Department for Environment and Heritage

Management Plan

Witjira National Park

2009

Government of South Australia

This plan of management was adopted on 26 May 2009 and was prepared in pursuant to section 38 of the *National Parks and Wildlife Act 1972.*

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Government of South Australia

Department for Environment and Heritage

FOREWORD

Witjira National Park was proclaimed in 1985 and is located in the far north of South Australia. The park was proclaimed to protect Australia's largest array of arterial springs: the nationally significant Dalhousie Mound Springs complex. Over 768 850 hectares in size, the park also conserves relativity pristine areas of gibber and sandy country, river floodplains and floodouts. The land is of great significance for the Lower Southern Arrernte and Wangkangurru people and continues to be an important connection of their living culture today.

Witjira National Park was the first reserve in South Australia to have formal joint management arrangements between traditional owners and the Minister for Environment and Conservation. This has enabled local involvement in the management and development of the park, and provided expertise to conserve the area according to both traditional requirements and the *National Parks and Wildlife Act 1972*.

The management plan was prepared in collaboration with the Witjira National Park Co-management Board and sets out a series of objectives and strategies for the future management and use of the park. The co-management of the park will help to ensure that the quality of the environment is enhanced and its cultural significance to Aboriginal people continues to be recognised and protected.

The park's co-managers have worked closely together throughout the planning process, including reviewing the entire plan on a number of occasions and providing detailed advice on issues such as traditional Aboriginal hunting and gathering; and the use of Aboriginal language and terminology throughout the document.

In particular, this management plan defines a new management zone containing the unique Dalhousie Great Artesian Basin Mound Springs Complex. This zone affords greater protection for the significant cultural and natural values of the Dalhousie Springs Area. The Dalhousie Springs zone was developed in consultation with Primary Industries and Resources South Australia, the Department for Water, Land and Biodiversity Conservation, South Australian Arid Lands Natural Resources Management Board, the Aboriginal Affairs and Reconciliation Division of the Department for the Premier and Cabinet, the Witjira National Park Co-management Board and the Department for Environment and Heritage.

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

Jay Weatherill

HON JAY WEATHERILL MP

MINISTER FOR ENVIRONMENT AND CONSERVATION

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GLOSSARY

PHRASE	DESCRIPTION
Abbreviations	
AARD	Aboriginal Affairs and Reconciliation Division (Department of the Premier and Cabinet) (formerly DAARE)
DEF	Declaration of Environmental Factors
DEH	Department for Environment and Heritage
DPP	Desert Parks Pass
DPP Hotline	1800 816 078
eg	For example
et al.	And other people
EIR	Environmental Impact Report
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
GAB	Great Artesian Basin
ie	That is
ILAs	Indigenous Living Areas
ILUA	Indigenous Land Use Agreement, as established under the *Native Title Act 1993*
Irrwanyere AC	Irrwanyere Aboriginal Corporation
km	Kilometres
km^2	Square kilometres
LEB	Lake Eyre Basin
MARP	Mining and Rehabilitation Plan
m	Metres
mm	Millimetres
NES	National Environmental Significance
NHL	National Heritage List
NRM	Natural Resources Management
PIRSA	Primary Industries and Resources South Australia
RAP	Remote Area Power
SAAL NRM Board	South Australian Arid Lands Natural Resources Management Board
SEO	Statement of Environmental Objectives
2WD	Two Wheel Drive
4WD	Four Wheel Drive
Interpretations	
Adaptation	Physical changes of plants or animals to the environment
Altyerre	The Lower Southern Arrernte word for traditional lore and customs
Aquatic	Living in water
Aquatic invertebrates	Water insects, spiders, snails and other small animals without bones
Association	The ties and relationship Aboriginal people have with Witjira National Park through ***Altyerre/Tjukurpa***, through their responsibilities for the land, and through stories, song and dance
Biodiversity	Biological diversity is the variety of all life forms – the different plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part. It is not static, but constantly changing; it is increased by genetic change and evolutionary processes and reduced by processes such as habitat degeneration, population decline and extinction. The concept emphasises the interrelatedness of the biological world. It covers the terrestrial, marine and other aquatic environments.
Biogeographic	Relating to the geographical distribution of animals and plants

PHRASE	DESCRIPTION
Endemic	Only occurring in a specific place
Exploration and Mining	The activity of searching for and removing minerals and petroleum of economic value
Fossil	Ancient remnant
Invertebrates	Insects, spiders, snails and other small animals without bones
Land System	An area or group of areas throughout which there is a recurring pattern of topography, vegetation and soils
Law	A collection of rules according to which people live
Lore	The way Aboriginal people live on the land (culture) and the traditional law they live by (authority)
Minister	Minister for Environment and Conservation
Radiation	Spreading from a specific location
Speciation	Development of new species
Taxonomy	Species description
Terrestrial	Living on land
Tjukurpa	The Pitjantjatjara word for traditional lore and customs
Traditional owners	Aboriginal people who have traditional associations with Witjira National Park
Vagrant	A migratory bird found outside the normal range of its species
Witjira Co-management Board	The Witjira National Park Co-management Board, as established under section 43G of the *National Parks and Wildlife Act 1972*

1 VISION AND PRINCIPLES

When the first European settlers arrived in Central Australia the Australian continent was already occupied by Aboriginal societies, each with their own territories and characteristics. Research indicates that Lower Southern Arrernte people have occupied the land that is now Witjira National Park for more than 15,000 years.

Witjira National Park was the first national park in South Australia to have joint management between the traditional owners and the Minister for Environment and Conservation. This non-statutory arrangement was made in 1995, following years of involvement and advice from the traditional owners with regards to the management of the environment, protection of native plant and animal species, provision of recreational facilities, and protection of historic and cultural sites of significance in the park.

Witjira National Park was formally made a co-managed park under the *National Parks and Wildlife Act 1972* on 1 October 2007 through the signing of a co-management agreement between the Minister for Environment and Conservation and Irrwanyere Aboriginal Corporation.

1.1 Vision

One Park

Two Perspectives

Two Laws

The vision for Witjira National Park is a park co-managed by Irrwanyere Aboriginal Corporation and DEH to respect, promote and preserve ***Altyerre/Tjukurpa*** and culturally important places, and to conserve its natural values, particularly internationally significant mound springs.

1.2 Principles

To achieve the harmonious and effective co-management of Witjira National Park the aims and objectives of the two parties (DEH and traditional owners) will be brought together and implemented through two main principles:

Principle One: ***Respect and promote Aboriginal lore***

This means that indigenous people will be involved, and their culture and lore respected, when decisions are being made on the management and use of Witjira National Park.

Principle Two: ***Ensure the park is managed in the public interest***

This means that the park will be managed sustainably and accountably for the benefit of all people, including future generations. The public interest means the interests of both the local and the wider community.

2 PARK LOCATION AND FEATURES

Importance to Lower Southern Arrernte people

Significant natural features of the park

Tourism and Recreation

Witjira National Park is an area of 768 853 hectares (7,690 km^2) and is located in the far north of South Australia, approximately 100 kilometres north of Oodnadatta (Figure 1). The park's northern boundary abuts the Northern Territory border and its eastern boundary abuts the Simpson Desert Regional Reserve. Witjira National Park (Section 1495 Out of Hundreds (Dalhousie) was proclaimed on 21 November 1985 under the *National Parks and Wildlife Act 1972* to protect the internationally significant Dalhousie Mound Springs complex and multiple other landforms indicative of desert regions. The park was proclaimed with access for exploration and mining under the *Mining Act 1971* and *Petroleum Act 2000*.

Witjira National Park comprises undulating gibber tablelands supporting Mitchell-grass (*Astrebla* spp.) grasslands and Chenopod low open shrublands, which are dissected by shallow creek lines supporting Gidgee (*Acacia cambagei*) and Red Mulga (*A. cyperophylla*). There are large areas of saline ground with characteristic mound springs that support distinctive vegetation. Alluvial sands along the Finke River bed support Coolibah (*Eucalyptus coolibah*) woodland. Sparsely vegetated large clay pans (fringed by samphires (*Halosarcia* sp.) if salty, or Lignum (*Muehlenbeckia florulenta*) and canegrass (*Zygochloa* spp.) if fresh) are scattered throughout the park. Areas of extensive parallel sand dune and swales dominate the eastern boundary of the park in the Simpson Desert. Dunes support a combination of Sandhill Canegrass (*Z. paradoxa*) on the crests, Spinifex (*Triodia* sp.) on the lower slopes and mixed *Acacia* shrublands in the swales.

The Dalhousie Mound Springs complex is recognised as Nationally Important (Environment Australia, 2001), being one of Australia's largest array of arterial springs. The mound springs provide 'islands' of permanent wetlands of relatively fresh water in the most arid part of the continent. Indeed, the mound springs are the primary attraction for visitors to Witjira National Park, who are rewarded by breathtaking scenery and pools of deep warm water.

The park comprises three other major land systems. The Simpson Desert sandy plains and dunefields are present in the eastern part of the park and run in a north-south direction. The western and central portions of the park are dominated by gibber stony tablelands and plains, and flowing south-east from the Northern Territory is the Finke River, a braided channel that, during floods, terminates in the large interdunal floodplains in the east of the park. The variety of land systems at Witjira National Park provides for an array of vegetation communities that support an abundant diversity of wildlife, many of conservation significance.

Witjira National Park lies within an area of great significance for the Lower Southern Arrernte and Wangkangurru people, whose ***Altyerre*** (traditional lore and customs) is strongly linked with the land (***Tjukurpa*** by Pitjantjatjara speaking people). The Lower Southern Arrernte and Wangkangurru people also had relations with neighbouring Aboriginal groups through trade, ceremonies and marriage.

The strong link that Aboriginal people have with the land at Witjira National Park is reflected through ***Altyerre/Tjukurpa*** and the high number of Dreaming stories that weave throughout the park, which are associated with natural features. Different Aboriginal groups may have different Dreaming stories associated with the same location or natural feature.

Aboriginal descendents of the original occupants of Witjira National Park now live in communities and towns across Central Australia and northern South Australia: at Finke (Aputula), Santa Teresa and Alice Springs in the Northern Territory, Birdsville in Queensland, and at Oodnadatta, Marree, Coober Pedy, Port Augusta and Adelaide in South Australia. The closest Aboriginal community to the park is the Aputula community at Finke.

Witjira National Park lies within one of the most arid regions of Australia. Rainfall is extremely low, unreliable and seasonally unpredictable, averaging 150 millimetres annually. Although not common, when heavy rainfall events occur they result in extensive flooding of the Finke River. Drought, on the other hand, is a common occurrence in the region.

The major land uses in the region surrounding the park are pastoral grazing, mining and conservation. Properties to the west and south of the park are pastoral leasehold properties that produce beef cattle. To the east of Witjira National Park are the Simpson Desert Regional Reserve and Simpson Desert Conservation Park.

2.1 History of Management

Prior to proclamation the area now comprising Witjira National Park was known as Mount Dare Pastoral Lease and was grazed by domestic stock for more than 100 years. The area was originally stocked with sheep and later with cattle. Date palms were planted in some of the mound springs in 1899 and are now a threat to the ecology of the mound springs.

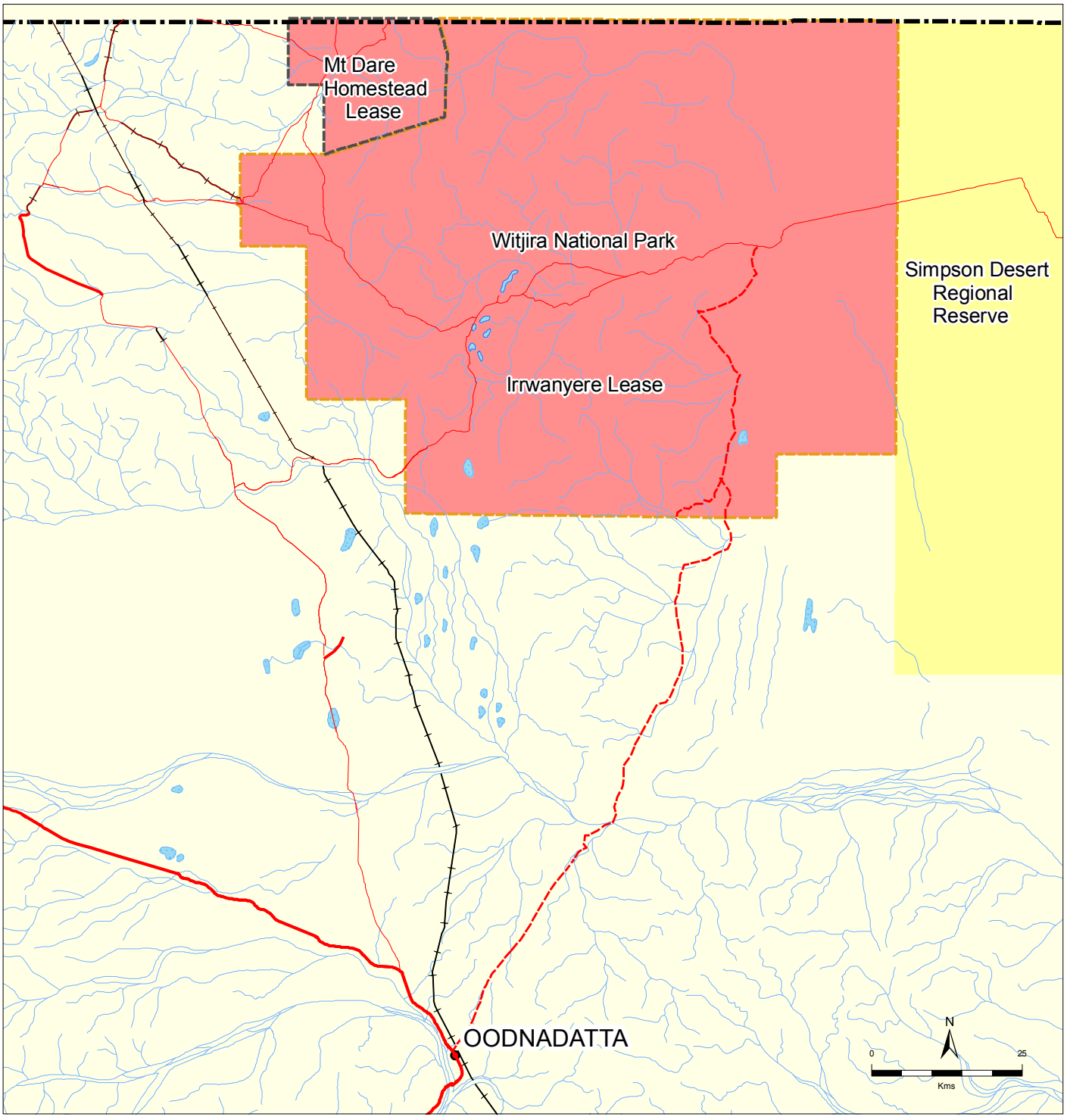
During 1986, following the park's proclamation, consultation discussions were undertaken with the Aputula community regarding the name of the park and living areas on the park. During these discussions the community suggested that some Aboriginal people be on a Board of Management for the park. The Board of Management would enable local involvement in the management and development of the park, and would provide expertise to conserve the area according to both traditional requirements and of the *National Parks and Wildlife Act 1972*.

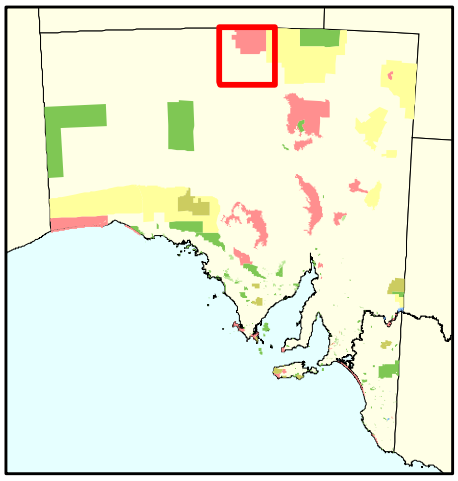
To enable discussions between the Government and the concerned Aboriginal people, Irrwanyere Aboriginal Corporation (Irrwanyere AC) was formed in 1989. Discussions between DEH and Irrwanyere AC resulted in the joint management of the park. The Irrwanyere lease was signed between the then Minister for Environment and Natural Resources and Irrwanyere AC on 5 October 1995, and the first management plan for Witjira National Park was adopted on 12 October 1995.

Since then management achievements have included:

- the appointment of the first (and subsequent) Witjira National Park Board of Management (prior to co-management);
- the leasing of the Mount Dare Homestead area for the purposes of providing services to travellers;
- approval of several Indigenous Living Areas on the park. Irrwanyere AC subsequently established homelands at two of these living areas;
- several surveys of various aspects of the flora and fauna, including the Rare Rodents Survey, Marsupial Mole Survey, Stony Deserts Biological Survey, Sandy Deserts Biological Survey, Kowari Habitat Identification and Survey, Inventory and Survey of Mound Springs with the Scientific Expedition Group, and the Australian New Zealand Scientific Exploration Society Biological Survey of the Mt Crispe Tableland and Boomika Dam area of the Finke River;
- pest plant and animal control works, including the control and monitoring of the reoccurrence of Athel Pine, control of *Acacia farnesiana* and Buffel Grass, control of feral donkeys, brumbies and camels, development of a control strategy and trial, and implementation of date palm control works;
- limiting the collection and use of firewood by defining areas where firewood may be collected, and providing small fireplaces at Dalhousie campground to limit the size of fires;
- the provision of fire suppression equipment for the protection of assets in the event of a fire;
- the control of Great Artesian Basin Bores. Flow has been stopped at all but Purni Bore where flow has been greatly reduced to conserve Great Artesian Basin water and pressure. Purni wetland has consequently reduced in size due to the reduction in flows;
- the stabilisation of the Old Dalhousie Homestead Ruins and the installation of interpretive signs;
- establishment and redevelopment of camping areas to provide better experiences for visitors and to protect the mound springs. The Dalhousie Springs campground has been extensively upgraded with new toilets, shower facilities, a shade shelter and marked walking trail installed. The Purni campground has a shower and toilet facilities and plans have been prepared to better define the camping area near the wetland. At Three O'Clock Creek a water supply, shade shelter and some screening vegetation have been established;

- construction of two ranger houses at Dalhousie Springs, so that rangers may now live on site. These houses are powered by a remote area power (RAP) system, which uses a combination of wind and solar energy with diesel backup.
- the installation of a public telephone;
- efforts to control off-road vehicle driving through the installation of barrier fencing at points of most use; and
- the establishment of an interpretive trail and signs between the Main and Kingfisher Springs in the Dalhousie Mound Springs complex.





Legend

- Irrwanyere Lease Boundary
- Mt Dare Homestead Lease Boundary
- State Border
- Major Road
- Minor Road
- Emergency Track
- Railway
- Drainage

Figure 1

Witjira National Park

Location

Produced by	Land Management Branch Department for Environment and Heritage 1 Richmond Road www.parks.sa.gov.au
Data Source	DEH Spatial Data
Compiled	20 February 2009
Projection	Lambert Conformal Conic
Datum	Geocentric Datum of Austalia, 1994

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DEH Map ID: 2008-906

3 LEGISLATIVE FRAMEWORK

3.1 National Parks and Wildlife Act 1972

Witjira National Park is a co-managed park under Division 6A of the *National Parks and Wildlife Act 1972* and subject to a co-management agreement that commenced in 2007. Management of the park is the under the control of the Witjira National Park Co-management Board. The Witjira National Park Co-management Board has been established, and the powers, roles and functions of the Board have been set out in a co-management agreement and the *National Parks and Wildlife (Witjira National Park) Regulations 2007*.

When managing Witjira National Park, the Witjira Co-management Board 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.

