

Department for Environment and Heritage
Management Plan



Anstey Hill Recreation Park
2006



Government
of South Australia

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



Government of South Australia
Department for Environment
and Heritage

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Cover photography courtesy of Carly Lovering: Looking towards the Adelaide Plains from the Wildflower Walk.

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FOREWORD

Anstey Hill Recreation Park conserves an area of 362 hectares of native vegetation and previously grazed land, located 18 kilometres north-east of Adelaide in the Hills Face Zone of the Mount Lofty Ranges.

The majority of the park was proclaimed on 31 August 1989 to conserve the native vegetation and cultural heritage of the park, and to provide for public recreation and enjoyment. A further allotment was added to the park on 4 October 2001.

The park conserves a large area of native vegetation, which provides an important refuge for native flora and fauna. It also provides a much-valued recreational resource to the residents of the north-eastern suburbs.

Through organisations such as the Friends of Anstey Hill, the City of Tea Tree Gully and the National Trust, strong community connections have been forged with the park.

The most immediate management concern within the park is the prevention of illegal mountain bike riding in areas of high conservation value. This management plan proposes strategies to provide for the development of purpose built trails for mountain bike riding in a designated area of the park, whilst closing and rehabilitating unauthorised trails developed throughout the rest of the park.

Many people and community groups have contributed to the development of this management plan. Their input and interest is gratefully acknowledged.

I now formally adopt the plan of management for Anstey Hill Recreation Park under the provisions of section 38 of the *National Parks and Wildlife Act 1972*.



HON GAIL GAGO MLC

MINISTER FOR ENVIRONMENT AND CONSERVATION



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ACKNOWLEDGEMENTS

The contributions of the Friends of Anstey Hill in the preparation of this plan are acknowledged.

For the purposes of this plan of management, tracks are defined as access routes established for use by vehicles, pedestrians on foot and in some cases bicycles. Trails are defined as access routes, established (with or without DEH authorisation) for use by pedestrians on foot, and in some instances bicycles.

1 PARK LOCATION AND FEATURES

Anstey Hill Recreation Park is located approximately 18 kilometres north-east of Adelaide in the Hills Face Zone of the Mount Lofty Ranges (Figure 1).

The park occupies an area bounded by North East Road to the north, Lower North East Road to the south, Range Road South to the east and Perseverance Road to the west. A small section of the park lies south of Lower North East Road, and includes the geological formation known as the Gun Emplacement (Figure 2).

Covering an area of 362 hectares, the majority of the park was proclaimed on 31 August 1989 (Allotments 1, 2 and 3 of Deposited Plan 26217, Hundred of Yatala) to conserve native vegetation, prevent the destruction and further degradation of the cultural heritage of the park, and to provide for public recreation and enjoyment. Allotment 200 of Deposited Plan 30929, Hundred of Yatala, was subsequently added to the park on 4 October 2001.

Anstey Hill Recreation Park contains one of the last remnant plant communities on the Adelaide foothills. The park consists of steep, hilly country adjoining residential areas. The majority of the park is covered in native vegetation, which provides an important refuge for native flora and fauna. While a significant proportion of the park has undergone a variety of developments in the past, the native vegetation is extensive enough and sufficiently diverse to support many species of native birds and other wildlife.

A complex track network, originally constructed for mining access, has been further developed for fire management and pedestrian access. The tracks offer a wide range of walking opportunities through high quality remnant vegetation as well as modified grassy woodland communities that occur in areas previously cleared for grazing.

Climatic data for the area indicates that the park lies between the 584mm and 823mm average annual rainfall isohyets. Typical of the Mount Lofty Ranges, the summers are the warmest and driest parts of the year. The average maximum temperatures from December to February are between 26° and 29°C. The winters are cooler and wetter. The lowest average maximum of 14.6°C occurs in July.

Prior to colonial settlement, the Mount Lofty Ranges, together with the Adelaide Plains, is believed to have held the State's richest source of biodiversity (Turner, 2000). Today, it is estimated that only 10-15% of the original native vegetation remains, generally in small fragmented stands (Turner, 2000), with approximately only 4% held within DEH reserves (Long, 1999). As one of the more significant Mount Lofty Ranges remnants, the contribution of Anstey Hill Recreation Park to regional biodiversity conservation and to a comprehensive, adequate and representative reserve system cannot be overstated.

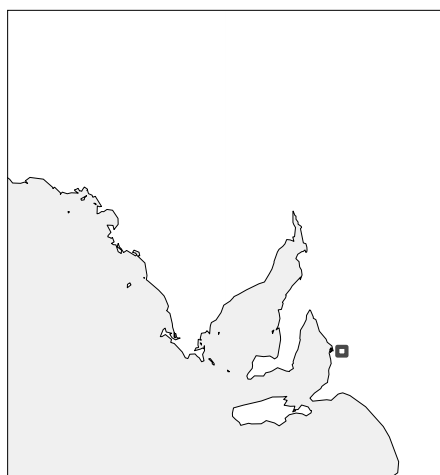
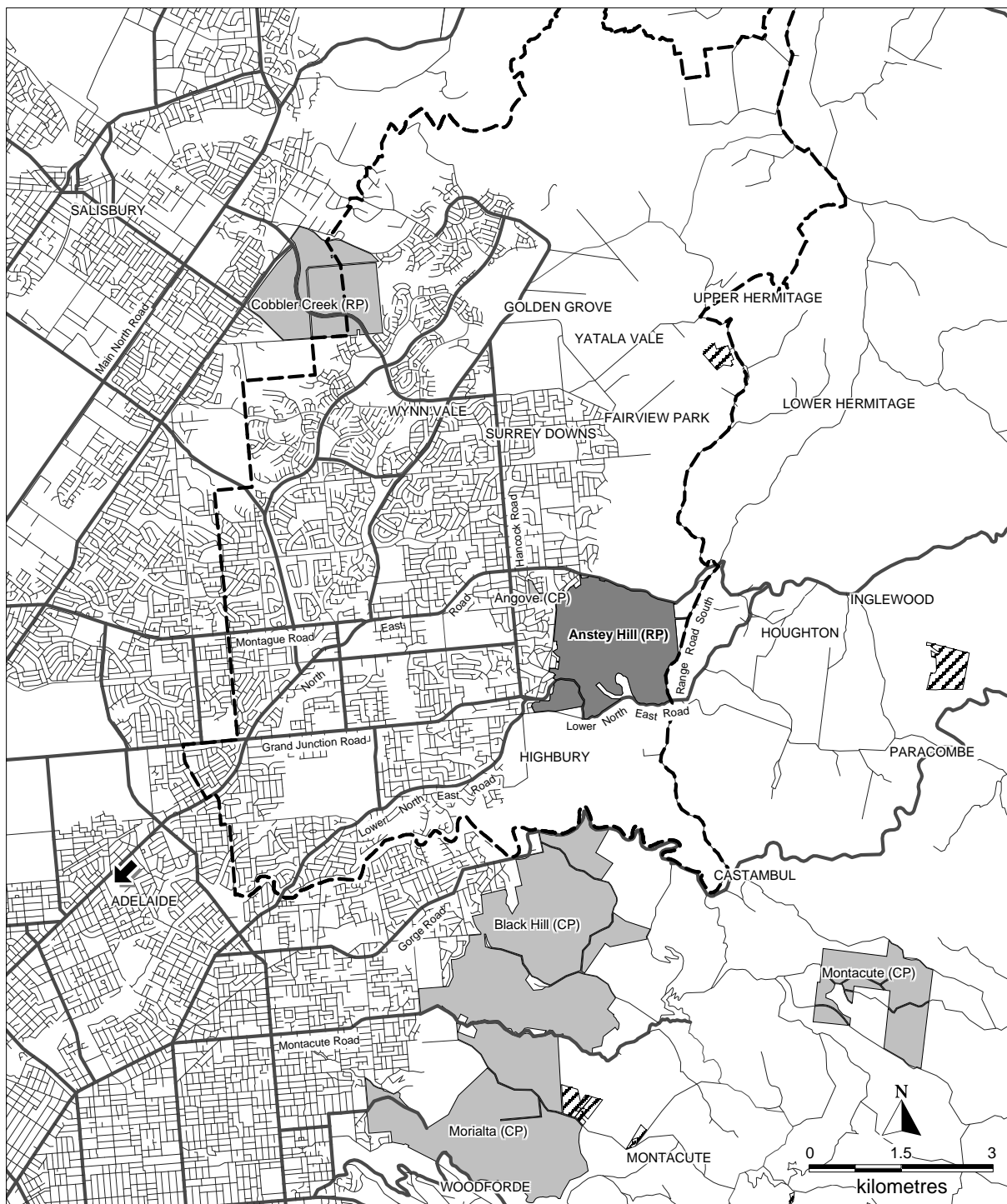
Other DEH reserves in the vicinity include Angove Conservation Park, Black Hill Conservation Park, Cobbler Creek Recreation Park, Montacute Conservation Park, and Morialta Conservation Park.

Yurrebilla – The Greater Mount Lofty Parklands

Anstey Hill Recreation Park and other National Parks and Wildlife Act reserves, along with Native Forest Reserves (*Forestry Act 1950*) and other Crown land within the Adelaide Region, are being managed in the broader context of a planning initiative known as Yurrebilla – The Greater Mount Lofty Parklands. The name was assigned in recognition of Kaurna culture and heritage. The aim of this project is to establish an integrated and cooperative management framework for approximately 40,000 hectares of land throughout the Mount Lofty Ranges that is variously managed by DEH, ForestrySA, SA Water and Planning SA. "Yurrebilla" can also include local government land and voluntarily nominated, privately owned areas.

