Department for Environment and Heritage

Management Plan

Angove Conservation Park

2005

Government of South Australia

www.environment.sa.gov.au

OUR PARKS, OUR HERITAGE, OUR LEGACY

Cultural richness and diversity are the hallmarks of a great society. It is these qualities that are basic to our humanity. They are the foundation of our value systems and drive our quest for purpose and contentment.

Cultural richness embodies morality, spiritual well-being, the rule of law, reverence for life, human achievement, creativity and talent, options for choice, a sense of belonging, personal worth and an acceptance of responsibility for the future.

Biological richness and diversity are, in turn, important to cultural richness and communities of people. When a community ceases to value and protect its natural landscapes, it erodes the richness and wholeness of its cultural foundation.

In South Australia, we are privileged to have a network of parks, reserves and protected areas that continue to serve as benchmarks against which we can measure progress and change brought about by our society. They are storehouses of nature's rich diversity, standing as precious biological and cultural treasures. It is important to realise that survival of species in 'island' reserves surrounded by agriculture or urban areas is uncertain, and that habitat links between reserves are essential for their long-term value as storehouses.

As a result of more than a century of conserving nature and cultural items, we possess a "legacy" which is worth passing on to future generations.

There are twelve essentials for the protection of our park environments:

- Recognition that a primary purpose of our national parks system is to conserve the wide diversity of South Australia's native plants and animals and to improve their chances of survival through active wildlife management.
- Recognition that all our parks also protect cultural legacy of relevance to both Indigenous and Non-indigenous people, and that Indigenous people have had cultural association with this land over many thousands of years.
- Freedom to improve our legacy by making additions to the park system -- enhancing existing protected areas and including landscapes and environments containing native plant and animal communities not already protected.
- Realisation that the continuance of our native species cannot be dependent upon island reserves alone but should be provided for in a regional landscape with linkages between natural areas to enhance the prospect of long-term survival.
- Recognition that there is potential for new and useful substances or genetic material to be found in native plant and animals.
- Recognition of economic and social benefits for local communities, which arise from the presence of national parks in their region and the consequent opportunities to offer service for visitors.
- Development of close relationships with the community, so that there is an understanding of the role of parks in conserving native wildlife, cultural items and in providing recreational opportunities.
- Promotion of community participation in making decisions on the management of parks, so that a sense of community ownership of the reserve system may be fostered, and so that parks and surrounding landscapes are managed in harmony.
- Appreciation that those qualities presented to visitors for their use and enjoyment in parks, should be the diversity of plants, animals and landscapes for which the parks were set aside.
- Understanding that development in a park should proceed where it:
  - contributes to the conservation of the environment;
  - provides for better appreciation of the need to conserve the diversity of plants and animals;
  - protects wildlife habitats and landscape (especially vulnerable and threatened species or communities); and
  - is necessary for management of the park.
- Reassurance, in support of our cultural character, that natural areas can survive even though those who care deeply for their survival may never visit them.
- Provision of valued natural areas for people to be at one with nature and for personal and spiritual refreshment.

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


Government of South Australia

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Cover Photograph: Sheoak community within Angove Conservation Park

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FOREWORD

Angove Conservation Park conserves an important area of remnant Drooping Sheoak and Southern Cypress Pine open woodland, in the foothills between the Adelaide Plains and the Mount Lofty Ranges. Located in the City of Tea Tree Gully, the park is a remnant of much of the original vegetation of the Adelaide plain and Mount Lofty foothills region. The vegetation associations and landforms of the park provide habitat for native birds, reptile, amphibian and mammal species, whilst the park's location and character provide an important educational and recreational resource to residents of adjacent urban areas.

The principal aim of this management plan is to protect the indigenous, remnant vegetation of the park. Angove Conservation Park is a small piece of land and is therefore vulnerable to impacts associated with its location within a highly developed suburban area. This plan describes the attributes of the park, existing and potential management challenges, and presents a series of objectives and strategies for the future management and use of the park.

Many people have contributed to the development of this plan of management. Their interest and helpful suggestions are gratefully acknowledged.

I now formally adopt the plan of management for Angove Conservation Park under the provisions of section 38 of the *National Parks and Wildlife Act 1972*. I encourage you to read the plan and visit and enjoy this exceptional park.

JOHN HILL

MINISTER FOR ENVIRONMENT AND CONSERVATION

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ACKNOWLEDGEMENTS

The significant contribution of the Friends of Angove Conservation Park and those members of the community who assisted in the planning process are acknowledged.

1 PARK LOCATION AND FEATURES

Angove Conservation Park is located 16km north-east of the Adelaide GPO and occupies an area of 5.2 hectares. The park, comprising lot 105, Section 5485, Hundred of Yatala, was proclaimed on 23 June 1994 to protect one of the last remnant plant communities on the Adelaide foothills. It is subject to a temperate climate of cool, wet winters and warm to hot dry summers. Annual average rainfall for the park is 622mm.

The park is bordered by residential housing and features a number of walking trails throughout. There are two easements within the park, along the south-western and north-eastern borders, belonging to the City of Tea Tree Gully for the purpose of controlling storm water run-off.

Angove Conservation Park is part of a chain of reserves along the western edge of the Mount Lofty Ranges, between suburban Adelaide and the foothills. The majority of native vegetation cover has been cleared and the few isolated remnants are under increasing pressure from threatening processes related to urban land use, such as introduced plants from gardens and introduced animals.

Reserves in the vicinity include Anstey Hill Recreation Park, Black Hill Conservation Park, Cobbler Creek Recreation Park, Cudlee Creek Conservation Park, Montacute Conservation Park and Morialta Conservation Park.

The role of DEH reserves within the region is recognised by the current State Government planning initiative known as Yurrebilla - The Greater Mount Lofty Ranges Parklands, the name for which was given in recognition of Kaurna Aboriginal culture and heritage. The initiative aims to establish a common management framework for land managed by DEH, Forestry SA, SA Water, Planning SA, local government and voluntarily nominated privately owned areas throughout the Mount Lofty Ranges. The project seeks to identify common natural resource, heritage and recreation issues and to develop regional level policies that will enable a consistent, sustainable management approach to be adopted throughout the region.

Prior to Colonial settlement, the Mount Lofty Ranges, together with the Adelaide Plains, are 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 only 4% held within DEH reserves (Long, 1999). The contribution made to biodiversity conservation by small parks such as Angove Conservation Park is important, despite the special management requirements imposed by the park's close proximity to the urban environment.

The Interim Biogeographic Regionalisation of Australia (IBRA) provides a bioregional planning framework within which to identify the gaps and to set priorities for developing the National Reserve System. IBRA regions represent a landscape-based approach to classifying the land surface from a range of continental data on environmental attributes. IBRA version 5.1 was developed with 85 bioregions delineated, each reflecting a unifying set of major environmental influences which shape the occurrence of flora and fauna and their interaction with the physical environment.