Under section 43E of the *National Parks and Wildlife Act 1972* the Witjira Co-management Board must also, as far as practicable:

- ensure the continued enjoyment of the park by the relevant Aboriginal groups for cultural, spiritual and traditional uses;
- ensure the continued enjoyment of the parks by members of the public in a manner consistent with the co-management agreement for the park;
- ensure the preservation and protection of Aboriginal sites, features, objects and structures of spiritual or cultural significance within the park; and
- provide protection for the natural resources, wildlife, vegetation and other features of the park.

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

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

For a co-managed park a management plan must be prepared in collaboration with the Co-management Board. Much of this management plan was prepared prior to the establishment of the co-management agreement, and was prepared in close consultation with the Witjira National Park Board of Management when the park was jointly managed by DEH and Irrwanyere Aboriginal Corporation (see Section 2.1 History of Management). Following the establishment of the co-management agreement, the management plan was agreed by, and finalised in collaboration with, the Witjira Co-management Board.

The draft plan for Witjira National Park was released for public exhibition in September 2008. At the close of the comment period, ten submissions were received, raising issues including overall positive support for the plan, greater clarification of the determination of native title rights by the Federal Court order in September 2008, management of camper trailers and off-road caravans, different views on the design of camping areas, and the process for private aircraft wishing to use the Dalhousie airstrip. All comments and concerns were considered by the Witjira Co-management Board and forwarded to the South Australian National Parks and Wildlife Council for advice before the plan was presented to the Minister for adoption.

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

3.2 Native Title Act 1993 and Indigenous Land Use Agreement

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. Federal legislation, in the form of the *Native Title Act 1993*, was enacted to:

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

In September 2008 the Federal Court of Australia determined native title exists over the claimant area which included Witjira National Park. Determination of native title is the recognition by Australian law that the determined claimants have right to use, occupy and enjoy the claimant area in accordance with the claimants traditional lore and customs.

An Indigenous Land Use Agreement (ILUA) for Witjira National Park has been established under the *Native Title Act 1993* between the Attorney-General, the Minister for Environment and Conservation, traditional owners (Lower Southern Arrernte and Wangkangurru people) and the Irrwanyere Aboriginal Corporation. This ILUA has been entered into to agree how traditional rights held by traditional owners may be exercised within Witjira National Park.

This management plan is released and will be adopted subject to any native title rights and interests that may continue to exist in relation to the land and/or waters. Before undertaking any acts that might affect native title, the Witjira Co-management Board and DEH will follow the relevant provisions of the ILUA.

3.3 Environment Protection and Biodiversity Conservation Act 1999

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), actions that have, or are likely to have, a significant impact on a matter of National Environmental Significance (NES) require approval from the Australian Government Minister for the Environment, Heritage and the Arts. The Minister will decide whether assessment and approval is required under the EPBC Act.

Actions that are likely to have a significant impact on matters of NES are subject to the referral, assessment and approval provisions of Chapters 2 to 4 of the EPBC Act. A significant impact is an impact which is important, notable or of consequence, having regards to its context or intensity. Whether or not an action is likely to have a significant impact depends on the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts.

Places on the National Heritage List (NHL) are a matter of NES. The list is a register of places with exceptional natural and/or cultural values that are deemed to be of outstanding heritage significance to the Australian nation. The Great Artesian Basin Springs: Witjira-Dalhousie place was included on the NHL in 2009. The National Heritage values of this Great Artesian Basin Springs

place are detailed in Appendix 4. The boundaries of the Witjira-Dalhousie Springs NHL place are the same as the Dalhousie Zone (Figure 4).

The provisions of this management plan for Dalhousie Springs are consistent with the National Heritage management principles (Appendix 5) for protecting their national heritage values.

4 PARK MANAGEMENT FRAMEWORK

Co-management of Witjira National Park

The rules and structures for decision-making and management of Witjira National Park

The management of Witjira as a National Park is enhanced by sharing skills and knowledge between indigenous and non-indigenous people. The plan incorporates indigenous knowledge of the land and natural resources, and makes provision for living areas, commercial enterprise development and subsistence use practices inside the park.

Communication is important. To successfully manage the park the Witjira Co-management Board, lessees and DEH rangers must communicate freely and work closely together. They must also understand each other's roles and responsibilities.

4.1 Park Management Roles and Responsibilities

A large portion of Witjira National Park is leased to Irrwanyere AC, under a 99-year lease agreement. The Mount Dare Homestead Area is separately leased and managed (see Figures 1 and 2). The co-management agreement is subject to the Mount Dare Homestead Lease.

This management plan applies to all of Witjira National Park, being both the Irrwanyere AC and Mount Dare Homestead lease areas.

Witjira National Park Co-management Board

The Witjira National Park Co-management Board is established by regulation under the *National Parks and Wildlife Act 1972*. The board consists of seven members comprised of: four Lower Southern Arrernte and Wangkangurru people (nominated by Irrwanyere AC), two members from DEH (nominated by the Minister) and one other member (nominated by the Minister).

The role of the Witjira Co-management Board is to undertake co-management of Witjira National Park, subject to the terms of the Mount Dare Homestead Lease.

The Witjira Co-management Board makes decisions on behalf of the Minister and the indigenous people with traditional association to the area. As part of the co-management agreement the Witjira Co-management Board has agreed to delegate some of its powers to the Director, which at this time include:

- the issue of permits for scientific research subject to the Director complying with policies and procedures (if any) developed by the Witjira Co-management Board in consultation with the Director;
- the issue of Commercial Tourism Operator licences which do not apply solely to the park or permit the explanation or interpretation of Aboriginal culture within the park; and
- the setting of fees for park entry and use.

The Witjira Co-management Board must report to the Minister for Environment and Conservation.

If the co-management agreement (and subsequently the Witjira Co-management Board) is terminated, the Minister and Director will assume all functions and powers of the Board, and the joint management arrangements under the 1995 plan of management will revive, as detailed in the co-management agreement.

Department for Environment and Heritage

DEH is responsible for the management of parks under the *National Parks and Wildlife Act 1972*, and in the case of co-managed parks DEH maintains a role as part of the Witjira Co-management Board. DEH staff and rangers are the operational managers; they are the people who do the day-to-day work at Witjira National Park such as the provision of advice to visitors, maintenance of infrastructure and visitor facilities, and implementation of biodiversity and cultural conservation programs. The day-to-day management of the park must be consistent with this plan of management, the *National Parks and Wildlife Act 1972*, the co-management agreement and ILUA, and the approved annual works program and budget allocation.

The District Ranger is responsible for the supervision and management of DEH employees on the park, and for implementing decisions of the Witjira Co-management Board, including the approved annual works program.

DEH also administers the Mount Dare Homestead Lease on behalf of the Minister. The Mount Dare Homestead lessees are responsible for management of the Mount Dare Homestead leased area in accordance with the Lease Agreement (see Section 4.2 Leases and Licences).

4.2 Leases and Licences

Irrwanyere Lease

In 1995 the Minister for Environment and Conservation granted the Irrwanyere Aboriginal Corporation a 99-year lease over Witjira National Park, excluding the Mount Dare lease area. Irrwanyere AC is the representative body for indigenous people who have traditional associations with the area. The Irrwanyere Lease provides for members of Irrwanyere AC to live on, use and manage the park. It includes the establishment of homelands and the conduct of enterprises in accordance with the 1995 plan of management and subject to other leases. The Irrwanyere AC lease was the first in South Australia to create management arrangements in a National Parks and Wildlife Act reserve.

The establishment of the co-management agreement and ILUA at Witjira National Park has resulted in the Irrwanyere Lease being amended to reflect these arrangements. The co-management agreement and ILUA confirm that members of Irrwanyere AC may live on, use and manage the park.

The Regional Conservator, Outback, is responsible, on behalf of the Minister for the Environment and Conservation, for all administrative functions and monitoring for compliance associated with the Irrwanyere Lease.

Mount Dare Homestead Lease

The Mount Dare homestead Lease is in the north-west corner of the park. The former Mount Dare homestead and outbuildings, and the 'Homestead' and 'Bullock' paddocks of approximately 38,000 hectares (380 km^2) were leased in 1989 to operate and maintain a tourist facility with accommodation and camping facilities, food, fuel and licensed premises, subject to the plan of management.

The Regional Conservator, Outback, is responsible, on behalf of the Minister for Environment and Conservation, for all administrative functions and monitoring for compliance associated with the Homestead lease.

The lessees have some exclusive rights including:

- the operation of tours based on or originating from Mount Dare (but not including Aboriginal Cultural tours); and
- the provision of facilities similar to those operating at Mount Dare (excepting camping facilities).

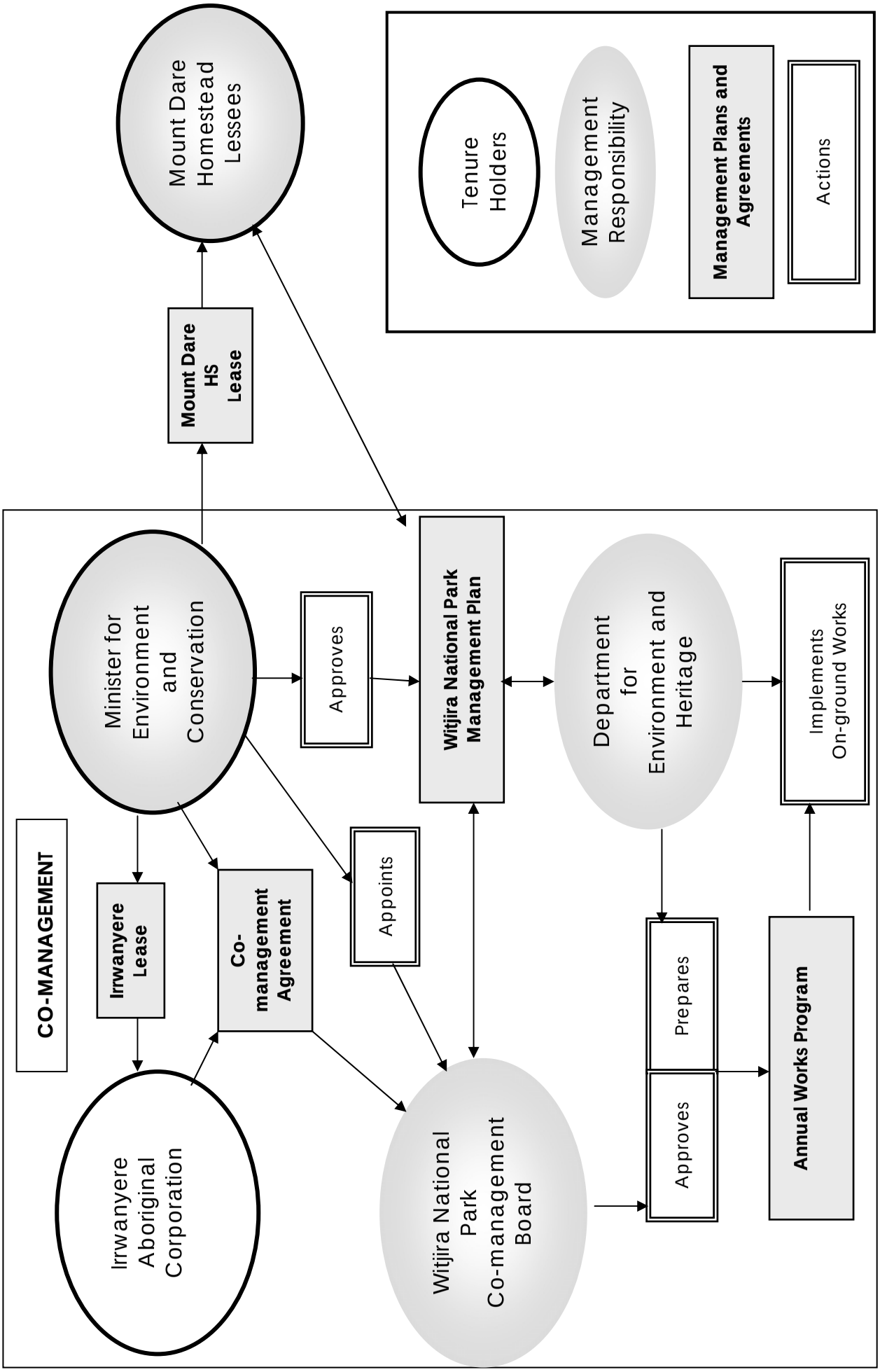
WHAT WE WANT – OBJECTIVE

Irrwanyere Aboriginal Corporation and Mount Dare Leases are managed consistent with the objectives of this management plan.

HOW WE WILL DO IT – STRATEGY

- Ensure the lessees comply with the established lease conditions.

Figure 2: Management Structures, Roles and Responsibilities



5 CO-MANAGEMENT THEMES FOR WITJIRA NATIONAL PARK

Witjira National Park is to be managed for the indigenous people of the area consistently with the objectives of the *National Parks and Wildlife Act 1972*. This is reflected in the vision for the park, which recognises it is one park with two perspectives and two laws.

The co-management themes for the park bring these two perspectives together, as can be seen in Figure 3.

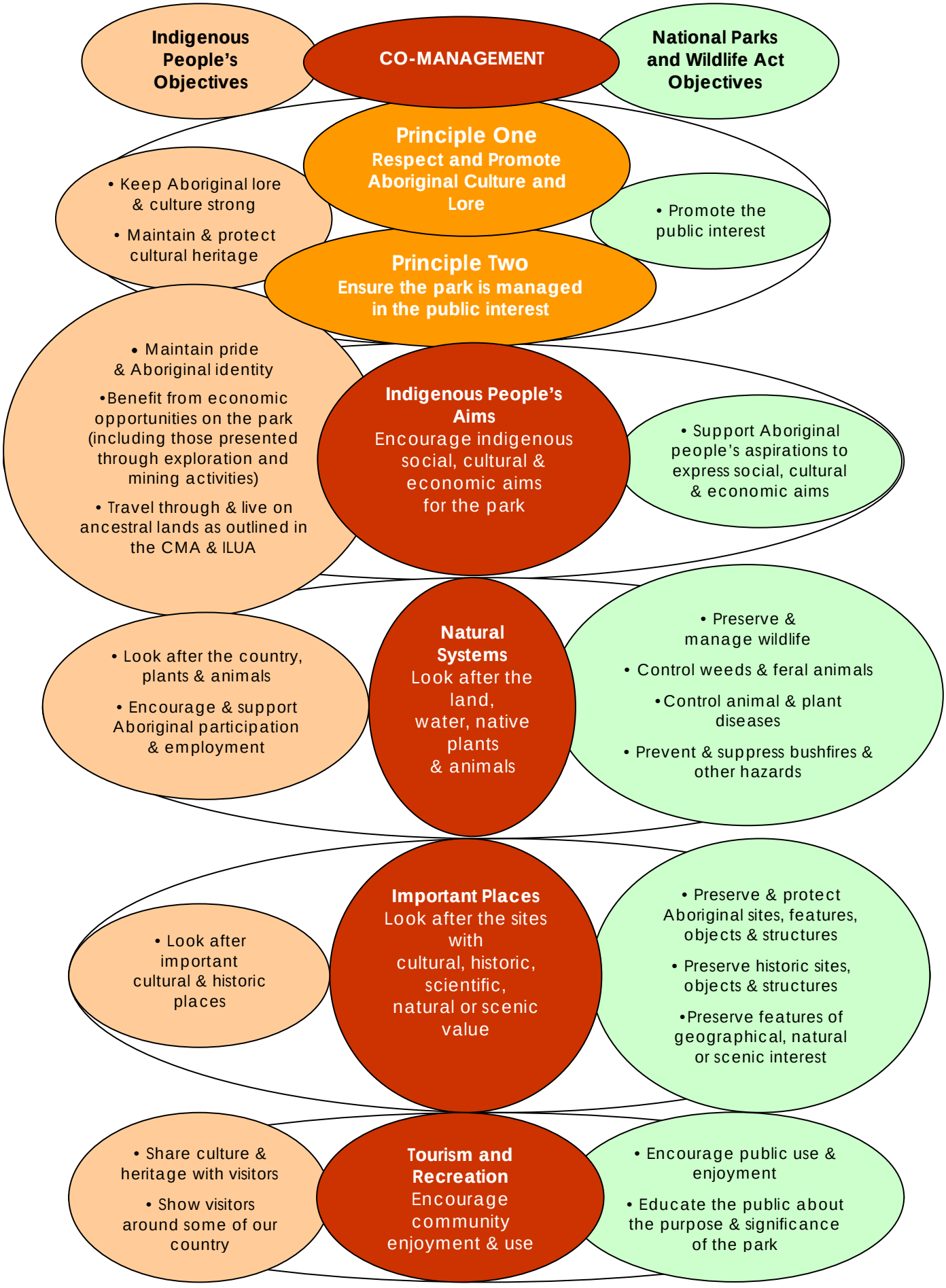
These co-management themes guide the consideration of all the issues covered in this management plan. Once the co-managers have agreed on the objectives for Witjira National Park then it is possible for the Witjira Co-management Board and DEH rangers to develop action plans and projects so that they can get on with the job.

There are four main co-management themes for Witjira National Park:

- **Indigenous People's Aims** – Encourage the expression of social, cultural and economic aims by indigenous people at Witjira National Park.
- **Managing Natural Systems** – Look after the land, water, native plants and animals.
- **Managing Important Places** – Look after sites with cultural, historic, scientific, natural or scenic value.
- **Managing Tourism and Recreation** – Encourage community enjoyment and use.

These themes bring together indigenous people's objectives for Witjira National Park, and the objectives of section 37 and objects of section 43E of the *National Parks and Wildlife Act 1972*.

Figure 3: Co-management Themes for Witjira National Park



6 INDIGENOUS PEOPLE'S AIMS

Encourage the expression of
social, cultural and economic aims
by indigenous people at Witjira National Park

The expression of social, cultural and economic aims at Witjira National Park is the key objective for Irrwanyere AC. Co-management of the park has been entered into to further realise these aims.

These social, cultural and economic aims are to:

- continue to practice and maintain ***Altyerre/Tjukurpa*** – Aboriginal lore and traditional customs;
- live on the park, closely associated with the land;
- be able to continue resource-use practices; and
- develop enterprise and employment opportunities on the park.

6.1 Continue and Maintain *Altyerre/Tjukurpa* – Aboriginal Lore and Customs

Altyerre is the Lower Southern Arrernte and Wangkangurru word for traditional lore and customs. ***Tjukupra*** is the Pitjantjatjara word for traditional lore and customs (different Aboriginal groups have different interpretations of traditional lore and customs). ***Altyerre/Tjukurpa*** and its relationship to the land are the foundations of indigenous culture. There are different parts of ***Altyerre/Tjukurpa*** for men and women, and for younger, older and initiated people. Elders pass on ***Altyerre/Tjukurpa*** through 'Dreaming' stories, songs and dances, lore, initiation ceremonies and art. The lore defines the way people live with the land and provides rules people live by, just as in 'white fella' law.

Access throughout Witjira National Park is particularly important to strengthen ***Altyerre/Tjukurpa*** and pass ***Altyerre/Tjukurpa*** on to the young people. To ensure activities in the park are consistent with ***Altyerre/Tjukurpa***, a system is required to check projects and plans with indigenous people who have knowledge of the right ***Altyerre/Tjukurpa***. This checking process is the job of the indigenous people on the Witjira Co-management Board. Certain elders hold some ***Altyerre/Tjukurpa*** knowledge. Hence, there also needs to be a process during Witjira Co-management Board meetings by which other indigenous people can comment on, or appeal, projects or plans if they have additional knowledge or if they think a mistake has been made.

