Department for Environment and Heritage

Management Plan

Mowantjie Willauwar and Poonthie Ruwe Conservation Parks

2008

Government of South Australia

This plan of management was adopted on **30 May 2008** and was prepared pursuant to section 38 of the *National Parks and Wildlife Act 1972.*

Government of South Australia

Department for Environment and Heritage

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Cover photography: Scented Irongrass tussock grassland at Poonthie Ruwe Conservation Park (Left) (T. Dendy, DEH) and Southern Cypress Pine forest at Mowantjie Willauwar Conservation Park (Right) (C. Lovering, DEH).

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FOREWORD

Mowantjie Willauwar Conservation Park conserves 142.9 hectares of Southern Cypress Pine Forest found approximately six kilometres south-west of Tailem Bend in the Murralyands region of South Australia. The nationally vulnerable Sandhill Greenhood Orchid and nationally endangered Metallic Sun-orchid have been found in the park. The population of Sandhill Greenhood Orchids is one of the nine remaining in our State. Visitors can enjoy this park while walking along the new River Bend Heritage Trail that extends between the ferry crossings in Tailem Bend and Wellington.

Poonthie Ruwe Conservation Park is in close proximity to Mowantjie Willauwar Conservation Park, being approximately five kilometres south-east of Tailem Bend. The Scented Irongrass tussock grassland conserved in Poonthie Ruwe Conservation Park is the largest known area of this vegetation community (240.9 hectares) endemic to South Australia. Temperate grasslands such as those found in this park are poorly conserved resulting in a classification as critically endangered under Australian Government legislation.

In recognition of the traditional association that Ngarrindjeri people have with these parks, both were given Ngarrindjeri names. 'Poonthie Ruwe' meaning 'Hopping Mouse Country' makes reference to the time before European settlement when the park was hopping mouse habitat. 'Mowantjie' is the name for the native pine found in Mowantjie Willauwar Conservation Park, while 'Willauwar' is a plural word meaning 'forest of species'. Therefore the name 'Mowantjie Willauwar' means 'Native Pine Forest', which provides an accurate description of the park.

This plan defines objectives and strategies for the future management of these significant parks and facilitates the development and implementation of conservation programs. Many people have contributed to the preparation of this management plan. Their interest and helpful suggestions are gratefully acknowledged.

I now formally adopt the plan of management for Mowantjie Willauwar and Poonthie Ruwe Conservation Parks under the provisions of section 38 of the *National Parks and Wildlife Act 1972*. I encourage you to read the plan and appreciate the high conservation values of these parks.

HON GAIL GAGO MLC

MINISTER FOR ENVIRONMENT AND CONSERVATION

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ACKNOWLEDGEMENTS

The Tailem Bend and Murraylands communities are gratefully acknowledged for their valuable input in the preparation of this management plan.

1 PARK LOCATION AND FEATURES

Mowantjie Willauwar Conservation Park was proclaimed on 2 June 2005 under the *National Parks and Wildlife Act 1972*. The park conserves 142.9 hectares of Southern Cypress Pine (*Callitris gracilis*) forest that includes two nationally threatened orchid species, the vulnerable Sandhill Greenhood Orchid (*Pterostylis arenicola*) and the endangered Metallic Sun-orchid (*Thelymitra epipactoides*). Mowantjie Willauwar Conservation Park comprises Allotments 50 to 54 of FP 33930 and Sections 513 to 518, all within the Hundred of Seymour.

Poonthie Ruwe Conservation Park was first proclaimed as Poonthie Ruwi-Riverdale Conservation Park on 16 January 2003 under the *National Parks and Wildlife Act 1972*. The name of the park has since been altered under the Act on 29 May 2008. This 240.9 hectare park protects the largest known area of intact Scented Irongrass (*Lomandra effusa*) tussock grassland. Irongrass Temperate grassland in South Australia is listed as critically endangered under the *Environment Protection and Biodiversity Conservation Act 1999* and has been assigned with a 'Priority 1' conservation rating for poorly conserved or not conserved plant associations within South Australia (Neagle, 1995). Poonthie Ruwe Conservation Park comprises Allotments 2 to 6 on DP 36415 in the Hundred of Seymour. Prior to proclamation the park was a Heritage Agreement under the *Native Vegetation Act 1991* and prior to this the land had been used for grazing. The South Australian Government purchased this land with the assistance of the Australian Government through the National Reserve System Program of the Natural Heritage Trust and a contribution from the Native Vegetation Fund under the *Native Vegetation Act 1991*.

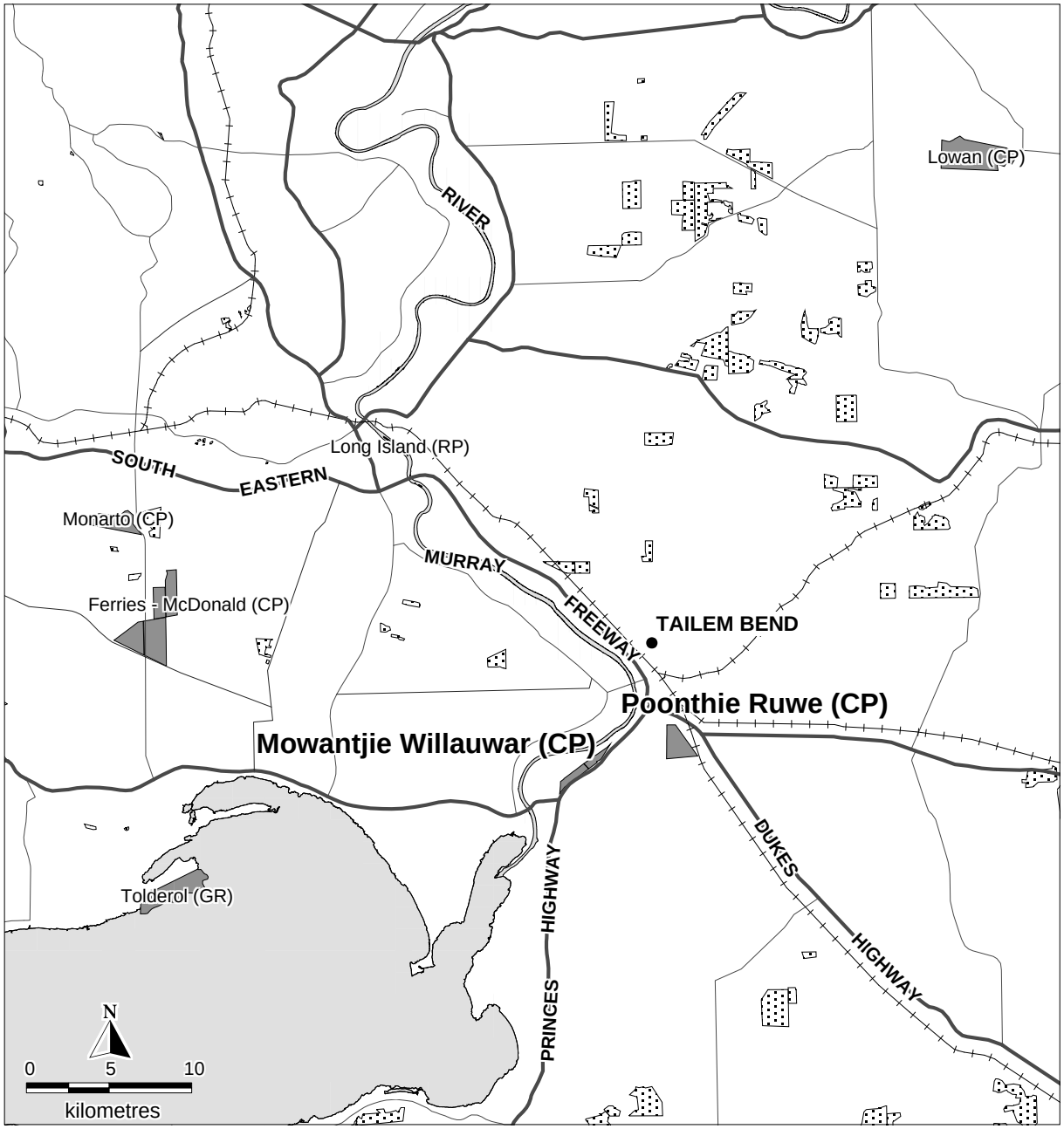
Poonthie Ruwe Conservation Park and Mowantjie Willauwar Conservation Park are located about five kilometres south-east and six kilometres south-west of Tailem Bend respectively (Figure 1). Both parks experience warm to hot summers and cool to cold winters, with rainfall occurring predominantly during the winter months. The parks are situated within the boundaries of the Coorong District Council, in the Murray Mallee/Murray Plains Regional Ecological Area, where only 27% of native vegetation coverage remains (Kahrimanis, et al., 1999; Coorong District Council, 2003).

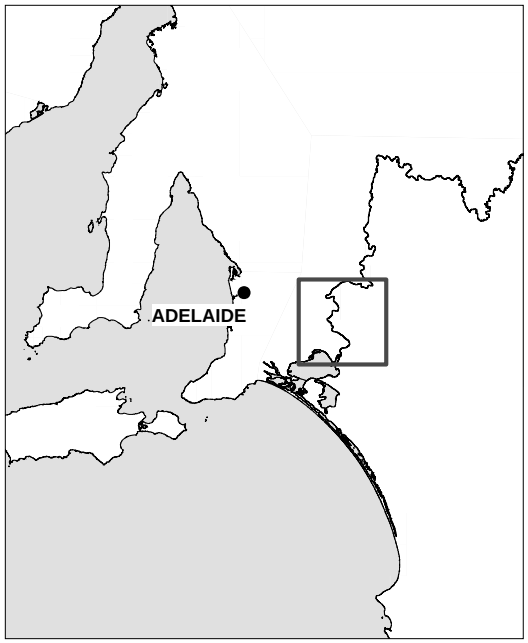
Both parks are refugia for native fauna in an otherwise overly modified landscape and were proclaimed without access under State mining legislation in recognition of their conservation values. Neither park experiences a great deal of public interest in terms of recreational users. However, there has been a history of orchid enthusiasts visiting Mowantjie Willauwar Conservation Park to view the nationally threatened orchids.

