made available to the public.

A similar process applies for any amendment to a management plan.

Once a plan is adopted, its provisions must be carried out and no operations undertaken unless they are in accordance with the plan.

This document is the Management Plan for the Naracoorte Caves Conservation Park. The Plan details the management actions necessary to ensure the conservation of the natural environment as well as to balance proposed and established patterns of use against the conservation function of the Park.

The document is divided into three principal parts. The first part contains background information on the park and its history of use. The second part begins with a list of Park management objectives, followed by management policies and actions which are considered necessary to fulfil the objectives. The final section of the Plan presents, in summary form, each management action, its anticipated duration, and its priority.

2 MANAGEMENT CONTEXT

2.1 The South Australian National Parks and Wildlife Service

In South Australia, reserves constituted under the *National Parks and Wildlife Act, 1972* cover a wide range of landscapes from the hot sandy deserts, salt lakes, saltbush and mulga plains of the arid interior to the cooler, more humid hills, woodlands, swamps and coastlines of the southern continental fringe.

The South Australian National Parks and Wildlife Service (SANPWS) is a manager and custodian of land, wildlife and sites of natural and historical significance throughout South Australia. It is also an educational and advisory organisation which aims to assist the public in understanding and enjoying the State's heritage, and ensuring that it is preserved for future generations.

The SANPWS has responsibility for the control and management of nearly 17 million hectares of land reserved under the *National Parks and Wildlife Act, 1972*. It acts as custodian of these areas as long as required by the South Australian community, and in appropriate areas provides for development of facilities for public education and enjoyment. The Service promotes habitat retention for conservation, research and recreation.

The objectives of the SANPWS can be summarised as:

- to promote and encourage conservation and public appreciation of wildlife and plant communities, and other natural and historical features by means of a reserve system, and provide for the management of plants and wildlife species and populations throughout the state, in accordance with the *National Parks and Wildlife Act, 1972*; and
- to identify and provide for recreational pursuits in specified parks or areas, which are in sympathy with the provisions of the *National Parks and Wildlife Act, 1972* and which assist in the promotion of community understanding of parks and their inherent values.

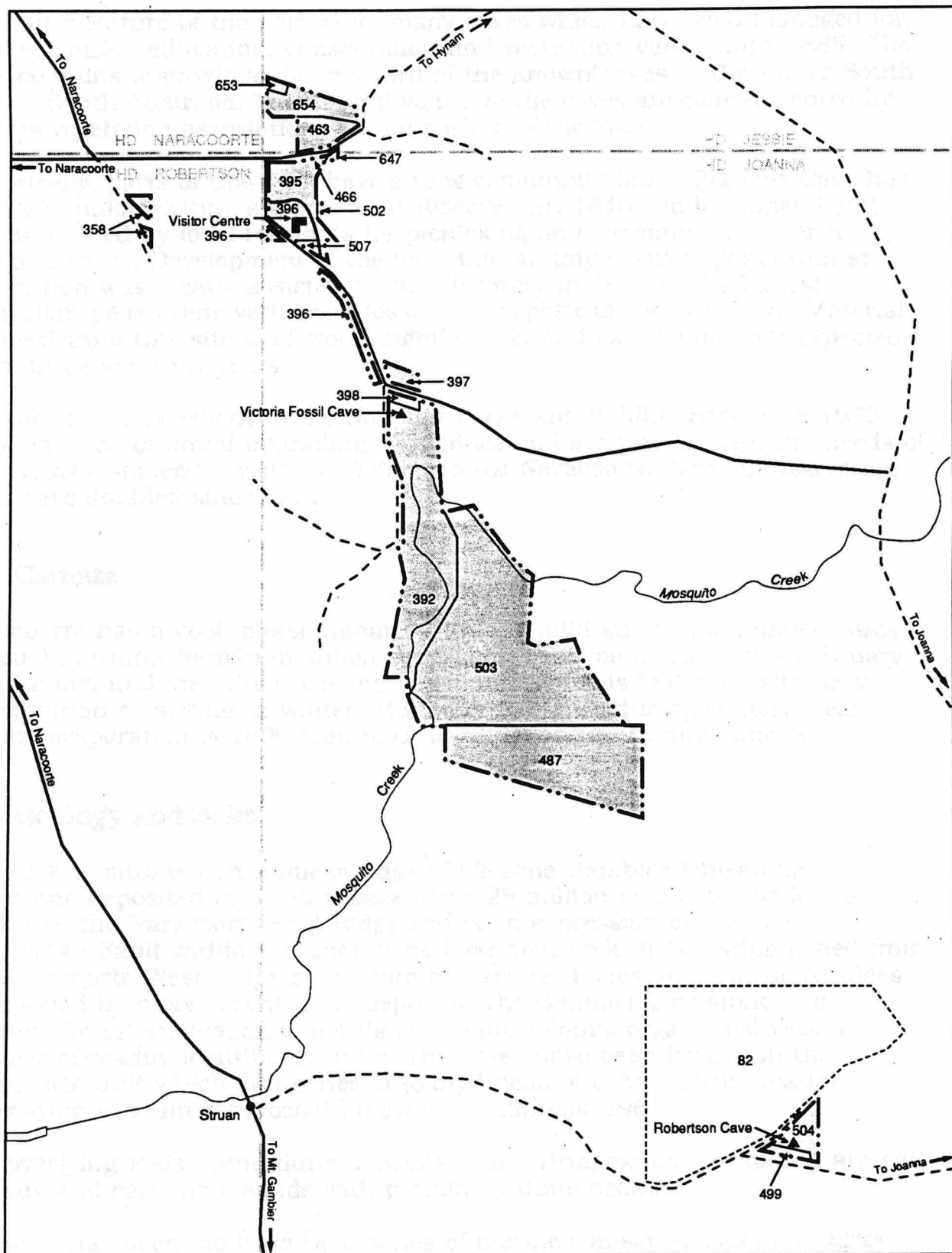
The classification which a reserve receives on being dedicated under the Act is a general statement of the purpose for which that area of land was acquired. Conservation parks are protected to conserve wildlife, natural or historic features which they contain.

These points have been considered in preparing the Management Plan for the Naracoorte Caves Conservation Park.