Clause 29 of the ILUA defines acts or activities that are considered to be Notifiable Acts. Such acts and activities must be addressed and managed by following the Notification Protocol in Schedule 3 of the ILUA. Following the Notification Protocol will ensure ***Altyerre*** is protected.

WHAT WE WANT – OBJECTIVE

Consider ***Altyerre/Tjukurpa*** in all decisions and activities of the Witjira Co-management Board, Minister and DEH.

HOW WE WILL DO IT – STRATEGIES

- Develop a protocol for protecting ***Altyerre/Tjukurpa*** in decision-making processes for managing the park.
- Develop a protocol at Witjira Co-management Board meetings by which indigenous people can comment on, and appeal, Witjira Co-management Board decisions that conflict with their knowledge of ***Altyerre/Tjukurpa***.
- Ensure the Notification Protocol in Schedule 3 of the ILUA is followed for any acts and activities that are Notifiable Acts, to ensure ***Altyerre/Tjukurpa*** is protected.
- Ensure the Witjira Co-management Board respects any decisions on Native Title.
- Provide Aboriginal people with cultural access throughout the park, ensuring permission is granted from the lessee when accessing the Mount Dare Homestead Zone.
- In accordance with the co-management agreement, allow the Witjira Co-management Board to approve the temporary closure of parts of the park for Aboriginal people to hold private ceremonies. Ensure notification of such closures is provided well in advance to minimise inconvenience to visitors.

6.2 Share our Culture with Visitors

It is important that non-Aboriginal people understand, appreciate and respect why ***Altyerre/Tjukurpa*** and the land is important to Aboriginal people. Witjira National Park provides an excellent opportunity for people to learn about Aboriginal culture and customs, 'Dreaming' stories and other associations indigenous people have with the land. Visitors to Witjira National Park should be educated through the provision of interpretive walks and informative signage in the park. Cultural awareness information should also be provided in published information and interpretive materials like the Desert Parks Pass (see Section 11.2 Access). There is opportunity in the future for Irrwanyere AC to develop a Culture Centre within the Public Access Zone. DEH supports the aspirations of Irrwanyere AC to do so, and encourages it to seek external funding for such a development.

It must be stressed that, while it is important that non-indigenous people gain an understanding and appreciation of the connection indigenous people have with the land, protection of this land is necessary for indigenous people to maintain these connections. Hence, visitors should respect the sensitivity of the land and its connections by adopting a 'minimal impact' approach when visiting the park.

WHAT WE WANT – OBJECTIVE

Ensure visitors understand, appreciate and respect the importance of Witjira National Park to Aboriginal people.

HOW WE WILL DO IT – STRATEGIES

- Educate visitors about the importance of Witjira National Park for Aboriginal people through the provision of interpretive information, and the delivery of relevant and appropriate cultural tourism.
- Enable the development of a Culture Centre by Irrwanyere AC within the Public Access Zone consistent with the objectives of this management plan.

6.3 Living on the Park – Homelands

Aboriginal culture and ***Altyerre/Tjukurpa*** is strongly linked to the land. For Aboriginal people to successfully maintain ***Altyerre/Tjukurpa*** and their culture they need to live on the land associated with ***Altyerre/Tjukurpa***.

The Irrwanyere lease, co-management agreement and ILUA permit members of Irrwanyere AC to set up living areas or 'homelands', enabling indigenous people to live on Witjira National Park.

There are currently two Indigenous Living Areas established in the park: Oasis Bore and Anniversary Bore. Additional living areas may be developed at other locations within the Conservation Zone subject to the conditions in the lease of Witjira National Park to Irrwanyere AC, and subject to the approval of the Witjira Co-management Board and the Minister for Environment and Conservation. Should additional Indigenous Living Areas be developed they are likely to be in the western part of the park near Federal Ruin. Each living area would only accommodate a few houses.

The Irrwanyere Lease, co-management agreement and ILUA include conditions that must be met by Irrwanyere AC when establishing homelands. It is the responsibility of the Witjira Co-management Board to ensure that any proposed homeland development:

- has building approval from the Development Assessment Commission;
- complies with the *Development Act 1993*;
- complies with lease conditions for planning, occupation and use of the park;
- provides adequate access to essential services (eg maintenance, transport and health services);
- has telephone/HF radio installed;
- has been surveyed for clearance of sites;
- has adequate power and water provided;
- has approved effluent and rubbish disposal systems;
- has a dedicated garden area of no more than 0.5 hectares; and
- is approved by the Minister for Environment and Conservation.

The homelands are private homes located outside the Public Access Zone. Should new roads be established to access homelands, the Witjira Co-management Board may consider and approve applications for such developments. Access to the homelands by the public is by invitation only and is generally not permitted. DEH employees are authorised to access homeland areas to conduct DEH business.

Given the remoteness of these homelands and the need, therefore, for self-sufficiency, the agreement (being the Irrwanyere lease) enabling the establishment of homelands includes conditions for establishing gardens and keeping pets. It is the responsibility of the Witjira Co-management Board to approve the keeping of pets and garden plants at homelands. The following conditions must be considered by the Witjira Co-management Board and agreed upon by homeland occupants:

- dogs and horses will be permitted subject to approval from the Witjira Co-management Board;
- cats, goats and livestock (ie sheep and cows) will not be permitted;
- camels will only be permitted if they are an approved part of a tourism enterprise (see Section 6.5 Tourism Enterprises);
- applications for an area of land for grazing horses or camels must be submitted to the Witjira Co-management Board for consideration and approval;
- monitoring grazing impacts will follow pastoral lease agreements and inspection methods;
- the Witjira Co-management Board may de-stock grazing areas if impacts on the natural values of the park are found to be unacceptable;
- domestic plants must be contained within dedicated gardens and pots. Applications to develop and maintain a garden of domestic plants must provide information about how the plants will be watered and how the spread of domestic plants as environmental weeds will be prevented;
- invasive domestic plants will not be permitted;
- the Witjira Co-management Board will work with Irrwanyere AC to encourage water-efficient and minimum-impact gardening at homelands; and
- Irrwanyere AC must provide an annual report to the Witjira Co-management Board, which identifies issues that need to be resolved within the following 12 months.

WHAT WE WANT – OBJECTIVE

Enable indigenous people to live at Witjira National Park, on homelands set aside for that purpose, in a manner that minimises impacts to the natural values of the park.

HOW WE WILL DO IT – STRATEGIES

- Permit the establishment of homeland living areas in the Conservation Zone only.
- Ensure the Witjira Co-management Board assesses all proposed homeland developments against the conditions of the Irrwanyere lease agreement, the *Development Act 1993* and the conditions outlined in this management plan.
- Permit the Witjira Co-management Board to approve new access roads to homelands, where necessary and appropriate.
- Ensure the privacy of homeland residents is respected by limiting public access to invitation only.
- Ensure the Witjira Co-management Board assesses the keeping of pets and the establishment of domestic gardens against the conditions outlined in this management plan.

6.4 Indigenous Resource Use

Indigenous resource-use practices include the collection of plants, animals and minerals for food, craft and ceremonial activities. The continuation of these resource-use practices and methodologies is important to maintain indigenous culture and to share indigenous knowledge. New technology such as vehicles, rifles and power tools have made resource collection easier, and new materials may be used instead of old for some purposes.

Indigenous resource-use practices will be permitted in the Conservation Zone and Dalhousie Mound Springs Zone; they will not be permitted in the Public Access Zone given the presence of visitors in this area.

Traditional gathering practices will be permitted in both the Conservation Zone and Dalhousie Mound Springs Zone.

Traditional hunting practices will only be permitted in the Conservation Zone. A five kilometre buffer will be placed around the boundary of the Public Access Zone, where traditional hunting activities will not be permitted. This will further ensure visitor safety, particularly when rifles are in use.

It is the role of the Witjira Co-management Board to approve, monitor and manage the use of the park's natural resources by indigenous people, to ensure it is undertaken in a sustainable manner. To do this, the Witjira Co-management Board will develop a plan to guide sustainable indigenous resource-use practices for non-commercial purposes. In developing this plan, and consistent with the co-management agreement, the Witjira Co-management Board will take into account the conservation status of any species, and the impacts traditional hunting and gathering may have on those species. The plan will include a map that clearly shows the areas in which traditional hunting and gathering practices are permitted. The plan will also clearly identify those areas of the park in which vehicle access is permitted for people undertaking traditional hunting and gathering practices; vehicles will not be permitted in the five kilometre buffer zone around the Public Access Zone.

The Witjira Co-management Board will consider the advice of DEH staff and other experts when making decisions regarding traditional hunting and gathering.

The plan for sustainable indigenous resource-use practices will also address firewood collection and use by indigenous people. Fallen timber provides shelter and habitat for many ground-dwelling animals (eg small mammals and reptiles). Hence, firewood collection needs to be undertaken in a sustainable manner so it does not negatively impact the park's ground-dwelling animals.

WHAT WE WANT – OBJECTIVE

Allow Aboriginal people to use the resources of the park in a sustainable manner.

HOW WE WILL DO IT – STRATEGIES

- In consultation with Irrwanyere Aboriginal Corporation, develop and implement a plan for sustainable traditional hunting and gathering by indigenous people that:
    - encourages responsible, minimum-impact resource-use practices;
    - limits the use of resources by and for the local community (ie not commercial purposes);
    - is carried out with weapons suitable for the humane destruction of animals;
    - clearly lists which plant and animal species are permitted to be taken by traditional hunting and gathering;
    - includes a map that clearly shows the areas in which traditional hunting and gathering practices are permitted, and clearly identifies the five kilometre buffer zone around the Public Access Zone, where hunting is not permitted;
    - clearly identifies the areas in which vehicle access is permitted for people undertaking traditional hunting and gathering practices (vehicle access will not be permitted in the five kilometre buffer zone around the Public Access Zone);
    - allows for the monitoring and reporting on the impacts of resource use and collection on populations of plant and animal species taken;
    - considers recommendations made by DEH staff and other experts regarding the restriction and/or prohibition of species taken, and the location and method of collection, where necessary;
    - provides the procedures for the Witjira Co-management Board ensuring that members of the public are warned in relation to the dangers of any traditional hunting being carried out on the park; and
    - addresses firewood collection and use by indigenous people.

- Regularly review and update the plan for sustainable traditional hunting and gathering by indigenous people, taking into account the research undertaken and recommendations made regarding the impacts of these practices on the native flora and fauna.
- Ensure indigenous people undertaking traditional hunting and gathering on the park comply with the rules set by the Witjira Co-management Board.

6.5 Indigenous Tourism Enterprises

The increase in the number of visitors to the region provides opportunities for traditional owners of Witjira National Park to develop cultural and eco-tourism businesses.

To run tours for commercial purposes within the park it is necessary to hold a Commercial Licence, issued under section 35 of the *National Parks and Wildlife Act 1972* and consistent with regulation 37 of the *National Parks and Wildlife (National Parks) Regulations 2001*.

Consistent with the Irrwanyere lease and ILUA for the park, Lower Southern Arrernte and Wangkangurru people have the exclusive right to conduct commercial tours that relate to, or are associated with, traditional and contemporary Aboriginal use of the park, or the explanation and interpretation of Aboriginal sites and culture. Applications for such commercial tourism operations must be referred to the Witjira Co-management Board.

As part of the co-management agreement the Witjira Co-management Board has delegated, to the Director of National Parks and Wildlife, its power to issue Commercial Tourism Operator licences which do not apply solely to the park and do not permit the explanation or interpretation of Aboriginal culture within the park (see Section 11.6 Commercial Tourism).

Commercial tours that are operated by persons other than Lower Southern Arrernte or Wangkangurru people may refer to the cultural significance of the park, but otherwise may not explain or interpret the cultural heritage of the park in the absence of a Lower Southern Arrernte or Wangkangurru person employed for that purpose. Such commercial tours must originate outside the park.

When assessing commercial tourism applications the Witjira Co-management Board and/or Director must consider:

- the nature of the proposed activities, including their safety, their impacts on other users, and the impacts on the natural and cultural values of the park;
- consultation with existing lessees. Preference will be given to tour operations owned by or affiliated with the indigenous people who have traditional associations with the park; and
- commercial tour operators will be limited to the Public Access Zone.

Licence proposals most likely to be approved would be those that focus on the park's environmental and cultural values, and can demonstrate strong linkages to the tourism theme adopted for the region.

It is the role of the Director to charge a fee for all commercial tour licences on Witjira National Park. Licence fees are paid into the General Reserves Trust and are used to improve visitor services and facilities within reserves.

WHAT WE WANT – OBJECTIVE

Encourage and promote tourism enterprises that are developed and run by Aboriginal people on the park.

HOW WE WILL DO IT – STRATEGIES

- Adhere to the delegations of power regarding the issuing of commercial tour operator licences, as agreed to in the co-management agreement.
- Ensure all commercial activities on the park comply with relevant legislation relating to commercial activities and DEH policies.

6.6 Community Development and Employment

In accordance with the co-management agreement and ILUA, preference will be given to Lower Southern Arrernte and Wangkangurru people when employment opportunities arise at Witjira National Park. Park management opportunities may include programs such as weed control and feral animal control (see Section 8.7 Feral Animals). Aboriginal people will be encouraged to develop and implement training, employment and enterprise programs related to park management.

Where appropriate, the Witjira Co-management Board may approve commercial activities on-park (eg filming and tours) subject to the employment of Aboriginal people.

WHAT WE WANT – OBJECTIVE

Encourage and promote employment and training opportunities for Aboriginal people.

HOW WE WILL DO IT – STRATEGIES

- Give preference to the employment of local indigenous people in work contracts for the day-to-day management and maintenance of the park, where appropriate.
- Prior to approval of commercial activities on-park consult with the Witjira Co-management Board regarding employment of Aboriginal people in these operations, where appropriate.
- Encourage Aboriginal people to develop, secure funding for, and implement employment and training programs that relate to park management.

6.7 Protection of Aboriginal Heritage

The purpose of the *Aboriginal Heritage Act 1988* is the protection and preservation of Aboriginal sites, objects and remains. 'Aboriginal site' and 'Aboriginal object' are defined under the Act as 'an area of land or an object that is of significance according to Aboriginal tradition; or that is of significance to Aboriginal archaeology, anthropology or history'.

Currently 132 sites and places at Witjira National Park are documented in the Register of Aboriginal Sites and Objects on AARD's Central Archive. However, these do not reflect a comprehensive survey of the park and there may be other, as yet unidentified, Aboriginal sites, objects and remains in the park. To promote better cultural heritage management at Witjira National Park there needs to be further work with elders to identify and record sites of significance on the park. Most of the information recorded in the Central Archive is not available to the public, as it is culturally confidential. However, persons who can demonstrate a need may access relevant site information in consultation with the original informants at the time of site recording.

In addition to the *Aboriginal Heritage Act 1988*, to ensure the protection of Aboriginal sites, Schedule 3 of the ILUA outlines the Notification Protocol that must be followed for any acts or activities that are Notifiable Acts. Visitors to the park also need to be aware that damaging Aboriginal sites, objects or remains is an offence for which penalties apply. Visitors should be informed through interpretive and informative signs and the Desert Parks Pass (see Section 11.2 Access).

WHAT WE WANT – OBJECTIVE

Protect and preserve Aboriginal sites, features, objects and structures of spiritual or cultural significance within Witjira National Park, in accordance with the *Aboriginal Heritage Act 1988*.

HOW WE WILL DO IT – STRATEGIES

- Consult with the Witjira Co-management Board and Aboriginal elders to identify and protect any Aboriginal sites, objects and remains.
- Encourage indigenous people to nominate sites for the Register of Aboriginal Sites and Objects under the *Aboriginal Heritage Act 1988*.
- Comply with the Notification Protocol as outlined in Schedule 3 of the ILUA prior to starting any development work, to ensure Aboriginal sites are protected.
- Develop conservation plans for significant Aboriginal sites as outlined by AARD.
- Inform visitors, through park signage and the Desert Park Pass, that damaging Aboriginal sites is an offence for which penalties apply.

7 MANAGEMENT ZONES

Section 39 of the *National Parks and Wildlife Act 1972* provides for the definition of management zones. The identification of different zones within the park is a way of separating different uses of the land. This plan of management for Witjira National Park specifies rules and conditions for land use and management within each zone. Zoning aims to ensure that public use and management actions remain compatible with the protection of park values.

Four zones have been defined for Witjira and are shown in Figures 4, 5, 6 and 7:

1. Conservation Zone
2. Public Access Zone
3. Dalhousie Springs Zone
4. Mount Dare Homestead Zone (Lease)

Conservation Zone

The Conservation Zone comprises the majority of the park. Within this zone the focus of management is the conservation of natural and cultural values.

Indigenous Living Areas are an important part of the maintenance of traditional culture and of enabling the use of indigenous knowledge in the management of the park. Some Indigenous Living Areas have been identified and established in this zone, and others may be established in all but the erosion prone south-east tablelands area of this zone. The Witjira Co-management Board and the Minister must both approve the location and development of Indigenous Living Areas.

Management of the Conservation Zone:

- Management aims to protect sites of cultural and historical significance.
- Management aims to protect and enhance the species and environments of the reserve.
- Indigenous Living Areas have been established, and new Indigenous Living Areas may be established subject to Witjira Co-management Board and Ministerial approval.
- General public access is not permitted without prior approval of the Witjira Co-management Board.
- Environmental requirements associated with exploration and mining will be assessed on a case-by-case basis (refer to Section 12 Managing Exploration and Mining)
- Track proposals will be assessed against environmental and cultural criteria and require the Witjira Co-management Board's approval.

Public Access Zone

The Public Access Zone includes the areas of high visitor use within the park, being the campgrounds and accommodation areas at Dalhousie Springs, Three O'Clock Creek and Purni Bore, and a corridor extending 50 metres either side of public access roads throughout the park. This corridor is allocated for the purposes of possible future management developments and is not for general public use; visitors must keep to the designated vehicle tracks.

The Witjira Co-management Board may identify and designate additional camping sites and access routes if necessary, but the Public Access Zone may not be extended further into the Dalhousie Springs Zone. Staff housing and a workshop are located in this zone adjacent the Dalhousie Campground, where demand for visitor services is high.

Management of the Public Access Zone:

- The experience of park visitors will be a major consideration in the management of access within this zone.
- Public use roads will be maintained at a standard appropriate for 4WD travel.
- Access by 2WD vehicles and buses and towing trailers and caravans will not be encouraged through interpretative information and park design bus, trailer and caravan access may be restricted if problems for road maintenance occur.
- The use of firearms for traditional hunting purposes will not be permitted within five kilometres of the Public Access Zone boundary;
- Monitoring sites and procedures may be established to assess the impacts of visitor access and other uses on the natural and cultural values of the area particularly the mound springs

and associated wetlands. Monitoring may include track and road condition, off-road vehicle use, water quality, vegetation condition, aquatic and terrestrial wildlife, and cultural sites;

- Exploration and mining is subject to administrative and management procedures including Codes of Environmental Practice using methods to be developed and implemented by agreement between DEH, PIRSA and exploration companies.
- Prospecting and exploration activities that involve walking through, and use of hand-held recording equipment is permitted in this zone (except where the Public Access Zone coincides with the Dalhousie Springs Zone). No extractive industry will be permitted within this zone.
- Additional environmental requirements in relation to exploration and mining will be assessed on a case-by-case basis (refer to Section 12 Managing Exploration and Mining).

Dalhousie Springs Zone

The Dalhousie Springs Zone is a unique area containing the Dalhousie GAB Mound Springs complex. The area has cultural and natural features of national conservation significance and tourism interest. A precautionary approach has been adopted to determine the boundaries of this zone, being a five kilometre buffer around all known spring vents and spring tails, and a buffer around the outflow tail of the mound springs complex (see Section 12 Managing Exploration and Mining).

