

Department for Environment and Heritage Management Plan



Conservation Parks of Lower Eyre Peninsula 2007



Government
of South Australia

This plan of management was adopted on **20 June 2007** and was prepared pursuant to section 38 of the *National Parks and Wildlife Act 1972*.



Government of South Australia

Department for Environment
and Heritage

Published by the Department for Environment and Heritage, Adelaide, Australia

© Department for Environment and Heritage, 2007

ISBN: 1 921238 46 1

Cover Photography (clockwise from top left): historic tank structure at Moody Tank Conservation Park; nationally vulnerable Winter Spider-orchid (*Caladenia brumalis*); post-fire regeneration of native vegetation at Wanilla Land Settlement Conservation Park; Sleaford Mere Conservation Park looking south-east to Lincoln National Park. Photos courtesy of Katrina Pobke (Winter Spider-orchid), Paul Wainwright (Sleaford Mere CP) and Liesl Garrett, DEH.

This document may be cited as "Department for Environment and Heritage (2007) *Conservation Parks of Lower Eyre Peninsula Management Plan*, Adelaide, South Australia"

FOREWORD

The Conservation Parks of Lower Eyre Peninsula Management Plan encompasses eight parks, being Kathai, Lincoln, Moody Tank, Murrunatta, Sleaford Mere, Tucknott Scrub, Wanilla and Wanilla Land Settlement Conservation Parks, all of which are within 65 kilometres of Port Lincoln. Moody Tank and Tucknott Scrub Conservation Parks were acquired as part of the Australian Government's National Reserve System Program of the Natural Heritage Trust.

Collectively, the parks protect more than 3,000 hectares of remnant native vegetation, including communities and species of conservation significance (eg Sugar Gum woodlands, Fat-leaf Wattle, Silver Daisy-bush and Winter Spider-orchid). The parks also provide habitat for native animal species of conservation significance (eg Common Brush-tail Possum, Eyre Peninsula Southern Emu-wren and Eyre Peninsula Yellow-tailed Black Cockatoo).

In January 2005 the Wangary bushfire burnt across more than 77,000 hectares on lower Eyre Peninsula in a nine-hour period. Native vegetation comprised 14,000 hectares of that area and included Murrunatta, Tucknott Scrub, Wanilla and Wanilla Land Settlement Conservation Parks. More than 6,600 hectares of the regionally significant Sugar Gum woodland was burnt and the entire population of the nationally vulnerable Ironstone Mulla Mulla was affected. Monitoring programs have already been established and implemented to improve our knowledge of the effects of bushfire on native vegetation, and to determine the vital attributes of different species.

The management plan for the Conservation Parks of Lower Eyre Peninsula provides direction for management of this network of remnant native vegetation, taking into consideration the impacts of the Wangary bushfire and how best to manage the recovering environment. The involvement of volunteers, and the partnerships and cooperative management arrangements that have evolved since the Wangary bushfire, are recognised, appreciated, and encouraged in management of these parks.

The draft management plan for the Conservation Parks of Lower Eyre Peninsula was released for public exhibition in January 2007. At the close of the comment period, five submissions were received on issues relating to the management of the historic tank structure at Moody Tank Conservation Park and additional information on the parks' natural values. All comments were considered by the West Consultative Committee and forwarded to the South Australian National Parks and Wildlife Council for advice before the plan was presented for adoption.

The plan of management for the Conservation Parks of Lower Eyre Peninsula is now formally adopted under the provisions of section 38 of the *National Parks and Wildlife Act 1972*.



HON GAIL GAGO MLC

MINISTER FOR ENVIRONMENT AND CONSERVATION



TABLE OF CONTENTS

FOREWORD.....	i
1 PARK LOCATIONS AND FEATURES	1
2 LEGISLATIVE FRAMEWORK	5
2.1 National Parks and Wildlife Act 1972.....	5
2.2 Native Title Act 1993	5
3 VISION	6
4 ZONING	7
5 MANAGING NATURAL HERITAGE.....	11
5.1 Geology, Soils and Landform	11
5.2 Hydrology	12
5.3 Native Vegetation	15
5.4 Native Fauna	17
5.5 Introduced Plants	21
5.6 Introduced Animals.....	22
6 MANAGING FIRE	24
7 MANAGING CULTURAL HERITAGE	26
7.1 Indigenous Heritage	26
7.2 Non-Indigenous Heritage.....	26
8 MANAGING TOURISM AND RECREATION.....	29
8.1 Visitor Use and Access.....	29
8.2 Visitor Facilities	30
9 MANAGING EXPLORATION AND MINING	32
10 MANAGING RESERVE TENURE	34
10.1 Public Utilities.....	34
SUMMARY OF MANAGEMENT STRATEGIES	35
REFERENCES AND BIBLIOGRAPHY	39
APPENDIX A: RECORDED FLORA SPECIES OF CONSERVATION SIGNIFICANCE.....	42
APPENDIX B: RECORDED FAUNA SPECIES OF CONSERVATION SIGNIFICANCE.....	43
APPENDIX C: CONSERVATION STATUS CODES.....	44

LIST OF FIGURES

Figure 1: Location	4
Figure 2: Moody Tank Conservation Park – Zoning and Features.....	9
Figure 3: Sleaford Mere Conservation Park – Zoning and Features.....	10
Figure 4: Surface Water Catchments on Lower Eyre Peninsula	14

LIST OF TABLES

Table 1: Catchment Area and Hydrological Features	12
Table 2: Declared Pest Plants	21

ACKNOWLEDGEMENTS

Various groups and individuals are acknowledged for their valuable assistance, information and comments during the production of this management plan.

1 PARK LOCATIONS AND FEATURES

The Conservation Parks of Lower Eyre Peninsula Management Plan encompasses eight parks in the Eyre Peninsula region of South Australia. Four parks are located on the inland section of lower Eyre Peninsula, approximately 30 kilometres north-west of Port Lincoln. Moody Tank Conservation Park is further north of this group, approximately 65 kilometres north of Port Lincoln. The remaining three parks are located along the coast, on the southern tip of the peninsula, and all are less than 20 kilometres south-west of Port Lincoln (Figure 1). This management plan applies to the land parcels defined below, and all future additions to the Conservation Parks of Lower Eyre Peninsula, which will be managed in accordance with the objectives of this plan.

Since European settlement Eyre Peninsula has been subjected to extensive vegetation clearance, primarily for agricultural practices, such that about 43% of the original native vegetation remains (DEH, 2002a). This remnant vegetation occurs in isolated patches, which are scattered across the region with little or no connectivity. Most parks incorporated in this management plan are surrounded by agricultural land. However, Lincoln and Sleaford Mere Conservation Parks are quite densely surrounded by native vegetation, a small proportion of which is protected under Heritage Agreement (constituted under the *Native Vegetation Act 1991*).

Two large blocks of semi-continuous native vegetation have been identified that contain a species diversity that reflects pre-European communities and populations of species with high conservation significance (DEH, 2002a).

The Central-Northwest Linkage Large Remnant Area stretches from central Eyre Peninsula to the north, and west to Streaky Bay and the Poochera district. This large remnant area covers 992,000 hectares, 683,000 hectares of which is native vegetation. The Purple-gaped Honeyeater (*Lichenostomus cratitius*), Yellow-plumed Honeyeater (*L. ornatus*) and Tawny-crowned Honeyeater (*Phalidonyris melanops*) utilise this linkage to move from one area of the peninsula to another (DEH, 2002a).

The Jussieu Peninsula to Coffin Bay Peninsula Large Remnant Area encompasses the southern tip of Eyre Peninsula and covers 206,000 hectares. Native vegetation within this large remnant area covers 113,000 hectares and is almost continuous south of the Flinders Highway between Port Lincoln and Coffin Bay (DEH, 2002a). Of the parks included in this management plan, Kathai, Lincoln and Sleaford Mere Conservation Parks form part of the Jussieu Peninsula to Coffin Bay Peninsula Large Remnant Area.

The climate on lower Eyre Peninsula is generally one of cool, wet winters and hot, dry summers. Changes of weather are associated with frontal systems, which approach from the south-west. These frontal systems are most active in winter and spring, bringing fairly reliable and frequent light to moderate rainfall. Annual average rainfall is variable across lower Eyre Peninsula, ranging from 400 – 600 millimetres. Most rainfall occurs during winter, with the highest gauging in May and August (Day et al., 2005).

Kathai Conservation Park

Kathai Conservation Park (81 hectares) is approximately five kilometres south-west of Port Lincoln and comprises Section 328, Hundred of Lincoln. The park was proclaimed on 7 November 1985 under the *National Parks and Wildlife Act 1972*, to protect and conserve habitat and wildlife within the Uley catchment basin. The park was proclaimed without access under State mining legislation.

Kathai Conservation Park encompasses a large hill rising 145 metres above sea level. The park comprises predominantly Coastal White Mallee (*Eucalyptus diversifolia*) open mallee forest over Dryland Tea-tree (*Melaleuca lanceolata*) tall shrubs. The regionally rare Purple-flowered Mallee (*Eucalyptus albopurpurea*) community is conserved within this park.

Lincoln Conservation Park

Lincoln Conservation Park (1,037 hectares) is approximately 15 kilometres south-west of Port Lincoln and comprises Section 490, Hundred of Lincoln. The park was originally proclaimed on 11 November 1993 as a Conservation Reserve under the *Crown Lands Act 1929*, to conserve vegetation within the water resources zone. This zone provides for the continued utilisation of ground water resources for public supplies purposes and the development of further water supply resources within the zoned area. To recognise its contribution to regional biodiversity conservation, the park was proclaimed as Lincoln Conservation Park under the *National Parks and*

Wildlife Act 1972 on 7 December 2006, and provides for existing and future rights of access under the *Mining Act 1971*.

The eastern section of the park consists of undulating limestone plains with low laterite-capped hills, whereas the western section consists of undulating calcarenite plains overlain by sand dunes and coastal dunes or cliffs (Laut et al., 1977). Mallee vegetation formations cover most of the park, with Coastal White Mallee being the dominant species. The regionally rare Purple-flowered Mallee community is also conserved within this park.

Moody Tank Conservation Park

Moody Tank Conservation Park (77.7 hectares) is approximately 26 kilometres north-east of Cummins and comprises Section 48, Hundred of Moody. The park was acquired as part of the Australian Government's National Reserve System Program of the Natural Heritage Trust. Moody Tank Conservation Park was proclaimed on 7 December 2006 under the *National Parks and Wildlife Act 1972*, to protect and conserve endemic, remnant vegetation and a site of heritage significance. The park was proclaimed without access under State mining legislation.

Moody Tank Conservation Park contains four major vegetation communities, one of which (*Eucalyptus peninsularis*, *E. leptophylla* and *E. pileata* open mallee) is listed as threatened in South Australia. The park also protects numerous plant species of conservation significance and provides suitable habitat for the nationally vulnerable Granite Mudwort (*Limosella granitica*).

Murrunatta Conservation Park

Murrunatta Conservation Park is approximately 19 kilometres north-east of Coffin Bay. The park is comprised of two land parcels situated on either side of a road reserve.

The northern section of Murrunatta Conservation Park (424.7 hectares), comprising Section 99, Hundred of Wanilla, was proclaimed on 29 March 1984 under the *National Parks and Wildlife Act 1972*, to conserve a small area of remnant mallee vegetation dominated by Coast Ridge-fruited Mallee (*Eucalyptus angulosa*).

The southern section of Murrunatta Conservation Park (92.7 hectares), comprising Allotment 11 in Deposited Plan (DP) 25772, Hundred of Wanilla, was originally proclaimed as a Conservation Reserve under the *Crown Lands Act 1929*, to conserve a small area of mallee vegetation dominated by Swamp Paperbark (*Melaleuca halmaturorum*). To recognise its contribution to regional biodiversity conservation, the park was proclaimed under the *National Parks and Wildlife Act 1972* on 7 December 2006 and was added to Murrunatta Conservation Park. This southern section of the park is low-lying, is regularly subject to inundation and provides habitat for the nationally vulnerable Eyre Peninsula Southern Emu-wren (*Stipiturus malachurus parimeda*).

Murrunatta Conservation Park was proclaimed without access under State mining legislation.

Sleaford Mere Conservation Park

Sleaford Mere Conservation Park (699.3 hectares) is approximately 15 kilometres south-west of Port Lincoln and comprises Section 36, Hundred of Sleaford. The park was proclaimed on 1 January 1969 under the former *National Parks and Wildlife Reserves Act 1891-1955*, to conserve important lake feeding habitat for wader birds. The park was constituted by statute under the *National Parks and Wildlife Act 1972* without access under State mining legislation.

Sleaford Mere Conservation Park is a shallow, rocky edged coastal brackish lake, which contains some small islands. It is bounded to the south and east by steep-sided sand dunes and to the west by a gently undulating calcarenite landscape. Sleaford Mere is listed on the Register of the National Estate (Place ID 6710) (DEH, 2002a), and was recently added to the South Australian listing of nationally important wetlands for *A Directory of Important Wetlands in Australia* (Anderson, 2005). Vegetation associations surrounding the Mere include Coastal White Mallee woodland, Dryland Tea-tree tall open shrubland, and sedgeland dominated by *Gahnia* species.

Sleaford Mere provides important habitat for a variety of endangered flora and fauna, provides feeding and breeding grounds for migratory birds and shore birds, and provides a refuge when adverse conditions such as drought prevail (Day et al., 2005). Stromatolites (rounded mounds near the water's edge that form by the accumulation of sand and silt on growing mats of blue-green algae) occur at the lake and are of significance, as they provide some of the oldest known fossil forms of life on earth, thought to be older than 500 million years (Williams, 1985).

Tucknott Scrub Conservation Park

Tucknott Scrub Conservation Park (359.8 hectares) is approximately 30 kilometres north of Port Lincoln and 35 kilometres north-east of Coffin Bay, and comprises Sections 416 and 417, and Allotment 1 in DP 60720, Hundred of Louth. The park was acquired as part of the National Reserve System Program of the Natural Heritage Trust. Tucknott Scrub Conservation Park was proclaimed on 12 January 2006 under the *National Parks and Wildlife Act 1972*, to conserve remnant habitat for a number of threatened plants and animals of national significance. The park has been proclaimed with existing and future rights of access under the *Mining Act 1971*.

Tucknott Scrub Conservation Park is an undulating area of gently sloping land and steeper hills covered with heath, wet heath and Sugar Gum (*Eucalyptus cladocalyx*) woodland. The park has two ephemeral creeks, which form part of the Tod catchment area of the Tod Reservoir. Tucknott Scrub Conservation Park is the largest remnant of Sugar Gum woodland in the Koppio Hills, and is important feeding habitat and potential breeding habitat for the state vulnerable and regionally threatened Yellow-tailed Black-Cockatoo (*Calyptorhynchus funereus* ssp. *xanthanotus*).

Wanilla Conservation Park

Wanilla Conservation Park (281 hectares) is approximately 23 kilometres north-east of Coffin Bay and four kilometres east of Wanilla, and comprises Sections 124 and 125, Hundred of Wanilla. The park was proclaimed on 27 April 1978 under the *National Parks and Wildlife Act 1972*, to protect significant Sugar Gum woodland habitat. The park was proclaimed without access under State mining legislation.

Wanilla Conservation Park is dominated by Sugar Gum woodland with heath understorey. Small patches of the park are vegetated with Broombush (*Melaleuca uncinata*) shrubland over low shrubs and sedges. The park is characterised by rolling hills and relatively steep gullies. Wanilla Conservation Park is bisected by a road reserve into northern and southern sections.

