Department for Environment and Heritage

# Management Plan

## Onkaparinga River Reserve

Incorporating Onkaparinga River National Park
and Onkaparinga River Recreation Park

2004

Government
of South Australia


# OUR PARKS, OUR HERITAGE, OUR LEGACY

Cultural richness and diversity are the marks 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.

Department for Environment and Heritage

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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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Department for Environment and Heritage

## FOREWORD

This management plan sets out objectives and actions for the Onkaparinga River National Park, and the Onkaparinga River Recreation Park, which are together referred to as Onkaparinga River Reserve or 'the reserve'. It has been produced in accordance with the National Parks and Wildlife Act 1972. The park is of considerable conservation value and is managed by the Department for Environment and Heritage (DEH).

Located in southern metropolitan Adelaide, the Onkaparinga River Reserve covers a large area of the gorge, floodplain and estuary of the Onkaparinga River and conserves important fish breeding habitat and significant estuarine and freshwater habitats. It is linked to the ecological stability of the Noarlunga Reef, and conserves 32 plant and animal species of conservation significance at state and national levels. The Onkaparinga River estuary also provides habitat for migratory birds listed on international agreements.

Onkaparinga River Reserve is a part of the Metropolitan Open Space System. The intention of the Metropolitan Open Space System is to create a 'second generation' of Adelaide parklands to complement the original city parklands. Recreational opportunities provided in the reserve include walking, bushwalking, fishing, canoeing, cycling, rock climbing and nature study.

Management aims to protect the natural and cultural resources of the area whilst providing for suitable recreational activities. The management objectives for the Onkaparinga River Reserve have not been prepared in isolation, but rather in consultation with other agencies and community groups. The location of other DEH reserves and areas of remnant vegetation have also been considered to ensure that the Onkaparinga River Reserve is managed in a regional context.

The plan of management for the Onkaparinga River Reserve is now formally adopted under the provisions of section 38 of the *National Parks and Wildlife Act 1972*.

JOHN HILL

MINISTER FOR ENVIRONMENT AND CONSERVATION

## SYNOPSIS

This management plan for the Onkaparinga River Reserve incorporates recommendations and actions for the management of the Onkaparinga River National Park and the adjacent Onkaparinga River Recreation Park. The Onkaparinga River Reserve (the reserve) is located in southern metropolitan Adelaide and includes the lower catchment of the Onkaparinga River, including the Onkaparinga gorge, floodplain and estuary.

Many reserve values are dependent upon the external management of the Onkaparinga River catchment. Catchment issues relating to water quality, quantity and seasonality impinge upon the reserve. The reserve contributes significantly to ensuring water quality within the estuary meets standards that protect human health. The reserve contains four (of five) stormwater retention wetlands that reduce nutrient, heavy metal and faecal coliform pollution of the river from urban stormwater.

The reserve conserves important fish breeding habitat and estuarine and freshwater habitats of significance to the State. In addition, the ecological stability of the Noarlunga Reef is linked to management of the river, estuary and coastal dune system. The estuary provides a small but useful habitat for migratory birds, including wader species that are covered by international agreements to which Australia is a signatory[1]. Twenty three species of terrestrial plants and animals occurring within the reserve are classified as Vulnerable or Rare at the State level. However, the natural diversity of native plant communities (with some exceptions) is comparatively low. Much of the reserve is composed of small remnant areas of native vegetation within a broad swathe of degraded pasture.

Nonetheless, the reserve contributes significantly to biodiversity conservation, especially at the regional level. As part of the Metropolitan Open Space System, the reserve services the City of Onkaparinga, contributing to the quality of life and well-being of the city's 151, 000 or more residents.

The reserve provides recreational opportunities for visitors to bushwalk, exercise their dog, fish, canoe, cycle, rock climb, undertake nature study and generally enjoy and appreciate the natural and cultural values. There is potential for the limited provision of cycling trails in the reserve which may link with regional trails. The reserve contains heritage sites of importance to the Kaurna people and heritage structures listed on the SA Heritage Register.

### Vision, Strategy and Major Actions

This plan recognises the extensive and notable contribution of the Friends of Onkaparinga Park. It recognises community concerns over water quality issues and acknowledges the community support for building upon existing reserve values. Furthermore, the plan promotes and endorses the contribution that Onkaparinga River Reserve can make to a regional trails network. However, the plan recognises the reality of limited recurrent funding and proposes a long-term strategy of developing partnerships to help achieve outcomes. In particular, the plan promotes further development of partnership arrangements with the Friends of Onkaparinga Park, the City of Onkaparinga and the Onkaparinga Catchment Water Management Board.

The plan proposes the following key actions:

- Monitor and conserve communities of plants and animals of conservation significance, particularly those of State significance.
- Develop, in association with the Friends of Onkaparinga Park, an integrated revegetation, pest plant and animal control program with 10-year goals and annual targets for the first 5 years. Have the program scrutinised by a biological scientist. Implement the program.
- Review and progressively redevelop car parks, trail-heads and walking trails within the reserve, facilitating the development of regional trails.

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1 International agreements include the Japan – Australia Migratory Bird Agreement (JAMBA) and the China – Australia Migratory Bird Agreement (CAMBA).

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## ABBREVIATIONS

| | |
|---|---|
| DAARE | Department for Aboriginal Affairs and Reconciliation |
| DEH | Department for Environment and Heritage |
| DENR | The former Department for Environment and Natural Resources |
| DWLBC | Department for Water Land and Biodiversity Conservation |
| EPA | Environment Protection Authority |
| ILUA | Indigenous Land Use Agreement |
| MOSS | Metropolitan Open Space System |
| PIRSA | Department of Primary Industries and Resources, South Australia |
| IBRA | Interim Biogeographic Regionalisation for Australia |
| CARRS | Comprehensive, Adequate and Representative Reserve System |
| JAMBA | Japan and Australia Migratory Bird Agreement |
| CAMBA | China and Australia Migratory Bird Agreement |

## ACKNOWLEDGEMENTS

This management plan for Onkaparinga River Reserve was prepared by staff of the Sturt District, and Reserve Planning, Department for Environment and Heritage.

The assistance of the Friends of Onkaparinga Park, the Sturt District Consultative Committee, Alex McDonald former Manager Reserve Planning (DEH), Dene Cordes, DEH, Paul Tulloch, DEH, Katherine Bellette, former Manager Onkaparinga Catchment Water Management Board, David Leek, DWLBC, Peter Goonan from the EPA and Ben Calder, City of Onkaparinga is also acknowledged.

# 1 INTRODUCTION

This document is the adopted management plan for Onkaparinga River Reserve. It combines the management plans for Onkaparinga River National Park and Onkaparinga River Recreation Park. The reserves have been considered together as they are located in the same geographic area and are used and supported by the same local community. These reserves are located in the southern metropolitan area of Adelaide, which falls within the Sturt District, Adelaide Region of the Department for Environment and Heritage. The plan outlines proposals to conserve and where appropriate rehabilitate the natural and cultural values of the parks, while providing for public use and enjoyment.

This management plan has been prepared in accordance with the *National Parks and Wildlife Act 1972*. Section 38 of the Act states that a management plan is required for each reserve. A management plan should set out 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.

On completion of a draft plan, an announcement is made in the Government *Gazette* and the plan is placed on public exhibition for three months. During this period, any interested person may make submissions, which are then referred, with the plan, to the South Australian National Parks and Wildlife Council for their comments and suggestions.

Providing opportunity for formal community input into public land management is a legislative requirement and is supported by park managers. The draft plan for Onkaparinga River Reserve was released for public exhibition in June 2001. At the close of the comment period, 244 submissions had been received. Issues raised included both concern and support for the proposed multi-use horse/bicycle/walk trail in the vicinity of the Bakers Gully Track, corrections/addenda to species lists, maps, historical and cultural content, concerns regarding lease arrangements and the provision of facilities, and a wide variety of comments on other issues raised in the plan. All comments and concerns were considered by the Sturt Consultative Committee before being further considered by the SA National Parks and Wildlife Council.

After considering all representations, the Minister may then adopt the management plan with or without alterations. In the case of the plan for Onkaparinga River Reserve, a number of alterations have been incorporated as a result of the community consultation process. Notice of official adoption is published in the Government Gazette and copies of the final plan are made available for sale to the public. They may also be viewed on the departmental website: http://www.environment.sa.gov.au/parks/management_plans.html.

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

# 2 MANAGEMENT FRAMEWORK

Management planning is a statutory requirement for all reserves prescribed in s38 of the *National Parks and Wildlife Act 1972* and s31 of the *Wilderness Protection Act 1992*. The management planning process is a small part of a much larger, state-wide hierarchy of management. This is guided at the highest level by State Government policies and Departmental priorities and implemented, on a day to day basis, at a Regional and District level.

Management plans are significant, in that they provide a ministerially endorsed and legally binding framework for the use and management of *National Parks and Wildlife Act* reserves. They are intended to accommodate anticipated trends and community aspirations over a five to ten year time frame. The legislation anticipates that management plans will be formally reviewed from time to time, but there are no prescribed time limits for this to occur.

DEH regional staff have been assigned primary responsibility for preparing management plans and undertaking the associated community consultation process. A standard management planning process is mandated, to ensure that all statutory obligations are met.

Management plans define what is considered acceptable activity in a reserve while still allowing park managers some flexibility in day to day decision-making. They should be prescriptive enough to prevent deleterious activities, or inappropriate developments, taking place. They are not intended to be comprehensive compendiums of resource information, nor are they heavily prescriptive action statements; other documentation covers those aspects. They do however, identify the key values of reserves, their appropriate utilisation and the major issues of concern requiring action, thereby providing the community (and park managers) with a blue-print of how public land is going to be used and managed.

Management plans often foreshadow the preparation of 'delegate' plans to achieve the proposed objectives. For example, a fire management plan and a public risk assessment plan might both be needed to provide additional details on how the actions, listed in this management plan, are to be progressed. Although such in-house action plans are not subject to the same statutory processes as are formal management plans, DEH will continue to involve relevant stakeholders, other agencies and community groups in their preparation and implementation as part of the on-going management of the reserve.

## 2.1 Park Classification

Parks are established for the conservation of biodiversity and cultural heritage and the environmentally responsible use of our natural resources. The classification of parks provides a general statement of purpose for which the area was acquired.

Classifications under the *National Parks and Wildlife Act 1972*, the *Crown Lands Act 1929* or the *Wilderness Protection Act 1992* are as follows:

*Recreation Parks (RP)* - areas of significance under the *National Parks and Wildlife Act*, managed for public recreation and enjoyment in a natural setting;

*National Parks (NP)* - areas proclaimed under the *National Parks and Wildlife Act* considered to be of national significance due to wildlife, natural features of the land or cultural heritage;

*Conservation Parks (CP)* - areas under the *National Parks and Wildlife Act* that are protected for the purpose of conserving wildlife or the natural or historic features of the land, where the development of visitor facilities tends to be kept to a minimum;

*Game Reserves (GR)* - areas set aside under the *National Parks and Wildlife Act* for the conservation of wildlife and the management of game at prescribed times for controlled seasonal hunting;

*Regional Reserves (RR)* - areas proclaimed under the *National Parks and Wildlife Act* for the purpose of conserving wildlife or natural or historical features while allowing responsible use of the area's natural resources (eg. mining);

*Conservation Reserves (CR)* - land currently set aside for conservation of natural and cultural features under the *Crown Lands Act 1929* and held under the care, control and management of the Minister for Environment and Conservation, that for various reasons were not proclaimed under the *National Parks and Wildlife Act 1972*;

*Wilderness Protection Areas (WPA)* - land set aside under the *Wilderness Protection Act 1992* to protect natural and remote areas.

## 2.2 Government Policy and Legislation

When managing reserves, DEH is required under section 37 of the *National Parks and Wildlife Act* to have regard to, and provide actions that are consistent with the following objectives 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 geological, 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 bushfires and other hazards;
- encouragement of public use and enjoyment of reserves and education in, and a proper understanding and recognition of, their purpose and significance; and
- generally, the promotion of the public interest.

Additional legislation, conventions and agreements that DEH is obliged to comply with are listed in Appendix A.

## 2.3 Native Title

Native Title is used to describe the interests Aboriginal and Torres Strait Islander People have in land and waters according to their traditional laws and customs. Federal 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.

Any development proposed for a reserve must be valid in terms of the *Native Title Act 1993* (Commonwealth). This reserve is subject to a claim for a determination of native title by the Kaurna People. A 'determination' is a decision made by the courts as to who holds native title for an area.

This management plan is released and will be adopted subject to any native title rights and interests that may continue in relation to the land and/or waters. Nothing in the management plan is intended to affect native title. Before undertaking any future acts that might affect native title, DEH will follow the relevant provisions of the *Native Title Act 1993*.

In addition to the requirements of native title legislation, DEH is committed to developing partnerships with Aboriginal people. This may include a number of native title and Aboriginal heritage groups.

Consistent with South Australian Government policy, DEH is also keen to pursue Indigenous Land Use Agreements (ILUAs) where appropriate. ILUAs are voluntary agreements between a native title group and other people about the use and management of land and/or waters.

## 2.4 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) represents a fundamental reform of former Commonwealth environment laws. The Act establishes a new Commonwealth approval process for assessment of proposed actions that are likely to have a significant impact on matters of national environmental significance and provides an integrated system for biodiversity conservation and management of important protected areas.

Matters that require assessment and approval of proposed actions under the EPBC Act 1999 are:

- any action that has, will have or is likely to have a significant impact on the following identified matters of national environmental significance:
  - World Heritage properties
  - Ramsar wetlands of international significance
  - Nationally listed threatened species and ecological communities
  - Listed migratory species
  - Commonwealth marine areas
  - Nuclear actions (including uranium mining)

- any activity involving Commonwealth land that has, will have, or is likely to have a significant impact on the environment.

With regard to Onkaparinga River Reserve, the Pale Leek-orchid (*Prasophyllum pallidum*) and Pink-lip Spider-orchid (*Caladenia behrii*) are two nationally threatened species that occur within the park. Commonwealth approval is required for any action that has, will have or is likely to have a significant impact on these nationally threatened species in addition to any State approval that may be required.

Furthermore, in consultation with relevant State authorities, the Commonwealth Minister for the Environment and Heritage may develop and implement recovery plans and threat abatement plans for threatened species and ecological communities listed under the EPBC Act. Where applicable, DEH should contribute to and incorporate these plans into park management regimes and operational procedures.

## 2.5 Land Tenure History

The land tenure history identifies the prior tenure for each land parcel now reserved, as well as detailing reserve proclamations. Specifics of the land tenure history for land parcels comprising this reserve are provided below, with more details provided in Appendix B.

The Onkaparinga River Recreation Park was first constituted on 7/11/1985 (*Gazette* p1360) and at that time comprised sections 998 and 999, Hundred of Kuitpo, sections 1666, 1667 and 1668, Hundred of Noarlunga, and sections 863 to 869, Hundred of Willunga.

Road plans 8104, 8111 and 8265 were also consolidated with the former Certificate of Title into the reserve.

The Onkaparinga River National Park was first constituted on 5/8/1993 (*Gazette* p747) by excluding from the Recreation Park, land to the east of Main South Road.

The National Park comprised sections 998 and 999, Hundred of Kuitpo, sections 868 and 869, Hundred of Willunga and section 1668, Hundred of Noarlunga.

<u>Additions</u>

Pieces 103, 104 and 105, Deposited Plan 36654 were added to the National Park on 6/3/1997 (*Gazette* p1114). Allotment 20 in Deposited Plan 29423 was added to the Recreation Park on 21/3/1991 (*Gazette* p963). On 16/5/1991 (*Gazette* p1570) Sections 865 and 867 were divided, with Allotments 21 and 23 being added to the Recreation Park and Allotment 3 (in Deposited Plan 29546) and Allotment 22 (in Deposited Plan 29547) were excluded from the reserve. On 11/10/2001 Allotment 205 in Deposited Plan 53156, Allotments 300 and 301 in Deposited Plan 53157, and Allotment 1 in Deposited Plan 56738 were added to the National Park.

<u>Current Status of Land</u>

The reserve now comprises the following sections (see Figure 5: Additional Land):

*Onkaparinga River Recreation Park*
Sections 863, 864 and 866, Hundred of Willunga,
Allotment 23, Deposited Plan 29546,
Allotment 21, Deposited Plan 29547,
Allotment 20, Deposited Plan 29423 and
Sections 1666 and 1667 Hundred of Noarlunga.

*Onkaparinga River National Park*
Section 1668, Hundred of Noarlunga,
Sections 868 and 869, Hundred of Willunga,
Sections 998 and 999, Hundred of Kuitpo,
Pieces 103,104 and 105 Deposited Plan 36654, Hundred of Willunga and Noarlunga,
Allotment 205, Deposited Plan 53156, Hundred of Willunga,
Allotments 300 and 301, Deposited Plan 53157, Hundred of Willunga and
Allotment 1, Deposited Plan 56738, Hundred of Willunga.

# 3 MANAGEMENT CONTEXT

## 3.1 Purpose of Reserve

The majority of the land now dedicated as Onkaparinga River Reserve was purchased by the State Planning Authority in 1973-1977 and held as Open Space Reserves. The original purpose in acquiring the land was to provide open space for recreational purposes and to preserve the natural character of the landscape, including the native flora and fauna. The area was also intended to function as a buffer between areas of urban and rural land.

The majority of the land was transferred to the Department for Environment and Heritage in 1982 and both the estuary and gorge areas were dedicated in 1985 as Onkaparinga River Recreation Park. The first draft management plan was placed on public exhibition in 1991 and following public submissions, the gorge section was reclassified to National Park in 1993.

This Plan of Management for the Onkaparinga River Reserve confirms the purpose of the reserve to firstly conserve and enhance natural biodiversity, cultural values and water quality and secondly, to provide a range of recreation opportunities for nearby residents and general visitors. The range of recreation opportunities should be compatible with maintaining the reserve's natural values and complement those recreational opportunities provided by the City of Onkaparinga, private organisations and businesses outside the reserve. In addition, the reserve may well provide future opportunities for cycling, in appropriate sections of the reserve, as part of a broader regional trails strategy.

## 3.2 Location and Park Features

Onkaparinga River Reserve is located approximately 35 km south of Adelaide (see Figure 1 Location). It is the largest reserve (1,850 hectares) within the Adelaide metropolitan area.

The reserve extends eastwards from the coast about 16 km towards Clarendon. From Port Noarlunga it crosses the plain to Old Noarlunga and then eastward, through the Onkaparinga Gorge to the reserve boundary, about 3km north of Blewitt Springs.

The reserve is bounded by Piggott Range Road and River Road in the north and by a more complex system of roads (Jared, Railway and Chapel Hill Roads) and private land to the south (see Figure 4 Reserve Features). The reserve is crossed from north to south by Main South Road near Old Noarlunga and by the Commercial Rd/Saltfleet Bridge at Port Noarlunga.

In the eastern section of the reserve, areas of either cleared, revegetated or remnant native vegetation cover the ridge crests, upper slopes and steep slopes of the Onkaparinga Gorge.

To the west of Old Noarlunga, the floodplain and surrounding areas are covered by a combination of open shrubland, native grassland, introduced pasture, reed beds, samphire flats and areas of revegetation. The Onkaparinga estuary supports substantial areas of the estuarine variety of the seagrass *Zostera muelleri*, locally known as garweed, which remains submerged and is only rarely emergent. Growing attached to the garweed is a variety of algal species, which form an important food source for estuary fauna. Both eastern and western sections of the reserve have extensive infestations of introduced plants, including scheduled pest plants.

The reserve offers scenic environments of considerable extent and variety. Walkers can experience the open expansive landscapes in the estuary and along the ridge tops, or the enclosed riparian environment of the gorge, while residents of the adjacent suburbs and day visitors can enjoy short walks on marked and formed trails, or enjoy half and full day walks into areas that retain a semi-wilderness character. Fishing and canoeing are popular activities within the estuary area. The multi-purpose trail, located within the floodplain, is well used by walkers and cyclists.

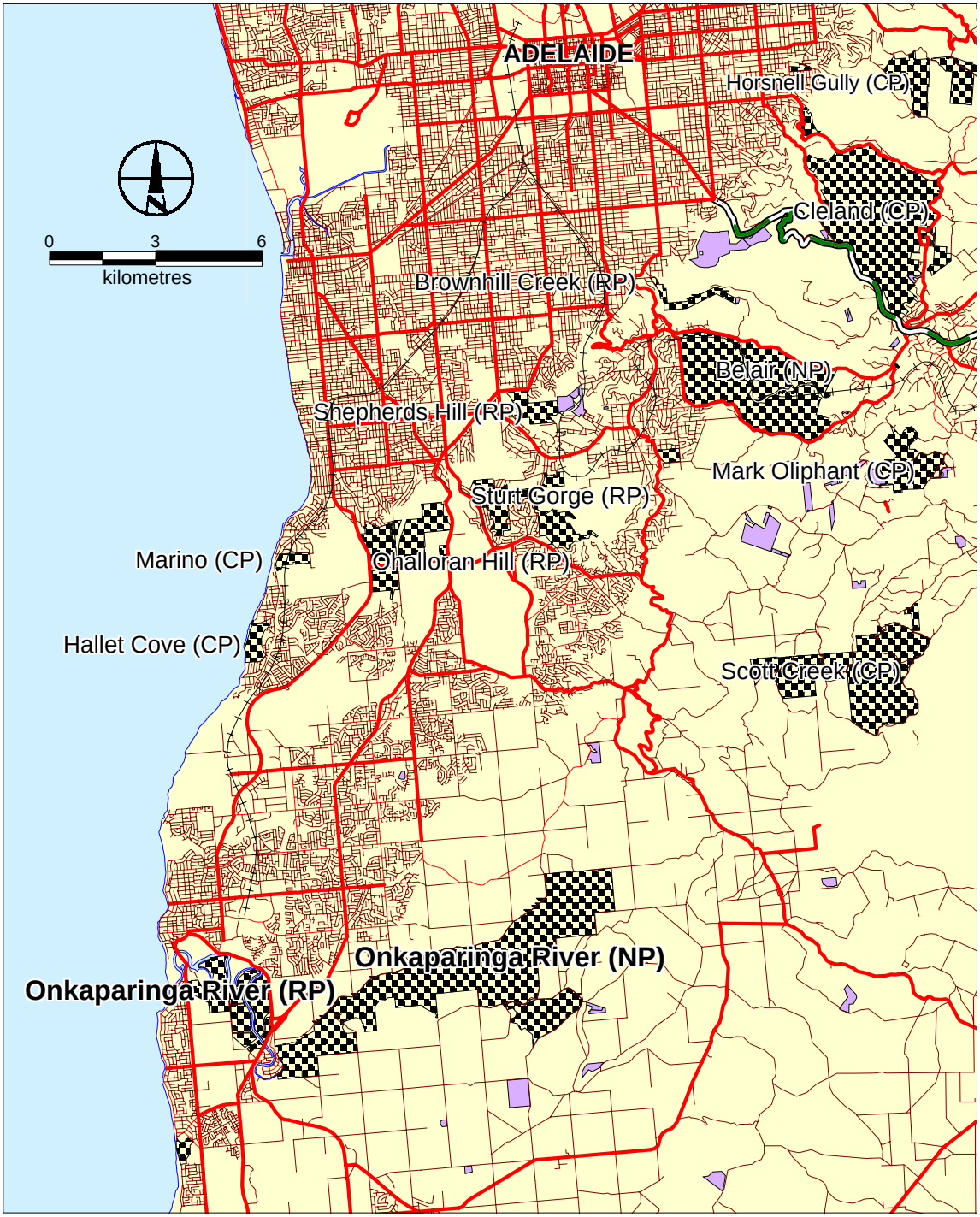


**Figure 1**

Onkaparinga River Reserve

**Location**

Main Road

Road

Railway

DEH Reserve

Heritage Agreement

Map designed and created by
Reserve Planning using PAMS
Projection: Longitude / Latitude (GDA 94)
Date: 2004

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### 3.2.1 Climate

Onkaparinga River Reserve experiences cool wet winters and warm dry summers. Temperatures and rainfall vary from the coastal floodplain to the higher elevation lands near the eastern boundary of the reserve.