Management of the Dalhousie Springs Zone:

- Vehicle access is limited to the designated campground and access tracks (Public Access Zone).
- Visitors to the area will be encouraged to learn about the importance of the springs through cultural and environmental interpretive walking trails.
- All on-ground prospecting and exploration activities for both minerals and petroleum resources are prohibited in this zone.
- Airborne exploration surveys are permitted over this zone.
- All extractive industries (mining, petroleum and water) are prohibited within the Dalhousie Springs Zone.

Mount Dare Homestead Zone

The homestead, outbuildings and home paddock at Mount Dare are subject to a 30-year lease for commercial purposes, expiring 2019. The lease provides for the operation of a tourist facility that includes accommodation and camping, and food and fuel outlets.

Should the lease be determined or surrendered, the Mount Dare home paddock and improvements would revert to the responsibility of DEH. If the lease was determined, DEH would need to consider various issues such as:

- maintenance of existing infrastructure, facilities and services;
- provision of fuel, accommodation and camping facilities; and
- visitor expectations that Mount Dare is a tourist destination.

Management of the Mount Dare Homestead Zone:

The Regional Conservator, Outback is responsible, on behalf of the Minister, for all administrative functions and monitoring for compliance associated with the Mount Dare Homestead Lease.

The lessees have some exclusive rights, including the operation of tours based on or originating from Mount Dare (not including Aboriginal cultural tours), and the provision of visitor facilities (not including camping facilities).

Environmental requirements associated with exploration and mining will be assessed on a case-by-case basis (refer to Section 12 Managing Exploration and Mining).

Witjira National Park is part of the Land Not Within a Council Area Eyre, Far North, Riverland and Whyalla. A comprehensive Development Plan under the *Development Act 1993* has been prepared for that area (consolidated in 2008). The park is currently zoned as the 'Remote Area' Zone in the Development Plan. While the policy framework allows for a wide range of developments in this Zone, rezoning of the Park to Conservation would be more appropriate for land set aside as a National Park. Therefore, it is suggested that when the Development Plan is

next reviewed, DEH will encourage the inclusion of Witjira National Park within a zone that reflects its primary use, which is conservation.

WHAT WE WANT – OBJECTIVE

Zone Witjira National Park to ensure appropriate land use, landscape protection and the conservation of wildlife habitats and cultural features.

HOW WE WILL DO IT – STRATEGY

- Designate and adopt the management zones as shown in Figures 4, 5, 6 and 7, and apply the management prescriptions as outlined in this plan.

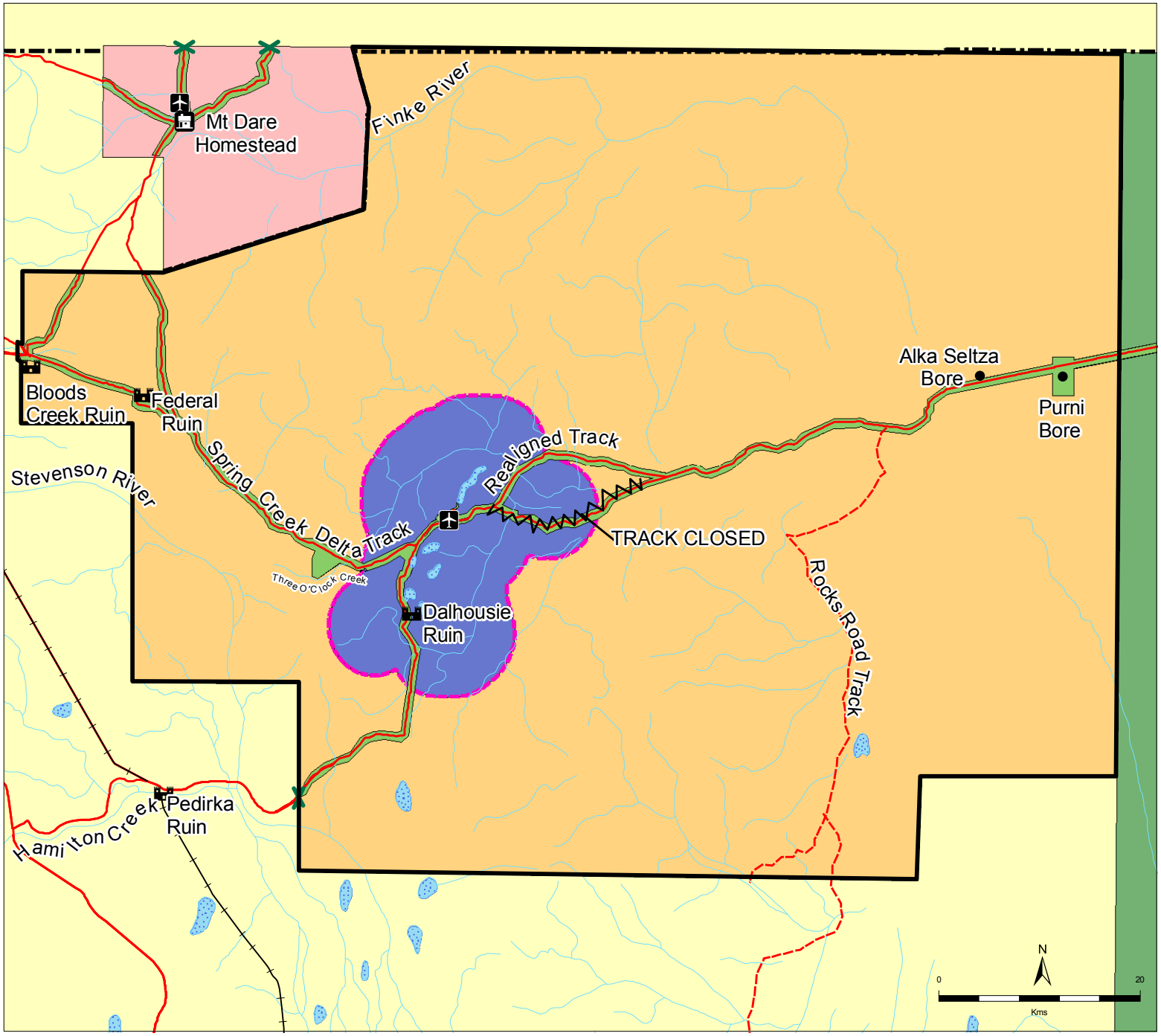


Figure 4

Witjira National Park

Features and Zoning

Legend

- Conservation Zone
- Public Access Zone
- Homestead Zone
- Dalhousie Springs Zone
- Simpson Desert Regional Reserve
- Park Boundary
- National Heritage Listing Boundary
- Lease Boundary
- Public Access Track
- Emergency Track
- Railway (abandoned)
- Drainage
- Gate
- Ruin
- Homestead
- Airstrip
- Bore

Produced by	Land Management Branch Department for Environment and Heritage 1 Richmond Road www.parks.sa.gov.au
Data Source	DEH Spatial Data
Compiled	2 December 2008
Projection	Lambert Conformal Conic
Datum	Geocentric Datum of Australia, 1994

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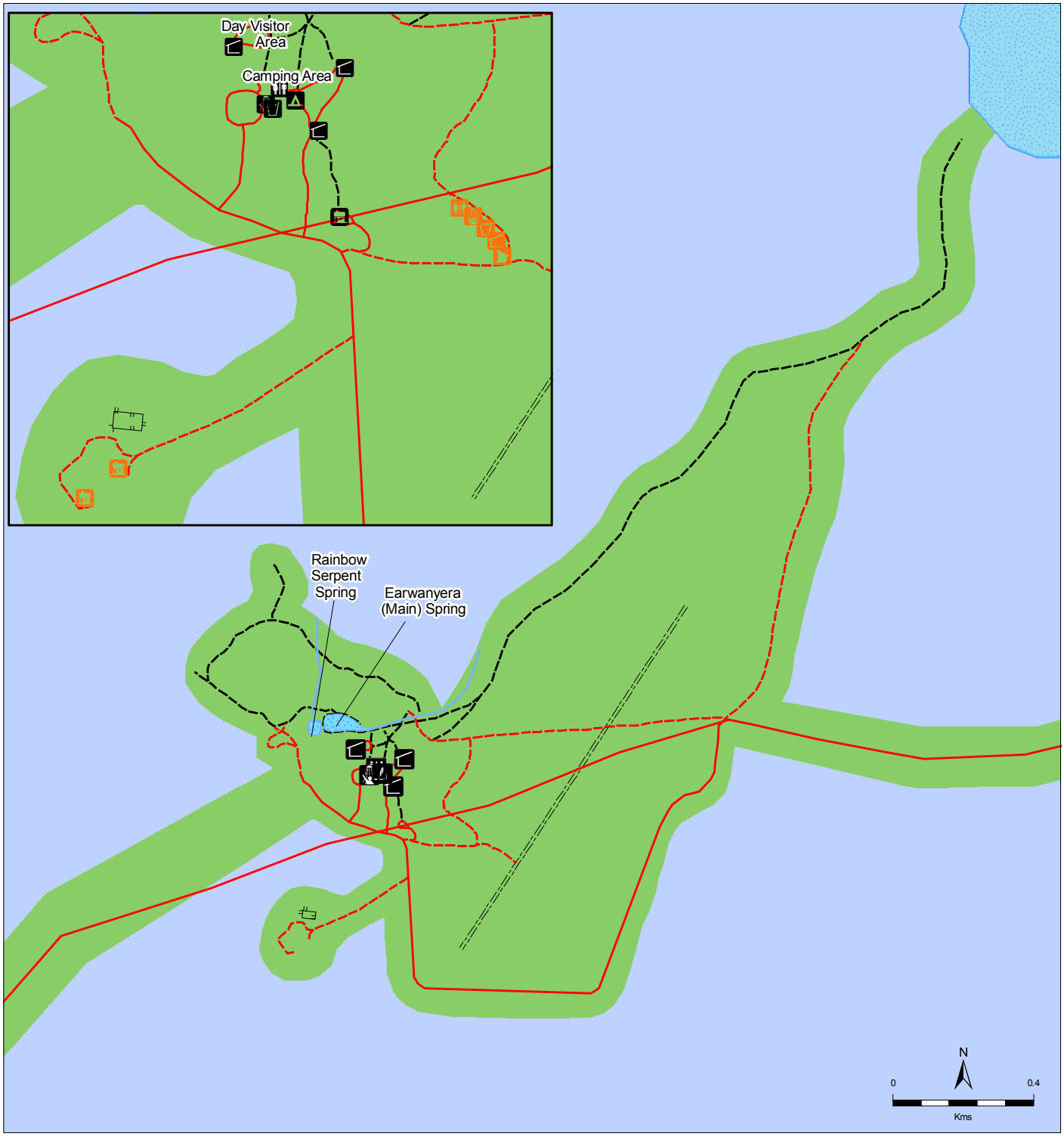

Legend

- Public Access Zone
- Dalhousie Springs Zone
- Mound Springs of Visitor Focus
- Public Access Track
- Management Track
- Walking Trail
- Remote Area Power System
- Airstrip
- Office & Information Centre
- Rainwater Tank
- Visitor camping area
- Shower
- Toilet Block
- Shade Shelter
- Staff Toilet Block
- Staff Water Tank
- Staff Shower
- Staff Shade Shelter
- Staff Housing
- Staff Workshop

Figure 5

Witjira National Park

Dalhousie Campground

Produced by	Land Management Branch Department for Environment and Heritage 1 Richmond Road www.parks.sa.gov.au
Data Source	DEH Spatial Data
Compiled	1 July 2009
Projection	Lambert Conformal Conic
Datum	Geocentric Datum of Australia, 1994

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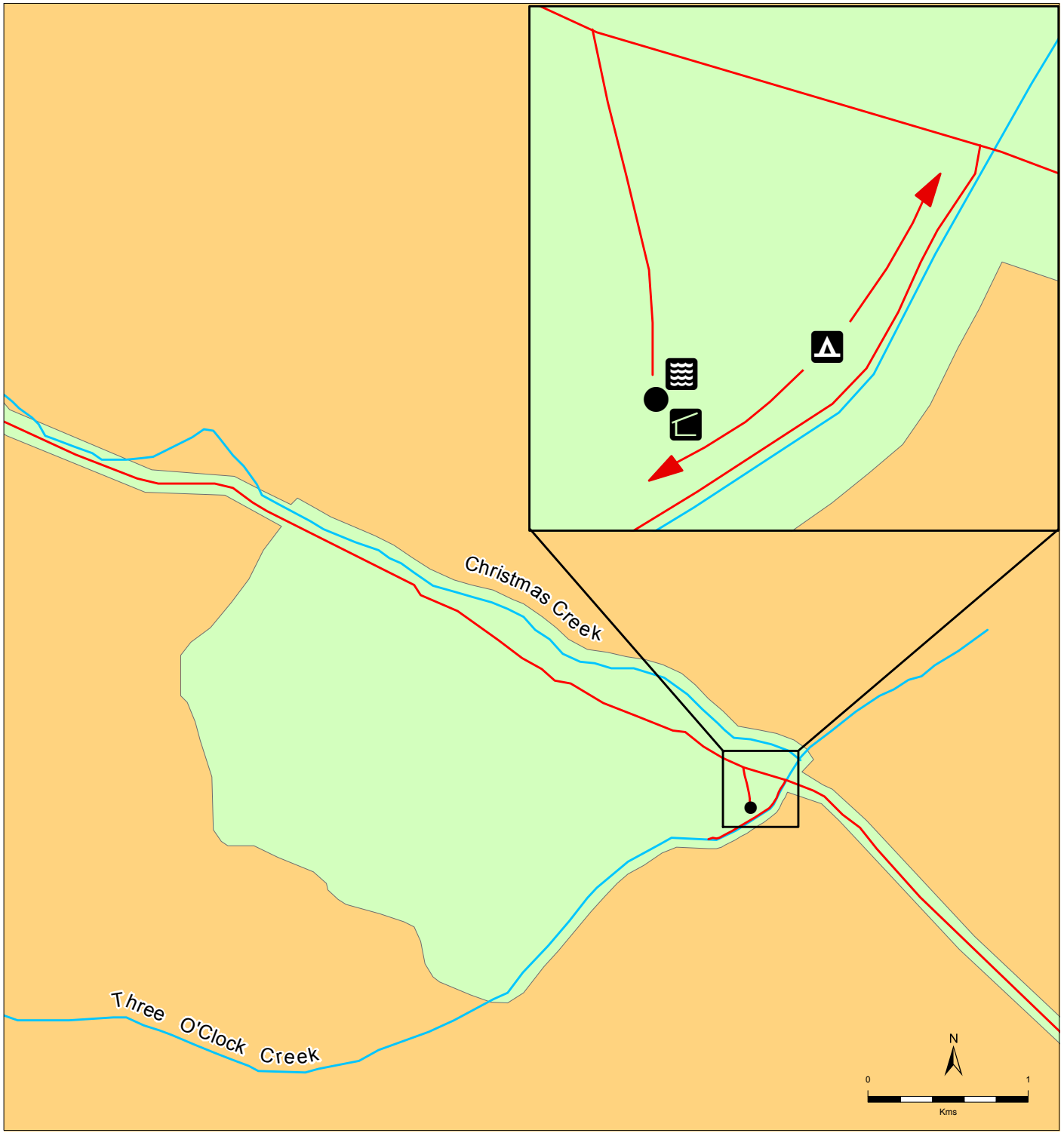

Legend

- Public Access Zone
- Conservation Zone
- Public Access Track
- Drainage
- Three O'Clock Creek Bore
- Camping Area
- Shade Shelter
- Portable Bore Water Tank

Figure 6

Witjira National Park

Three O'Clock Creek Campground

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Data Source	DEH Spatial Data
Compiled	27 November 2008
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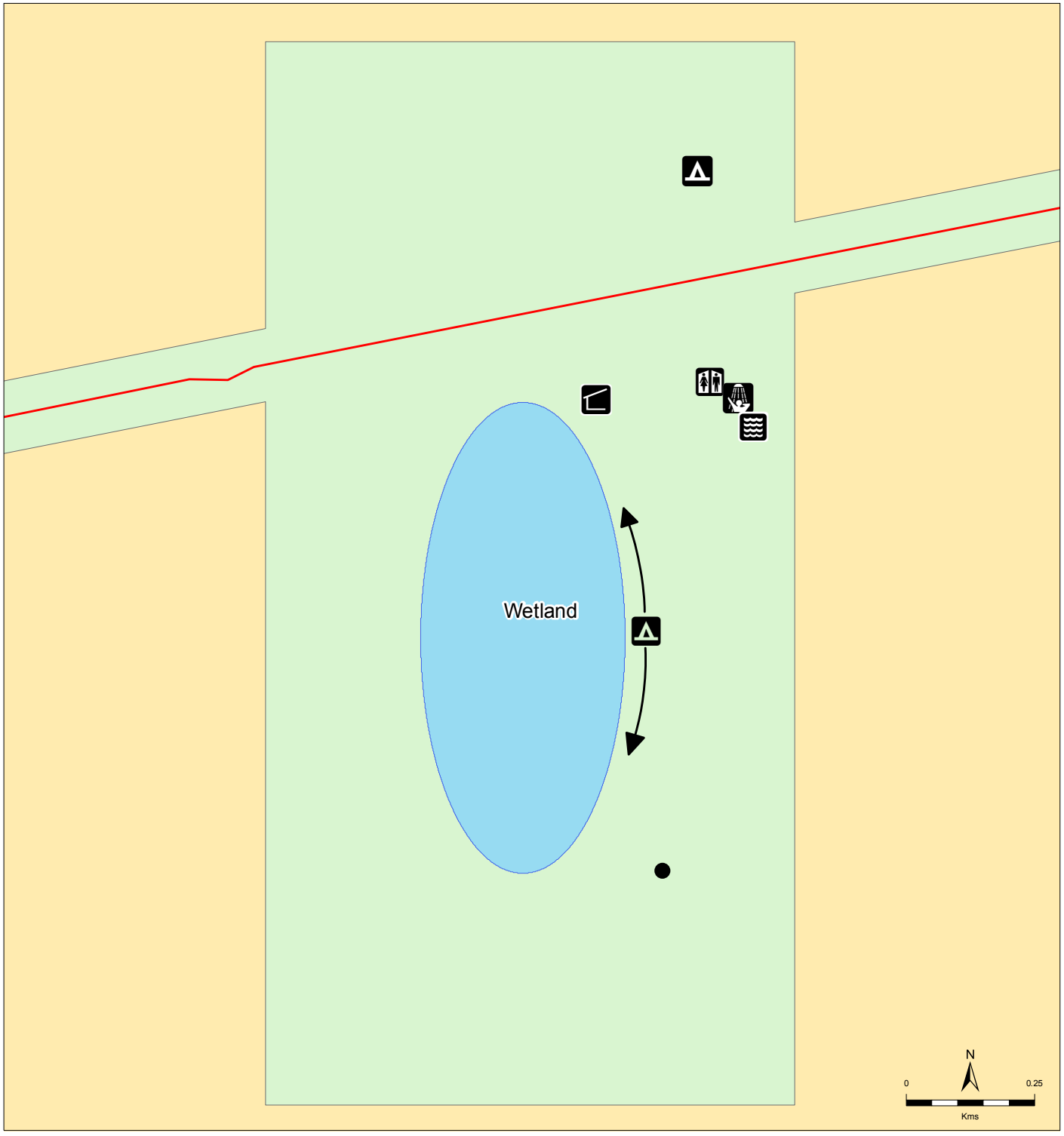
DEH MapID: 2009-1254



Legend

- Public Access Zone
- Conservation Zone
- Minor Road
- Camping Area
- Shade Shelter
- Toilet Block
- Shower
- Bore Water Tank
- Purni Bore

Figure 7

Witjira National Park

Purni Bore Campground

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Data Source	DEH Spatial Data
Compiled	22 June 2009
Projection	Lambert Conformal Conic
Datum	Geocentric Datum of Austalia, 1994

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DEH Map ID: 2008-908

8 MANAGING NATURAL HERITAGE

Look after the land, water, native plants and animals

8.1 Land Systems

There are many different landscapes in Witjira National Park, four of which are widespread:

- The Dalhousie Mound Springs;
- Gibber country – stony tablelands and plains;
- Sandy Country – sandy plains, breakaways and dunefields of the western Simpson Desert; and
- River floodplains and terminal floodouts.