This initiative seeks to identify common natural, heritage and recreation resources and to develop regional-level policies that will enable a consistent management approach to be adopted throughout the region.

Several Bushcare sites adjoin the park, providing important buffers to park vegetation and increasing connectivity to other areas. DEH will actively work towards effective management arrangements with the owners and managers of adjoining land.









LEGEND	
(RP)	Recreation Park
(CP)	Conservation Park
	Anstey Hill Recreation Park
	DEH Reserve
	Heritage Agreement
	City of Tea Tree Gully LGA Boundary
	Main Road
	Road

Figure 1

Anstey Hill Recreation Park

Location

Map designed and created by
Reserve Planning using PAMS
Projection: Longitude / Latitude (GDA 94)
Date: 3 August, 2006



LEGEND

- Conservation Zone
- Managed Recreation Zone A
- Managed Recreation Zone B
- Easement (indicative only)
- Fire Access Track/Walking Trail
- Road
- Walking Trail
- Existing access track which may provide cycle access
- Pipeline
- SA Water Treatment Plant

- Newman's Nursery Ruins (Heritage Site)
- Ellis Cottage & Bakehouse (Heritage Site)
- Residence/Storage (Development Site)
- Silver Mine
- Stile
- Gate
- Boot Cleaning Station
- Lookout
- Quarry

Figure 2

Anstey Hill Recreation Park

Features and Zoning

Map designed and created by Reserve Planning using PAMS
This map is indicative only.

Anstey Hill Recreation Park is located in the City of Tea Tree Gully. To enable effective cooperative management of the park, management must consider local community activities and values, increase visitor awareness of the importance of remnant habitats and coordinate management efforts with regional management programs and the City of Tea Tree Gully council. Within the Tea Tree Gully (City) Development Plan the park is included within the Hills Face Zone with the general objective of preserving, enhancing or re-establishing the natural character of the area, and accommodating low-intensity agricultural activities and public/private open space.

The park provides an important area of open space for the population of Adelaide's north-eastern suburbs. The hills form a dramatic backdrop to the city and provide panoramic views from several vantage points, as well as opportunities for recreation in a peaceful bush setting. The park bears evidence of mining from the early colonial settlement of South Australia through to more recent times. It also contains the ruins of several early colonial buildings.

The local community has strong links with the park through the Friends of Anstey Hill, the National Trust and the City of Tea Tree Gully. Several sporting bodies hold events in the park and the quarry areas are occasionally used for emergency services training (SES and CFS).

1.1 History of Management

In the *Report on the Metropolitan Area of Adelaide* (DEP, 1962), six sites including the area now encompassed in Anstey Hill Recreation Park were proposed for development as Regional Parks, together with other forms of open space for Adelaide. These Regional Parks were nominated to provide opportunities for both active and passive recreation beyond the proposed limits of the built up area, whilst preserving the natural character of the landscape, flora and fauna.

From 1966 to 1977, land acquisition took place under the State Planning Authority, which guided the development of "Reserve 13" into a Regional Park, with the help of a steering committee convened in 1980. After extensive community consultation, including the release of a Draft Concept Plan in 1981, the *Anstey Hill Regional Park Concept Report* (DEP, 1983) was published. By this time the State Planning Authority was no longer operating and control was passed to the (then) Department for Environment and Planning (DEP). DEP adopted as policy many of the management objectives proposed for Regional Parks, recognising the need to balance public recreation and enjoyment with protection of natural values and historic sites (DEP, 1987).

In the *Anstey Hill Regional Park Concept Report* (DEP, 1983), the concept of zoning was recognised as a suitable tool to address potentially conflicting uses. DEH has applied this principle since then though it is yet to be fully ratified as part of an adopted management plan.

Fire prevention and suppression issues have always held a high priority for agencies managing Anstey Hill Recreation Park. Public consultation by the State Planning Authority prior to the proclamation of Anstey Hill as a Recreation Park, led to the establishment of grazing leases at the park perimeter, outside the de facto conservation zone. Current management practice is to combine a range of methods to minimise the threat of bushfire to neighbours and park assets. Liaison with CFS, and the City of Tea Tree Gully is ongoing, through a district bushfire prevention committee and a draft fire management plan that has been written in cooperation with those agencies.

Access tracks have been defined throughout the park, and some interpretative signs have been placed near historic sites such as the nursery ruins. In collaboration with the Friends of Anstey Hill, revegetation programs have been initiated in an attempt to rehabilitate abandoned quarries and other sites of previous habitat disturbance. Input to park management from other agencies (eg PIRSA Minerals and Energy Resources) has occurred, assisting with brochure development, signage and interpretation, and the Heritage Branch of DEH has assisted with stabilisation of ruins.

The Friends of Anstey Hill have made a significant contribution to the park since the group's formation in 1988 and continue to be involved in revegetation and weed control, promoting natural regeneration of open areas. They have also contributed to the design of a brochure and a geological interpretive walking trail, secured grants for the stabilisation of ruins, undertaken a heritage plant survey and contributed to the development of the Gun Emplacement, and the Friends Lookout.

2 LEGISLATIVE FRAMEWORK

2.1 National Parks and Wildlife Act 1972

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

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

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

DEH is responsible for preparing management plans and undertaking the prescribed community consultation process for the park. A standard management planning process is mandated to ensure that all statutory obligations are met. Help and guidance with plan preparation is sought and obtained from individuals, community groups or relevant advisory committees, although the Minister ultimately decides whether to adopt a management plan.

The draft plan for Anstey Hill Recreation Park was released for public exhibition in September 2005. At the close of the comment period, 78 submissions were received; the majority of these submissions concerned the use of bicycles within the park, and presented both negative and positive points of view. Comments and concerns were considered by the Adelaide Region Consultative Committee and forwarded to the South Australian National Parks and Wildlife Council for advice before the plan was presented to the Minister for adoption.

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

Management plans often foreshadow the preparation of additional documents to achieve proposed objectives. These documents are detailed, non-statutory action-orientated statements that provide additional details on how specific strategies listed in the management plan are to be progressed. This management plan for Anstey Hill Recreation Park enables the development of a vegetation management plan, bicycle trails development plan and a fire management plan. Although these plans will not be subject to the same statutory process as formal management plans, DEH will involve the relevant stakeholders in their preparation and implementation as part of the ongoing management of the park.

2.2 Native Title Act 1993

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

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

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

3 VISION

The vision for Anstey Hill Recreation Park is a park that contributes to long term biodiversity conservation in the Hills Face Zone of the Mount Lofty Ranges, through the minimal disturbance of core conservation areas, the rehabilitation of degraded areas and the establishment of regional connectivity. As part of this vision, the park is appreciated by the community for its high conservation, recreational, historical, geological and visual amenity values and this will be demonstrated through appropriate use and participation in the management of the park.

4 ZONING

Section 39 of the *National Parks and Wildlife Act 1972* provides for the designation of zones in a reserve and constrains the use of land in those zones to the conditions specified in an adopted management plan. Zoning aims to ensure that public use and management strategies remain compatible with the protection of park values. In common with many parks located close to the metropolitan area, Anstey Hill Recreation Park has to satisfy a variety of potentially conflicting uses and values. Zones were originally identified in the Anstey Hill Regional Park Concept Report (DEP, 1983) and park management has reflected these zones in a de facto sense since dedication.

The park will be divided into five management areas (zones and sites), based upon the conservation value of the native vegetation, the value of open space for recreation, the historic value of the Newman's Nursery and bakehouse precincts, existing and potential infrastructure development and fire management. Should the necessity arise, public works may be undertaken in any zone if they are essential to meet contemporary standards of public safety, subject to ministerial approval, provided there are no viable alternatives and those works are consistent with the management intent of preserving the park's conservation integrity.

The management zones described below, and shown in Figure 2, establish a framework for the sustainable use of the park during the life of this plan.

Conservation Zone

This zone will be managed to conserve the value of native vegetation, wildlife habitat and geological monuments with minimal disturbance. Passive recreation using existing management access tracks will be permitted, whilst existing tracks and trails that are not shown on Figure 2 will not be maintained, and may be closed and rehabilitated. Cycling will not be permitted within this zone. Modifications to existing management access tracks, proposals for new tracks and associated infrastructure, or proposals for off track activities, must have regard to a vegetation management plan (see Section 5.3 Native Vegetation). Modification will only be considered if an existing track disturbs native vegetation, or a management issue demonstrates that a new track is required.

Orienteering in the northern part of this zone will be allowed providing course setters consult with DEH regarding the position of any track markers, and receive approval to undertake the activity. This activity will generally be limited to a strip of approximately 500 metres wide from the North East Road park boundary.

Managed Recreation Zone A

This zone will be managed to facilitate recreational activities whilst ensuring the maintenance of the park's conservation values. Basic facilities such as picnic tables, information shelters, interpretive signage and car parking may be provided. Amenity plantings of indigenous vegetation may be included around facilities such as car parks and picnic areas and will be managed appropriately. Cycling may be permitted on selected management tracks following the completion of a bicycle trails management plan, to provide access to Managed Recreation Zone B from the western side of the park. Strategically positioned interpretive and directive signage will be developed to inform park users of the shared use of some management tracks, and to provide information to riders regarding appropriate use and activities within the zone.