2.2 Location, Regional and Historical Context

Naracoorte Caves Conservation Park is situated 11 km south south east of Naracoorte township. The Park has a total area of approximately 307 ha, comprising Sections 463, 466, 647, 653 and 654 Hundred of Jessie; Section 358 Hundred of Robertson; and Sections 392, 395-8, 487, 499, 502-4, and 507 Hundred of Joanna (Figure 1).

The Park lies within the South East region of South Australia. Its regional context is essentially one of a karst province, namely one in which the topography and hydrology of the area is determined by the solubility of limestone rock (Marker 1975). This has resulted in a diversity of solutional features, including the caves which were the basis for the establishment of the Park. Within this region, Laut et al. (1977) distinguish the Naracoorte Environmental Association, characterised by calcarenite dune ridges overlain by sand with narrow and imperfectly drained interdunal areas.



- Park boundary
- Sealed road
- Unsealed road
- Section to be added
- ▲ Cave entrance
- 397 Section number

0 km 1 2



Figure 1

NARACOORTE CAVES CONSERVATION PARK **Park Location and Boundary Map**

The major feature of the Park is its many caves which have been managed for their scientific, education, conservation and recreation value since 1885. The Park contains approximately one-third of the known caves in the upper South East of South Australia. The natural values of the caves are complemented by various vegetation associations on the surface of the Park.

Historically, parts of this Park have strong community links. Blanche Cave has been a popular visiting spot since its discovery in 1845, while Stoney Point has been used by local residents for picnicking and swimming for over a hundred years. Development of the Park into an important regional tourist destination was greatly assisted by the discovery in 1969 of the largest Australian pleistocene vertebrate fossil cave deposit in Victoria Cave. Material removed from this site is of world significance, and excavations are expected to continue for many years.

Transfer of management to the National Parks and Wildlife Service in 1972 resulted in a continual upgrading of facilities and services to meet the needs of increasing numbers of visitors. Visitors to the Naracoorte Caves Conservation Park have doubled since 1972.

2.3 Climate

Naracoorte has a cool, moist climate with long mild summers. Temperatures are cool in winter to mild in summer; reaching maxima in January - February and minima in June - July. The mean annual rainfall is 580 mm, with most precipitation occurring in winter. Humidity is higher during winter. Mean annual evaporation is 1800 mm, most of which occurs during summer.

2.4 Geology and Soils

The Park is situated on a linear ridge of Miocene Gambier Limestone (limestone deposited in shallow seas some 25 million years ago) which is known as the Naracoorte East Ridge and is an expression of the nearby Kanawinka Fault within the underlying basement rock. It is distinguished from the Naracoorte West Ridge by its core of Gambier Limestone, but both ridges are capped by more recent dune deposits. The Gambier Limestone is a bryozoal limestone (contains fossils of aquatic colonial organisms) with a number of readily identifiable units. The caves have been formed in the Naracoorte unit which is a series of jointed beds of coarse shelly matter alternating with finer bryozoal limestone (Ludbrook 1961).

The overlying Pleistocene dune deposits of the Bridgewater Formation are calcareous and carbonate sands with prominent dune bedding.

The area has been modified by a series of marine transgressions and regressions. These influenced the surface erosion/deposition patterns and the watertable, and evidence of both transgressive and regressive stages can be seen. The caves were predominantly formed by the action of water, but have been subsequently modified by roof collapse and further solution. There have also been various sedimentary phases, resulting in deposition of cave sediments, the most famous of which, is the fossil rich deposit in Victoria Fossil Cave.

The soils show a close correlation with landforms. The ridges are characterised by an alkaline, shallow, reddish sand and an acid, bleached sand with a yellow-grey B horizon. These well-drained sands on the ridges are commonly stony and are characterised by rock outcrops, (Blackburn et al. 1965). The interdunal areas show either neutral, black, organic soils or alkaline, sandy, pedal, mottled-yellow duplex soils. These are generally deep and well developed but poorly drained.

2.5 Caves

The 33 known karst features in the Park are part of a larger group of 105 karst features documented for the Naracoorte dunes (CEGSA Occasional Papers 5 & 6). Not all of these karst features are caves. Formed in Gambier Limestone, the caves generally have collapse window or enlarged solution tube entrances, and low, wide passages with silt floors connecting large collapse chambers with floors of large breakdown blocks. Four of the caves have been modified for public inspection, while many others have been modified during exploration and/or excavation of guano (Bat Cave) or building stone (Robertson Cave).

The code preceding the cave names are those assigned to cave entrances by the Cave Exploration Group of South Australia and are part of an Australian data system on caves. The U prefix applies to caves of the Upper South East Region.

U1 Victoria Fossil Cave

Numerous large, domed, collapse chambers are connected by a series of low crawlways. Artificial entrances have been excavated for ease of visitor access. Extensive deposits of vertebrate sub-fossils are found in the Cave which has been placed on the State Heritage Register.

U2 Bat Cave

A collapse window 8 m x 12 m drops 8 m to a rockpile in the entrance chamber. South east of the entrance, the cave continues for 100 m to the main bat chamber, 60 m x 25 m x 12 m high, which contains extensive guano deposits.

U3, U90 Alexandra Cave

Consists of four main chambers connected by low silt-floored passages enlarged to allow easy access for visitor inspection. The original solution tube entrance has been extensively modified and an artificial entrance excavated. The four chambers (some 3800 m² combined area) exhibit extensive speleothem decoration.

U4, U5, U6 Blanche Cave

Three collapse window entrances provide access to the Cave, which is essentially a chamber 240 m long by 25 m wide and up to 5 m high. Decoration which for many years had been dormant is now quite active following the removal of pine trees from above the Cave. This Cave has been placed on the State Heritage Register.

U7 Appledore Cave

Two collapse entrances 20 m apart lead into the Cave which heads south east for 70 m and ends in a chamber 15 m x 7 m, 3 m high.

U8, U9 Blackberry Cave

Two window entrances 80 m apart provide access. From the eastern entrance the Cave extends for 220 m in an area known as the Butterfly Extension. This section contains the only known examples of black decoration in the Naracoorte area. The major portion of the Cave heads south from half-way between the two entrances for 350 m. The Cave continues north west from this chamber for 140 m. The southern section of the Cave has a gate to control access.