For the distribution of these land systems throughout Witjira National Park see Figure 14.

Mound Springs

The Dalhousie group of mound springs includes Missionary Spring, Mount Jessie Spring, Earwanyera Spring, Warrarrinna Spring and Dalhousie Springs proper (Figure 8). The group includes more than 100 springs and mounds, about 60 of which are wet or flowing (Figure 9). The springs are natural outlets for the waters of the Great Artesian Basin (GAB). They provide 'islands' of permanent wetlands of relatively fresh water in the most arid part of the continent. The Dalhousie Mound Springs complex feeds into a large wetland of deep pools, reed lined channels and damp saline flats, which in turn drains into the Spring Creek delta (Nicholson et al., 1999). The tails of mound springs vary in length from short to several kilometres, and each tail extends and contracts seasonally. These spring tails play an important functional role in spring ecology.

At least 14 species are endemic to the Dalhousie Mound Springs complex. Most of these are invertebrates and most are found in the northern portion of the springs. The Dalhousie Mound Springs complex is also the only springs area in Australia's arid zone with a closed forest (*Melaleuca*) community.

The Dalhousie Mound Springs complex is of particular significance to Aboriginal people, as many 'Dreaming' stories are associated with, or pass through, the springs.

Mound spring soils vary from sands and clays to gypseous silts and limestone. The mound around a spring is created by erosion of the dry soil surrounding the wet soils of the spring, and by sand, silt and clay sediments and chemical deposits slowly mounding around spring vents. Active springs range from damp or seeping mounds to deep pools, one of the largest being approximately 50 metres long and 10 metres deep. The springs in the Dalhousie group discharge hot water between 30^{O}C and 46^{O}C.

Water discharge from mound springs accounts for about 20% of the total water discharge from the GAB, with the springs at Dalhousie accounting for about 10% the total discharge. Within South Australia the Dalhousie Springs may account for as much as 80-90% of spring discharge. Evaporation has an important effect on surface water availability; the effects are such that winter spring discharge is able to support an area of vegetation 3.5 times that supported in summer (Boyd, 1990).

High grazing pressures from feral and native herbivores can cause significant damage around mound springs through removal of vegetation, soil compaction and soil erosion. However, moderate levels of grazing also appear to have a function in allowing the persistence of some native species through controlling competition from more dominant mound spring plants, particularly *Phragmites*, *Baumea* and *Fimbristylis* species (NSW NPWS, 2002) (see Section 8.7 Feral Animals). The use of fire around mound springs is also thought to play an important role in controlling competitive species, and was implemented by Aboriginal people in the past. Hence, changes in fire regimes and negative impacts of grazing threaten the biodiversity of the Dalhousie Mound Springs complex.

The increased temperatures associated with climate change also threaten the biodiversity of the Dalhousie Mound Springs complex (and mound springs in general). The decreased flows in most mound spring groups, due to water extraction from the Great Artesian Basin, is such that mound springs are far more vulnerable to evaporation because of the increased temperatures associated with climate change. The water flows of some spring groups are already so reduced that the

springs dry up over summer, thus increasing the vulnerability of endemic species to extinction. This vulnerability will only heighten with climate change.

Other threats to the biodiversity of the mound springs include:

- reduced GAB pressure and perhaps flow from springs;
- the introduction of weeds, particularly the establishment of more Date Palms;
- damage and removal of vegetation;
- excavation;
- off-road vehicle use; and
- introduction of pollutants to aquatic habitats.

Communities

Since the park's proclamation the Dalhousie GAB Mound Springs complex has been recognised as a wetland of national significance by listing in the Directory of Important Wetlands in Australia (2001).

The "community of native species dependent on natural discharge of groundwater from the Great Artesian Basin" is listed as an endangered ecological community under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The GAB Springs community is listed as endangered as it has a very restricted geographic distribution and is subject to threatening processes that could cause it to be lost in the near future (see Appendix 3 for details). Hence, careful management of the cultural and natural values of these springs is of local and national importance.

A recovery and threat abatement plan is being developed for the GAB Mound Springs in consultation with relevant State authorities and the Australian Government Minister for the Environment, Heritage and the Arts. Where applicable, the Witjira Co-management Board and DEH will contribute to, and incorporate actions from, this plan into park management regimes and operational procedures.

Plants

The vegetation of the Dalhousie group of mound springs is distinct, particularly the White Tea-tree (*Melaleuca glomerata*) closed forest, which is the only closed forest community present at any mound springs within Australia's arid zone. Broughton Willows (*Acacia salicina*) are sometimes associated with White Tea-tree.

Closed reedlands of Cumbungi (*Typha domingensis*) and Common Reeds (*Phragmites australis)* are a major component of spring vegetation with sedges (*Cyperus* sp.), rushes (*Baumea* sp.), and Spike Rush (*Eleocharis* sp.) (Lange and Fatchen, 1990; Mollemans, 1989).

The white, crusty saline flats surrounding the springs contain a patchy low shrubland of Nitre Bush (*Nitraria billardierei*), samphires (*Halosarcia* sp.), Sea Heath (*Frankenia* sp.), and Native Myrtles (*Myoporum montanum*). Ephemerals occur after rain (Marla-Oodnadatta Soil Conservation District Plan, 1997; see 'Terrestrial and Semi-aquatic Plants' by FH Mollemans in Zeidler and Ponder (1989) for more information on vegetation structures in the Dalhousie Springs complex).

Three plant species recorded at Dalhousie Springs, the Marsh Pennywort (*Hydrocotyle verticillata*), Common Duckweed (*Lemna disperma*), and Nodding Club-rush (*Isolepis cernua*), represent interesting northern and central outlying populations of these species (R Brandle, Pers. comm., 2006).

Slender Knotweed (*Persicaria decipiens*), Samphire (*Halosarcia frontalis*), the State vulnerable Mound Spring Bindyi (*Sclerolaena fontinalis*), Kunai Grass (*Imperata cylindrica*), Sea Tassel (*Ruppia maritima*), Rush (*Baumea arthrophylla*), Bare Twig-rush (*B. juncea*), and Fringe Rush (*Fimbristylis sieberiana*) all have a very restricted distribution in Central Australia (Noack unpub. data, 2005). All are protected within Witjira National Park.

There are several species for which the main distributions are in temperate regions and which would not occur in the north without permanent waters. Those recorded at Witjira National Park include Common Duckweed (*Lemna disperma*), Blady Grass (*Imperata cylindrica*), Cutting Grass (*Gahnia trifida*), Bare Twig-rush, Rush, and Shield Pennywort (*Hydrocotyle verticillata*) (Lange and Fatchen, 1990; Mollemans, 1989).

Plant species of conservation significance that have been recorded within the Dalhousie Springs complex are listed in Table 1.

Animals

Two mammals have been recorded at the Dalhousie Mound Springs complex. Gile's Planigale (*Planigale gilesi*) occurs at the spring and is an interesting population in that it lives in the dense sedges amongst the Melaleuca forest, which is markedly different to usual Planigale habitat. The Long-haired Rat (*Rattus villosissimus)* is provided with refugia at the springs, from which the species can disperse when favourable seasons occur.

The wetland environments at the Dalhousie Mound Springs complex provides for a diversity of bird species. Those of conservation significance and migratory species are listed in Table 1.

Two frog species have been recorded at the springs, being the Spotted Grass-frog (*Limnodynastes tasmaniensis*) and Red Tree-frog (*Litoria rubella*).

The isolated aquatic environments of the mound springs have lead to physical changes and development of a new species in fish and other aquatic species. These springs contain rare aquatic and terrestrial plant and animal species including relict and fossil species, and endemic species that have evolved due to biogeographic isolation and radiation. Five of the six fish species recorded at Dalhousie Springs are endemic to the area. These are the Dalhousie Catfish (*Neosilurus gloveri*), Dalhousie Hardyhead (*Craterocephalus dalhousiensis*), Glover's Hardyhead (*Craterocephalus gloveri*), Dalhousie Goby (*Chlamydogobius gloveri*) and the Dalhousie Purple-spotted Gudgeon (*Mogurnda thermophila*), which is protected under the *Fisheries Management Act 2007*. The Spangled Perch (*Leiopotherapon unicolor*) has a wider distribution and is considerably larger than the endemic species (Glover, 1989). While fish species are not protected under the *National Parks and Wildlife Act 1972*, the endemic species are recognised as threatened under the Draft Action Plan for South Australian Freshwater Fishes: 2007-2012 (Hammer et al., 2007).

Little research has been conducted on the taxonomy and ecology of the invertebrates (insects) present in the Dalhousie Mound Springs complex, so their endemic, evolutionary and conservation significance is relatively unknown.

Those aquatic invertebrates that have been identified from Dalhousie Springs include two endemic species of side swimmers (*Austrochiltonia dalhousiensis* and *Phreatochilton anophthalm*ia). Two undescribed and possibly endemic species of Water Slater (order Isopoda), six species of Seed Shrimp (Order Podocopa, <2mm bivalve shell; 3-4 of which are probably endemic or relictual), and three endemic species of Hydrobiid snails have been recorded.

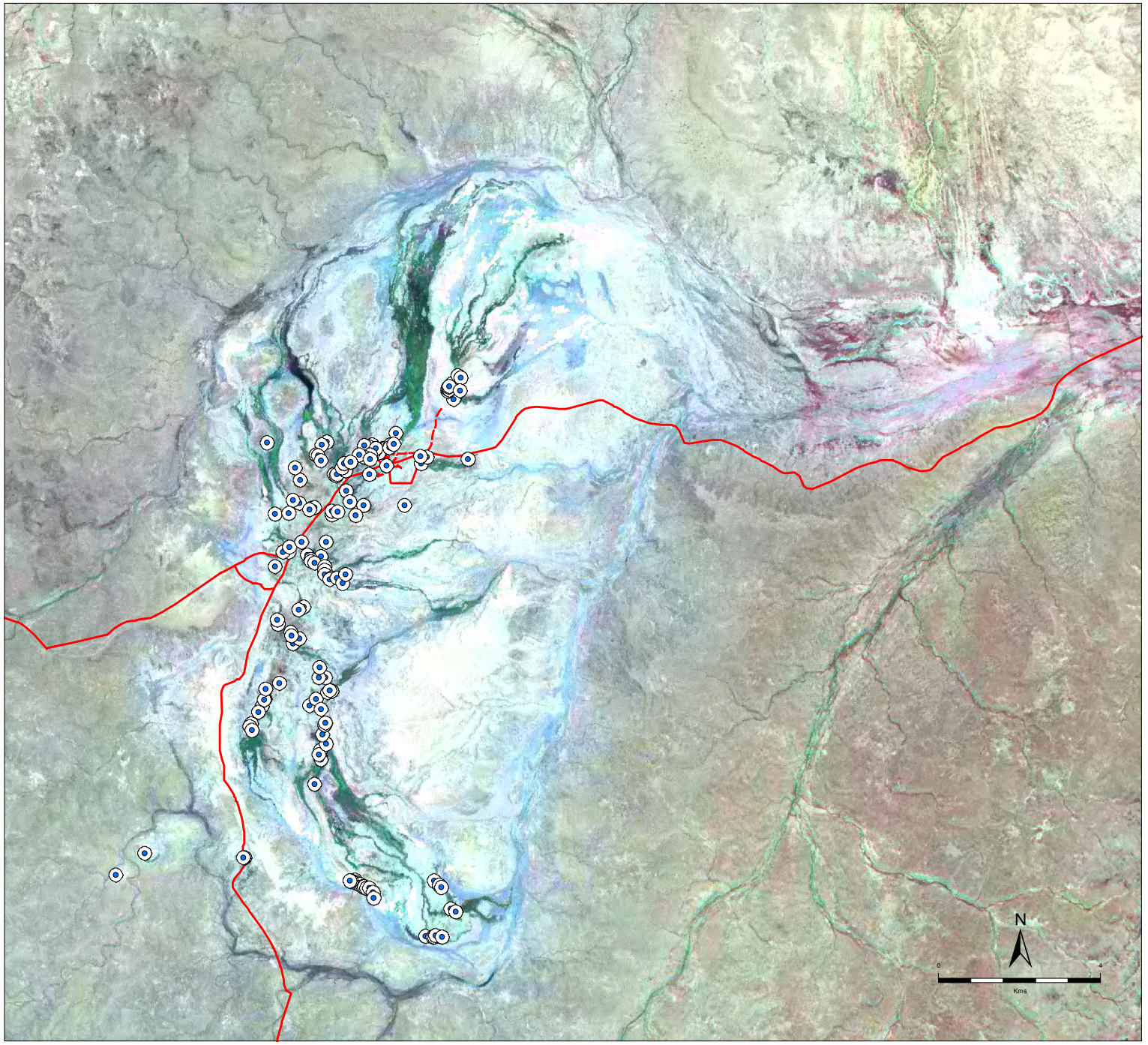
Figure 8: Aerial Photograph of the Dalhousie Mound Springs Land System (with Mount Crispe Tableland in the background)

(Photograph courtesy of Robert Brandle, DEH)

Figure 9

Witjira National Park

Satellite Image of the Dalhousie Mound Springs Complex



Legend

- Management Track
- Public Access Track
- Known Spring Vents

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Data Source	South Australian Arid Lands Natural Resource Management Board (Data collected 2005)
Compiled	2 December 2008
Projection	Lambert Conformal Conic
Datum	Geocentric Datum of Australia, 1994

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Table 1: Plant and Animal Species of Conservation Significance Recorded within the Dalhousie Mound Springs Complex at Witjira National Park.

Scientific Name	Common Name	Conservation* Status		Migratory# Species
		SA	AUS	
Plants				
Brachyscome eriogona		R		
Calocephalus sonderi	Pale Beauty-heads	R		
Cyperus bifax	Downs flat-sedge	R		
Cyperus lhotskyanus		R		
Eleocharis geniculata	Spike-rush	R		
Eremophila pentaptera		R		
Goodenia anfracta		R		
Lepidosperma avium	Remote sword-sedge	R		
Ptilotus aristatus var. *aristatus*		R		
Ptilotus aristatus var. *eichlerianus*		V		
Sclerolaena blackiana	Black's Bindyi	R		
Sclerolaena fontinalis	Mound Spring Bindyi	R		
Swainsona oligophylla		R		
Zygophyllum crassissimum	Thick Twinleaf	R		
Zygophyllum humillimum	Small-fruit Twinleaf	R		
Zygophyllum hybridum		R		
Birds				
Anas rhynchotis	Australasian Shoveler	R		
Anseranas semipalmata	Magpie Goose	E		
Ardea alba	Great Egret			JAMBA & CAMBA
Ardeotis australis	Australian Bustard	V		
Biziura lobata	Musk Duck	R		
Cacatua leadbeateri	Major Mitchell's Cockatoo	R		
Calidris acuminata	Curlew Sandpiper			JAMBA & CAMBA
Calidris ruficollis	Red-necked Stint			JAMBA & CAMBA
Falco hypoleucos	Grey Falcon	R		
Grus rubicundus	Brolga	V		
Hamirostra melanosternon	Black-breasted Buzzard	R		
Neophema splendida	Scarlet-chested Parrot	R		
Oxyura australis	Blue-billed Duck	R		
Phaps histrionica	Flock Bronzewing	R		
Plegadis falcinellus	Glossy Ibis			CAMBA
Sterna caspia	Caspian Tern			CAMBA
Tringa glareola	Wood Sandpiper			JAMBA & CAMBA
Tringa nebularia	Common Greenshank			JAMBA & CAMBA

*****See Appendix 1 for Conservation Status Codes

CAMBA: China-Australia Migratory Birds Agreement JAMBA: Japan-Australia Migratory Birds Agreement

Stony Tablelands and Plains

Most of the land in Witjira National Park (being the western and central portions) is comprised of stony tablelands and plains (Figure 10). This land system generally has a cracking clay soil that develops gilgai or crabholes and is covered by coarse stones (Purdie, 1984). The stony tablelands and plains are important to Aboriginal people whose ***Altyerre/Tjukurpa*** is closely associated with the natural features of this land system.

Growing on the gibber stone flats between gilgai are chenopod shrubs such as Bladder Saltbush (*Atriplex vesicaria*), Emu Bush (*Eremophila* sp.), and Senna (*Senna artemisioides*). In wet seasons ephemerals such as Bindyi (*Sclerolaena* spp.) and Bottle-washer (*Enneapogon* spp.) may grow but the red polished silcrete gibber stones dominate this landscape during most years. Gilgai that collect rainwater support grasses such as Barley Mitchell-grass (*Astrebla pectinata*), Neverfail (*Eragrostis setifolia*), Oodnadatta Saltbush (*Atriplex nummularia* ssp. *omissa*), and Mulga Grass (*Aristida contorta*).

Small creeklines support Gidgee (*Acacia cambagei*), Mineritchie (*A. cyperophylla*), and Mulga (*A. aneura* complex) over low shrubs and grasses. Major drainage lines are dominated by Gidgee and Coolibah (*Eucalyptus coolibah*), with River Red Gums (*E. camaldulensis*) around the most reliable waterholes. Swamps and floodouts are often dominated by shrubs such as Lignum (*Muehlenbeckia florulenta*) and Oldman Saltbush (*Atriplex nummularia* ssp. *nummularia*), with more ephemeral cover in less frequently flooded areas (Marla-Oodnadatta Soil Conservation District Plan, 1997; Purdie, 1984; Lange and Fatchen, 1990; Davey et al., 1985). Table 2 lists the plant species of conservation significance that have been recorded within the stony tablelands and plains land system.

Plants and Animals

The diversity of vegetation communities present within the stony tablelands and plains is such that numerous plant species of conservation significance are protected (Table 2). Species include the State rare Ashy-haired Swainson-pea (*Swainsona tephrotricha*), and Small-fruit Twinleaf (*Zygophyllum humillimum*).

The Plains Rat (*Pseudomys australis*) is the only mammal recorded within the stony tablelands and plains (see Table 2 for conservation status).

The diversity of vegetation communities present within the stony tablelands and plains provides habitat for a diverse list of bird species. Bird species of conservation significance are listed in Table 2.

Figure 10: Aerial Photograph of the Stony Tablelands and Plains Land System

(Photograph courtesy of Robert Brandle, DEH)

Table 2: Plant and Animal Species of Conservation Significance Recorded within the Stony Tablelands and Plains at Witjira National Park.

Scientific Name	Common Name	Conservation* Status	
		SA	AUS
Plants			
Osteocarpum acropterum var. *deminutum*	Wingless Bonefruit	R	
Ptilotus aristatus var. *eichlerianus*		V	
Swainsona tephrotricha	Ashy-haired Swainson-pea	R	
Zygophyllum humillimum	Small-fruit Twinleaf	R	
Mammals			
Pseudomys australis	Plains Rat	V	V
Birds			
Amytornis textilis modestus	Thick-billed Grasswren (eastern ssp.)		V
Falco hypoleucos	Grey Falcon	R	
Falco peregrinus	Peregrine Falcon	R	
Geophaps plumifera	Plumed (Spinifex) Pigeon	R	
Stipiturus ruficeps	Rufous-crowned Emu-wren	R	
Tyto capensis	Grass Owl	R	

*See Appendix 1 for Conservation Status Codes

Sandy Plains and Dunefields

The Simpson Desert sandy plains and dunefields occur east of the Finke floodplain (Figure 11). They are red quartz sand dunes that run in a north-west to south-east direction. Aboriginal culture is also associated with this land system, particularly with its waterholes.