Managed Recreation Zone B

This zone will be managed to facilitate the revegetation and rehabilitation of a degraded section of the park, and to facilitate the potential development of specialised trails and facilities in this area for mountain bike riding (see Section 8.2 Cycling). New trails and facilities may be developed subject to the completion of a bicycle trails management plan. All potential trail and facility development will occur in conjunction with the revegetation and rehabilitation of the site.

Strategically positioned interpretive and directive signage will be developed to inform park users of the presence of bikes within this zone and to provide information to riders regarding appropriate use and activities within the zone.

Heritage Sites

These sites includes the Ellis Cottage and Bakehouse precinct and the ruins and exotic plantings of the Newman's Nursery, and will be managed to conserve historic values and provide visitors with appropriate access and interpretive information. Exotic plant species associated with the historic nursery will be monitored and steps taken to prevent their spread from this Heritage Site.

Development Site

This site consists of the existing house and sheds on the eastern boundary of the park. Infrastructure at this site may require maintenance and development to ensure the site is functional and safe. The Development Site will be managed to ensure that the integrity of the surrounding Conservation Zone is not compromised.

It is reasonable to expect the Conservation Zone will not only retain its integrity but increase in biodiversity conservation value, given adequate protection and active management, including control of invasive plants such as the Olive (*Olea europaea* ssp. *europaea*) and closure and rehabilitation of illegally constructed trails. Managed Recreation Zone A and Managed Recreation Zone B should also increase in diversity of vegetation as a result of adequate protection and revegetation (accepting that there may be manageable impacts from some forms of recreation), and provide effective buffering for and links to the Conservation Zone.

Objective

Zone Anstey Hill Recreation Park to ensure appropriate public use, landscape protection and the conservation of wildlife habitats and cultural features.

Strategy

- Zone the park as indicated in Figure 2 and manage the park in accordance with zoning guidelines.

5 MANAGING NATURAL HERITAGE

5.1 Geology, Soils and Landform

Anstey Hill Recreation Park is underlain by Neoproterozoic sedimentary rocks of the Burra Group, part of a very thick succession of sediments that were deposited between about 800 and 500 million years ago, in the Adelaide Geosyncline (a marine sedimentary basin extending throughout the area of the Flinders and Mount Lofty Ranges). The Burra Group unconformably overlies the older Precambrian crystalline basement (Barossa Complex) to the east of the park (eg at nearby Houghton, Inglewood and the Kangaroo Creek Reservoir). The sedimentary rocks were folded, faulted and slightly metamorphosed during the Delamerian Orogeny about 500 million years ago. This event produced a mountain range, which was gradually worn down over the next few hundred million years.

The rock types that outcrop in the park are quartzite, sandstone, siltstone, phyllite and dolomite, belonging to the following rock units, in order of age from youngest to oldest:

- Stonyfell Quartzite (Quartzite, sandstone, minor siltstone);
- Woolshed Flat Shale (Siltstone, minor sandstone and dolomite); and
- Montacute Dolomite (Blue-grey dolomite with minor magnesite conglomerate and siltstone, and ridge-forming sandstone at base).

The overall dip of the beds in the park is to the west, with the oldest sandstone forming the ridge at the eastern boundary of the park, and the Stonyfell Quartzite forming the Hills Face Zone.

Renewed uplift of the deeply eroded remnants of the Delamerian mountains began a few million years ago when Australia came under the influence of east-west compression, forming a series of prominent fault scarps east and south of Adelaide. The abrupt break in slope along the western margin of the park is a fault scarp from movement along the Eden-Burnside Fault, but the fault is entirely obscured by younger alluvial sediments. As uplift proceeded, stream erosion cut gullies into the escarpment, producing the landscape seen today.

A conspicuous small plateau known as the Gun Emplacement is located in the south western corner of the park just south of Lower North East Road. This is an erosional remnant of an iron-cemented surface developed on sand that had been previously deposited in a river system about 45 million years ago. The sand has been quarried nearby in the Highbury Sand Quarries. The SA Division of the Geological Society of Australia has designated the Gun Emplacement as a Geological Monument.

The remains of the old Tea Tree Gully silver-lead mine are situated in an iron-rich fault zone in the eastern part of the park. There are also several disused quarries within the park, including the very old quarries used for building stone in early Adelaide on the ridge at the eastern boundary, and aggregate quarries in the Montacute Dolomite and Stonyfell Quartzite along the range near the eastern boundary and elsewhere in the park. The Festival Quarry in the southernmost section of the park displays evidence of the dramatic folding and distortion caused during tectonic movement along the Eden-Burnside fault line.

Apart from the broad alluvial flats of Water Gully, topsoil throughout the park is shallow and low in organic material. The quartzite-derived soils of the Hills Face and the sides of the Gun Emplacement are highly erodible and require protection from activities that unnaturally accelerate erosion. It is difficult to maintain tracks in these areas without soil and vegetation loss, unless they are properly designed and adequately surfaced. Mountain bike riders have utilised existing tracks and more recently, made diversions to suit their preference for steep or challenging rides (see Section 8.2 Cycling). Severe erosion has occurred, especially on fragile soils that support the park's most diverse flora.

Objectives

Conserve the geological features of the park and interpret them for visitors.

Limit soil erosion within the park to natural weathering.

Strategies

- Ensure that all park management works and visitor activities have minimal impact on the geological and geomorphological features of the park, particularly the Gun Emplacement.
- Avoid soil disturbance and activities that may cause soil erosion. Rehabilitate eroded sites as required.

5.2 Hydrology

Anstey Hill Recreation Park, as part of the Mount Lofty Ranges, is divided by a number of short seasonal creeks. The longest creek commences near the north-east corner and bisects the site through the gully known as Water Gully and occasionally experiences flow during the summer months. This creek is fed by water from a spring at Newman's Nursery and water from the SA Water Treatment Plant, sourced from the River Murray.

Maintenance of natural conditions in the watercourses depends on integrated catchment management. Land use that minimises negative impacts to streams, including the re-establishment of native vegetation, should be encouraged outside the park throughout the catchment area. The park's riparian systems should be managed in accordance with the *Initial Natural Resources Management Plan for the Adelaide and Mount Lofty Ranges Natural Resources Management Region 2006-2008* (2006), and any future plans relating to the management of the watercourses within the park.

Objective

Maintain and restore the natural hydrology of the park as far as practical.

Strategies

- Liaise with the Adelaide and Mount Lofty Ranges Natural Resources Management Board, the City of Tea Tree Gully and private landowners in order to minimise upstream impacts (eg erosion, silt, poor water quality, rubbish, and inappropriate recreational use).
- Ensure compliance with Adelaide and Mount Lofty Ranges Natural Resources Management Board requirements by seeking advice and assistance from the Board and the City of Tea Tree Gully, in implementing threat abatement and stream rehabilitation works.
- Contribute to total catchment management by maintaining watercourses within the park in as natural condition as possible.

5.3 Native Vegetation

Anstey Hill Recreation Park conserves important areas of native vegetation in the Mount Lofty Ranges, including vegetation associations that are characterised by a high level of biodiversity. The park conserves a range of vegetation types typical of the western slopes of the Mount Lofty Ranges.

Approximately 411 species of plant have been observed in the park, with 107 (26%) of these species being exotic. Table 1 lists plant species in Anstey Hill Recreation Park that are considered to be vulnerable or rare at state and/or national level.

Table 1: Plants of Conservation Significance Recorded within Anstey Hill Recreation Park

Scientific Name	Common Name	Conservation Status*	
		AUS	SA
<i>Adiantum capillus-veneris</i>	Dainty Maiden-hair		V
<i>Isoetes drummondii</i> ssp. <i>drummondii</i>	Plain Quillwort		R
<i>Prasophyllum pallidum</i>	Pale Leek-orchid	V	V
<i>Pterostylis foliata</i>	Slender Greenhood		R
<i>Ptilotus erubescens</i>	Hairy-tails		R

* See Appendix for Conservation Status Codes

Vegetation associations located within Anstey Hill Recreation Park are remnants of associations once widespread in the region between the Adelaide Plains and the Mount Lofty Ranges. Much of this vegetation has been cleared for the development of residential areas. Changes to the natural ecological fire regime and in the flow of the watercourses through the park may pose a threat to the integrity of the vegetation associations, however this is poorly understood. Populations of aggressive pest plants are thought to pose the most significant threat. A model to address this threat in the parks of the Mount Lofty Ranges has been developed by DEH (Paul, 1997) and will be applied through the development and implementation of a vegetation management plan for the park.

Revegetation strategies within the vegetation management plan will be linked to species recovery plans and regional revegetation strategies, with an aim to restore and develop vegetation structures that represent pre-European vegetation communities as accurately as possible. This broad scale ecological restoration approach will include a focus on the provision of seasonally available food plants to sustain fauna populations.

Phytophthora is the generic name for a group of parasitic soil-borne root-rot fungi (most commonly *Phytophthora cinnamomi*), which affects many native plant species and was confirmed in Anstey Hill Recreation Park in July 2001. The park is traversed by various power, water and communications easements as well as park management and fire access tracks and walking trails. There is a risk of further introduction and spread of *Phytophthora* from soil adhering to vehicles, equipment and shoes of people who enter the park, including maintenance workers, contractors and sub-contractors employed to control vegetation along easements, legitimate park visitors and those who use the park illegally (eg mountain bike riders).

DEH has developed Standard Operating Procedures for *Phytophthora* Threat Management (DEH, 2002), which provide hygiene principles and procedural guidelines to prevent the introduction and spread of *Phytophthora* in reserves administered by DEH. In accordance with these guidelines, DEH will develop a *Phytophthora* Action Plan for Anstey Hill Recreation Park to prevent the further introduction and spread of *Phytophthora* within the park.