U10, U11 Tomato-Stick Cave

The Tomato Cave entrance is a collapse window 12 m x 4 m dropping 6 m to the top of a rock collapse covered with silt. The entrance is at the northern end of a 25 m diameter chamber with a roof height of 3 m. A short passage from the southern corner of this chamber overlooks a second chamber 25 m x 30 m and 6 m high. The floor of this chamber is broken rock on a silt bed. A silt and mud floored chamber 40 m long and up to 15 m wide continues to the south east. From the western end of this chamber a low crawlway 55 m long leads into Stick Cave. From the Tomato Cave connection, Stick Cave heads west for 30 m then trends north west for 100 m. Part of this Cave is commonly used by bats as a hibernation site. The entrance, a dual window collapse 6 m x 5 m and 2 m in diameter is situated midway along the north western leg.

U12, U13 Cathedral Cave

Two roof windows; the northern 1 m in diameter, the south western 3 m in diameter, drop 20 m into a large cathedral-like chamber. From the southern entry this chamber (height 10 m) continues south easterly and southerly for 65 m. The Cave continues with a roof height of 1 m for a further 20 m. A tight squeeze connects with a low series of rock-floored passages with a total length of 90 m. One branch heads north west, the other south west. At the end of the south west branch the passage rises through a rock collapse to a small chamber. The rest of the Cave is a series of chambers connected by low passages. Some of the chambers have silt beds containing bone deposits. The total length of the cave is 500 m.

U17, U18, U19 Robertson Cave

The entrances are two collapse windows and a shaft excavated to remove stone quarried from the Cave. The two windows, one 3 m x 1.5 m; the other 5 m in diameter, drop 2 m into a chamber 35 m x 40 m. Soil and large blocks of rock comprise the floor of this chamber which slopes down from the entrances. From the north eastern corner of this chamber a low 10 m long crawl leads to a second chamber 30 m in diameter and 12 m high, with the shaft connecting it to the surface. Considerable rubbish in this chamber is the result of inappropriate disposal of agricultural and household refuse.

U22 Fox Cave

A 2 m diameter window entrance in a doline 10 m in diameter, 2 m deep, drops 1.5 m into a large rock-floored chamber. A slot at the western end of this chamber leads into a short section of low crawls which emerge into another chamber. From this second chamber a flat-roofed passage heads north east to a flat silt-floored chamber. This is one of the best examples of an original phreatic passage representing the first stage of cave genesis in the Naracoorte area. The total length of the Cave is 1000 m.

U44 Little Victoria Cave

A window entrance 1.5 m in diameter drops 3 m to the top of a rock pile. The Cave consists of a complex network of passages through and around the rockpile. The total extent of the Cave is 30 m x 20 m with a maximum depth of 8 m.

U49 - unnamed

A 0.6 m diameter tube drops 4 m. Very little cave development.

U50 - unnamed

A small roof window entrance leads down the edge of a rock pile before choking off.

U51 - unnamed

A group of three small collapse entrances 0.5 m deep. No passages lead off this cave.

U62 Saddle Cave

A small window entrance drops 1 m into a network of low passages. South of the entrances about 50 m of silt-floored passages have not been fully explored. North from the entrance the passage leads down to a small floor hole which leads into a low chamber. Another floor hole leads down into a flat silt-floored chamber 25 m x 15 m. Further passages run through the rock pile at the south eastern end of this chamber for 15 m. The total depth of the Cave is 15 m.

U72 Sand Funnel Cave

A funnel-shaped doline 5 m in diameter and 4 m deep in sand leads to a 0.3 m wide tube which drops 12 m to a chamber 130 m long. Large blocks of rock cover the floor of the chamber. Smaller passages give the Cave a total length of 500 m and a depth of 30 m.

U89 Peppertree Hole

An undercut ledge in a doline 10 m in diameter with a sandy floored passage reaching a depth of 3 m.

U94 Pavy's Plunge

A 3 m diameter collapse at the top of a sand ridge tapering down to 1 m diameter at a depth of 5 m.

U98 Little Cathedral

A small doline with twin solution tubes, 1 m and 1.5 m in diameter, converging at 4 m. The total depth of the feature is 7 m.

U119 Frog Hole

A 1 m diameter collapse 2.5 m deep.

U122 - unnamed

A small doline.

U127 - unnamed

A small window collapse entrance leads into a cave 3 m long by 0.5 m high and 5 m wide.

U128 - unnamed

A small cave in the bank of Mosquito Creek.

U129 - unnamed

A small cave in the bank of Mosquito Creek.

2.6 Vegetation

Little of the vegetation within the Park remains in a natural condition. The original vegetation communities would have been open forest of brown stringybark (*Eucalyptus baxteri*) with a sparse heath understorey on the sand dunes, open scrub dominated by tea-trees (*Leptospermum* spp.) on rocky areas on the limestone ridges, and open forest or woodland of river red gum (*E. camaldulensis*) along the Creek and on its flats. The brown stringybark community is the only one of these three that is represented in a reasonably undisturbed condition in the Park. Despite this, much of the landscape retains a semi-natural character and there is considerable nature conservation value in maintaining even the disturbed vegetation, especially as habitat for native animals.

Several areas of natural vegetation adjoin the Park. The main area of interest surrounds the Robertson Cave section of the Park and consists of open forest of pink gum (*E. fasciculosa*) with scattered South Australian blue gum (*E. leucoxylon*), *Acacia mearnsii* and *Banksia marginata*, or brown stringybark with scattered pink gum and rough-barked manna gum (*E. viminalis* ssp. *cygnetensis*). This area, Section 82, has recently been purchased and is intended to be added to the Park.

There are many introduced plants in the Park, ranging from herbs, annual grasses, broad leaved weeds and garden escapees, to trees and shrubs. The latter include many Australian natives which are not indigenous to the area, numerous broad leaved deciduous trees and palms. These introduced species reflect phases in the management history of the Park, and therefore have considerable historic value.

Portions of Sections 463, 487 and 503 are former agricultural land, developed for grazing, and now support rank growth of introduced grasses and broad leaved weed species.