The average summer maximum temperature is 27°C with the hottest weather recorded in January and February. Old Noarlunga receives 522mm of rainfall per year on average while the higher eastern portions of the reserve receive a little more. Rainfall shows a seasonal bias towards winter, with most rain falling between May and September.

Prevailing summer winds are from the southeast during the day, shifting to the southwest in the late afternoon. The gorge modifies both wind direction and strength, deflecting winds to follow the course of the river. During summer, strong gully winds from the east may funnel down the gorge at night. Hot northerly winds during summer bring daytime temperatures above 30°C on approximately 24 days per year and the temperature exceeds 35°C on an average of 11 days per year.

## 3.3 Regional Setting

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The Onkaparinga River Reserve is one of fifteen parks managed by the Sturt District within the Adelaide Region of DEH. The Sturt District has its administrative centre at Belair National Park, about 30 minutes away from the reserve by vehicle.

Rangers and construction and maintenance workers visit the reserve to conduct the annual program of works, carry out projects and in response to needs as they arise. Staff are not allocated on an exclusive basis to manage the reserve, but are allocated from the district workforce in the context of meeting overall district priorities. However, the district maintains the flexibility to respond to developing situations and general requests from the community relating to the reserve.

The Sturt District currently has a field staff complement of six rangers and seven construction and maintenance workers (CMW). Over a twelve-month period, the reserve is managed by the equivalent of a half time ranger and one full time CMW commitment.

National Reserve System and CARRS

The Onkaparinga River Reserve contributes significantly to the National Reserve System (NRS), which encompasses all existing protected areas managed and/or administered by State or Commonwealth nature conservation agencies.

The aim of the National Reserve System is to establish a Comprehensive, Adequate and Representative Reserve System (CARRS) for the protection and conservation of Australia's biodiversity according to the following principles:

- Comprehensiveness: inclusion of the full range of ecosystems recognised at an appropriate scale within and across each bioregion.
- Adequacy: ability to maintain the ecological viability and integrity of populations, species and communities.
- Representativeness: those areas that are selected for inclusion in reserves reasonably reflect the biotic diversity of the ecosystems from which they derive.

Biogeographic Regionalisation

The Interim Biogeographic Regionalisation of Australia (IBRA, Environment Australia 2002) 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. In 2002, 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.

The Onkaparinga River Reserve occurs within the Flinders Lofty Block IBRA region, which is described as temperate to arid Proterozoic ranges, alluvial fans and plains with extensive and mixed landuse, often with highly modified lands; particularly near metropolitan Adelaide. Areas of natural biodiversity occur in relatively small and sometimes isolated pockets. Low open woodlands of *Eucalyptus obliqua* and *E. baxteri* on deep lateritic soils, and *E. fasciculosa* and *E. cosmophylla* on shallower or sandy soils, cover the southern portion of this region, where the Onkaparinga River Reserve is situated (Environment Australia 2002).

The Flinders Lofty Block IBRA region totals 7,131,816 ha and has been extensively cleared of native vegetation for agriculture and urban development. Remaining native vegetation is highly fragmented and only 5.5% of the Flinders Lofty Block's area is conserved in protected areas.

There is a widely recognised benchmark that at least 15% of an original ecosystem should be conserved where possible. Land representing ecosystems within the Flinders Lofty Block IBRA region is inadequately protected and remnant vegetation in Onkaparinga River Reserve contributes significantly to biodiversity conservation.

The reserve also forms part of a linked sequence of remnant areas of native vegetation that stretch from the sea, across the floodplain, through the foothills and into the higher Mount Lofty Ranges. Within the local region, there are several private properties protected by Heritage Agreements under the *Native Vegetation Act 1991,* which assist with the preservation of biodiversity (Figure 1). These protected areas provide stepping stones or links that can facilitate movement of species, improve overall genetic diversity and boost ecosystem sustainability.

This concept of a biological corridor has the potential to be extended through revegetation programs consistent with the DEH *NatureLinks* policy to link other areas of remnant native vegetation on public and private land.

Regional Biodiversity Planning

Onkaparinga River is South Australia's second largest permanent river and has the third largest estuary, after the River Murray and Port River estuaries. The Onkaparinga River and estuary function as important and valuable ecosystems but have ongoing pollution problems.

Onkaparinga River is important in a regional and state context for maintaining environmental and biodiversity values associated with the Noarlunga Reef, estuarine wetland fauna, fish breeding and freshwater aquatic plants and animals. South Australia has few rivers and estuaries of any size, increasing the importance of maintaining the reserve as an adequate representative sample of that which remains.

Most of the land contained within the reserve has been subject to either vegetation clearance and/or stock grazing. Significant and valuable areas of remnant vegetation do exist however, and these are being actively extended and joined through revegetation projects. The reserve conserves remnant vegetation from the western face foothills and the floodplain environments of the southern metropolitan area.

The distribution of plant and animal communities and the current status of species of conservation significance are not well understood for the reserve. *A Biological Survey of the Southern Mount Lofty Ranges, South Australia* was published in 2003 (Armstrong et al.). This document outlines conservation management issues and proposes actions including further survey work to aid the conservation of biodiversity throughout the Mount Lofty Ranges. Results and recommendations from the *Biological Survey of the Southern Mount Lofty Ranges, South Australia* will be incorporated, along with additional survey results into the Biodiversity Plan for the Mount Lofty Ranges, which is expected to be released in 2004. This management plan will contribute to the implementation of the Biodiversity Plan for the Mount Lofty Ranges.

The reserve includes the lower Onkaparinga River catchment, which plays an important role in maintaining the water quality of the Onkaparinga River. By maintaining native vegetation cover (without grazing by domestic stock), the reserve contributes a substantial amount of fresh water to the river, resulting in improved overall water quality.

The stormwater retention wetlands, constructed on the floodplain within the reserve, also reduce the deposition of nutrients, heavy metals and bacterial organisms into the river. These functions of the reserve are an important "whole of catchment contribution" to achieving safe water quality values for the lower estuary and coastal reef.

Yurrebilla – The Greater Mount Lofty Parklands

Onkaparinga River Reserve and other DEH reserves 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, Forestry SA, 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 policies that will enable a consistent management approach to be adopted throughout the region with an emphasis on improved biodiversity conservation and recreational opportunities.

Local Council

Onkaparinga River Reserve lies within the City of Onkaparinga in southern metropolitan Adelaide. The City of Onkaparinga has a resident urban population in excess of 151,000 (based on the 2001 Census of Population and Statistics) and the urban areas adjacent to the reserve have a population approaching 20,000 people. The Onkaparinga River Reserve is an important natural open space used extensively by this adjacent population. Major population centres are located to the northwest and southwest of the reserve while to the northeast, east and south a combination of hobby farms and horticultural activities provide a diversity of landuse. The reserve acts as a physical buffer between urban and rural landuse thereby lessening the possibility of conflicting incompatible land management practices.

Recreation

DEH manages most reserves within the southern metropolitan area with a focus on biodiversity conservation and passive recreation. This strategy complements the network of open space reserves managed by the City of Onkaparinga for more structured sports, passive, active and social recreation.

Onkaparinga River Reserve is managed with a primary focus on biodiversity conservation and where compatible, the provision of recreation opportunities. Within the region, O'Halloran Hill Recreation Park is managed for more structured active recreation pursuits.

The reserve is recognised by government and the regional community as an area providing recreation opportunities for bushwalking, nature study, fishing, educational field trips, picnics, and in designated areas; the exercising of dogs, cycling, rock climbing, abseiling and canoeing.

## 3.4 History of Reserve Management

Over the last 18 years, management of the Onkaparinga River Reserve has concentrated on the following key strategies:

- Acquire land to consolidate the reserve for the adequate conservation of remaining natural biodiversity and to create manageable boundaries.
- Utilise a zoning plan to limit negative environmental and cultural impacts in sensitive areas while encouraging recreation activities within appropriate locations.
- Facilitate and encourage the participation of the local community in the management and rehabilitation of the reserve.
- Contribute to the management of urban stormwater and the improvement of water quality within the estuary by assisting in the planning, construction, revegetation and maintenance of stormwater retention wetlands within the reserve.

- Link existing areas of remnant native vegetation within the reserve by implementing revegetation programs.
- Progressively fence the reserve, provide and maintain car parks, emergency entrances and an appropriate emergency and reserve management access system.
- Develop recreation infrastructure, including boardwalks, bridges, walking trails and multi-purpose trails.
- Undertake pest animal and plant control programs.
- Assist in identification and preservation of indigenous and non-indigenous cultural sites.
- Protect lives and property from the threat of bushfire, by developing a bushfire prevention program.

Important achievements include:

- Facilitating the construction of stormwater retention wetlands within the floodplain under the auspices of the Ministerial Task Group and Steering Committee in 1990-1992.
- Facilitating the archaeological investigation of a number of indigenous cultural sites in 1992.
- Undertaking revegetation projects resulting in over 350 hectares of direct seeding of native vegetation. The planting of over 80,000 tube stock into selected areas by the Friends of Onkaparinga Park and other volunteers between 1988 and 1999.
- DEH participation in the Wetlands Subcommittee, responsible for completing additional works including construction, revegetation and monitoring of the stormwater retention wetlands, from 1992 until 1999. This included construction of boardwalks and the Wetlands Interpretive Trail.
- Construction during 1995-6 of the suspension footbridge over the Onkaparinga River at Old Noarlunga, with a significant financial contribution from the Friends of Onkaparinga Park.
- Construction and signposting of the Sundew and Echidna Nature Trails during 1995.
- Production of the 'People versus Pollution' booklet and video in 1996 in association with numerous groups and agencies.
- Undertaking fox control programs between 1997 and 2003 (ongoing).
- Maintaining weed control programs from 1985 to 2003 (ongoing), focusing on environmental weeds and scheduled pest plants.
- Consolidation and conservation of the Pingle Farm ruins between 1995 and 1999.
- Establishing the multi-purpose bikeway in cooperation with the City of Onkaparinga and the Department of Recreation and Sport during 1998-9.
- Facilitating and supporting the development of the Friends of Onkaparinga Park who won the award for the Friends Group of the Year in 1992 and the Friends Group of the Decade in 1997.
- Developing and implementing a Bushfire Prevention Plan (1995).
- Establishing holdfasts (anchor points) for rock climbing.

Reserve management has been generally effective in:

- building community involvement;
- establishing a framework for the management of the natural values of the reserve to ensure sustainable visitor usage;
- commencing rehabilitation and revegetation works within the reserve; and
- contributing to improved water quality within the Onkaparinga catchment.

Reserve management has been less effective in:

- reducing vandalism;
- reducing the incidence of small bushfires; and
- establishing a comprehensive walking trail system.

This plan aims to build on current successes and implement a suitable long-term vision and set of strategies for this reserve.

## 3.5 Existing Management Arrangements

Although DEH is primarily responsible for the management of Onkaparinga River Reserve, the Department maintains management agreements with a number of interested parties. Some of these are structured arrangements but most are maintained on a more informal basis.

Work programs are bolstered by the involvement of volunteers, the Friends of Onkaparinga Park and by the letting of contract work (eg. the direct seeding program).

The Friends of Onkaparinga Park are valued partners in the ongoing management of the reserve and make a major contribution to many aspects of management, including flora and fauna inventory, revegetation, weed control and promoting the reserve to the community.

Arrangements with other groups and organisations have assisted in the total management effort. A special recognition of the work undertaken within the reserve by CFS brigades over a number of years is also warranted. CFS crews regularly attend fires within the reserve throughout the fire danger season.

DEH works in partnership with the City of Onkaparinga and the Onkaparinga Catchment Water Management Board regarding issues of mutual interest, thereby ensuring a cooperative approach to management and monitoring of the Onkaparinga River, estuary and stormwater retention wetlands.

DEH consults with members of the Kaurna community in relation to cultural sites and sensitive issues as the need arises.

Leasing arrangements exist with the Noarlunga District Radio Modellers, the South Coast Flying Club, and the South Australian branch of the Scout Association. Easements exist within the reserves for ETSA, SA Water, Telstra and the provision of a further transport corridor to service the Seaford Development is anticipated.

Short-term permits are provided for recreation and tourism purposes. Currently permits are available within designated areas of the reserve for rock climbing and camel tours. Extensions to all permits are subject to a review of the impacts of these activities on reserve values.

## 3.6 Management Philosophy & Strategic Directions

The role of reserves is predicated on the twin aims of the *National Parks and Wildlife Act 1972*; to provide for public benefit and enjoyment and to conserve wildlife in a natural environment. Increasingly, the importance of biodiversity conservation is being recognised and the future use and management of reserves must address this issue. Proposed actions will need to be assessed with the ability to meet the primary objective of biodiversity conservation, which may result in public use becoming regulated to serve that aim.

Onkaparinga River Reserve conserves plants and animals of state and national conservation significance, however, the distribution and long-term viability of communities within which they occur is not known. The majority of the reserve and its resources are important in a more localised sense. Some areas, in particular degraded pasture, represent a short-term land management liability.

The reserve is the largest within the metropolitan area, with significant biological and cultural resources, and a local community willing to donate extensive amounts of their time to develop the reserve values. The reserve also plays an important role in providing recreation opportunities to a local urban population.

Staff, sections of the local community and the Friends Group value the reserve not only for its existing values, but also for its potential. There is passionate support for the reserve as a major urban park servicing southern metropolitan Adelaide.

The vision of a reserve that is largely revegetated, with a diverse fauna, containing a special freshwater and estuarine ecology has generated considerable interest. Such a reserve will provide valued natural bushland for nature conservation, passive recreation opportunities and significantly add to the quality of life for future residents of the southern suburbs.

Repairing natural ecosystems that have been damaged by past land use presents a challenge for future management. DEH must prioritise often limited resources for the conservation and maintenance of reserves with high biodiversity and cultural values. Priorities are set at first in a state-wide and then a regional perspective.

Within the region, most resources are allocated to the maintenance of areas of mature, stable, biologically diverse habitats containing species or communities of State significance and to locations with intensive, concentrated public use. Resource allocation using this approach results in Onkaparinga River Reserve receiving only modest funding for the foreseeable future. There may be insufficient resources available to implement all proposals in this plan immediately. Consequently management action proposals have been given priority ratings.

However, DEH believes that in partnership with the community and other agencies, considerable progress may be made over the next twenty years towards increasing biological values and providing quality recreational settings and opportunities for visitors.

To achieve these aims, the following strategies will be employed:

- Establish comprehensive, long-term programs for habitat reconstruction based on available sound scientific principles.
- Develop and progressively implement a recreation strategy that complements the regional provision of recreation opportunities and that assists in the improvement of reserve biodiversity values.
- Recognise the central role of the Friends of Onkaparinga Park in delivering the objectives of this plan and respond with appropriate recognition, support, advice, training and direction. Adopt strategies to widen the understanding and involvement of the local community.
- Formally explore management opportunities and possible partnership with the Onkaparinga Catchment Water Management Board and work with the City of Onkaparinga on management issues of mutual interest.
- Continue to explore all opportunities for external funding and grants.

# 4 MANAGEMENT PRESCRIPTION

## 4.1 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 reserve values.

The management zones shown in Figure 2 establish a framework for the sustainable use of the reserve during the life of this plan.

*Objective*

Zone Onkaparinga River Reserve to ensure:

- conservation of biological and cultural values;
- landscape and land system protection; and
- appropriate public use in a diversity of recreation settings.

*Strategies*

Designate and apply the zones shown in Figure 2, defined as follows:

Conservation Zone

This zone is managed to conserve and enhance biological and cultural values and to ensure ongoing stable environmental conditions. Public use of this zone is limited to those activities that do not impact significantly on the natural and cultural environment. Walking trails and direction and interpretive signs are permitted. Works undertaken for the provision and maintenance of a fire access track system and to improve or achieve conservation goals are permitted.

The use of the area by visitors with dogs, horses, private motor vehicles or cycles (including mountain bikes) is prohibited. Special permits for exceptional circumstances may be granted by the District Ranger.

Recreation Zone

This zone conserves biodiversity and cultural values but permits a wider range of recreation activities than the Conservation Zone. Dogs, on leads, are permitted within this zone, as are cycles on designated trails (see Multi-purpose Trail on Figure 2). The construction of visitor facilities, services and signs is more likely within this zone than within the conservation zone.

Rock Climbing Zone

This zone is set aside specifically for use by rock climbers and abseilers, and is regulated by a permit system.

Development Nodes

These small areas indicate locations of existing and possible future sites for the provision of built facilities. In these largely degraded areas a more significant direct impact on the immediate landscape is accepted as inevitable. They may include locations for carparks, trail heads, day visit/picnic sites, information shelters, toilets and other facilities. Developments within these zones will require a site clearance under the *Aboriginal Heritage Act 1988.*

Lease Zone

Areas of land that are leased for a special purpose are managed under the specific terms of their lease agreement. The current lessees are the Noarlunga District Radio Modellers, the South Coast Flying Club, and the Scout Association of SA.

*Actions*

- Adopt and implement the zoning plan shown in Figure 2.

## 4.2 Natural Resources

### 4.2.1 Landform and Soils

The erosional and depositional effects of the ancestral Onkaparinga River dominate landforms within the reserve. The meta-sediments[2] of the uplifted Mount Lofty Block occur in the eastern area of the reserve. Structurally controlled weaknesses (faults) within the Block resulted in the ancestral Onkaparinga River cutting a steep-sided gorge through the meta-sediments. This incision is up to 90 metres deep in places. Lateral streams feeding the river produced the side valleys and consequent ridges. Where the river leaves the foothills (at Old Noarlunga) and enters the coastal embayment it has deposited an outwash plain of silts and clays over the underlying marine sediments. At the margins of the outwash plain some remnant aeolian[3] dunes occur.

The river reaches the sea by breaching the coastal dune through a narrow outlet at Port Noarlunga. The river is brackish and tidal for 10 km inland to Old Noarlunga. The outwash plain is subject to occasional flooding by the river and from storm surges.

Soils within the reserve vary. Shallow skeletal soils occur on steep slopes, deeper clay soils are found on upper slopes, deep alluvium silts with high organic levels occur in the riparian environments. The floodplain has deep alluvium silts, gravels and clays. The higher floodplain shoulder tends more towards sandy clays in some locations.

The reserve contains a number of Geological Monuments recorded on the National Heritage Register. The geomorphological features of the reserve are highly valued as a teaching aid for students studying landscape formation and stream processes.

The landscape within the reserve has aesthetic properties appreciated by many and is of cultural significance to Kaurna people.

Soils within the reserve, particularly those associated with the upper and middle slopes of steep gullies, are vulnerable to erosion once vegetation cover is lost. Damage from previous landuse, the ongoing bushfire risk, inappropriate management works and public use are all potential sources of active soil erosion.

*Objectives*

Encourage the appreciation and conservation of landscape and soils within the reserve.

*Strategies*

Adopt zoning strategies to conserve landscape and soils within the reserve.

Conserve natural soil cover and rehabilitate historically damaged sites.

Include geomorphological themes in reserve interpretive material.

*Actions*

- Ensure that management actions do not result in soil erosion.
- Continue revegetation programs.
- Rehabilitate known sites of soil erosion.
- Monitor for soil based pathogens and undertake remedial action as required.
- Encourage use of the reserve by schools studying geomorphology.