Objectives

Protect and conserve native vegetation within the park.

Prevent the further introduction or spread of soil-borne plant pathogens.

Strategies

- Develop and implement a vegetation management plan for Anstey Hill Recreation Park.
- Monitor and record plants of conservation significance and undertake programs for their conservation if necessary.
- Prevent the further introduction and spread of soil-borne plant pathogens into Anstey Hill Recreation Park by developing and implementing a *Phytophthora* Action Plan.

5.4 Native Fauna

While the impacts of human settlement and disturbance have significantly reduced the fauna of the park, what remains, particularly in the less disturbed habitat areas, forms an important conservation resource. These populations of native fauna are capable of recolonising currently degraded habitats, should those habitats be rehabilitated in the future.

Mammals

The diversity of landforms and vegetation within Anstey Hill Recreation Park provides habitat for a number of mammals. Mammals recorded include Western Grey Kangaroo (*Macropus fuliginosus*), Common Ringtail Possum (*Pseudocheirus peregrinus*), Common Brush-tailed Possum (*Trichosurus vulpecula*), Echidna (*Tachyglossus aculeatus*), and several bats, including Gould's Wattled Bat (*Chalinolobus gouldii*), Chocolate Wattled Bat (*Chalinolobus morio*), Little Forest Eptesicus (*Vespadelus vulturnus*), White Striped Freetail-bat (*Tadarida australia*), Southern Freetail-bat (*Mormopterus planiceps*) and Lesser Long-eared Bat (*Nyctophilus geoffroyi*). The Koala (*Phascolarctos cinereus*) is present within the park although it is introduced to the Adelaide Hills area.

Reptiles and Amphibians

The variety of vegetation associations and variable plant structures, from leaf litter, through to small heath-like shrubs and taller shrubs to the larger tree species, could potentially support a number of reptiles. The ephemeral watercourses located within the park could also support amphibian species. *Survey of the Reptiles of the Anstey Hill Reserve* (1977) is a good resource regarding information about the reptile species found in the park. However, there has been no recent collection of information relating to the reptile and amphibian species that may be found within Anstey Hill Recreation Park.

Birds

The avifauna of the park is typical of the Mount Lofty Ranges. Over 98 native species have been recorded within the park by the Friends of Anstey Hill, including species usually associated with the higher rainfall areas of the southern Fleurieu Peninsula.

A checklist of birds in the Tea Tree Gully district, including historic records and additions from the SA Ornithological Association, was reproduced in the *Anstey Hill Recreation Park Concept Report* (DEP, 1983).

Some migratory birds have been recorded in the park, as have a number of bird species that typically move widely within the Mount Lofty Ranges. These latter species follow the changing supply of food sources such as honey and nectar.

Anstey Hill Recreation Park, along with the nearby Angove Conservation Park, forms a secure and relatively large habitat for a range of sedentary birds. The park is also an important part of a regional habitat for birds that move throughout the Mount Lofty Ranges. The park offers specialised habitat for a small number of species that require dense and closed vegetation to survive.

Objective

Protect and conserve native fauna within the park.

Strategy

- Monitor and record fauna populations of conservation significance and undertake programs for their conservation if necessary.

5.5 Introduced Plants and Animals

Plants

Over 100 introduced plant species have been identified in Anstey Hill Recreation Park, reflecting a long history of disturbance in many areas of the park. The relatively high proportion of weeds reflects the widespread clearance of vegetation, grazing, mining and urbanisation in Anstey Hill Recreation Park and the surrounding area. Various disturbances, such as the clearance for walking and vehicle tracks, and clearance beneath power lines, has further increased the opportunity for exotic plants to become established in the park. Of the introduced plants present within the park, those requiring more intensive control are listed in Table 2.

Table 2: Introduced Plant Species of Highest Priority for Control

Scientific Name	Common Name
<i>Asparagus asparagoides</i>	Bridal Creeper
<i>Chrysanthemoides monilifera</i>	Boneseed
<i>Cynara cardunculus</i>	Artichoke Thistle
<i>Cytisus</i> spp.	Broom
<i>Erica lusitanica</i>	Spanish Heath
<i>Foeniculum vulgare</i>	Fennel
<i>Genista</i> spp.	Broom
<i>Olea europaea</i> ssp. <i>europaea</i>	Olive
<i>Pennisetum setaceum</i>	Fountain Grass
<i>Pentaschistis pallida</i>	Pussy Tail
<i>Rosa canina</i>	Dog Rose
<i>Rubus</i> spp.	Blackberry
<i>Ulex europaeus</i>	Gorse

Bridal creeper and Boneseed are recognised under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* as weeds of national significance and have the potential to significantly alter even relatively intact ecosystems. Chilean Needle Grass (*Nassella neesiana*), a nationally significant weed present in the Modbury area, should also be controlled as a matter of high priority if it is discovered in the park. It is currently the subject of regional survey and monitoring.

There are other species of alien plants throughout the park that require monitoring to ensure they do not become a greater problem in the future. These include Tree of Heaven (*Ailanthus altissima*), Gorse (*Ulex europaeus*), Cork Elm (*Ulmus suber*), Monterey Pine (*Pinus radiata*), Topped Lavender (*Lavandula stoechas*), Coolati Grass (*Hyparrhenia hirta*), Rhus Tree (*Toxicodendron succedaneum*) and native species that are non-indigenous to the Adelaide Hills, such as Golden Wreath Wattle (*Acacia saligna*).

In some cases it may be worthwhile reversing traditional priorities and attempting eradication of species in the latter group to minimise the risk of it becoming a problem, as time devoted to extensive monitoring may be better spent on immediate eradication. The recent escape of the popular garden plant Fountain Grass (*Pennisetum setaceum*), along Lower North East Road and into the park, is a good example. Effective monitoring and early attention to control of this species may have prevented it from becoming a significant pest plant in the grassy areas.

Although management of introduced plants has traditionally been focussed on environmental weeds, there is also an obligation under the *Natural Resources Management Act 2004* to control species proclaimed under that Act. Most of the environmental weeds listed are also proclaimed pest species. Proclaimed plants which are less significant from an environmental perspective, but which DEH is obliged to control, include Horehound (*Marrubium vulgare*) and Salvation Jane (*Echium plantagineum*). Control options for these species include biological control and reduction through competition from regenerating native vegetation.

Weed species of greatest concern (either proclaimed pest species or those capable of invading native vegetation) are commonly found in highly disturbed and cleared areas or in close proximity to housing, roads and tracks.

Introduced plant species are a threat to native vegetation within Anstey Hill Recreation Park as they may out-compete native plants. This in turn changes the composition of the vegetation associations, impacting upon the native animals that rely on these associations for habitat.

Management prescriptions will differ between zones, recognising the heritage significance of historic plantings.

As noted in Section 5.3 Native Vegetation, a vegetation management plan will be developed for the park that aims to maintain or enhance native vegetation, control pest plants on a regional basis, incorporate park conservation and rehabilitation programs and consider the recommendations of the plant heritage survey (Randell, 1998).

Animals

At present, little systematically collected data is available on the presence and impact of introduced animal species in Anstey Hill Recreation Park. However, the Fox (*Vulpes vulpes*), Cat (*Felis catus*), European Rabbit (*Oryctolagus cuniculus*), Black Rat (*Rattus rattus*), House Mouse (*Mus musculus*), European Hare (*Lepus capensis*), and regionally common exotic bird species, including Blackbird (*Turdus merula*), Starling (*Sturnus vulgaris*), European Goldfinch (*Carduelis carduelis*), House Sparrow (*Passer domesticus*), Spotted Turtle Dove (*Streptopelia chinensis*) and Rock Dove (*Columba livia*) are known to inhabit the park.

Introduced bees and European wasps are found within the park, and use hollows that are valuable habitat for birds and mammals. European Wasps in particular present a threat to park visitors and the surrounding community. Where practicable these invertebrate pest species should be controlled.

DEH has an obligation to control proclaimed pest animals. Fox and cat populations are a threat to populations of native animals as they prey upon birds, small mammals and reptiles. Methods available to control pest animals (eg poison baits or trapping) are constrained by the proximity of neighbours and their pets, and the popularity of the park as a venue for exercising dogs.

The effective control of foxes and other large vertebrate species requires coordination across the region and community with clear priorities to be ascertained before the commitment of resources.

Objectives

Control and eradicate, if possible, introduced plants within the park.

Control introduced animals within the park.

Strategies

- Develop and implement introduced plant control programs in coordination with regional programs and the proposed vegetation management plan for Anstey Hill Recreation Park. Evaluate the effectiveness of introduced plant control and regularly review programs.
- Conserve introduced plants of heritage significance with the Newman's Nursery Heritage Site, and control those introduced plants that threaten the integrity of the site and those that escape from the site.
- Develop and implement introduced animal control programs in coordination with regional and community priorities and objectives. Evaluate the effectiveness of introduced animal control prior to implementation and regularly review programs once implemented.

6 MANAGING FIRE

The pre-European fire regime of Anstey Hill Recreation Park is not well known. The recent fire history of the park indicates that serious fires have occurred frequently. Although many of the fire reports show the fire ignition source as unknown, it is suspected that the majority of fires are deliberately lit. Most fires start near park boundaries and are contained within the park.

DEH undertakes seasonal fire management activities to minimise the fire risk and hazards in order to protect life and property as well as the park's natural and cultural assets. These include track maintenance, fuel reduction by slashing and controlled burning. Fire training, provision of infrastructure to assist suppression and regular liaison with CFS Groups and District Fire Prevention Committees all assist with the prevention and suppression of bushfires within the park.