2.7 Fauna

2.7.1 Surface Fauna

The extensive modification of landscape and vegetation has had an impact on the fauna of the district. 26 species of native mammals and seven species of introduced mammals are thought to be present in the Naracoorte region. Two mammal species of particular interest are the brush-tailed phascogale (*Phascogale tapoatafa*), which is now very rare in South Australia, and the sugar glider (*Petaurus breviceps*). The diversity of bird species and the population numbers of each species have also generally been reduced by environmental modification across the region, however, 90 species (including four introduced species) have been recorded in the Park. Twenty seven species of reptiles have been collected in the Naracoorte district, and most of these are probably present in the Park. Exotic fish species, particularly brown trout and redfin perch, now dominate the fish population of Mosquito Creek, but the river blackfish, *Gadopsis marmoratus*, is still found there.

2.7.2 Cave Fauna

The major faunal feature of the Park lies in its population of bent-winged bat (*Miniopterus* sp.). The bent-winged bat utilises caves as shelter during the day, emerging at night to feed on free-flying insects.

Each population of bent-winged bats in Australia occupies a relatively discrete geographical range (Dwyer 1968). Within this range, one cave will be chosen as the maternity site and used for the birth and rearing of each generation of young. In the case of the population which covers a range consisting of south eastern South Australia and south western Victoria, the maternity site is Bat Cave. Like all such sites, this Cave is shaped in such a way as to facilitate the capture of warm air in ceiling domes, thus providing an incubator-like situation which is vital to the survival of the young bats.

The bats gather in the Cave from September onwards each year, and birth of the young normally commences in late October. In 15 weeks, they are weaned and capable of independent flight and hunting. Most of the population leave at this point, dispersing throughout their range and entering hibernation during winter.

Although currently numerous, this bat is an extremely vulnerable species. Disturbance at the maternity site can lead to premature births and subsequent death of the young or to massive death among juveniles. Similarly, disturbance during hibernation leads to depletion of fat reserves and subsequent death from starvation (Hamilton-Smith 1970).

Not only is the protection of Bat Cave vital for conservation of the species, but the nightly bat flight from November to March provides a visitor experience of great educational importance.

The bat population also provides the environment for a wide range of other species including parasites and organisms which live in bat guano. Over 30 species of arthropods have been collected from the guano deposits of Bat Cave, some of which appear to be endemic to this cave (Hamilton-Smith 1972). The Cave is the type locality of a number of these species. Another invertebrate of interest found in the Park is a species of cave-cricket; *Novotettix naracoortensis* Richards. Alexandra Cave is the type locality for this species.

2.8 Fossils

Two kinds of fossil are seen by visitors to Naracoorte Caves: fossils of Miocene age, of which corals, sponges, echinoderms, brachiopods and molluscs are the most obvious, although larger marine species such as sharks and whales have been recorded (Glaessner 1955); and The Fossil Chamber and The Ossuaries in Victoria Fossil Cave containing one of the richest deposits of more recent Pleistocene vertebrate fossils in the world. The presence of these pleistocene fossils has resulted in the Park being investigated for nomination to the World Heritage List.

Modification of the Cave to facilitate the interpretation of fossil deposits has revolutionised the nature of the visitor experience at Naracoorte and has given a specific importance to the Park as a visitor attraction. From a scientific perspective, it is a site of true world significance.

2.9 History of Use

Little appears to be known of the Aboriginal inhabitants of the Naracoorte area, and few artefacts have been recognised on the Park other than the famous "petrified Aborigine"; one of the stranger aspects of the Park's history. From the first discovery of Blanche Cave by Europeans in 1845, it was known that in an alcove near the end of the Cave was a dried-out body of an Aborigine, with some calcite encrustation which caused it to be thought of as "petrified". The body was stolen from the Cave on 10 September 1861 by a wandering showman, was returned to the Cave by court order, subsequently stolen again by the showman, and not recovered. A preliminary survey of one cave in the Park has resulted in the collection of some Aboriginal artefacts. A further detailed survey is anticipated.

At least some other caves were known at a relatively early date, and Bat Cave was mined for guano as early as 1871 (Lewis 1977) and shown to visitors during the 1870s (Murdoch and Parker 1962).

As a result of the popularity of the caves and their vulnerability to vandalism, a caretaker was appointed by the Woods and Forests Department in 1885.

A systematic search for caves was rewarded by the first entry of Alexandra Cave in 1908. By this stage eight other caves were open to the public.

A number of caretakers, curators (since 1949) and rangers (since 1972) have been appointed with only a few having a significant or lasting impact on the Park, most notably William Redden, from the late 1880s until 1919, and Robert Leitch, from 1921 until 1948.

Evidence of early development of the Show Caves includes: cut and benched steps, wooden handrails, tables and benches, and an iron grille in Blanche Cave; and the original constructed entrance and stairway, wire screens and ceiling-hung lighting in parts of Victoria Fossil Cave.

The major event of recent years has undoubtedly been the discovery in 1969 of the fossil chamber in Victoria Cave by Gartrell and Wells of the Cave Exploration Group of South Australia. They recognised that their discovery was not only of major importance from a palaeontological viewpoint, but potentially represented a new kind of opportunity for cave tourism and interpretation. They were supported in this view by the then South Australian Tourist Bureau. Accordingly, the fossil chamber was first opened to the public on 20 December 1969. A new entrance was constructed and opened in 1971 to improve access.

In 1972 responsibility for the Park was transferred to the newly constituted National Parks and Wildlife Service.

Caves are an important element of the South East regional tourism industry attracting over 135 000 people annually, of which an average (1974-89) 55 000 visit Naracoorte Caves. The Park contributes to the range of recreational activities available in the South East. Apart from cave tours and exploration, the Park offers a range of opportunities such as picnicking, camping, nature observation, photography, and freshwater fishing.

In 1986 a program to provide Park visitors with the experience of cave exploration under supervision was introduced, as were guided tours to view the bats and interpret the significance of the Bat Cave.

2.10 Infrastructure and Visitor Facilities

2.10.1 Aboveground Development

The main facilities for visitors are concentrated in Section 396 (Figure 2) and include:

- car park for 80-100 cars and three buses;
- visitor centre comprising a ticket office and general display area, interpretation area, kiosk and public toilets;
- picnic areas and maintained lawns; and
- camping area with powered sites, ablution and toilet blocks.

Other visitor facilities are:

- car park and shelter near the entrance to Victoria Fossil Cave;
- fence stiles and informal picnic areas at several sites along the west bank of Mosquito Creek; and
- walking tracks from the main visitor centre to Victoria Fossil Cave and south along Mosquito Creek.