Aside from the natural heritage values of these parks, both are of cultural significance to the Ngarrindjeri people, with archaeologically significant sites protected within Mowantjie Willauwar Conservation Park. In recognition of the traditional association that Ngarrindjeri people have with the parks, both were given Ngarrindjeri names. The name 'Poonthie Ruwe' means 'Hopping Mouse Country', which refers to the park being recognised as hopping mouse habitat prior to European settlement. The native pine found in Mowantjie Willauwar Conservation Park is named 'Mowantjie' in the Ngarrindjeri language, while 'Willauwar' is a plural word meaning 'forest of species'. Therefore the name 'Mowantjie Willauwar' means 'Native Pine Forest', which accurately describes the park.

Other National Parks and Wildlife Act reserves in the vicinity of the parks include Long Island Recreation Park, Tolderol Game Reserve and Ferries-McDonald, Lowan and Monarto Conservation Parks (Figure 1). The Coorong National Park is also situated nearby, to the south-west.

Mowantjie Willauwar Conservation Park was previously constituted as the Tailem Bend Forest Reserve under the *Forestry Act 1950*. While the reserve was managed by ForestrySA, it was subject to a number of management plans. State Flora at Murray Bridge performed the maintenance and pest control of the property on behalf of ForestrySA for the 10 years prior to its constitution as a park. This included repairing fences, and controlling pest plants and animals, and surveys of reptile and bird species. The Princes Highway previously cut through the reserve and was re-routed to bypass the reserve during the 1990s. Work has been undertaken to rehabilitate the former Princes Highway route, and the bare ground that remained after the construction of the current Princes Highway was revegetated by local schools in association with local naturalists. Surveys of orchid species, the Sandhill Greenhood in particular, have been conducted in the park by the Native Orchid Society of South Australia. Research of the key threats to the Sandhill Greenhood Orchid population in the park has been conducted by DEH since 1995.





LEGEND

- Town
- (CP) Conservation Park
- (RP) Recreation Park
- (GR) Game Reserve
- Main Road
- Road
- Railway
- National Parks and Wildlife Act Reserve
- Heritage Agreement
- Waterbody

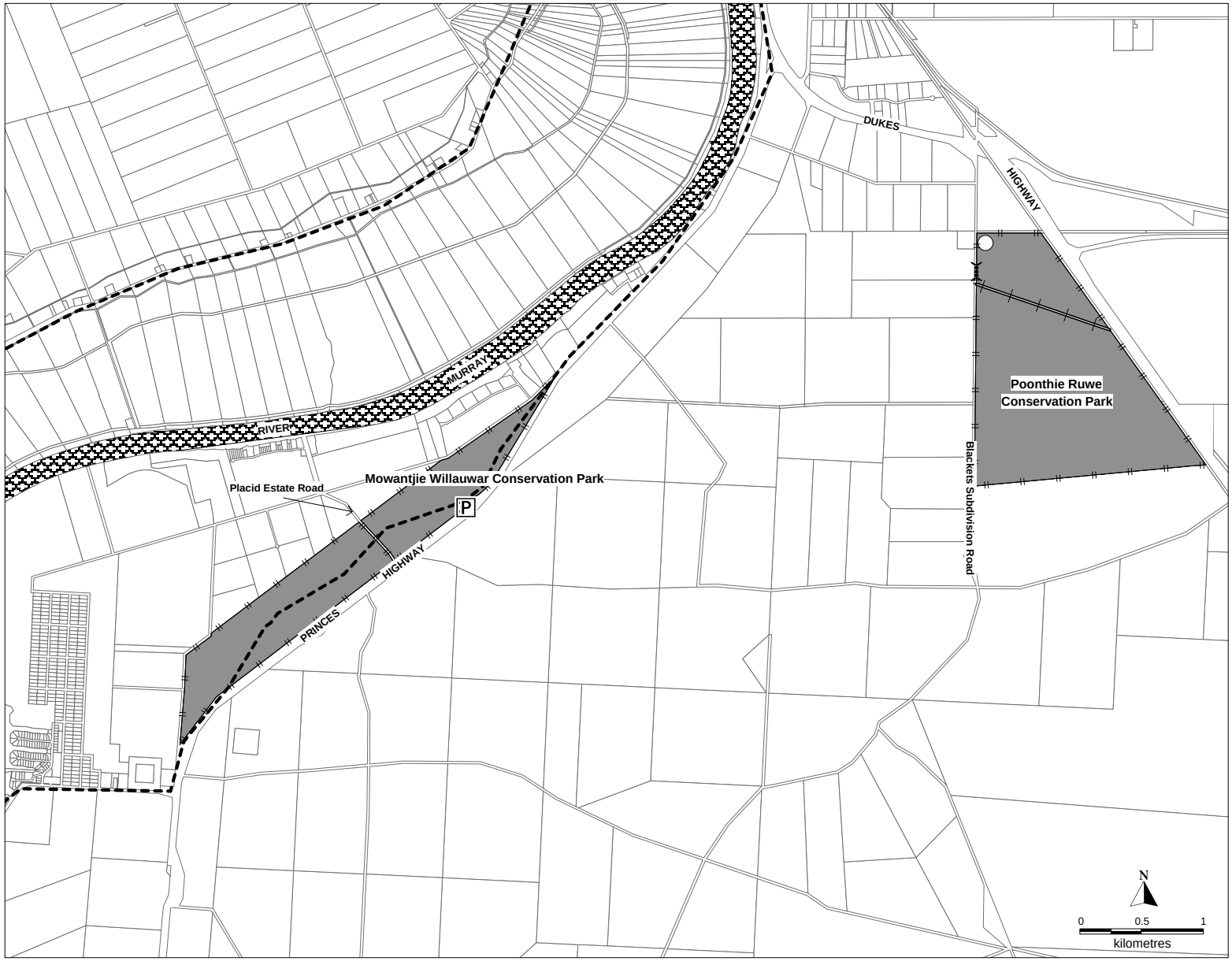
Figure 1

Mowantjie Willauwar and Poonthie Ruwe Conservation Parks

Location

Map Produced from PAMS
Projection: MGA Zone 54 (GDA 94)
Date: 28 March, 2006

This map is indicative and only intended for the purposes of this management plan



LEGEND

- Old Well
- Gate
- Car Park
- ETSA Powerlines
- River Bend Heritage Trail
- Land Parcel Boundary
- Fence
- National Parks and Wildlife Act Reserves
- Water Body
- Land Parcel

Figure 2

Mowantjie Willauwar and Poonthie Ruwe Conservation Parks

Park Features

Map Produced from PAMS
Projection: MGA Zone 54 (GDA 94)
Date: 28 March, 2006

This map is indicative and only intended for the purposes of this management plan

2 LEGISLATIVE FRAMEWORK

2.1 National Parks and Wildlife Act 1972

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

- preservation and management of wildlife;
- preservation of historic sites, objects and structures of historic or scientific interest within reserves;
- preservation of features of geographical, natural or scenic interest;
- destruction of dangerous weeds and the eradication or control of noxious weeds and exotic plants;
- control of vermin and exotic animals;
- control and eradication of disease of animals and vegetation;
- prevention and suppression of bush fires and other hazards;
- encouragement of public use and enjoyment of reserves and education in, and a proper understanding and recognition of, their purpose and significance;
- generally, the promotion of the public interest;
- insofar as a reserve is located wholly or partly within the Murray-Darling Basin, the promotion of the objects of the *River Murray Act 2003* and the *Objectives for a Healthy River Murray* under that Act; and
- preservation and protection of Aboriginal sites, features, objects and structures of spiritual or cultural significance within reserves.

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

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

The draft plan for Mowantjie Willauwar and Poonthie Ruwe Conservation Parks was released for public consultation in September 2007. At the close of the comment period, six submissions were received. All comments and concerns were provided to members of the Murraylands Consultative Committee and the South Australian National Parks and Wildlife Council, which provided advice before the plan was presented to the Minister for adoption.

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

2.2 Native Title Act 1993

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

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

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

2.3 River Murray Act 2003

The *River Murray Act 2003* provides an administrative framework for the protection and enhancement of the River Murray, related areas and ecosystems. Section 22 (4) of the *River Murray Act 2003* requires that management plans relating to a reserve located wholly or partly within the Murray-Darling Basin must seek to further the objects of the *River Murray Act 2003*. Both the Mowantjie Willauwar and Poonthie Ruwe Conservation Parks fall wholly within the Murray-Darling Basin, as such this management plan has taken into account and seeks to further the Act's objects and objectives.

3 VISION

The vision for Mowantjie Willauwar and Poonthie Ruwe Conservation Parks is for these reserves to contribute to the conservation of threatened species and ecological communities in the Murraylands region, primarily through protecting the largest known area of critically endangered Scented Irongrass tussock grassland, an important stand of Southern Cypress Pine forest, and nationally threatened orchid species.

3.1 Key Values

- Protect the largest known area of critically endangered Scented Irongrass tussock grassland in South Australia.
- Conserve one of the few remaining populations of Sandhill Greenhood Orchid in the State and the nationally endangered Metallic Sun-orchid.

3.2 Key Pressures

- High possibility of erosion occurring in both parks, particularly in regard to the sand dunes in Mowantjie Willauwar Conservation Park.
- Inappropriate disturbance regimes for the Scented Irongrass tussock grasslands of Poonthie Ruwe Conservation Park.
- Introduced plant species, particularly Bridal Creeper and Perennial Veldt Grass are a threat to tussock grassland habitat and the nationally threatened orchid species.
- Introduced animals, particularly rabbits, impact on the habitat required by native fauna in both parks and the nationally threatened orchids.
- Illegal activities including the collection of wood, dumping of rubbish and illegal vehicle use in Mowantjie Willauwar Conservation Park.