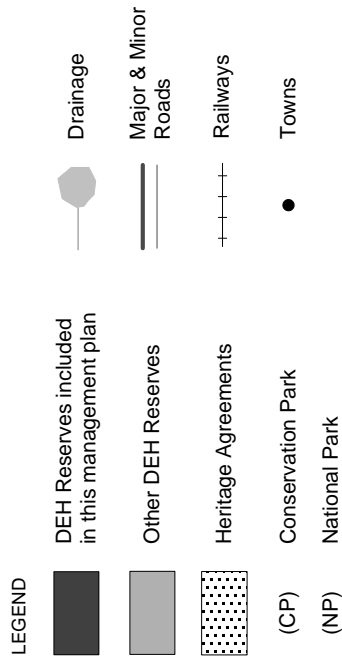
Wanilla Land Settlement Conservation Park

Wanilla Land Settlement Conservation Park (16 hectares) borders the Wanilla township and is approximately four kilometres north-west of Wanilla Conservation Park, and comprises Section 121, Hundred of Wanilla. The park was originally proclaimed on 14 November 1985 as Wanilla Land Settlement Conservation Reserve under the *Crown Lands Act 1929*, to protect regionally threatened Sugar Gum woodlands. Wanilla Land Settlement Conservation Reserve also protects numerous plant species of conservation significance, as well as species that are endemic to the region. To recognise its contribution to regional biodiversity conservation, the park was reproclaimed as Wanilla Land Settlement Conservation Park under the *National Parks and Wildlife Act 1972* on 7 December 2006, without access under State mining legislation.

Figure 1

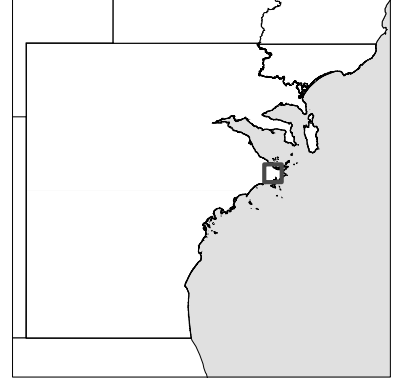
Conservation Parks of Lower Eyre Peninsula

Location



Map designed and created by Reserve Planning using PAMS Projection: MGA Zone 53 (GDA 94) Date: January 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; 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 parks. 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.

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

3 VISION

The vision for the Conservation Parks of Lower Eyre Peninsula is a network of parks that protect important remnant vegetation and species of conservation significance, thus contributing to the conservation of regional biodiversity.

Key Values

- Contribute to regional biodiversity through the protection of six threatened ecosystems.
- Provide habitat for fauna species of conservation significance, particularly the nationally endangered and state vulnerable Eyre Peninsula Yellow-tailed Black-Cockatoo (*Calyptorhynchus funereus* ssp. *xanthanotus*), the nationally vulnerable and state endangered Eyre Peninsula Southern Emu-wren (*Stipiturus malachurus parimeda*), and the state rare Common Brush-tail Possum (*Trichosurus vulpecula*).
- Protect flora species of conservation significance, including the nationally and state endangered Metallic Sun-orchid (*Thelymitra epipactoides*), and the nationally and state vulnerable West Coast Mint-bush (*Prostanthera calycina*).

Key Pressures

- Introduced plants, including agricultural weeds, and their competition with native plant species for space and resources.
- Lack of appropriate habitat for threatened fauna species, particularly the Eyre Peninsula Yellow-tailed Black-Cockatoo, Common Brush-tail Possum and Eyre Peninsula Southern Emu-wren.
- Bushfires, igniting either in the parks or entering the parks from surrounding land.

4 ZONING

Section 39 of the *National Parks and Wildlife Act 1972* provides for the designation of zones in a reserve. Zoning aims to ensure that public use and management actions remain compatible with the protection of park values and constrains the use of land in zones to the conditions specified in an adopted management plan.

The management zones described below establish a framework for the sustainable use of the parks during the life of this plan.

All parks except Moody Tank and Sleaford Mere Conservation Parks are entirely zoned as a Conservation Zone.

Conservation Zone

This zone has the primary management objective of conserving biodiversity values. Many of the parks included in this management plan are recovering from the effects of bushfire (see Section 6 Managing Fire). To ensure regeneration of vegetation can occur as thoroughly as possible, introduced plant and animal control programs will be a focus of management within this zone.

Activities known to cause environmental disturbance or degradation (eg vehicle access) will not be permitted. An exception to this is Kathai Conservation Park, in which the management track leads to SA Water land at the top of the hill (see Section 11.2 Public Utilities). While closed to the public, SA Water vehicles have exclusive access to this track to undertake maintenance of the infrastructure in the park.

Recreational activities with minimal environmental impact, such as walking, interpretation and education, scientific research and nature appreciation will be permitted using existing tracks and trails within this zone. No new developments are planned for this zone other than conservation project works.

Development Zone

The Development Zone at Moody Tank Conservation Park comprises an area just inside the entrance of the park, on either side of the road, as well as the road leading to the tank structure (Figure 2). This zone has been established to potentially provide a simple car parking area. DEH will monitor the use of Moody Tank Conservation Park to determine whether a car parking area is necessary to effectively manage visitor use and minimise environmental impact. Should the development of car parking facilities be required, they will be established within this zone.

Sleaford Mere Conservation Park has two Development Zones at the southern tip of the park (Figure 3). These zones allow for the potential development of access facilities for canoeing on the Mere. DEH will monitor the use of Sleaford Mere Conservation Park by canoeists. Should the development of facilities be required to effectively manage the southern access point (eg ramp and/or carpark), they will be established within this zone.

District Council Development Plans

Kathai, Tucknott Scrub, Wanilla and Wanilla Land Settlement Conservation Parks, and the southern parcels of Lincoln and Murrnatta Conservation Parks are located within the Water Protection Zone of the Development Plan for the District Council (DC) of Lower Eyre Peninsula (most recently consolidated in June 2006). Water Protection Zone objectives are directed towards the enhancement of groundwater aquifers and surface water catchments as sources of high quality water, and the protection of those water sources from pollution, contamination or excessive usage.

The northern parcels of Lincoln and Murrnatta Conservation Parks are located within the General Farming Zone of the Development Plan for the DC of Lower Eyre Peninsula. General Farming Zone objectives are directed towards agricultural and pastoral activities, and the protection of rural support infrastructure for the bulk handling and transportation of farm commodities.

Moody Tank Conservation Park is within the General Farming Zone of the Development Plan for the DC of Tumbay Bay (most recently consolidated in August 2005). General Farming Zone objectives within this council area are similarly directed towards the promotion of general agricultural activities and the long-term protection of primary production land from incompatible use.

Sleaford Mere Conservation Park is located within the Conservation Zone of the Development Plan for the DC of Lower Eyre Peninsula. The Conservation Zone incorporates land and features of major conservation significance, including areas of native vegetation, wildlife habitat and sites containing features of significance to the earth sciences. Conservation Zone objectives are directed towards the conservation of those natural values, the conservation of the natural form and character of sand dunes and estuaries, and the protection of groundwater and surface water resources.

The Conservation Parks of Lower Eyre Peninsula all contain remnant native vegetation and habitat for native wildlife that contributes to the region's biodiversity. Since the parks were all established to conserve these natural values, their protection is the primary objective of management.

Given the Conservation Zone objectives within the DC of Lower Eyre Peninsula Development Plan are specifically conservation focused, it is suggested that when the Development Plan is next revised, the Conservation Parks within this council area should be included in the Conservation Zone.

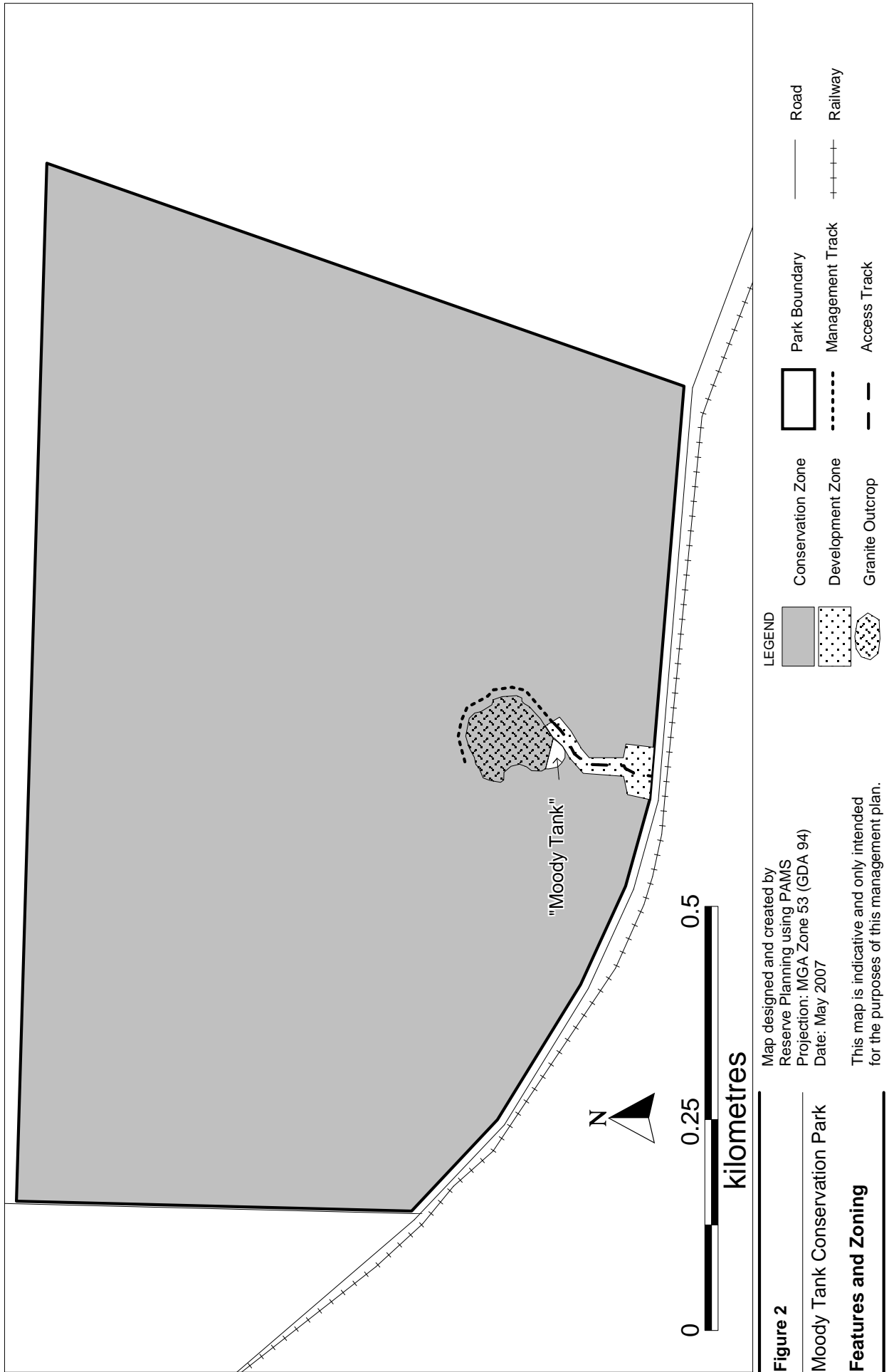
The current Development Plan for the DC of Tumby Bay does not include a Conservation Zone. It is suggested that when the Development Plan is next revised, a Conservation Zone be established with Objectives and Principles of Development Control similar to those in the DC of Lower Eyre Peninsula Development Plan. Moody Tank Conservation Park should be included in the Conservation Zone.

Objective

Zone the Conservation Parks of Lower Eyre Peninsula to ensure appropriate landuse, landscape protection and the conservation of wildlife habitats and cultural features.

Strategies

- Designate and adopt the management zones as described in Section 4 Zoning and depicted in Figures 2 and 3.
- Ensure that the District Councils of Lower Eyre Peninsula and Tumby Bay consider re-zoning the necessary parks to Conservation Zones when the respective Development Plans are revised.



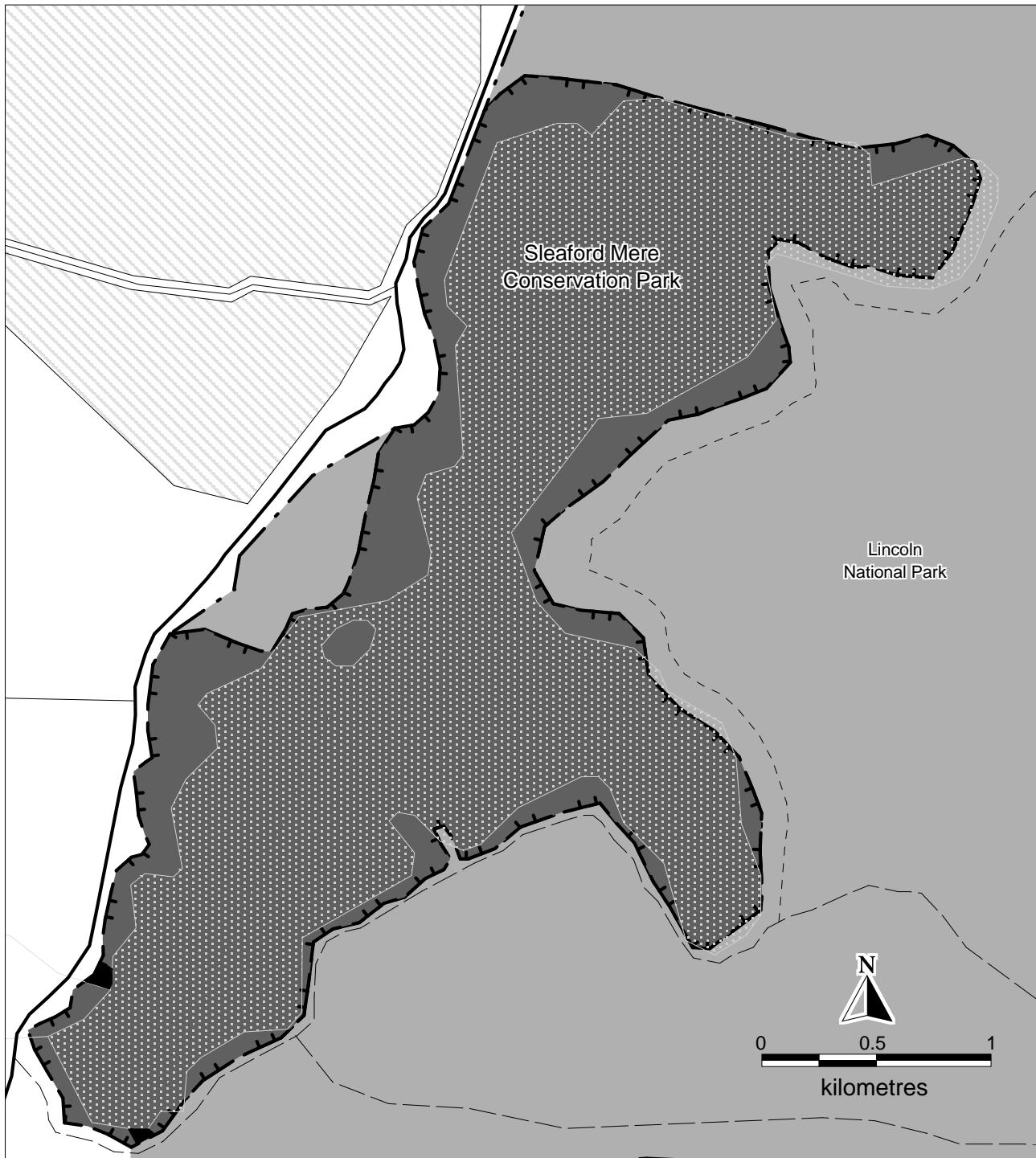











Figure 3

**Sleaford Mere Conservation Park
Features and Zoning**

Map designed and created by
Reserve Planning using PAMS
Projection: MGA Zone 53 (GDA 94)
Date: January 2006

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

LEGEND

- | | | | |
|-------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------|---------------------|
|  | Park Boundary |  | Drainage |
|  | Conservation Zone |  | Major & Minor Roads |
|  | Development Zone |  | 4WD Track |
|  | Lincoln National Park |  | Walking Trail |
|  | Heritage Agreement | | |

5 MANAGING NATURAL HERITAGE

5.1 Geology, Soils and Landform

The Eyre Peninsula region is underlain by a basement of crystalline rocks, mainly granite and gneiss. Throughout the region, deep weathering of the bedrock occurred during the Mesozoic Era (290 – 65 million years ago). Over these long periods of time, water penetrated deeply, differentially weathering the rock. Later, erosion of the weathered portions resulted in the exposure of isolated hills, ranges and various granite outcrops that rise dramatically from the plains (Day et al., 2005; DEH, 2002a).