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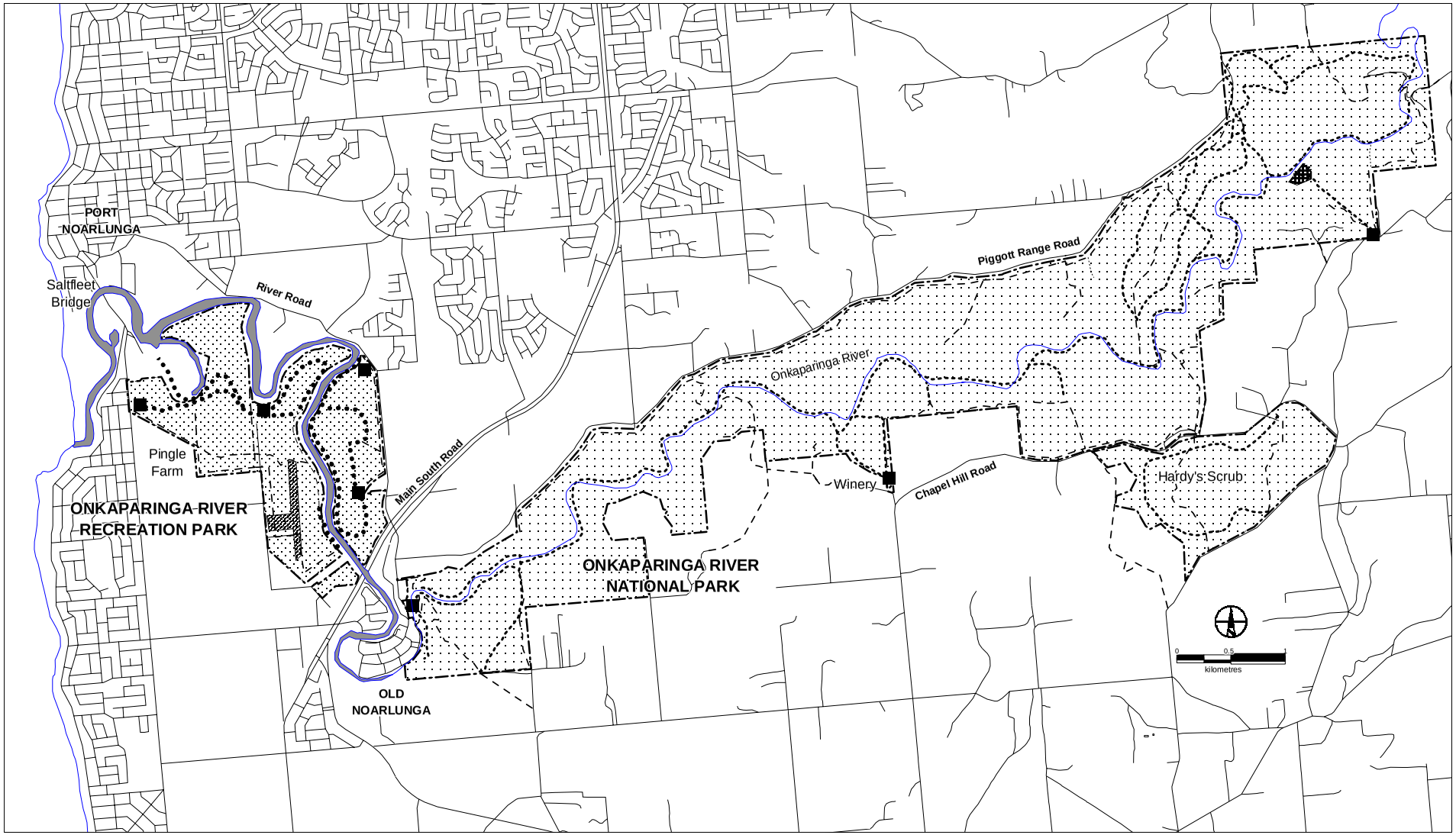
[2] A sedimentary rock that has undergone metamorphism (ie has been changed, usually as a result of heat and pressure, into rock with new minerals and/or structures).

[3] Wind-blown.




LEGEND

- Conservation zone
- Recreation zone
- Rock climbing zone
- Development node
- Lease zone
- Reserve boundary
- Fire access track
- Onkaparinga River
- Walking trail
- Multi-purpose trail

Map designed and created by
Natcon Land Systems using PAMS
Date: 2004

**Figure 2**

Onkaparinga River Reserve

**Zoning**

Government of South Australia

Department for Environment and Heritage

### 4.2.2 Hydrology

The reserve contains only the lower section of the Onkaparinga River catchment. The upper reaches of the catchment include the Inverbrackie and Mitchell Creeks and the townships of Lobethal, Charleston and Lenswood. The river also gains water from the Piccadilly, Stirling, Mylor, Hahndorf and Echunga areas. A very significant feature of the catchment is the Mt Bold Reservoir.

From Mount Bold Reservoir the river flows to the Clarendon Weir. Additional catchment inflows occur from the Angel and Scott Creeks. Below Clarendon, inflows are added from the Kangarilla sub-catchment before the river enters the reserve.

The catchment is large with approximately 55,256 ha of land draining to the river (PPK 2000). Upstream landuse includes broad-acre grazing, cropping, horticulture, townships, hobby farms and water storage. A number of other conservation reserves and numerous Heritage Agreements occur within the catchment.

It has been estimated that approximately 75% of pre-settlement flows have been diverted away from the Onkaparinga estuary. Water balance and major flow transfer data (PPK 1999) indicate that about 61,000 ML of flow from the upper catchment reach Hahndorf each year. This is augmented by a 24,000 ML supply of Murray River water from the Murray Bridge pipeline and a further 8,000 ML catchment inflow before the Clarendon Weir (in total 93,000 ML). This total is reduced to 18,000 ML below the Clarendon Weir because of evaporation from Mount Bold Reservoir (3,000 ML) and water diversions from the Clarendon Weir to the Happy Valley Reservoir (72,000 ML).

The 18,000 ML flow below Clarendon is augmented by a further 6,000 ML from the Kangarilla sub-catchment, prior to entering the reserve. A further 1,500 ML enters the river as stormwater and 25,500 ML finally leaves the estuary each year at Port Noarlunga (PPK 1999). Although not stated, it is assumed that rainfall occurring on the reserve must roughly equal freshwater evaporation from the estuary.

<u>Issues</u>

Water flows reaching Old Noarlunga have high nutrient levels. In addition, waters below Old Noarlunga also record occasional contamination by faecal coliforms (eg *Escherichia coli*). Bacterium levels exceed primary contact (swimming) safety standards within the estuary area on a number of occasions each year. This usually occurs following heavy rain and increased river flow. Heavy metals such as cadmium, lead, zinc and copper, which used to occur at levels approaching a risk to human health, appear to have abated as a result of diverting stormwater through the retention wetlands within the reserve. Faecal coliform levels also appear to have improved over the last 5 years (DEH file documents -water monitoring reports, sites 1-5 Onkaparinga estuary).

The continuing source, interaction and composition of, nutrient, heavy metals and faecal coliform inflows remains unclear. Monitoring results are sensitive to tidal influences (that is changes in salinity and oxygen) and it is also possible that a build up of heavy metals may have occurred in the bed of the river (Manning 1986). These heavy metals may be slowly releasing from the sediments into the water body. The Onkaparinga Catchment Water Management Board is investigating some of these concerns.

The continuing high nutrient loads from upstream landuse remain of concern. Nitrogen, carbon and phosphorous contamination encourages eutrophication of the water body and may result in toxic algal blooms. The resultant changes in oxygen levels within the estuary can pose an ongoing threat to the ecology of the area. Nutrient loading of the Onkaparinga River is a whole of catchment problem.

<u>Implications</u>

The implications of ongoing poor water quality for the biological resources of the reserve are considerable. The future stability of valuable aquatic ecosystems within the reserve and on the Noarlunga Reef are dependent upon how government, landowners and the broader catchment community manage environmental flows and water quality.

The management of the terrestrial areas of the reserve (1,850 ha) can positively contribute to overall river water quality. Water contributed to the catchment from areas of native vegetation is generally of high quality with low nutrient, heavy metal and faecal contamination. With the cessation of grazing leases within the reserve (1999) and ongoing revegetation programs, the reserve should make an important future contribution to overall water quality within the Onkaparinga estuary.

Storm Water Retention Wetlands

Following community concern during the 1980s over water quality in the Onkaparinga River, the then Minister for Environment and Natural Resources, Susan Lenehan, appointed a Task Force to report on practical solutions.

The Task Force Report in 1988 and further lobbying by the community (principally the Onkaparinga Estuary Water Quality Group) resulted in a Steering Committee being provided with $900,000 to construct stormwater retention wetlands within the Onkaparinga floodplain. Design and construction of five wetlands occurred between 1989 and 1992 with modifications, revegetation and ongoing monitoring becoming the responsibility of a Wetlands Sub-Committee from 1993.

The Wetlands Sub-Committee (chaired by the District Ranger) organised the works and monitoring, including the terrestrial replanting undertaken by the Friends of Onkaparinga Park and other volunteers.

Today, the wetlands are well established and attract considerable numbers of waterfowl and waders seasonally. The wetlands provide mainly feeding habitat with only limited breeding occurring. The wetlands also provide recreation and interpretive opportunities for visitors.

DEH is responsible for ongoing management and maintenance of the wetlands while the City of Onkaparinga maintains and clears the Gross Pollutant Traps on the stormwater input channels. Monitoring at five stations within the estuary in 1995 indicates that the wetlands contribute to reduced heavy metal and faecal coliform inflows to the estuary (monitoring reports to the Wetlands Sub-Committee). The City of Onkaparinga will continue this monitoring, which, along with recommendations of the Onkaparinga Catchment Water Management Board, will guide the detailed ongoing management of the wetland.

The Onkaparinga Catchment Water Management Board Catchment Water Management Plan (constituted under the provisions of the *Water Resources Act 1997*) was released in December 2000. The plan was developed to:

- provide for the sustainable management of all water within the Onkaparinga Catchment Water Management Board area of responsibility,
- set the framework for water management and use,
- set the framework for funding of activities that affect the catchment, and
- guide all agencies and people whose actions impact on the catchment.

Through its Water for the Environment program, the Onkaparinga Catchment Water Management Board Catchment Water Management Plan recognises the environment as a legitimate water user, and provides for environmental flows to maintain healthy aquatic ecosystems. A survey is currently under way to determine the water regime required to sustain water dependent ecosystems. Once this has been determined, water provisions will then be established, following consideration of existing users' rights, associated social and economic impacts and negotiation with various stakeholders and water managers.

*Objectives*

Ensure the maintenance of the valuable aquatic and wetland ecosystem and public health by achieving adequate environmental water flows of a suitable quality, quantity and seasonality into, through and out of the Onkaparinga River Reserve.

*Strategies*

Continue to build partnership arrangements with the Onkaparinga Catchment Water Management Board and the City of Onkaparinga.

Advocate the importance of aquatic ecosystems contained within the reserve to government and the community.

Manage the terrestrial areas of the reserve in a manner that positively contributes to water quality in the Onkaparinga River and estuary.

Encourage other Government and non-Government landowners to manage terrestrial areas in a manner that positively contributes to water quality within the total catchment area of the Onkaparinga River.

*Actions*

- Work cooperatively with the Onkaparinga Catchment Water Management Board within government and the community.
- Seek assistance from the Onkaparinga Catchment Water Management Board to manage erosion, revegetation and weed control within the riparian areas of the reserve.
- Support Onkaparinga Catchment Water Management Board water monitoring programs within the Reserve.
- Support any review of the existing use of the upper Onkaparinga as an aqueduct for River Murray water and emphasise the need for environmental flows of suitable quantity, quality and seasonality.
- Attempt to control the frequency and extent of bushfire within the reserve in order to limit nutrient loading of the river from fire-ash.
- Contribute to the ongoing monitoring of the stormwater retention wetlands.
- Continue to manage the stormwater retention wetlands to maximise water quality, wetland habitat values and educational and interpretive opportunities.
- Continue to emphasise the importance of tidal flows and support measures intended to protect the mouth of the river and adjacent dunes.

### 4.2.3 Native Vegetation

The native vegetation of the reserve has been severely impacted by farming activities since early colonial settlement. Land clearance, cropping and grazing have resulted in the removal and modification of native vegetation within the reserve. In some localities within the reserve patches of low open forest, woodland and scrub survived with only minor modification.

In the eastern area of the reserve a low open forest of Grey Box (*Eucalyptus microcarpa*) and Sheoak (*Allocasuarina verticillata*) occurs. On the upper ridges and higher valleys a low woodland of Pink Gum (*E. fasciculosa*), Dryland Tea-tree (*Melaleuca lanceolata*) and Sheoak is present. On wetter sites throughout the eastern section of the reserve, an open forest formation of Blue Gum (*E. leucoxylon*) and Manna Gum (*E. viminalis* ssp *cygnetensis*) can be seen. Along the creek and riverbanks a riparian association dominated by River Red Gum (*E. camaldulensis*) occurs.

Within the floodplain and estuary area of the reserve, important samphire flats occur. These areas, along with their saline margins, support communities of samphire, chenopods, saltbush and sedges. Samphires include *Sarcocornia blackiana* and *Arthrocnemum halocnemoides*. Aquatic estuarine flora is dominated by garweed (*Zostera muelleri*) and various algae.

Substantial areas of the reserve remain as degraded pasture. These areas are dominated by introduced grasses including Wild Oats (*Avena fatua*), and herbs such as clovers, medic and Salvation Jane (*Echium plantagineum*). However, small areas of native grassland (*Danthonia* and *Stipa* species) still occur within the reserve. The reserve (including Hardy's Scrub) contains 457 native plant species, including two species of conservation significance at the national level, 18 at State level (schedules 7, 8 and 9 *National Parks and Wildlife Act 1972* -2003 update) and 123 at the regional level (Southern Lofty Herbarium Region). These are listed in Appendix C.

Revegetation

A considerable amount of revegetation has been undertaken by the Friends of Onkaparinga Parks, volunteers and as part of the Urban Forest Biodiversity Program. The emphasis has been on direct seeding of trees and shrubs in degraded pastures with some tubestock planting in selected areas. Major works were aimed at establishing native vegetation between existing remnants and working from upper slopes down towards the gorge. Native grasslands and nursery areas have also been established.

In November 2003 the State Government of South Australia announced the naming of the David Suzuki Forest - a 50 hectare site within the Onkaparinga River National Park. The Youth Conservation Corps, of which Dr Suzuki is Patron, has assisted in establishing around 40,000 local indigenous seedlings on the site. The Youth Conservation Corps has been involved with weed control, planting seedlings and setting up a monitoring program. Figure 3 identifies the David Suzuki Forest and revegetation undertaken within the reserves between 1988 to 2003. The plantings to be undertaken within the Park will be the largest established as part of the SA Urban Forests - One Million Trees Program.

Weed control prior to seeding and record keeping have been, and will continue to be, an important and integral part of all revegetation projects. There is a need to review the success rates from existing trials and broadacre revegetation. The gains of the last 15 years need to be acknowledged and secured, whilst the program is developed beyond 2003, with long-term goals and staged, achievable targets taking into account new information and techniques.

To enhance the biodiversity benefits of the revegetation program there is a need to;

- introduce a wider range of understorey species into the existing and future revegetation areas,
- gain a better understanding of the presence and composition of pre-european vegetation types,
- identify those plant communities containing species of conservation significance and ensure appropriate management,
- integrate vegetation management with long term pest plant and animal control programs,
- continue to trial, monitor and evaluate innovative techniques.

With long term programs there is a risk that staff and volunteer motivation will decline. Staff and volunteers need to be involved and supportive of new long-term native vegetation programs established on a technically sound, efficient and cost-effective footing.

The reserve is part of a larger landscape and as such the actions of adjacent and upstream landowners can have a significant impact on the biodiversity values of the reserve. To improve water quality and enhance biodiversity values, DEH has encouraged landowners adjacent to, and upstream of, the reserve to manage remnant native vegetation and to undertake appropriate revegetation.

*Objectives*

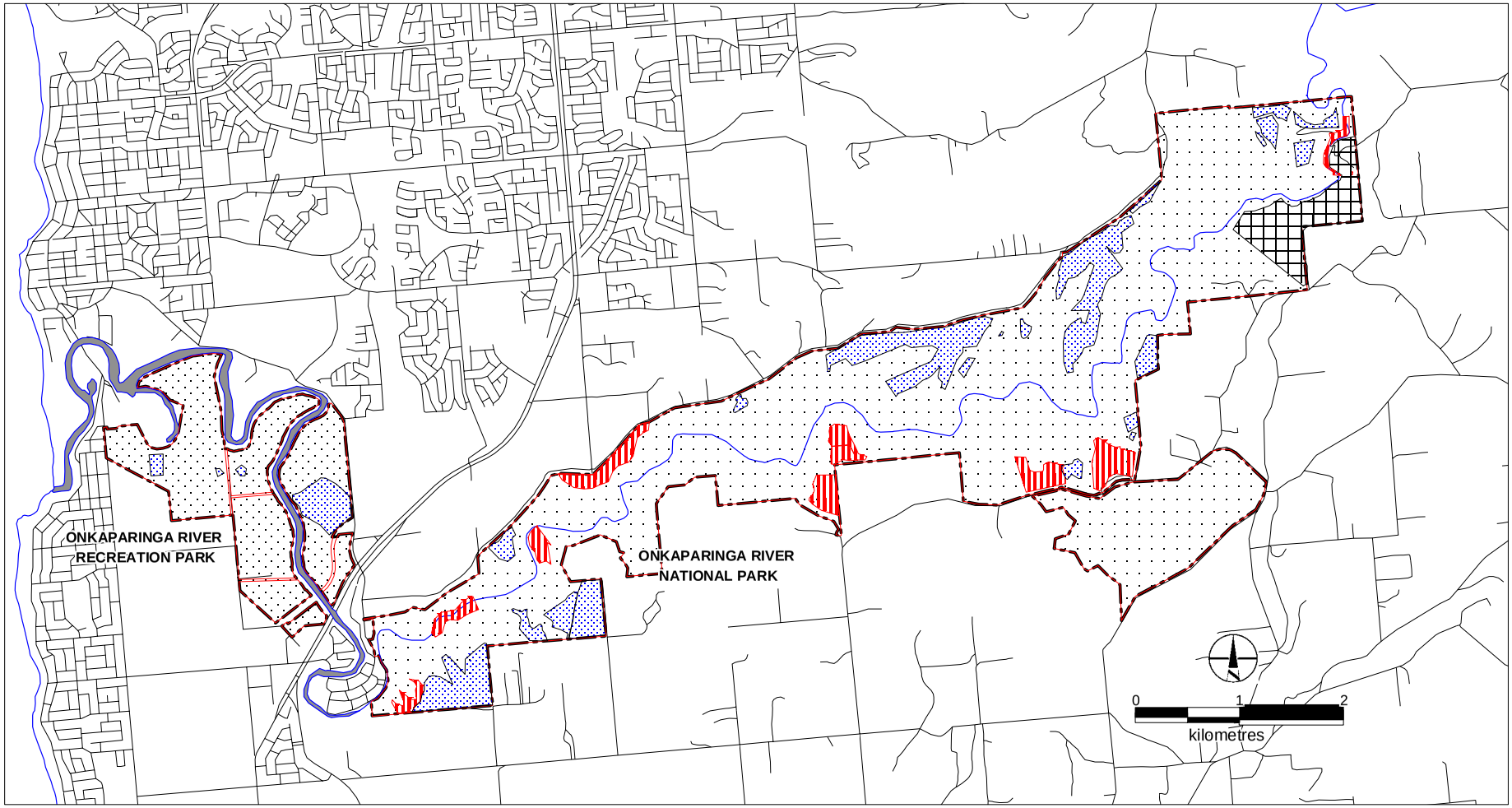
Protect and enhance the distribution and condition of native vegetation and populations of plants of conservation significance within the reserve.

Encourage landowners in the region to care for native vegetation and undertake appropriate revegetation.

*Strategies*

Develop a long-term, integrated vegetation management framework for the reserve.

Advocate the benefits of native vegetation protection and enhancement to landowners within the region.




LEGEND

- Onkaparinga National Park
- Onkaparinga Recreation Park
- Revegetation 1988 - 1999
- Revegetation 1999 - 2003
- David Suzuki Forest
- Park Boundary
- Onkaparinga River

Map designed and created by
Natcon Land Systems and
Reserve Planning using PAMS
Date: 2003

**Figure 3**

Onkaparinga River Reserve

**Revegetation Areas**

Government of South Australia

Department for Environment and Heritage

*Actions*

- Review previous revegetation programs.
- Prioritise and implement plans for vegetation restoration / revegetation sites using current biological information.
- Develop and implement an integrated vegetation management / pest plant and animal control program with ten year goals, annual targets and a monitoring program.
- In conjunction with the Onkaparinga Catchment Water Management Board promote the benefits of integrated vegetation management and pest plant and animal control programs to the wider community.

### 4.2.4 Native Fauna

The fauna contained within the reserve is not well documented. The Friends of Onkaparinga Park have added to the lists of species in recent years and A *Biological Survey of the Southern Mount Lofty Ranges, South Australia* (Armstrong et al., 2003) has further improved base line information.

Mammals present within the reserve include Western Grey Kangaroo (*Macropus fuliginosus*), Common Brushtail Possum (*Trichosurus vulpecula*), Common Ringtail Possum (*Pseudocheirus peregrinus*), and Echidna (*Tachyglossus aculeatus*). The Lesser Long-eared Bat (*Nyctophilus geoffreyi*) and the Southern Forest Bat (*Vespadelus regulus*) are also recorded for the reserve.

The bird list maintained by the Friends records 192 species that live in or seasonally visit the reserve. They include the following species of conservation significance:

| Rare in South Australia | | Vulnerable in South Australia | |
|---|---|---|---|
| Common Name | Species | Common Name | Species |
| Intermediate Egret | *Ardea intermedia* | Australasian Bittern | *Botaurus poiciloptilus* |
| Eastern Reef Egret | *Egretta sacra* | Freckled Duck | *Stictonetta naevosa* |
| Australasian Shoveler | *Anas rhynchotis* | Yellow-tailed Black-Cockatoo | *Calyptorhynchus funereus* |
| Peregrine Falcon | *Falco peregrinus* | Painted Button-quail | *Turnix varia* |
| Shining Bronze-cuckoo | *Chrysococcyx lucidus* | | |
| Baillon's Crake | *Porzana pusilla* | | |
| Cape Barren Goose | *Cereopsis novaehollandiae* | | |
| Rare: occurs in small populations that are not at present 'Endangered' or 'Vulnerable' but are at some risk due to their rarity (ie low numbers); this may include naturally scarce species that may require conservation consideration to ensure that they do not become 'Endangered' or 'Vulnerable'. Vulnerable: likely to be in danger of extinction in the near future if the causal factors continue to | | | |

White-faced Heron (*Ardea novaehollandiae*), Great Egret (*Ardea alba*) and Royal Spoonbill (*Platalea regia*) are commonly seen feeding in the estuary. During the summer months, waders feed on the samphire and tidal mudflats. Many of these birds migrate from the Northern Hemisphere to escape the arctic winter; they come from Siberia, China and Japan every Australian summer to feed, but not to breed.