A sealed public road runs along the western side of the visitor centre section of the Park and continues past Victoria Fossil Cave; a sealed one-way loop road off this gives access to the main visitor facilities in Section 396. An unsealed public road gives access from the Victoria Cave area to Sections 392 and 398. Other tracks provide vehicle access for management purposes in the Park. The various public access roads and tracks are shown on Figure 1.

The SANPWS Upper South East Sub-District administrative office is located in Section 463, as are the Park maintenance and works depot and the Ranger's residence.

A Ranger's residence, fire shed, mower shed and water tanks are located 100 m north of the visitor centre.

The majority of the natural cave entrances in Sections 395 and 396 have substantial fences around them. Victoria Fossil Cave and Alexandra Cave entrances have steel doors.

2.10.2 Underground Development

Alexandra and Blanche Caves have undeveloped but defined pathways with handrails, steps and electric lighting.

Victoria Fossil Cave has a concrete pathway, handrails, steps and electric lighting throughout the visitor inspection section of the Cave.

Tomato-Stick Cave has a steel fabricated entrance stairway leading to a defined pathway with handrails and steps. No electric lighting has been installed.

Blackberry and Fox Caves have been fitted with internal gates.

3 OBJECTIVES OF MANAGEMENT

3.1 General Objectives

The general objectives relating to Conservation Parks in South Australia are:

- preservation and management of wildlife;
- preservation of historic sites, objects and structures of historic or scientific interest;
- preservation of features of geographical, natural or scenic interest;
- destruction of dangerous weeds and eradication or control of noxious weeds and exotic plants;
- control of vermin and exotic animals;
- control and eradication of disease and injurious affection of animals and vegetation;
- prevention of bushfires 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.

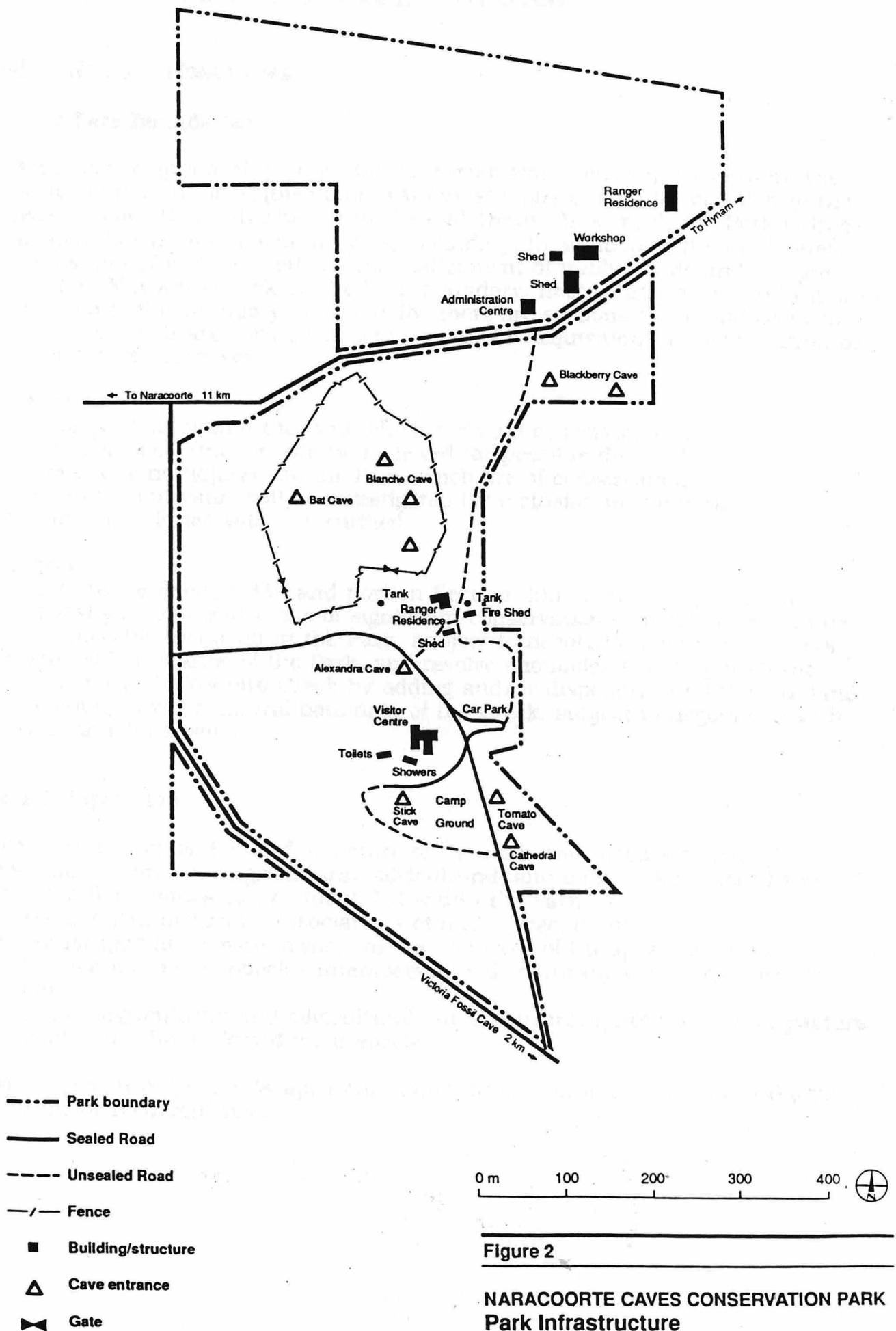
3.2 Park-Specific Objectives

In this general context, the factors which have been taken into account in generating specific objectives and management proposals for the Park are: The caves in the Park and adjoining land are of outstanding value. Victoria Fossil Cave contains a vertebrate fossil deposit which is significant at a world level. Bat Cave is the maternity site for bent-winged bats, houses an invertebrate fauna which includes a number of endemic species, and is of National significance. Blanche Cave is significant at the National level because of its historic and aesthetic value. Other caves of at least State significance include Alexandra, Fox, Blackberry, Cathedral, and in adjoining property Sand and Wombat Caves.

The natural features of the Park together with the established visitor facilities provide an outstanding opportunity for interpretation; and The quality of the natural attractions is such that the Park is a primary destination for many visitors, a large number of whom then visit other parts of the region. The Park makes a substantial economic contribution to regional tourism.