Angove Conservation Park falls within the Flinders Lofty Block IBRA region, which is described as "temperate to arid Proterozoic ranges, alluvial fans and plains, and some outcropping volcanics, with the semi arid to arid north supporting Southern Cypress Pine, Black Oak (Belah) and mallee open woodlands, eremophila and acacia shrublands, and bluebush/saltbush chenopod shrublands on shallow, well-drained loams and moderately-deep, well-drained red duplex soils. The increase in rainfall to the south corresponds with an increase in low open woodlands of *Eucalyptus obliqua* and *E. baxteri* on deep lateritic soils, and *E. fasciculosa* and *E. cosmophylla* on shallower or sandy soils." (Environment Australia, 2000).

The Flinders Lofty Block IBRA region is an area of high importance to the National Reserve System due to the fragmented distribution of remnant areas and the poor representation of many environmental associations within government reserves of this region.

Angove Conservation Park is surrounded by residential properties. 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 co-ordinate management efforts with regional management programs and the City of Tea Tree Gully. Within the Tea Tree Gully (City) Development Plan, the park is included within a Residential Zone. The objectives of the Residential Zone do not refer to the conservation of biodiversity. DEH recommends that the City of Tea Tree Gully amend the Development Plan to zone Angove Conservation Park as a conservation area, due to the significant contribution the area makes to biodiversity conservation.

1.1 History of Reserve Management

Angove Conservation Park was proclaimed on 23 June 1994. The proclamation was assisted by public concern at an attempt in 1993 to purchase the land for subdivision. In response to this, the local community and other groups lobbied the State and Commonwealth governments, the City of Tea Tree Gully Council and the then Department for Environment and Natural Resources, presenting a strong argument for the preservation of this valuable area of remnant vegetation.

Since dedication, numerous actions have been undertaken in collaboration with an active Friends of Angove Conservation Park group, who meet regularly to discuss, plan and implement work plans, in consultation with DEH. Their activities complement management by DEH staff. Tasks that have been accomplished by the Friends of Angove Conservation Park, in conjunction with DEH, include:

- erection of a temporary boundary fence to protect the park during the construction of the adjacent housing development (subsequently replaced by DEH with a boundary fence);
- control of exotic plant species including Olives, Pine, Bridal Creeper, Cotton Bush, Watsonia, Salvation Jane, Peas and Wild Oats;
- planting of seedlings grown from seed collected within the park;
- redesigning the walking trail system, through track upgrade or closure, to reduce visitor impacts;
- collection of rubbish;
- installation of photopoints at 14 sites to be monitored twice yearly;
- erection of visitor information notice board and signs;
- design, preparation and publication of two brochures that were fully funded by the Friends;
- purchase and erection of a seat, dedicated to the late William Angove;
- identification of plant, animal and bird species in the park; and
- organisation of a bat survey.

The Friends of Angove Conservation Park have had a major role in the development of the management plan for the park and make a valuable contribution to the management of the park, particularly with revegetation, weed control, provision of environmental and cultural interpretation and promotion of the park's cultural and environmental heritage. Their contribution is valuable and DEH will continue to actively support their activities.

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 ultimately the decision on whether or not to adopt a management plan remains a ministerial prerogative.

The draft plan for Angove Conservation Park was released for public exhibition in July 2004. At the close of the comment period, seven submissions were received, on topics ranging from trail maintenance and modification to mapping and editorial amendments. All comments and concerns were considered by the Northern Lofty Consultative Committee and forwarded to the South Australian National Parks and Wildlife Council for review and endorsement 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 some of the strategies proposed in management plans. Implementation of these projects is determined by, and subject to, the availability of resources (eg staffing and funding).

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:

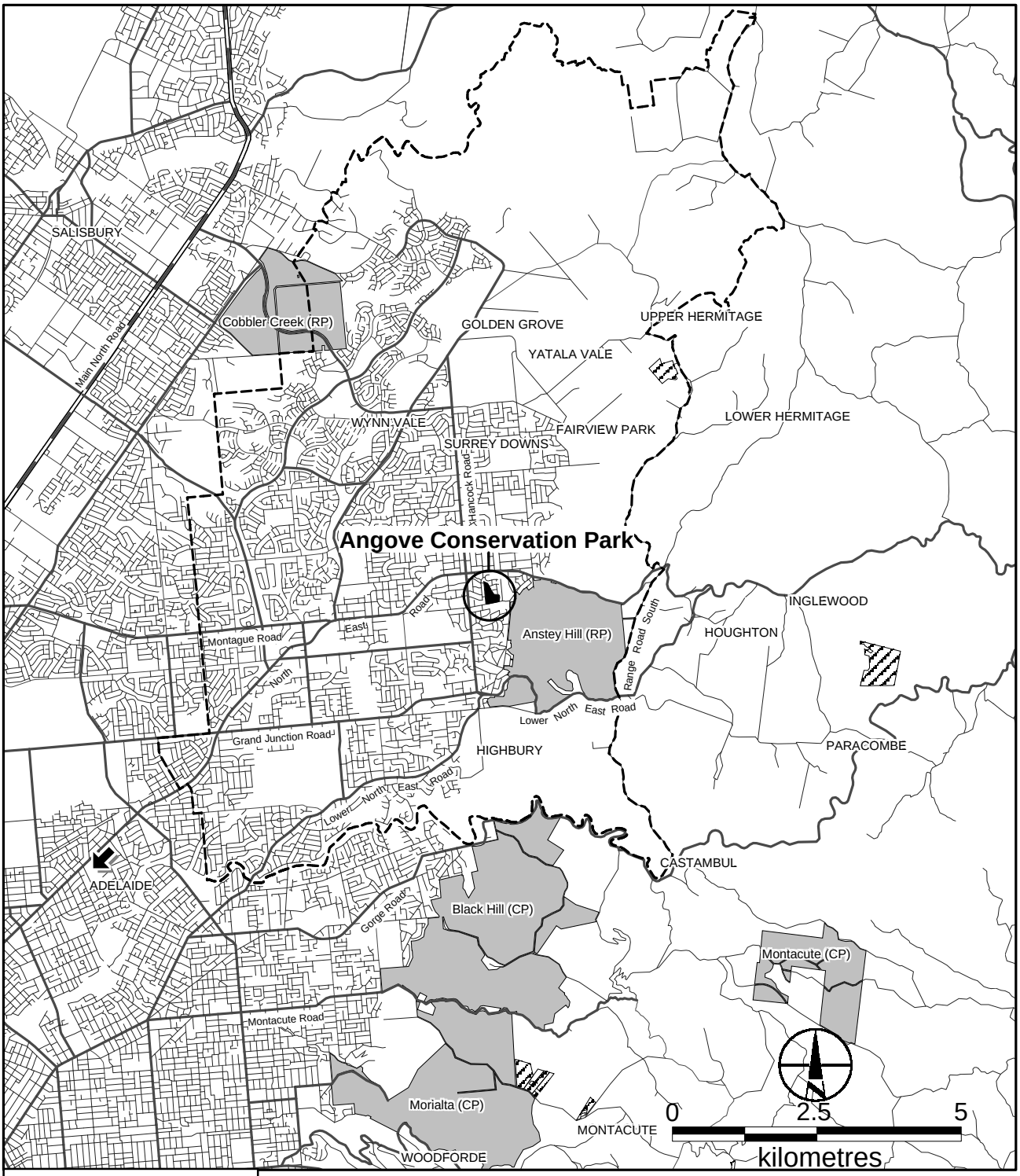
- Provide for the recognition and protection of native title;
- Establish ways in which future dealings affecting native title may proceed and to set standards for those dealings;
- Establish a mechanism for determining claims to native title; and
- Provide for, or permit, the validation of past acts, 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