According to Armstrong et al. (2003), the Yellow-tailed Black-Cockatoo is readily observed in the Mount Lofty Ranges, mainly due to its large size, slow flight and distinctive call. This may create a misleading impression of its abundance in comparison to less visible and more secretive species. Its Vulnerable status is based on a presumed population of less than 10,000 individuals and low reproductive potential due to a reduction in the number of large tree hollows available for nesting, and a lack of food sources near nesting areas. Further research into the basic ecology of Yellow-tailed Black-Cockatoo and monitoring of populations is required.

The Onkaparinga estuary provides a small but useful habitat for waders. They include the Common Sandpiper, Sharp-tailed Sandpiper and Curlew Sandpiper. Occasional sightings of Black-tailed Godwit, Bar-tailed Godwit and Greenshank also are recorded for the estuary.

Approximately 20 fish species are recorded for the estuary and river. The major fish species include Jumping Mullet (*Liza argentea*), Black Bream (*Acanthopagrus butcheri*) and Yellow-eye Mullet (*Aldrichetta forsteri*). Algae, molluscs and garweed form the major diet of the fish species (DENR 1993).

Little is known of the reptile and amphibian fauna of the reserve. Valuable information on the butterfly populations of the reserve was provided by R Grund in a submission to this plan. Common species include:

| Common Name | Species |
|---|---|
| Meadow Argus | *Junonia villida calybe* |
| Cabbage White | *Pieris rapae rapae* |
| Saltbush Blue | *Theclinesthes serpentata serpentata* |
| Australian Painted Lady | *Vanessa kershawi* |
| Common Grass-blue | *Zizina labradus labradus* |
| Lesser Wanderer | *Danaus chrysippus petilia.* |

*Gahnia filum* sedge-lands in the estuary may provide habitat for populations of the endangered Yellowish Sedge-skipper (*Hesperilla flavescens*). Over 20 other butterfly species have been recorded for the reserve since 1990 (R Grund submission).

Issues

There is a need for a comprehensive baseline study of the faunal resources of the reserve including an inventory of the reptile, amphibian and aquatic species. Consideration should be given to commissioning further detailed biodiversity inventory work following on from the broad scale work that has been undertaken for *A Biological Survey of the Southern Mount Lofty Ranges, South Australia*.

Observations by DEH staff suggest that in recent years a number of introduced fish species have been released into the river and estuary. These releases, including European Carp and Brown Trout, are understood to have occurred within the reserve and may threaten the ecology of the natural aquatic ecosystem. It remains an offence under the *National Parks and Wildlife Act 1972* to release any animal into a park or reserve without a permit. Further work is required to gain community understanding and support on this issue.

With the removal of sheep grazing and ongoing revegetation, the population of Western Grey Kangaroos is likely to rise. Kangaroos are the major natural herbivore in the Mount Lofty Ranges. However, it is thought that land clearance and settlement have altered factors naturally controlling their population size. Abundant areas of pasture maintained for primary production combined with, fresh water supplies and remnant thickets of native vegetation now provide ideal habitat for Western Grey Kangaroo. This habitat currently exists within the reserve and the absence of hunting pressure by dingo and humans has the potential to lead to a localised explosion of the kangaroo population. This has also occurred at other reserves within the Mount Lofty Ranges (eg Para Wirra Recreation Park).

A monitoring program needs to be established that charts the relative size of the population over time to provide sufficient information to support threat management programs.

*Objectives*

Manage the reserve to protect and enhance populations of native fauna and species of conservation significance.

*Strategies*

Continue to re-establish areas of native vegetation and to link existing areas of native vegetation.

Improve baseline information on species within the reserve

Control threatening processes including overabundant and feral animals, reduced water quality and bushfire.

*Actions*

- Ensure that the requirements of native fauna are considered when designing integrated revegetation programs, including weed and vermin control components.
- Encourage the creation of biological corridors within the district and the retention and careful management of remnant habitats.
- Support additional baseline surveys to add to information collected by *A Biological Survey of the Southern Mount Lofty Ranges, South Australia.*
- Remove artificial dams and monitor the population and effect of Western Grey Kangaroos.
- Improve community understanding about the dangers of introducing exotic animals into the reserve. Prosecute offenders where appropriate.
- Implement integrated threat management programs based on data obtained from monitoring programs, to protect reserve values.

### 4.2.5 Introduced Plants

Over 200 exotic plants are recorded for the reserve. They are the legacy of European land settlement since the 1840s. Many species are confined to disturbed sites and will slowly disappear from the reserve as it is rehabilitated over time. Others appear to be more persistently established. The pest plants of most concern are those that actively invade relatively undisturbed areas and out-compete native species.

The most prominent pest plants include: Olive (*Olea europaea*), Cape Tulip (*Homeria flaccida*), Artichoke Thistle (*Cynara cardunculus*), Fennel (*Foeniculum vulgare*), African Boxthorn (*Lycium ferocissimum*), Bridal Creeper (*Asparagus asparagoides*), Boneseed (*Chrysanthemoides monilifera*) and Horehound (*Marrubium vulgare*). Many exotic plants occur along the watercourse, including Caucasian Ash (*Fraxinus rotundifolia*), Blackberry (*Rubus fruticosus*) and Fig (*Ficus carica*).

Pest plant control programs have been undertaken within the reserve over the last 15 years. Usually financial resources have been limited and the funds have been shared between occurrences of weeds of significance to neighbouring rural landowners and weeds that threaten conservation values. With so many pest plants located within the reserve, control programs need to target the achievement of maximum long-term benefits. Future pest plant control programs will usually work down slope and down stream and will be based upon the following criteria, listed in order of priority:

1. Within areas of existing high value native vegetation, control pest plants that actively invade native vegetation.
2. Within revegetation areas, both before and following direct seeding, control invasive pest plants.
3. In association with the Onkaparinga Catchment Water Management Board, and as part of whole of catchment programs, control pest plant populations occurring along the watercourses within the reserve.
4. Control Scheduled pest plants occurring around the boundary of the reserve.

*Objectives*

Control and reduce the populations of pest plants within the reserve.

*Strategies*

Work in cooperation with the Friends of Onkaparinga Park, the Onkaparinga Catchment Water Management Board, the City of Onkaparinga and the Animal and Plant Control Board.

Allocate financial resources on the basis of the approved priorities.

*Actions*

- Create achievable, long term, pest plant control programs with clearly defined goals and annual targets for the first five years. The program should be integrated with revegetation and fauna management programs.
- Create and implement a program to prevent the introduction of new pest plant and soil pathogen species into the reserve.
- Establish annual monitoring programs to map the distribution of weeds of concern and the effectiveness of control programs. Review the program every three years.
- Seek support and financial assistance from the Onkaparinga Catchment Water Management Board.
- Encourage ongoing support and involvement in the program by the Friends of Onkaparinga Park at a level and in a manner that they feel they can realistically and willingly contribute.

### 4.2.6 Introduced Pathogens

*Phytophthora cinnamomi* (Cinnamon Fungus) 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 the root system and reducing or stopping the movement of water and nutrients within the plant.

The disease spreads quickly downhill with the movement of water 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 the Onkaparinga River Reserve but has been reported in the Mount Lofty Ranges, the Fleurieu Peninsula and on Kangaroo Island. The limited occurrence of immediately apparent host plant species in this area may minimise the likelihood of its establishment, however the possibility of its introduction must be considered. 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 any reserve if *Phytophthora* infestation seems imminent.

*Phytophthora cinnamomi* infestation is listed as a key threatening process under the *Environment Protection and Biodiversity Conservation Act 1999*. A threat abatement plan has been developed to provide for the research and management necessary to reduce the impact of *Phytophthora* and maximise the chance of the long-term survival of native species and ecological communities affected.

'Mundulla Yellows' is a syndrome that affects native vegetation, the cause of which is still under investigation. It has the potential to devastate large areas. The reserve should be assessed on a regular basis to see if any vegetation is exhibiting symptoms, and an appropriate management strategy developed if required.

*Objective*

Prevent the introduction of exotic pathogens into the reserve.

*Strategies*

Provide useful and up to date information on *Phytophthora,* monitor its spread in surrounding areas to assess the risk to the reserve and provide cleaning facilities where necessary.

Comply with the provisions of the *Threat Abatement Plan For Dieback Caused By The Root-Rot Fungus Phytophthora cinnamomi* Environment Australia (2001).

*Actions*

- Increase awareness amongst the public and DEH staff on the potential for the introduction and establishment of *Phytophthora cinnamomi*, and measures to prevent its spread.
- Ensure that soil removal and disinfection treatment is undertaken for all vehicles, earth-moving and construction equipment entering the reserve, to reduce the risk of *Phytophthora* introduction.
- Monitor the spread of *Phytophthora* in areas surrounding the reserve.
- Provide boot-cleaning stations for track users where necessary.
- Determine if the symptoms of 'Mundulla Yellows' occur in the area and if it appears to be present, develop and implement an appropriate response strategy.

### 4.2.7 Introduced Animals

Introduced mammals include Fox (*Vulpes vulpes*), Goat (*Capra hircus*), Rabbit (*Oryctolagus cuniculus*), Black Rat (*Rattus rattus*), Cat (*Felis catus*) and House Mouse (*Mus musculus*). Domestic stock have now been removed from the reserve (1999) with the voluntary cancellation of the last grazing leases.

Over the last 15 years occasional programs to reduce pest animals have been undertaken. Rabbit numbers are monitored and control programs undertaken as necessary. Goat numbers fluctuate within the reserve, but on average, around 30 are removed per year.

Over the last four years staff, pest animal control authorities and volunteers have been involved in implementing and monitoring a fox control program within the reserve. The intention was to reduce predator impacts on waterfowl and on any small mammals and reptiles within the reserve. The work is based upon establishing buried fox baits at locations likely to attract foxes and then regularly monitoring the baits to see if they are dug up and eaten. Signs at entrances and around the boundary of the reserve warn visitors with dogs of the work.

The large number of baits taken and the carcasses that have been collected indicate the success of the program. Unfortunately, recruitment from the wider fox population within the district has limited the ongoing value of this work. This type of program would be more effective if conducted on a regional basis with substantial community involvement.

The status of other pest animals, particularly aquatic species, is not well understood.

*Objectives*

Control pest animals within the reserve, to reduce grazing and predator pressure on native species and communities of plants and animals.

*Strategies*

Work in cooperation with adjoining landowners, Pest Plant and Animal Control Boards, the City of Onkaparinga and the Friends of Onkaparinga Park to achieve effective pest animal control programs.

*Actions*

- Monitor populations of pest animals within the reserve. Produce an internal report annually.
- Initiate and participate in a regional fox control program and evaluate and monitor any long-term benefits.
- Continue cat and goat control in an opportunistic manner, under clear management direction by licensed and trained staff who are qualified to operate firearms. Produce an annual report with statistics.
- Undertake rabbit control as necessary, to protect revegetation areas.

## 4.3 Cultural Heritage

### 4.3.1 Aboriginal Heritage

Kaurna Culture and Heritage

The Kaurna people occupied the land now conserved by Onkaparinga River Reserve. Tindale records the Kaurna name for Onkaparinga as Ngangkiparinga or "women's river" (Tindale 1974). The mouth of the river is a mythological site and the area is highly significant to Kaurna Women.

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.

The coastal environment provided important resources for the Kaurna. To date the full extent of Aboriginal heritage at Onkaparinga River Reserve has not been comprehensively researched. However, in 1991/92 a heritage survey and archaeological excavation was undertaken within the Onkaparinga floodplain, resulting in the identification and recording of archaeological sites (Draper 1991) and analysis of the artefacts found there (Czerwinski 1997). The discovery of glass artefacts indicates historical use of the area as a camping place. Burial sites are also known in the area surrounding the river. Radiocarbon dating of material from the edge of the estuary indicates a date of around 7,500BP for the oldest known Aboriginal sites along the Onkaparinga River (Ross 1984: 19). This would make it one of the earliest sites so far recorded on the Fleurieu Peninsula.

In 1840 John McLaren surveyed the land encompassing the (now) Onkaparinga River Reserve. On his map are several 'native tracks' that are within the current park boundary (McLaren 1840).

The Aboriginal Heritage Act 1988

Under the *Aboriginal Heritage Act 1988*, the South Australian Government is responsible for the protection and preservation of sites, objects and remains of significance to Aboriginal people. The Department for Aboriginal Affairs and Reconciliation maintains a Central Archive of recordings of Aboriginal sites.

Currently 4 sites are listed on the Central Archive for Onkaparinga River Reserve. These are archaeological sites and burial sites. These recordings do not reflect a comprehensive survey of the park. To promote better cultural heritage management at Onkaparinga River Reserve further research needs to be undertaken to identify and record sites of significance. To avoid inadvertent damage to sites DEH shall consult with DAARE and the relevant Aboriginal authorities before commencement of any development works.

Following colonial settlement in 1836, the populations of the Kaurna people were substantially reduced as the result of disease, dispersal, occupation of land, utilisation of water supplies and through violent conflict. Today, Kaurna people continue to live on their traditional country and practice their culture, language, and traditional associations.

### 4.3.2 Colonial Heritage

Colonial settlement began in the Noarlunga district from about 1839. Prior to that, shore-whalers had visited the area. In 1831 Captain Collett Barker entered the Onkaparinga River and went inland to the Horseshoe Bend (Old Noarlunga). Other early explorers and survey teams also passed through the district in 1837-8.

Noarlunga district was surveyed and opened up for selection in February 1839. By 1841, over 150 settlers occupied land in the Noarlunga area (Towler 1974 quoting the *South Australian Almanack*). Settlers were predominantly engaged in establishing agricultural ventures but included early storekeepers. In 1840, the Horseshoe Inn was constructed and licensed. At what was to become Port Noarlunga, George Hepenstal opened a bay whaling station in 1841.

Growth and development within the district was rapid. A wooden bridge was constructed across the river in 1840. Early crops were transported by flat-bottomed barge down the estuary and out through the mouth of the Onkaparinga River to waiting coastal ships, which sheltered inside the reef. In 1843 a steam-powered flourmill was built. In 1854-5 a towpath from Old Noarlunga to the tramway terminal at Port Noarlunga was constructed to facilitate the passage of horse drawn barges. At the same time a tramway through the dunes, and a jetty, were also constructed. In later years the jetty was extended and the tramway was covered to form a tunnel. By 1882 Old Noarlunga had two hotels, a baker, blacksmith and farrier, boot maker, butcher and a wheelwright-coachbuilder (Towler 1974).

Early transport by coach and horses and by bullock dray often crossed the river at Old Noarlunga. In addition to the wooden bridge, a ford existed behind the Horseshoe Inn, and this crossing permitted coaches to travel on to Willunga. The remains of this coach-road can be seen within the reserve today.

Following excellent early crop yields, the district and the adjacent Morphett Vale continued to expand. Then, from about 1870, crop yields started to fall. The initial fertility of the soil had been depleted. In some locations, poor yields continued until the discovery of the importance of trace elements and the value of super phosphate.

One location that suffered less than most was the Onkaparinga floodplain. John Jared, of Lincolnshire, brought his family to South Australia in 1846 and farmed for 15 years in the Aldinga/Willunga district before purchasing 240 acres at Noarlunga. He called the property Clear Farm and gradually increased his holding to 400 acres, much of which was within the current Onkaparinga River Recreation Park. In 1862 he constructed the family home and continued to farm the land until succeeded by his son John William Jared in 1871.

John William Jared extended the house and with his wife Hannah, renamed the property Pingle Farm. The property stayed in the Jared family until purchased by the State Planning Authority in the 1970s. The remains of Pingle Farm are conserved within the reserve today. They are listed on the SA Heritage Register and are recognised as structures that demonstrate important aspects of the evolution or pattern of the State's history and they have rare, uncommon or endangered qualities that are of cultural significance. The buildings have been stabilised and conserved as a partial ruin. Unfortunately, even though the structures are fenced, acts of vandalism continue to occur.

The structures include the main dwelling, consisting of the original 1862 free standing, gable-roofed cottage (plus later additions), a large limestone barn with gable-ended corrugated iron roof and an underground, brick-lined and rendered, cone-head, cylindrical tank. Remnants of the original garden are still present dating back to at least 1902. Other historic sites within the reserve containing remnants of early settlement also exist but have yet to be researched or documented to fully understand their significance.

*Objectives*

Identify and protect important cultural and historic sites within the reserve.

*Strategies*

Aboriginal people should be involved in decisions regarding the management of their cultural heritage. DEH will liaise with the Department for Aboriginal Affairs and Reconciliation and Heritage Committees established under the provisions of the *Aboriginal Heritage Act 1988*.

Encourage and support further research to identify historic sites and objects within the reserve.

Interpret, where appropriate, the cultural heritage of the reserve for visitors.

*Actions*

- 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 Department for Aboriginal Affairs and Reconciliation, the Heritage branch of DEH and other relevant authorities and organisations. Aboriginal and historic cultural heritage sites require conservation plans to facilitate appropriate management.

- Before proceeding with any development works within the reserve, obtain an assessment and clearance from the appropriate authority, under the provisions of the *Aboriginal Heritage Act 1988*. This includes new walking trails and other visitor facilities.
- Research and record, historic sites and stories that relate to the history of the park and where appropriate, make this information available to visitors through interpretive material.
- Continue to upgrade interpretive and directional signs within the reserve and include appropriate cultural heritage themes.
- Encourage and support research of historic sites, archaeological and anthropological studies within the park. All Aboriginal heritage sites located during these surveys should be recorded to the standards set by DAARE and submitted for inclusion on the DAARE Central Archive.
- Repair any damage caused by acts of vandalism.

## 4.4 Fire Management

Onkaparinga River Reserve is an area of steep terrain with a range of vegetation types, which will easily carry fire. The substantial cleared areas, currently grasslands dominated by exotic weed species allow a fire to spread rapidly once lit in summer conditions. This is particularly so on the steep upslopes found in the reserve.

For some time there have been multiple fires each year in Onkaparinga, caused by campfire escapes and arson. Fires have occurred in the grassland areas of the Onkaparinga River floodplain, around the boundary of the reserve and at sites along the bottom of the Onkaparinga Gorge. Local CFS brigades and DEH brigades have responded rapidly to suppress all fires, preventing larger fires and decreasing the risk to life and property surrounding the reserve. At appropriate frequency fire is an important ecological process within the area of remnant native habitat in the Reserve.

*Objectives*

Minimise the incidence of human-caused fires within the reserve.

Manage fire to ensure:

- the protection of life and property in and around the reserve;
- the maintenance of biodiversity; and
- the protection of natural, cultural and built values.

Minimise the negative environmental impacts of fires and suppression activities within the reserve.

*Strategies*

Undertake fire management planning to address the following issues:

- protection of life particularly fire fighter safety, visitor management and evacuation,
- protection of built assets and property in and surrounding the reserve/s,
- protection of cultural sites,
- protection of natural values,
- biodiversity and ecological management,
- fuel hazard assessment,
- risk assessment including environmental risk, risk of *Phytophthora* spread and risk of ignition from arson and campfires,
- works and activities to mitigate risks including fuel reduced areas,
- park-specific fire response and suppression strategies,
- fire access, suppression guidelines, safety warnings and water supply.

Ensure stakeholders and the wider community are consulted and understand the fire risks and mitigating actions being proposed or undertaken in the reserve.

*Actions*

- Suppress all bushfires within the reserve promptly.
- Develop a fire management plan for the reserve.
- Formally consult with CFS, the relevant District Bushfire Prevention Committee/s and other key stakeholders, conservation and park interest groups, neighbours and the wider community during the preparation of the fire management plan.
- Review and update fire management planning to ensure the planning is current, accurate and adequately addresses all issues.
- Continue to work with the relevant District Bushfire Prevention Committee and CFS to reduce the risk of arson and minimise risks to life and property within and surrounding the reserve.
- Maintain a strategic network of fire access and fuel reduced areas.

## 4.5 Infrastructure, Built Assets and Public Risk

DEH manages one residence, various historic structures, a suspension bridge, boardwalks and a number of large water storage tanks. In addition, it is responsible for the ongoing maintenance of the stormwater retention wetlands, a fire management access system and walking trail network. The management of these built structures must be in accordance with the proper discharge of the Minister's Duty of Care. The proper management of public risk needs to be reviewed for Onkaparinga River Reserve.

This plan provides appropriate prospective authority to undertake unspecified public works that are essential to meet contemporary standards of public safety, subject to ministerial approval, provided that there are no viable alternatives and those works are not inconsistent with the management intent.

*Objectives*

Maintain a safe built environment for members of the public and limit public risk.

*Strategies*

Identify, evaluate and remedy public risk through a regular process of review and action.

*Actions*

- Undertake an audit of public risk within the reserve and evaluate the identified risks. Produce a Public Risk Assessment Plan as part of a District operations program.
- Implement the Public Risk Assessment Plan by designing and implementing routine written inspection programs, remedial works, and appropriate hazard identification signs to ensure the ongoing provision of a safer public environment, especially in relation to built assets and locations promoted to the public by DEH.

## 4.6 Recreation and Tourism

### 4.6.1 Visitor Use

No surveys of visitor numbers or recreation preferences have been undertaken by DEH. Information used in this plan is largely based upon professional observation and anecdotal information from DEH staff, comments from the Friends of Onkaparinga Park and from short-term observation during the production of this plan.

Onkaparinga River Reserve provides recreation for; South Australians, interstate and international visitors, although the residents of southern metropolitan Adelaide form the vast majority of visitors. This fact serves to underline the importance of the reserve to the local community. District records indicate that as many as 80 – 100,000 visitors use the reserve each year.

A wider range of activities occurs within the floodplain and estuary area of the reserve than within the larger and steeper gorge section of the reserve. Adjacent to the reserve, but still on floodplain land, are football ovals, tennis, bowling and other clubs.