Historically, approximately 100 hectares of grassy areas were grazed by sheep to reduce fuel near park boundaries. This practice has been discontinued to allow some areas to regenerate, and strategically located zones are treated to reduce accumulated fuels. Treatment includes slashing, manual treatment and burning in certain priority areas. As the park is bounded in some areas by residential development and limited opportunity exists for fauna refuge or migration outside the park, all bushfires will be extinguished as soon as possible.

A Fire Management Plan will be prepared for the park, in consultation with adjoining Country Fire Service Groups and the District Bushfire Prevention Committee, to integrate district fire management. Stakeholders and the wider community will also be consulted to ensure an understanding of the fire risks and mitigating actions being proposed or undertaken in the park.

Fire management planning will:

- identify natural and cultural heritage values and built assets;
- provide a framework for the management of wildfire suppression, including identification of strategic access and control lines;
- provide a framework for prescribed burning for ecological management and fuel reduction purposes; and
- identify performance indicators.

Objective

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

Strategies

- Develop, implement and review fire management plans in association with CFS and other stakeholders.
- Continue to work with the relevant District Bushfire Prevention Committee and CFS to minimise risk to life and property within and surrounding the park.
- Seek to extinguish all unplanned fires as soon as possible.
- Maintain a network of fire management access tracks within the park.

7 MANAGING CULTURAL HERITAGE

7.1 Indigenous Heritage

Kaurna Culture and Heritage

Anstey Hill Recreation Park is within the traditional land of the Kaurna people who occupied the Adelaide Plains (Tindale, 1974). The Kaurna people, lived a less nomadic life than most desert-dwelling Aboriginal people and according to Tindale (1974) seasonally travelled between the sea in summer and inland areas in winter. The landscape provided abundant resources and their technology, skillfully used, was able to supply them with food and shelter without the need to move regularly.

Possibly the most significant impact of Kaurna occupation resulted from their use of fire, which was used to encourage regrowth, as a hunting aid to flush out game and to facilitate easier movement through the scrub. Descriptions by settlers such as Angas (1847) note blackened tree trunks and huge summer fires, although the frequency, intensity and timing of Aboriginal fire management remains unknown.

Following colonial settlement in 1836, the population of the Kaurna people was substantially reduced as a result of disease, dispersal, occupation of land and water supplies and sometimes through violent conflict. Records of Aboriginal occupation of the lands now forming the environs of Adelaide are poor. Today, Kaurna people still practise their culture and language.

At present, there is no Kaurna cultural information interpreted within Anstey Hill Recreation Park, and the full extent of Aboriginal heritage within the park is largely unknown to DEH.

Aboriginal Heritage Act 1988

The purpose of the *Aboriginal Heritage Act 1988* is the protection and preservation of Aboriginal sites, objects and remains. "Aboriginal site" and "Aboriginal object" are defined under the Act as "an area of land or an object that is of significance according to Aboriginal tradition; or that is of significance to Aboriginal archaeology, anthropology or history." The Aboriginal Affairs and Reconciliation Division (AARD) of the Department of Premier and Cabinet maintains a Central Archive, including the Register of Aboriginal Sites and Objects.

Although there are no sites listed on the Central Archive for Anstey Hill Recreation Park, a comprehensive survey of the park is yet to be undertaken. In carrying out the activities and strategies proposed in this plan, DEH will ensure that it complies with the *Aboriginal Heritage Act 1988*.

To ensure the protection of cultural heritage sites, DEH staff will consult with AARD and the relevant regional Aboriginal heritage committees before commencement of any development works.

Objective

Ensure that any Aboriginal sites, objects and remains are protected and preserved.

Strategies

- Consult with the relevant regional Aboriginal heritage committees and relevant Government Aboriginal heritage authorities in decisions regarding the management of Aboriginal heritage.
- Identify and protect any Aboriginal sites, objects and remains in cooperation with the relevant regional Aboriginal heritage committees, AARD and other relevant authorities.
- In consultation with the relevant regional Aboriginal heritage committees, submit cultural sites and stories that relate to the park for inclusion on the AARD Central Archive.

7.2 Non-Indigenous Heritage

Anstey Hill Recreation Park was named after George Alexander Anstey (1814-1895), who resided at nearby Highercombe in the 1840s. Examples of non-indigenous heritage remain throughout the park, including the following.

Newman's Nursery

In the late nineteenth century, one of the leading commercial nurseries in South Australia was C F Newman's "Model Nursery" at Water Gully, Anstey Hill. It was established in 1875, although its development had begun in the late 1850s (Swinbourne, 1981). By the 1880s the nursery fostered 90 acres of fruit trees, 300 varieties of orchids, 600 varieties of roses and many other plants.

Floods and subsequent abandonment in the early 1900s led to the decay of the nursery buildings and planting beds. The ruins are in varying states of deterioration although some stabilisation has been undertaken. Some of the original plants still survive and a survey has been undertaken to determine their heritage value.

Newman's Nursery Ruin is listed in the State Heritage Register. The *Development Act 1993* provides the legislative control for future activities that "effect the context of the place".

Ellis Cottage and Bakehouse

Ellis cottage and the bakehouse are two of the earliest buildings of the original Tea Tree Gully township (Figure 2). They were constructed in the 1850s, principally of local stone. Both buildings incorporated some brickwork, whilst the cottage had plastered interior walls and a timber floor.

Since their construction, both buildings have suffered to some degree from poor drainage, neglect and vandalism. The bakehouse has been modified at various times, although the original design of the cottage structure appears to have undergone little change, and the original shingle roof has been retained. Some restoration work has also been undertaken on Ellis Cottage. The Friends of Anstey Hill obtained Australian Government funding in 1999 to stabilise these buildings and work was completed in 2000 under the direction of the Heritage Branch of DEH.

Tea Tree Gully Iron Mine (Silver Mine)

Mining activity began in 1853 when the Tea Tree Gully Iron Mine commenced operations to extract iron ore for flux to be used in the smelting of copper ore in Port Adelaide. Only small amounts of iron ore were found until closure of the mine in 1862. In 1888, the Tea Tree Gully Silver Mining Company was formed to rework the mine for silver. A 29-metre adit was constructed into the former open cut, followed by the sinking of a 45 metre vertical shaft. Although traces of copper, gold and silver had been observed in the ironstone and quartz veins, the mine only produced several hundred tons of iron ore for flux. It closed in 1889. Recent works at the site includes fencing and interpretation to reduce the public risk associated with the quarry.

Quarries

Stonyfell quartzite and blue siliceous dolomite was extracted from several quarries in Anstey Hill for road building materials. Although the dolomite quarry near Newman's Ruins was used predominantly for road material, it was also used to provide some material for the building of the nursery. The largest quarry, the Tea Tree Gully Quarry, was closed in 1982. The Festival Quarry, named after a successful performance held there during the Adelaide Festival of Arts in 1988, is close to a fault line and displays dramatic folding and distortion from tectonic movements. Additionally, other quarries of lesser importance remain throughout the park.

Objective

Ensure significant non-indigenous heritage sites are protected and conserved.

Strategies

- Identify, record, protect, and monitor known sites or relocated objects, and items of archaeological, anthropological, cultural and historical significance located in the park, in cooperation with the Heritage Branch of DEH, City of Tea Tree Gully and other relevant authorities and organisations.
- Protect and conserve heritage sites at Newman's Nursery and Ellis Cottage and Bakehouse in consultation and cooperation with the Heritage Branch of DEH and City of Tea Tree Gully.

8 MANAGING TOURISM AND RECREATION

8.1 Visitor Use and Access

The range and location of acceptable recreational activities within Anstey Hill Recreation Park are primarily defined by the steepness of terrain, soil characteristics and access limitations. The park is well used by neighbourhood residents for pedestrian access throughout the year. The park is currently used for low-key unstructured active and passive recreation, the main user groups comprising:

- local residents of the north-eastern suburbs, entering at all points around the park to bushwalk, observe nature or exercise their dogs;
- local children for unstructured play; and
- special interest groups, including walking groups, schools, revegetation groups, orienteering groups and SES and CFS for training purposes.

In accordance with a notice from the Director of National Parks and Wildlife, the exercising of dogs on-lead is permitted in Anstey Hill Recreation Park under the *National Parks and Wildlife (National Parks) Regulations 2001*.

Illegal, use of the park, including damage to park property, unauthorised vehicle entry, mountain bike riding, rubbish dumping and littering, occurs. Management strategies, based on available resources, will be implemented to address these matters.

The main visitor facilities include tracks, lookouts and basic signage. In addition to scenic views and bushwalking opportunities, visitors also enjoy other aspects of the natural environment. The park is an important educational resource used by local schools. No provision is made for camping within the park and horse riding is not permitted. It should also be noted that there are already adequate conventional sporting facilities such as ovals and tennis courts in areas surrounding the park. However, it is recognised that the development of facilities for suitable recreation activities within the park is required. The type and extent of any development will depend on:

- how well it accommodates or enhances biodiversity conservation;
- how the activity complements existing regional facilities;
- the ability of the activity to be independently self-sustaining in terms of ongoing management and maintenance; and
- how urgently development is required.

Whilst the protection and enhancement of the park's environmental values is a major priority, it is also important that the park continues to provide for a range of formal and informal recreation activities. Although the very nature of these recreation activities means that they may, to varying degrees impact on the environmental values of the park, careful management will minimise impacts.