Angove Conservation Park was proclaimed in order to protect one of the last remnant plant communities on the Adelaide foothills. It has important landscape, biological, recreation, education and historic values. These values are under pressure due to the small size of the park, the impacts of exotic flora and fauna, visitors to the park and the potential impact of fire if the whole of the park is burnt. The proclamation of this area as a Conservation Park under the *National Parks and Wildlife Act 1972*, means that the park is protected for the purpose of conserving wildlife or the natural or historic features of the land. Given the small size of the reserve and the significance of the remnant vegetation, visitor facilities will be kept to a minimum and will aim to reduce visitor impacts on the reserve.

The vision for Angove Conservation Park is to be valued by the community, and managed to maintain biodiversity and low impact recreation. To achieve this vision, DEH is keen to explore the possibility of partnership arrangements with organisations that have a legitimate interest in the management of this park. DEH recognises the importance of community and volunteer organisations and will continue to provide ongoing support and assistance, where possible.



DEH Reserve

Heritage Agreement

Road

City of Tea Tree Gully LGA Boundary

Figure 1

Angove Conservation Park

Location

Map designed and created by
Reserve Planning using PAMS
Projection: MGA Zone 54 (GDA 94)
2005

Government of South Australia

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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 actions remain compatible with the protection of park values. Due to the biodiversity significance and the small size of the park, the entire area of Angove Conservation Park has been zoned as a conservation area.

As a Conservation Zone, Angove Conservation Park will be managed to conserve biodiversity values with minimal disturbance.

Passive recreation using existing tracks will be permitted. Modifications to existing trails or proposals for new trails and associated infrastructure will have regard to the native vegetation and habitat. They will only be considered if:

- they are essential for public safety;
- disturbance to intact and regenerating native vegetation is minimal;
- a management issue demonstrates that changes are required for net environmental gain; or
- they do not compromise ecological/ecosystem integrity of the park.

Objective

Continue to manage Angove Conservation Park as a Conservation Zone.

Strategy

- Zone Angove Conservation Park as a Conservation Zone.

5 MANAGING NATURAL HERITAGE

5.1 Geology, Landform and Soils

Sediments laid down within the Adelaide Geosyncline above the Pre-Cambrian crystalline basement (Barossa Complex) were uplifted along fault lines and folded about 470 million years ago. This formed the foundation of today's Mount Lofty Ranges. The sediments during this mountain building period were converted, in the vicinity of Angove Conservation Park, to quartzite, shale and phyllites with generally only mild evidence of folding.

About two million years ago, mountain building occurred again, and in association with fault lines, caused renewed uplift of the Mount Lofty Ranges. The fault blocks east of the Eden-Burnside Fault rose and started the process of stream erosion that shapes today's landscape. The landforms present within the park are part of the hill slopes of the Mount Lofty Ranges with well-defined drainage lines.

Soils within the park strongly reflect underlying geology and footslope erosion processes. Within Angove Conservation Park, shallow sandy 'A' horizon soils occur particularly in the east of the park. These yellow podzolic soils developed from the underlying Tertiary sands. Soils on steep slopes are particularly prone to erosion and it is difficult to maintain any track adequately without some soil loss and subsequent negative impact on adjacent native vegetation.