It appears that the majority of the users (walkers and fishers) are preferentially choosing the area, in part, to experience the open, natural and tranquil setting. The quality of the natural environment is of the utmost importance to visitors.

The main activities within the estuary/floodplain area appear to be short walks, walking the dog, fishing, and relaxing in groups. To a lesser extent canoeing and cycling are also enjoyed. Bird-watchers, educational and other groups involved in specialised recreational activities, including scouting and flying model or vintage aircraft also make use of the estuary/floodplain area of the reserve. In the gorge section of the reserve, bush walking, picnics, nature study, rock climbing, abseiling and educational pursuits form the major activities.

The strategic and long term aim of this plan is to consolidate the reserve as a major urban park; one that is biologically valuable (through protection, revegetation and rehabilitation) and that provides a range of compatible recreation opportunities in a District context.

Planning must consider the following questions:

- What limitations (if any) need to be placed on recreation activities to ensure the successful achievement of the primary goal of biodiversity conservation?
- What types of recreation activity is the reserve best suited to provide for the District while still meeting the primary goal?
- What activities are most consistent with ensuring that the natural and cultural values of the reserve are fully appreciated?
- What activities (if any) tend to conflict with successful rehabilitation and/or the appreciation of the reserve's natural and cultural values?

Sporting and club-based activities are believed to be well provided for within the District outside the reserve, including O'Halloran Hill Recreation Park, and should not be duplicated in Onkaparinga River Reserve. Facilities and activities within the reserve should be designed to provide complementary opportunities that do not conflict with the principles of biodiversity conservation and take into account the existing activities of other reserve users, such as the South Australian branch of the Scout Association.

In the District context and under the provisions of the *National Parks and Wildlife Act 1972,* the Onkaparinga River Reserve is considered most appropriate for providing recreation opportunities that permit visitors to appreciate and understand the reserve's natural and cultural values. Opportunities for appreciating and learning about the natural environment are relatively scarce in the southern metropolitan area.

Environments which provide visitors with the opportunity to enjoy open vistas, enclosed forested watercourses, wildlife, heritage and a sense of naturalness, peace and tranquillity are vulnerable. Vulnerability takes two forms:

- Natural environments are vulnerable to the direct impacts of recreation activities that may contribute to soil erosion, the spread of weeds and pathogens, the incidence of fire, disturbance to wildlife and vandalism.
- Recreation activities that are dependant on natural environmental conditions are also vulnerable. Enjoyment of these activities can be spoilt by landscape intrusions, persistent and loud noise, congestion and perceived threats to participants' physical safety.

Making decisions between user groups to protect resources and the quality of recreation experiences is a difficult task. Such decisions raise issues of equity of access to public land and can lead to charges of favouritism or prejudice. However, decisions are required for this reserve, with criteria presented to the public, for assessment of proposals.

Recreation activities are considered appropriate within the whole, or specified areas of the reserve when they:

- are consistent with the reasons for dedication, the role of the reserve and the objectives of the *National Parks and Wildlife Act 1972*;
- do not cause or contribute to soil or track erosion, the spread of pest plants and soil-borne diseases or disturbance of wildlife;
- do not impact negatively on other reserve values, including cultural values;
- do not impact significantly on the recreation experience of other users whose activity is appropriate, nor threaten their sense of physical and psychological security; and
- do not compromise the Minister's duty of care and create situations of public risk, such that the Minister may be liable at law.

The following table indicates the appropriateness of activities undertaken in Onkaparinga Recreation Reserve.

| Recreation Activity | Status | Comments |
|---|---|---|
| Walking | Appropriate. | |
| Walking the dog | Appropriate in designated area only. | |
| Bush walking | Appropriate. | |
| Fishing | Appropriate below Old Noarlunga only. | |
| Canoeing | Appropriate in estuary area only. | |
| Cycling | Appropriate on designated trail only. | |
| Mountain-bike riding | Not appropriate. | Due to soil erosion and safety issues. |
| Horse riding | Not appropriate. | Potential for soil disturbance, compromised public safety, weed and nutrient introduction if not effectively managed. |
| 4wd and motor bike riding | Not appropriate. | Soil disturbance, track erosion, noise and safety issues, reserve of insufficient size (minimal vehicle access). |
| Nature study, birdwatching | Appropriate. | |
| Educational activities | Appropriate. | Restricted to low impact activities only. |
| Piloting motorised model aircraft | Appropriate in designated area / review. | Noise and disturbance to other users is an issue. Subject to ongoing assessment. |
| Piloting aircraft from an airstrip within the reserve | Appropriate / review. | Visual disturbance, impact on wildlife, bird strikes, proximity to urban areas, safety issues. Subject to ongoing assessment. |
| Piloting power boats and personal watercraft | Not appropriate. | River bank erosion, noise and wash disturbance to wildlife and other users. |
| Paintball/war-game activities | Not appropriate. | Activities based on violence may distress reserve users. Alienation of public land. |
| Camping and campfires | Not appropriate. | Due to current incidence of bushfire |
| Rock climbing | Appropriate in designated area under permit system. | |

| Recreation Activity | Status | Comments |
|---|---|---|
| Abseiling | Appropriate in designated area under permit system. | |
| Picnics (without fires) | Appropriate. | |

### 4.6.2 Vehicle Access

The approach currently utilised for the management of vehicle access on tracks within the reserve is to fence the perimeter and install locked gates. Vehicle parking is provided around the boundary of the reserve giving visitors the opportunity to walk within the reserve. In this context, and under the *National Parks and Wildlife Act 1972* the definition of vehicles includes; cars, four-wheel drives, boats, horses, motorbikes and cycles (including mountain bikes). Exceptions and alternative arrangements are provided for on a reserve-by-reserve basis.

Public vehicles are excluded from reserve tracks for several reasons, including; dangerous, highly variable track conditions, fragile soils, steep terrain, to reduce the spread of weeds and soil pathogens, to limit noise intrusion, to improve public safety on steep trails (particularly walkers threatened by speeding motor bikes and mountain bikes), to limit the risk, frequency and possible consequences of fires and to maximise visitors' experience of natural conditions.

There is widespread support for continuing to restrict all vehicles (as defined above) to the boundary of the reserve. However, it is possible to identify a section of the reserve that may provide recreation opportunities for visitors utilising a regional trails network. Such a route would need to avoid steep terrain and any potential user-conflict situations.

Cycles are currently only permitted on a marked trail within the recreation park and canoes are permitted within the estuary. Aircraft are managed through permits and conditions attached to leases. A vehicle access track system is maintained to facilitate reserve management and emergency access. Walking trails start and are signposted from the car parks.

*Objectives*

Construct and maintain safe, functional and public, management and emergency access.

*Strategies*

Provide public vehicle access to the boundary of the reserve with the provision of adequate, well designed carparks, trailheads and information packages.

Provide and maintain management and emergency service access to the reserve consistent with government standards and the requirements of emergency services.

*Actions*

- Undertake a review of the existing carparks. Redevelop carparks based on the review to meet the anticipated future needs of visitors within the sustainable limits of the reserve. Carparks should be designed to best practice standards with a high quality aesthetic design and the use of quality durable materials.
- Maintain fences and designated locked gates.
- Maintain the internal access system and modify the system as necessary in consultation with emergency services.
- Repair damage resulting from acts of vandalism quickly.
- Upgrade trail head signage and information bays associated with carparks.
- Prohibit the public use of motorised boats and motorised personal watercraft within the reserve. Canoes and small boats powered by oars should be permitted (note this action requires proclamation of additional Crown land).

### 4.6.3 Walking and Cycling Trails

A number of walking trails have been developed within the reserve. In the northeast are the Sundew , Echidna and Nature Trails. Within the floodplain the Wetland Walk provides opportunities to see wildlife by using a combination of trail and boardwalk to cross the wetland. The multi-purpose trail also crosses the floodplain.

A partially constructed walking trail through the Gorge exists. This trail is intended to provide a high quality scenic walk through the Gorge from the Onkaparinga Ford (and suspension bridge) northeast to the eastern boundary of the reserve. However, much of the existing trail surface is lost and requires reconstruction. Walkers, including those utilising Hardy's Scrub, use some sections of the fire access system.

Issues

The development of sustainable walking trails is subject to these considerations:

- ensuring safe and appropriate use;
- construction and maintenance costs;
- erosion problems; and
- steepness of grade.
- frequency of use.

Taking into account these considerations, especially where moderate to heavy use is anticipated, new tracks are constructed in a way to ensure that grades are low to moderate. Steep grades are avoided. This is intended to permit a wider range of walkers with limited abilities to utilise the trails and also to reduce erosion and the long-term cost of maintaining the trails. Constructed (that is to say benched and sometimes surfaced) trails and other associated constructions, like bridges or boardwalks, need to be developed and maintained in a manner that limits the risk of injury to users while still providing a sense of wilderness. New construction routes require inspection and clearances under the provisions of the *Aboriginal Heritage Act 1988*.

The Onkaparinga walking trail network requires revision and some extension. The trail network needs adequate signposting and where appropriate, interpretation media. The trail network needs to offer variety, and in the case of longer trails, options for leaving and linking the trail with other day visit sites.

*Objectives*

Develop and maintain a safe, varied and interpreted walking trail network within Onkaparinga River Reserve.

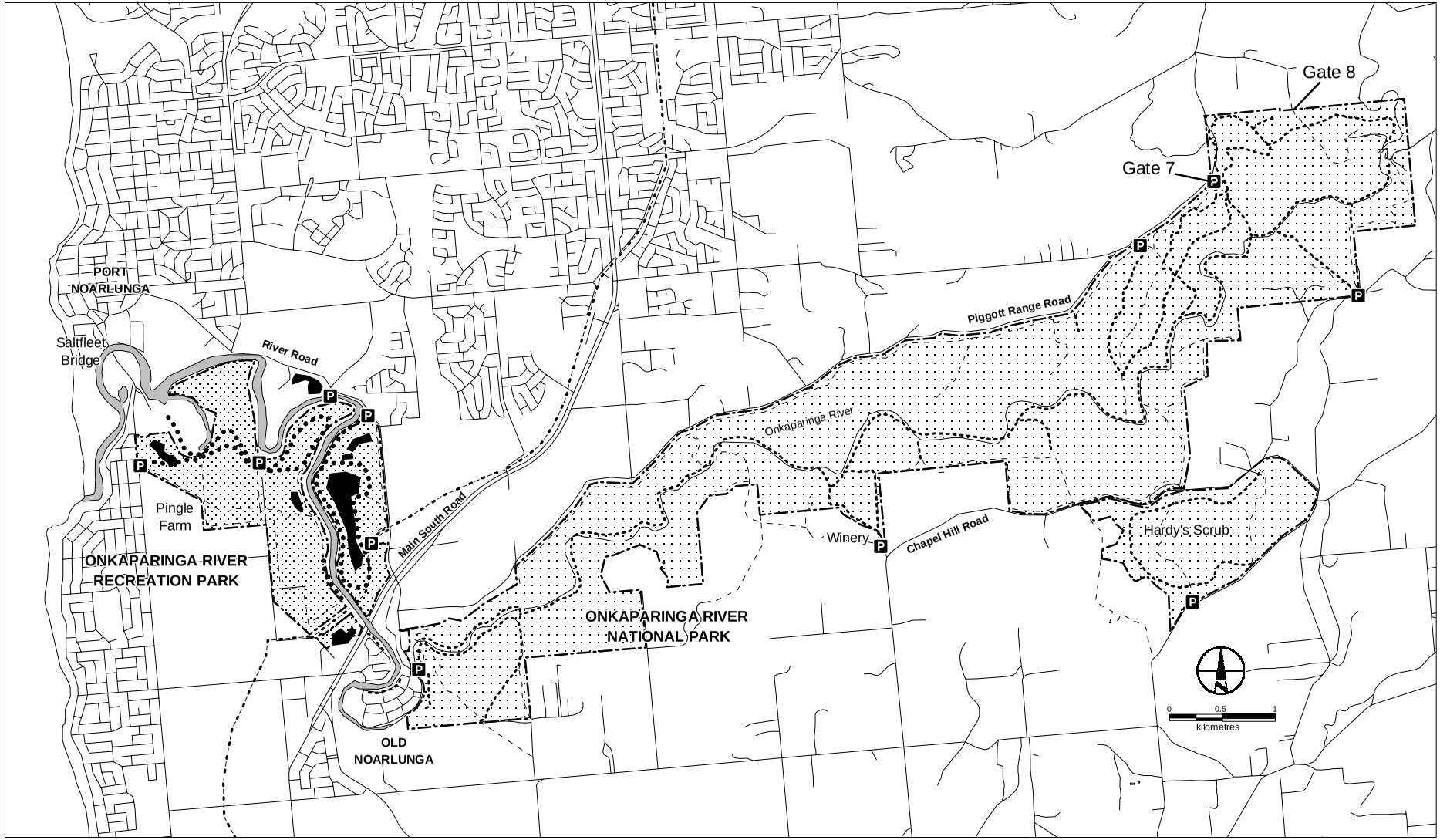
Facilitate the introduction of a regional trails strategy.

*Strategies*

Redevelop walking trails in association with the Friends of Onkaparinga Park.

*Actions*

- Review the existing walking trail system and identify the new route for the Gorge Walking Trail and any connecting links that may be required. Gain clearances from the appropriate Heritage Committees.
- Progressively construct a new Gorge Walking Trail with other linkages.
- Identify appropriate interpretive themes and arrange for the redevelopment of trail-head and trail-side interpretive and directional signs and shelters, where appropriate.
- Establish and implement a documented program of regular safety inspections for all walking trails.
- Obtain regular written safety reports from a qualified engineer for major built structures.




Reserve Boundary
National Park
Recreation Park
Parking area / Trail head
Stormwater Reduction Wetlands
Onkaparinga River
Fire Track
Walking Track
Multi-purpose Trail
Willunga to Merino Rail Trail

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

**Figure 4**

Onkaparinga River Reserve

**Features**

Government of South Australia

Department for Environment and Heritage

### 4.6.4 Day Visit Areas

A day visit area, consisting of toilets and picnic tables, is provided adjacent to the Chapel Hill Winery. Another has been established jointly by the City of Onkaparinga and Department of Transport on River Road. Additional carparks and trail-heads exist at other locations around the boundary of the reserve.

Possibly because many of the visitors to the Onkaparinga River Reserve live within surrounding suburbs, there has not been a marked demand for more day visit facilities such as picnic tables, barbecues, toilets and sun shelters. The high incidence of both vandalism and bushfire has also resulted in a reluctance to create sites that may prove costly to maintain and be a source of accidental fires.

This plan promotes the redesign and redevelopment of carparks and trail-head information and interpretation. It further promotes the establishment of a day visit site in association with the Onkaparinga Ford crossing and trail head. This day visit site should utilise a small area of land upstream from the ford crossing to provide shaded picnic sites but not barbecues. The existing track adjacent to this area should be widened slightly and resurfaced to create an effective fuel break between the day visit area and the rest of the reserve.

A further, though different type, of day visit site is the designated rock climbing area in the eastern part of the reserve. This area provides a site, for those visitors who qualify and obtain a permit, to practice the sport of rock climbing and abseiling. The activity is managed through a policy framework and permit system devised in consultation with South Australian Rockclimbing Education Association (SAREA). The rock climbing zone is shown in Figure 2 Zoning.

*Objectives*

Provide adequate day visit sites within Onkaparinga River Reserve.

*Strategies*

Continue to provide day visit facilities and sites in cooperation with the City of Onkaparinga and the South Australian Rockclimbing Education Association.

*Actions*

- Consult with the City of Onkaparinga on the overall provision of day visit facilities in and around the reserve.
- Continue to prohibit the use of barbecues and fires within the reserve except at established barbecue facilities.
- Design, and then construct, a simple and small day visit site adjacent to the Onkaparinga Ford trail-head.
- Maintain day visit sites and repair acts of vandalism quickly.
- Continue to prohibit camping within the reserve.
- Manage rock climbing, and the rock climbing designated area, in line with departmental policy and in consultation with South Australian Rockclimbing Education Association. Gazette the rock climbing area.
- Prohibit rock climbing outside the designated area.
- Investigate the feasibility of developing a viewing platform within the designated rock climbing area, and implement if feasible.
- Investigate the feasibility of developing toilet facilities at gates 7 and 8 and implement if feasible.

## 4.7 Commercial Activities and Other Landuse

### 4.7.1 Commercial Operators

From time to time DEH is requested to approve various commercial activities for the reserve. These include commercial tour operators seeking access to various sections of the reserve, or those seeking to develop business ventures within the reserve. Sometimes the requests are for the use of the natural resources of the reserve, such as commercial seed collection. DEH will assess all such requests and may from time to time approve and permit commercial activities within the reserve.

All commercial operators utilising the reserve are required to obtain an appropriate permit from DEH.

In considering an application for a permit for a commercial activity, DEH will take into account the:

- value the activity will bring to paying participants;
- reasons for dedication of the reserve;
- provisions and intent of the management plan; and
- impacts upon and benefits (if any) to the values of the reserve and upon other users, as a result of approving the request.

*Objectives*
Allow use of the reserve for appropriate commercial purposes.

*Strategies*
Ensure that permits are granted for commercial activities that meet legal requirements, do not compromise the values of the reserve or interfere with visitor enjoyment of the reserve.

*Actions*

- Provide for the commercial use of the reserve to suitable applicants through the provision of a commercial licence.
- Ensure that commercial licences are granted only to suitable ventures that meet legal requirements, do not compromise the values of the reserve or interfere with visitor enjoyment of the reserve.
- Continue to monitor commercial operators within the reserve.

### 4.7.2 Public Utilities

Onkaparinga River Reserve has a number of easements and road reserves within its boundaries that facilitate the provision of basic services. These include easements managed by SA Water, ETSA Utilities and local government. Such infrastructure is of long standing and operators require access to maintain their facilities.

The Department of Transport still retains an interest (originating prior to dedication of the reserve) in developing a transport corridor for the Seaford Development across the Onkaparinga River Recreation Park. The choice of route and any subsequent environmental impact statement remains in abeyance at this time. DEH maintains an interest in the choice of route and in the design of structures and systems to mitigate any impacts.

The Commonwealth or organisations operating under the authority of Commonwealth legislation (eg telecommunications carriers) may undertake actions on the reserve subject to ministerial approval, even though they may not be referred to in specific terms within this management plan, provided that such actions are consistent with the objectives of this plan and are demonstrably in the public interest.

*Objectives*

Ensure that ongoing service of utilities is compatible with reserve values and that utilities are not impacted by reserve development and maintenance works.

*Strategies*

Liaise with utility companies to ensure that maintenance programs have minimal impact on reserve values.

*Actions*

- Maintain liaison with utility companies and periodically review maintenance programs.
- Maintain accurate records of underground and overhead services to minimise damage through reserve maintenance and development work.

### 4.7.3 Leases and Licences

The Onkaparinga River Reserve has a number of existing leases:

- The Noarlunga District Radio Modellers, who build and fly motorised model aircraft from a lease within the floodplain. Their lease expires in 2013.
- The South Coast Flying Club, who lease a portion of the floodplain on which clubrooms, aircraft hangers and a runway are maintained. Members of the club own and fly vintage aircraft. Their lease expires in 2013.
- The Scout Association of SA has a small lease on which a Scout Hall is located. Their lease expires in 2014.

It is the intention of the South Australian Government to honour its lease arrangements with all lessees. This management plan advocates continuing monitoring of the leases. The undertaking of any investigations may be required, particularly in relation to public safety issues or in the context of changing land use and changing community expectations.

*Objectives*

Achieve effective, on-going partnerships with lessees that are mutually beneficial to all parties.

Ensure that lessees continue to be compatible with reserve values and do not compromise public enjoyment of the reserve.

*Strategies*

Continue to monitor leases within the reserve and maintain liaison with lessees.

*Actions*

- Continue to liaise with lessees.
- Continue to monitor leases within the reserve
- Ensure that lessees are compatible with reserve values and do not compromise public enjoyment of the reserve.

## 4.8 Management Arrangements

### 4.8.1 Partnerships and Community Volunteer Involvement

The Department for Environment and Heritage supports and promotes activities by agencies and communities to work towards nature conservation across the landscape within the Mount Lofty Ranges. DEH also supports and promotes the development of regional recreation opportunities across land ownership boundaries. During the life of this plan, Onkaparinga River Reserve will increasingly be managed as a key component of a regional biodiversity conservation and recreation resource.

This approach requires the development of substantial working relationships with other government agencies, local authorities and local communities. It is anticipated that the reserve will make a contribution to both the Yurrebilla concept and to a regional trail strategy. In addition, ongoing management links to the Sturt Consultative Committee, The City of Onkaparinga, the Onkaparinga Catchment Water Management Board, Aboriginal people with a traditional association with the land and the Friends of Onkaparinga Park are seen as important.

City of Onkaparinga

DEH and The City of Onkaparinga have a number of land management issues in common. Both organisations provide outdoor recreation opportunities for residents, are jointly involved in the management of stormwater retention wetlands and have a common interest in water quality. The City of Onkaparinga also manages land for conservation purposes adjacent to the reserve.

Onkaparinga Catchment Water Management Board

The aim to improve catchment management and water quality within the reserve is a central theme of this plan. This direction is concurrent with the Onkaparinga Catchment Water Management Board's aim to protect and restore creeks and rivers within the Onkaparinga catchment, and ensure that water resources are managed in a sustainable way.

Aboriginal Partnerships

DEH is committed to reconciliation and partnerships with indigenous communities to manage parks and wildlife effectively, in a way that respects contemporary and traditional culture, knowledge and skills. Partnerships involve the delivery of programs that promote reconciliation, cultural awareness, indigenous employment and training, joint management and indigenous cultural heritage management on parks.

Furthermore, consistent with the South Australian Government policy, DEH will consider the development of Indigenous Land Use Agreements (ILUAs), which are voluntary agreements between native title groups and other people.

Friends of Onkaparinga Park

Under the guidance of DEH, the Friends of Onkaparinga Park have contributed vital volunteer resources to the successful development and management of the Reserve over the last decade. DEH values their continued input and will support their contribution to work programs over the life of this plan (and beyond).