Moody Tank Conservation Park contains an expansive granite outcrop, creating a significant water catchment area, which has been utilised at the base with the formation of a water-holding tank (see Section 7.2 Non-Indigenous Heritage). Freshwater pools on the granite outcrop provide suitable habitat for the nationally vulnerable Granite Mudwort (*Limosella granitica*), a plant species endemic to Eyre Peninsula (see Section 5.3 Native Vegetation). Hence, these habitats should not be compromised by activities or developments proposed to occur in the park.

The soils of Eyre Peninsula are predominantly ironstone gravel with sandy loam over clay. They are often non-wetting with a low water-holding capacity, which often leads to waterlogging during heavy winter rainfall events (Day et al., 2005; ERDB, 2005). During such times, vehicular use on management tracks should be avoided (eg in Kathai and Moody Tank Conservation Parks; see Section 8.2 Visitor Access).

Soil erosion by water is a threatening process on lower Eyre Peninsula. Since the region is prone to heavy rainfall events during winter, those parks with a sloped aspect (Kathai, Moody Tank, Tucknott Scrub and Wanilla Conservation Parks) will be most affected. During periods of high rainfall, vehicular use on management tracks should be minimised.

Soil salinity is a problem on lower Eyre Peninsula due to the extensive removal of native mallee vegetation and the subsequent rise of the water table (NDSP, 2000; ERDB, 2005). While good quality remnant vegetation is not threatened by dryland salinity, native vegetation that has been exposed to grazing and/or clearing is susceptible to saline soils, which can lead to degradation in the condition of the native vegetation (NDSP, 2000).

The southern parcel of Murrunatta Conservation Park may be susceptible to the effects of soil salinity, as half of the park had been cleared for agriculture prior to proclamation. Tucknott Scrub Conservation Park may also be impacted by soil salinity. Prior to proclamation, the land had not been utilised for primary production pursuits for some time. However, some areas, mainly along the western portion, an area in the south-eastern corner and an area along the northern boundary, had previously been cleared. These areas have since regenerated with native vegetation, although the damaging effects of clearance may be evident for many years to come.

Objective

Conserve the geological features of the parks, maintain healthy soil condition and limit erosion to natural levels.

Strategies

- Ensure all activities and proposed developments surrounding the granite outcrop in Moody Tank Conservation Park are compatible with the protection and conservation of this geological structure and the habitat it provides for the Granite Mudwort.
- Regulate visitor and management impacts to protect the soils within the parks from unnatural erosion processes.

5.2 Hydrology

The geology of Eyre Peninsula is particularly relevant to water resources as it determines where, how and why these resources are located (Day et al., 2005). The majority of the region's potable water is sourced from groundwater resources in the form of basins and lenses (Parker et al., 1985). Lincoln and Sleaford Mere Conservation Parks are within the Southern Basins Prescribed Wells Area, which provides a large part of the region's potable water supply. The underground water resources of the Southern Basins Prescribed Wells Area are primarily contained within the Quaternary Bridgewater Formation limestone and the Tertiary Sand aquifers of the Lincoln, Uley and Coffin Bay Basins (DWR, 2001).

Sleaford Mere Conservation Park is nestled within the Water Resource Zone of Lincoln National Park, where a management agreement with SA Water provides for the protection and utilisation of the natural resources in the area (see Appendix E in DEH, 2004). In particular, the agreement was established to protect the area's groundwater resources and the associated operating water supply facilities.

Monitoring the water level, quality and salinity of groundwater resources is conducted via observation wells scattered across the peninsula, by SA Water and the Department of Water, Land and Biodiversity Conservation (DWLBC). There are no observation wells being monitored within the parks included in this management plan, however historic observation wells are present in Sleaford Mere Conservation Park, and historic mineral wells are present in Moody Tank and Tucknott Scrub Conservation Parks. Should any observation wells be established or re-opened in the future, access to wells within the parks will be permitted to personnel undertaking monitoring or maintenance activities. DEH should be notified prior to such activities being undertaken.

Surface water resources are not abundant due to the peninsula's relatively low rainfall, high evaporation rate, permeable soils and relatively flat landscape (Day et al., 2005). The Tod River system is the only significant surface water resource that supplies potable water on Eyre Peninsula (Day et al., 2005). The Tod River catchment is approximately 412 square kilometres and is defined by the Koppio Hills (Rixon et al., 2002) (Figure 4). The Tod River is the only permanent flowing water system in the catchment (Day et al., 2005). With the extension of railways through Eyre Peninsula and the rapid opening up of the country to settlement at the turn of the 20th century, the demand for water increased in the region (SA Water, 2006). Hence, the Tod Reservoir was constructed just west of Tod River and east of Tucknott Scrub Conservation Park (the drainage of which flows into Tod Reservoir after flowing into Toolillie Creek). Many catchments on lower Eyre Peninsula influence, or are influenced by, the hydrology of the parks included in this management plan. Table 1 provides a summary of the catchment area in which each park is present and the hydrological features in each park. The major surface water catchments on lower Eyre Peninsula are depicted in Figure 4.

Table 1: Catchment Area and Hydrological Features

Conservation Park	Catchment Area	Hydrology in Park
Kathai	Little Swamp and Boston Bay	None
Lincoln	Coffin Bay – Jussieu Peninsula	None
Moody Tank	Salt Creek	Granite outcrop (surface runoff) and numerous drainage lines
Murrunatta	Lake Wangary	Swamp in southern parcel (subject to inundation)
Sleaford Mere	Coffin Bay – Jussieu Peninsula	Permanent saline lake
Tucknott Scrub	Tod River	Numerous drainage lines
Vanilla	Lake Wangary	Numerous drainage lines
Vanilla Land Settlement	Lake Wangary	None

Since European settlement surface water quality across Eyre Peninsula has been significantly affected by native vegetation clearance and intensive agricultural practices, such as grazing, stocking and application of pesticides (Day et al., 2005). Surface water quality is particularly affected in areas where riparian vegetation has been cleared, and the impacts of poor land practices upstream can affect the entire downstream catchment area. If riparian land is not well vegetated with shallow- and deep-rooted plants, this can lead to accelerated bank erosion, loss

of topsoil, and pollution of the waterways with soil and excess nutrients and pesticides (Day et al., 2005; Price and Lovett, 2002a, 2002b). Hence, poor land practices on properties adjacent and upstream of the parks included in this management plan will negatively impact the natural values of these parks. DEH should liaise with the Eyre Peninsula Natural Resources Management (NRM) Board to ensure landowners are aware of the positive impact healthy riparian ecosystems have on the water quality of entire catchments, and are encouraged to facilitate riparian regeneration.

The salt lake at Sleaford Mere Conservation Park is one of few permanent salt lakes protected within South Australia's reserve system (Anderson, 2005). While it is understood that the lake is supplied by both local runoff (direct) and groundwater (indirect) resources, it is uncertain whether groundwater resources are supplied from one basin or whether multiple basins contribute.

Research is currently being undertaken at Sleaford Mere Conservation Park, by the Eyre Peninsula NRM Board, to obtain a greater understanding about the dynamics of this nationally important wetland (ie how water level, quality and salinity alter, and how the stromatolites near the water's edge are affected by changing lake conditions). Such research will enable more effective management of this wetland environment by identifying and minimising impacts on the system.

DEH does, and should continue to, work closely with the Eyre Peninsula NRM Board to better understand the dynamics of the region's wetland environments. DEH should also liaise with regional landholders to educate them about the sensitivity of wetland environments, the negative effects of poor land management on these environments, and the best practice methods that can be implemented to minimise such impacts.

The southern parcel of Murrunatta Conservation Park protects one of relatively few swamp environments on lower Eyre Peninsula. The dense understorey provides appropriate habitat for the nationally vulnerable Eyre Peninsula Southern Emu-wren (*Stipiturus malachurus parimeda*) (see Section 5.4 Native Fauna). Hence, maintaining the ecosystem as a healthy swamp environment is important not only for the protection of the swamp itself, but also for threatened species associated with it.

Tucknott Scrub Conservation Park has numerous creeks that flow out of the park's northern and eastern boundaries, into Toolillie Creek and on to the Tod Reservoir. The Wangary bushfire in January 2005 burnt all of Tucknott Scrub Conservation Park (see Section 6 Managing Fire), thus reducing the ability of its vegetation to trap substrates. This resulted in sediment and organic matter washing into the creeks, subsequently depleting the water quality of the creeks and reservoir. To mitigate this problem a silt trap was installed in the park (by Primary Industries and Resources SA), which improved the water quality of the creeks, thus improving water quality for the reservoir. As the vegetation at Tucknott Scrub Conservation Park regenerates so too does its ability to trap substrates. Hence, the silt trap within the park will not be maintained and the site will be left to regenerate naturally with the rest of the vegetation.

Objective

Maintain and improve the water quality of surface and groundwater resources to conserve the biological values of the parks and region.

Strategies

- Liaise with SA Water and DWLBC regarding notification of any future establishment or re-opening of groundwater observation wells within the parks.
- Ensure activities conducted in parks do not impact on the water quality of the region's creeks and catchments.
- Liaise with the Eyre Peninsula NRM Board and landholders regarding the management and rehabilitation of regional surface water and groundwater resources, the need for healthy riparian vegetation, and the impact of any proposed activities on the conservation values of the parks.
- Encourage and support research at Sleaford Mere Conservation Park to gain a better understanding about the dynamics of the nationally important wetland.
- Maintain the swamp environment in the southern parcel of Murrunatta Conservation Park in a healthy condition to provide appropriate habitat for the Eyre Peninsula Southern Emu-wren.

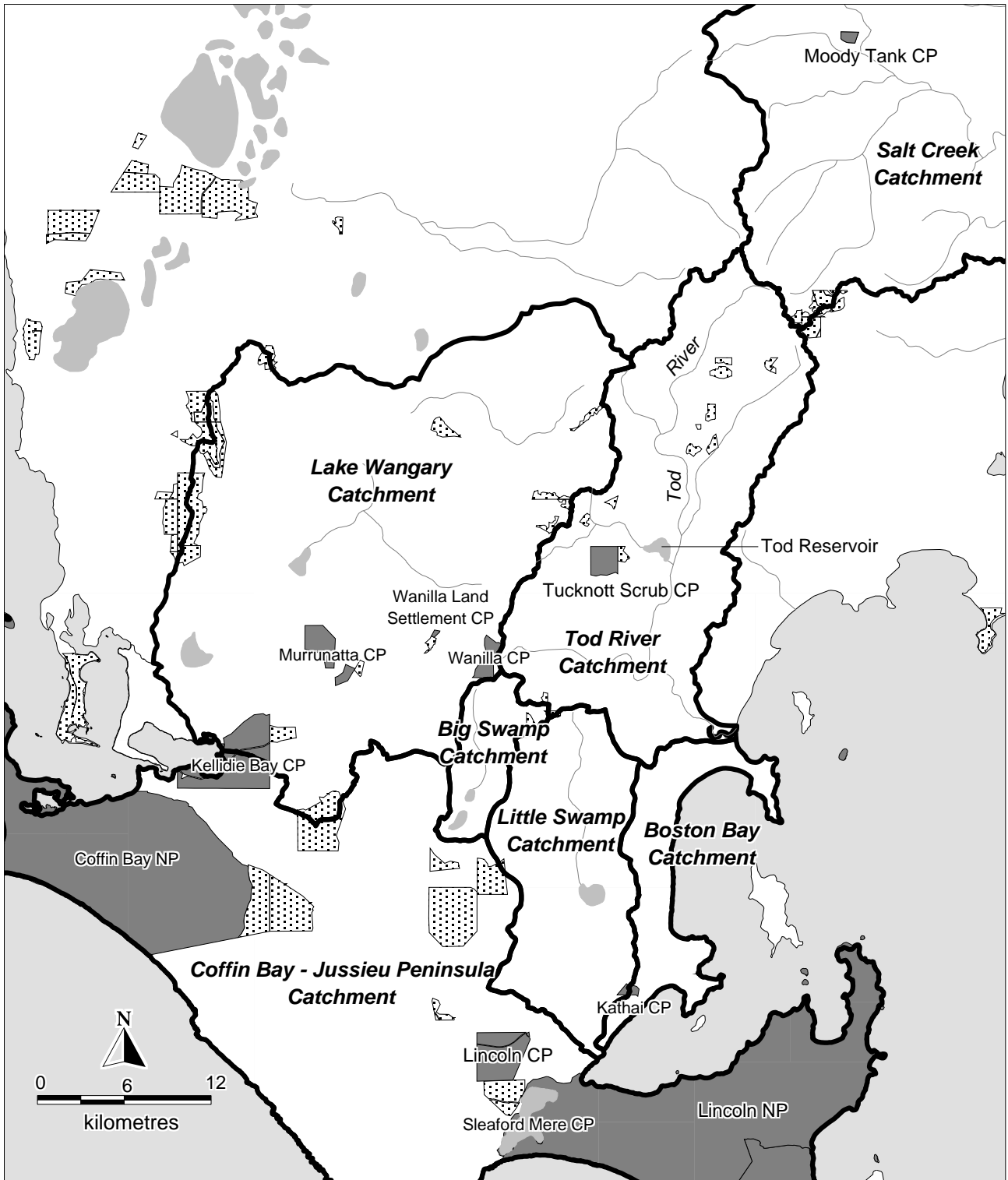








Figure 4

**Conservation Parks of Lower Eyre Peninsula
Catchment Boundaries**

Map designed and created by
Reserve Planning using PAMS
Projection: MGA Zone 53 (GDA 94)
Date: January 2006

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

LEGEND

- | | | | |
|-------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------|------------------------|
|  | Catchment Boundaries |  | (CP) Conservation Park |
|  | DEH Reserves |  | (NP) National Park |
|  | Heritage Agreements |  | Drainage |

5.3 Native Vegetation

The Conservation Parks of Lower Eyre Peninsula are dominated by seven broad vegetation structures (see Appendix C for conservation status codes):

1. Purple-flowered Mallee (*Eucalyptus albopurpurea*) and/or Coastal White Mallee (*E. diversifolia* ssp. *diversifolia*) open mallee forest (EP:R) dominates Kathai Conservation Park.
2. Coastal White Mallee mid mallee woodland dominates Lincoln Conservation Park.
3. Coast Ridge-fruited Mallee (*E. angulosa*) mid mallee woodland dominates the northern parcel of Murrunatta Conservation Park.
4. Broombush (*Melaleuca uncinata*) tall open shrubland (EP:T) dominates Moody Tank Conservation Park.
5. Swamp Paper-bark (*M. halmaturorum*) tall shrubland dominates the southern parcel of Murrunatta Conservation Park.
6. Dryland Tea-tree (*M. lanceolata*) tall open shrubland dominates Sleaford Mere Conservation Park.
7. Sugar Gum (*E. cladocalyx*) mid woodland (EP:T) dominates Tucknott Scrub and Wanilla Conservation Parks, and Wanilla Land Settlement Conservation Park. Sugar Gum is endemic to South Australia and is known from only four populations, two of which are on Eyre Peninsula (DEH, 2002a). On lower Eyre Peninsula today, Sugar Gum woodland (as a dominant vegetation community) covers just over 13,000 hectares, a small portion of its original distribution. Of this, only about 14 percent is protected within DEH reserves and Heritage Agreement areas.