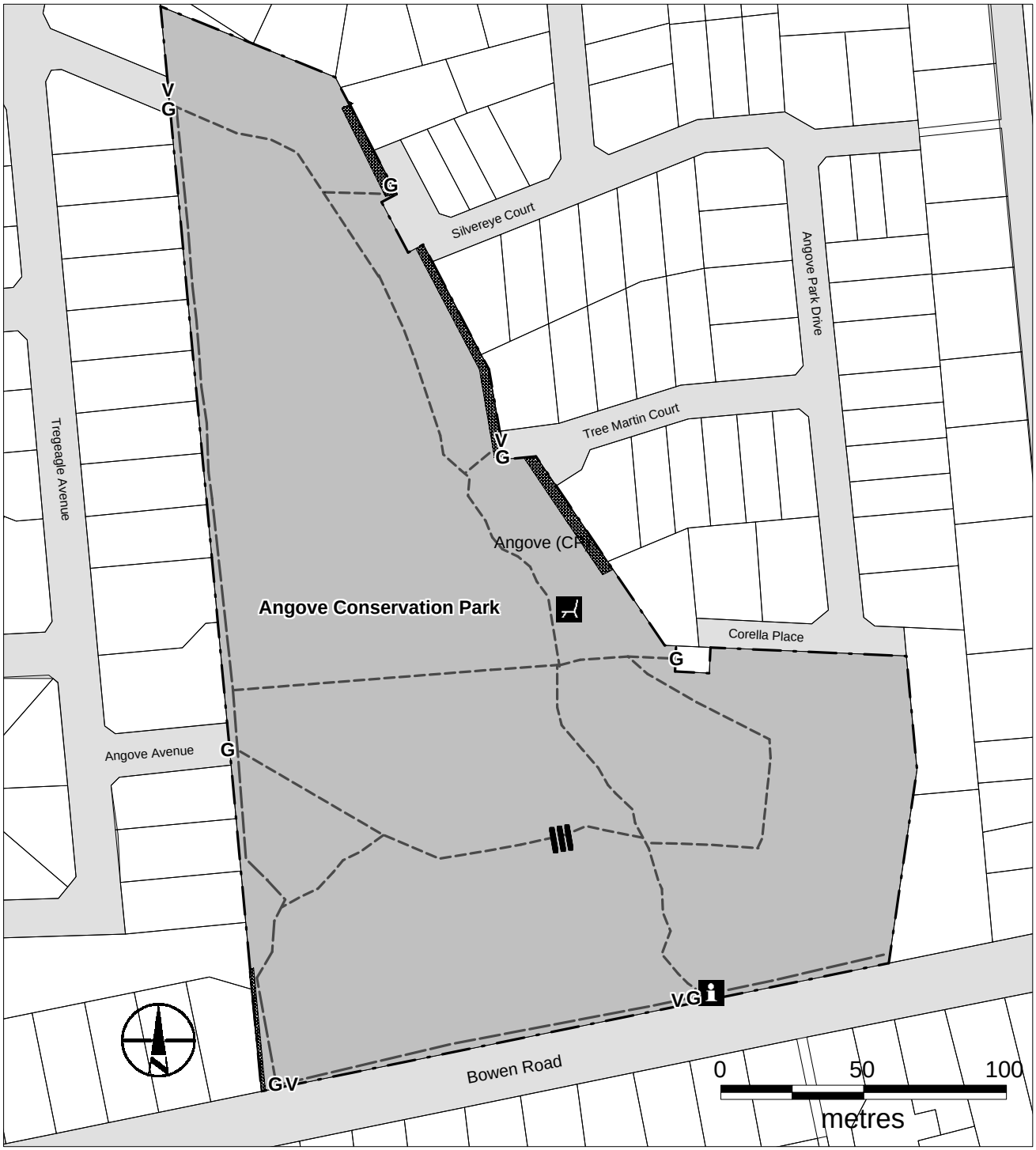
Objectives

Protect the geological and geomorphological features of the park.

Limit soil erosion to natural weathering.

Strategies

- Ensure that all park management works and visitor activities have minimal impact on the geological and geomorphological features of Angove Conservation Park.
- Avoid soil disturbance and any activity that may cause soil erosion and rehabilitate eroded sites as required.



Park Boundary

Information Shelter

Stairs

Dr Angove Memorial Seat

Walking Track

Fire Access Track

Sealed Road

Easement

G Pedestrian Access Gate

V Vehicle Access for Management Purposes Only

Figure 2

Angove Conservation Park

Features

Map designed and created by
Reserve Planning using PAMS
Projection: MGA Zone 54 (GDA 94)
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5.2 Hydrology

There are two ephemeral drainage lines located within Angove Conservation Park. One is located along the north-eastern border of the reserve and is covered by an easement. The other is located in the south-west corner. There is also a natural spring located within the south-west section of the reserve. However, due to the development of houses and the associated management of stormwater, water only flows from the spring during very wet winters. Maintenance of the natural conditions in the watercourses depends on integrated catchment management. Landuse that minimises negative impacts to the stream, including the re-establishment of native vegetation, should be encouraged outside the park throughout the catchment area. The park riparian system should be managed in conjunction with a local catchment management plan.

Objective

Maintain natural hydrology as far as practical.

Strategy

- Contribute to total catchment management by maintaining watercourses within the park in as natural condition as possible.

5.3 Native Vegetation

The vegetation associations in Angove Conservation Park are characterised by a high level of biodiversity; 142 native and 98 introduced plant species occur in the park at present.

Approximately four hectares of the park is covered by vegetation. The vegetation comprises two blocks divided by an old vineyard that is being revegetated (Figure 2). Within the two scrub blocks, four main plant associations and one minor plant association are present. The distribution of the four main plant associations is shown in Figure 3 and described below.

Drooping Sheoak (*Allocasuarina verticillata*) Woodland

This association comprises about 50% of the southern block and 95% of the northern block. Drooping Sheoak (*Allocasuarina verticillata)* occurs over a tall shrub layer of native wattles including Kangaroo Thorn (*Acacia paradoxa*), Golden Wattle (*Acacia pycnantha*), Myrtle Wattle (*Acacia myrtifolia*), South Australian Christmas Bush (*Bursaria spinosa*), Erect Hakea (*Hakea carinata*), Bearded Heath (*Leucopogon cordifolius*), and Common Fringe-myrtle (*Calytrix tetragona*).

Lower understorey species up to 80cm high include Erect Rice-flower (*Pimelea stricta*), Twiggy Daisy Bush (*Olearia ramulosa*), Mallee Bushpea (*Eutaxia microphylla* var *microphylla*), Black-anther Flax-lily (*Dianella revoluta*), Prickly Cryptandra (*Cryptandra tomentosa*), Lavender Grevillea (*Grevillea lavandulacea* var *lavandulacea*), Erect Guinea Flower (*Hibbertia riparia*) and Black Rapier-sedge (*Lepidosperma carphoides*). This vegetation association is recognised as vulnerable in the Flinders Lofty Block of South Australia (DEH, 2003).

Southern Cypress Pine (*Callitris preissii*) Woodland

This plant association occurs towards the south-west corner of the southern block with the trees themselves being in good condition. Because of the density of the canopy, shrub flora is less abundant than in the sheoak woodland. This is typical for this type of plant community.

Larger shrub species include Golden Wattle, Bearded Heath, Common Fringe-myrtle, South Australian Christmas Bush, Twiggy Daisy Bush, Kangaroo Thorn and an occasional Native Cherry *(Exocarpos cupressiformis).*

Southern Cypress Pine/Drooping Sheoak/South Australian Blue Gum (*Eucalyptus leucoxylon*) Open Woodland

This association represents about 25% of the southern block. The shrub and herb layers are quite dense and very diverse, with over 80% of flora species recorded in the park found here. This diversity may, in part, be attributed to the soils derived from sandstones and the occurrence of laterite bands, that favour these particular woodland plant species.

Tall shrub layer species up to 3m high include Golden Wattle, Kangaroo Thorn, Native Cherry, South Australian Christmas Bush, Bearded Heath and Slaty Sheoak (*Allocasuarina muelleriana*). This is succeeded by lower shrubs to 1.5m high comprising Common Fringe-myrtle, Sticky Boobialla (*Myoporum viscosum*), Heath Tea-tree (*Leptospermum myrsinoides*), Flame Heath (*Astroloma conostephioides*), Prickly Cryptandra, Twiggy Daisy Bush, Leafless Bitterpea (*Daviesia brevifolia*), Erect Rice-flower, Mallee Bushpea, Erect Guinea Flower and Black-anther Flax-lily.