Key activities of the Friends include:

- fund raising;
- contribution to work programs;
- contribution to the collection of baseline information;
- promotion of the reserve.

Individual members have received National Parks Volunteer Awards and the City of Noarlunga Senior's Awards. The Friends of Onkaparinga Park won the 1992 Friends Group of the Year Award and the 1997 Friends Group of the Decade award for their consistent efforts.

Through trading tables and other work, the Friends raise approximately $6,000 per year. The group also seeks and obtains substantial grants from numerous sources.

With the support of DEH, the Friends have contributed to:

- the planting of approximately 80,000 trees and shrubs grown from seed collected and cared for by members;
- securing funding for direct seeding of approximately 10 ha per year since 1992;
- securing substantial donations toward the cost of the footbridge across the Onkaparinga River;
- ongoing input into erosion control, rehabilitation of the riparian zone and fox control;
- raising approximately $5,000 for contract weed spraying;
- funding the construction of an island in Wetland No 1; and
- the purchase of a trailer, caravan, chainsaws, brushcutter and other tools for use by the Friends.

It is important for DEH to provide ongoing guidance and support to the Friends of Onkaparinga Park. During the production of this plan several areas were identified as requiring attention, including additional training, the safe storage of equipment and help in obtaining appropriate property insurance.

Adjoining Landowners

It is widely recognised that conservation goals can not be achieved through the reservation of public land alone. Conservation is also dependent on the efforts of private landowners and other non-government organisations.

As the Onkaparinga River Reserve is long and narrow it is particularly susceptible to incursion by weeds and feral animals. The conservation efforts of adjoining landowners are therefore vital if this is to be prevented. DEH encourages adjacent landowners to consider a cooperative approach to the management of remnant vegetation and other habitat within the vicinity of parks, particularly where they adjoin the park boundary.

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

*Objectives*

Advance the future management of the Onkaparinga River Reserve through strategic partnerships.

*Strategies*

Contribute to the development of integrated biodiversity conservation and recreation management in the Mount Lofty Ranges.

In liaison with the City of Onkaparinga identify matters of common interest and develop mutually beneficial arrangements to facilitate management of the reserve.

Continue to work in cooperation with the Onkaparinga Catchment Water Management Board.

Encourage Aboriginal people with a traditional association with the land comprising the reserve to be involved in partnership arrangements to assist with management of the reserve.

Facilitate and direct community-based involvement in integrated programs that conserve and improve the biodiversity and cultural values and promote quality visitor experiences within the reserve.

Establish cooperative arrangements with adjoining landowners for land management and conservation of biodiversity.

*Actions*

- Manage Onkaparinga River Reserve in a landscape context by participating in integrated natural resource management initiatives in adjacent areas of the Mount Lofty Ranges, taking a lead role in biodiversity conservation.
- Work cooperatively with the City of Onkaparinga on land management issues and concerns of common interest.
- Continue to work closely with the Onkaparinga Catchment Water Management Board on matters of mutual interest.
- Take steps to involve Aboriginal people, who have a traditional association with the land comprising the park, in the management of the reserve and the preservation of their cultural heritage.
- Develop annual work programs for the Friends Group as part of integrated management programs for the reserve.
- Facilitate and support the contribution of the Friends Group to reserve management.
- Liaise with adjoining landowners to identify opportunities for cooperative management arrangements.

## 4.9 Future Directions

### 4.9.1 Reserve Classification and Additional Land

When the original Recreation Park was proclaimed in 1993 and the eastern gorge section was proclaimed as a National Park, the intention was to eventually proclaim the Recreation Park as a National Park. Reclassification of the Recreation Park will be dependent on the future requirements of the Seaford Transport Corridor and the future management requirements of the estuary area.

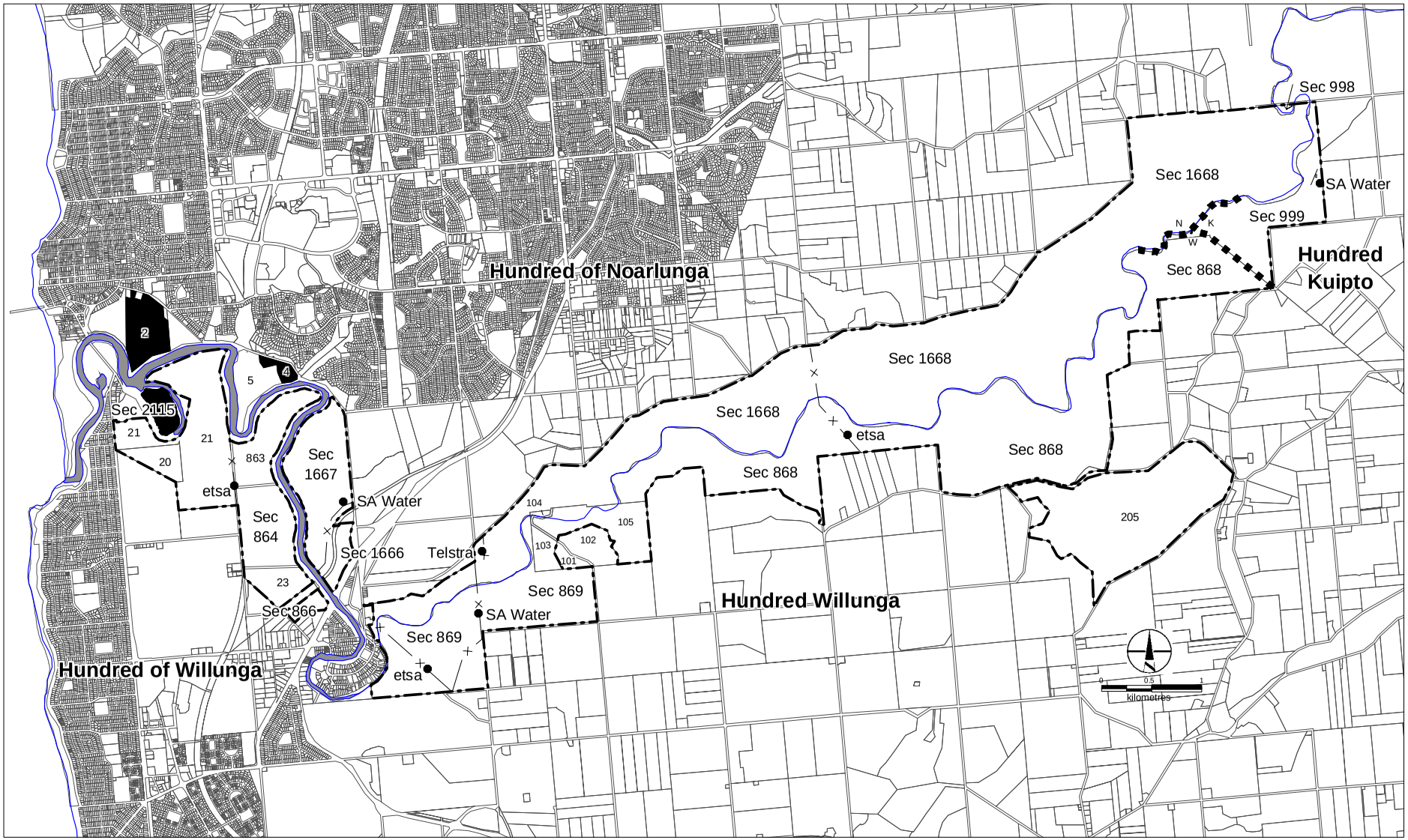
Over the last eight years a number of parcels of land have been purchased or transferred to the management of DEH with the intention of dedicating them as part of the reserve. The most significant recent addition to the reserve is that of Hardy's Scrub (Section 205, Hundred of Willunga), an area of approximately 161 hectares, which was gazetted in October 2001. The additional land will improve the long-term integrity of the reserve by achieving links between areas of quality habitat, improving logical boundaries and facilitating more effective management of public use.

The parcels of land currently being processed for dedication are:

- The island in the estuary, Allotment 2115 Hd Willunga.
- Floodplain land to the north of the estuary at Port Noarlunga, Allotment 2 Hd Noarlunga.
- The small stormwater wetland west of River Road, Allotment 4 Hd Noarlunga.

In addition, this plan proposes the dedication into the reserve of the Crown Land beneath the waters of the Onkaparinga Estuary from the Saltfleet Bridge to Old Noarlunga, including the Tow Path land located on both banks.

The coastal dunes and lower estuary from the Saltfleet Bridge to the sea are Crown Land under the care and control of the City of Onkaparinga. DEH will work with the City of Onkaparinga to ensure effective future management of this land, within the context of overall estuary management.




LEGEND

Land Parcels Awaiting Proclamation

Onkaparinga River

Hundred Boundary

Easement

Reserve Boundary

Map designed and created by Natcon Land Systems and Reserve Planning using PAMS
Date : 2004

Government of South Australia

Department for Environment and Heritage

**Figure 5**

Onkaparinga River Reserve

**Additional Land**

*Objective*

Consolidate the boundaries of the reserve.

*Strategy*

Explore options to progress the resolution of the choice of route for the Seaford Transport Corridor.

Consult with the City of Onkaparinga on the management of the Lower Estuary, sea outlet and sand dunes.

*Actions*

- Proceed to consolidate within the reserve, all currently available parcels of Crown Land that are awaiting dedication.
- Dedicate the Crown Land upstream of the Saltfleet Bridge and through to South Road, that underlies the waters of the estuary (including the Tow Path), into the reserve.

# 5 SUMMARY OF MANAGEMENT ACTIONS

| Action Statement | Duration | Priority | Pge |
|---|---|---|---|
| **Zoning** | | | |
| Adopt and implement the zoning plan shown in Figure 2. | Ongoing | High | 13 |
| **Natural Resources** | | | |
| **Landform and Soils** | | | |
| Ensure that management actions do not result in soil erosion. | Ongoing | High | 14 |
| Continue revegetation programs. | Ongoing | High | 14 |
| Rehabilitate known sites of soil erosion. | Short term | Medium | 14 |
| Monitor for soil based pathogens and undertake remedial action as required. | Ongoing | Very High | 14 |
| Encourage use of the reserve by schools studying geomorphology. | Ongoing | Low | 14 |
| **Hydrology** | | | |
| Work cooperatively with the Onkaparinga Catchment Water Management Board within government and the community. | Ongoing | High | 19 |
| Seek assistance from the Onkaparinga Catchment Water Management Board to manage erosion, revegetation and weed control within the riparian areas of the reserve. | Ongoing | Medium | 19 |
| Support Onkaparinga Catchment Water Management Board water monitoring programs within the Reserve. | Ongoing | High | 19 |
| Support any review of the existing use of the Onkaparinga as an aqueduct for River Murray water and emphasise the need for environmental flows of suitable quantity, quality and seasonality. | Ongoing | Medium | 19 |
| Attempt to control the frequency and extent of bushfire within the reserve in order to limit nutrient loading of the river from fire-ash. | Ongoing | High | 19 |
| Contribute to the ongoing monitoring of the stormwater retention wetlands. | Short term | High | 19 |
| Continue to manage the stormwater retention wetlands to maximise water quality, wetland habitat values and educational and interpretive opportunities. | Ongoing | Medium | 19 |
| Continue to emphasise the importance of tidal flows and support measures intended to protect the mouth of the river and adjacent dunes. | Ongoing | High | 19 |
| **Native Vegetation** | | | |
| Review previous revegetation programs. | Short term | Medium | 22 |
| Prioritise and implement plans for vegetation restoration / revegetation sites using current biological information. | Ongoing | High | 22 |
| Develop and implement an integrated vegetation management / pest plant animal control program with ten year goals, annual targets and a monitoring program. | Short term | High | 22 |
| In conjunction with the Onkaparinga Catchment Water Management Board promote the benefits of integrated vegetation management and pest plant animal control programs to the wider community. | Ongoing | Medium | 22 |

| Action Statement | Duration | Priority | Pge |
|---|---|---|---|
| Native Fauna | | | |
| Ensure that the requirements of native fauna are considered when designing integrated revegetation programs, including weed and vermin control components. | Short term | High | 24 |
| Encourage the creation of biological corridors within the district and the retention and careful management of remnant habitats. | Ongoing | Medium | 24 |
| Support additional baseline surveys to add to information collected by *A Biological Survey of the Southern Mount Lofty Ranges, South Australia.* | Short term | High | 24 |
| Remove artificial dams and monitor the population and effect of Western Grey Kangaroos. | Short term | Medium | 24 |
| Improve community understanding about the dangers of introducing exotic animals into the reserve. Prosecute offenders where appropriate. | Ongoing | Medium | 24 |
| Implement integrated threat management programs based on data obtained from monitoring programs, to protect reserve values. | Ongoing | High | 24 |
| Introduced Plants | | | |
| Create achievable, long term, pest plant control programs with clearly defined goals and annual targets for the first five years. The program should be integrated with revegetation and fauna management programs. | Short term | Very high | 25 |
| Create and implement a program to prevent the introduction of new pest plant and soil pathogen species into the reserve. | Ongoing | High | 25 |
| Establish annual monitoring programs to map the distribution of weeds of concern and the effectiveness of control programs. Review the program every three years. | Ongoing | High | 25 |
| Seek support and financial assistance from the Onkaparinga Catchment Water Management Board. | Ongoing | Medium | 25 |
| Encourage ongoing support and involvement in the program by the Friends of Onkaparinga Park at a level and in a manner that they feel they can realistically and willingly contribute. | Ongoing | High | 25 |
| Introduced Pathogens | | | |
| Increase awareness amongst the public and DEH staff with regard to the potential for the introduction and establishment of *Phytophthora cinnamomi*, and measures to prevent its spread. | Ongoing | High | 26 |
| Ensure that soil removal and disinfection treatment is undertaken for all vehicles, earth-moving and construction equipment entering the reserve, to reduce the risk of *Phytophthora* introduction. | Ongoing | High | 26 |
| Monitor the spread of *Phytophthora* in areas surrounding the reserve. | Ongoing | High | 26 |
| Provide boot-cleaning stations for track users where necessary. | Ongoing | High | 26 |
| Determine if the symptoms of 'Mundulla Yellows' occur in the area and if it appears to be present, develop and implement an appropriate response strategy. | Ongoing | High | 26 |
| Introduced Animals | | | |
| Monitor populations of pest animals within the reserve. Produce an internal report annually. | Ongoing | Medium | 26 |

| Action Statement | Duration | Priority | Pge |
|---|---|---|---|
| Initiate and participate in a regional fox control program and evaluate and monitor any long-term benefits. | Short term | Medium | 26 |
| Continue cat and goat control in an opportunistic manner, under clear management direction by licensed and trained staff who are qualified to operate firearms. Produce an annual report with statistics. | Ongoing | Medium | 26 |
| Undertake rabbit control as necessary, to protect revegetation areas. | Ongoing | Medium | 26 |
| 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 the Department for Aboriginal Affairs and Reconciliation, the Heritage branch of DEH and other relevant authorities and organisations. Aboriginal and historic cultural heritage sites require conservation plans to facilitate appropriate management. | Ongoing | Medium | 28 |
| Before proceeding with any development works within the reserve, obtain an assessment and clearance from the appropriate authority, under the provisions of *Aboriginal Heritage Act 1988*. This includes new walking trails and other visitor facilities. | Short term | Very high | 29 |
| Research and record, historic sites and stories that relate to the history of the park and where appropriate, make this information available to visitors through interpretive material. | Ongoing | Medium | 29 |
| Continue to upgrade interpretive and directional signs within the reserve and include appropriate cultural heritage themes. | Ongoing | Medium | 29 |
| Encourage and support research of historic sites, archaeological and anthropological studies within the park. All Aboriginal heritage sites located during these surveys should be recorded to the standards set by DAARE and submitted for inclusion on the DAARE Central Archive. | Ongoing | High | 29 |
| Repair any damage caused by acts of vandalism. | Ongoing | Medium | 29 |
| Fire Management | | | |
| Suppress all bushfires within the reserve promptly. | Ongoing | High | 30 |
| Develop a fire management plan for the reserve. | Short term | High | 30 |
| Formally consult with CFS, the relevant District Bushfire Prevention Committee/s and other key stakeholders, conservation and park interest groups, neighbours and the wider community during the preparation of the fire management plan. | Short term | High | 30 |
| Review and update fire management planning to ensure the planning is current, accurate and adequately addresses all issues. | Ongoing | Medium | 30 |
| Continue to work with the relevant District Bushfire Prevention Committee and CFS to reduce the risk of arson and minimise risks to life and property within and surrounding the reserve. | Ongoing | High | 30 |
| Maintain a strategic network of fire access and fuel reduced areas | Ongoing | High | 30 |

| Action Statement | Duration | Priority | Pge |
|---|---|---|---|
| **Infrastructure, Built Assets and Public Risk** | | | |
| Undertake an audit of public risk within the reserve and evaluate the identified risks. Produce a Public Risk Assessment Plan as part of a District operations program. | Short term | High | 30 |
| Implement the Public Risk Assessment Plan by designing and implementing routine written inspection programs, remedial works, and appropriate hazard identification signs to ensure the ongoing provision of a safer public environment, especially in relation to built assets and locations promoted to the public by DEH. | Ongoing | High | 30 |
| **Recreation and Tourism** | | | |
| **Vehicle Access** | | | |
| Undertake a review of the existing carparks. Redevelop carparks based on the review to meet the anticipated future needs of visitors within the sustainable limits of the reserve. Carparks should be designed to best practice standards with a high quality aesthetic design and the use of quality durable materials. | Short /medium | High | 33 |
| Maintain fences and designated locked gates. | Ongoing | High | 33 |
| Maintain the internal access system and modify the system as necessary in consultation with emergency services. | Ongoing | High | 33 |
| Repair damage resulting from acts of vandalism quickly. | Ongoing | Very high | 33 |
| Upgrade trail head signage and information bays associated with carparks. | Short term | Medium | 33 |
| Prohibit the public use of motorised boats and motorised personal watercraft within the reserve. Canoes and small boats powered by oars should be permitted (note this action requires proclamation of additional Crown land). | Ongoing | High | 33 |
| **Walking and Cycling Trails** | | | |
| Review the existing trail system and identify the new route for the Gorge Walking Trail and any connecting links that may be required. Gain clearances from the appropriate Heritage Committees. | Short term | Very high | 34 |
| Progressively construct a new Gorge Walking Trail with linkages. | Medium | High | 34 |
| Identify appropriate interpretive themes and arrange for the redevelopment of trail-head and trail-side interpretive and directional signs and shelters, where appropriate. | Short term | Medium | 34 |
| Establish and implement a documented program of regular safety inspections for all walking trails. | Ongoing | Very high | 34 |
| Obtain regular written safety reports from a qualified engineer for major built structures. | Ongoing | Very high | 34 |
| **Day Visit Areas** | | | |
| Consult with the City of Onkaparinga on the overall provision of day visit facilities in and around the reserve. | Ongoing | High | 37 |
| Continue to prohibit the use of barbecues and fires within the reserve except at established barbecue facilities. | Ongoing | High | 37 |
| Design, and then construct, a simple and small day visit site adjacent to the Onkaparinga Ford trail-head. | Short term | Medium | 37 |
| Maintain day visit sites and repair acts of vandalism quickly. | Ongoing | Very high | 37 |

| Action Statement | Duration | Priority | Pge |
|---|---|---|---|
| Continue to prohibit camping within the reserve. | Ongoing | High | 37 |
| Manage rock climbing, and the rock climbing designated area, in line with departmental policy and in consultation with South Australian Rockclimbing Education Association. Gazette the rock climbing area. | Ongoing | High | 37 |
| Prohibit rock climbing outside the designated area. | Ongoing | High | 37 |
| Investigate the feasibility of developing a viewing platform within the rock climbing designated area, and implement if feasible. | Short term | Medium | 37 |
| Investigate the feasibility of developing toilet facilities at gates 7 and 8 and implement if feasible. | Short term | Medium | 37 |
| Commercial Activities and Other Landuse | | | |
| Commercial Operators | | | |
| Provide for the commercial use of the reserve to suitable applicants through the provision of a commercial licence. | Ongoing | Medium | 38 |
| Ensure that commercial licences are granted only to suitable ventures that meet legal requirements, do not compromise the values of the reserve or interfere with visitor enjoyment of the reserve. | Ongoing | High | 38 |
| Continue to monitor commercial operators within the reserve. | Ongoing | Medium | 38 |
| Public Utilities | | | |
| Maintain liaison with utility companies and periodically review maintenance programs. | Ongoing | Medium | 39 |
| Maintain accurate records of underground and overhead services to minimise damage through reserve maintenance and development work. | Ongoing | High | 39 |
| Leases and Licences | | | |
| Continue to liaise with lessees. | Ongoing | High | 39 |
| Continue to monitor leases within the reserve. | Ongoing | High | 39 |
| Ensure that lessees are compatible with reserve values and do not compromise public enjoyment of the reserve. | Ongoing | High | 39 |
| Management Arrangements | | | |
| Partnerships, Community and Volunteer Involvement | | | |
| Manage Onkaparinga River Reserve in a landscape context by participating in integrated natural resource management initiatives in adjacent areas of the Mount Lofty Ranges, taking a lead role in biodiversity conservation. | Ongoing | High | 42 |
| Work cooperatively with the City of Onkaparinga on land management issues and concerns of common interest. | Ongoing | High | 42 |
| Continue to work closely with the Onkaparinga Catchment Water Management Board on matters of mutual interest. | Ongoing | High | 42 |
| Take steps to involve Aboriginal people, who have a traditional association with the land comprising the park, in the management of the reserve and the preservation of their cultural heritage. | Ongoing | High | 42 |
| Develop annual work programs for the Friends Group as part of integrated management programs for the reserve. | Ongoing | Very High | 42 |

| Action Statement | Duration | Priority | Pge |
|---|---|---|---|
| Facilitate and support the contribution of the Friends Group to reserve management. | Ongoing | Very high | 42 |
| Liaise with adjoining landowners to identify opportunities for cooperative management arrangements. | Ongoing | High | 42 |
| Future Directions | | | |
| Reserve Classification and Additional Land | | | |
| Proceed to consolidate within the reserve, all currently available parcels of Crown Land that are awaiting dedication. | Short term | Very high | 44 |
| Dedicate Crown Land upstream of Saltfleet Bridge through to South Road that underlies the waters of the estuary (including the Tow Path) into the reserve. | Short term | High | 44 |

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Pre-planning submissions were received for this plan from the following:

- Friends of Onkaparinga Park.
- Mr Roger Grund.
- Mr Scott Stokes

Personal Communication:
Mr R. Coombe and Mr T. Gregory, Department for Environment and Heritage.