Protection of these remnant stands of Sugar Gum is vital for the long-term survival of threatened plants species that are associated with this vegetation community, such as the Fat-leaf Wattle (*Acacia pinguifolia*) (AUS:E; SA:E; EP:E), Metallic Sun-orchid (*Thelymitra epipactoides*) (AUS:E; SA:E), Silver Daisy-bush (*Olearia pannosa* ssp. *pannosa*) (AUS:V; SA:V) and Winter Spider-orchid (*Caladenia brumalis*) (AUS:V; SA:V; EP:V).

Sugar Gum woodlands have also been found to consistently support the highest diversity of bird species compared with any other vegetation community in the region (Carpenter, unpublished). These woodlands are particularly important for the Eyre Peninsula Yellow-tailed Black-Cockatoo (*Calyptorhynchus funereus xanthanotus*) (SA:V; EP:E) as they provide critical feeding and breeding habitat for the region's declining population (see Section 5.4 Native Fauna).

Numerous other vegetation communities of conservation significance are protected within the Conservation Parks of Lower Eyre Peninsula:

- Cutting-grass (*Gahnia trifida*) sedgeland (SA:E) is protected within Sleaford Mere Conservation Park and the northern parcel of Murrunatta Conservation Park;
- Drooping Sheoak (*Allocasuarina verticillata*) low open woodland (SA:V; EP:V) is protected within Lincoln and Tucknott Scrub Conservation Parks; and
- Short-leaf Honey-myrtle (*Melaleuca brevifolia*) and/or Scarlet Bottlebrush (*Callistemon rugulosus* var.) shrubland (EP:T) is protected within Tucknott Scrub Conservation Park and the southern parcel of Murrunatta Conservation Park and, along with Cutting-grass sedgeland, provides critical habitat for the Eyre Peninsula Southern Emu-wren (*Stipiturus malachurus parimeda*) (AUS:V; SA:E; EP:E).

Many plant species of conservation significance have been recorded in the parks included in this management plan, a selection of which is listed in Appendix A. At Moody Tank Conservation Park, the small rock pools on the granite outcrop are thought to provide suitable habitat for the Granite Mudwort (*Limosella granitica*), a nationally vulnerable plant that is endemic to Eyre Peninsula (Freebairn and Pobke, 2006). Granite Mudwort is suspected in the park, although to date this has not been confirmed. DEH will survey the rock pools to confirm the presence of this species at Moody Tank Conservation Park and management strategies will be implemented to ensure the habitat is adequately protected.

Numerous threatened orchid species are protected within the Conservation Parks of Lower Eyre Peninsula, including the Metallic Sun-orchid (*Thelymitra epipactoides*) (AUS:E; SA:E; EP:E), Twisted Sun-orchid (*T. flexuosa*) (SA:R; EP:K) and Winter Spider-orchid (*Caladenia brumalis*) (AUS:V; SA:V; EP:V).

As well as supporting threatened vegetation communities, Sleaford Mere Conservation Park also protects plant species of conservation significance, including the Common Spleenwort (*Asplenium trichomanes*) (SA:R; EP:R) and Eyre Peninsula Bitter-pea (*Daviesia asperula* ssp. *obliqua*) (EP:U). Effective management of this significant wetland system cannot be considered in isolation from this surrounding terrestrial vegetation (DEH, 2002a). DEH should continue to support research into the dynamics of this wetland environment, and should conduct and encourage the restoration and revegetation of riparian zone vegetation around Sleaford Mere Conservation Park.

Prior to purchase by DEH, Tucknott Scrub Conservation Park was held under private ownership, during which time some areas (mainly along the western portion of the property, an area in the south-eastern corner and an area along the northern boundary) were cleared. Most areas have since regenerated back to native bushland (ie similar structure as pre-clearance vegetation), however, the south-eastern corner remains a grassland community with limited structural diversity.

The Wangary bushfire in January 2005 affected many vegetation communities and species of conservation significance. More than 6,600 hectares of Sugar Gum woodland was burnt during the fire and the entire population of the nationally vulnerable Ironstone Mulla Mulla (*Ptilotus beckerianus*) was affected. Funded by the State and Federal Governments and Nature Foundation SA Inc, the Lower Eyre Peninsula Bushfire Re-establishment Program was implemented to support ongoing surveys that monitor the post-fire response of these and other threatened plants and vegetation communities. These surveys will increase our knowledge of the positive and negative effects of bushfire on native plant species and communities. DEH will ensure any management strategies that evolve from the bushfire recovery monitoring program are consistent with the objectives of this management plan.

Introduced plants are a threat to the integrity of native vegetation within the Conservation Parks of Lower Eyre Peninsula. Weeds compete with native species for space and resources, and their threat to native vegetation is exacerbated by disturbance such as fire. Indeed, regenerating introduced plants (particularly Bridal Creeper (*Asparagus asparagoides*) and numerous agricultural species) are currently prevalent in those parks affected by the Wangary bushfire (see Section 5.5 Introduced Plants). In the longer term, however, it is likely that the post-fire successional development of native vegetation will reduce the impact of weeds in fire-affected parks. The biggest threat to this process occurring is grazing by introduced animals (particularly the Rabbit (*Oryctolagus cuniculus*)), which can inhibit the regeneration of native vegetation (see Section 5.6 Introduced Animals).

In recent times, illegal firewood collection has been occurring at Tucknott Scrub Conservation Park, and is also known to occur at Lincoln, Wanilla and Wanilla Land Settlement Conservation Parks. Illegal firewood collection generally involves the removal of deadwood from the ground, as well as the active removal of limbs from trees in threatened Sugar Gum and Drooping Sheoak woodlands, thus impacting ground-dwelling animals and those that utilise hollows. The presence of researchers (undertaking post-fire recovery monitoring) in these parks will hopefully deter people from removing firewood. If necessary, signage will be installed to inform visitors that firewood collection is a prohibited activity for which penalties apply.

The fragmentation of remnant native vegetation across lower Eyre Peninsula, and the small size of these fragments, is such that the region's biodiversity values often extend beyond the boundaries of DEH reserves. Conservation of biodiversity on a regional scale is imperative to maintain genetic diversity and protect native species from threats (eg bushfire and introduced species), and is achieved through cooperative management programs with the local community, volunteer groups, local Councils and other Government departments (eg Eyre Peninsula NRM Board). In the area surrounding the Conservation Parks of Lower Eyre Peninsula, land adjacent Lincoln and Wanilla Land Settlement Conservation Parks is particularly valuable to regional biodiversity, containing many plant species of conservation significance. To enhance the protection of these areas and the native species within them, DEH will investigate opportunities to add this land to the State's reserve system.

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 and has developed a National Threat Abatement Plan (Environment Australia, 2001).

Phytophthora is suspected in a forested area near Wanilla Conservation Park, at the southern gate at Tucknott Scrub Conservation Park and in Wanilla Land Settlement Conservation Park. 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*.

A boot-cleaning station has been installed to the east of the southern gate at Tucknott Scrub Conservation Park and the north-west entrance of Wanilla Land Settlement Conservation Park. Visitors are expected to use these stations prior to entering and leaving the parks to prevent further spread of the pathogen.

Objective

Conserve native vegetation within the parks and reduce threats, particularly to vegetation communities and plant species of conservation significance.

Strategies

- Encourage and support research to confirm the presence of the Granite Mudwort at Moody Tank Conservation Park. Implement strategies to ensure its habitat is adequately protected.
- Encourage and support research into the relationship between riparian vegetation and healthy wetland ecosystems at Sleaford Mere Conservation Park. Conduct and encourage the restoration and revegetation of the riparian zone.
- Encourage ongoing monitoring of threatened vegetation communities and plant species, particularly in those parks affected by the January 2005 bushfire.
- Investigate opportunities to add land to the State's reserve system to enhance the protection of areas that are particularly valuable for the conservation of regional biodiversity.
- Confirm and monitor the presence of *Phytophthora* at the southern entrance of Tucknott Scrub and Wanilla Land Settlement Conservation Parks by undertaking regular soil tests. Implement programs to contain this pathogen and to restrict the movement of visitors and management staff through infected areas.
- Maintain the boot-cleaning stations located at Tucknott Scrub and Wanilla Land Settlement Conservation Parks.
- Consider the threat of *Phytophthora* and take steps to prevent the introduction and spread whenever practicable; report and investigate any new infestations.
- Encourage and liaise with local councils to educate works personnel and contractors about hygienic road-grading activities in *Phytophthora*-prone areas bordering parks.

5.4 Native Fauna

The Conservation Parks of Lower Eyre Peninsula contain a large variety of habitat types, thus offering a range of specific niches and resources for a diverse range of native fauna. The extensive clearance of native vegetation in the region and the highly fragmented distribution of remnant vegetation are such that the parks provide critical refuge areas for native fauna. All parks except Moody Tank Conservation Park are known to contain fauna species of conservation significance, some of which are listed in Appendix B. The following provides more detailed information about some species found within the Conservation Parks of Lower Eyre Peninsula. An explanation of the conservation status codes used is provided in Appendix C.

Mammals

Common Brush-tail Possum

The Common Brush-tail Possum (*Trichosurus vulpecula*) (SA:R; EP:E) has become regionally extinct or rare in much of its former range, and the decline in abundance is partly attributed to loss of suitable habitat (eucalypt and sheoak woodlands), overgrazing, competition for resources with stock and feral herbivores, and predation by foxes and cats (DEH, 2002a; Bird, 1997). Previously

distributed across much of Eyre Peninsula, the Common Brush-tail Possum is now confined to limited areas of the eastern coast and southern parts of the peninsula (DEH, 2002a).

The January 2005 bushfire burnt much of the Common Brush-tail Possum's habitat, thus threatening the survival of this species. Post-fire monitoring (January 2006) has observed individuals in habitat north of the Koppio Hills and further south near Green Patch (see Figure 1), and has confirmed the presence of possums in Tucknott Scrub Conservation Park (DEH, 2006). Suitable hollow-bearing trees in the park should be closely monitored for occupation by the Common Brush-tail Possum to monitor its recovery. The use of artificial den boxes is still being investigated and may be installed on Sugar Gums in fire-affected areas to encourage possums to recolonise the area.

The Common Brush-tail Possum found on Eyre Peninsula is thought to be the subspecies *Trichosurus vulpecula vulpecula*, which occurs from Queensland, through New South Wales and Victoria, across to Eyre Peninsula (DEH, 2002a). Research into the genetic diversity of the Eyre Peninsula species is required to confirm this, and if found to be the subspecies, research into the feasibility of translocating possums to replenish the Eyre Peninsula population is also required.

Koala

The Koala (*Phascolarctos cinereus*) is listed as a rare species in South Australia. However, it is not endemic to Eyre Peninsula and was introduced to the region in the 1940s (DEH, 2002a). Eyre Peninsula's Koala population is mostly restricted to an isolated population of Rough-barked Manna Gum (*Eucalyptus viminalis* ssp. *cygnetensis*) woodland on Mikkira Station, near Sleaford Bay. While Rough-barked Manna Gum is the preferred food tree, koalas appear to be dispersing into other eucalypt habitat on the lower part of the peninsula.

Lincoln Conservation Park is dominated by Coastal White Mallee (*Eucalyptus diversifolia* ssp. *diversifolia*), a eucalypt consumed by koalas. The Koala population and the habitat damage caused by these animals in and around Lincoln Conservation Park should be monitored, and management strategies implemented if necessary.

Kangaroos

Western Grey Kangaroos (*Macropus fuliginosus*) have been recorded within Murrnatta, Sleaford Mere, Tucknott Scrub, Wanilla, and Wanilla Land Settlement Conservation Parks. Although many native animal species have declined or become extinct since European settlement, kangaroo numbers have generally increased, often above ecologically sustainable levels. Such increases in kangaroo numbers can be attributed to the increased availability of fresh water (from artificial watering points) and food resources (from agricultural crops), and can have considerable impacts on native vegetation, fences, pastures and crops.

A kangaroo management program is in place in South Australia (DEH, 2002b) and permits can be issued to landowners to reduce the impacts caused by high kangaroo numbers. Successful management of kangaroo populations will only be achieved if undertaken and coordinated on a regional scale. DEH will liaise with regional landowners regarding management of kangaroo populations across lower Eyre Peninsula.

Birds

Eyre Peninsula Yellow-tailed Black-Cockatoo

The Eyre Peninsula Yellow-tailed Black-Cockatoo (*Calyptorhynchus funereus xanthanotus*) (AUS:E; SA:V; EP:E) was once a common species in the region, but today the population comprises less than 35 individuals. Historical clearance of critical Sugar Gum woodland has significantly reduced food resources and nesting habitat, the latter of which is restricted to Sugar Gum hollows. Limited and fragmented food resources, exacerbated since the January 2005 bushfire event, is a major threatening factor.

The birds consume a mixture of native and introduced seeds and wood-boring invertebrate larvae (DEH, 2002a). The introduced Aleppo Pine has significantly supplemented the Eyre Peninsula Yellow-tailed Black-Cockatoos' natural diet in response to widespread loss of native food resources. More than 60 percent of the Aleppo Pines in the cockatoos' breeding area were destroyed during the January 2005 bushfire. Aleppo Pine stands that are repeatedly used by the cockatoos have been identified for retention in a strategic management report (Way, 2006).

The January 2005 bushfire also significantly reduced the number of suitable nesting hollows, destroying more than half of the known nest trees. Suitable nesting hollows are further restricted by competition with the Common Brush-tail Possum (which also predate on eggs and nestlings), feral honeybees and galahs (DEH, 2002a). While no breeding sites are known on DEH reserves, suitable feeding habitat for the Eyre Peninsula Yellow-tailed Black-Cockatoo occurs at Tucknott Scrub, Wanilla and Wanilla Land Settlement Conservation Parks.

Habitat protection and revegetation projects are currently being implemented, mainly on private land, with the assistance of regional landholders, the Eyre Peninsula NRM Board, Nature Foundation SA Inc, Green Corps teams and the Friends of Southern Eyre Peninsula Parks. DEH will continue to support and implement these projects, as well as ongoing surveys to monitor the cockatoo population across the region.

Eyre Peninsula Southern Emu-wren

The Eyre Peninsula Southern Emu-wren (*Stipiturus malachurus parimeda*) (AUS:V; SA:E; EP:E) is restricted to lower Eyre Peninsula, and contraction and fragmentation of its former range appears to have been primarily caused by extensive land clearance, drainage and grazing (Pickett, 2002, 2004).