The vegetation occurring on the sandy dune soil is sparse hummock grassland of Sandhill Canegrass with patches of shrubs such as Mulga (*Acacia aneura* var. *aneura*), Horse Mulga (*A. ramulosa*), Marpoo (*A. ligulata*), Silver Needlebush *(Hakea leucoptera)*, Hopbush (*Dodonaea* sp.), and Senna (*Senna artemisioides*). Bluebush Pea (*Crotalaria eremaea* ssp. *eremaea*) and Birdflower (*Crotalaria cunninghamii)* are also common on dunes. The understorey contains tall Kerosene Grass (*Aristida holathera*) and Mulga Grass (*Aristida contorta*) with Poached-egg Daisies (*Polycalymma stuartii*), Fleshy Groundsel (*Othonna gregorii*), and Everlastings (*Chrysocephalum* sp. and *Rhodanthe* sp.) abundant in good seasons.

Interdune swales have more clayey soils that support Spinifex (*Triodia* sp.) hummock grassland with Marpoo, Sandplain Wattle (*Acacia murrayana*), Emu Bush (*Eremophila* sp.), the State rare Sandhill Riceflower (*Pimelea penicillaris*), and other sparse shrubs. Ephemeral herbs, particularly daisies and everlastings (*Chrysocephalum* sp. and *Rhodanthe* sp.) are common after winter rain. Clay pans and salt lakes also occur in the swales with Samphire (*Halosarcia* sp.) occurring at their margins (Marla-Oodnadatta Soil Conservation District Plan, 1997; Purdie, 1984). Table 3 lists the plant species of conservation significance that have been recorded within the sandy plains and dunefields land system.

Plants and Animals

The sandy plains and dunefields support various plant and animal species of conservation significance, which are listed in Table 3. The Mulgara (*Dasycercus cristicauda* ssp. *cristicauda*), which is nationally endangered, was previously recorded within the park, however it currently does not occur anywhere in South Australia. The Ampurta (*D. cristicauda* ssp. *hillieri*) was once widely distributed across Central Australia, although the species now appears restricted to a small area in South Australia (Ehmann, 2005).

Figure 11: Aerial Photograph of the Sandy Plains and Dunefields Land System
(Photograph courtesy of Robert Brandle, DEH)

Table 3: Animal Species of Conservation Significance Recorded within the Sandy Plains and Dunefields at Witjira National Park.

Scientific Name	Common Name	Conservation* Status	
		SA	AUS
Mammals			
Dasycercus hillieri	Ampurta		E
Birds			
Ardeotis australis	Australian Bustard	V	
Burhinus grallarius	Bush-stone Curlew	R	
Neophema chrysostoma	Blue-winged Parrot (vagrant)	V	

*See Appendix 1 for Conservation Status Codes

River Floodplains and Terminal Floodouts

The river floodplains and terminal floodouts in Witjira National Park are associated with the Finke River, which runs along the northern boundary of the park (Figures 12 and 13). It is the largest drainage system on the western side of Lake Eyre, although it does not often flood. The Finke River has travelled hundreds of kilometres south through Central Australia to end its journey on the edge of the Simpson Desert dunefield (Nicholson et al., 1999).

Aboriginal people have strong associations with the Lower Finke through ***Altyerre/Tjukurpa***. Occupation sites have been located along many parts of the Finke River in Witjira National Park, where Aboriginal people utilised waterholes as part of their seasonal subsistence pattern and as they travelled for ceremonial business.

The surface-fed episodic wetlands associated with the Finke River are very productive ecosystems when the river floods. Native vegetation along the channels of the Finke River consists of Coolibah (*Eucalyptus coolibah*) open woodland. Other species include Whitewood (*Atalaya hemiglauca*), Broughton Willow (*Acacia salicina*) and Prickly Wattle (*A. victoriae* ssp. *victoriae*) with occasional Red Gum (*Eucalyptus camaldulensis*). The understorey is dominated by Lignum (*Muehlenbeckia florulenta*) in some areas, which is structurally important to these arid zone wetlands. Old Man Saltbush (*Atriplex nummularia* ssp. *nummularia*) dominates the understorey in other areas. Other understorey species include chenopods such as Buckbush (*Salsola kali*), Swamp and Sandhill Canegrass (*Eragrostis australasica* and *Zygochloa paradoxa*, respectively), Tangled Leschenaultia (*Lechenaultia divaricata*), Neverfail (*Eragrostis setifolia*), Swamp Wanderrie (*Erlrrwanyerehne*

ovata), Verbine (*Psoralea australasica*), and Golden Goosefoot (*Chenopodium auricomum*) (Marla-Oodnadatta Soil Conservation District Plan, 1997; Davey et al., 1985).

The floodplain vegetation consists of seasonal grasses and herbs including chenopods with scattered *Acacia* shrubs and Cotton Bush (*Maireana aphylla)* low open shrubland with occasional scalded areas. In some areas sparse open woodland of Gidgea (*Acacia cambagei*) and Mulga (*A. aneura* var. *aneura*) and some Bladder Saltbush (*Atriplex vesicaria*) occurs (Davey et al., 1985). Table 4 lists the plant species of conservation significance that have been recorded within the river floodplains and terminal floodouts land system.

Plants and Animals

The river floodplains and terminal floodouts support various plant and animal species of conservation significance, which are listed in Table 4.

No systematic sampling of the Finke River in South Australia for fish or other aquatic species has been undertaken. From sampling upstream in the Finke and nearby rivers (eg Warburton and Neales Rivers), fish likely to travel on the Finke floodwaters into South Australia in order of abundance, are Bony Herring (*Nematalosa erebi*), Spangled Grunter (*Leiopotherapon unicolor*), and Lake Eyre Hardyhead (*Craterocephalus eyresii*) (JT Puckridge, Arid zone fish ecologist, Pers. comm.).

Three species of frog known to occur within the river floodplains and terminal floodouts at Witjira National Park are the Water-holding Frog (*Cyclorana platycephala),* Red-tree Frog (*Litoria rubella*), and Trilling frog (*Neobatrachus centralis*).

WHAT WE WANT – OBJECTIVES

Recognise and respect the cultural and spiritual value, to Aboriginal people, of the park's natural land systems and their associated vegetation communities and animals, and factor indigenous knowledge into park management.

Protect and conserve the natural land systems and their associated vegetation communities and animals.

HOW WE WILL DO IT - STRATEGIES

- Take into account the indigenous spiritual and cultural values of the land systems and their associated vegetation communities and animals when planning for future land use or visitor access, or when undertaking management activities and development works.
- Encourage and support research to gain a greater understanding of the taxonomy and ecology of invertebrates in the Dalhousie Mound Springs complex.
- Encourage and support research to gain a greater understanding of the taxonomy and ecology of fish and invertebrates in the Lower Finke River.
- Develop strategies for protecting the land systems of the park as part of regional natural resource management initiatives.
- Increase community understanding of regional biodiversity values and associated threats.
- Monitor progress towards securing the biodiversity assets of Witjira National Park.

Figure 12: Aerial Photograph of the River Floodplains and Terminal Floodouts Land System
(Photograph courtesy of Peter Canty, DEH)

Figure 13: Aerial Photograph of a Terminal Floodout/Swamp in the River Floodplains and Terminal Floodouts Land System
(Photograph courtesy of Robert Brandle, DEH)

Table 4: Bird Species of Conservation Significance Recorded within River Floodplains and Terminal Floodouts at Witjira National Park.

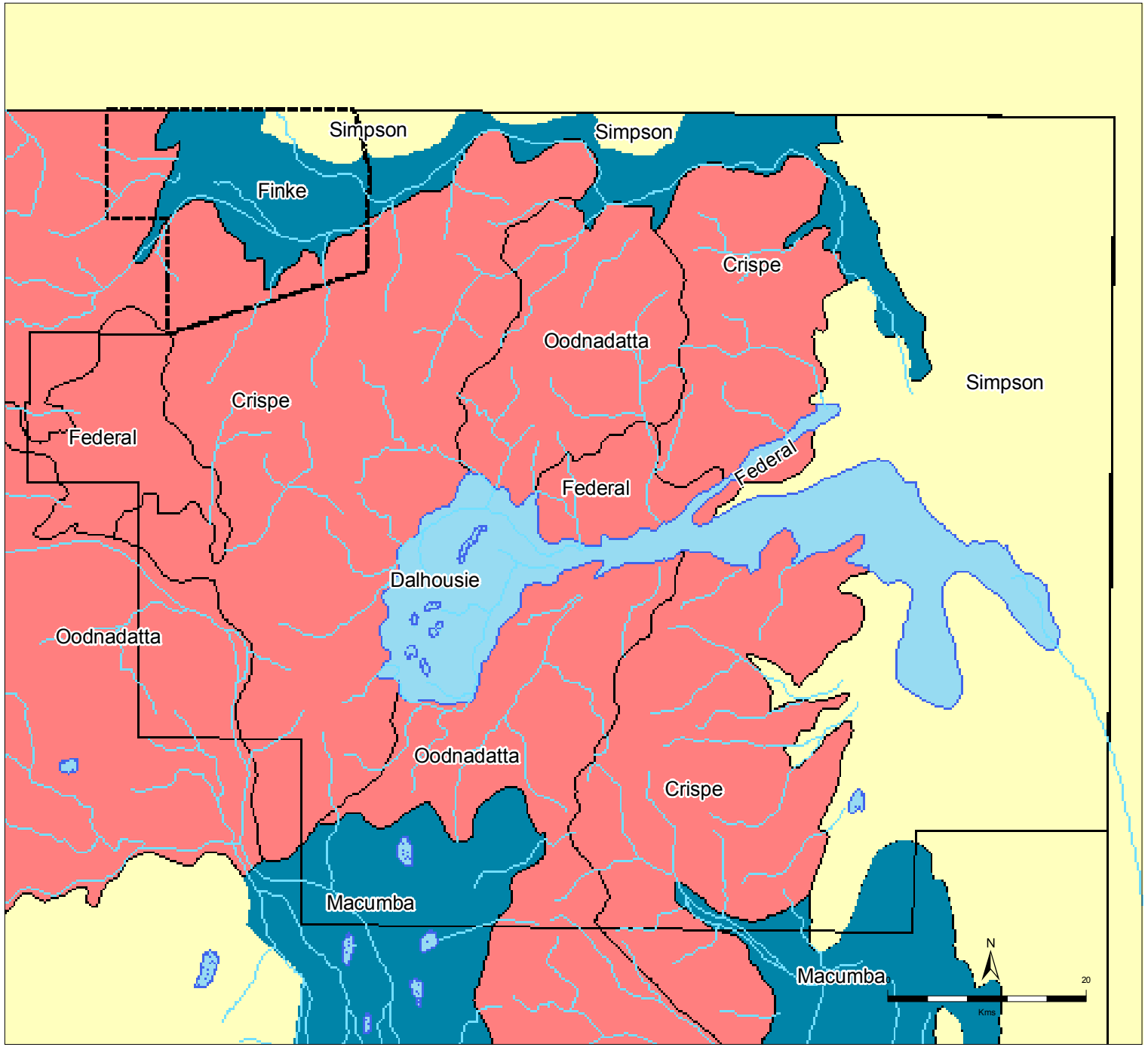
Scientific Name	Common Name	Conservation* Status	
		SA	AUS
Falco hypoleucos	Grey Falcon	R	
Grus rubicunda	Brolga	V	
Hamisrostra melanosternon	Black-breasted Buzzard	R	
Lichmera indistincta	Brown Honeyeater	R	
Phaps histrionica	Flock Bronzewing (Pigeon)	R	
Plegadis falcinellus	Glossy Ibis	R	

*See Appendix 1 for Conservation Status Codes

Figure 14

Witjira National Park

Land Systems



Legend

- Dalhousie Mound Springs
- Gibber Country
- River Floodplains and Terminal Floodouts
- Sandy Country
- Park Boundary
- Homestead Zone
- Drainage

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Data Source	DEH Spatial Data
Compiled	2 December 2008
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Datum	Geocentric Datum of Australia, 1994

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8.2 Water

Water Flows

The mound springs are the natural vents for Great Artesian Basin (GAB) water. This surface water is of prime importance to wildlife and people, particularly Aboriginal people who have traditional associations with the land. The conservation of GAB water is fundamental to the maintenance of mound springs, their water flows, and distinct flora and fauna (particularly endemic species). Furthermore, the many 'Dreaming' stories associated with the mound springs are directly related to water, so maintenance of the mound springs is necessary to maintain this connection.

The sinking of bores into the GAB began in 1878. Since that time artesian water pressures have fallen about 25% (Habermehl, 1980 in Thompson, 1985). To conserve the water of the GAB most artesian bores in South Australia have been capped or rehabilitated under the Great Artesian Basin Well Rehabilitation Program.

Although the intrinsic relationship between the GAB, mound springs, and flora and fauna species is indisputable, further research needs to be conducted to better understand the threats to the system (particularly the hydrogeology) and how such threats may be minimised or managed.

Purni Bore has been rehabilitated and its flow regulated so as to maintain a small artificial wetland that has been established there since the 1960s. Purni Bore is also a key day visitor and camping area within the park, as the flowing bore creates an oasis in the desert.

Three O'Clock Creek and Mount Dare Homestead GAB bores are controlled for domestic use.

The headwaters of the Finke River are in the West MacDonnell Ranges, west of Alice Springs, near Glen Helen and Mount Sonder in the Northern Territory. Although a relatively rare occurrence, when flooding occurs, the Finke River flows across the border into Witjira National Park. The surface-fed episodic wetlands associated with this river flooding are very productive ecosystems.

Although not well understood, the Finke River is thought to play an important role in recharge of the western margin of the GAB (AACWMB, 2004). Such recharge is likely to occur through the bed of this ephemeral river when it floods. Ephemeral rivers in the Northern Territory have been found to contribute 70-80% of the total average annual recharge of the Ti-Tree Basin via infiltration of flood waters following heavy, sustained rainfall events (Harrington et al., 1999; P Cook, pers. comm, 2006). These findings warrant further research into the relationship between the Finke River and the GAB, the identification of threatening processes to this GAB recharge zone and the implementation of management strategies to minimise such threats. The Witjira Co-management Board and DEH should liaise with the South Australian Arid Lands (SAAL) NRM Board, the Arid Areas Catchment Water Management Board and other groups to ensure research and management is compatible across organisations.

Water Pollution

Increased nutrients and pollutants from people swimming in, and camping near, springs impacts on the water quality. Pollution and disturbance may affect the species composition of these springs.

Potential sources of pollution include:

- effluent and waste water;
- personal sunscreen and insect repellents;
- soap, shampoo and detergent;
- increased sediment from soil and bank erosion; and
- fuel spillage.

The redevelopment of the Dalhousie Springs Campground has been designed to reduce visitor impacts on the aquatic and riparian environments of the springs (see Section 11.4 Visitor Facilities). Effluent management has also been improved at this campground with the redevelopment of the toilet and shower facilities.

Exotic Disease

Boats, fishing equipment, water containers, and clothing act as vectors for aquatic diseases and exotic species (eg Plague Minnow (*Gambusia holbrooki*)). The introduction of diseases and exotic species to mound springs and other waterways within Witjira National Park threatens the biodiversity of these unique aquatic environments.

WHAT WE WANT – OBJECTIVES

Recognise and respect the cultural and spiritual value to Aboriginal people of the park's water resources, particularly the mound springs and the Finke River, and factor indigenous knowledge into park management.

Protect the water resources of the Great Artesian Basin and Lake Eyre Basin from adverse impacts.

Minimise the risk of water pollution in the park.

HOW WE WILL DO IT – STRATEGIES

- Take into account the Aboriginal spiritual and cultural values of springs, waterholes and watercourses when planning for future land use or visitor access, or when undertaking management activities and development works.
- Play an active role in the protection of the water resources of the GAB and Lake Eyre Basin. Inform the Witjira Co-management Board of any matters relevant to the management of the park.
- With the approval of the Witjira Co-management Board, allow relevant agencies to monitor bores and artesian water use including flow rates, water quality and species composition. These agencies are required to provide a report of collected data to the District Ranger, who will present this report to the Witjira Co-management Board.
- Monitor and assess the importance of Purni Bore to wildlife and visitors.
- As the GAB springs are listed under the Australian Government's EPBC Act, seek approval (in addition to any state approval that may be required) for any action that has, will have, or is likely to have, a significant impact on these nationally threatened communities and species.
- Encourage and support research to better understand the threats to the GAB system (particularly the hydrogeology) and how such threats may be minimised or managed.
- Encourage and support research to better understand the relationship between the Finke River and the GAB, and to identify and minimise threatening processes.
- Prohibit the use of soap and shampoo in the Mound Springs.
- Maintain signs that encourage visitors to shower before swimming at Dalhousie Springs to minimise water pollution.
- Install and maintain signs at strategic locations to manage potential water-polluting activities such as clothes washing, car washing, and refuelling.
- Prohibit boats, including canoes, and fishing in the water bodies within the park.
- Ensure boats used for aquatic research are washed before being placed in each water body.

8.3 Soil Erosion

Off-road vehicle use causes the most significant damage to the soils, topography and vegetation of the mound springs. The banks, sediments and spring morphology are disturbed as people enter and exit the spring, thus creating bank-wash. Camels, donkeys and brumbies, and cattle from adjacent properties, watering at springs, and damaging stabilising vegetation also cause mound, bank and soil erosion.

Soil erosion is the major threat to the ecological integrity of the stony tablelands and plains. Removal of the gibber (stone cover) and other surface crusts exposes friable soils that are prone to water and wind erosion. Off-road vehicle use has caused significant soil erosion on the stony tablelands. Furthermore, gullies that have developed from tracks, animal pads, wheel ruts and seismic lines create scars on the landscape, which will continue to erode for many years to come. Prevention of off-road vehicle use is a major management challenge at Witjira National Park.

Unnatural modification and accelerated erosion of the soils within the park is also threatening for Aboriginal people, whose ***Altyerre/Tjukurpa*** is closely linked with the park's natural landforms.

WHAT WE WANT – OBJECTIVES

Recognise and respect the cultural and spiritual value, to Aboriginal people, of the park's rocks, soils and landforms, and factor indigenous knowledge into park management.

Protect the soils in the park from unnatural modification and accelerated erosion.

HOW WE WILL DO IT – STRATEGIES

- Take account of Aboriginal spiritual and cultural values when undertaking management activities and development works that might impact on rocks, soils or landforms.
- Prohibit off-road vehicle use unless approved for specific purposes.
- Discourage off-road vehicle use by providing directional and interpretive signage, and by building and maintaining vehicle barriers where necessary.
- Monitor the impacts of swimming use on the springs.
- Ensure access to the springs for swimming is only by the steps and ladder provided.
- Maintain signage to prohibit diving and jumping into the springs.
- Develop walking trails to sites of interest to prevent visitors walking off-trail.
- Undertake road grading to minimise erosion.
- Disguise tracks, where necessary, to prohibit use by visitors.
- Undertake restoration activities in areas where excessive soil erosion has occurred, particularly in the gibber country.
- Manage feral animal populations to minimise impacts on soils.

8.4 Native Vegetation, *Punu*

Since being proclaimed as a National Park, Witjira has been de-stocked, resulting in the significant recovery of native vegetation. However, the presence of feral herbivores in the park, particularly camels, donkeys and brumbies (and some remaining cattle), is such that the condition of native vegetation is still threatened. Cattle from adjacent pastoral properties are known to stray onto the park, further threatening the native vegetation (see Section 8.7 Feral Animals). The condition of native vegetation is measured using photopoints and exclosures.