Vehicle access into the park is provided for DEH management purposes only. Some informal parking is available at gates along the roads bordering each side of the park. At times, these areas are unable to accommodate the numbers of visitors. Additionally, entry to and exit from these informal car parks is dangerous due to topography and traffic visibility. Some park entrances are concealed or lack pedestrian access points and information, which may present difficulties for some park visitors.

The park requires an upgrading of vehicle and pedestrian access. While topography limits opportunities to upgrade entrances along North East Road and Lower North East Road, there are opportunities for improving access on the Eastern and Western boundaries. The network of access tracks in Anstey Hill Recreation Park was originally developed for mining and fire management purposes, and has been maintained to provide dual purpose walking and management access tracks. Tracks and park entrances are identified with a combination of routed wood and aluminium signs.

A variety of walking options exist, from challenging steep hikes to more gentle walks, providing the opportunity to observe the natural environment and biodiversity. There is scope for rationalisation and improvement of some tracks to address issues of safety and sustainability. It is necessary to reduce the number of informal, unplanned trails in order to control erosion, habitat fragmentation, the spread of *Phytophthora* and the trampling of vegetation.

Objective

Provide sustainable public access and visitor facilities in the park.

Strategies

- Monitor visitor use of the park and provide facilities to ensure the protection of the natural values of the park.
- Establish a track and trail rationalisation/maintenance program to provide clearly defined, sustainable routes for public use, management and emergency purposes.
- Develop and maintain safe, sustainable and signposted access points to the park and car parking areas where possible.
- Allow dogs on-lead in Anstey Hill Recreation Park under the *National Parks and Wildlife (National Parks) Regulations 2001*.

8.2 Cycling

With the rise in popularity of mountain bikes, there is an increasing demand for cycling areas in public open space and natural areas, particularly those areas close to population centres. Mountain bike riding has not been permitted within Anstey Hill Recreation Park. However, cycling on fire tracks, walking tracks and illegally constructed tracks in areas of high biodiversity value occurs on a regular basis. The appeal of Anstey Hill Recreation Park to mountain bikers is primarily due to:

- the lack of legal mountain bike opportunities in the region;
- the park's close proximity to residential areas;
- the extensive network of existing tracks; and
- the park's topography.

There are two main forms of mountain bike riding, cross-country and downhill, both of which are currently undertaken illegally in Anstey Hill Recreation Park. Cycling on existing tracks can compromise user safety whilst the development of illegal trails has caused identifiable erosion and vegetation loss in areas of the park with high biodiversity values, and has the potential to transport *Phytophthora* from where it has been identified down-slope to other areas of the park.

DEH has previously focused on prosecuting those caught undertaking illegal mountain bike riding within the park, and utilising the presence of staff as a deterrent. Although some control is possible via staff patrols, comprehensive enforcement of the current regulations throughout the whole park is unlikely given current staffing resources.

In developing this management plan, a number of options have been considered to address the future management of mountain bike riding in Anstey Hill Recreation Park. It is proposed to permit cycling in a designated zone on purpose-built tracks and on certain management tracks. This approach is most likely to satisfy both biodiversity and recreation objectives, whilst reducing the incidence of illegal mountain bike riding within the park. The State Mountain Bike Plan for South Australia 2001-2005 (Office for Recreation and Sport, and Bicycle SA, 2001) endorses this approach in Action 1.F "Assess and determine areas within parks (managed under the *National Parks and Wildlife Act 1972*) that are appropriate for mountain biking to contribute to an integrated trail network."

Managed Recreation Zone B in the south of the park has been identified as suitable for this purpose (Figure 2). The area is highly modified, was previously cleared, and the vegetation is now comprised mainly of introduced species. The topography and soil in this area are suitable for the development of several tracks of varying steepness and difficulty for both downhill riding and cross-country riding, whilst avoiding excessive erosion. Tracks would be built according to current best practice to ensure sustainability and safety (International Mountain Bike Association – IMBA Standards), and signage will be provided to direct riders and other park users. This area also has the potential to be revegetated to improve the site's natural values. Bike tracks will provide access for vegetation and weed management activities.

Access could be obtained via gates 11 and 12 along Lower North East Road, and via the established management track in Managed Recreation Zone A, running from the Ellis Cottage and Bakehouse along the western boundary of the park. This track is considered to be suitable for safe usage by both bike riders and park users on foot, although appropriate signage will be installed to ensure that all users are aware of the multiple use of this track.

Potential exists to upgrade car parking facilities in suitable areas, such as Gates 11 and 12 to cater for the expected increase in use of this area. As the area is directly adjacent to land owned and managed by United Water, DEH will liaise with United Water to develop adequate fencing arrangements (see Section 12.1 Public Utilities).

In the event of cycling being permitted in the park, a partnership agreement will be developed between the involved mountain bike organisations and DEH. This will detail the level of input into track maintenance and environmental rehabilitation expected of the mountain bike community, and options for DEH action should such external input into the facility not be sustained. It is envisaged that with the development of a high standard facility, the site may be used for organised competitions. This presents an opportunity for a portion of competition entry fees to be directed back into the site to contribute to maintenance costs. Additional funding sources will be investigated, to ensure that bicycle trails development and management costs do not affect the management of the conservation values of the park, and other parks in the region.

Mountain bike riding is a widely recognised and appreciated recreational pursuit, and as a Recreation Park, Anstey Hill is well positioned to provide facilities for such use. It is recognised that the development of tracks within the park will require initial expenditure and ongoing maintenance. However, as the majority of mountain bike riding currently occurs in areas of high biodiversity value, the diversion of these activities to an area of lower biodiversity value is seen as a positive outcome. The creation of distinct zones in this area of the park will also benefit other park users, as riding will be restricted to an area that is not usually utilised by walkers. Signage will also provide guidelines for the use of these zones.

Additionally, the development of facilities for mountain bike riding will enable DEH to develop constructive relationships with the mountain bike riding community, who will be required to contribute to track maintenance and revegetation activities in what is currently a degraded and highly modified area. With the development of such a relationship between bike riders and DEH, it is envisaged that, through peer pressure, the riding community will itself discourage illegal use of the rest of the park, and further develop a culture of respect towards the biodiversity values of the park.

A bicycle trails management plan will be developed for Anstey Hill Recreation Park. This will provide details on topics including track placement and alignment, safety, revegetation strategies, provision of upgraded car parking facilities and signage. The bicycle trails management plan will be guided by the provisions of the vegetation management plan and Section 4 Zoning, to ensure that strategies are developed with regard to the biodiversity values of the entire park and the threats to biodiversity, such as *Phytophthora*. This plan will be developed in consultation with the cycling community and other relevant stakeholders. Bicycle trails will not be developed until the completion of the bicycle trails management plan.

Objective

Without compromising park values or visitor safety, accommodate legitimate, sustainable cycling opportunities in the park within an agreed code of conduct and management framework.

Strategies

- Close and rehabilitate informal tracks used by downhill and cross-country mountain bike riders.
- In consultation with relevant stakeholders, develop and implement a bicycle trails management plan for Anstey Hill Recreation Park.
- Review the access of mountain bikes and the implementation of the bicycle trails management plan within three years of the start of the bicycle trails plan, to ensure mountain bike riding does not have unacceptable impacts on the conservation values and public access and enjoyment of the park.
- Develop a partnership agreement between DEH and cycling organisations.
- Develop and implement a code of practice for bicycle riders that addresses visitor safety and environmental protection, in consultation with relevant cycling organisations and riders.
- Continue to enforce the prohibition of bicycle riding in areas of the park that are not designated to allow for this use, according to Section 4 Zoning, and the bicycle trails management plan when developed.

8.3 Commercial Tourism

At present no commercial tour operators are licensed to conduct tours in Anstey Hill Recreation Park. If private tour operators were to undertake commercial activities within Anstey Hill Recreation Park they would be required to hold a Commercial Licence, pursuant to regulation 37 of the *National Parks and Wildlife (National Parks) Regulations 2001*. Licence fees are paid into the General Reserves Trust and are used to improve visitor services and facilities within reserves.

The park's cultural and natural resources provide some tourism potential for day visits, particularly if links are developed with regional facilities and points of interest. Some examples include the adjacent National Trust Museum, Old Tea Tree Gully township precinct (which is currently the subject of considerable local Council planning and investment), Angove Conservation Park, the current Newman's Nursery and the nearby Angove Winery. Tour Operators and their employees will be required to follow specific guidelines to reduce the risk of the transmission of *Phytophthora*.

Objective

Accommodate appropriate use of the park by commercial tourism operators.

Strategies

- Provide information to the public and tour operators that addresses the features of the park, objectives of management for the park and public risk issues.
- Provide for the issue of licenses to tourism operators for approved activities in the park and monitor use.

8.4 Information and Interpretation

Interpretive information available to visitors in Anstey Hill Recreation Park is currently limited to signage relating the geological and vegetation features located along the Geological Trail, signage relating the history of Ellis cottage and bakehouse located at the Gate 1 entrance and a park brochure developed with extensive community involvement. The location of Anstey Hill Recreation Park behind the northern suburbs in the Adelaide foothills makes this park a valuable education tool and further interpretive opportunities should be explored. This may include further interpretation of the heritage values of the park, including Newman's Nursery, the park's mining history, as well as the environmental and conservation values of the park, including vegetation, geology, cultural heritage and the role of the Friends of Anstey Hill.

Objective

Provide adequate interpretation within the park to enhance visitor experiences and safety.