The Eyre Peninsula Southern Emu-wren is a particularly poor flier, capable of only short bursts of flight over little more than a few metres, so the highly fragmented nature of remnant vegetation in the region is such that the species requires suitable connective corridors for dispersal between patches (Pickett, 2002). This dependency on connective corridors has heightened the threats to emu-wren populations, particularly bushfires, as they are unable to disperse to 'safe' habitat if a fire affects their resident habitat.

Suitable emu-wren habitat has been identified in swampy regions at the northern end of Sleaford Mere Conservation Park. These mixed shrub and sedge habitats were burnt during a bushfire in 2001, but can be expected to be recolonised by emu-wrens in due course (Pickett, 2002).

Prior to the January 2005 bushfire, the Eyre Peninsula Southern Emu-wren was present at the southern parcel of Murrunatta Conservation Park (Pickett, 2002). A post-fire survey was conducted but emu-wrens were not recorded in the park. However, individuals were recorded post-fire at a site just one kilometre south, so the prospect for reoccupation of the southern parcel of Murrunatta Conservation Park is promising (Pickett, 2005a).

The northern parcel of Murrunatta Conservation Park has been identified as potential habitat for emu-wrens and should provide suitable habitat upon regeneration post-fire. Assuming the population in the southern parcel persists, a vegetation corridor linking the two parcels would provide this species with the opportunity to expand its range.

A recovery plan for the Eyre Peninsula Southern Emu-wren is in preparation, with the main objectives of maintaining the population, implementing management strategies to ensure longer-term persistence of existing populations and habitat, and increasing the size and distribution of the population within its range (Pickett, 2004). Following the January 2005 bushfire event a *Habitat Management Plan for the Eyre Peninsula Southern Emu-wren in the 2005 Bushfire Area* was developed (Pickett, 2005b). This plan complements the recovery plan, and identifies high priority parcels of land that have the potential to increase habitat connectivity between known and/or potential emu-wren sites. DEH will continue to support and implement these plans, as well as ongoing surveys to monitor the population across the region.

Other Birds

The health of the Sleaford Mere wetland system is important for many bird species that utilise the waters for feeding. Hardy Heads (*Pranesus* sp.) in the lake are likely to provide food for species such as the Silver Gull (*Larus novaehollandiae*), Pacific Gull (*L. pacificus*), Pied Cormorant (*Phalacrocorax varius*), Pied Oystercatcher (*Haematopus longirostris*), Red-capped Plover (*Charadrius ruficapillus*), Sharp-tailed Sandpiper (*Calidris acuminata*) and Curlew Sandpiper (*C. ferruginea*) (Lloyd and Balla, 1986). The latter two species are migratory birds that are protected under JAMBA (Japan-Australia Migratory Birds Agreement) and CAMBA (China-Australia Migratory Birds Agreement). Species of conservation significance known to utilise Sleaford Mere include the Fairy Tern (*Sterna nereis*) (SA:V), Hooded Plover (*Thinornis rubricollis*) (SA:V) and Musk Duck (*Biziura lobata*) (SA:R).

The Sugar Gum woodlands in Tucknott Scrub, Wanilla and Wanilla Land Settlement Conservation Parks provide vital habitat for the Western Gerygone (*Gerygone fusca*) (SA:R; EP:V), which is at the eastern-most extent of its range on Eyre Peninsula. Other woodland birds that utilise the Conservation Parks of Lower Eyre Peninsula are the:

- Painted Button-quail (*Turnix varia*) (SA:V; EP:V), which is found in Kathai, Murrunatta and Wanilla Conservation Parks; and
- Shining Bronze-Cuckoo (*Chrysococcyx lucidus*) (SA:R; EP:R), which is found in Lincoln Conservation Park.

Reptiles and Amphibians

Little is known about the reptiles and amphibians inhabiting the Conservation Parks of Lower Eyre Peninsula. Heath Goannas (*Varanus rosenbergi*) (SA:R) have been observed near Tucknott Scrub Conservation Park, and the Western Three-lined Skink (*Bassiana trilineata*) (SA:R) has been recorded within Murrunatta Conservation Park.

Through the annual Frog Census (implemented by the Environment Protection Agency (EPA)) seven species of frog have been recorded on Eyre Peninsula. There have been no confirmed frog records within the parks included in this management plan, although Bibron's Toadlet (*Pseudophryne bibroni*) is suspected at Moody Tank Conservation Park. DEH should liaise with the EPA to encourage community groups and individuals to survey protected reserves as part of the Frog Census, to gain a greater understanding about the biodiversity of frogs on Eyre Peninsula.

Objectives

Protect and conserve native fauna within the parks.

Conserve key threatened species through the protection of breeding areas and important feeding habitat.

Strategies

- Encourage and support ongoing monitoring of threatened species, particularly those affected during the January 2005 bushfire: the Common Brush-tail Possum, Eyre Peninsula Yellow-tailed Black-Cockatoo and Eyre Peninsula Southern Emu-wren.
- Encourage and support research into the genetic diversity of the Common Brush-tail Possum to determine whether translocation is a feasible option to replenish the Eyre Peninsula population.
- Monitor the Koala population and its impact on native vegetation in and around Lincoln Conservation Park, and implement management strategies if necessary.
- Support the management of kangaroo populations on properties surrounding the parks as part of the statewide Kangaroo Management Program.
- Encourage and support habitat protection and revegetation projects for the Eyre Peninsula Yellow-tailed Black-Cockatoo.
- Investigate the development of a vegetation corridor linking the two parcels of Murrunatta Conservation Park to facilitate the dispersal of the Eyre Peninsula Southern Emu-wren. If feasible, develop and implement strategies to achieve this.
- Encourage and support research to develop a greater understanding of the distribution and abundance of reptiles and amphibians on Eyre Peninsula, particularly those of conservation significance.

5.5 Introduced Plants

Forty-two introduced plant species have been recorded within the Conservation Parks of Lower Eyre Peninsula. While all introduced species threaten the integrity of natural ecosystems, the six species listed in Table 2 are declared pest plants that require control under the *Environment Protection and Biodiversity Conservation Act 1999* and/or *Natural Resources Management Act 2004*.

Table 2: Declared Pest Plants

SCIENTIFIC NAME	COMMON NAME	EPBC Act 1999 [#]	NRM Act 2004 [^]
<i>Asparagus asparagoides</i>	Bridal Creeper	*	*
<i>Carduus tenuiflorus</i>	Slender Thistle		*
<i>Echium plantagineum</i>	Salvation Jane		*
<i>Lycium ferocissimum</i>	African Boxthorn		*
<i>Pinus halepensis</i>	Aleppo Pine	*	*
<i>Ulex europaeus</i>	Gorse		*

[#] *Environment Protection and Biodiversity Conservation Act 1999*

[^] *Natural Resources Management Act 2004*

Bridal creeper was introduced to South Australia as a garden plant and is now considered to be one of the most significant weed threats to biodiversity in the State. It is present in all parks included in this management plan. Bridal Creeper forms a thick mat of underground tubers, which impedes the root growth of other plants and often prevents seedling establishment. It smothers native vegetation and competes for space, light, water and nutrients. Bridal Creeper invades native vegetation that is in good condition and it can be widely dispersed by native and non-native birds (CRC for Australian Weed Management, 2004; DEH, 2002a). Like most environmental weeds, Bridal Creeper responds well to disturbances such as fire. Indeed, immediately following the January 2005 bushfire event, Bridal Creeper was one of the first plants to regenerate in the fire-affected parks.

Although Bridal Creeper has been a problematic introduced plant threatening the regeneration of native plant species post-fire, agricultural species have actually been a greater issue. The soils within burnt areas of agricultural land were affected by wind erosion, resulting in the spread of agricultural species into fire-affected parks, particularly Wanilla and Wanilla Land Settlement Conservation Parks. Much effort is currently being focussed on control the most invasive introduced species in these parks, particularly Veldt Grass (*Ehrharta longiflora*), Perennial Veldt Grass (*E. calycina*), Quaking Grass (*Briza maxima*), Cape Weed (*Arctotheca calendula*) and South African Daisy (*Senecio pterophorus*).

Myrtle-leaf Milkwort (*Polygala myrtifolia*) is a problematic weed in numerous parks, particularly Kathai and Lincoln Conservation Parks. Similar to Bridal Creeper, this South African plant was originally introduced to Australia as a garden plant. In Lincoln Conservation Park, Myrtle-leaf Milkwort is particularly dense along those boundaries adjacent to the road.

Aleppo Pine (*Pinus halepensis*) has been used widely as a windbreak and to reduce soil erosion. However, it is an aggressive invader of cleared roadsides (where it is strategically controlled) and native vegetation. It will compete with established vegetation and will eventually dominate an infested area if left unchecked (Animal and Plant Control Commission of South Australia, 2002). Aleppo Pine is of particular concern on lower Eyre Peninsula and has been recorded within Lincoln Conservation Park. Aleppo Pine stands near Sleaford Mere Conservation Park may pose an infestation risk. The listing of Aleppo Pine as a declared plant under the *Natural Resources Management Act 2004* applies to non-cultivated populations only. It is still legal to buy and plant Aleppo Pines on private land. However, the listing under the Act implies that the landholder is responsible for controlling any feral seedlings from the planted individuals that occur on their property (see Way, 2006).

The Eyre Peninsula Yellow-tailed Black-Cockatoo relies on mature stands of Aleppo Pines for feeding habitat, particularly in their breeding area near Wanilla (see Section 5.5 Native Fauna). These mature stands occur on private property, so control of Aleppo Pine infestations in National Parks and Wildlife Act reserves should not affect food availability for the Eyre Peninsula Yellow-tailed Black-Cockatoo. Hence, Aleppo Pine should be actively controlled within the Conservation Parks of Lower Eyre Peninsula. More information on strategic management of Aleppo Pines, also addressing the conservation of the Eyre Peninsula Yellow-tailed Black-Cockatoo, can be found in Way, 2006.

Lincoln Conservation Park is threatened by invasion of feral seedlings from the Radiata Pine (*Pinus radiata*) plantation to the north of the park. Appropriate management of this plantation is necessary, not only to control feral seedlings, but also to minimise fire risk. DEH may need to liaise with the managers of this plantation to ensure the natural values of Lincoln Conservation Park and the surrounding area are protected.

Other weeds that threaten the integrity of native vegetation on lower Eyre Peninsula are African Boxthorn (*Lycium ferocissimum*), Olive (*Olea europaea*) and Bridal Veil (*Asparagus declinatus*). Olive is particularly threatening at Lincoln Conservation Park, as the species is present within adjacent SA Water land. DEH will liaise with SA Water regarding this matter. Threatening species should be monitored so as to minimise the threat of their introduction and spread in the Conservation Parks of Lower Eyre Peninsula.

Marijuana (*Cannabis sativa*) crop sites have been discovered in a few of the parks covered in this management plan. Programs are continually implemented by DEH, in conjunction with the SA Police Force, to eradicate Marijuana crops from DEH reserves.

The relatively small size of each park included in this management plan is such that weed control within parks needs to be part of a regional weed control program. The Eyre Peninsula NRM Board implements numerous regional control programs that complement the work conducted within DEH reserves. The control of Bridal Creeper is a very large project involving landholders across the region. Biological control using a rust fungus appears to be the most effective biological control method, however the leafhopper and leaf beetle are also implemented as methods of control. The control of Aleppo Pines along transport corridors is implemented with the cooperation of SA Water and the Department for Transport, Energy and Infrastructure (DTEI). African Boxthorn control is an ongoing program in the coastal areas of the peninsula and will be implemented wherever this species threatens the integrity of native vegetation.

Objectives

Control, and eradicate where possible, introduced plants within the parks.

Prevent the establishment of threatening introduced plants within the parks.

Strategies

- Continue to control, and eradicate where possible, pest plants within the parks, focusing on identified priorities.
- Monitor populations of threatening introduced plant species, particularly African Boxthorn, Olive and Bridal Veil, and prevent their introduction and spread in the parks.
- Liaise with managers of the Radiata Pine plantation adjacent Lincoln Conservation Park regarding appropriate management of the plantation to prevent introduction of the species into the park.
- Continue to liaise with the SA Police Force to eradicate Marijuana crops from the parks and to remove any infrastructure associated with them.
- Liaise with SA Water regarding the presence of olives on its land adjacent Lincoln Conservation Park and the threats these pose to the park's natural values.
- Work cooperatively with the Eyre Peninsula NRM Board and Lower Eyre Pest Management Group to implement regional weed control programs that address identified priorities for reserve weed control.

5.6 Introduced Animals

Eight species of introduced animal have been recorded in the parks covered in this management plan: the Common Starling (*Sturnus vulgaris*), House Sparrow (*Passer domesticus*), Eurasian Blackbird (*Turdus merula*), House Mouse (*Mus musculus*), Feral Cat (*Felis catus*) and Sheep (*Ovis aries*). Species of particular concern are those declared as pests under the *Natural Resources Management Act 2004*: the European Red Fox (*Vulpes vulpes*) and Rabbit (*Oryctolagus cuniculus*).

On Eyre Peninsula, foxes are a serious predator that can threaten the long-term survival of a range of native fauna. Fox populations are closely correlated with those of rabbits, as rabbits comprise the majority of their diet seasonally, and about 30% of their diet annually (V Linton, Pers. Comm.,

2006). However, foxes also feed on small to medium sized native ground-dwelling mammals, reptiles and ground nesting birds, many of which are of conservation significance (Environment Australia, 1999c). Foxes have been recorded within Sleaford Mere and Wanilla Conservation Parks, and at the southern parcel of Murrunatta Conservation Park, however they are likely and expected to be present in all parks included in this management plan.

Since their introduction in 1859, rabbits have become Australia's worst vertebrate pest, grazing some native plant species to the extent that they are unable to survive, regenerate and recruit, which may eventually lead to a change in ecosystem structure. Rabbits exacerbate soil erosion through burrow formation. Rabbits have also contributed to the extinction of many small to medium sized native animals through competition for food and habitat (Sandell and Start, 1999), and by supporting elevated numbers of foxes and feral cats (Environment Australia, 1999a).

On Eyre Peninsula, biological control programs, such as the Rabbit Haemorrhagic Disease (RHD) (formerly Rabbit Calicivirus Disease), have played an important role in management rabbit populations. However, rabbits are still a concern. Responsible landholders, including DEH, should be taking long-term actions to control rabbits beyond the levels currently maintained by RHD. Such actions include warren destruction and fumigation, which are best implemented when rabbit numbers are low. Rabbits have been recorded within Lincoln and Wanilla Conservation Parks, and the northern parcel of Murrunatta Conservation Park. Since the Wangary bushfire, rabbit warrens in Murrunatta Conservation Park have been located and recorded by the Eyre Peninsula NRM Board and Friends of Southern Eyre Peninsula Parks. Fumigation and baiting was undertaken to rid the warrens of rabbits and thus minimise their impact on the regeneration and recruitment of native vegetation post-fire (see Section 5.3 Native Vegetation). The warrens will be regularly monitored for occupation by rabbits and will be managed accordingly.

Predation by foxes and cats, and land degradation caused by rabbits have been identified as Key Threatening Processes under the *Environment Protection and Biodiversity Conservation Act 1999*. In recognition of this, National Threat Abatement Plans have been prepared for these species (Environment Australia, 1999a, 1999b, 1999c). On lower Eyre Peninsula the Southern Integrated Pest Management (IPM) Program (through the Eyre Peninsula NRM Board) implements regional control programs in an area that incorporates all parks in this management plan except Moody Tank Conservation Park. As part of these programs DEH undertakes fox control at Sleaford Mere Conservation Park. DEH will continue to support the Eyre Peninsula NRM Board in the implementation of regional pest animal control programs.