3.3 Key Management Strategies

To protect the key values and address the key pressures, the following strategies from within the management plan are priorities to be addressed during the term of this management plan.

- **Geology, Soils and Landform:** Undertake stabilisation and regeneration practices in areas of the parks where erosion is occurring or conduct preventive works where there is potential for degradation, with particular attention paid to the sand dunes in Mowantjie Willauwar Conservation Park.
- **Native Vegetation:** In conjunction with organisations interested in native grassland conservation, monitor the height, spread, levels of recruitment, density and abundance of native species in the Scented Irongrass tussock grasslands of Poonthie Ruwe Conservation Park, to allow for adaptive management on the basis of monitoring results. Explore management techniques such as non-disturbance, grazing and ecological burning, through research, liaison with local landowners with similar grasslands or field experimentation within the park.
- **Native Vegetation:** Ensure that the Metallic Sun-orchid and Sandhill Greenhood Orchid are protected through the mitigation of the key threats as outlined in the *South Australian Murray Darling Basin Threatened Flora Recovery Plan*.
- **Introduced Plants and Animals:** Establish and implement pest plant/animal control priorities and actions for the parks and integrate these with pest plant/animal control initiatives being conducted by neighbours within the vicinity of the parks. Particular consideration should be given to control of priority introduced plant species, rabbits and feral bees.
- **Visitor Use and Access:** Manage the parks for low-key visitor use without the need for facilities development and control access to the parks if visitors are having unacceptable impacts on the parks natural values.

4 MANAGING NATURAL HERITAGE

4.1 Geology, Soils and Landform

Mowantjie Willauwar and Poonthie Ruwe Conservation Parks are located within the Murray- Darling River Basin and although both are less than 10 kilometres from the River Murray neither have any tributaries. The parks are in a region characterised by gently undulating sand and clay plains of Tertiary and Quaternary origin that are frequently overlain by aeolian dunes, with occasional outcrops of calcrete and isolated dunes (Environment Australia, 2000; Laut, et al., 1977).

Mowantjie Willauwar Conservation Park is underlain by sheet limestone, which is exposed in some areas, and overlain by a deep to shallow layer of reddish brown sand, sandy loam soil and siliceous aeolian sands in others. The pH of the soil tends to be neutral to slightly alkali. It should also be noted that soils in the park provide a highly suitable environment for the establishment of rabbit warrens (see Section 4.4 Introduced Animals and Plants).

The landform of Mowantjie Willauwar Conservation Park is relatively flat with slight undulation in the form of sand dunes. Stabilization of the sand dunes in the park has been undertaken over the years, with the first attempt made during 1973. This was done using cereal rye grass and different fertiliser ratios and mulches, followed by the planting of Southern Cypress Pine (*Callitris gracilis*) in areas that had been successfully stabilised. In 1979 the stabilisation and regeneration processes appeared to be successful and this was mainly attributed to control of the rabbit population.

Given the high erosion potential of the soils in the park, changes in landforms and any potential soil disturbing activities need to be monitored to ensure that remediation works are carried out when necessary. Prior to commencing any management activities the erosion potential of the soils will need to be considered. As indicated by prior research undertaken in the park, the use of non-endemic plant species can assist in the stabilization of soils and this should be investigated by DEH with regard to any remediation works required for the park. However, the use of local, native plant species will also be examined, and where possible will take preference over the use of non-endemic species.

The sand mining operations on the property adjacent to Mowantjie Willauwar Conservation Park could have adverse impacts on the park. The mining activities could cause change to landforms and increase weed invasion, therefore resulting in the loss of native orchid species and this needs to be addressed (see Section 4.4 Introduced Plants and Animals).

Poonthie Ruwe Conservation Park is of relatively flat terrain, with very shallow loam over calcrete, which outcrops frequently throughout the park. The soluble nature of calcrete has lead to the formation of small 'potholes' throughout the park. These 'potholes' provide habitat for native fauna, particularly reptiles, although rabbits have been known to use these burrows in the past as well (see Section 4.4 Introduced Animals and Plants). Sandy soil has blown onto the southern edge of the property from a small, disturbed dune on the adjacent block.

Objective

Conserve the landforms, soils and geological features of the parks.

Strategies

- Consider the impacts on the landforms and soils when undertaking management activities and avoid causing erosion or loss of natural burrows whenever possible.
- Investigate and undertake stabilisation and regeneration practices in areas of the parks where erosion is occurring, or conduct preventive works where there is potential for degradation, with particular attention paid to the sand dunes in Mowantjie Willauwar Conservation Park.
- Liaise with neighbouring land managers and other agencies such as the South Australian Murray Darling Natural Resources Management Board and the Coorong District Council, regarding conservation measures for the soils and geological formations in the parks.
- Liaise with the company mining sand on property adjacent to Mowantjie Willauwar Conservation Park, to ensure that there is minimal to no impact to the park's landforms and soils.

4.2 Native Vegetation

Mowantjie Willauwar Conservation Park

Since 1938 the area that constitutes Mowantjie Willauwar Conservation Park has been a protected area due to its conservation significance (Woods and Forests Department, 1980). However, before its constitution as a Conservation Park under the *National Parks and Wildlife Act 1972* it had been routinely grazed over a number of years, which minimised understorey growth and fragmented the forest strata. There are 23 species of either regional, state or national conservation significance recorded within the park (Table 1).

The vegetation of the park is characterised by communities of conservation significance, including: Southern Cypress Pine (*Callitris gracilis*) closed forest; Drooping Sheoak (*Allocasurina verticillata*) woodland; *Acacia* sp., woodland understorey; Hop Bush (*Dodonaea viscosa* spp.) woodland understorey; Ruby Saltbush (*Enchylaena tomentosa* var. *tomentosa*) woodland understorey; Mallee Box (*Eucalyptus porosa*) woodland; and Scented Irongrass (*Lomandra effusa*) grassland. Southern Cypress Pine closed forest and Drooping Sheoak woodland are considered to be vulnerable vegetation communities in South Australia, with Drooping Sheoak woodland also being endangered within the South East region (DEH, 2005; Croft, et al., 1999).

Mowantjie Willauwar Conservation Park provides critical habitat for two orchids of national conservation significance. These are the Metallic Sun-orchid (*Thelymitra epipactoides*) and the Sandhill Greenhood Orchid (*Pterostylis arenicola*). Comprehensive survey and monitoring is yet to be undertaken for these orchid species. Both are recognised by the IUCN (International Union for the Conservation of Nature), with the Metallic Sun-orchid categorised as critically endangered and the Sandhill Greenhood Orchid as vulnerable (Obst, 2005). Under the *Environment Protection and Biodiversity Conservation Act 1999* and the *National Parks and Wildlife Act 1972*, the Metallic Sun-orchid is considered endangered and the Sandhill Greenhood Orchid is classified as vulnerable. The *South Australian Murray Darling Basin Threatened Flora Recovery Plan* (Obst, 2005) includes both of these species and provides key targets for their conservation. The plan should be referred to when conducting management activities associated with the protection of these two significant orchids.

According to the State Herbarium database there was an individual Metallic Sun-orchid identified in the land comprising Mowantjie Willauwar Conservation Park in 1906. Another sighting of this species was made in 1989 (Davies, 1995 after pers. comm. with R. Taplin in 1994). Although sightings of this species have not been made during more recent visits to the location of these previous recordings, it is possible that the orchids were dormant during these visits. Further investigations should be undertaken to rediscover the original plants that were sighted and to search for additional populations. Aside from the cyclic period of dormancy (end of December to February), Metallic Sun-orchid can lie dormant for up to two years and still reappear. This species colonises best after experiencing a form of disturbance such as animal scratching or fire (Obst, 2005 after Cropper, 1993). According to Obst (2005) the key threats to this species include: lack of recruitment and fragmentation; grazing by various herbivores such as kangaroos, rabbits and hares; competitive and smothering introduced plant species such as Bridal Creeper (*Asparagus asparagoides*) and Perennial Veldt Grass (*Ehrharta calycina*); inadequate knowledge of ecology and threats; and inappropriate fire regimes. The recovery of the Metallic Sun-orchid is also addressed by the *National recovery plan for Twenty-five threatened orchid taxa of Victoria, South Australia and New South Wales 2003 - 2007* (2002) and should guide the management of this species, along with any future recovery plans that relate to the broad scale management of the orchid.

The park protects one of the nine remaining populations of Sandhill Greenhood Orchid in South Australia (Obst, 2005). The latest survey of this species (between 22 September 2006 to 10 October 2006) undertaken at four different sites within Mowantjie Willauwar Conservation Park, found 422 individual plants occupying an area of 3,600 square metres (pers. comm. C. Obst 2006). It must be noted that the abundance of this species in the park can be highly variable. For example, in 2004 a total of 92 individual Sandhill Greenhood Orchids were surveyed at three different sites within the park, with an occupancy area of 3,500 square metres (Obst, 2005). Whereas in 2005, with only one additional site surveyed in the park, a total of 684 individual plants, covering an area of 3,600 square metres were recorded (pers. comm. Obst 2006). This indicates that the abundance of this species within the park is highly variable and it is hypothesised that the number and distribution of the Sandhill Greenhood Orchid is actually much higher than currently assessed (pers. comm. Obst 2006). More comprehensive surveys of the Sandhill Greenhood Orchid population need to be carried out to gain a more accurate representation of the abundance and distribution of this species, as the surveys conducted so far have only been of a preliminary nature.