## APPENDIX A: LEGISLATION, CONVENTIONS AND AGREEMENTS

In addition to the *National Parks and Wildlife Act 1972*, DEH is obliged to comply with the provisions of the following legislation, conventions and agreements:

| South Australia |
|---|
| *Aboriginal Heritage Act 1988* |
| *Animal and Plant Control Act (Agricultural Protection and Other Purposes) 1986* |
| *Biological Control Act 1986* |
| *Catchment Water Management Act 1995* |
| *Coast Protection Act 1972* |
| *Country Fires Act 1989* |
| *Equal Opportunity Act 1984* |
| *Environment Protection Act 1993* |
| *Development Act 1993* |
| *Harbors and Navigation Act 1993* |
| *Heritage Act 1993* |
| *Historic Shipwrecks Act 1981* |
| *Mining Act 1971* |
| *National Trust of South Australia Act 1955* |
| *Native Title (South Australia) Act 1994* |
| *Native Vegetation Act 1991* |
| *Occupational Health, Safety and Welfare Act 1986* |
| *Petroleum Act 2000* |
| *Prevention of Cruelty to Animals Act 1985* |
| *Roads (Opening and Closing) Act 1991* |
| *Recreational Greenways Act 2000* |
| *Soil Conservation and Land Care Act 1989* |
| *Water Resources Act 1997* |
| *Wilderness Protection Act 1992* |

| Commonwealth |
|---|
| *Aboriginal and Torres Straight Islander Heritage Protection Act 1984* |
| *Disability Discrimination Act 1992* |
| *Environment Protection and Biodiversity Conservation Act 1999* |
| *Native Title Act 1993* |
| *Natural Heritage Trust Act 1996* |

| International |
|---|
| Japan / China Australia Migratory Bird Agreements (JAMBA, CAMBA) |
| Ramsar Convention |
| World Heritage Convention |

## APPENDIX B: LAND TENURE HISTORY

Onkaparinga River Recreation Park and Onkaparinga River National Park.

(Source: Tenure History Search Unit, Roads & Crown Support, DEH)

The Onkaparinga River Recreation Park was constituted in *Gazette* 7/11/1985, page 1360 and at that time comprised:

*Sections 998 and 999, Hundred of Kuitpo,*

*Sections 1666, 1667 and 1668, Hundred of Noarlunga,*

*Sections 863 to 869, Hundred of Willunga.*

The land to the east of the Main South Road also comprised of former closed roads in Road Plans 8104, 8111 and 8265 which were consolidated with the former Certificates of Title.

The boundaries of the Recreation Park were altered in *Gazette* 5/8/1993, page 747 by excluding from the Recreation Park all the land on the eastern side of Main South Road.

The area excluded was constituted as a National Park and assigned the name "Onkaparinga River National Park" and comprised:

*Sections 998 and 999, Hundred of Kuitpo,*

*Sections 868 and 869, Hundred of Willunga and*

*Section 1668, Hundred of Noarlunga.*

Pieces 103, 104 and 105, Deposited Plan 3664 were added to the National Park in *Gazette* 6/3/1997, page 1114.

The balance land to the west of Main South Road remained as a Recreation Park and now comprises:

*Sections 1666 and 1667, Hundred of Noarlunga,*

*Sections 863, 864 and 866, Hundred of Willunga,*

*Allotment 23 in Deposited Plan 29546 (being the division of section 865) and*

*Allotment 21 in Deposited Plan 29547 (being the division of section 867).*

The balance of sections 865 and 867 (being allotment 3 in Deposited Plan 29546 and allotment 22 in Deposited Plan 29547) were excluded in *Gazette* 16/5/1991, page 1570.

Allotment 20 in Deposited Plan 29423 was added to the Recreation Park in *Gazette* 21/3/1991, page 963.

The sections created for the constitution of the Park comprised the amalgamation and cancellation of former sections in the respective Hundreds as shown on Survey Diagram Book page 441, Hundred of Noarlunga.

ONKAPARINGA RIVER RECREATION PARK

The Park comprises:

*Sections 863, 864 and 866, Hundred of Willunga,*

*Allotment 23, Deposited Plan 29546*

*Allotment 21 Deposited Plan 29547*

*Allotment 20 Deposited Plan 29423*

*Sections 1666 and 1667 Hundred of Noarlunga*

HUNDRED OF WILLUNGA

Section 863
Comprises the whole of former section 323.

1. CT 2322/89 portion of section 323 transferred from ML Oliver and others to SAHT on 25/11/1970 and CT 3744/132 issued.

   CT 4021/815 land transferred from SAHT to State Planning Authority on 16/12/1975. Transfer to Her Majesty on 17/9/1985 and cancellation of title.

2. CT 3770/24 the balance of section 323 was acquired from ML Oliver by the State Planning Authority on 8/7/1974 and CT 4024/728 issued.

   CT 4024/728, land transferred to Her Majesty on 17/9/1985 and title cancelled.

Section 864
Comprises of portion of former section 327 and the whole of former section 328.

*Section 327*
There are two portions of the former section included in section 864

1. CT 2322/89, portion transferred from ML Oliver and others to SAHT on 25/11/1970 and CT 3744/132 issued.

   CT 4021/815, transfer from SAHT to State Planning Authority on 16/12/1975. Transfer to Her Majesty on 17/9/1985 and cancellation of title.

2. CT 3770/24, portion acquired from ML Oliver by the State Planning Authority on 8/7/1974 and CT 4024/728 issued. Transfer to Her Majesty on 17/9/1985 and title cancelled.

*Section 328*
CT 2405/19 land transferred from G Hunt to the State Planning Authority on 3/7/1968. Transfer to Her Majesty on 17/9/1985 and title cancelled.

Section 865
Comprises portion of former section 337.

CT 2026/122 portion transferred from G Hunt to State Planning Authority on 3/7/1968. Transfer to Her Majesty on 17/9/1985 and title cancelled.

Section 866.
Comprises portions of former section 337 and portion of former section 339

*Section 337*
First issued in Certificate of Title 130/92 to D Teakle on 9/6/1869

1. CT 1037/112 portion of section 337 transferred from South Australian Railways Commissioner to the Commissioner of Highways on 9/5/1972 and CT 3850/97 issued.

   CT 3850/97 transfer to the State Planning Authority on 7/3/1973. Transfer to Her Majesty on 17/9/1985 and title cancelled.

2. CT 2405/18 portion transferred from G Hunt to the State Planning Authority on 3/7/1968 and CT 3802/97 issued.

   CT 3802/97 transfer to Her Majesty on 17/9/1985 and title cancelled.

*Portion of section 339*
CT 2509/98 portion section 339 transferred from J Fletcher to the State Planning Authority on 27/10/1977. Transfer to Her Majesty on 17/9/1985 and title cancelled.

Deposited Plan 29547, Allotment 21 (Formerly portion of section 867)
This land comprises the whole of former sections 320 and 322 and portions of former sections 318, 319 and 327.

*Section 320*

CT 3770/23 land acquired from MJ Oliver by the State Planning Authority on 8/7/1974 and CT 4024/728 issued.

CT 4024/728 transfer to Her Majesty on 17/9/1985 and title cancelled.

*Section 322*

1. CT 3770/24 portion was acquired from MJ Oliver by the State Planning Authority on 8/7/1974 and CT 4024/728 issued.

   CT 4024/728 transfer to Her Majesty on 17/9/1985 and title cancelled.

2. CT 2322/89 portion transferred from DR Hunt to the South Australian Housing Trust on 25/11/1970 and CT 3744/132 issued.

   CT 4021/815 transfer to Her Majesty on 17/9/1985 and title cancelled.

*Section 327*

CT 2322/89 portion transferred from DR Hunt to the South Australian Housing Trust on 25/11/1970 and CT 3744/132 issued.

CT 4021/815 transfer from SAHT to the State Planning Authority on 16/12/1975. Transfer to Her Majesty on 17/9/1985 and title cancelled.

*Portions of Sections 318 and 319*

1. CT 2308/138 land acquired from Eproc Limited by the South Australian Land Commission on 5/6/1975.

   CT 4080/694 transfer from SALC to SPA on 28/7/1977. Transfer to Her Majesty on 17/9/1985 and title cancelled.

2. CT 4024/199 transfer from R Weatherald to State Planning Authority on 3/7/1975. Transfer to Her Majesty on 17/9/1985 and title cancelled.

*Deposited Plan 29423, Allotment 20.*

Comprises of portions of former sections 318 and 319

1. CT 3221/160 transfer from MJ Oliver and others to South Australian Housing Trust on 25/11/1970.

   CT 4021/815 transfer from SAHT to State Planning Authority on 16/12/1975. Transfer to Her Majesty on 17/9/1985 and title cancelled.

2. CT 2030/162 and CT 2030/163 transfer from R Weatherald to South Australian Railways Commissioner on 16/5/1974 and CT 4024/198 issued.

   CT 4024/198 transfer from SARC to South Australian Housing Trust and South Australian Urban Land Trust on 15/8/1990.

   CT 4371/197 transfer to Her Majesty on 21/1/1991 and title cancelled

3. CT 4024/200 transfer from R Weatherald to South Australian Land Commission on 3/7/1975. Transfer from SALC to South Australian Housing Trust and South Australian Urban Land Trust on 15/8/1990.

   CT 4371/197 transfer from SAHT & SAULT to Her Majesty on 21/1/1991 and title cancelled

HUNDRED OF NOARLUNGA

Section 1666 and portion of section 1667
Comprises of former section 338.
CT 3915/83 land acquired from E Antonio by the South Australian Land Commission on 27/3/1975.

CT 4040/375 transfer from SALC to State Planning Authority on 22/10/1975

Transfer from SPA to Her Majesty on 17/9/1985 and title cancelled.

*Balance section 1667*
Comprises of portions of former section 329 and 324

*Section 329*
CT 2011/59 transfer from L Gawley to the State Planning Authority on 30/1/1973.

CT 4144/576 transfer from SPA to Her Majesty on 17/9/1985 and title cancelled.

*Section 324*
CT 4017/908 land acquired from Elders Trustee by the South Australian Land Commission on 17/4/1975.

CT 4041/878 transfer from SALC to the State Planning Authority on 28/7/1977.

CT 4144/720 transfer from SPA to Her Majesty and title cancelled.

ONKAPARINGA RIVER NATIONAL PARK

The park comprises of:

*Section 1668, Hundred of Noarlunga;*
*Sections 868 and 869, Hundred of Willunga*
*Sections 998 and 999, Hundred of Kuitpo*
*Pieces 103, 104 and 105 Deposited Plan 36654, Hundreds of Willunga and Noarlunga,*
*Allotment 205 in Deposited Plan 53156,*
*Allotments 300 and 301 in Deposited Plan 53157, and*
*Allotment 1 in Deposited Plan 56738.*

Land in Deposited Plan 36654 was added to the National Park by proclamation published in the gazette of 6/3/1997, page 1114. On Allotment 205 in Deposited Plan 53156, Allotments 300 and 301 in Deposited Plan 53157, and Allotment 1 in Deposited Plan 56738 were added to the National Park by proclamation published in the gazette of 11/10/2001, page 4442.

All of the land within the National Park was formerly freehold land that at some time transferred to the Government.

The land comprises of former sections totally within the hundreds of Noarlunga, Willunga and Kuitpo as well as sections that are listed as being in the Hundreds of Willunga and Noarlunga and the hundreds of Noarlunga and Kuitpo.

Section 1668, hundred of Noarlunga comprises of the following former sections:

*Part section 36,*
CT 3909/130, transfer from JN McEwin to State Planning Authority on 29/6/1973.
Transfer from SPA to Her Majesty on 8/5/1985

*Part section 41,*
CT 3883/118, transfer from H Sparrow to South Australian Land Commission on 5/12/1974.

CT 373/238 (closed road) transfer to South Australian Land Commission on 5/12/1974.

CT 4051/369, transfer from SALC to SPA on 15/7/1976.

Transfer to Her Majesty on 8/5/1985

*Section 42, hundred of Noarlunga and Willunga.*
CT 2069/38, Land Acquired from Quarry Industries by the South Australian Land Commission on 19/6/1975.

CT 4047/958, transfer from SALC to SPA on 15/7/1976

CT 4258/466, transfer from SPA to Her Majesty on 8/5/1985.

*Sections 43 and 44 hundreds of Noarlunga and Willunga*
CT 3939/140, transfer from J McEwin to State Planning Authority on 29/6/1973.

Transfer to Her Majesty on 8/5/1985.

*Sections 47 and 48,*
CT 2881/112, transfer from Noarlunga Meats to South Australian Land Commission on 5/6/1975.

CT 4048/613, transfer from SALC to SPA on 15/7/1975.

CT 4258/466 transfer to Her Majesty on 8/5/1985.

*Section 49, Hundred of Noarlunga and Willunga*
As for sections 47 and 48

*Section 50, Hundred of Noarlunga and Willunga.*
CT 2581/20, land acquired from Quarry Industries by the South Australian Land Commission on 19/6/1975.

CT 4047/958, transfer from SALC to the SPA on 15/7/1976.

CT 4258/466, transfer to Her Majesty on 8/5/1985.

*Section 51 and part 52 Hundreds of Noarlunga and Willunga*
CT 3556/143, land acquired from Quarry Industries by the South Australian Land Commission on 19/6/1975

CT 4047/958, transfer from SALC to SPA on 15/7/1976

CT 4258/466, transfer to Her Majesty on 8/5/1985.

*Part Section 54,*
CT 4032/909, transfer from Noarlunga Meat Ltd to South Australian Land Commission on 5/6/1975

CT 4048/613, transfer from SALC to SPA on 15/7/1976

CT 4258/466 transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985.

*Section 55, Hundred of Noarlunga and Willunga.*
CT 3230/199 transfer from L Gawley to State Planning Authority on 14/12/1972.

CT 4258/466, transfer from Minister of Environment and Planning to Her Majesty on 8/5/1985

*Section 61, Hundred of Noarlunga and Willunga.*
1. CT 2841/49, transfer from Noarlunga Meats Ltd to South Australian Land Commission on 5/6/1975

CT 4048/613, transfer from SALC to SPA on 15/7/1976

CT 4258/466, transfer from Minister for Environment to Her Majesty on 8/5/1985

2. CT's 3602/193 and 3602/194, land acquired from N Perry by the South Australian Land Commission on 19/6/1975

CT 4045/825, transfer from SALC to SPA on 28/7/1977

CT 4228/543, transfer from Minister of Environment and Planning to Her Majesty on 8/5/1985

*Section 63, hundreds of Noarlunga and Willunga*
CT 2751/100, transfer from Denlehen Pastoral Co. to the State Planning Authority on 8/5/1973.

Transfer from SPA to Her Majesty on 8/5/1985

*Part section 71, hundreds of Noarlunga and Willunga*
CT 3602/194, land acquired from N Perry by the South Australian Land Commission on 19/6/1975

CT 4045/825 transfer from SALC to SPA on 28/7/1977

CT 4228/543, transfer from Minister of Environment and Planning to Her Majesty on 8/5/1985

*Part Section 72, hundreds of Noarlunga and Willunga*
CT 2841/49, transfer from Noarlunga Meats Ltd to South Australian Land Commission on 5/6/1975

CT 4048/613, transfer from SALC to SPA on 15/7/1976

CT 4258/466 transfer from Minister of Environment and Planning to Her Majesty on 8/5/1985

*Part section 805,*
CT 3752/3, transfer from E Bley to State Planning Authority on 2/12/1971

CT 4258/466 transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985.

*Section 806,*
CT 407/86, transfer from E Bley to State Planning Authority on 2/12/1971

CT 4258/466, transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985.

*Section 807*
CT 2025/65, transfer from N Eckermann

CT 4156/916, transfer from SPA to Her Majesty on 8/5/1985

Closed Road in Road Plan 7572 added to title.

*Section 808, hundreds of Noarlunga and Kuitpo*
CT 3771/199, transfer from N Eckermann to State Planning Authority on 1/2/1974

Transfer from SPA to Her Majesty on 8/5/1985.

*Part sections 818, 819 and section 820,*
CT 1845/94, transfer from A Cockington to State Planning Authority on 16/5/1972

CT 4258/466 transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985

*Section 821, hundreds of Noarlunga and Kuitpo*
CT 1853/152, transfer from E Rohrlach to State Planning Authority on 29/6/1973

CT 4160/789, transfer from SPA to Her Majesty on 8/5/1985

*Section 822, hundreds of Noarlunga and Kuitpo*
CT 3689/142, transfer from E Rohrlach to State Planning Authority on 29/6/1973

Transfer from SPA to Her Majesty on 8/5/1985

*Part section 829,*
CT 189/27, transfer from DN Holly to South Australian Land Commission on 8/5/1975.

CT 4051/543, transfer from SALC to Her Majesty on 8/5/1985.

*Part section 830,*
CTs 3714/199 and 3714/200, transfer from DE smoker to State Planning Authority on 11/1/1972.

Transfer from SPA to Her Majesty on 8/5/1985

*Part section 831,*
CT 3820/111, transfer from DV McMichael to State Planning Authority on 4/11/1971

CT 3824/22, transfer from SPA to Her Majesty on 8/5/1985

*Section 832,*
CT 1912/128, transfer from A Cockington to State Planning Authority on 16/5/1972

CT 4258/466, transfer from SPA to Her Majesty on 8/5/1985.

*Part section 833,*
CT 1914/29, transfer from A Cockington to State Planning Authority on 16/5/1972

Transfer from SPA to Her Majesty on 8/5/1985.

*Section 834, hundred of Noarlunga and Willunga*
CT 3256/140, transfer from J Smart to State Planning Authority on 23/8/1974

CT 4258/466 transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985.

Closed roads in Road Plans 8265 and 7572 added to land.

*Section 842,*
CT 3197/156, transfer from J McEwin to State Planning Authority on 29/6/1973

CT 4258/466 transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985

*Section 843,*
CT 410/23, transfer from JN McEwin to State Planning Office on 29/6/1973

CT 4258/466, transfer from Minister for Environment and Planning to Her Majesty

*Section 844*
CT's 3714/199 and 3714/200, transfer from DE Smoker to State Planning Authority

Transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985

*Section 845,*
CT 1556/133, transfer from A Cockington to State Planning Authority on 16/5/1972

Transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985

*Section 846, As for sections 818,819 and 820*

*Section 847, hundred of Noarlunga and Willunga*
CT 3755/28, transfer from E Wait to South Australian Land Commission on 8/7/1975

CT 4056/359, transfer from SALC to SPA on 15/7/1976

CT 4258/466 transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985

*Section 857,*
CT 3571/53, transfer from V Hill to State Planning Authority

CT 4258/466, transfer from Minister of Environment and Planning to Her Majesty on 8/5/1985

*Sections 858 and 859 hundreds of Noarlunga and Willunga*
CT 663/62 transfer from M Edwards to State Planning Authority

CT 4258/466, transfer from Minister of Environment and Planning to Her Majesty on 8/5/1985

*Section 860, hundreds of Noarlunga and Willunga*
CT 556/166, transfer from E Wait to the State Planning Authority

Transfer from SPA to Her Majesty on 8/5/1985

HUNDRED OF KUITPO
Section 998 comprises portion of former section 808, hundreds of Noarlunga and Kuitpo

*Section 808,*
CT 3771/199, transfer from N Eckermann to State Planning Authority on 1/2/1974.

Transfer from SPA to Her Majesty on 8/5/1985

Section 999 comprises of the following former sections:

*Section 808, hundreds of Noarlunga and Kuitpo – see above*

*Section 821, hundreds of Noarlunga and Kuitpo*
CT 1853/152, transfer from E Rohrlach to State Planning Authority on 29/6/1973

CT 4160/789, transfer from SPA to Her majesty on 8/5/1985

*Section 822, hundreds of Noarlunga and Kuitpo*
CT 3689/142, transfer from E Rohrlach to State Planning Authority on 29/6/1973

Transfer from SPA to Her Majesty on 8/5/1985

*Section 835*
CT 2699/38, transfer from DJ Smart to State Planning Authority on 23/8/1974

CT 4258/466, transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985.

Closed roads added – Road Plans 7572 and 8265

*Section 1640,*
CT 1853/152, transfer from E Rohrlach to State Planning Authority on 29/6/1973

CT 4258/466 transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985.

Closed roads added - Road Plans 7572 and 8265

HUNDRED OF WILLUNGA
Section 868 comprises of the following former sections

*Section 49 hundreds of Noarlunga and Willunga*
CT 2881/112, transfer from Noarlunga Meats to South Australian Land Commission on 5/6/1975.