The European Honeybee (*Apis mellifera*) has become a problematic species throughout lower Eyre Peninsula. Utilising tree hollows to establish hives, bees compete with native animals for these sites. This is particularly concerning for two species of conservation significance, the Common Brush-tail Possum (*Trichosurus vulpecula*) and Eyre Peninsula Yellow-tailed Black-Cockatoo (*Calyptorhynchus funereus xanthanotus*), as they are dependent on tree hollows for successful nesting and breeding. Bee hives have been discovered in tree hollows within Tucknott Scrub, Wanilla and Wanilla Land Settlement Conservation Parks. Management of these hives occurs on a case-by-case basis. The impact that European Honeybees have on the seed production and pollination of native plant species is not well understood on lower Eyre Peninsula, and warrants further research.

Objective

Control introduced animals within the parks.

Strategies

- Continue to implement measures to control pest animals within the parks, focusing on identified priorities.
- Work cooperatively with the Eyre Peninsula NRM Board and Friends of Southern Eyre Peninsula Parks to monitor rabbit warrens for occupation, and manage accordingly.
- Work cooperatively with the Eyre Peninsula NRM Board to implement regional pest animal control programs that address identified priorities pest animal control within reserves.
- Undertake feral bee control as required.
- Encourage and support research to develop a greater understanding of the impact that feral bees have on native plant species on lower Eyre Peninsula.

6 MANAGING FIRE

Large fire events are not uncommon on lower Eyre Peninsula. This is due to the strong northerly winds that shift quickly to the south-west, dry lightning strikes and hot summer temperatures that are common in the region. The woodland, mallee and shrubland vegetation communities that dominate lower Eyre Peninsula (and most parks included in this management plan) are particularly fire-prone and, together with the surrounding agricultural land, can carry a bushfire across the region with great intensity.

Past bushfires have affected Lincoln and Sleaford Mere Conservation Parks (2001), and Kathai Conservation Park (1958). More recently, in January 2005, Murrunatta, Tucknott Scrub, Wanilla and Wanilla Land Settlement Conservation Parks were significantly affected by the Wangary bushfire, which burnt an area larger than 77,000 hectares in a nine-hour period. Monitoring programs have been established and implemented to improve our knowledge of the effects of bushfire, and to determine the vital attributes of different species. Such monitoring programs are supported and encouraged by this management plan (see Section 5.3 Native Vegetation).

The conservation, landscape and cultural values of the parks, and the surrounding land-use require the development of pro-active fire management strategies to protect both life and property, and the conservation values of the parks. Prescribed burning was conducted at Kathai Conservation Park in 2004 to minimise risk of bushfire to the local community. Consistent with the fire management plan that will be prepared for the parks, DEH will plan and conduct prescribed burning to limit the area of bushfire, protect adjacent assets, and manage habitats to maintain and enhance conservation values.

As much as possible, bushfires in the Conservation Parks of Lower Eyre Peninsula will be managed to limit their impact on off-park assets, and to maintain and enhance conservation values. Hot temperatures and strong dry winds that often occur on Eyre Peninsula can be such that bushfires pose significant threats to life and property. These weather conditions, as well as access and threat to off-park assets will be considered when responding to bushfires. All bushfire response will use techniques that minimise fire suppression impacts and risk to fire fighters.

A fire management plan will be prepared for the parks in consultation with adjoining Country Fire Service (CFS) Groups and the District Bushfire Prevention Committee. 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 fire related risks to natural and cultural heritage values and built assets;
- define objectives for fire management in the planning area; and
- identify strategies to achieve these objectives, incorporating:
 - a framework for the management of bushfire suppression, including identification of strategic fire access and infrastructure; and
 - a framework for prescribed burning to assist in built asset protection and for ecological management purposes.

The presence of *Phytophthora* in the region (see Section 5.3 Native Vegetation) is such that strict hygiene procedures must be implemented during bushfires and prescribed burns. It is important to ensure that any fire fighting equipment or vehicles used in the event of a fire undergo *Phytophthora* hygiene practices prior to entering the parks as per DEH policy, thus minimising the threat of introducing and spreading the pathogen in the parks.

Objective

Manage fire to protect life and property, maintain biodiversity and conserve other natural, cultural and built values.

Strategies

- Develop, implement and review fire management plans in association with CFS and other stakeholders.

- Respond to bushfires as soon as practicable, taking account of weather conditions, access and off-park assets, to minimise the risk of life and property while still maintaining and conserving biodiversity values.
- Implement strict hygiene procedures for fire fighting crews entering the parks during bushfires and prescribed burns, to minimise the threat of introducing and spreading *Phytophthora* in the parks.
- Continue to work with the relevant District Bushfire Prevention Committee and CFS to minimise risk to life and property within and surrounding the parks.

7 MANAGING CULTURAL HERITAGE

7.1 Indigenous Heritage

Barnjala and Nauo Culture and Heritage

The land comprising the Conservation Parks of Lower Eyre Peninsula was traditionally associated with the Barnjala and Nauo people (Tindale, 1974).

Prior to colonial settlement, the Barnjala and Nauo people occupied the coastal and inland environment of lower Eyre Peninsula, which provided them with important seasonal food resources. Barnjala people came from the north and with the establishment of European settlement in the region in 1839, extended past Franklin Harbour to Tumbby Bay, then on to Port Lincoln. Pressure from Barnjala's inroads into Nauo territory resulted in the Nauo group contracting to south-west Eyre Peninsula (Rixon et al., 2002).

Following colonial settlement, the Barnjala and Nauo populations were substantially reduced as a result of introduced diseases, dispersal, dispossession of their land and water supplies, and sometimes through violent conflict. Today, Barnjala and Nauo people still practice their culture and language. Some of the language and traditional stories have been recorded. However, to date, the full extent of Aboriginal heritage within the parks covered in this management plan has not been comprehensively researched. 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. However, it should be respected that due to historical or cultural reasons, any knowledge of the cultural heritage of the region may be privileged to selected Barnjala and Nauo people and therefore unable to be recorded.

Aboriginal Heritage Act 1988

The purpose of the *Aboriginal Heritage Act 1988* is to protect and preserve Aboriginal sites, objects and remains. "Aboriginal site" and "Aboriginal object" are defined to mean an area of land or an object that is of significance according to Aboriginal tradition or 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.

Although there are no sites listed on the Central Archive for any of the parks in this management plan, comprehensive surveys of the parks are yet to be undertaken. In carrying out the activities and strategies proposed in this plan, DEH will ensure that it complies with the *Aboriginal Heritage Act 1988*.

To ensure the protection of cultural heritage sites, DEH staff will consult with AARD and the traditional owners before commencement of any development works.

Objective

Ensure that any Aboriginal sites, objects and remains are protected and preserved in accordance with the *Aboriginal Heritage Act 1988*.

Strategies

- Consult with the traditional owners in decisions regarding the management of Aboriginal cultural heritage and before proceeding with significant development works within the parks.
- Identify and protect any Aboriginal sites, objects and remains in cooperation with the traditional owners, AARD and relevant authorities.
- In consultation with the traditional owners, encourage research into cultural sites and stories that relate to the parks for inclusion on the AARD Central Archive.

7.2 Non-Indigenous Heritage

The namesake of Moody Tank Conservation Park has important links with the Eyre Peninsula railway network that was developed specifically for the transportation of agricultural produce to the shipping port of Port Lincoln (PPK, 1999a). Constructed in 1913, and opened between 1915 and 1920 as a watering point, the water-holding tank in the park supplied water to the region's steam trains until the 1960s (Knife, 2006). There are two signs in the park that refer to the history of

Moody Tank: one just inside the southern boundary and one near the tank. The two signs provide different information; neither was installed by DEH. Should it be deemed appropriate, the information signs at Moody Tank Conservation Park will be replaced by one containing more comprehensive historic information. Moody Tank is a State Heritage Place (Register No. 14249), entered on the South Australian Heritage Register in 1992. The site is also entered on the Register of the National Estate (Register No. 6370) and is listed as a Local Heritage Place in the Development Plan for the DC of Tumby Bay.

Prior to the acquisition of Moody Tank Conservation Park by DEH, the District Council of Tumby Bay held a licence over the land comprising Moody Tank Conservation Park, the conditions of which allowed for restoration of the tank structure. In 1996 the structure was re-roofed by the District Council of Tumby Bay with the assistance of personnel from the Correctional Services Scheme. Despite this, its present condition is deteriorated, with a rusting roof and corroding support beams, multiple holes in the water-retaining wall and broken fencing, all of which pose significant public risk issues, particularly to people unfamiliar with the granite outcrop and tank structure. Easy access to the contained volume of water also poses a drowning risk. It is recommended that a formal risk assessment be undertaken at Moody Tank and that conservation works necessary to minimise public risk be carried out.

Moody Tank will be conserved in sympathy with heritage principles and in a manner that still reflects its historic significance, taking into account the public risk issues identified in a risk assessment, and the surrounding natural and built environments. Since DEH does not intend to utilise the tank structure for water, DEH does not propose to restore and maintain a working tank structure. However, DEH welcomes discussions regarding the future management and use of Moody Tank by third parties, which may involve restoration of the structure and utilisation of the water. All proposals will be carefully considered, taking account of park management objectives, public risk issues and regional priorities.

Should any lease arrangements be established at Moody Tank Conservation Park:

- the lessee would need to address, and be responsible for, maintenance, public risk issues and heritage conservation;
- the lease arrangements would need to be consistent with the management intent for the park; and
- an assessment would need to be made on whether an amendment to this management plan is required to effect the lease proposal.

In 1946, 18,600 hectares of land surrounding Wanilla Land Settlement Conservation Park was purchased by the Commonwealth Government, cleared of vegetation, and subdivided into 39 farms. In 1949, the Wanilla War Service Land Settlement farms were allocated to returned servicemen of World War II. Wanilla Land Settlement Conservation Park is one of few areas of vegetation that escaped clearance (the other protected areas including Murrumbidgee and Wanilla Conservation Parks). Wanilla Land Settlement Conservation Park commemorates the Wanilla War Service Land Settlement farms, and the men the land was allocated to, on two plaques in the park's north-western corner.

Objective

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

Strategies

- In cooperation with relevant authorities, protect sites of historical significance located in the parks.
- In cooperation with relevant authorities, encourage research into historic sites and stories that relate to the parks, and record these to the appropriate standard.
- If deemed appropriate, replace the two information signs at Moody Tank Conservation Park with one containing more comprehensive information about the history and significance of the tank structure.
- Undertake a formal risk assessment of the tank structure at Moody Tank Conservation Park and carry out conservation works necessary to minimise public risk, taking account of the historic value of the site.

- Conserve the historic tank structure at Moody Tank Conservation Park in sympathy with heritage principles, taking into account public risk issues, and the surrounding natural and built environments.
- Discuss and carefully consider proposals for the future management and use of the tank structure at Moody Tank Conservation Park by third parties.

8 MANAGING TOURISM AND RECREATION

The Conservation Parks of Lower Eyre Peninsula all contain remnant native vegetation and habitat for native wildlife that contributes to the region's biodiversity. Since the parks were all established to conserve these natural values, their protection is the primary objective of management. As such, visitor use and access must be compatible with this objective to ensure the natural values of the parks are adequately protected. Visitor use in the Conservation Parks of Lower Eyre Peninsula is relatively low; most visitor use in the region's parks is directed to Coffin Bay and Lincoln National Parks, and Memory Cove Wilderness Protection Area. Of the Conservation Parks of Lower Eyre Peninsula, Moody Tank and Sleaford Mere Conservation Parks receive the most visitor use. No commercial tours are operated within the parks included in this management plan.

8.1 Visitor Use and Access

Visitors will be encouraged to use the Conservation Parks of Lower Eyre Peninsula in a way that protects their values and helps to build understanding and respect for the need to protect such natural and cultural values. Recreational activities need to be environmentally sustainable and should be focussed on low-impact recreational pursuits, such as bushwalking, interpretation and education, scientific research and nature appreciation. Camping is not permitted in any of the parks included in this management plan.

Walking is the most popular activity in the Conservation Parks of Lower Eyre Peninsula, and appears to be focused at Moody Tank, Sleaford Mere and Wanilla Land Settlement Conservation Parks, and the northern parcel of Murrunatta Conservation Park. Access should be restricted to management tracks and walking trails to protect native vegetation from undue disturbance. Such restrictions will be particularly important in those parks recovering from the January 2005 bushfire event, as rehabilitating vegetation is sensitive and highly susceptible to disturbance. The fragility of the stromatolites on the shore of Sleaford Mere Conservation Park should be identified to visitors, as these ancient fossil forms of life should not be trampled.

Moody Tank Conservation Park is often used as a picnic spot by the local community. Visitors are able to traverse the granite outcrop and weave through vegetation in the northern section of the park. Visitors need to take care when walking on the outcrop as it is extremely slippery when wet. Also, the suspected presence of the nationally vulnerable Granite Mudwort (*Limosella granitica*) in the outcrop's small rock pools is such that protection from visitor impacts is essential.

All visitors entering Tucknott Scrub Conservation Park must do so via the boot-cleaning station at the southern boundary, to minimise the threat of introducing *Phytophthora* into the park (see Section 5.3 Native Vegetation).

The main walking opportunity in Kathai Conservation Park is along the vehicle track from the locked gate to the top of the hill. There are no designated walking trails within the park.

Visitor use at Lincoln Conservation Park and the southern parcel of Murrunatta Conservation Park appears to be very low. For Lincoln Conservation Park, most visitors utilise the nearby Lincoln National Park and Memory Cove Wilderness Protection Area, which provide a greater range of visitor opportunities (including vehicle access) and offer a diverse array of scenic attractions. The low visitor use at the southern parcel of Murrunatta Conservation Park is attributed to its low-lying, swampy environment, preventing access during much of the year.

While swimming at Sleaford Mere Conservation Park is not a prohibited activity, it is not very common either, since the lake is only a few feet deep and is highly saline. Sleaford Mere Conservation Park is occasionally used by school and holiday groups for canoeing. This activity will not be prohibited, however, given the significance of the wetland and the presence of stromatolites on much of the shore, canoeing and access to the Mere will need to be controlled.

The only vehicle access provided for visitors exists at Moody Tank Conservation Park, where the track leads to the tank structure and continues along the boundary of the park to the hilltop. The track can get very boggy and slippery in wet weather. To ensure the natural values of the park are not compromised, vehicle access will be restricted to as far as the tank structure, and may be prohibited during wet weather to minimise environmental damage.

While Sleaford Mere Conservation Park does not have any access tracks within the boundary of the park, visitors are able to utilise a 4WD track within Lincoln National Park that runs around most of the southern and eastern boundaries of the Mere.

Wanilla Land Settlement Conservation Park has a 'rest-spot' in its north-western corner that provides visitors with an area to park their vehicles before walking into the park. This 'rest-spot' is not within the boundaries of the park and visitors are not able to drive into the park.

Despite the lack of vehicular access for visitors, most parks included in this management plan do have some access for management vehicles. Tucknott Scrub Conservation Park has a management track that runs through the centre of the park. While this will be utilised in the short term to clean up numerous old dump sites, it will not be maintained as a management track, instead being allowed to regenerate with native vegetation. The management track at the northern parcel of Murrunatta Conservation Park follows the inner boundary of the park. Wanilla Conservation Park and the southern parcel of Murrunatta Conservation Park also have some internal management tracks, and access is also available along the park boundaries on adjacent private land.