The key threats to the Sandhill Greenhood Orchid population include: competition and smothering by introduced species such as Perennial Veldt Grass, Bridal Creeper and annual grasses; inadequate knowledge of the distribution and abundance; grazing by kangaroos, rabbits, hares and possibly caterpillars and snails; inadequate knowledge of the ecology and threats of this species; and inappropriate fire regimes, however the effects of fire are not currently well understood (Obst, 2005).

Field experiments regarding the impact of introduced species on a portion of the Sandhill Greenhood Orchid population, within a rabbit-proof fenced area, have been conducted for more than 10 years now by DEH and this needs to continue (see Section 4.4 Introduced Animals and Plants). During field surveys in 2004 it was observed that many of the rosettes identified within the rabbit-proof fenced area during a previous visit had disappeared. The cause of this occurrence is currently unknown, although it should be noted that similar disturbances within this area have not been observed since. There is speculation that it was the result of White-winged Choughs (*Corcorax melanorhamphos*) digging out the plants or it could even be the result of the illegal removal of these plants by visitors to the park (Obst, 2005). It also needs to be considered that rabbits and hares still may be capable of obtaining entry into the rabbit-proof fenced area. Consequently, monitoring of the plants within this area is required to determine what could be causing this disturbance so that action can be taken to protect these orchids of national conservation significance.

A partnership with the Native Orchid Society of South Australia to assist in the management of the nationally threatened orchids would be beneficial; although it must be considered that the society is an organisation dependent on volunteers. It is also suggested that community members that have an interest in the park be encouraged to form a 'Friends of Parks' group, as this would contribute to the management and conservation of the park's natural values.

Mowantjie Willauwar Conservation Park is adjacent to a Sheep (*Ovis aries*) grazing property. Most probably as a result of adequate fencing, these sheep have not been known to stray into the park. Park neighbours have a responsibility to prevent stock from straying into DEH reserves.

Table 1: Native flora of conservation significance in Mowantjie Willauwar Conservation Park

Species Name	Common Name	Conservation Status Codes		
		EPBC Act	NP&W Act	MU/SE Regions*
Amyema melaleucae	Tea-tree Mistletoe			R
Austrostipa elegantissima	Elegant Spear-grass			R
Austrostipa flavescens	Coast Spear-grass			U
Austrostipa nodosa	Tall Spear-grass			U
Caladenia cardiochilla	Heart-lip Spider Orchid			U
Caladenia stricta	Upright Caladenia			U
Calandrinia clayptrata	Pink Purslane			U
Callitris gracilis	Southern Cypress Pine			R
Diuris pardina	Spotted Donkey-orchid			R
Enneapogon nigricans	Black-head Grass			U
Eutaxia diffusa	Large-leaf Eutaxia			U
Isolepis nodosa	Knobby Club-rush			U
Myoporum insulare	Common Boobialla			U
Myriocephalus rhizocephalus var. *rhizocephalus*	Woolly-heads			R
Ophioglossum lusitanicum	Austral Adder's-tongue			U
Panicum effusum var. *effusum*	Hairy Panic			U
Podolepis rugata var. *rugata*	Pleated Copper-wire Daisy			V
Podolepis tepperi	Delicate Copper-wire Daisy			V
Prasophyllum constrictum	Tawny Leek Orchid		R	E
Pterostylis arenicola	Sandhill Greenhood Orchid	V	V	V
Ptilotus spathulatus forma spathulatus	Pussy-tails			U
Thelymitra epipactoides	Metallic Sun-orchid	E	E	E
Wahlenbergia luteola	Yellow-wash Bluebell			U

NB: Refer to Appendix for the definition of the Conservation Status Codes.
* Regional conservation status is determined using ratings for both the Murray Mallee and South East regions as the park is on the border.

Poonthie Ruwe Conservation Park

Poonthie Ruwe Conservation Park is considered to have high native flora species diversity. There are 13 plant species of regional conservation significance found in the park (Table 2). The vegetation of the park can be described as Scented Irongrass (*Lomandra effusa*) tussock grassland including Spear Grass (*Austrostipa* sp.) and Wallaby Grass (*Austrodanthonia* sp.), with sparse stands of Mallee Box (*Eucalyptus porosa*), isolated Southern Cypress Pine (*Callitris gracilis*) and Native Apricot (*Pittosporum angustifolium*). Scented Irongrass tussock grassland is endemic to South Australia and would have originally occurred as the dominant understorey species in *Callitris* and *Allocasurina* associations within the local area. Therefore it is highly likely that this grassland is the result of the area being logged for Southern Cypress Pine (Hyde, 1995).

Temperate grasslands are recognised as a poorly conserved ecosystem at an international, national and state level (Henwood, 1998; Taylor, 1998). Irongrass temperate grasslands are listed as critically endangered under the *Environment Protection and Biodiversity Conservation Act 1999*, considered to be endangered in South Australia, and is a 'Priority 1' plant association (DEH, 2005; Neagle, 1995). Consequently, the Scented Irongrass tussock grassland protected in the park, which is the largest known area of intact grassland of this type, is of high conservation value. Additionally, the park's location in an otherwise cultivated landscape means that it is an important refuge for a variety of grassland-dependent species and that it functions as a seed source for re-establishing native grassland species in the local area.

The park had not been grazed for about six years prior to purchase by DEH in 2000. Site inspections in 1997 and 1999 recorded positive changes in the recruitment and regeneration of the Scented Irongrass tussock grassland and the Southern Cypress Pines in the park. These positive changes were assessed based on the height, spread, and level of recruitment, density and abundance of native species and the presence of native perennial species, which were attributed to the decline in grazing pressure. In addition, native herbaceous and annual species were observed to be numerous and large areas of intact moss and lichen constitute the soil crust between the naturally exposed calcrete areas. All of these aspects of the park's vegetation need to be monitored on an annual basis to determine whether or not management activities such as ecological burning or grazing are required. Opinions on best practice are continually changing. It is important to keep up to date with current theories and to converse with other grassland managers in order to make properly informed decisions regarding future management activities. This can partially be achieved by maintaining effective contact with groups that have an interest in grassland conservation and management. The formation of a 'Friends of Parks' group, consisting of community members and those with an interest in grassland management could be of great benefit to Poonthie Ruwe Conservation Park, particularly with regard to undertaking surveys and monitoring of the grasslands.

The most important aspect of grassland management is that it should focus on outcomes and aim to enhance or restore diversity and structure by the best means available (Ross, 1999). The natural processes and cultural practices that influence native grasslands have dramatically changed since European settlement. Therefore active management is now essential to maintain and manipulate structure and composition, and to minimise the key threats to their conservation (Eddy, 2002). Any national recovery plans developed that relate to the management of the Scented Irongrass tussock grassland protected in the park, should be referred to when applicable.

Some form of defoliation management (ie grazing, burning or mowing) is essential for maintaining the structure and botanical composition of most grassland ecosystems. Without regular removal of some herbage, grassland can become overgrown by dominant grasses and excess grass will accumulate and die, inhibiting the growth of numerous plant species in the sward (Eddy, 2002). Methods such as ecological burning and grazing are considered acceptable for the management of grasslands and have in fact been used elsewhere for quite some time. The type, frequency and consistency of management practices, or lack of them, have a significant impact on the composition of grasslands. For example, research has indicated that light, intermittent grazing is better than intensive or continuous grazing and that ploughing, fertilising and dramatic changes to current management regimes are detrimental, particularly with regard to high quality sites (Ross, 1999). In the case of Poonthie Ruwe Conservation Park the method of grassland management implemented needs to be carefully considered, especially since it appears that the lack of disturbance to the grasslands appears to have had a positive influence.

Some of the properties adjacent to Poonthie Ruwe Conservation Park are used to graze stock. While there is not a history of these animals straying into the park, neighbours have a responsibility to prevent stock from straying into DEH reserves.

Table 2: Native flora of conservation significance in Poonthie Ruwe Conservation Park

Species Name	Common Name	Conservation Status Codes
		MU/SE Regions*
Arthropodium minus	Small Vanilla-lily	R
Austrostipa acrociliata	Graceful Spear-grass	R
Austrostipa elegantissima	Feather Spear-grass	R
Austrostipa eremophila	Rusty Spear-grass	R
Brachycome lineariloba	Hard-head Daisy	U
Bulbine bulbosa	Bulbine-lily	R
Calandrinia calyptrata	Pink Purslane	U
Callitris gracilis	Southern Cypress Pine	R
Drosera glanduligera	Scarlet Sundew	U
Eucalyptus odorata	Peppermint Box	R
Ophioglossum lusitanicum	Austral Adder's-tongue	U
Pittosporum phylliraeoides	Native Apricot	E
Podolepis rugata var. *rugata*	Pleated Copper-wire Daisy	V

NB: Refer to Appendix for the definition of the Conservation Status Codes.

* Regional conservation status is determined using ratings for both the Murray Mallee and South East regions as the park is on the border.

Seed Collection

In the past seed collection from Mowantjie Willauwar Conservation Park has been a common practice. A permit is required for the taking of, sale or gift of native plants (including the flower, seed or any other part of the vegetation) from the park, under section 49 of the *National Parks and Wildlife Act* 1972. Different permits are required dependant on the reason for collection. To determine the correct type of permit consultation with DEH should be undertaken.

Mundulla Yellows

Mundulla Yellows is a syndrome that affects eucalypts and other native plants, resulting in the death of the affected plants over several years. It is characterised by progressive yellowing and dieback of foliage. The latest theory suggests that Mundulla Yellows is caused by a complex interaction of soil properties, nutrients, soil compaction, water availability, increased alkalinity and salinity, and the accumulation of bicarbonate in the soil solution (Czerniaknowski, et al., 2006; Luck, et al., 2006). Biotic factors, such as pathogenic organisms or pests are no longer thought to be the cause of Mundulla Yellows (Luck, et al., 2004).