The herbaceous layer is also diverse with the occurrence of Native Flax (*Linum marginale*), Black Rapier-sedge, Mat Rushes (*Lomandra multiflora* ssp *dura*, *L. densiflora*, *L. micrantha*, *L. nana* and *L. sororia)*, Common Everlasting (*Chrysophyllum apiculatum*), Native Primrose (*Goodenia blackiana*), Milk Maids (*Burchardia umbellata*), Chocolate Lily (*Arthropodium strictum*), Nodding Chocolate Lily (*A. fimbriatum*), Blue Squill (*Chamaescilla corymbosa*) and Garland Lily (*Calostemma purpureum*).

South Australian Blue Gum Open Woodland

Only a small remnant (approximately 5%) of this association remains on the southeastern boundary of the southern block. Larger shrub species like Golden Wattle, South Australian Christmas Bush, Native Cherry, Bearded Heath, a few Common Fringe-myrtle and Mallee Bushpea occur under the South Australian Blue Gums. Because of its more open aspect the list of herbaceous plant species is very similar to that of the Southern Cypress Pine mixed association described above.

Common Fringe-myrtle (*Calytrix tetragona*) Heathland

This minor plant association has not been mapped but was recorded within the northern block. These shrubs form a very dense, almost closed heath community. The herbaceous species found associated with the Common Fringe-myrtle includes Common Everlasting, Native Primrose, the Mat Rush Lilies *Lomandra multiflora* ssp *dura,* and *L. densiflora,* Nodding Chocolate Lily and Native Flax.

Understorey

Native and introduced grasses and herb species dominate the understorey within the park. Native species include Kangaroo Grass (*Themeda triandra*), Spear Grass (*Austrostipa* spp), and the vulnerable (in South Australia) Plum Leek-orchid (*Prasophyllum pruinosum*).

In the region between the Adelaide Plains and the Mount Lofty Ranges, these remnant vegetation associations were once widespread, but were eventually cleared for the development of residential areas. The subsequent invasion and competition of introduced plant species and changes to the natural ecological fire regime and watercourse through the park may threaten remaining biodiversity in the park. To ensure the preservation of remnant vegetation in Angove Conservation Park, a vegetation management plan will be prepared.

The vegetation management plan will aim to ensure that resources are allocated to weed control and vegetation management actions that result in the highest biodiversity outcomes. The plan will include baseline vegetation data from pre-planning survey work, a comprehensive flora inventory, information on threatened plant species and weed control actions based on best practice techniques. Vegetation management plans provide guidance not only for DEH staff but also for Friends groups and contractors.

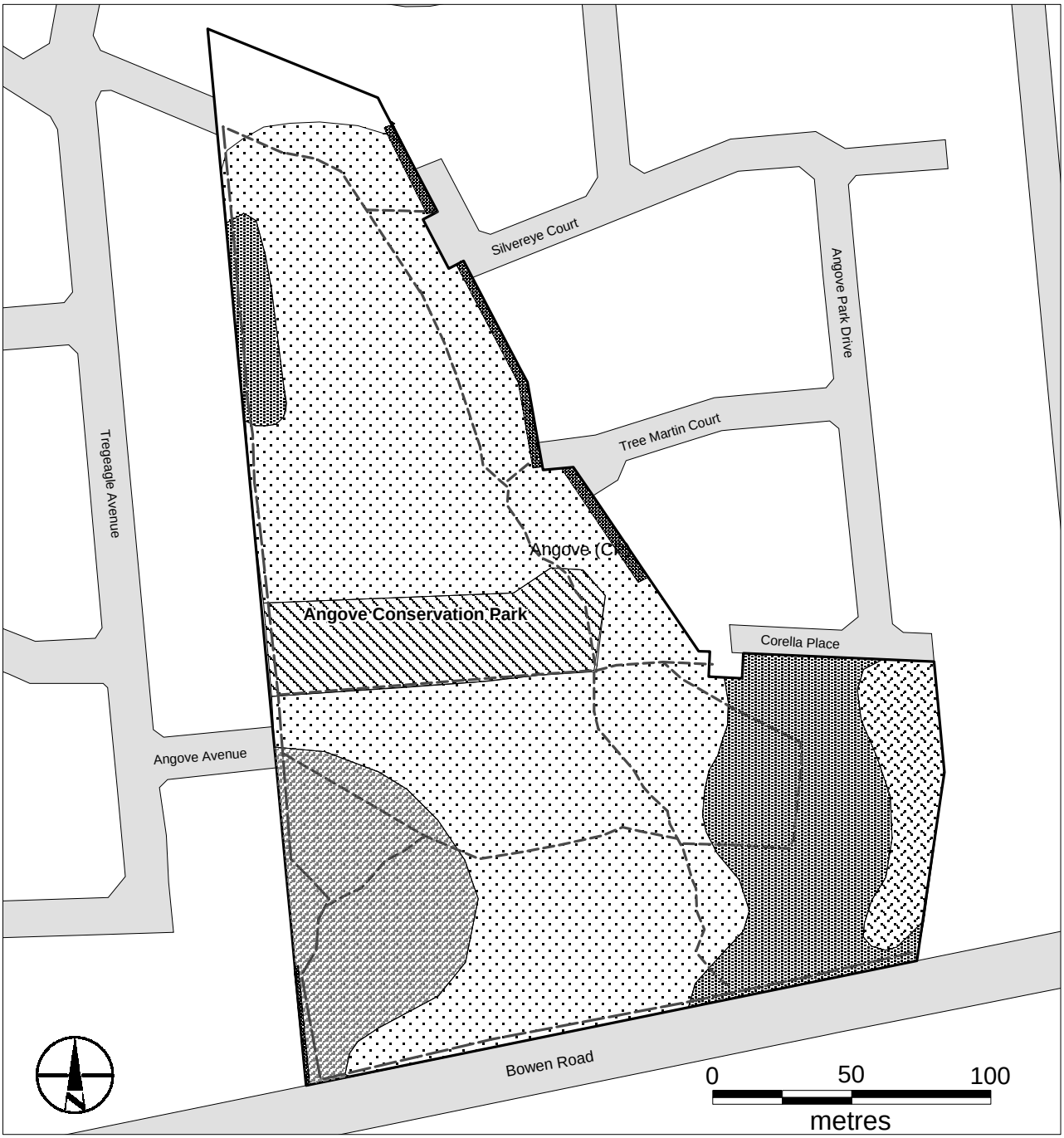
In applying the plan, populations of plants of conservation significance should be monitored and management programs modified as required for their conservation.

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 resource. These populations of native fauna are capable of recolonising currently degraded habitats, should those habitats be rehabilitated in the future.