The structural vegetation communities have been surveyed within Witjira National Park, and 15 main communities have been identified (Figure 15). The eastern portion of the park, the Simpson Desert, has not been mapped.

The major threats to the 460 native plant species and various vegetation communities within Witjira National Park are feral animal grazing and damage (see Section 8.7 Feral Animals), weeds, and vegetation damage and removal by visitors to the park. While previously a threatening process, the clearance of vegetation from campsites in the mound springs area is no longer a problem. The campground has a set number of established camping sites that should prevent further degradation of vegetation by campers.

Outside of the Fire Ban Season visitors at Witjira National Park may light small wood campfires in approved locations (including the Dalhousie Springs Campground). While DEH guidelines for the sustainable use of firewood by visitors at Witjira and Simpson Desert National Parks may be altered over time, the current practices are outlined in the Desert Parks Pass (see Section 11.2 Access). If found to be significantly impacting the natural values of the park, firewood collection may be prohibited. Although collection of firewood is not permitted from the springs area, the practice continues to negatively affect the vegetation of the Mound Springs area.

WHAT WE WANT – OBJECTIVES

Recognise and respect the cultural and spiritual value of the park's plants and vegetation to Aboriginal people, and factor indigenous knowledge into park management activities and scientific research.

Conserve native vegetation and reduce threats, particularly for species and communities of conservation significance.

HOW WE WILL DO IT - STRATEGIES

- Take the advice of Aboriginal people into consideration when making decisions about the conservation and protection of native vegetation.
- Continue to monitor the condition of native vegetation through the use of photopoints and exclosures.
- Consult with the Witjira Co-management Board, visitors, and recreation groups to develop a regional strategy for the management of firewood collection and use, educating them about the impacts such activities have on the natural values of the park.
- Ensure the collection and use of firewood by visitors to the park is consistent with current guidelines.

8.5 Native Animals

Mammals

At least 28 native mammal species have been recorded within Witjira National Park, eight of which are of conservation significance (listed in Tables 1 – 4). Three mammal species present or suspected within the park are described in greater detail below.

Plains Rat

The Plains Rat (*Pseudomys australis*) is a small native rodent weighing 40 grams. The species was once scattered across four states but now appears to be restricted to the gibber and cracking clay habitats of the western Lake Eyre Basin and the Arcoona Plateau west of Lake Torrens. This restriction in distribution is such that the Plains Rat is listed as vulnerable in Australia and South Australia.

Witjira National Park is the only major reserve supporting the Plains Rat. It is known to be present in the Oodnadatta Bush shrublands west of Dalhousie Springs, the Crispe tableland and on the edge of the Finke River east of Mount Dare Homestead. The Plains Rat is also found in the Northern Territory. A monitoring site exists on the Crispe tableland, where the Plains Rat is one of at least seven mammal species. A recovery plan is being prepared for the Plains Rat, in which management strategies for its conservation will be outlined and implemented.

Kowari

The Kowari (*Dasycercus byrnei*) is a native carnivorous marsupial weighing about 100 grams. It is listed as vulnerable in Australia and South Australia. The last specimen recorded near Witjira National Park was in 1895 at Charlotte Waters Telegraph Station. However, the exact location of its original recording is unknown.

Extensive surveys of Kowari habitat have been undertaken on Sturts Stony Desert and have identified habitat preferences for the species. Suitable habitat at Witjira National Park was sampled in July 2003, however neither the significant trapping effort or search for visual signs of burrows in sand exposed signs of Kowaris in the park.

At Witjira National Park, the habitat suitable for the Kowari has substantially recovered from earlier grazing pressure. Hence, it may provide suitable habitat for the reintroduction of Kowaris in the park. Further research is required to establish the feasibility of Kowari reintroductions at Witjira National Park.

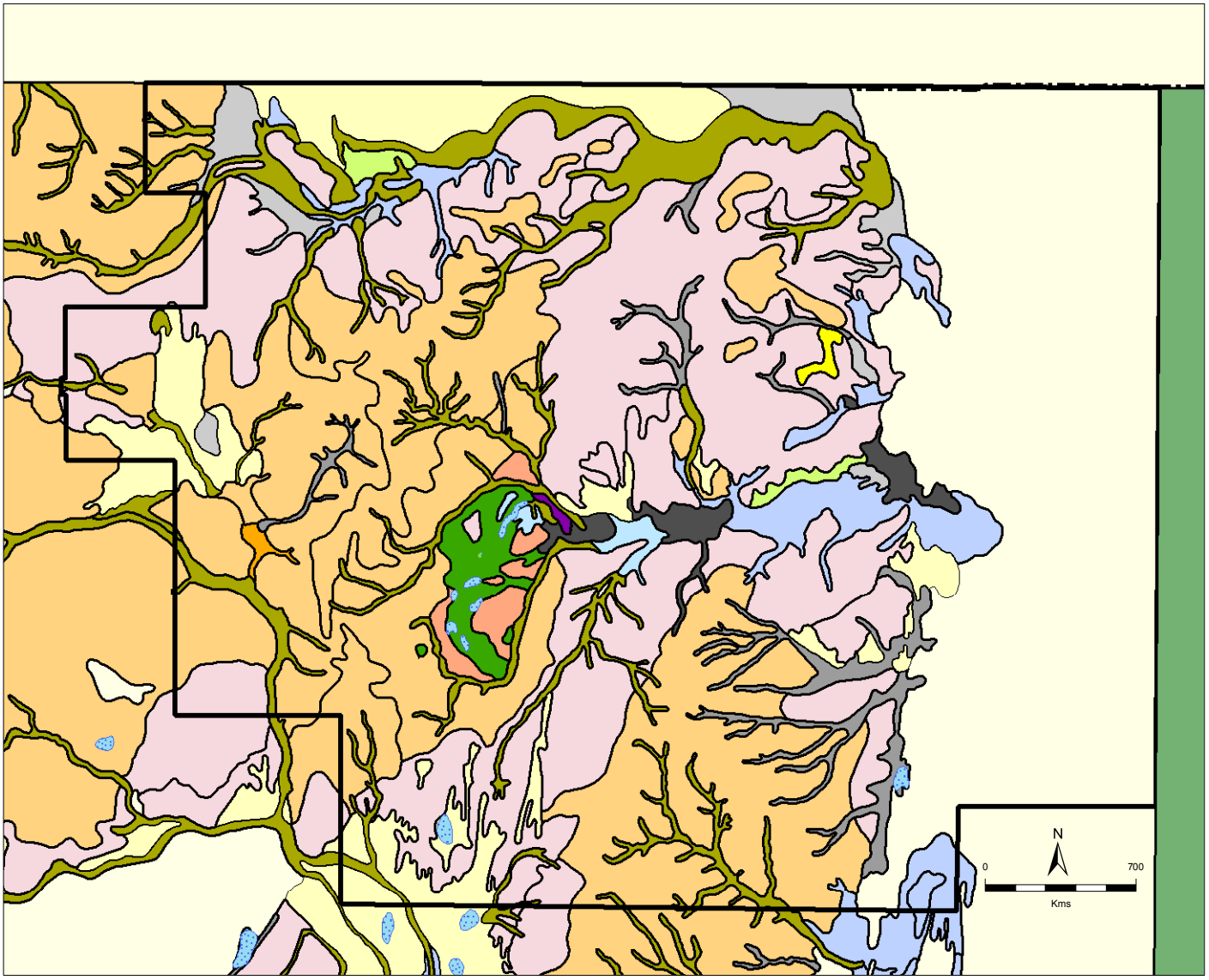

Figure 15

Witjira National Park

Structural Vegetation Communities

Legend

- Park Boundary
- Drainage
- Vegetation Communities not mapped
- Simpson Desert Regional Reserve

Produced by Land Management Branch
Department for Environment and Heritage
1 Richmond Road
www.parks.sa.gov.au
Data Source DEH Spatial Data
Compiled 2 December 2008
Projection Lambert Conformal Conic
Datum Geocentric Datum of Australia, 1994

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STRUCTURAL VEGETATION COMMUNITIES

Mound Springs Complex

- Sedges (Cyperus/Eleocharis spp.), Sea-heaths (Frankenia spp.), Nitrebush (Nitaria billardierei), Samphires (Halosarcia/ Sclerostegia spp.), other chenopod shrubs (Atriplex/Maireana/Sclerolaena), trees (Acacia spp.) and scalds complex associated with mound springs.
- Mixed Mitchell-grass (Astrebla pectinata) Rat-tail Couch (Sporobolus actinocladus) Tussock Grassland with chenopod (Sclerolaena/Atriplex/Dissocarpus/Neopbassia spp.) Sub-shrubland
- Chenopod (Atriplex/Sclerolaena/Maireana spp.) Low open shrubland over sub-shrubs and grasses.
- Chenopod (Dissocarpus/Neobassia/Atriplex/ Sclerolaena spp.) Sub-shhrubland +/- herbs and grasses - on cracking clays.
- Low Bluebush (Maireana astrotricha)/Bladder Saltbush (Atriplex vesicaria) Low open shrubland - on calcareous soils.

Sandy Plains and Dunefields

- Sandhill Canegrass (Zygochloa paradoxa) Hummock grassland +/- Sandhill Wattle (Acacia ligulata) Tall shrubland.
- Mulga (Acacia aneura) Low open woodland over shrubs/grasses.
- Nitre (Nitraria billardierei)/Sturt's Pigface (Gunniopsis quadrifida) Low open shrubland to Shrubland.

River Floodplains and Terminal Floodouts

- Clay pans and salt lakes with fringing Samphire (Halosarcia/Sclerostegia spp.) Low shrubland
- Oldman Saltbush (Atriplex nummularia nummularia) Lignum (Muehlenbeckia florulenta) Shrubland +/- emergent Coolabah (Eucalyptus coolabah)/Accaia (Accacia stenophylla/ A. salicina/A. stowardii) trees.
- Samphire (Halosarcia/Sclerostegia spp.) +/- Nitrebush (Nitraria billardierei)/chenopod (Sclerostegia/Atriplex/Maireana spp.) Shrubland to Low shrubland +/- emergent Willow Wattle (Acacia salicina).
- Coolabah (Eucalyptus coolabah) +/- River Red Gum (E. camaldulensis)/Gidgee (Acacia cambagei) Red Mulga (A. cyperophylla) /Mulga (A. aneura) Woodland.
- Mixed (Acacia spp.) Tall shrubland to Low open woodland over chenopod (Atriplex/Maireana/Sclerolaena spp.) shrubs and grasses.
- Cottonbush (Maireana aphylla) +/- Saltbush (Atriplex spp.) Low shrubland +/- emergent trees or tall shrubs.
- Mixed chenopod (Sclerolaena/Atriplex spp.) Sub-shrubland with herbs and grasses - on floodout flats.

DEH Map ID: 2008-908

Marsupial Mole

It is likely that the Southern Marsupial Mole (*Notoryctes typhlops*) occurs in the Simpson Desert land system of Witjira National Park. The Southern Marsupial Mole is listed as vulnerable in South Australia. A survey near Purni Bore identified signs of the mole in the area. A recovery plan is being prepared for the Southern Marsupial Mole and further surveys of the Simpson Strzelecki Dunefields will identify its current distribution in South Australia.

The Recovery Plan will identify objectives for the management and protection of the species, and strategies and actions for the Southern Marsupial Mole at Witjira will be implemented as resources permit.

Birds

Approximately 150 native bird species have been recorded within Witjira National Park. Seven of these are listed migratory species, in agreements with Japan and/or China, and 24 species are of conservation significance (Tables 1 – 4). The Painted Finch (*Emblema pictum*) is listed as rare in South Australia, and is present within Witjira National Park. Other birds present in the park include Emu (*Domaius novaehollandiae*) and the State vulnerable Australian Bustard (*Ardeotis australis*).

Reptiles

More than 40 species of reptile have been recorded within Witjira National Park. The Desert Glossy Skink (*Notoscincus ornatus*) is a rare species in South Australia and is protected within the park. Witjira National Park is the only reserve in South Australia with populations of the Perenti (*Varanus gigantus*). The reserve also protects the Gibber Dragon (*Ctenophorus gibba*), a species endemic to South Australia.

It is important to remember that some of the native animals that occur on the park are of special significance to Aboriginal people, both spiritually and as important resources. Hence, all management policies and procedures need to be developed with these relationships in mind, as anything that impacts on the environment and the 'land' impacts on the life and culture of those who are part of that land.

WHAT WE WANT – OBJECTIVES

Recognise and respect the cultural and spiritual value, to Aboriginal people, of the park's native animals, and factor indigenous knowledge into park management and scientific research.

Protect and conserve native animals within the park.

HOW WE WILL DO IT – STRATEGIES

- Take the advice of Aboriginal people into consideration when making decisions about the conservation and protection of native animals.
- Encourage and support research to gain a greater understanding of the mammal species present in the park prior to pastoral use, and to determine which species are still present in the park.
- Continue to monitor the Plains Rat population and implement the management strategies outlined in recovery plans as they are developed.
- Continue to monitor suitable habitat in the park for the Kowari. If present, develop and implement a recovery plan for the species. If not present, conduct research to determine the feasibility of conducting Kowari reintroductions.
- Monitor suitable habitat to confirm the presence of the Southern Marsupial Mole in the park. Implement the management strategies outlined in recovery plans as they are developed.

8.6 Weeds

The harsh climate experienced at Witjira National Park is such that few introduced plants have become established. However, at disturbed sites where grazing has been prolific some introduced weeds occur, including Spurry (*Spergularia* spp.), Beard Grass (*Polypogon monspeliensis*), and cereals such as Rye Grass, Wheat, and Oat (Lange and Fatchen, 1990).

Weed species of particular concern at Witjira National Park are Date Palm (*Phoenix dactylifera*), *Acacia farnesiana*, Buffel Grass (*Cenchrus ciliaris*), Athel Pine (*Tamarix aphylla*), and Camel Thorn (*Neurada procumbens*). Management programs are being implemented or developed for these species, and are described in greater detail below.

Date Palm

Date Palm (*Phoenix dactylifera*) was planted in the late 1800s around the Dalhousie homestead area and is now common in many of the springs of the Dalhousie Complex. Date Palm is an aggressive invader of wetland habitats. It has the ability to grow in high densities, forming a continuous and dense canopy, which effectively excludes light from natives growing beneath. The roots of the Date Palm form a dense mat that is both extensive and invasive, and may extend considerable distances into water bodies. Date Palms inhibit the establishment of endemic native species beneath the canopy and compete for space and resources with those species already present (Kendrick, 2000). The species reproduces by both seed and vegetative suckering. Seed is spread by water flow, dingoes, foxes and birds, which eat the fruit and defecate the seeds.

At Witjira National Park the mound springs complex, particularly where water flow is low, is most at risk from the impacts of Date Palms. The aggressive and extensive root system, and high transpiration rates of Date Palms may lead to a reduction or cessation of water availability or flow, thus resulting in a loss of water dependant species (Noack, 2002). Further encroachment of Date Palms at the mound springs will increase the amount of shade at the springs, thus resulting in the reduction of primary productivity required to support aquatic animals, including endemic fish species. The mound spring community is further threatened by the risk of fire from accumulated Date Palm fronds, since the native community is not adapted to the intense heat a Date Palm burn causes.

Despite their introduced status and invasive nature, some of the date palms near Dalhousie Ruins are seen as having heritage values. Hence, control of this species must be conducted in a manner that conserves those particular plants of heritage or cultural value.

Techniques for the removal of pest palms have been investigated and the Date Palm Control Strategy has been developed. The strategy includes measures to ensure that:

- Irrwanyere AC is involved and consulted regarding the control and removal of Date Palm; and
- the control techniques used have minimal impact on cultural heritage, sites of significance, native vegetation, water, and the spring's mound structure.

The Date Palm Control Strategy will be implemented over the life of this management plan.

Acacia farnesiana

Acacia farnesiana is a prickly acacia that was introduced to Witjira National Park from Northern Australia. A survey of the park mapped the distribution of this species. An initial control program was conducted in 2003 using a 'plucker' to remove adult trees. Since then, follow-up control programs have been implemented on a regular basis.

Buffel Grass

Buffel Grass (*Cenchrus ciliaris*) is one of central Australia's worst environmental weeds, and is known to directly (through resource competition) and indirectly (through altered fire regimes) negatively affect native flora and fauna in a range of habitat types (Clarke et al., 2005). Buffel Grass has been identified in several small patches at Witjira National Park (Figure 16). These populations usually occur along roadsides. A control program has been developed and implemented. A watching brief will be maintained for new populations in areas of suitable habitat, particularly along roadsides.

Athel Pine

Athel Pine (*Tamarix aphylla*) was historically present at the Mount Dare Homestead within Witjira National Park (Figure 17). These plants have been removed, however Athel Pine is still a

threatening weed species. Athel Pine was once well established in the bed of the Finke River in the Northern Territory. A significant amount of work has been conducted to control this species in the Northern Territory, with the aim of complete eradication. However, populations of Athel Pine remain in the Finke River, just upstream of the Northern Territory-South Australia border.

In the Northern Territory many mature Athel Pines are present near homesteads, where they were planted as a shade and shelter tree. The species has been spread downstream from these mature trees by floodwaters, and may spread into Witjira National Park and South Australia.

Camel Thorn

Camel Thorn (*Neurada procumbens*) was identified and reported in 2002 as a naturalised weed of the arid Simpson-Strzelecki Dunefields of Northern Territory. New introduced species to this extremely arid bioregion are of major concern because their establishment and persistence is indicative of the weedy potential of the species. Camels and vehicles are presumed to be the main vectors of the spiny fruit, with camels likely to spread the fruits off vehicle tracks into less accessible areas (Albrecht et al., 2002).

The extent of the Camel Thorn population is not known in South Australia or at Witjira National Park. Any control programs established for Camel Thorn should be coordinated with those in the Northern Territory, to maximise the efficiency of control.

WHAT WE WANT – OBJECTIVES

Control, and eradicate where possible, introduced plant species within the park.

Minimise the possibility of the introduction or spread of Athel Pine.

HOW WE WILL DO IT – STRATEGIES

Date Palm

- Continue to implement programs to control the Date Palm, while reviewing and reporting the success of programs.
- Monitor terrestrial and aquatic biodiversity changes that result from the removal of Date Palms.

Acacia farnesiana

- Continue to implement necessary control programs to manage the *Acacia farnesiana* population within the park.
- Monitor controlled areas to determine the success of control measures and revise methodology as appropriate.

Buffel Grass

- Identify, survey, assess and monitor Buffel Grass recruitment within the park.
- Control Buffel Grass infestations and regrowth using best possible techniques and minimising impact to surrounding vegetation and soils.
- Ensure road works or other activities do not contribute to the spread of Buffel Grass in the park.

Athel Pine

- Conduct regular surveys to determine the presence of new Athel Pine seedlings and regrowth within the park.
- Control Athel Pine recruitment and regrowth using best possible techniques and minimising impact to surrounding vegetation and soils.

Camel Thorn

- Conduct regular surveys to determine the presence of Camel Thorn within the park.
- Coordinate control programs for Camel Thorn with those implemented in the Northern Territory.
- Eradicate any identified populations of Camel Thorn using best possible techniques and minimising impact to surrounding vegetation and soils.

Figure 16: Photograph of the Weed Buffel Grass (*Cenchrus ciliaris*)

(Photography courtesy of Australian National Botanic Gardens, Department of the Environment and Heritage, Australian Government: www.anbg.gov.au/weeds/)

a) Athel Pine along the Finke River (Photograph courtesy of C Wilson: www.weeds.org.au)

b) Athel Pine flowers arranged spirally in dense spike-like racemes (Photograph courtesy of JR Hosking: www.weeds.org.au)

Figure 17: Photographs of the Weed Athel Pine (*Tamarix aphylla*)

8.7 Feral Animals

Nine feral animal species have been recorded within Witjira National Park, and are listed in Table 5.