To date, none of the plants within the parks have shown symptoms of Mundulla Yellows. According to the Mundulla Yellows Task Group (2004), all of the *Acacia*, *Eucalyptus* and *Melaleuca* species found in either of the parks are susceptible to Mundulla Yellows. As research is still being conducted into the precise cause of Mundulla Yellows, conclusions of how to treat or prevent it are yet to be reached. However, precautions can be taken such as using local seed from plants not affected by Mundulla Yellows when undertaking revegetation works.

Phytophthora

Cinnamon Fungus (*Phytophthora cinnamomi*) and other species of *Phytophthora* are introduced plant pathogens that cause disease and death in a range of native plant species. *Phytophthora* is recognised by the Australian Government as a key threat to the survival of our native plants and animals, as identified in the National Threat Abatement Plan (Environment Australia, 2001).

Symptoms of *Phytophthora* dieback have not been observed in Mowantjie Willauwar and Poonthie Ruwe Conservation Parks, but are present elsewhere in the region. It is of significance that the Metallic Sun-orchid is susceptible to *Phytophthora* and therefore the threat of *Phytophthora* to Mowantjie Willauwar Conservation Park needs to be monitored (Obst, 2005). Unfortunately, there is no cure for infected plants and it is extremely difficult to prevent the spread of *Phytophthora* from an infested area. However, the risk of human activity spreading *Phytophthora* into new areas can be minimised using the management strategies outlined in the DEH Standard Operating Procedures for *Phytophthora* Threat Management, which apply to all users of reserves. These strategies are aimed at minimising the transfer of *Phytophthora* in soil, water and plant roots by controlling access, adopting hygiene procedures, modifying work plans and ensuring awareness of *Phytophthora*.

Objective

Conserve and protect plant species and vegetation communities indigenous to the parks.

Strategies

- Encourage programs to comprehensively monitor changes in vegetation communities, particularly Southern Cypress Pine, within Mowantjie Willauwar Conservation Park and implement rehabilitation projects when necessary.
- Encourage organisations interested in the conservation of native orchids, such as the Native Orchid Society of South Australia, to survey and monitor Metallic Sun-orchid and Sandhill Greenhood Orchid populations in Mowantjie Willauwar Conservation Park, preferably using a transect method. Additional investigations may be needed to rediscover the original populations of the Metallic Sun-orchid.
- Ensure that the Metallic Sun-orchid and Sandhill Greenhood Orchid are protected through the mitigation of the key threats as outlined in the *South Australian Murray Darling Basin Threatened Flora Recovery Plan*.
- Ensure that critically endangered Scented Irongrass tussock grassland is protected and managed in accordance with any recovery plans that are developed.
- In conjunction with organisations interested in native grassland conservation, monitor the height, spread, levels of recruitment, density and abundance of native species in the Scented Irongrass tussock grasslands of Poonthie Ruwe Conservation Park, to allow for adaptive management on the basis of monitoring results. Explore management techniques such as non-disturbance, grazing and ecological burning, through research, liaison with local landowners with similar grasslands or field experimentation within the park.
- Integrate management of threatened species and communities with regional, district and national plans, particularly for those that are nationally threatened.
- Investigate the establishment of a 'Friends of Parks' group or groups for the parks to assist with the management of the parks' natural values.
- Ensure that park neighbours prevent their stock from entering the parks.
- Issue permits for seed collection under the *National Parks and Wildlife Act 1972* where it does not compromise conservation objectives for Mowantjie Willauwar Conservation Park, and maintain liaison with the holders of these permits.
- Consider the threat of Mundulla Yellows and *Phytophthora* and take steps to prevent the introduction of either whenever practicable, report and investigate suspected infections, and treat whenever possible.

4.3 Native Fauna

The Murraylands region has been extensively cleared and altered for agricultural purposes. Therefore both of the parks provide an important refuge, particularly for species that require grassland or closed forest habitat. Only minimal native fauna survey work has been carried out for these parks and it is a recommendation of this plan that comprehensive surveys be conducted so that the necessary information for park management is available. If a 'Friends of Parks' group or groups were established they could assist with undertaking these surveys (see Section 4.2 Native Vegetation).

<u>Birds</u>

Government agencies, local naturalists and volunteer groups have conducted minor survey work in Mowantjie Willauwar Conservation Park over time. The data from these surveys indicate that there are at least 40 different bird species that utilise Mowantjie Willauwar Conservation Park. Of these, 11 have a conservation status at either a state or regional level (Table 3). Some of the native bird species, such as the Tree Martin (*Hirundo nigricans*), use the hollows provided by the Southern Cypess Pine forest. It is important to ensure that these nesting sites are protected from threats such as Common Honeybee (*Apis mellifera*) hives (see Section 4.4 Introduced Animals and Plants).

There are a number of bird species recorded in Poonthie Ruwe Conservation Park that rely on grasslands as a food source and use the trees for nesting. Currently, the only fauna sightings in the park have been of native bird species. Of these at least eight native bird species of state or regional conservation significance utilise the habitat protected by the park (Table 4).

Table 3: Native fauna of conservation significance in Mowantjie Willauwar Conservation Park

Species Name	Common Name	Conservation Status Codes	
		NP&W Act	MU/SE Regions*
Acanthiza nana	Yellow Thornbill		U/V
Geopelia striata	Peaceful Dove		U/V
Haliastur sphenurus	Whistling Kite		U
Macropus giganteus	Eastern Grey Kangaroo	R	
Malurus lamberti	Variegated Fairy-wren		U
Milvus migrans	Black Kite		U
Myiagra inquieta	Restless Flycatcher	R	U
Pachycephala rufiventris	Rufous Whistler		U
Pardalotus punctatus	Spotted Pardalote		U
Petroica goodenovii	Red-capped Robin		R
Plectorhyncha lanceolata	Striped Honeyeater	R	R/X
Pomatostomus superciliosus	White-browed Babbler		U

NB: Refer to Appendix for the definition of the Conservation Status Codes.

* Regional conservation status is determined by ratings for species in the Murray Mallee and South East regions because the land is situated so close to the border between these two areas (within 20 kilometres).

Table 4: Native fauna of conservation significance in Poonthie Ruwe Conservation Park

Species Name	Common Name	Conservation Status Codes	
		NP&W Act	MU/SE Regions*
Aphelocephala leucopsis	Southern Whiteface		U/E
Chrysococcyx osculans	Black-eared Cuckoo		U
Corcorax melanorhamphos	White-winged Chough	R	U/V
Geopelia striata	Peaceful Dove		U/V
Neophema elegans	Elegant Parrot	R	K
Plectorhyncha lanceolata	Striped Honeyeater	R	R/X
Psephotus haematogaster	Blue Bonnet		U/V
Stagonopleura guttata	Diamond Firetail	V	V/E

NB: Refer to Appendix for the definition of the Conservation Status Codes.

* Regional conservation status is determined by ratings for species in the Murray Mallee and South East regions because the land is situated so close to the border between these two areas (within 20 kilometres).

Reptiles

While there have been no reptile surveys conducted in Poonthie Ruwe Conservation Park, during a field trip in 2004 a Sleepy Lizard (*Tiliqua rugosa*) was observed. This species has also been recorded in Mowantjie Willauwar Conservation Park. The natural 'potholes' in Poonthie Ruwe Conservation Park would provide habitat for this species and other reptiles found in the local area that use burrows. Other reptile species that have been sighted in Mowantjie Willauwar Conservation Park include the Sand Goanna (*Varanus gouldii*), Eastern Striped-skink (*Ctenotus robustus*), Dwarf Skink (*Menetia greyii*) and Common Brown Snake (*Pseudonaja textilis*). All of these species, apart from the Sand Goanna, may also be found in Poonthie Ruwe Conservation Park, given the location and habitat of the park.

Mammals

Reputedly the Southern Hairy-nosed Wombat (*Lasiorhinus latifrons*) had at one time established burrows in Poonthie Ruwe Conservation Park, prior to the initial rabbit invasion (see Section 4.4 Introduced Animals and Plants). However there are no current records for mammal species in the park and a survey is required to enable effective park management.

Survey work for native mammal species in Mowantjie Willauwar Conservation Park is needed. As the park is an isolated remnant it is unlikely that suitable habitat remains for native mammals and the impacts caused by the grazing prior to proclamation have meant that the habitat value for ground dwelling mammals is now limited. However, it is believed that the park could provide suitable habitat for the Brushtail Possum (*Trichosurus vulpecula*), which has been known to feed on the cones of the Southern Cypress Pine (*Callitris gracilis*).

Invertebrates

Both Poonthie Ruwe and Mowantjie Willauwar Conservtion Parks provide habitat for native butterfly species and are located in a potentially interesting region for significant butterfly species. Therefore in the interest of conserving threatened invertebrate species it is important to encourage invertebrate surveys in the parks.

Species such as the vulnerable Cynone Grass-skipper (*Anisynta cynone cynone*) and White-veined Grass-skipper (*Herimosa albovenata albovenata*), and the rare Black and White Sedge-skipper (*Antipodia atralba*), Small Copper (*Lucia limbaria*) and White-banded Grass-dart (*Taractrocera papyria papyria*) could occur within the parks. The White-veined Grass-skipper uses many grasses as host plants such as Rusty Spear-grass (*Austrostipa eremophila*) found in Poonthie Ruwe Conservation Park.

Other host plants used by threatened butterfly species found within the parks include Common Everlasting (*Chrysocephalum apiculatum*), Climbing Saltbush (*Einadia nutans* ssp.), Small-flower Goodenia (*Goodenia pusilliflora*), Native Sorrel (*Oxalis perennans*) and Little Medic (*Medicago minima* var. *minima*), which is an introduced plant species. It should be noted that the occurrence of a butterfly host plant does not mean that the butterfly is also present. Other factors such as host plant density, site location in the parks, degree of smothering from introduced plants, the degree of historical degradation and geographic layout in the parks all need to be considered (pers. comm. R. Grund, 2004).