Lincoln Conservation Park is dissected by an old railway corridor that runs from east to west in the northern half of the park (Portion of Allotment Piece 61 in File Plan 217422, Hundred of Lincoln). This thin strip of land is owned by SA Water, who maintains the access track within the corridor for infrastructure maintenance and as a fire access track. Under an agreement with SA Water, this access track may be utilised by DEH staff for park management purposes. DEH also has vehicle access along the outer western boundary of Lincoln Conservation Park.

Objective

Provide opportunities for visitors to explore the parks in a way that does not compromise the natural and cultural values.

Strategies

- Identify the fragility and significance of the stromatolites along the shore of Sleaford Mere Conservation Park, and ensure visitors avoid them, to reduce the risk of trampling.
- Ensure visitors to Tucknott Scrub Conservation Park access the park via the boot-cleaning station to minimise the spread of *Phytophthora*.
- Permit swimming and canoeing at Sleaford Mere Conservation Park, provided these activities do not adversely impact on the park's significant natural values.
- Allow vehicle access as far as the tank structure at Moody Tank Conservation Park, and, if necessary, restrict access during wet weather to protect soils from human-induced erosion.
- Restrict vehicle access on management tracks during wet weather to protect the soils from human-induced erosion.
- Work cooperatively with regional landholders to allow continued use of outer-boundary tracks by management vehicles.

8.2 Visitor Facilities

Given the low visitor use of most parks included in this management plan, and the primary objective of biodiversity conservation, few visitor facilities currently exist and few will be established. Those facilities that may be established will be located within those parks that receive the most visitor use, being Moody Tank and Sleaford Mere Conservation Parks.

Given visitors are able to drive vehicles into Moody Tank Conservation Park, effective management of vehicular access may be required to minimise environmental impacts. DEH will monitor the visitor use at Moody Tank Conservation Park and, if necessary, may develop a simple car parking area within the park's Development Zone (see Section 4 Zoning and Figure 2).

DEH will monitor the use of Sleaford Mere Conservation Park by canoeists and their access at the southern tip of the park. If necessary to effectively manage this access point, low-key facilities may be developed, such as a ramp and/or carpark, within the park's Development Zone (see Section 4 Zoning and Figure 3).

Objective

Maintain the parks for self-reliant visitors undertaking low-key activities.

Strategies

- Manage all parks, except Moody Tank and Sleaford Mere Conservation Parks, for self-reliant, low-key visitor activities without the requirement for the development of visitor facilities.
- Monitor visitor use at Moody Tank Conservation Park and, if necessary to protect the park's natural values, establish and maintain a simple car parking area.
- Monitor access by canoeists at the southern access point of Sleaford Mere Conservation Park and, if necessary to protect the park's natural values, install and maintain low-key facilities.

9 MANAGING EXPLORATION AND MINING

Lincoln and Tucknott Scrub Conservation Parks are jointly proclaimed to provide for access for exploration and mining under the *Mining Act 1971*. The Minister for Environment and Conservation must approve the issuing of all licences and may impose licence conditions that must be carried out in relation to exploration and mining activities.

It is a requirement of an approval to carry out exploration activities under the *Mining Act 1971* that a Declaration of Environmental Factors (DEF) is submitted as part of an exploration work approval application for activities in sensitive areas. For mining activities, companies submit a Mining and Rehabilitation Program (MARP) as part of their licence application, which identifies environmental impacts and proposed management techniques.

The presence of *Phytophthora* at the southern boundary of Tucknott Scrub Conservation Park (see Section 5.3 Native Vegetation), and its suspected presence across much of the region, is such that strict conditions will be placed on any licence approved for exploration and mining activities in the parks.

The following conditions may form part of licence and activity approvals applied to exploration and extraction activities in Lincoln and Tucknott Scrub Conservation Parks, but may not be restricted to:

- all mineral exploration activities will require a DEF;
- exploration activities are to be carried out with foot access only to prevent the introduction and spread of *Phytophthora*;
- access to Tucknott Scrub Conservation Park must be made via the boot-cleaning station at the southern entrance to prevent the introduction and spread of *Phytophthora*;
- prior to being taken into the park all footwear, machinery, equipment and tools must be washed down to prevent the introduction and spread of *Phytophthora*;
- licensees are to avoid any exploratory activity that will be detrimental to local populations of flora and fauna, in particular destruction of vegetation including large trees (either dead or alive) that provide important refuges for fauna;
- exploration techniques must be utilised in a manner that minimises impacts on the natural and cultural values of the park;
- progressive rehabilitation of any disturbance associated with works will be required, with rehabilitation activities to be completed within six months of the cessation of activities;
- formal Notice of Entry, as required under section 58 of the *Mining Act 1971*, should be submitted to DEH at least 21 days prior to entry for commencement of on-ground activities;
- contact must be made with the park manager or delegate at least 10 working days prior to commencement of activities, and must be maintained throughout the work program; and
- operators must comply with additional recommendations made by DEH in relation to carrying out their activities.

Other areas of environmental sensitivity that should not receive undue disturbance may be identified for higher-level conditions in the licence or works approvals for exploration and mining activities at Lincoln and Tucknott Scrub Conservation Parks. Sensitive environments that contain high conservation value include, but are not limited to, flora and fauna of conservation significance known to exist in the area, particularly the Sugar Gum (*Eucalyptus cladocalyx*) woodland community at Tucknott Scrub Conservation Park and threatened species associated with it (eg Common Brush-tail Possum (*Trichosurus vulpecula*) and Yellow-tailed Black-Cockatoo (*Calyptorhynchus funereus xanthanotus*)).

Intensive exploration activity may only be approved in identified areas of environmental sensitivity if less intensive exploration indicates that there is a high likelihood of an economically-viable mineral deposit. Development of economic mineral deposits within Lincoln and Tucknott Scrub Conservation Parks will be subject to extensive consultation with DEH and strict controls over and above general park provisions will be required and determined on a case-by-case basis.

Objective

Ensure that exploration and mining activities at Lincoln and Tucknott Scrub Conservation Parks are undertaken in a way that minimises impacts to the parks' natural values.

Strategies

- Liaise with licensees regarding the conservation values of the parks to ensure minimisation of environmental impacts, particularly those associated with *Phytophthora*, and to ensure compliance with the objectives of this management plan.
- Monitor mineral exploration activities occurring within the parks.

10 MANAGING RESERVE TENURE

10.1 Public Utilities

Kathai Conservation Park is the only park in this management plan that contains public utilities. SA Water owns a small amount of property in the park, at the top of the hill. The property is surrounded by six-foot barbed-wire fencing and contains an aerial tower and electronic equipment that controls the region's water supply and pipelines.

Also present in Kathai Conservation Park is an ETSA powerline. Beginning at the top of the hill, this powerline runs north down the hill and out of the park. There is no easement associated with this powerline and no lease or licence is held by ETSA for such an easement.

DEH is opposed to the location of utilities on reserves except under special conditions. Protection of reserve values should be the priority and reserves should not be taken as the 'easy option' for public utility sites because they are public land and (usually) remote from residential areas. Considering the small size of the parks included in this management plan and the primarily conservation-focussed objectives, public utilities should not be installed in the parks. Alternative sites should be sought.

Objectives

Ensure the management of public utilities in Kathai Conservation Park is compatible with the conservation of park values.

Prevent the future installation of public utilities within the parks to ensure their biodiversity values are not compromised.

Strategies

- Liaise with SA Water and ETSA to ensure maintenance and use of public utilities at Kathai Conservation Park is considerate to the natural values of the park.
- Manage and respond to any proposal for the location of public utilities within or over the parks in accordance with the current DEH policy and the provisions of this management plan.

SUMMARY OF MANAGEMENT STRATEGIES

ZONING
<ul style="list-style-type: none"> • Designate and adopt the management zones as described in Section 4 Zoning and depicted in Figures 2 and 3. • Ensure that the District Councils of Lower Eyre Peninsula and Tumby Bay consider re-zoning the necessary parks to Conservation Zones when the respective Development Plans are revised.
MANAGING NATURAL HERITAGE
<p>Geology, Soils and Landform</p> <ul style="list-style-type: none"> • Ensure all activities and proposed developments surrounding the granite outcrop in Moody Tank Conservation Park are compatible with the protection and conservation of this geological structure and the habitat it provides for the Granite Mudwort. • Regulate visitor and management impacts to protect the soils within the parks from unnatural erosion processes.
<p>Hydrology</p> <ul style="list-style-type: none"> • Liaise with SA Water and DWLBC regarding notification of any future establishment or re-opening of groundwater observation wells within the parks. • Ensure activities conducted in parks do not impact on the water quality of the region's creeks and catchments. • Liaise with the Eyre Peninsula NRM Board and landholders regarding the management and rehabilitation of regional surface water and groundwater resources, the need for healthy riparian vegetation, and the impact of any proposed activities on the conservation values of the parks. • Encourage and support research at Sleaford Mere Conservation Park to gain a better understanding about the dynamics of the nationally important wetland. • Maintain the swamp environment in the southern parcel of Murrunatta Conservation Park in a healthy condition to provide appropriate habitat for the Eyre Peninsula Southern Emu-wren.
<p>Native Vegetation</p> <ul style="list-style-type: none"> • Encourage and support research to confirm the presence of the Granite Mudwort at Moody Tank Conservation Park. Implement strategies to ensure its habitat is adequately protected. • Encourage and support research into the relationship between riparian vegetation and healthy wetland ecosystems at Sleaford Mere Conservation Park. Conduct and encourage the restoration and revegetation of the riparian zone. • Encourage ongoing monitoring of threatened vegetation communities and plant species, particularly in those parks affected by the January 2005 bushfire. • Investigate opportunities to add land to the State's reserve system to enhance the protection of areas that are particularly valuable for the conservation of regional biodiversity. • Confirm and monitor the presence of <i>Phytophthora</i> at the southern entrance of Tucknott Scrub and Wanilla Land Settlement Conservation Parks by undertaking regular soil tests. Implement programs to contain this pathogen and to restrict the movement of visitors and management staff through infected areas. • Maintain the boot-cleaning stations located at Tucknott Scrub and Wanilla Land Settlement Conservation Parks. • Consider the threat of <i>Phytophthora</i> and take steps to prevent the introduction and spread whenever practicable; report and investigate any new infestations. • Encourage and liaise with local councils to educate works personnel and contractors about hygienic road-grading activities in <i>Phytophthora</i>-prone areas bordering parks.

Native Fauna

- Encourage and support ongoing monitoring of threatened species, particularly those affected during the January 2005 bushfire: the Common Brush-tail Possum, Eyre Peninsula Yellow-tailed Black-Cockatoo and Eyre Peninsula Southern Emu-wren.
- Encourage and support research into the genetic diversity of the Common Brush-tail Possum to determine whether translocation is a feasible option to replenish the Eyre Peninsula population.
- Monitor the Koala population and its impact on native vegetation in and around Lincoln Conservation Park, and implement management strategies if necessary.
- Support the management of kangaroo populations on properties surrounding the parks as part of the statewide Kangaroo Management Program.
- Encourage and support habitat protection and revegetation projects for the Eyre Peninsula Yellow-tailed Black-Cockatoo.
- Investigate the development of a vegetation corridor linking the two parcels of Murrunatta Conservation Park to facilitate the dispersal of the Eyre Peninsula Southern Emu-wren. If feasible, develop and implement strategies to achieve this.
- Encourage and support research to develop a greater understanding of the distribution and abundance of reptiles and amphibians on Eyre Peninsula, particularly those of conservation significance.

Introduced Plants

- Continue to control, and eradicate where possible, pest plants within the parks, focusing on identified priorities.
- Monitor populations of threatening introduced plant species, particularly African Boxthorn, Olive and Bridal Veil, and prevent their introduction and spread in the parks.
- Liaise with managers of the Radiata Pine plantation adjacent Lincoln Conservation Park regarding appropriate management of the plantation to prevent introduction of the species into the park.
- Continue to liaise with the SA Police Force to eradicate Marijuana crops from the parks and to remove any infrastructure associated with them.
- Liaise with SA Water regarding the presence of olives on its land adjacent Lincoln Conservation Park and the threats these pose to the park's natural values.
- Work cooperatively with the Eyre Peninsula NRM Board and Lower Eyre Pest Management Group to implement regional weed control programs that address identified priorities for reserve weed control.

Introduced Animals

- Continue to implement measures to control pest animals within the parks, focusing on identified priorities.
- Work cooperatively with the Eyre Peninsula NRM Board and Friends of Southern Eyre Peninsula Parks to monitor rabbit warrens for occupation, and manage accordingly.
- Work cooperatively with the Eyre Peninsula NRM Board to implement regional pest animal control programs that address identified priorities pest animal control within reserves.
- Undertake feral bee control as required.
- Encourage and support research to develop a greater understanding of the impact that feral bees have on native plant species on lower Eyre Peninsula.

MANAGING FIRE
<ul style="list-style-type: none"> • Develop, implement and review fire management plans in association with CFS and other stakeholders. • Respond to bushfires as soon as practicable, taking account of weather conditions, access and off-park assets, to minimise the risk of life and property while still maintaining and conserving biodiversity values. • Implement strict hygiene procedures for fire fighting crews entering the parks during bushfires and prescribed burns, to minimise the threat of introducing and spreading <i>Phytophthora</i> in the parks. • Continue to work with the relevant District Bushfire Prevention Committee and CFS to minimise risk to life and property within and surrounding the parks.
MANAGING CULTURAL HERITAGE
<p>Indigenous Heritage</p> <ul style="list-style-type: none"> • Consult with the traditional owners in decisions regarding the management of Aboriginal cultural heritage and before proceeding with significant development works within the parks. • Identify and protect any Aboriginal sites, objects and remains in cooperation with the traditional owners, AARD and relevant authorities. • In consultation with the traditional owners, encourage research into cultural sites and stories that relate to the parks for inclusion on the AARD Central Archive.
<p>Non-Indigenous Heritage</p> <ul style="list-style-type: none"> • In cooperation with relevant authorities, protect sites of historical significance located in the parks. • In cooperation with relevant authorities, encourage research into historic sites and stories that relate to the parks, and record these to the appropriate standard. • If deemed appropriate, replace the two information signs at Moody Tank Conservation Park with one containing more comprehensive information about the history and significance of the tank structure. • Undertake a formal risk assessment of the tank structure at Moody Tank Conservation Park and carry out conservation works necessary to minimise public risk, taking account of the historic value of the site. • Conserve the historic tank structure at Moody Tank Conservation Park in sympathy with heritage principles, taking into account public risk issues, and the surrounding natural and built environments. • Discuss and carefully consider proposals for the future management and use of the tank structure at Moody Tank Conservation Park by third parties.
MANAGING TOURISM AND RECREATION
<p>Visitor Use and Access</p> <ul style="list-style-type: none"> • Identify the fragility and significance of the stromatolites along the shore of Sleaford Mere Conservation Park, and ensure visitors avoid them, to reduce the risk of trampling. • Ensure visitors to Tucknott Scrub Conservation Park access the park via the boot-cleaning station to minimise the spread of <i>Phytophthora</i>. • Permit swimming and canoeing at Sleaford Mere Conservation Park, provided these activities do not adversely impact on the park's significant natural values. • Allow vehicle access as far as the tank structure at Moody Tank Conservation Park, and, if necessary, restrict access during wet weather to protect soils from human-induced erosion. • Restrict vehicle access on management tracks during wet weather to protect the soils from human-induced erosion. • Work cooperatively with regional landholders to allow continued use of outer-boundary tracks by management vehicles.