Mammals

The existing diversity of landforms and vegetation provides habitat for a number of mammals,



Park Boundary
Walking Track
Fire Access Track
Easement

Allocasuarina verticillata Woodland

Callitris preissii Woodland

Eucalyptus leucoxylon Woodland

Callitris preissii, Allocasuarina verticillata, Eucalyptus leucoxylon Open Woodland

Revegetation Area (Old Vineyard)

Figure 3

Angove Conservation Park

Major Vegetation Associations

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Map designed and created by
Reserve Planning using PAMS
Projection: MGA Zone 54 (GDA 94)
2004

including Common Ringtail Possum (*Pseudocheirus peregrinus*), Common Brushtailed Possum (*Trichosurus vulpecula*), and Bats (*Michrochiroptera* spp). There has not been a systematic survey of animals in the park and all observations have been opportunistic.

Reptiles and Amphibians

There has been no systematic survey of reptile and amphibian species that may be found within Angove Conservation Park. However the variety of vegetation associations and variable plant structures, from leaf litter, through small heath-like shrubs and taller shrubs to the larger tree species, may be expected to support a number of reptiles. Amphibian species may also be resident in the ephemeral watercourses located within the park.

Birds

The 75 bird species recorded in Angove Conservation Park are typical of those in the Mount Lofty Ranges. The park provides habitat for a range of sedentary birds and those species that require dense and closed vegetation to survive. The park is an important part of regional habitat for birds that move throughout the Mount Lofty Ranges, most notably providing a refuge for species usually associated with higher rainfall areas.

Insects

Dr William Angove named Butterfly Ridge, located in the centre of Angove Conservation Park at the site of the old vineyard, after the numerous butterflies to be found there.

Angove Conservation Park is only a small park and therefore unlikely to support threatened butterfly species, unless there is some cross movement of butterflies with the larger areas of native vegetation in the ranges further to the east. The presence of resident populations of butterflies would depend on the condition and density of relevant butterfly food plants in the park.

5.5 Introduced Plants

Angove Conservation Park has 98 introduced plant species recorded. Introduced plants are regarded as one of the major threats to indigenous plant communities in the park. The most prevalent introduced species found in the park include Wild Oats (*Avena barbata*), Sparaxis (*Sparaxis bulbifera*), Clover (*Trifolium* spp), Ribgrass (*Plantago lanceolata*), and Salvation Jane (*Echium plantagineum*).

Weed invasion is both a symptom and cause of degradation of native plant communities. The relatively high proportion of weeds reflects the grazing, viticulture and urbanisation in the area surrounding the park. Disturbances in the park, such as vegetation clearance for vines, sand mining and walking tracks, have further increased opportunities for exotic plants to become established in the park. Environmental weeds that have the potential to invade and out-compete native vegetation are listed in Table 2.

Table 2. Introduced Plants of Concern

Species	Common Name	Proclaimed
Asparagus asparagoides	Bridal Creeper	✓
Watsonia meriana cv. *Bulbillifera*	Bulbil Watsonia	✓
Echium plantagineum	Salvation Jane	✓
Olea europaea	Olive	✓
Ehrharta calycina	Perennial Veldt Grass	
Sparaxis tricolor/Freesia hybrid	Sparaxis/Freesia	

Proclaimed plants require control under section 57(2) of the *Natural Resources Management Act 2004.*

The distribution of the more serious weed species (either proclaimed pest species or those capable of invading native vegetation) shows an affinity for highly disturbed/cleared areas or areas in close proximity to housing, roads and tracks. The discarding of garden waste from adjacent properties facilitates the continual introduction of weed species to the park. Areas of woodland are also now largely stabilised with exotic grasslands and minor weed species.

5.6 Introduced Animals

At present, verifiable data on the presence and impact of introduced animals within Angove Conservation Park is scarce. The House Mouse (*Mus musculus*), Brown Rat (*Rattus norvegicus*) and Fox (*Vulpes vulpes*) are known to live in the park, whilst Cats (*Felis catus*) and Dogs (*Canis familiaris*) frequent the area, largely due to its close proximity to urban residences. Foxes and cats are a threat to native animal populations as they prey upon birds, small mammals and reptiles.

Prior to its dedication as a Conservation Park, the area was often used by the local community as a thoroughfare between North East Road and Bowen Road, and was popular with dog owners. Despite signs stating that dogs and cats are prohibited in the park, people continue to walk their dogs in Angove Conservation Park.

Invertebrate pests including European Wasps *(Vespula germanica)* and introduced Bees (*Apis mellifera*) are also found within the park. Introduced bees use hollows required by native animals and therefore should be controlled as they use valuable habitat for birds and mammals.

5.7 Introduced Pathogens

There is an increasing threat of the introduction of soil borne pathogens such as *Phytophthora cinnamomi* (Cinnamon Fungus) to the park. *Phytophthora* is technically classified as a water mould or Oomycota but is generally referred to as a fungus. It is an introduced soil-borne pathogen that kills a wide range of native Australian plant species by attacking their root system and reducing or stopping the movement of water and nutrients within the plant. The disease spreads quickly downhill with water moving through the soil. It can also spread slowly in any direction through root to root contact. The spread of *Phytophthora* has been dramatically increased by human activities, particularly by moving soil, gravel and plant material on vehicles, footwear and camping equipment.

Phytophthora has not been found in Angove Conservation Park but has been reported in the Mount Lofty Ranges, including the nearby Anstey Hill Recreation Park. The small size of the park makes the introduction of soil borne pathogens a major management issue, necessitating prevention measures.

Appropriately designed and well-maintained tracks and education of track users will reduce the risk of introduction. Hygiene infrastructure will be put in place at suitable locations in the reserve if *Phytophthora* infestation is found within the reserve.

Objective

Manage and protect indigenous vegetation and fauna within the park.

Strategies

- Prepare and implement a vegetation management plan.
- Develop and implement pest plant and animal control programs in coordination with regional programs and the vegetation management plan. Evaluate the effectiveness of pest plant and animal control and regularly review programs.
- Increase public awareness about the importance of remnant vegetation and threatening processes including discarding garden waste within the park, the spread of garden plants into the park and the effects of cats and dogs on park values.
- Monitor the park for the presence of introduced pathogens and implement control measures as necessary.

6 MANAGING FIRE

The fire history of Angove Conservation Park is not well known. The small size of Angove Conservation Park, and its isolation from other bushland areas, means that the contemporary fire regime (the incidence, location, size, frequency and intensity of fires) may differ significantly from what occurred in the past.

Recent history includes a small fire in the Southern Cypress Pine woodland, thought to have been deliberately lit, near the western boundary, in December 2002. This area is now regenerating and is the site of a revegetation program undertaken by a local primary school. In a park of this size, surrounded by residential areas, fire management has to focus on minimising the incidence of fires and when a fire occurs, extinguishing the fire as soon as possible.

A fire management plan is required for Angove Conservation Park in consultation with County Fire Service Groups and the District Fire 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 reserve.