With regard to important invertebrate species it should be noted that the Fungus Gnat (*Mycetophilids*) pollinates the nationally vulnerable Sandhill Greenhood Orchid (*Pterostylis arenicola*) and a species of native bee is the only pollen vector for the nationally endangered Metallic Sun-orchid (*Thelymitra epipactoides*) (Obst, 2005 after Calder, et al., 1989). Efforts should be made to ensure that these species are present within Mowantjie Willauwar Conservation Park to support the survival of these nationally significant orchids.

Objective

Protect native fauna and habitat in the parks, particularly those of conservation significance.

Strategies

- Encourage surveys and monitoring programs for native fauna in the parks. In particular, focus on species suspected to be in the parks that have not been recorded yet and determine the habitat requirements of any new species sighted.
- Identify and protect fauna habitat, particularly that of species with a conservation status, and integrate habitat restoration with any revegetation efforts and introduced plant management programs.

4.4 Introduced Plants and Animals

Introduced plants and animals are key threats in both Mowantjie Willauwar and Poonthie Ruwe Conservation Parks. Due to their location and landuse history both parks have severe weed problems that need to be addressed. The following introduced plant species have been identified in either park and are a priority for eradiation and control in accordance with the *Natural Resources Management Act 2004*:

- African Boxthorn (*Lycium ferocissimum*);
- Bridal Creeper (*Asparagus asparagoides*);
- False Caper (*Euphorbia terracina*);
- Horehound (*Marrubium vulgare*);
- Lincoln Weed (*Diplotaxis tenuifolia*);
- Onion Weed (*Asphodelus fistulosus*);
- Pussy Tail Grass (*Pentachistis pallida*);
- Salvation Jane (*Echium plantagineum*);
- Thistles (*Carduus* spp.);
- Perennial Veldt Grass (*Ehrharta calycina*); and
- Wild Oats (*Avena barbata*).

There are currently six introduced pest animals that have been recorded in Mowantjie Willauwar Conservation Park. These include the European Rabbit (*Oryctolagus cuniculus*), the Red Fox (*Vulpes vulpes*), the House Mouse (*Mus musculus*), the Spotted Turtle-dove (*Streptopelia chinensis*), the European Goldfinch (*Carduelis carduelis*) and the Common Starling (*Sturnus vulgaris*). Although a fauna survey is yet to be undertaken for Poonthie Ruwe Conservation Park it could be assumed that similar introduced animals would be found.

In Poonthie Ruwe Conservation Park, Perennial Veldt Grass, Horehound and Salvation Jane are particularly threatening to the Scented Irongrass (*Lomandra effusa*) tussock grasslands. African Boxthorn is a major threat since it has the capability of forming a thick shrubby over-storey that could effectively prevent the growth of grasslands. Bridal Creeper, Perennial Veldt Grass and Pussy Tail Grass are considered to be the most harmful in Mowantjie Willauwar Conservation Park, due to the smothering and competitive nature of these species which reduce the amount of habitat for native orchid species and therefore prevent their growth.

Field experiments concerning the impact of introduced species on the Sandhill Greenhood Orchid (*Pterostylis arenicola*) have been conducted by DEH since 1995, within a rabbit-proof fenced area of Mowantjie Willauwar Conservation Park. Opinion is currently split over whether the rabbit-proof fences used for the study have actually benefited the orchid population as Bridal Creeper and Perennial Veldt Grass are having a large impact on the orchid population, as the weeds are no longer grazed by rabbits. It was found that as the percentage of Bridal Creeper cover increased, the number of Sandhill Greenhood Orchid individuals decreased (pers. comm. M. Jusaitis, 2006). Therefore, it is suggested that while the fencing appears to be preventing the rabbits from eating the orchid species, introduced plant species control must also be a priority. Any management activities to control weeds must be in accordance with the research being undertaken by DEH.

To date only African Boxthorn and Bridal Creeper have been actively controlled. For example, Bridal Creeper rust parasite was introduced to Mowantjie Willauwar Conservation Park in 2005, as part of the South Australian Murray Darling Basin Threatened Flora Recovery Program. Control of these species needs to continue in conjunction with the control of other priority pest plant species, using the best means possible. Other priority pest plants such as Perennial Veldt Grass and Pussy Tail Grass can be controlled with spot-herbicide spraying taking care to avoid the possibility of off-target damage to the orchids. Furthermore, it is suggested that the Horehound Plume Moth (*Pterophorus spilodactylus*) could be a suitable method for suppressing Horehound.

There is the additional matter of trucks transporting uncovered loads from the sand mine adjacent to the park, along Placid Estate Road, which could enhance the risk of weed invasion in the park. Of particular concern is that the rabbit-proof exclosure area where DEH is conducting field experiments relating to the threats to the Sandhill Greenhood Orchid population is relatively close to the road. Possibly the establishment of a native, endemic boundary hedge could be considered to reduce the impact of dust and weed seeds. Also, it should be suggested to the mining company that trucks ensure that their loads are covered to reduce the risk of weed invasion.

With regard to introduced animal species, rabbits are the highest priority for control in Mowantjie Willauwar and Poonthie Ruwe Conservation Parks. It is believed that the escape of the Rabbit Haemorrhagic Disease (RHD; calicivirus) in 1995 and release in 1996 has reduced rabbit numbers in the area; however rabbits are still a key threat in both parks. In areas supporting Southern Cypress

Pine (*Callitris gracilis*) even rabbits present in low numbers are of great concern and can prevent the regeneration of native species. This is reflected by the studies concerning the influence of rabbits on regenerating Southern Cypress Pines in Mowantjie Willauwar Conservation Park that were undertaken during the 1970s (Currall, 1978). Rabbits also cause erosion, threaten the nationally significant orchid species, and compete with native herbivorous species for both food and habitat. For example, rabbits have been known to utilise old wombat burrows and the natural 'potholes' found throughout Poonthie Ruwe Conservation Park.

The Common Honeybee (*Apis mellifera*) has been noticed in Mowantjie Willauwar Conservation Park by local naturalists and is a considerable threat to some native bird species. Feral bees compete with native bird species such as the Tree Martin (*Hirundo nigricans*) for nesting hollows in old growth trees. Surveys for the existence of feral bee hives in old growth trees should be conducted and the hives need to be destroyed when found.

To manage the key threat of introduced plants and animals, ideally control techniques need to be undertaken in conjunction with park neighbours, the Coorong District Council and the South Australian Murray Darling Basin Natural Resources Management Board. In addition, to assist with the management of introduced species in the parks it is suggested that the establishment of a 'Friends of Parks' group or groups be encouraged (see Section 4.2 Native Vegetation).

Objective

Control and if practicable eradicate all introduced species found in the parks, preferably in conjunction with regional initiatives.

Strategies

- Establish and implement pest plant/animal control priorities and actions for the parks and integrate these with pest plant/animal control initiatives being conducted by neighbours within the vicinity of the parks. Particular consideration should be given to control of priority introduced plant species, rabbits and feral bees.
- Implement regional pest control programs with the South Australian Murray Darling Basin Natural Resources Management Board and the Coorong District Council to achieve effective pest plant and animal control on a regional scale.
- Continue to research the effectiveness of the rabbit-proof exclosure area in Mowantjie Willauwar Conservation Park, with regard to the nationally threatened orchids and ensure that these fences are maintained.
- Consider the establishment of a native endemic hedge to reduce the impact of dust and weed seeds from the transport of mined sand along Placid Estate Road and liaise with the mining company regarding the covering of loads to reduce the risk of weed invasion.

5 MANAGING FIRE

It is not known when Poonthie Ruwe Conservation Park was last burnt, either all or in part. There is one fire recorded for Mowantjie Willauwar Conservation Park in 1981, which burnt approximately 12.5 hectares. Fire management planning for these parks needs to consider the enhanced risk of bushfire due to the proximity of main roads, the small size of the parks, and the impact that fire would have on native vegetation.

The fire management issues for the parks will be addressed in a fire management plan. Although it is currently thought that there is adequate access for fire fighting and management purposes, the need to construct any additional vehicle access tracks within Mowantjie Willauwar Conservation Park will be determined through the fire management planning process. Given the nature of the vegetation in Poonthie Ruwe Conservation Park it is unlikely that the construction of firebreaks and management tracks would be practicable. If fire management measures, such as the creation of firebreaks and access tracks are required for Mowantjie Willauwar Conservation Park, prior to the preparation of the fire management plan, these measures will only be considered if they are necessary for the protection of native habitat or public safety.

Any bushfires should be suppressed as soon as practicable, due to the relatively small size of the parks and the vulnerability of some of the vegetation. For example, the Southern Cypress Pine (*Callitris gracilis*) trees in Mowantjie Willauwar Conservation Park will most likely be destroyed by any fire events, but will readily regenerate from seed following fire. The primary objective would be to ensure that a significant area, more than 50% of the Southern Cypress Pine forest, is not burnt before sufficient seed is set to ensure adequate regeneration over a 20 year timeframe.

Until fire management issues are addressed in a fire management plan, prescribed burning will only be used if the benefits of such a practice are justified upon the basis of scientific principles, or for the purposes of risk minimisation. The application of ecological fire management principles in particular requires an understanding of how species and vegetation communities respond to fire regimes. Inappropriate fire regimes are a key threat to the survival of the nationally endangered Metallic Sun-orchid (*Thelymitra epipactoides*) and the nationally vulnerable Sandhill Greenhood Orchid (*Pterostylis arenicola*) (Obst, 2005). Burning during the dormant phase of the Metallic Sun-orchid (summer/autumn), particularly a fast, hot burn, can break dormancy and result in an increase in flower production (Obst, 2005 after Beardsell & Parsons 1980, 1986, in Davies 1992). However, it should be noted that a slow smoldering prolonged burn could damage the root tuberoid located just below the surface and therefore damage the plant (Obst, 2005 after Cropper, 1993). The effect of fire on the Sandhill Greenhood Orchid and the Metallic Sun-orchid requires further research (Obst, 2005).