The management objectives for the Park are:

- to rationalise Park boundaries by purchasing and adding to the Park adjacent lands which contain significant features, and by disposing of portions of land which are of no conservation or management value;
- to protect the natural and cultural values of the Park;
- to conserve areas of natural vegetation and to manage other vegetated areas for their natural or historic conservation values;
- to provide and maintain appropriate access for vehicles and pedestrians;
- to provide appropriate facilities for visitor use and enjoyment;
- to provide opportunities for visitors to experience, understand and appreciate the natural and cultural values of the Park, in particular the caves;
- to ensure the Park maintains its role as a significant element in regional tourism;
- to ensure resources for visitor services and facilities maintenance and development are adequate;
- to ensure resources for Park protection are adequate;
- to encourage appropriate research, inventory and monitoring of the natural and cultural features of the Park.



4 MANAGEMENT FRAMEWORK

4.1 Natural Resources

4.1.1 Park Boundaries

With the exception of Section 358 (a former stone reserve), caves were the principle reason for acquisition of various sections of land for addition to the reserve since its establishment in the mid 1880s. As a result the Park is fragmented, linear, and has an irregular boundary. In addition to the unplanned acquisition of various sections, the realignment of public roads and the presence of Mosquito Creek on the Park boundary, necessitate review and rationalisation of the boundary. Additionally, there are sections of land adjacent to the Park which are considered appropriate for acquisition for conservation or management purposes.

Policy

- areas of land within the Park which serve no conservation or management function will be reviewed for possible disposal
- areas of land adjacent to the Park which are of conservation or management value will be investigated for inclusion in the Park
- Park boundaries will be identified

Action

- investigate Section 358 and portion Section 396 for possible disposal
- investigate adjacent lands of significant conservation or management value for possible inclusion in the Park, subject to negotiation with landowners
- survey boundaries of the Park, and resolve anomalies resulting from the proximity of Mosquito Creek by adding and/or disposing of portions of land alienated by the natural boundary of the Creek, subject to negotiation with relevant landowner

4.1.2 Vegetation

The floral composition and structure of the Park have been extensively modified by previous agricultural, silvicultural, and cultural land use. Three distinct floral zones can be identified within the Park as:

- relatively undisturbed associations of native vegetation;
- landscaped areas with lawns, shrubs and trees of European and non-indigenous native species interspersed with naturally occurring species; and
- former agricultural and silvicultural lands supporting rank growth of pasture plants and broad leaved weed species.

Management of the landscaped and former agricultural and silvicultural areas is a major recurrent task.

Policy

- natural associations of native vegetation will be maintained with specific regard to their value as habitat for native fauna
- the landscaped areas will be maintained with specific regard to their historical and aesthetic value (see also 4.2.2 European History)
- former agricultural and silvicultural areas will be managed with specific regard to legislative responsibility to control pest plants, to fire hazard reduction, and to economic constraints

Action

- inspect areas of natural associations to detect invasion by exotic or non- indigenous native plant species, and remove such plants by physical or chemical means where possible and practicable
- maintain landscaped areas by watering, mowing and conditioning as required
- remove and replace diseased, damaged or senescent amenity trees with appropriate indigenous trees/shrubs
- regenerate areas of former pine plantation with appropriate indigenous trees/ shrubs
- manage improved pastures on former agricultural land to reduce the threat of wildfire occurring within or spreading through the Park, by removing rank grass growth by means of mowing, spraying or grazing
- progressively displace improved pasture through a planned program of revegetation with indigenous trees/shrubs
- control pest plant species by a planned program of mapping, treating and monitoring, with priority given to those species which threaten the integrity of undisturbed natural associations or neighbouring land use
- maintain fire management access tracks around the Park, and between areas of natural associations and former agricultural land
- prohibit the lighting and maintaining of open fires in areas of undisturbed natural associations and former agricultural land
- provide constructed fireplaces in camping areas

4.1.3 Fauna

The value of caves as fauna habitat is linked to management of the above-ground vegetation. While the areas of native vegetation associations occurring within the Park have some value as habitat for native fauna, it is the conservation of caves as fauna habitat that must be given priority when considering management activities.

Policy

- existing free living, self-perpetuating populations of native species in the Park will be maintained
- visitor access to caves with particular value as fauna habitat will be restricted where such access threatens that value
- physical barriers to prevent unauthorised entrance to caves will not diminish the value of the caves as fauna habitat

Action

- encourage research into aspects of the ecology and distribution of rare, endangered or specific-cave dependant species
- restrict visitor access to caves identified as having specific value as bat hibernation sites
- permit access to Bat Cave for scientific studies which cannot be undertaken in any other cave
- control introduced species which affect significant natural resources or neighbouring land use

4.1.4 Caves

The caves in the Park are its most significant resource and providing for their protection was the sole purpose for Government acquisition and management of the area. They provide the community with educational and recreational opportunities, while preserving a broad range of geological, historical and palaeontological values for scientific research and aesthetic appreciation. Studies into the effect of human visitation on caves have effectively demonstrated that the carrying capacity of caves, their tolerance to visitation without discernable change, is zero. The impact of human visitation on caves is therefore a primary issue for management and protection of cave values.

The *National Parks and Wildlife Act, 1972* provides for legislative protection of caves within reserves under Regulation 10 vis:

A person must not, without the permission of the Director -

- (a) enter a cave within a reserve (except in the company of a warden or person assisting a warden);
- (b) remove or displace any rock, mineral or fossil in a cave;
- (c) disturb or interfere with any plant or animal (whether dead or alive) in a cave;
- (d) touch or interfere with any karstcalcite formation (speleothem) in a cave;
- (e) urinate or defecate in a cave;
- (f) deposit any organic or inorganic matter in a cave;
- (g) disturb, touch or interfere with any Aboriginal art or artefact in a cave;
- (h) use any paint, dye or marker in a cave, or release any substance into the waters of a cave;
- (i) light a fire or burn any material in a cave;
- (j) smoke any tobacco product in a cave.