The fire management plan 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

Protect life and property and reduce the negative impacts of fire on the parks' 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 reserve.

7 MANAGING CULTURAL HERITAGE

7.1 Indigenous Heritage

Kaurna Culture and Heritage

The land comprising Angove Conservation Park is in the traditional land of the Kaurna people who occupied the Adelaide Plains. Kaurna people travelled less frequently than most desert dwelling Aboriginal people and according to Tindale (1976) seasonally migrated towards the sea in summer and inland in winter. Their environment provided abundant resources and their technology, skillfully used, was able to supply them with food and shelter without the need to move constantly.

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, was probably the most significant impact of Aboriginal occupation.

For Aboriginal people, land and waters have many interconnected complex meanings and values. The significance of land and waters is central to Aboriginal people's lives: at birth, death, ceremonies and socially, whilst hunting, gathering camping, and travelling. The term "story lines" is the term used to describe the combination of these aspects of life, religion, mythology, law and history which includes the past, the present and the future.

At present, there are no Kaurna story lines interpreted within Angove Conservation Park and the full extent of Aboriginal heritage 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. The Department of Aboriginal Affairs and Reconciliation (DAARE) maintains a Central Archive, including the Register of Aboriginal Sites and Objects. Aboriginal site is defined under the Act as "An area of land that is of significance according to Aboriginal tradition; or that is of significance to Aboriginal archaeology, anthropology or history."

In Angove Conservation Park, there are no known sites listed on the Register. However, this lack of recordings does not reflect a comprehensive survey of the park. To promote better cultural heritage management at Angove Conservation Park further research needs to be undertaken to identify the significance of the area and record sites of significance on the park. To avoid inadvertent damage to sites, DEH shall consult with DAARE and authorised Aboriginal Heritage Committees before commencement of any development works.

7.2 Non-Indigenous Heritage

The park was once a part of the Angove vineyards, which were a part of Angove winery operations at St Agnes. The cellars on North East Road still exist. However, wine production from this site has ceased. The founder of the winery, Dr William Angove, was an early medical practitioner of the Tea Tree Gully district. He acquired the land in 1896 to establish vines for winemaking. Most of the district at that time had vines planted.

Dr Angove was well known at that time for his wide interest in the natural environment. He was also well known for his sketches of birds and butterflies in the area of the park known locally as Butterfly Ridge. He retained an area of his property, called Angove Scrub, which is now Angove Conservation Park, in its natural state for study purposes. A small section within the centre of the park had been cleared, presumably for a residential site. However, a dwelling was never established and instead several rows of vines were established. All but three vines have been removed to assist in the rehabilitation of the park. In recognition of the historical significance of the park, a memorial bench was erected on Butterfly Ridge in honour of the late Dr William Angove. The bench and the three vines will be maintained to preserve their historical value.

The park remained within the confines of the Angove property until 1992 when Angove Winery proposed to dispose of the land for residential development. In November 1992, a community campaign to protect the area was started by the Conservation Council of SA and the Nature Conservation Society. More than 130 residents attended the first meeting. The Conservation Council then petitioned the Government to preserve the park for its conservation values.

Objective

Conserve significant archaeological, cultural or historical sites.

Strategies

- Consult Kaurna people who have a traditional association with the land, Native Title Claimants and relevant Aboriginal heritage authorities, in decisions regarding the management of Kaurna cultural heritage.
- Identify, record, protect, restore and monitor known or relocated sites and items of archaeological, anthropological, cultural and historical significance located in the park, in cooperation with DAARE, the Heritage branch of DEH and other relevant authorities and organisations. Kaurna and historic cultural heritage sites require conservation plans to facilitate appropriate management.

8 MANAGING TOURISM AND RECREATION

8.1 Visitor Access

Public vehicle access is not permitted in the park. A system of walking trails, including an interpretive trail that highlights common indigenous plant species (see section 8.3 Information and Interpretation), provides visitors with opportunities to explore the features of the park. A system of steps is also provided down a steep gradient in the middle of the park to assist visitor access and control erosion (see Figure 2). Though currently adequate, these steps may require modification in future to ensure safety and maintenance requirements are met.

Existing track surfaces are reasonable but often have loose surface material and in some places there is evidence of erosion. For ease of use and visitor safety, walking trails need to be defined and maintained to a suitable maximum width, stabilised with appropriate surfacing material and require ongoing maintenance.

There are also several informal trails throughout the park that need to be rationalised to control erosion, prevent habitat fragmentation and the trampling of vegetation. All work on trails will be undertaken subject to the conditions listed in section 4 Zoning.

8.2 Visitor Activities

Angove Conservation Park is used regularly by local residents. In addition to scenic views and bushwalking opportunities, visitors also enjoy nature study and bird watching. The park represents an important educational resource and is often used by local schools. Given the small number of natural settings in the metropolitan area, it is important that remnants such as Angove Conservation Park are maintained.

Angove Conservation Park attracts visitors through seven entry locations, with two entry points on each of the southern and western boundaries and three entry points on the north-east boundary. The main entrance is on Bowen Road where an information board is located to provide visitors with information on the park. Parking at these locations is limited.

8.3 Information and Interpretation

To increase visitor awareness, an integrated interpretation approach is needed to convey information regarding the features of the park, pest animals and plants, the impacts of inappropriate behaviour and the need to minimise access to sensitive vegetation and wildlife habitat.

Information relating to the vegetation of Angove Conservation Park is currently delivered via an interpretive brochure with corresponding numbered posts throughout the park. Interpretive information regarding the natural and cultural history of the park has also been provided through an information shelter on the southern boundary.

Objective

Enhance visitor experiences while conserving biodiversity values.

Strategy

- Provide safe, low impact visitor facilities and interpretive information to provide visitors with a greater understanding of park features and values.

9 MANAGING RESOURCE USE

9.1 Infrastructure and Built Assets

Angove Conservation Park will be managed to conserve biodiversity with minimal disturbance.

The infrastructure and built assets within Angove Conservation Park currently include fencing, gates, walking trails, interpretive information and limited vehicle access for fire management

purposes only, all of which are designed to facilitate recreation and protect the environmental values associated with the park.

The Friends of Angove Conservation Park obtained funding to establish a wooden bench, and a notice board. The wooden bench is located along the main walking trail adjacent to where the vineyard was located. The bench faces west and has a view of the Adelaide Plains and coastline. An information board was erected with the generous assistance of the Tea Tree Gully Lions Club and is situated at the southern entrance along Bowen Road.

Fire access tracks are located along the southern and western boundaries of the park, and further vehicle access for fire management is provided for at gates located at Bowen Road, Tree Martin Court and the northernmost point of the park.

Objective

Maintain essential infrastructure at a functional level.