Inadequate fire management is one of the main impediments to the conservation of temperate grasslands such as those found in Poonthie Ruwe Conservation Park (Taylor, 1998). In general, grassland species tend to be tolerant of fire. Fire can be used to benefit grassland biodiversity by removing thick layers of grass thatch, which is the underlying reason as to why native herbs and forbs can become lost from grasslands. However, before fire is used as a management tool in Poonthie Ruwe Conservation Park, planning must occur to ensure that fire does not have a detrimental influence on the critically endangered Scented Irongrass tussock grassland. It needs to be noted that weed invasion is likely to increase exponentially following a fire. Therefore, while fire can be essential for grassland maintenance weed control must coincide with the use of fire, due to the presence of introduced plant species.

Fire management planning will be undertaken for the parks in consultation with adjoining Country Fire Service (CFS) Groups and the District Bushfire Prevention Committee, in order to integrate it with fire management in the district. Stakeholders and the wider community will also be consulted to ensure an understanding of the fire risks and mitigating actions being proposed or undertaken in the parks.

Fire management planning will:

- identify natural and cultural heritage values threatened by inappropriate fire regimes and built assets vulnerable to damage by fire;
- provide a framework for the management of bushfire suppression, including identification of potential strategic access and control lines; and
- provide a framework for the use of a suite of fire management strategies, including prescribed burning for protection of life, and property, and the conservation of biodiversity and other natural and cultural values.

Objective

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

Strategies

- Develop, implement and review the fire management plan associated with the parks through consultation with the CFS and other stakeholders, while ensuring that it is consistent with this plan of management.
- Encourage research into the fire response of the Sandhill Greenhood Orchid, Metallic Sun-orchid and Scented Irongrass tussock grassland, so that appropriate fire management strategies can be implemented.
- Continue to work with the relevant District Bushfire Prevention Committee and the CFS to minimise risk to life and property within and surrounding the parks.
- Suppress all bushfires within the parks as soon as practicable.
- Until a fire management plan is prepared:
    - maintain fire access tracks and only undertake fire management measures (ie creation of access tracks and firebreaks) if they are necessary for the protection of native habitat or are in the interest of public safety; and
    - only use applied fire as a management tool if it is supported by scientific principles, or required to reduce fuel hazards and all steps are taken to ensure that burning is conducted safely.

6 MANAGING CULTURAL HERITAGE

6.1 Aboriginal Heritage

The land comprising Mowantjie Willauwar and Poonthie Ruwe Conservation Parks forms part of the 'Country' of the Ngarrindjeri people. For Ngarrindjeri people, land and waters have many interconnected complex meanings and values. The significance of land and waters is central to their lives: at birth, death, ceremonies and socially, whilst hunting, gathering camping, and travelling.

Following colonial settlement, the Ngarrindjeri population was substantially reduced as a result of introduced diseases, dispersal, dispossession of their land and water supplies, and sometimes through violent conflict.

Today, Ngarrindjeri people live on their country and practise their culture and language. Some of the language and traditional stories have been recorded. However, to date, the full extent of Aboriginal heritage at Mowantjie Willauwar and Poonthie Ruwe Conservation Parks has not been comprehensively researched.

However, due to historical or cultural reasons, any knowledge of the cultural heritage of the region may be privileged to selected Ngarrindjeri people and therefore unable to be recorded. Given the lack of existing information, it is considered important that further research be undertaken in order to gain a better understanding of the Aboriginal occupancy and use of the area.

Aboriginal Heritage Act 1988

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

There are archaeological sites listed on the Central Archive for Mowantjie Willauwar Conservation Park. However, these recordings do not reflect a comprehensive survey of the park. To promote better cultural heritage management at Mowantjie Willauwar Conservation Park, further research needs to be undertaken to identify and record sites of significance in the park. Although there are no sites listed for Poonthie Ruwe Conservation Park, a comprehensive survey of the park is yet to be undertaken. In carrying out the activities and strategies proposed in this plan, DEH will ensure that it complies with the *Aboriginal Heritage Act 1988*.

To ensure the protection of sites, DEH shall consult with AARD and the Ngarrindjeri Heritage Committee before commencement of significant development works.

Objective

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

Strategies

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

6.2 Non-Aboriginal Heritage

Prior to Poonthie Ruwe Conservation Park being proclaimed the property was used for grazing purposes and has been the subject of clearance and development applications since the late 1980's. The only indication that the park was previously used for agricultural purposes is an old well (Figure 2).

With regards to Mowantjie Willauwar Conservation Park, it is understood that an old stone wall running along part of the Princes Highway boundary of the park was built by prisoners of war during World War II, although this has not been verified.

Although both parks have infrastructure linked to the past, there does not seem to be any sites or objects of non-Aboriginal heritage significance, with nothing in the parks being recorded on the State Heritage Register. However, further research may reveal some historic material or stories about the parks that could be relevant to management or of interest to park visitors.

Objective

Ensure that any sites or items of heritage significance are appropriately protected and managed.

Strategies

- Encourage research into the history of Poonthie Ruwe and Mowantjie Willauwar Conservation Parks, particularly with regards to the stone wall in Mowantjie Willauwar Conservation Park.
- Cooperate with relevant authorities and organisations to protect any sites or items of non-Aboriginal heritage significance that are discovered in the future.

7 MANAGING TOURISM AND RECREATION

7.1 Visitor Use and Access

Few visitors come to the parks at present. The key visitors include local people with an interest in nature observation, research scientists and members of the Native Orchid Society of South Australia with an interest in the observation and conservation of the orchids of national significance within Mowantjie Willauwar Conservation Park. Research scientists, particularly those with an interest in grassland habitat conservation, are the most likely members of the public to visit Poonthie Ruwe Conservation Park.

The current pattern of low-key use is compatible with the primary role of the parks for biodiversity conservation and any visitors to the parks would either be self-sufficient or be provided for by the nearby township of Tailem Bend. Consequently there is no immediate demand or requirement for visitor facilities and none are planned for the term of this management plan. If the level of visitor use threatens the conservation values of the parks, management actions may be required to restrict visitor access. The parks should not be actively promoted, consistent with this proposed level of access.

Poonthie Ruwe Conservation Park does not have any walking trails or internal vehicle access and is completely surrounded by wire fencing. The park can be entered on foot via a gate on Blackets Subdivision Road, which runs along the western boundary of the park (Figure 2). However, given the abundance of 'potholes' and the fragility of the soils and calcrete outcrops, visitor access will not be encouraged and no specific walking trails constructed. Additionally, vehicular access for the implementation of management activities needs to be kept to a minimum due to the fragile nature of the park's terrain.

Mowantjie Willauwar Conservation Park is surrounded by wire fencing and is only accessible on foot from either Princes Highway or Placid Estate Road, which bisects the park (Figure 2). There is currently one defined walking trail within the park, known as the River Bend Heritage Trail. This is a new long distance walking trail from the ferry crossing in Tailem Bend to the ferry crossing at Wellington and back again (Figure 2). It was constructed and is maintained by the Coorong District Council. Within the park, the trail is along the compacted dirt track that was once the Princes Highway. There are fence stiles enabling walkers to cross from the south-western section of the park to the north-eastern section, across Placid Estate Road. This trail is consistent with managing the park for low-key visitor use; it may also assist with access for biodiversity conservation works and could lead to greater community awareness and support of the park.

There is a car park adjacent to Mowantjie Willauwar Conservation Park which is a part of the road reserve for the Princes Highway (Figure 2). The Department for Transport, Energy and Infrastructure (DTEI) are responsible for the car park, including maintenance and the emptying of rubbish bins. In the past, this car park has been associated with illegal activity occurring in the park, such as the dumping of rubbish and fire wood collection. DEH should liaise with DTEI with regard to the management of this area and ensuring that its use does not impact on the values of the park. However, any issues relating to the illegal dumping of domestic waste should be addressed collaboratively between DEH, DTEI and the Coorong District Council.

Objectives

Ensure that visitors have a minimal impact on the environment of the parks and respect their primary role of biodiversity conservation.

Provide access to the parks without compromising park values.

Strategies

- Manage the parks for low-key visitor use without the need for facilities development and control access to the parks if visitors are having unacceptable impacts on the parks' natural values.
- Ensure that the Coorong District Council adequately maintains the section of the River Bend Heritage Trail within Mowantjie Willauwar Conservation Park and that use of this trail does not adversely impact on the natural values of the park.
- Liaise with DTEI and the Coorong District Council, where necessary, to ensure that use of the car park adjacent to Mowantjie Willauwar Conservation Park does not compromise the values of the park.

8 MANAGING RESERVE TENURE

Mowantjie Willauwar Conservation Park is located in a Conservation Zone within the Coorong District Council area. However, Poonthie Ruwe Conservation Park is within the Primary Industry Zone (Coorong District Council, 2003). The objectives of the Primary Industry Zone do not adequately provide for the conservation of biodiversity. Poonthie Ruwe Conservation Park provides a significant contribution to biodiversity conservation in the Coorong District Council area and therefore DEH recommends that the Development Plan for the Coorong District Council be amended to reflect this. It should be noted that the Coorong General Plan Amendment Report being prepared also proposes that Poonthie Ruwe Conservation Park be rezoned as Conservation Zone in the Development Plan for the Coorong District Council, which would result in meeting the objective of this management plan with regard to this issue.

Objective

Poonthie Ruwe Conservation Park is zoned appropriately by the Coorong District Council.

Strategy

- Ensure that the Coorong District Council considers re-zoning Poonthie Ruwe Conservation Park to a 'Conservation Zone', and that this is reflected in the Coorong District Council Development Plan.

8.1 Public Utilities

Above-ground power lines owned and managed by ETSA Utilities traverse Poonthie Ruwe Conservation Park. ETSA Utilities must liaise with DEH prior to undertaking any work in the park and has standard operating procedures to ensure minimal impact on native vegetation.