Just as the caves vary greatly from one another, in regard to size and morphology, so their specific values vary. Specific values of individual caves therefore require tailored management prescriptions for each cave or cave type. This can be best achieved by first classifying each cave according to a system developed and accepted by cave management authorities and speleologists throughout Australia. This system comprises three categories of caves:

- *Public Access Caves* which are actively presented and interpreted to the public on guided or self-guided tours for aesthetic appreciation, education and recreation, and are subdivided into Adventure Caves which provide opportunities for aesthetic appreciation and physical recreation, usually with very little modification to the cave, and Show Caves which provide opportunities for aesthetic appreciation, usually with significant modification to provide easy access by the public;

- *Special Purpose Caves* which need specific management to protect values of the cave, where these are not being actively presented to the public, and are subdivided into Reference Caves which provide for strict protection of relatively undisturbed baseline areas for scientific reference and/or monitoring, Special Natural and/or Cultural Value Caves which protect sites of outstanding scientific, nature conservation, educational or aesthetic significance, and provide opportunities for appropriate scientific research, aesthetic appreciation, education, recreation or other activities consistent with protection of the special values of the cave, and Dangerous Caves which are managed to protect human life where the cave is known to present extreme hazards; and
- *Wild and Unclassified Caves* which are managed to protect cave values, provide opportunities for research, responsible cave recreation and exploration, subject to the code of ethics of the Australian Speleological Federation Inc. and/or other codes of practice appropriate to the area concerned, and are subdivided into Wild Caves which are all classified caves that do not appear under Public Access or Special Purpose, and Unclassified Caves which are caves awaiting classification and those not yet discovered.

Several categories or subcategories may be represented in any one cave.

The classification of caves within the Park are:

U1	Victoria Fossil: part Adventure, part Show, part Reference, part Special Natural Value
U2	Bat: Special Natural Value
U3, U90	Alexandra: part Show, part Reference
U4, U5, U6	Blanche: Show
U7	Appledore: Wild
U8, U9	Blackberry: part Wild, part Adventure, part Special Natural Value
U10, U11	Tomato-Stick: part Show (Tomato), part Adventure (Stick)
U12, U13	Cathedral: part Wild, part Adventure, part Special Natural Value
U17,	
U18, U19	Robertson: part Adventure, part Special Natural Value
U22	Fox: part Adventure, part Special Natural Value
U44	Little Victoria: Wild
U49	unnamed: Wild
U50	unnamed: Wild
U51	unnamed: Wild
U62	Saddle: Reference
U72	Sand Funnel: Reference
U89	Peppertree Hole: Wild
U94	Pavy's Plunge: Wild
U98	Little Cathedral: Wild
U119	Frog Hole: Wild
U122	unnamed: Wild
U127	unnamed: Wild
U128	unnamed: Wild
U129	unnamed: Wild

Policy

- access to caves in the Park will be provided subject to provisions of the *National Parks and Wildlife Act, 1972* and its regulations, and the function of the cave as described by the classification category into which it has been placed
- Adventure Caves will be managed to provide guided tours with a balance between interest in the features of the cave and the challenge in its exploration along pre-determined routes which avoid exposure of vulnerable features to damage, and access will be only under direct supervision of guiding staff or with written approval for recreational caving or research,
- Show Caves will be managed to provide guided tours with a balance between education and aesthetic appreciation of cultural, geological and palaeontological values of the cave, and access will be only under direct supervision of guiding staff or with written approval for research,
- Reference Caves will be protected against further disturbance as far as is practicable, and access will be only with written approval for research specifically related to the baseline functions of the cave, and where such research cannot reasonably be carried out elsewhere in the State,
- Special Natural Value Caves will be managed to provide opportunity for properly authorised research into the special values of the cave, and access will be only with written approval, and
- Wild Caves will be managed to provide opportunities for responsible cave recreation, exploration and research subject to guidelines set out by the Australian Speleological Federation
- new caves discovered within the Park will be classified as Special Natural Value Caves until sufficient research has been conducted, in consultation with speleologists, to determine their most appropriate classification
- cave classifications may be reviewed, in consultation with ASF approved speleological members and its Associates and the wider community, subsequent to changes in the values of caves

Action

- erect safety fences around all caves in high visitation areas, principally in Sections 395, 396, 398 and 466
- define predetermined routes for guided or self guided tours in those caves or cave parts classified Adventure
- define accurately parts of caves where more than one classification applies
- construct and install barriers as required to prevent unauthorised access to caves or parts of caves classified Reference and Special Natural Value
- provide and maintain appropriate facilities for safe public viewing, appreciation and education in Show Caves, with particular regard to the protection of the natural and cultural values of each cave
- support ongoing research and encourage new research which provides information of scientific, cultural or cave management value

4.2 Cultural Resources

4.2.1 Aboriginal History

Little is known of the significance of the caves to the Aboriginal inhabitants of the area, and this should be redressed if possible. Although a preliminary survey for Aboriginal artefacts in the caves has been conducted, a more thorough study is needed.

Policy

- sites and artefacts of previous Aboriginal occupation located in the Park will be protected

Action

- encourage a more extensive survey of the caves for Aboriginal artefacts

4.2.2 European History

The long history of visitation to the Park has developed strong cultural values. The physical and historic cultural resources of Blanche and Victoria Fossil Caves, and the landscape developments near the Show Caves reflect the popularity and extent of visitation, and are considered to be of historic significance.

Policy

- cultural resources in the Park will be managed to preserve their historic values
- research and documentation of the history of the caves and Park will be encouraged

Action

- maintain the historic artefacts in Blanche and Victoria Fossil Caves
- maintain the landscaped areas and prevent them encroaching into natural vegetation areas (see also 4.1.2 Vegetation)

4.3 Visitors

SANPWS reserves provide a significant proportion of the opportunities for outdoor recreation in South Australia. The Park is promoted as a prime visitor attraction in the Naracoorte district, and plays a substantial role in regional tourism. However, the provision of recreation opportunities must be balanced against the conservation objectives for the Park.

Policy

- facilities and appropriate opportunities for visitors to experience, understand and appreciate the natural and cultural values of the Park will be provided
- the Park's role as a significant element in the regional tourism industry will be maintained.