CT 4048/613, transfer from SALC to SPA on 15/7/1975

CT 4258/466, transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985

*Section 50, hundreds of Noarlunga and Willunga*
CT 2581/20, land acquired from Quarry Industries by the South Australian Land Commission on 19/6/1975

CT 4047/958, transfer from SALC to SPA on 15/7/1976

CT 4258/466, transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985

*Section 51 and part section 52, hundreds of Noarlunga and Willunga*
CT 3556/143, land acquired from Quarry Industries by the South Australian Land Commission on 19/6/1975

CT 4097/958, transfer from SALC to the SPA on 15/7/1976

CT 4258/466, transfer from the Minister for Environment and Planning to Her Majesty on 8/5/1985

*Part section 52 (balance)*
CT 3919/194, transfer from DR Farley to the State Planning Authority on 18/2/1977

CT 4258/466, transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985

*Part section 60, As for part section 52 (balance Section 575)*
CT 4030/973, transfer from J Smart to State Planning Authority on 24/12/1976

Transfer from SPA to Her Majesty on 8/5/1985

*Section 584*
1. CT 1717/65, transfer from J Humphrys to State Planning Authority on 24/11/1972

   Transfer from SPA to Her Majesty on 8/5/1985

2. CT 1717/66, transfer from L Humphrys to South Australian Land Commission on 10/3/1975.

   Transfer from SALC to SPA on 10/3/1975

   Transfer from SPA to Her Majesty on 8/5/1985

*Section 585*
CT 4038/648, transfer from A Oliver to South Australian Land Commission on 12/6/1975

Transfer from SALC to the SPA on 22/10/1975

CT 4258/466, transfer from Minister of Environment and Planning to Her Majesty on 8/5/1985

*Section 586*
CT 3697/55, transfer from J Humphrys to State Planning Authority on 24/11/1972

Transfer from SPA to Her Majesty on 8/5/1985

*Part section 833*
CT 3256/141, transfer from J Smart to State Planning Authority on 23/8/1974

CT 4258/466, transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985

Closed roads added – Road Plan 8265

*Section 834 hundreds of Noarlunga and Willunga*
CT 3256/140, transfer from J Smart to State Planning Authority on 23/8/1974

CT 4258/466, transfer from Minister for Environment and Planning to the Her Majesty on 8/5/1985

Closed roads added – Road Plans 7572 and 8265

*Section 836*
CT 3519/27, transfer from F Wait to South Australian Land Commission on 8/7/1975

CT 4056/359, transfer from SALC to the SPA on 15/7/1976

*Section 856,*
CT 3571/53, transfer from V Hill to State Planning Authority on 15/3/1972

CT 4258/466, transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985

*Sections 858 and 859, hundreds of Noarlunga and Willunga*
CT 663/62, transfer from M Edwards to State Planning Authority on 19/1/1972

CT 4258/466, transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985.

*Section 860, hundreds of Noarlunga and Willunga*
CT 556/166, transfer from E Wait to the State Planning Authority on 22/10/1975.

Transfer from SPA to Her Majesty

*Part section 861*
CT 2517/4, transfer from F Wait to South Australian Land Commission on 8/7/1975

CT 4056/359, transfer from SALC to SPA on 15/7/1976

CT 4258/466, transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985

*Section 847, hundreds of Noarlunga and Willunga*
CT 3755/28, transfer from E Wait to South Australian Land Commission on 8/7/1975

CT 4056/359, transfer from SALC to SPA on 15/7/1976

CT 4258/466, transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985

Section 869 comprises of the following former sections

*Section 55, hundreds of Noarlunga and Willunga*

CT 3230/199, transfer from L Gawley to State Planning Authority on 14/12/1972

CT 4258/466, transfer from Minister for Environment and Planning to Her Majesty on 8/5/1985

*Section 61, hundreds of Noarlunga and Willunga*

1. CT 3753/60, land acquired from A Dungey by the South Australian Land Commission on 1/5/1975.

   CT 4042/401, transfer from SALC to SPA on 28/7/1977

   CT 4228/543, transfer from Minister of Environment and Planning to Her Majesty on 8/5/1985

2. CT's 3602/193 and 3602/194, land acquired from N Perry by the South Australian Land Commission on 19/6/1975

   CT 4045/825, transfer from SALC to SPA on 28/7/1977

   CT 4228/543, transfer from Minister of Environment and Planning to Her Majesty on 8/5/1985

*Section 63, hundreds of Noarlunga and Willunga*

CT 2751/100, transfer from Denlehen Pastoral Co. to the State Planning Authority on 8/5/1973.

Transfer from SPA to Her Majesty on 8/5/1985

*Section 64*

CT 2993/108, transfer from Denlehen Pastoral Company to State Planning Authority on 8/5/1973

Transfer from SPA to Her Majesty on 8/5/1985

*Part section 71, hundreds of Noarlunga and Willunga*

1. CT's 3602/193 and 3602/194, land acquired from N Perry by the South Australian Land Commission on 19/6/1975

   CT 4045/825, transfer from SALC to SPA on 28/7/1977

   CT 4228/543, transfer from Minister of Environment and Planning to Her Majesty on 8/5/1985

2. CT 3753/60, land acquired from A Dungey by the South Australian Land Commission on 1/5/1975

   CT 4042/401, transfer from SALC to the SPA on 28/7/1977

   CT 4228/543, transfer from Minister of Environment and Planning to Her Majesty on 8/5/1985

*Part section 72 hundreds of Noarlunga and Willunga*

1. CT 2841/49, transfer from Noarlunga Meats Ltd to South Australian Land Commission on 5/6/1975

   CT 4048/613, transfer from SALC to SPA on 15/7/1976

   CT 4258/466, transfer from Minister of Environment and Planning to Her Majesty on 8/5/1985

2. CT 3753/60, land acquired from A Dungey by the South Australian Land Commission on 1/5/1975

   CT 4042/401, transfer from SALC to the SPA on 28/7/1977

   CT 4228/543, transfer from Minister of Environment and Planning to Her Majesty on 8/5/1985

ADDITION TO NATIONAL PARK, GAZETTE 6/3/1997

Deposited Plan 36654, Pieces 103, 104 and 105

Comprises portions of former sections 56 and 57 and closed roads, hundreds of Noarlunga and Willunga

CT 2913/164, transfer from R Oliver to Commissioner of Highways on 30/8/1961

CT 2993/107, transfer from Commissioner of Highways to Minister of Housing, Urban Development and Local Government Relations on 30/3/1993

CT 5151/777, transfer to Her Majesty on 12/3/1997.

ADDITION TO NATIONAL PARK, GAZETTE 11/10/2001

Allotment 205, Deposited Plan 53156, Hundred of Willunga, Allotments 300 and 301, Deposited Plan 53157, Hundred of Willunga and Allotment 1, Deposited Plan 56738, Hundred of Willunga.

## APPENDIX C: ONKAPARINGA - PLANTS OF CONSERVATION SIGNIFICANCE

| Species | Common Name | Conservation Status | | |
|---|---|---|---|---|
| | | EPBC Act | NP&W Act | Southern Lofty Region |
| *Acacia argyrophylla* | Silver Mulga-bush | | | E |
| *Acacia rupicola* | Rock Wattle | | | U |
| *Acacia verniciflua* | Varnish Wattle | | | U |
| *Acaena agnipila* | Downy Sheep's Burr | | | U |
| *Acrotriche patula* | Prickly Ground-berry | | | R |
| *Adenanthos terminalis* | Yellow Gland-flower | | | U |
| *Ajuga australis form B* | Lesser Bugle | | | R |
| *Alternanthera denticulata* | Lesser Joyweed | | | U |
| *Amphibromus archeri* | Pointed Swamp Wallaby-grass | | R | R |
| *Amyema pendulum ssp. pendulum* | Drooping Mistletoe | | | U |
| *Aphanes australiana* | Australian Piert | | | R |
| *Aristida behriana* | Brush Wire-grass | | | U |
| *Caladenia behrii* | Pink-lip Spider-orchid | E | E | E |
| *Caladenia latifolia* | Pink Caladenia | | | U |
| *Caladenia minor* | Pigmy Caladenia | | R | R |
| *Caladenia prolata* | Shy Caladenia | | | R |
| *Calandrinia calyptrata* | Pink Purslane | | | U |
| *Calandrinia granulifera* | Pigmy Purslane | | | U |
| *Callitris preissii* | Southern Cypress Pine | | | U |
| *Callitris rhomboidea* | Oyster Bay Pine | | | R |
| *Calystegia sepium* | Large Bindweed | | | U |
| *Carex bichenoviana* | Notched Sedge | | | U |
| *Centella asiatica* | Asian Centella | | | U |
| *Cheilanthes distans* | Bristly Cloak-fern | | | R |
| *Conospermum patens* | Slender Smoke-bush | | | U |
| *Correa decumbens* | Spreading Correa | | | R |
| *Corybas despectans* | Coast Helmet-orchid | | | R |
| *Cymbonotus preissianus* | Austral Bear's-ear | | | U |
| *Cymbopogon ambiguus* | Lemon-grass | | | V |
| *Cymbopogon obtectus* | Silky-head Lemon-grass | | | R |
| *Cynoglossum australe* | Australian Hound's-tongue | | | R |
| *Cynoglossum suaveolens* | Sweet Hound's-tongue | | | U |
| *Cyperus gunnii ssp. gunnii* | Flecked Flat-sedge | | | U |
| *Danthonia carphoides var. carphoides* | Short Wallaby-grass | | R | V |

| Species | Common Name | Conservation Status | | |
|---|---|---|---|---|
| | | EPBC Act | NP&W Act | Southern Lofty Region |
| *Danthonia tenuior* | Short-awn Wallaby-grass | | R | R |
| *Diplachne parviflora* | Small-flower Beetle-grass | | R | K |
| *Diuris brevifolia* | Short-leaf Donkey-orchid | | R | R |
| *Diuris palustris* | Little Donkey-orchid | | | V |
| *Drosera praefolia* | Early Sundew | | R | V |
| *Epaltes australis* | Spreading Nut-heads | | | K |
| *Epilobium billardierianum ssp.cinereum* | Variable Willow-herb | | | U |
| *Eucalyptus microcarpa* | Grey Box | | | U |
| *Eutaxia diffusa* | Large-leaf Eutaxia | | | V |
| *Gahnia ancistrophylla* | Curled Saw-sedge | | | U |
| *Gahnia trifida* | Cutting Grass | | | U |
| *Glyceria australis* | Australian Sweet-grass | | | R |
| *Gnaphalium indutum* | Tiny Cudweed | | | R |
| *Goodenia albiflora* | White Goodenia | | | U |
| *Goodenia amplexans* | Clasping Goodenia | | | U |
| *Goodenia pinnatifida* | Cut-leaf Goodenia | | | U |
| *Goodia lotifolia var. lotifolia* | Western Golden-tip | | | U |
| *Hydrocotyle verticillata* | Shield Pennywort | | | K |
| *Hymenanthera dentata* | Tree Violet | | | R |
| *Imperata cylindrica* | Blady Grass | | | R |
| *Indigofera australis var. australis* | Austral Indigo | | | U |
| *Isolepis fluitans* | Floating Club-rush | | | U |
| *Juncus australis* | Austral Rush | | R | K |
| *Kunzea pomifera* | Muntries | | | U |
| *Lasiopetalum baueri* | Slender Velvet-bush | | | U |
| *Lavatera plebeia* | Australian Hollyhock | | | U |
| *Lepidosperma canescens* | Hoary Rapier-sedge | | | U |
| *Lepidosperma laterale s.str.* | Tall Sword-sedge | | | U |
| *Leptospermum lanigerum* | Silky Tea-tree | | | U |
| *Leucopogon rufus* | Ruddy Beard-heath | | | R |
| *Limosella australis* | Australian Mudwort | | | U |
| *Logania saxatilis* | Rock Logania | | R | R |
| *Lomandra collina* | Sand Mat-rush | | | R |
| *Lomandra effusa* | Scented Mat-rush | | | R |
| *Lomandra sororia* | Sword Mat-rush | | | U |
| *Maireana enchylaenoides* | Wingless Fissure-plant | | | U |

| Species | Common Name | Conservation Status | | |
|---|---|---|---|---|
| | | EPBC Act | NP&W Act | Southern Lofty Region |
| *Melaleuca brevifolia* | Short-leaf Honey-myrtle | | | R |
| *Melaleuca lanceolata ssp. lanceolata* | Dryland Tea-tree | | | U |
| *Microtis parviflora* | Slender Onion-orchid | | | U |
| *Myoporum viscosum* | Sticky Boobialla | | | U |
| *Myosotis australis* | Austral Forget-me-not | | | R |
| *Myriophyllum simulans* | Amphibious Milfoil | | | V |
| *Opercularia ovata* | Broad-leaf Stinkweed | | | U |
| *Ophioglossum lusitanicum* | Austral Adder's-tongue | | | U |
| *Orthoceras strictum* | Horned Orchid | | | R |
| *Panicum effusum var. effusum* | Hairy Panic | | | K |
| *Paspalidium constrictum* | Knotty-butt Paspalidium | | | R |
| *Paspalidium jubiflorum* | Warrego Summer-grass | | | K |
| *Persicaria prostrata* | Creeping Knotweed | | | U |
| *Persoonia juniperina* | Prickly Geebung | | | U |
| *Phyllota pleurandroides* | Heathy Phyllota | | | U |
| *Pittosporum phylliraeoides var. microcarpa* | Native Apricot | | | R |
| *Plantago gaudichaudii* | Narrow-leaf Plantain | | | R |
| *Pleurosorus rutifolius* | Blanket Fern | | | U |
| *Pomaderris paniculosa ssp. paniculosa* | Mallee Pomaderris | | | U |
| *Poranthera triandra* | Three-petal Poranthera | | | R |
| *Prasophyllum fitzgeraldii* | Fitzgerald's Leek-orchid | | | R |
| *Prasophyllum pallidum* | Pale Leek-orchid | V | V | V |
| *Prostanthera behriana* | Downy Mintbush | | | U |
| *Pterostylis curta* | Blunt Greenhood | | R | R |
| *Pterostylis excelsa* | Dryland Greenhood | | | E |
| *Pterostylis foliata* | Slender Greenhood | | R | R |
| *Ptilotus erubescens* | Hairy-tails | | R | R |
| *Ptilotus spathulatus forma spathulatus* | Pussy-tails | | | R |
| *Ranunculus amphitrichus* | Small River Buttercup | | | R |
| *Ranunculus pachycarpus* | Thick-fruit Buttercup | | | R |
| *Ranunculus pumilio var. pumilio* | Ferny Buttercup | | | R |
| *Rhagodia parabolica* | Mealy Saltbush | | | V |
| *Rubus parvifolius* | Native Raspberry | | | U |
| *Samolus repens* | Creeping Brookweed | | | U |

| Species | Common Name | Conservation Status | | |
|---|---|---|---|---|
| | | EPBC Act | NP&W Act | Southern Lofty Region |
| *Santalum acuminatum* | Quandong | | | V |
| *Scleranthus pungens* | Prickly Knawel | | | R |
| *Senecio odoratus var. odoratus* | Scented Groundsel | | | U |
| *Senecio squarrosus* | Squarrose Groundsel | | | R |
| *Sida petrophila* | Rock Sida | | | K |
| *Stellaria palustris var. tenella* | Swamp Starwort | | R | R |
| *Stipa elegantissima* | Feather Spear-grass | | | U |
| *Stipa gibbosa* | Swollen Spear-grass | | R | R |
| *Stipa setacea* | Corkscrew Spear-grass | | | U |
| *Thelymitra grandiflora* | Great Sun-orchid | | | U |
| *Triglochin procerum* | Water-ribbons | | | U |
| *Velleia paradoxa* | Spur Velleia | | | U |
| *Viminaria juncea* | Native Broom | | R | R |
| *Vittadinia blackii* | Narrow-leaf New Holland Daisy | | | R |
| *Wahlenbergia litticola* | Coast Bluebell | | | R |
| *Wahlenbergia multicaulis* | Tadgell's Bluebell | | | U |
| *Wilsonia humilis var. humilis* | Silky Wilsonia | | | U |
| *Zieria veronicea* | Pink Zieria | | R | R |
| *Zygophyllum billardierei* | Coast Twinleaf | | | R |
| 123 | | 2 | 18 | 123 |

## APPENDIX D: ONKAPARINGA RIVER RESERVE FAUNA LIST

| Species | Common Name | Conservation Status | |
|---|---|---|---|
| | | EPBC ACT | NP&W ACT |
| Mammals | | | |
| *Tachyglossus aculeatus* | Short-beaked Echidna | | |
| *Phascolarctos cinereus* | Koala | | R |
| *Trichosurus vulpecula* | Common Brushtail Possum | | |
| *Macropus fuliginosus* | Western Grey Kangaroo | | |
| *Pseudocheirus peregrinus* | Common Ringtail Possum | | |
| *Vulpes vulpes* * | Fox | | |
| *Rattus rattus* * | Black Rat | | |
| *Mus musculus* * | House Mouse | | |
| *Oryctolagus cuniculus* * | Rabbit | | |
| Birds | | | |
| *Coturnix pectoralis* | Stubble Quail | | |
| *Stictonetta naevosa* | Freckled Duck | | V |
| *Cereopsis novaehollandiae* | Cape Barren Goose | | R |
| *Anas castanea* | Chestnut Teal | | |
| *Anas gracilis* | Grey Teal | | |
| *Anas rhynchotis* | Australasian Shoveler | | R |
| *Anas superciliosa* | Pacific Black Duck | | |
| *Ardea intermedia* | Intermediate Egret | | R |
| *Botaurus poiciloptilus* | Australasian Bittern | | V |
| *Ardea sacra* | Eastern Reef Egret | | R |
| *Aquila audax* | Wedge-tailed Eagle | | |
| *Falco berigora* | Brown Falcon | | |
| *Falco peregrinus* | Peregrine Falcon | | |
| *Gallinula tenebrosa* | Dusky Moorhen | | |
| *Porzana pusilla* | Baillon's Crake | | R |
| *Porzana tabuensis* | Spotless Crake | | |
| *Turnix varia* | Painted Button-quail | | V |
| *Phaps chalcoptera* | Common Bronzewing | | |
| *Calyptorhynchus funereus* | Yellow-tailed Black-cockatoo | | V |
| *Cacatua galerita* | Sulphur-crested Cockatoo | | |
| *Cacatua roseicapilla* | Galah | | |
| *Cacatua sanguinea* | Little Corella | | |
| *Glossopsitta concinna* | Musk Lorikeet | | |
| *Trichoglossus haematodus* | Rainbow Lorikeet | | |
| *Glossopsitta porphyrocephala* | Purple-crowned Lorikeet | | |

| Species | Common Name | Conservation Status | |
|---|---|---|---|
| | | EPBC ACT | NP&W ACT |
| *Psephotus haematonotus* | Red-rumped Parrot | | |
| *Platycercus elegans* | Crimson Rosella | | |
| *Chrysococcyx basalis* | Horsfield's Bronze-cuckoo | | |
| *Chrysococcyx lucidus* | Shining Bronze-cuckoo | | R |
| *Ninox novaeseelandiae* | Southern Boobook | | |
| *Podargus strigoides* | Tawny Frogmouth | | |
| *Todiramphus sancta* | Sacred Kingfisher | | |
| *Dacelo novaeguineae* | Laughing Kookaburra | | |
| *Cormobates leucophaeus* | White-throated Treecreeper | | |
| *Malurus cyaneus* | Superb Fairy-wren | | |
| *Pardalotus punctatus* | Spotted Pardalote | | |
| *Pardalotus striatus* | Striated Pardalote | | |
| *Acanthiza reguloides* | Buff-rumped Thornbill | | |
| *Sericornis frontalis* | White-browed Scrubwren | | |
| *Acanthiza lineata* | Striated Thornbill | | |
| *Acanthiza pusilla* | Brown Thornbill | | |
| *Smicrornis brevirostris* | Weebill | | |
| *Phylidonyris novaehollandiae* | New Holland Honeyeater | | |
| *Acanthorhynchus tenuirostris* | Eastern Spinebill | | |
| *Anthochaera carunculata* | Red Wattlebird | | |
| *Lichenostomus chrysops* | Yellow-faced Honeyeater | | |
| *Lichenostomus penicillatus* | White-plumed Honeyeater | | |
| *Phylidonyris pyrrhoptera* | Crescent Honeyeater | | |
| *Colluricincla harmonica* | Grey Shrike-thrush | | |
| *Pachycephala pectoralis* | Golden Whistler | | |
| *Pachycephala rufiventris* | Rufous Whistler | | |
| *Rhipidura albiscapa* | Grey Fantail | | |
| *Grallina cyanoleuca* | Magpie-lark | | |
| *Gymnorhina tibicen* | Australian Magpie | | |
| *Strepera versicolor* | Grey Currawong | | |
| *Coracina novaehollandiae* | Black-faced Cuckoo-shrike | | |
| *Corvus mellori* | Little Raven | | |
| *Turdus merula* * | Eurasian Blackbird | | |
| *Sturnus vulgaris* * | Common Starling | | |
| *Petrochelidon nigricans* | Tree Martin | | |
| *Hirundo neoxena* | Welcome Swallow | | |
| *Zosterops lateralis* | Silvereye | | |

| Species | Common Name | Conservation Status | |
|---|---|---|---|
| | | EPBC ACT | NP&W ACT |
| *Acrocephalus australis* | Australian Reed Warbler, (Clamorous Reed-Warbler) | | |
| *Dicaeum hirundinaceum* | Mistletoebird | | |
| *Passer domesticus* * | House Sparrow | | |
| *Neochima temporalis* | Red-browed Finch | | |
| Reptiles | | | |
| *Ctenophorus decresii* | Tawny Dragon | | |
| *Pogona barbata* | Eastern Bearded Dragon | | |
| *Christinus marmoratus* | Marbled Gecko | | |
| *Aprasia striolata* | Lined Worm-lizard | | |
| *Tiliqua rugosa* | Sleepy Lizard | | |
| *Eulamprus quoyii* | Eastern Water Skink | | |
| *Hemiergis decresiensis* | Three-toed Earless Skink | | |
| *Lampropholis guichenoti* | Garden Skink | | |
| *Lerista bougainvillii* | Bougainville's Skink | | |
| *Lerista dorsalis* | Southern Four-toed Slider | | |
| *Menetia greyii* | Dwarf Skink | | |
| *Morethia obscura* | Mallee Snake-eye | | |
| *Egernia cunninghami* | Cunningham's Skink | | V |
| *Pseudonaja textilis* | Eastern Brown Snake | | |
| *Pseudechis porphyriacus* | Red-bellied Black Snake | | |
| Amphibians | | | |
| *Crinia signifera* | Common Froglet | | |
| Butterflies | | | |
| *Junonia villida calybe* | Meadow Argus | | |
| *Pieris rapae* | Cabbage White | | |
| *Theclinesthes serpentata serpentata* | Saltbush Blue | | |
| *Vanessa kershawi* | Australian Painted Lady | | |
| *Zizina labradus labradus* | Common Grass Blue | | |
| *Danaus chrysippus petilia.* | Lesser Wanderer | | |
| 97 | | 0 | 12 |

*Introduced Species

INDEX

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B



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D



E