DEH would oppose the establishment of any new public utilities on either Poonthie Ruwe Conservation Park or Mowantjie Willauwar Conservation Park, given their small size and significance for biodiversity conservation. DEH policy discourages the location of utilities on reserves, unless proponents can demonstrate that:

- alternative locations have received full consideration; and
- the utility will not compromise the conservation or recreation values of the reserve.

Protection of reserve values is a priority, and reserves should not be considered to be a convenient option for the location of public utilities due to their status as public land. Any future proposal for public utilities within the parks will be subject to an environmental assessment, and must be consistent with DEH policy and the provisions of this management plan.

Objective

Minimise the impact of authorised users on park values.

Strategy

- Liaise with ETSA Utilities regarding the public utilities over Poonthie Ruwe Conservation Park and impose appropriate conditions to ensure that maintenance of services and activities has minimal impact on park values.

SUMMARY OF MANAGEMENT STRATEGIES

MANAGING NATURAL HERITAGE

Geology, Soils and Landform

- Consider the impacts on the landforms and soils when undertaking management activities and avoid causing erosion or loss of natural burrows whenever possible.
- Investigate and undertake stabilisation and regeneration practices in areas of the parks where erosion is occurring, or conduct preventive works where there is potential for degradation, with particular attention paid to the sand dunes in Mowantjie Willauwar Conservation Park.
- Liaise with neighbouring land managers and other agencies such as the South Australian Murray Darling Natural Resources Management Board and the Coorong District Council, regarding conservation measures for the soils and geological formations in the parks.
- Liaise with the company mining sand on property adjacent to Mowantjie Willauwar Conservation Park, to ensure that there is minimal to no impact to the park's landforms and soils.

Native Vegetation

- Encourage programs to comprehensively monitor changes in vegetation communities, particularly Southern Cypress Pine, within Mowantjie Willauwar Conservation Park and implement rehabilitation projects when necessary.
- Encourage organisations interested in the conservation of native orchids, such as the Native Orchid Society of South Australia, to survey and monitor Metallic Sun-orchid and Sandhill Greenhood Orchid populations in Mowantjie Willauwar Conservation Park, preferably using a transect method. Additional investigations may be needed to rediscover the original populations of the Metallic Sun-orchid.
- Ensure that the Metallic Sun-orchid and Sandhill Greenhood Orchid are protected through the mitigation of the key threats as outlined in the *South Australian Murray Darling Basin Threatened Flora Recovery Plan*.
- Ensure that critically endangered Scented Irongrass tussock grassland is protected and managed in accordance with any recovery plans that are developed.
- In conjunction with organisations interested in native grassland conservation, monitor the height, spread, levels of recruitment, density and abundance of native species in the Scented Irongrass tussock grasslands of Poonthie Ruwe Conservation Park, to allow for adaptive management on the basis of monitoring results. Explore management techniques such as non-disturbance, grazing and ecological burning, through research, liaison with local landowners with similar grasslands or field experimentation within the park.
- Integrate management of threatened species and communities with regional, district and national plans, particularly for those that are nationally threatened.
- Investigate the establishment of a 'Friends of Parks' group or groups for the parks to assist with the management of the parks' natural values.
- Ensure that park neighbours prevent their stock from entering the parks.
- Issue permits for seed collection under the *National Parks and Wildlife Act 1972* where it does not compromise conservation objectives for Mowantjie Willauwar Conservation Park, and maintain liaison with the holders of these permits.
- Consider the threat of Mundulla Yellows and *Phytophthora* and take steps to prevent the introduction of either whenever practicable, report and investigate suspected infections, and treat whenever possible.

Native Fauna

- Encourage surveys and monitoring programs for native fauna in the parks. In particular, focus on species suspected to be in the parks that have not been recorded yet and determine the habitat requirements of any new species sighted.
- Identify and protect fauna habitat, particularly that of species with a conservation status, and integrate habitat restoration with any revegetation efforts and introduced plant management programs.

Introduced Plants and Animals

- Establish and implement pest plant/animal control priorities and actions for the parks and integrate these with pest plant/animal control initiatives being conducted by neighbours within the vicinity of the parks. Particular consideration should be given to control of priority introduced plant species, rabbits and feral bees.
- Implement regional pest control programs with the South Australian Murray Darling Basin Natural Resources Management Board and the Coorong District Council to achieve effective pest plant and animal control on a regional scale.
- Continue to research the effectiveness of the rabbit-proof exclosure area in Mowantjie Willauwar Conservation Park, with regard to the nationally threatened orchids and ensure that these fences are maintained.
- Consider the establishment of a native endemic hedge to reduce the impact of dust and weed seeds from the transport of mined sand along Placid Estate Road and liaise with the mining company regarding the covering of loads to reduce the risk of weed invasion.

MANAGING FIRE

- Develop, implement and review the fire management plan associated with the parks through consultation with the CFS and other stakeholders, while ensuring that it is consistent with this plan of management.
- Encourage research into the fire response of the Sandhill Greenhood Orchid, Metallic Sun-orchid and Scented Irongrass tussock grassland, so that appropriate fire management strategies can be implemented.
- Continue to work with the relevant District Bushfire Prevention Committee and the CFS to minimise risk to life and property within and surrounding the parks.
- Suppress all bushfires within the parks as soon as practicable.
- Until a fire management plan is prepared:
  - maintain fire access tracks and only undertake fire management measures (ie creation of access tracks and firebreaks) if they are necessary for the protection of native habitat or are in the interest of public safety; and
  - only use applied fire as a management tool if it is supported by scientific principles, or required to reduce fuel hazards and all steps are taken to ensure that burning is conducted safely.

MANAGING CULTURAL HERITAGE

Aboriginal Heritage

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

Non-Aboriginal Heritage

- Encourage research into the history of Poonthie Ruwe and Mowantjie Willauwar Conservation Parks, particularly with regards to the stone wall in Mowantjie Willauwar Conservation Park.
- Cooperate with relevant authorities and organisations to protect any sites or items of non-Aboriginal heritage significance that are discovered in the future.

MANAGING TOURISM AND RECREATION

Visitor Use and Access

- Manage the parks for low-key visitor use without the need for facilities development and control access to the parks if visitors are having unacceptable impacts on the parks' natural values.
- Ensure that the Coorong District Council adequately maintains the section of the River Bend Heritage Trail within Mowantjie Willauwar Conservation Park and that use of this trail does not adversely impact on the natural values of the park.
- Liaise with DTEI and the Coorong District Council, where necessary, to ensure that use of the car park adjacent to Mowantjie Willauwar Conservation Park does not compromise the values of the park.

MANAGING RESERVE TENURE

- Ensure that the Coorong District Council considers re-zoning Poonthie Ruwe Conservation Park to a 'Conservation Zone', and that this is reflected in the Coorong District Council Development Plan.

Public Utilities

- Liaise with ETSA Utilities regarding the public utilities over Poonthie Ruwe Conservation Park and impose appropriate conditions to ensure that maintenance of services and activities has minimal impact on park values.

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APPENDIX: CONSERVATION STATUS CODES

Australian Conservation Status Codes

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

EX **Extinct**: there is no reasonable doubt that the last member of the species has died.

EW **Extinct in the Wild**: known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

CE **Critically Endangered**: facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.

E **Endangered**: facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

V **Vulnerable**: facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

CD **Conservation Dependent**: the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

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

South Australian Conservation Status Codes

The following codes are based on the current listing of species under Schedules of the *National Parks and Wildlife Act 1972*, as amended in 2008. To align with other States, Territories and the Commonwealth (EPBC Act) listing categories and ratings, the IUCN criteria were used as a basis for determining threatened species status under the *National Parks and Wildlife Act 1972*. For IUCN criteria see:

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

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

E **Endangered**: (Schedule 7) in danger of becoming extinct in the wild.

V **Vulnerable**: (Schedule 8) at risk from potential or long term threats which could cause the species to become endangered in the future.

R **Rare**: (Schedule 9) low overall frequency of occurrence (may be locally common with a very restricted distribution or may be scattered sparsely over a wider area). Not currently exposed to significant threats, but warrants monitoring and protective measures to prevent reduction of population sizes.

Regional Status Codes

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

Birds

Regional conservation status for birds follow:

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

The regions are defined as follows:

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

Plants

Regional conservation ratings for plants follow:

> Lang, PJ and Kraehenbuehl, DN (2001) *Plants of Particular Conservation Significance in South Australia's Agricultural Regions*.
>
> Department for Environment and Heritage (2006) *Florlist*. Unpublished and last updated 2006.

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

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

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

In order of decreasing conservation significance:

X **Extinct/Presumed extinct**: not located despite thorough searching of all known and likely habitats; known to have been eliminated by the loss of localised population(s); or not recorded for more than 50 years from an area where substantial habitat modification has occurred.

E **Endangered**: rare and in danger of becoming extinct in the wild.

T **Threatened**: (*Plants only*) likely to be either Endangered or Vulnerable but insufficient data available for more precise assessment.

V **Vulnerable**: rare and at risk from potential threats or long term threats that could cause the species to become endangered in the future.

K **Uncertain**: likely to be either Threatened or Rare but insufficient data available for a more precise assessment.

R **Rare**: has a low overall frequency of occurrence (may be locally common with a very restricted distribution or may be scattered sparsely over a wider area). Not currently exposed to significant or widespread threats, but warrants monitoring and protective measures to prevent reduction of population sizes.

U **Uncommon**: less common species of interest but not rare enough to warrant special protective measures.

Q **Not yet assessed**: but flagged as being of possible significance.

N **Not of particular significance:** (*Plants only*) also indicated by a blank entry.

C **Common:** (*Birds only*) also indicated by a blank entry.

O **Occasional Visitor Only:** (*Birds only*) not considered of conservational status.