Strategies

- Ensure that tracks and trails have adequate directional and safety signage and information.
- Provide appropriate interpretive information for cultural heritage sites within the park and where possible Indigenous cultural heritage sites within the park, including Newman's Nursery and the Tea Tree Gully Silver Mine, in consultation with relevant authorities.
- Provide appropriate interpretive information to highlight the natural values of the park.

9 MANAGEMENT INFRASTRUCTURE

The infrastructure and built assets of Anstey Hill Recreation Park include fencing, management tracks, walking trails, signs and other interpretive material and a permanent residence.

The most obvious infrastructure in the park is the extensive track network. The tracks in the north and south of the park are a legacy of former mining activity, while ridge top tracks through the central area were made in an attempt to improve fire management. The tracks have been maintained to allow for management and emergency access, and pedestrian access on foot. A review of tracks, in association with the development of a fire management plan for the park, may result in selective closure and rehabilitation.

Apart from the tracks, little infrastructure remains from previous mining activity. Two disused water tanks remain and concrete slabs mark the location of crushing plants.

A residence and associated sheds (also known as the development site) are located on the eastern edge of the park (Figure 2). A management strategy for the house is provided in Section 10.2 Leases and Licences. One of the sheds is useful for storing equipment and machinery used in park programs. Currently, the Friends of Anstey Hill use the shed to store equipment and materials they utilise in volunteer projects. In future, this limited storage space may need to be used cooperatively to cater for the storage requirements of other park programs.

Fencing includes a perimeter fence and a network that was historically erected for grazing. Fencing will be rationalised and any not of practical value will be progressively removed.

Ruins at the Newman's nursery site and Ellis Cottage and Bakehouse (adjacent to the old Tea Tree Gully township) have been stabilised with the assistance of a grant obtained by the Friends of Anstey Hill.

Any development requiring the clearance of native vegetation within Anstey Hill Recreation Park will comply with a standard operating procedure approved by the Native Vegetation Council. In other cases DEH will be required to submit an application to the Native Vegetation Council should any native vegetation clearance be proposed as part of a development.

Objective

Maintain essential infrastructure for effective management at a functional level.

Strategies

- Develop and implement a priority program for facility and infrastructure maintenance and replacement.
- Manage storage in the shed near the house on the eastern boundary to facilitate park programs.
- Retain the park house and associated infrastructure as part of the Development Site.

10 MANAGING RESOURCE USE

10.1 Exploration and Mining

The main portion of Anstey Hill Recreation Park (covering 306.5 ha) was proclaimed in 1989 to allow for the continuation of existing rights of entry, prospecting and exploration for mining purposes. The proclamation details for this area place significant restrictions on mining activities. Within this portion of the park, a mining tenement holder may only operate on land that has previously been quarried, and may only prospect for, or mine, stone required for the restoration of a building or other structure.

The most recent addition to the park (allotment 200, DP 30929, covering 55.5ha) was proclaimed in 2001 with no provisions for mining.

The last active mining operation within the park area was Tea Tree Gully Quarry at the north end of the park, which closed in 1982.

Further mineral exploration and mining is unlikely to occur within Anstey Hill Recreation Park due to its location in the Hills Face Zone, and the conditions placed on mining as part of the proclamation of the park under the *National Parks and Wildlife Act 1972*.

Objective

Ensure that any mining operations within the park occur only on land that has previously been quarried, and that operators prospect or mine only for stone required for the restoration of a building or other structure.

Strategy

- Liaise with PIRSA and operators to ensure that any mining activities within the park are consistent with proclamation conditions and the objectives of this management plan.

10.2 Leases and Licences

There are currently no commercial leases or licenses affecting management of Anstey Hill Recreation Park, although contract grazing for fuel reduction has occurred in parts of the park in the past.

The house on the eastern edge of the park is occupied under a leasing arrangement between DEH and the tenants. DEH will develop suitable arrangements in liaison with tenants regarding maintenance and issues of mutual interest.

Objective

Ensure that leasing arrangements are consistent with DEH management objectives for the park.

Strategy

- Develop and implement suitable leasing arrangements to ensure that the requirements of tenants are met and the natural and cultural values of the park are not compromised.

11 INVOLVING THE COMMUNITY

An active group of volunteers, the Friends of Anstey Hill, meet regularly and contribute to revegetation, weed eradication and control, and promotion of the park's cultural and environmental heritage. Their activities complement management by DEH staff and contractors. The City of Tea Tree Gully also has an interest in park management. Representatives of these bodies have contributed to the development of this plan.

DEH encourages and relies significantly upon voluntary community support to assist with the care and maintenance of parks throughout the State. Anstey Hill Recreation Park has greatly benefited from its long term and close association with the Friends of Anstey Hill. The Friends group has made a major contribution to natural resource and visitor management projects, demonstrating the importance of the park to the local community. Local schools, clubs and individuals have also been involved in various aspects of park maintenance and development issues.

The involvement of volunteers requires liaison, coordination and sometimes the provision of materials, equipment and supervision by park staff. Volunteer programs should be integrated with park management projects to achieve the objectives of this plan. The development of a "Trails Care Group" including both members of mountain bike organisations, and community members who are not affiliated with these organisations, is seen as an important step in ensuring broad community support and ownership should cycling trails be developed in Recreation Zone B.

DEH maintains regular contact with the City of Tea Tree Gully, the Adelaide and Mount Lofty Ranges Natural Resources Management Board, the SES, the local CFS Brigade and Group and the District Bushfire Prevention Committee regarding park management and maintenance issues.

Objective

Promote and maintain community support and assistance with projects aimed at implementing this plan.

Strategies

- Develop and maintain partnerships with organisations and statutory bodies that can assist with the management of the park.
- Regularly liaise with Friends and volunteer groups to provide guidance, support, resources and information consistent with park management objectives.
- Encourage and support the involvement of the local community, through the Friends of Anstey Hill, volunteer organisations and individuals in park management programs that complement the activities of park staff and contractors.
- Provide an efficient and integrated planning, approval, support and liaison service to volunteers that is consistent with park management objectives.

12 MANAGING RESERVE TENURE

12.1 Public Utilities

DEH policy discourages the location of utilities on reserves, unless proponents can demonstrate that alternative locations have received full consideration, and the utility will not compromise the conservation or recreation values of the park.

Protection of park values is a priority, and parks should not be considered to be a convenient option for the location of public utilities due to their status as public land. Although a variety of inexpensive public utilities (as described below) are already located within Anstey Hill Recreation Park, any future proposal for public utilities within the park will be subject to an environmental assessment, and must be consistent with DEH policy and the provisions of this management plan.

Telstra

There is an existing Telstra fibre optic cable in Water Gully, which may be accessed by Telstra or its contractors for maintenance purposes. Additionally, there is a communications tower near the south-western corner of the park adjacent to the Lower North East Road that is serviced by optic and power cables that run through a portion of the park.

Hygiene issues should be considered with regard to transmission of plant pathogens by service crews or vehicles moving between sites. Service providers must follow the guidelines in Section 5.3 Native Vegetation relating to the reduction of transmission of plant pathogens.

Water Utilities

United Water manages a major water supply pipeline, which runs through Anstey Hill Recreation Park, and a storage and water treatment plant on land owned by SA Water and almost completely surrounded by the southern boundary of park (Figure 2). A smaller pipeline has been constructed to connect the fenced and enclosed water treatment plant with a tank outside the park on Range Road South. In addition there are several easements required to service the plant and major pipeline (Figure 2).

SA Water staff have right of access to the park to maintain and service infrastructure installed prior to 1990. Access to service the new Paracombe/Houghton pipeline requires DEH approval.

Hygiene issues should be considered with regard to transmission of plant pathogens and pest plants by service crew and vehicles moving between sites. Other impacts on the park have been caused by high water flows from the plant and its associated storage tanks. In some cases, high water flows have resulted in increased silt levels within the creek, and erosion of creek banks and the Water Gully track.

Former United Water land between Lower North East Road and Water Gully (Lot 200, DP 30929 Hundred of Yatala) was transferred to the Minister for Environment and Conservation in 2001 with the intention to dedicate it as part of the park. The land has since been dedicated as part of the park and is managed by DEH.

Power Utility Companies

Three AGL transmission lines (formerly owned by the Electricity Trust of South Australia) traverse the park. AGL staff and contractors have rights of access to the park to maintain and service infrastructure. Recent changes in specifications for clearance around transmission lines have resulted in increased visual and environmental impact. Unnecessary disturbance of soil should be avoided and service crew and vehicles moving between sites should consider hygiene issues with regard to transmission of plant pathogens.

Objectives

Minimise impact on park values by utility companies undertaking maintenance of infrastructure.

Ensure that all future proposals for utility infrastructure developments within the park are consistent with park values.

Strategies

- Request an environmental assessment for all proposals to locate public utilities within or over the park, and ensure that all proposals are consistent with current DEH policy and the provisions of this management plan.
- Liaise with utility companies to ensure DEH is informed of scheduled or emergency maintenance and to ensure that the natural and recreational values of the park are maintained.
- Reduce the risk of transmission of plant pathogens and pest plants by maintenance crews by ensuring that service vehicles and employees follow the provisions of the DEH Standard Operating Procedure for *Phytophthora* Threat Management.
- In liaison with United Water, minimise the impact of high flows from the water treatment plant and tanks.
- Liaise with United Water to develop a flushing regime or an engineering solution to erosion and siltation problems in Water Gully.
- In liaison with United Water, develop appropriate arrangements to prevent unauthorised entry to United Water property from within the park.