Strategies

- Develop and implement a priority program for facility/infrastructure maintenance and replacement.
- Maintain existing vehicle access tracks for fire management and general management purposes.

9.2 Leases and Licences

There are currently no commercial leases or licenses affecting Angove Conservation Park. Due to the small size of the park, it is anticipated that there will not be any commercial activities established in the future.

10 INVOLVING THE COMMUNITY

DEH supports and promotes partnerships and cooperative management arrangements to establish integrated natural resource management. This requires the development of effective working relationships with other government agencies, local authorities and communities. With regard to Angove Conservation Park, this requires ongoing management links to the City of Tea Tree Gully, NRM boards, Native Title Claimants, the representative Heritage Committee as nominated by the State Aboriginal Heritage Committee and key community stake-holders.

DEH encourages and relies significantly upon voluntary community support to assist with the care and maintenance of parks throughout the State. Angove Conservation Park is supported by an active Friends Group and local schools who are involved in a wide range of vegetation rehabilitation projects within the park. Service clubs, in particular the Tea Tree Gully Lions Club, have become involved in work directed at improving the standard of visitor facilities in the park.

The involvement of volunteers requires liaison and sometimes the provision of materials, equipment and supervision by park staff. The volunteer input also requires integration with park management objectives and work programs. As the size and importance of this volunteer input into management increases, new more structured mechanisms are required to efficiently integrate it into overall park management.

Objective

The community values and supports the management of the park.

Strategies

- Develop and maintain partnerships with organisations and statutory bodies that assist with the management of the park.
- Encourage and support the involvement of the local community, 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.

11 SUMMARY OF MANAGEMENT STRATEGIES

STRATEGY	Priority	Duration	Pg
ZONING			
Zone Angove Conservation Park as a conservation area.	High	Ongoing	6
MANAGING NATURAL HERITAGE			
Ensure that all park management works and visitor activities have minimal impact on the geological and geomorphological features of Angove Conservation Park.	High	Ongoing	6
Avoid soil disturbance and any activity that may cause soil erosion and rehabilitate eroded sites as required.	High	Ongoing	6
Contribute to total catchment management by maintaining watercourses within the park in as natural condition as possible.	Medium	Ongoing	8
Prepare and implement a vegetation management plan.	High	Ongoing	12
Develop and implement pest plant and animal control programs in coordination with regional programs and the vegetation management plan. Evaluate the effectiveness of pest plant and animal control and regularly review programs.	High	Ongoing	12
Increase public awareness about the importance of remnant vegetation and threatening processes including discarding garden waste within the park, the spread of garden plants into the park and the effects of cats and dogs on park values.	High	Ongoing	12
Monitor the park for the presence of introduced pathogens and implement control measures as necessary.	High	Ongoing	12
MANAGING FIRE			
Develop, implement and review fire management plans in association with CFS and other stakeholders.	High	Ongoing	13
Continue to work with the relevant District Bushfire Prevention Committee and CFS to minimise risk to life and property within and surrounding the reserve.	High	Ongoing	13
MANAGING CULTURAL HERITAGE			
Consult Kaurna people who have a traditional association with the land, Native Title Claimants and relevant Aboriginal heritage authorities, in decisions regarding the management of Kaurna cultural heritage.	High	Ongoing	14
Identify, record, protect, restore and monitor known or relocated sites and items of archaeological, anthropological, cultural and historical significance located in the park, in cooperation with the DAARE, the Heritage branch of DEH and other relevant authorities and organisations. Kaurna and historic cultural heritage sites require conservation plans to facilitate appropriate management.	Medium	Short	14

STRATEGY	Priority	Duration	Pg
MANAGING TOURISM AND RECREATION			
Provide safe, low impact visitor facilities and interpretive information to provide visitors with a greater understanding of park features and values.	Medium	Ongoing	15
MANAGING RESOURCE USE			
Develop and implement a priority program for facility/infrastructure maintenance and replacement.	High	Short	16
Maintain existing vehicle access tracks for fire management and general management purposes.	High	Ongoing	16
INVOLVING THE COMMUNITY			
Develop and maintain partnerships with organisations and statutory bodies that assist with the management of the park.	Medium	Ongoing	16
Encourage and support the involvement of the local community, volunteer organisations and individuals in park management programs that complement the activities of park staff and contractors.	High	Ongoing	16
Provide an efficient and integrated planning, approval, support and liaison service to volunteers that is consistent with park management objectives.	High	Ongoing	16

12 REFERENCES AND BIBLIOGRAPHY

Angas, G. F. (1847) *South Australia Illustrated*, Thomas McLean, London.

Dashorst, G.R.M., & Jessop, J. P. (1990) *Plants of the Adelaide Plains and Hills,* State Herbarium of South Australia, Adelaide.

Department for Environment and Heritage (2003) *Provisional List of Threatened Ecosystems of South Australia.* Unpublished.

Department of Environment and Land Management (DELM) (1993), *Angove Scrub Biological Assessment*, Native Vegetation Management Branch, Department of Environment and Land Management, Kensington.

Ellis, R. (1974) "The Aboriginal Inhabitants and their Environment", in *Natural History of the Adelaide Region,* Royal Society of South Australia, Adelaide.

Environment Australia (2002) *Revision of the Interim Biogeographic Regionalisation for Australia (IBRA) and Development of Version 5.1. Summary Report.* http://www.ea.gov.au/parks/nrs/ibraimcr/ibra_95/summary-report/index.html

Grund, R. (2001) *South Australian Butterflies* [Online, accessed 6 July 2001] URL: http://www.chariot.net.au/~rgrund/index.htm.

Lang, P. & Kraehenbuehl, D. (1995) *Plants of Particular Conservation Significance in South Australia,* National Parks and Wildlife South Australia, Adelaide.

Long, M. (1999) *A Biological Inventory of the Mt Lofty Ranges, South Australia*, National Parks and Wildlife SA, Adelaide 3rd edition.

Neagle, N. (1995) *An Update of the Conservation Status of the Major Plant Associations of South Australia*, Department of Environment and Natural Resources SA, Adelaide.

Thackway, R., and Cresswell, I. D., (1995) (Eds) An Interim Biogeographic Regionalisation for Australia: a framework for establishing the national reserve system of reserves, Version 4.0. Australian Nature Conservation Agency, Canberra.

Tindale, N. B. (1974) Aboriginal Tribes of Australia, ANU Press, Canberra.

Turner, M. S. (2000) *Biodiversity Plan for Metropolitan Adelaide*, Urban Forest Biodiversity Program, Adelaide.

Woods, T. (1879) in Cotton B Ed (1996) *Aboriginal Man in South and Central Australia*, Government Printer, Adelaide.