Actions

- provide safe public access, and appropriate illumination and information for public use of Tomato Cave as a self-guided Show Cave
- provide reasonable visitor access to Public Access Caves, with appropriate consideration for public safety and protection of the caves
- develop and maintain appropriate accommodation facilities for visitors to the Park
- provide facilities and services which enhance appropriate recreation and appreciation of the natural and cultural features of the Park

- provide safe public access to the viewing area near Bat Cave
- provide access for recreational caving in appropriate caves, subject to the established SANPWS procedure, that is, applications for an intended caving expedition detailing the number of cavers, their levels of experience, the purpose of the visit, and which specific caves are proposed for visitation must be approved four weeks prior to the proposed visit
- prepare and implement a plan to improve vehicle access and parking, with particular consideration to pedestrian safety
- prepare and implement a plan of appropriate signs for the Park, with particular consideration to visitor orientation and safety
- establish ongoing research and review of visitation levels and visitor impacts on Public Access Caves

4.4 Management Support

4.4.1 Infrastructure

Existing infrastructure serves two purposes: the management of Naracoorte Caves Conservation Park, and administration and maintenance of many other parks in the Upper South East Sub-District. Infrastructure is located in two distinct areas in the immediate vicinity of the visitor centre, and in the works depot some 400 m to the north (Figure 2). The existing infrastructure is considered adequate for the management of the Park, however, some upgrading, rationalisation and relocation of Sub-District related infrastructure from the visitor centre area to the works depot is required.

Policy

- provide and maintain infrastructure adequate to service the requirements of the Park and Sub-District

Action

- liaise with South Australian Housing and Construction Department to ensure that planned infrastructure maintenance and upgrading programs are continued
- relocate infrastructure not relevant to visitor area management from the visitor centre area to the works depot
- prepare and implement a site layout and security plan for the works depot
- upgrade and maintain the Sub-District administrative centre, with particular regard to occupational health and safety, fire protection, and asset security

4.4.2 Staff

Implementation of this Plan requires a basic staffing commitment to cater for visitor services, maintenance of facilities, and protection and monitoring of natural and cultural resources. Management of the Park comprises three permanent full time staff supported by Sub-District staff. Casual cave guides and kiosk assistants supplement the provision of visitor services during periods of peak visitation.

Policy

- staff numbers will be maintained at a level commensurate with management needs

Action

- employ casual staff according to the seasonal demands for visitor services, and for appropriate conservation/development projects
- encourage volunteers to participate in appropriate projects

4.4.3 Commercial Activities

Where appropriate, and within the guidelines of the Policy Document (SANPWS 1987), the SANPWS will make concessions available, under strictly controlled leasing arrangements, for the provision of appropriate visitor services which the SANPWS is unable to provide. Other commercial activities, not of direct benefit to visitors but which facilitate management or promotion of the Park, will be provided for under licence.

Policy

- all concessions, licences and fees will be in accordance with the *National Parks and Wildlife Act, 1972*, and the SANPWS Policies Document (SANPWS 1987)
- alien uses, such as grazing, cropping, meadow-hay baling, commercial filming and photography may be permitted under licence within the constraints of current Service policy, where such land uses are consistent with the conservation of Park values and will facilitate management of the Park, and where commercial activities will not conflict with natural values or visitor use of the Park
- income generated from fees collected for public use of facilities and services, or from the issue of permits, leases or licences will be credited to the South East Environmental Management Programme of the General Reserves Trust and used to provide visitor services and facilities

Action

- consider and determine any application for concession arrangements within the guidelines of this Plan
- monitor the environmental and social effects of alien land uses and commercial activities
- review existing licences for alien land use to ensure their consistency with this Plan

5 PLAN IMPLEMENTATION AND PRIORITIES

This section provides a summary of management proposals, giving an indication of the priority and duration of each. No operation can be undertaken within the Park if it is not provided for within this Plan. Any additional operation found to be justified will only be carried out after the Plan has been amended in accordance with Sections 38(2) and 38(3) of the Act.

ACTION	Priority	Duration	Ref.
<u>Park Boundaries</u>			
Investigate disposal of S. 358, part S. 396	high	short	4.1.1
Investigate additional lands for acquisition	high	short	4.1.1
Survey boundaries	mod	short	4.1.1
<u>Vegetation</u>			
Inspect natural associations and remove invading plants	mod	ongoing	4.1.2
Maintain landscaped areas	mod	ongoing	4.1.2
Remove diseased amenity trees	low	ongoing	4.1.2
Revegetate former pine plantations	high	long	4.1.2
Manage improved pastures	high	ongoing	4.1.2
Revegetate improved pastures	low	long	4.1.2
Control pest plants	mod	ongoing	4.1.2
Maintain fire access tracks	high	ongoing	4.1.2
Prohibit fires except in fireplaces constructed for that purpose	high	ongoing	4.1.2
<u>Fauna</u>			
Encourage research	mod	ongoing	4.1.3
Restrict access to bat sites	high	ongoing	4.1.3
Provide scientific access to Bat Cave	mod	ongoing	4.1.3
Control introduced species	high	ongoing	4.1.3
<u>Caves</u>			
Erect childproof fences	high	short	4.1.4
Define Adventure Tour routes	high	short	4.1.4
Construct barriers to prevent unauth. access	high	short	4.1.4
Provide facilities in Show Caves	high	short	4.1.4
Maintain facilities in Show caves	high	ongoing	4.1.4
Support research	high	ongoing	4.1.4

ACTION**Priority Duration Ref.****Cultural Resources**

Maintain historic artefacts	high	ongoing	4.2
Maintain landscaped areas	high	ongoing	4.2
Encourage survey for Aboriginal artefacts	mod	short	4.2
Develop Tomato-Stick as self-guided Show Cave	high	short	4.3
Provide visitor access to Public Access caves	high	ongoing	4.3
Provide visitor accommodation facilities	high	short	4.3
Provide recreation facilities	high	short	4.3
Provide safe access to Bat Cave entrance	high	short	4.3
Provide access for recreational caving	mod	ongoing	4.3
Prepare and implement sign plan	high	short	4.3
Prepare and implement access plan	high	short	4.3

Infrastructure

Liaise with SACON	high	ongoing	4.4.1
Relocate Sub-District infrastructure	low	long	4.4.1
Prepare and implement works depot plan	mod	short	4.4.1
Upgrade administration centre	mod	short	4.4.1

Staff

Employ casual staff	high	ongoing	4.4.2
Encourage volunteers	mod	ongoing	4.4.2

Commercial Activities

Consider and determine concession applications	low	ongoing	4.4.3
Monitor environmental and social effects	high	ongoing	4.4.3
Review existing alien land uses	high	short	4.4.3

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