SUMMARY OF MANAGEMENT STRATEGIES

STRATEGY
MANAGING NATURAL HERITAGE
<p>Geology, Soils and Landform</p> <ul style="list-style-type: none"> • Ensure that all park management works and visitor activities have minimal impact on the geological and geomorphological features of the park, particularly the Gun Emplacement. • Avoid soil disturbance and activities that may cause soil erosion. Rehabilitate eroded sites as required.
<p>Hydrology</p> <ul style="list-style-type: none"> • Liaise with the Adelaide and Mount Lofty Ranges Natural Resources Management Board, the City of Tea Tree Gully and private landowners in order to minimise upstream impacts (eg erosion, silt, poor water quality, rubbish, and inappropriate recreational use). • Ensure compliance with Adelaide and Mount Lofty Ranges Natural Resources Management Board requirements by seeking advice and assistance from the Board and the City of Tea Tree Gully, in implementing threat abatement and stream rehabilitation works. • Contribute to total catchment management by maintaining watercourses within the park in as natural condition as possible.
<p>Native Vegetation</p> <ul style="list-style-type: none"> • Develop and implement a vegetation management plan for Anstey Hill Recreation Park. • Monitor and record plants of conservation significance and undertake programs for their conservation if necessary. • Prevent the further introduction and spread of soil-borne plant pathogens into Anstey Hill Recreation Park by developing and implementing a <i>Phytophthora</i> Action Plan.
<p>Native Fauna</p> <ul style="list-style-type: none"> • Monitor and record fauna populations of conservation significance and undertake programs for their conservation if necessary.
<p>Introduced Plants and Animals</p> <ul style="list-style-type: none"> • Develop and implement introduced plant control programs in coordination with regional programs and the proposed vegetation management plan for Anstey Hill Recreation Park. Evaluate the effectiveness of introduced plant control and regularly review programs. • Conserve introduced plants of heritage significance with the Newman's Nursery Heritage Site, and control those introduced plants that threaten the integrity of the site and those that escape from the site. • Develop and implement introduced animal control programs in coordination with regional and community priorities and objectives. Evaluate the effectiveness of introduced animal control prior to implementation and regularly review programs once implemented.
MANAGING FIRE
<ul style="list-style-type: none"> • Develop, implement and review fire management plans in association with CFS and other stakeholders. • Continue to work with the relevant District Bushfire Prevention Committee and CFS to minimise risk to life and property within and surrounding the park. • Seek to extinguish all unplanned fires as soon as possible. • Maintain a network of fire management access tracks within the park.

STRATEGY
MANAGING CULTURAL HERITAGE
<p>Indigenous Heritage</p> <ul style="list-style-type: none"> • Consult with the relevant regional Aboriginal heritage committees and relevant Government Aboriginal heritage authorities in decisions regarding the management of Aboriginal heritage. • Identify and protect any Aboriginal sites, objects and remains in cooperation with the relevant regional Aboriginal heritage committees, AARD and other relevant authorities. • In consultation with the relevant regional Aboriginal heritage committees, submit cultural sites and stories that relate to the park for inclusion on the AARD Central Archive.
<p>Non-Indigenous Heritage</p> <ul style="list-style-type: none"> • Identify, record, protect, and monitor known sites or relocated objects, and items of archaeological, anthropological, cultural and historical significance located in the park, in cooperation with the Heritage Branch of DEH, City of Tea Tree Gully and other relevant authorities and organisations. • Protect and conserve heritage sites at Newman's Nursery and Ellis Cottage and Bakehouse in consultation and cooperation with the Heritage Branch of DEH and City of Tea Tree Gully.
MANAGING VISITATION
<p>Visitor Use and Access</p> <ul style="list-style-type: none"> • Monitor visitor use of the park and provide facilities to ensure the protection of the natural values of the park. • Establish a track and trail rationalisation/maintenance program to provide clearly defined, sustainable routes for public use, management and emergency purposes. • Develop and maintain safe, sustainable and signposted access points to the park and car parking areas where possible. • Allow dogs on-lead in Anstey Hill Recreation Park under the <i>National Parks and Wildlife (National Parks) Regulations 2001</i>.
<p>Cycling</p> <ul style="list-style-type: none"> • Close and rehabilitate informal tracks used by downhill and cross-country mountain bike riders. • In consultation with relevant stakeholders, develop and implement a bicycle trails management plan for Anstey Hill Recreation Park. • Review the access of mountain bikes and the implementation of the bicycle trails management plan within three years of the start of the bicycle trails plan, to ensure mountain bike riding does not have unacceptable impacts on the conservation values and public access and enjoyment of the park. • Develop a partnership agreement between DEH and cycling organisations. • Develop and implement a code of practice for bicycle riders that addresses visitor safety and environmental protection, in consultation with relevant cycling organisations and riders. • Continue to enforce the prohibition of bicycle riding in areas of the park that are not designated to allow for this use, according to Section 4 Zoning, and the bicycle trails management plan when developed.
<p>Commercial Tourism</p> <ul style="list-style-type: none"> • Provide information to the public and tour operators that addresses the features of the park, objectives of management for the park and public risk issues. • Provide for the issue of licenses to tourism operators for approved activities in the park and monitor use.

STRATEGY
<p>Information and Interpretation</p> <ul style="list-style-type: none"> • Ensure that tracks and trails have adequate directional and safety signage and information. • Provide appropriate interpretive information for cultural heritage sites within the park and where possible Indigenous cultural heritage sites within the park, including Newman's Nursery and the Tea Tree Gully Silver Mine, in consultation with relevant authorities. • Provide appropriate interpretive information to highlight the natural values of the park.
MANAGEMENT INFRASTRUCTURE
<ul style="list-style-type: none"> • Develop and implement a priority program for facility and infrastructure maintenance and replacement. • Manage storage in the shed near the house on the eastern boundary to facilitate park programs. • Retain the park house and associated infrastructure as part of the Development Site.
MANAGING RESOURCE USE
<p>Exploration and Mining</p> <ul style="list-style-type: none"> • Liaise with PIRSA and operators to ensure that any mining activities within the park are consistent with proclamation conditions and the objectives of this management plan.
<p>Leases and Licences</p> <ul style="list-style-type: none"> • Develop and implement suitable leasing arrangements to ensure that the requirements of tenants are met and the natural and cultural values of the park are not compromised.
INVOLVING THE COMMUNITY
<ul style="list-style-type: none"> • Develop and maintain partnerships with organisations and statutory bodies that can assist with the management of the park. • Regularly liaise with Friends and volunteer groups to provide guidance, support, resources and information consistent with park management objectives. • Encourage and support the involvement of the local community, through the Friends of Anstey Hill, volunteer organisations and individuals in park management programs that complement the activities of park staff and contractors. • Provide an efficient and integrated planning, approval, support and liaison service to volunteers that is consistent with park management objectives.
MANAGING RESERVE TENURE
<p>Public Utilities</p> <ul style="list-style-type: none"> • Request an environmental assessment for all proposals to locate public utilities within or over the park, and ensure that all proposals are consistent with current DEH policy and the provisions of this management plan. • Liaise with utility companies to ensure DEH is informed of scheduled or emergency maintenance and to ensure that the natural and recreational values of the park are maintained. • Reduce the risk of transmission of plant pathogens and pest plants by maintenance crews by ensuring that service vehicles and employees follow the provisions of the DEH Standard Operating Procedure for <i>Phytophthora</i> Threat Management. • In liaison with United Water, minimise the impact of high flows from the water treatment plant and tanks. • Liaise with United Water to develop a flushing regime or an engineering solution to erosion and siltation problems in Water Gully. • In liaison with United Water, develop appropriate arrangements to prevent unauthorised entry to United Water property from within the park.

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APPENDIX: CONSERVATION STATUS CODES

Australian Conservation Status Codes

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

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

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

South Australian Conservation Status Codes

The following codes are based on the current listing of species under Schedules of the *National Parks and Wildlife Act 1972*, as amended in 2000. To align with other States, Territories and the Commonwealth (EPBC Act) listing categories and ratings, the IUCN criteria were used as a basis for determining threatened species status under the *National Parks and Wildlife Act 1972*. For IUCN criteria see:

IUCN (1994) *IUCN Red List Categories*. Prepared by the IUCN Species Survival Commission. IUCN, Gland, Switzerland (www.redlist.org).

IUCN (2001) *IUCN Red List Categories and Criteria: Version 3.1*. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, United Kingdom (www.redlist.org).

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

Regional Status Codes

The categories below apply to the species distribution at a regional level. There are no regional conservation status categories developed for mammals, reptiles or amphibians to date.

Birds

Regional conservation status for birds follow:

Carpenter and Reid (1998) *The Status of Native Birds in the Agricultural Areas of South Australia*. Unpublished and regularly updated database.

The regions are defined as follows:

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

Plants

Regional conservation ratings for plants follow:

Lang, PJ and Kraehenbuehl, DN (2001) *Plants of Particular Conservation Significance in South Australia's Agricultural Regions*.

Department for Environment and Heritage (undated) *Florlist*. Unpublished and regularly updated database.

The regions are as defined by the State Herbarium (Plant Biodiversity Centre), illustrated in the front cover of:

Barker, WR, Barker, RM, Jessop, JP and Vonow, HP (Eds) (2005) *Census of South Australian Vascular Plants. Fifth Edition. J. Adelaide Bot. Gard. Supplement 1*. Botanic Gardens of Adelaide and State Herbarium, Adelaide.

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

In order of decreasing conservation significance:

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