Visitor Facilities

- Manage all parks, except Moody Tank and Sleaford Mere Conservation Parks, for self-reliant, low-key visitor activities without the requirement for the development of visitor facilities.
- Monitor visitor use at Moody Tank Conservation Park and, if necessary to protect the park's natural values, establish and maintain a simple car parking area.
- Monitor access by canoeists at the southern access point of Sleaford Mere Conservation Park and, if necessary to protect the park's natural values, install and maintain low-key facilities.

MANAGING EXPLORATION AND MINING

- Liaise with licensees regarding the conservation values of the parks to ensure minimisation of environmental impacts, particularly those associated with *Phytophthora*, and to ensure compliance with the objectives of this management plan.
- Monitor mineral exploration activities occurring within the parks.

MANAGING RESERVE TENURE**Public Utilities**

- Liaise with SA Water and ETSA to ensure maintenance and use of public utilities at Kathai Conservation Park is considerate to the natural values of the park.
- Manage and respond to any proposal for the location of public utilities within or over the parks in accordance with the current DEH policy and the provisions of this management plan.

REFERENCES AND BIBLIOGRAPHY

- ABC (Australian Broadcasting Corporation) (2005) *The Navigators: Naturalists – William Westall*. Retrieved 4 November 2005 from http://www.abc.net.au/navigators/naturalists/westall_print.htm.
- Anderson, G (2005) Review of South Australian Wetlands for 'A Directory of Important Wetlands in Australia'. Department for Environment and Heritage, Adelaide.
- Animal and Plant Control Commission of South Australia (2002) *Weed Identification Notes – Aleppo Pine*. Government of South Australia. Retrieved on 16 October 2006 from http://www.dwlbc.sa.gov.au/biodiversity/pests/weeds/plant_id.html.
- Bird, PL (1997) A review of the ecology of the Common Brush-tail Possum *Trichosurus vulpecula* in South-eastern Australia. pp 4-9. In *The Common Brush-tail Possum in South Australia: Seminar Proceedings, Adelaide, South Australia, May 29, 1996*. (Eds. JB Paton, PJ Alexander, PL Bird, FD Piva, RW Inns, DW Kelly and RF Storr), The Fauna Management Coordinating Committee, Adelaide.
- Bonney, N (undated) *What Seed is That?: A Field Guide to the Identification, Collection and Germination of Native Seed in South Australia*. Finsbury Press Pty Ltd.
- Carpenter, GA (unpublished) *Native Habitats of Terrestrial Birds on Eyre Peninsula – Draft*. South Australia.
- CRC for Australian Weed Management (2004) *Weeds of National Significance, Weed Management Guide: Bridal Creeper – Asparagus asparagoides*. CRC for Australian Weed Management and the Commonwealth Department of the Environment and Heritage.
- Copley, P (1991) Feral and domestic cats in South Australia. In: *The Impact of Cats on Native Wildlife* (Ed. C Potter). Australian National Parks and Wildlife Service, Canberra.
- Day, PR, Das, P and Clarke, K (2005) *Eyre Peninsula Catchment Water Management Plan – Draft*. Eyre Peninsula Catchment Water Management Board, Openbook Print, Adelaide.
- DEH (Department for Environment and Heritage) (2002a) *Biodiversity Plan for Eyre Peninsula*. DEH, South Australia.
- DEH (Department for Environment and Heritage) (2002b) *The Macropod Conservation and Management Plan for South Australia: Conservation and Management of Common Kangaroos*. DEH, South Australia.
- DEH (Department for Environment and Heritage) (2004) *Lincoln National Park Management Plan*. DEH, South Australia.
- DEH (Department for Environment and Heritage) (2005) *The Fire Response and Future Conservation of Biodiversity in the Lower Eyre Peninsula Bushfire Area*. DEH, South Australia.
- DEH (Department for Environment and Heritage) (2006) *Distribution and Status of Brush-tail Possums on the Lower Eyre Peninsula after the January 2005 Bushfire*. Unpublished report produced by Ecological Associates for the Department for Environment and Heritage, Port Lincoln.
- Dickman, CR (1996) *Overview of the Impact of Feral Cats on Australian Native Fauna*. Report to Australian Native Conservation Agency.
- DWLBC (Department of Water, Land and Biodiversity Conservation) (2005) *Fact Sheet 3: Groundwater Resources on Eyre Peninsula*. Retrieved on 17 October 2005 from http://www.dwlbc.sa.gov.au/files/fs3_groundwater_resources_ep.pdf.
- DWR (Department for Water Resources) (2001) *Understanding the Southern Basins Prescribed Wells Area – Draft Document*. Department for Water Resources, South Australia.
- Environment Australia (1999a) *Threat Abatement Plan for Competition and Land Degradation by Feral Rabbits*. Biodiversity Group Environment Australia.
- Environment Australia (1999b) *Threat Abatement Plan for Predation by Feral Cats*. Biodiversity Group Environment Australia.
- Environment Australia (1999c) *Threat Abatement Plan for Predation by the European Red Fox*. Biodiversity Group Environment Australia.

- Environment Australia (2001) *Threat Abatement Plan for Dieback Caused by the Root-rot Fungus Phytophthora cinnamomi*. Retrieved November 2006 from <http://www.ea.gov.au/biodiversity/threatened/tap/phytophthora>.
- EPNRM (Eyre Peninsula Natural Resource Management) (2005) Letter to Hon. Mike Rann MP RE: *Controlled Burn Initiatives at Kathai and Kellidie Bay Conservation Parks, Eyre Peninsula*. 29 March, 2005. Unpublished.
- ERDB (Eyre Regional Development Board, Inc.) (2005) *Soil Types*. Retrieved on 17 October 2005 from <http://tcsn.inetd.com.au/~erdb/index.html>.
- Freebairn, A and Pobke, K (2006) *Draft Recovery Plan for 25 Plant Taxa on Eyre Peninsula, South Australia*. Department for Environment and Heritage, South Australia.
- Jones, E (1989) Felidae. In: *Fauna of Australia, Volume 1B Mammalia* (Eds DW Walton and B Richardson). Australian Government Publishing Service, Canberra, pp 1006-1011.
- Knife, P (2006) *Peninsula Pioneer: A History of the Railways of Eyre Peninsula and their Role in Settlement and Development of the Region*. Peter Knife, SA.
- Lloyd, L and Balla, S (1986) *Wetlands and Water Resources of South Australia: Appendix 1 – Part 3: South Australian Gulf Drainage Division*. Department of Environment and Planning, Conservation Projects Branch, South Australia.
- Martin, R and Handasyde, C (1999) *The Koala: Natural History, Conservation and Management* (2nd Edition). University of New South Wales Press Inc, New South Wales.
- National Parks and Wildlife SA (1999) *Part 1: Lincoln National Draft Management Plan and Part 2: Report to the Minister for Environment and Heritage on areas of southern Eyre Peninsula recommended for protection under the Wilderness Protection Act 1992*. National Parks and Wildlife SA, South Australia.
- NDSP (National Dryland Salinity Program) (2005) *Dryland Salinity Management on Eyre Peninsula – Fact Sheet*. Retrieved on 11 November 2005 from <http://www.ndsp.gov.au/>.
- Parker, AJ, Fanning, CM and Flint, RB (1985). Geology. In *Natural History of Eyre Peninsula* (Eds. CR Twindale, MJ Tyler and M Davies). Royal Society of South Australia, Adelaide.
- Parsons, WT and Cuthbertson, EG (1992) *Noxious Weeds of Australia*. Inkata Press, Melbourne.
- Paton, JB, Alexander, PJ, Bird, PL, Piva, FD, Inns, RW, Kelly, DK and Storr, RF (Eds.) (1997) *The Common Brushtail Possum in South Australia: Seminar Proceedings, Adelaide, South Australia, May 29, 1996*. Fauna Management Coordinating Committee, Adelaide.
- Pickett, M (2002) *Status Review and Action Plan for the Eyre Peninsula Southern Emu-wren Stipiturus malachurus parimeda*. Southern Eyre Birds Inc. and Department for Environment and Heritage, South Australia.
- Pickett, M (2004) Draft Recovery Plan for the Eyre Peninsula Southern Emu-wren *Stipiturus malachurus parimeda* 2005-2009. Unpublished draft document prepared for the Department for Environment and Heritage, South Australia.
- Pickett, M (2005a) Eyre Peninsula Southern Emu-wren 2005 Post-fire Survey. Unpublished report prepared for the Department for Environment and Heritage, South Australia.
- Pickett, M (2005b) Habitat Management Planning for the Eyre Peninsula Southern Emu-wren in the 2005 Bushfire Area. Unpublished report prepared for the Department for Environment and Heritage, South Australia.
- Price, P and Lovett, S (2002a) *Managing Riparian Land*. Fact Sheet 1. Land and Water Australia, Canberra.
- Price, P and Lovett, S (2002b) *Streambank Stability*. Fact Sheet 2. Land and Water Australia, Canberra.
- Rixon, S, Kotz, S and Thomas, D (2002) *A River Management Plan for the Tod Catchment*. Environmental Protection Agency, Adelaide.
- SA Water (2006) *Water Storage (Reservoirs): Tod River*. Retrieved on 17 October 2005 from <http://www.sawater.com.au/SAWater/Education/OurWaterSystems/Water+Storage+%28Reservoirs%29.htm>.

- Sandell, PR and Start, AN (1999) Rabbit Calicivirus Disease Program Report 4: Implications for Biodiversity in Australia. A report of research conducted by participants of the Rabbit Calicivirus Disease Monitoring and Surveillance Program and Epidemiology Program, Prepared for the RCD Management Group. Bureau of Statistics, Canberra.
- Saunders, G, Coman, B, Kinnear, J and Braysher, M (1995) *Managing Vertebrate Pests: Foxes*. Australian Government Publishing Service, Canberra.
- Tindale, NB (1974) *Aboriginal Tribes of Australia*. ANU Press, Canberra.
<http://www.samuseum.sa.gov.au/tindale/HDMS/tindaletribes/peramangk/html>.
- Van Rensburg, PJ and Bester, MN (1988) The effect of cat (*Felis catus*) predation on three breeding Procellariidae species on Marion Island. *South African Journal of Zoology* **23**: 301-305.
- Velzeboer, R, Stubbs, W, West, A and Bond, A (2005) *Threatened Plant Species at Risk from Phytophthora in South Australia*. Report. Department for Environment and Heritage, South Australia.
- Way, S (2006) *Strategic Management of Aleppo Pines on Lower Eyre Peninsula to Maximise Biodiversity Conservation Outcomes*. Unpublished report for the Department for Environment and Heritage, South Australia.
- Weeds Australia (2006) *Weeds Australia – An Australian Weeds Committee National Initiative*. Retrieved on 7 February 2006 from www.weeds.org.au.
- Williams, WD (1985) Salt Lakes. pp. 119-126. In *Natural History of Eyre Peninsula* (Eds. CR Twindale, MJ Tyler and M Davies). Royal Society of South Australia, Adelaide.
- Wilson, G, Dexter, N, O'Brien, P and Bomford, M (1992) *Pest Animals in Australia: a Survey of Introduced Wild Mammals*. Kangaroo Press, Sydney.

APPENDIX A: RECORDED FLORA SPECIES OF CONSERVATION SIGNIFICANCE%

Scientific Name	Common Name				Conservation Status#				Species Presence%						
	AUS	SA	EP						Lincoln CP	Moody Tank CP	Murrunatta CP	Sleaford Mere CP	Tucknott Scrub CP	Wanilla CP	Wanilla LS CP
<i>Acacia dodonaeifolia</i>		R	R						*						
<i>Acacia havilandii</i>			R							*					
<i>Acacia imbricata</i>	V	R	R						*				*		
<i>Acacia pinguiifolia</i>	E	E	E						*						
<i>Asplenium trichomanes</i>		R	R									*			
<i>Banksia marginata</i>			R							*					
<i>Banksia ornata</i>			R							*					
<i>Caladenia brumalis</i>	V	V	V												
<i>Daviesia asperula</i> ssp. <i>obliqua</i>			U									*			
<i>Drosera</i> sp. <i>rigid</i>		V	V							*					
<i>Grevillea halmaturina</i> ssp. <i>laevis</i>		R								*					
<i>Levenhookia stipitata</i>		R	R							*				*	
<i>Limosella granitica</i>	V	V	V												
<i>Prasophyllum fecundum</i>		R	R												
<i>Prostanthera calycina</i>	V	V	V						*						
<i>Pteris tremula</i>		R	E									*			
<i>Ptilotus beckerianus</i>	V	V	E							*			*		*
<i>Pultenaea trichophylla</i>	V	R	R								*		*		
<i>Schoenus sculptus</i>		R	R								*				
<i>Sphaerolobium minus</i>		R	K											*	
<i>Spyridium spathulatum</i>		R	R												
<i>Thelymitra epipactoides</i>	E	E	E												
<i>Thelymitra flexuosa</i>		R	K												
<i>Wurmbea decumbens</i>		R	R												*

% This is only a representative sample of the species of conservation significance recorded within the Conservation Parks of Lower Eyre Peninsula

See Appendix C for Conservation Status Codes ∞ CP = Conservation Park; LS = Land Settlement

APPENDIX B: RECORDED FAUNA SPECIES OF CONSERVATION SIGNIFICANCE%

Scientific Name	Common Name				Species Presence [∞]							
	AUS	SA	EP		Kathai CP	Lincoln CP	Moody Tank CP	Murrunatta CP	Sleaford Mere CP	Tucknott Scrub CP	Wanilla CP	Wanilla LS CP
Mammals												
<i>Phascogale carolinensis</i>						*						
<i>Trichosurus vulpecula</i>	R	R	E							*		
Birds												
<i>Biziura lobata</i>		R	U						*			
<i>Chrysocolaptes lucidus</i>		R	R		*							
<i>Drymodes brunneopygia</i>			U		*						*	
<i>Gerygone fusca</i>		R	V						*		*	*
<i>Glossopsitta concinna</i>			R									*
<i>Haematopus longirostris</i>			U						*			
<i>Larus pacificus</i>			U						*			
<i>Lichenostomus cratitius</i>			U		*						*	
<i>Malurus pulcherrimus</i>			U					*			*	
<i>Phaps elegans</i>			U		*			*				
<i>Phylidonyis melanops</i>			U					*	*		*	
<i>Stagonopleura guttata</i>		V	V					*	*		*	*
<i>Stepera versicolor intermedia</i>			U					*		*	*	*
<i>Sterna nereis</i>		V	V						*			
<i>Thinornis rubricollis</i>		V	V						*			
<i>Trichoglossus haematodus</i>			U								*	*
<i>Turnix varia</i>		V	V		*			*			*	*
Reptiles												
<i>Bassiana trilineata</i>		R						*				

% This is only a representative sample of the species of conservation significance recorded within the Conservation Parks of Lower Eyre Peninsula

See Appendix C for Conservation Status Codes

∞ CP = Conservation Park; LS = Land Settlement

^ The Koala is not indigenous to Eyre Peninsula

APPENDIX C: CONSERVATION STATUS CODES

Australian Conservation Status Codes

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

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

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

South Australian Conservation Status Codes

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

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

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

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

Regional Status Codes

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

Birds

Regional conservation status for birds follow:

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

The regions are defined as follows:

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

Plants

Regional conservation ratings for plants follow:

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

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

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

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

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

In order of decreasing conservation significance:

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