Table 5: Feral Animal Species Recorded within Witjira National Park.

Scientific Name	Common Name
Bos taurus	Cow (livestock from adjacent properties)
Camelus dromedarius	Camel
Canis lupus familiaris	Dog
Equus asinus	Donkey
Equus caballus	Brumby
Felis catus	Feral Cat
Mus musculus	House Mouse
Oryctolagus cuniculus	Rabbit
Vulpes vulpes	Fox

Cattle, camels, donkeys and brumbies cause the most significant damage in areas around watering points, particularly the Dalhousie Mound Springs Complex, Purni Bore, and along watercourses. Damage includes the removal of vegetation, soil compaction and soil erosion. However, as discussed in Section 8.1 Land Systems, grazing by feral herbivores appears to play a role in allowing the persistence of less competitive native plant species, through controlling competition from other mound plant such as *Phragmites*, *Baumea*, and *Fimbristylis* spp. (NSW NPWS, 2002). Such grazing of dominant species reduces competition for light and water, and limits the formation of rhizomal mats (NSW NPWS, 2002). However, the negative effects of soil compaction and soil erosion outweigh the apparent positive effects of grazing on species biodiversity around watering points. Thus, control of feral herbivores is necessary and is most effective during long dry seasons, when the animals concentrate around watering points. Other methods to control dominant plant species around watering points should be investigated (see Section 9 Managing Fire).

Rabbits numbers throughout Witjira National Park are generally low. At Dalhousie Springs and the sandy areas near Federal and Purni Bores, rabbits have contributed to vegetation deterioration and soil erosion. Their numbers are monitored and controlled around Dalhousie Springs. The rabbit population is further controlled by the presence of Rabbit Calicivirus Disease (RCD) and Myxomatosis in the area.

Although feral carnivores (cats and foxes) are present at Witjira National Park, little is known about their population sizes and impacts on the park's natural values. Hence, research should be conducted to obtain a greater understanding of feral carnivores in the park, and control programs should be developed and implemented as appropriate.

The dogs recorded at Witjira National Park appear to be escapees and dumpings from domestic dwellings within and outside the park, and sometimes from park visitors. The number and activity patterns of feral dogs will be monitored, and will be controlled if necessary.

Control of feral animals on the park should be conducted in consultation with Irrwanyere AC members, as there is opportunity to involve Aboriginal people in control programs. Indeed, such control programs may incorporate Aboriginal people being able to take feral animals from the park for personal use, provided this use is within the park boundary. This removal of feral animals from the park would require an application to the Witjira Co-management Board, and would need to provide a description of procedures and meet conditions, particularly with regard to animal welfare and off-road vehicle use.

WHAT WE WANT – OBJECTIVES

Control, and eradicate where possible, feral animal species within the park.

Provide opportunities for Aboriginal people to be involved in feral animal control programs.

HOW WE WILL DO IT – STRATEGIES

- Ensure feral animals are controlled such that grazing impact on indicator plant species (white wood and eremophila) is minimal.
- Control rabbits using best possible practice methods, complying with the *Aboriginal Heritage Act 1988*.
- Target photopoint monitoring to assess the impacts of feral animals on indicator plant species, and to assess the benefits of feral animal control programs.
- Conduct aerial surveys to assess numbers, locations, status and impacts of pest animals such as camels, brumbies, cattle, and donkeys.
- Monitor and evaluate the effectiveness of feral animal control techniques.
- Encourage and support the involvement of Aboriginal people in feral animal control programs, where appropriate.
- Permit the Witjira Co-management Board to approve the taking of feral animals from the park, by Aboriginal people, for personal use on-park, given their applications meet necessary procedures and conditions.
- Coordinate the control of feral animal populations with neighbours through community and state government coordinating groups such as South Australian Arid Lands Natural Resource Management Board, cross-border committees, and steering groups.
- Monitor the condition of fences and liaise with neighbours to prevent access to the park by stock animals.
- Encourage and support research to obtain a greater understanding of cats and foxes in the park. Develop and implement control programs as appropriate.

9 MANAGING FIRE

Little is known about the historical fire regime of Witjira National Park. In the past, traditional management and use of the mound springs by indigenous people involved regular burning of dead reeds that clog the spring waterholes and restrict access to water. Changes in these burning regimes and removal of grazing stock may have altered the vegetation around the springs (NSW NPWS, 2002). Aboriginal elders have noticed an increase in *Phragmites* biomass. Such an increase, likely to be at the expense of other native plant species, could lead to a change in the habitat distribution and diversity of aquatic species (NSW NPWS, 2002). Aboriginal elders have indicated that the Finke River woodlands should be burnt to 'thin out' growth.

The majority of fires at Witjira National Park are started by lightning strike, particularly when fuel loads of fire-prone vegetation are high. Reed beds associated with the tails of mound springs are particularly vulnerable to fire. With the reduction in traditional fire management, a hot bushfire could remove understorey and trees, and may lead to soil erosion, reduced diversity of habitats in the Finke River woodlands and may change the hydrology of the Finke River.

Several fires have been caused by accidental spread of campfires, which have on several occasions damaged the *Melaleuca* woodland at the main Earwanyera Spring. The relocation of the camping area away from the spring should prevent this happening again. Signage will be installed at strategic locations to inform visitors of the Fire Ban Season.

A lack of access, resources and infrastructure at Witjira National Park is such that fire management is largely to 'let it burn'. However, fire suppression equipment is on site and is maintained. Protective measures are carried out on a regular basis to minimise threats to assets. If houses or other significant infrastructure are threatened by fire, protective measures will be taken.

A fire management plan will be prepared for the park, in consultation with the Witjira Co-management Board. The fire management plan will:

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

WHAT WE WANT – OBJECTIVE

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

HOW WE WILL DO IT – STRATEGIES

- Develop, implement and review a fire management plan in association with the Witjira Co-management Board and other stakeholders.
- Train staff to recognise and reduce fire hazards and to understand appropriate fire suppression procedures, safe operation of fire suppression equipment and safe storage of flammable materials.
- Install signage at strategic locations, informing visitors of the Fire Ban Season.
- Develop a better understanding of ecological fire regimes for the mound springs and woodlands in the park.
- Trial ecological burning practices for the mound springs and woodlands, and once developed, introduce a burning regime with the approval of the Witjira Co-management Board.
- Store flammable materials appropriately to minimise risk of ignition.

10 MANAGING IMPORTANT PLACES

Look after places
with cultural, historic,
scientific, natural or scenic value

Witjira National Park is an important place to ***Altyerre/Tjukurpa*** – Aboriginal spiritual connection, lore and culture. Some places within the park are very important lore or spiritual places. The park is also important to both Aboriginal and non-Aboriginal people for its history, plants and animals, and scientific and beautiful places.

10.1 Important Places to Indigenous People

Aboriginal lore, culture and beliefs are associated with land and landscape. Areas within Witjira National Park are extremely important to the people with traditional association to the area. There are places in the park that are lore places and others that have spiritual meaning or social importance. ***Altyerre/Tjukurpa*** is closely associated with many natural features in Witjira National Park, such as mound springs, water holes, swamps, creeks and hills, and flows in meandering paths throughout the park. These places are important even if those with traditional associations to the area live far from Witjira National Park.

People with traditional responsibilities to the area know their responsibilities for managing traditional places. Protection of these places is the role of the Irrwanyere rangers and the appropriate Lower Southern Arrernte and Wangkangurru people. They can talk with park rangers about their management responsibilities, and can ask them to help where park activities are affecting important places.

To manage the risk of damage to sites during management activities in the park, and to ensure these important sites are protected, the ILUA has an established Notification Protocol (Schedule 3) that must be followed for any acts or activities that are considered to be Notifiable Acts. Visitors to the park also need to be informed that damage to Aboriginal sites listed on the Central Archive (see Section 6.7 Protection of Aboriginal Heritage) is an offence for which penalties apply. Visitors should be informed through interpretive and informative signs and the Desert Parks Pass.

WHAT WE WANT – OBJECTIVE

Protect areas in the park that are important to indigenous people.

HOW WE WILL DO IT – STRATEGIES

- Maintain liaison with the Witjira Co-management Board to ensure park activities are consistent with indigenous lore.
- Acknowledge that appropriate indigenous people are able to look after the places they are responsible for within the park.
- Comply with the Notification Protocol as outlined in Schedule 3 of the ILUA prior to starting any development work, to ensure Aboriginal sites are protected.
- Negotiate 'access and work clearance' agreements with appropriate indigenous people as part of the planning of all developments in the park, including at the Mount Dare Homestead Lease area (pursuant to this plan and to ensure compliance with the *Aboriginal Heritage Act 1988*).
- Disguise tracks that lead to indigenous sites that are not part of the Public Access Zone.
- Inform visitors, through park signage and the Desert Park Pass, that damaging Aboriginal sites is an offence for which penalties apply.
- Develop conservation plans for significant Aboriginal sites as outlined by AARD.

10.2 Historic Places

There are several places associated with the non-indigenous history of the area including its exploration, the overland telegraph, early pastoral development, the Ghan Railway, water bores and the petroleum industry.

Information about the sites of historic heritage significance is collected and kept by the Heritage Branch of DEH. They include the Dalhousie homestead ruins, Federal and Bloods Creek ruins, gravesites, stockyards and old bores.

Many of the historic sites are also important to indigenous people whose relatives where involved in the developments and industries of the pioneer days. An example of this importance is the Bloods Creek ruins. Bloods Creek was a settlement established on the overland telegraph route in the late 1800s, where camel teamsters stocked up with stores and quenched their thirst at the pub. Aboriginal people have always camped along Bloods Creek where there is a waterhole.

In 1995 stabilisation work and fencing was undertaken at the Dalhousie homestead ruins and stockyards to reduce the rate of their deterioration. Interpretive signs were also installed to inform visitors of the significance of these sites.

Date Palms that were planted in the Dalhousie area in 1899, by the lessees John Lewis and his son Essington, now have historic significance. However, Date Palms have become a significant weed at Witjira National Park following the spread from these early plantings throughout the springs and creeks. Hence, Date Palms that do not have historical significance need to be controlled to prevent further spread and decline of the natural values of the mound springs complex (see Section 7.7 Weeds).

WHAT WE WANT – OBJECTIVE

Protect places and structures that are of historic importance in the park.

HOW WE WILL DO IT – STRATEGIES

- Monitor visitor use and impact on historic places.
- Monitor site stabilisation works at Dalhousie ruins and undertake works where necessary.
- Develop a car-parking area, car barriers and walking trails to protect Bloods Creek, Federal and Dalhousie historic ruins as required and approved.
- Install signs near heritage sites that provide information about the significance of the site and requesting people not to damage the sites.
- Identify Date Palms of historic significance near Dalhousie ruins while controlling other palms, particularly those threatening the ecology and geomorphology of mound springs and heritage places.
- Comply with the Notification Protocol as outlined in Schedule 3 of the ILUA, and consult the Witjira Co-management Board and DEH before commencement of works.

10.3 Scenic Places

Other valuable places at Witjira National Park are those of natural or scenic interest to visitors. Scenic or beautiful sites can be small features of the landscape or large panoramic vistas including the opportunity to look out over, or travel through, natural landscapes and vast 'undisturbed' stretches of country. Even people who cannot travel to the park often value just knowing it is there. It is important to maintain these values.

The beauty of scenic places within the park is not only valued by visitors, but also by Aboriginal people, who have strong spiritual and cultural associations with many of these scenic places.

Developments such as roads, buildings and other obvious signs of human influence can impact on indigenous and non-indigenous peoples' values for the park. Hence, developments need to be kept to a minimum and designed to limit their visual impact on the landscape. Visual scars on the landscape can also be caused by:

- off-road vehicle use that damages vegetation and causes erosion;
- litter and signs of recent occupation including charcoal from campfires; and
- the impact and presence of feral animals.

When appreciating the natural beauty of Witjira National Park, visitors are asked to follow the rules of the park, and to respect that the traditional owners of the land have spiritual and cultural associations with many scenic places, so they should all be visited with care and consideration.

WHAT WE WANT – OBJECTIVE

Visitors respect the cultural associations that indigenous people have with scenic places by visiting sites with care and consideration.

HOW WE WILL DO IT – STRATEGIES

- Provide roadside stops and scenic lookouts at places of scenic interest.
- Build vehicle barriers to reduce vehicle off-road use and resulting soil erosion and visual impacts, where necessary.
- Ensure designs for infrastructure and tracks minimise the visual impact of these developments.
- Consider the visual impacts of proposed developments, and select material, textures and colours that will minimise the visual impact of new developments.
- Improve, relocate or remove any existing infrastructure considered inappropriate.

10.4 Scientific, Ecological and Cultural Studies

The mound springs, their geological features and biodiversity have scientific, cultural and research significance. The GAB Mound Springs contain biotic communities evolving in isolation, and are being used to improve our understanding of how ecosystems evolve and function. The GAB Mound Springs provide an ideal natural laboratory for evolutionary, ecological, biogeographic and population dynamics studies because they are relatively simple systems in a wide variety of sizes and exhibit varying degrees of isolation. The isolated aquatic environments of the mound springs have lead to adaptation and speciation in fish and other aquatic species. These springs contain rare aquatic and terrestrial flora and fauna species including relict and fossil species, and endemic species that have evolved due to biogeographic isolation and radiation.

Other areas in Witjira National Park have been selected for long term monitoring of impacts. The monitoring sites include photopoints and exclosures at which data recorded over time enables the assessment of changes in land condition.

As part of the co-management agreement the Witjira Co-management Board has agreed to delegate, to the Director of National Parks and Wildlife, the power to issue permits for scientific research subject to the Director complying with policies and procedures (if any) developed by the Witjira Co-management Board in consultation with the Director. The Witjira Co-management Board should be kept informed of the outcomes of research undertaken in the park, by receiving copies of the reports submitted to DEH.

Where research at Witjira National Park is cultural in nature (including archaeological and anthropological) the provisions of the *Aboriginal Heritage Act 1988* and the Notification Protocol (Schedule 3 of the ILUA) must be followed to ensure Aboriginal sites, objects and culture are protected.

WHAT WE WANT – OBJECTIVES

Recognise and respect the cultural and spiritual value, to Aboriginal people, of the park's natural values, and factor indigenous knowledge into scientific, ecological and cultural research.

Encourage and support scientific, ecological and cultural research at Witjira National Park.

HOW WE WILL DO IT – STRATEGIES

- Adhere to the delegations of power regarding the issuing of commercial tour operator licences, as outlined in the co-management agreement.
- Take the advice of Aboriginal people into consideration when making decisions on scientific, ecological and cultural research and projects involving native animals and plants, and landforms.
- Ensure the provisions of the *Aboriginal Heritage Act 1988* and the Notification Protocol in Schedule 3 of the ILUA are followed to ensure the protection of Aboriginal sites, objects and culture when research that is cultural in nature is undertaken.
- Ensure the research proponent provides six-monthly briefings of progress and a copy of research findings and reports to DEH and the Witjira Co-management Board.

10.5 Commercial Filming and Photography

Under regulation 37 of the *National Parks and Wildlife (National Parks) Regulations 2001* a person must not undertake filming, videotaping or taking photographs for commercial purposes in a park without prior approval from the Minister for Environment and Conservation or, in the case of a co-managed park, the co-management board (in this case the Witjira Co-management Board).

Procedures for filming in reserves, including schedule of fees and filming agreements, are available from the DEH Outback Regional Office in Port Augusta.

The Witjira Co-management Board may place additional conditions on filming agreements with regard to employment of local persons and depiction of Aboriginal culture and heritage. DEH may inspect filming or photography activities in the park to ensure they are being conducted in the manner negotiated in the approval.

WHAT WE WANT – OBJECTIVE

Ensure that people undertaking commercial filming and photography are consistent with the objectives of the park and recognise and respect the importance of the park to Aboriginal people.

HOW WE WILL DO IT – STRATEGIES

- Ensure all photographers, film-makers and advertisers proposing to film in the park complete an application form that clearly depicts the storyline/theme of their filming.
- Refuse applications for commercial filming and photography where the proposed activity or storyline is inconsistent with the objectives of the park.
- Inspect commercial filming and photography activities to ensure they comply with the conditions of their approval.

11 MANAGING TOURISM AND RECREATION

Encourage community enjoyment and use

The number of people visiting Witjira National Park is increasing. To meet this growth in visitor demand this management plan identifies a range of visitor facilities, policies and natural and cultural heritage experiences for development and maintenance. These visitor facilities will also provide the natural and cultural values of the park with protection from visitor impacts.

Services in the park available to visitors include road access, a range of camping facilities, directional signs, interpretative information and walks. There are also commercial enterprises licensed commercial tour operators that are or may operate in the park.

Feedback from the local community and visitors assists park managers in identifying issues and priorities for management. Consultation with, and feedback from, park neighbours, visitors, friends groups and local community groups is important for the ongoing responsive management of Witjira National Park.

11.1 Tourism and Visitor Use

Tourism is an expanding industry in the far north of South Australia. Witjira National Park, particularly Dalhousie Springs, has become a popular tourist attraction. Most visitors travelling across the Simpson Desert also visit Dalhousie Springs.

Witjira National Park has been made accessible with the construction of numerous main roads and highways. In 1960 Rig Road was constructed across the Simpson Desert by petroleum explorers and the new Stuart Highway was constructed in 1984. Witjira National Park is now a part of the 'outback experience' for visitors from all Australian states and territories, and overseas. Since proclamation in 1985, tourist numbers to the park have steadily increased, such that today approximately 15,000 people visit each year.

Visitor use of the park is seasonal, with the majority of visitors arriving during the cooler winter months. Typical visitor use is four-wheel drive touring and camping with visitors taking an interest in the environment, wildlife, bushcraft history, Aboriginal culture of the area, and the hot pool at Dalhousie Springs.

Some people travel with commercial tour operators but most make their own travel arrangements. A small number arrive by light aircraft. Visitors usually camp, however some stay in accommodation at Mount Dare.

The Mount Dare Homestead is privately managed under a lease from DEH as a service centre for outback visitors providing fuel, accommodation, stores, radio and telephone contact, and an airstrip.

11.2 Access

Road Access

Witjira National Park is located on the western end of the Simpson Desert between Oodnadatta in South Australia and Aputula (Finke) in the Northern Territory. There are three main roads used to access Witjira National Park:

1. From the north, east from the Stuart Highway via Finke, then south to the park;
2. From the south-west, north from Oodnadatta via Hamilton Station; and
3. Across the Simpson Desert from Birdsville. Access via this road is closed between December 1 and March 15 each year due to high public risk from high summer temperatures.

DEH and the Witjira Co-management Board will consult with neighbours and public road maintenance authorities to determine the route, signposting and maintenance standards for these roads leading into the park. DEH and the Witjira Co-management Board will consider the scenic impact on the location of the roads, and will prioritise road repairs, maintenance and improvements as appropriate.

There are currently no official borrow pits within Witjira National Park that are associated with road maintenance. Any proposal to establish borrow pits within the park (by both the Department for Transport, Energy and Infastructure, and DEH) will:

- have to comply with the Notification Protocol;
- require a survey of environmental values and erosion risks;
- require an inspection for indigenous and non-indigenous cultural and heritage values;
- be considered with respect to the shape, size and construction techniques, with a view to rehabilitation and minimisation of waterholding; and
- require the approval of the Witjira Co-Management Board.

The maps in the Desert Parks Pass (DPP) identify the roads and tracks available for visitor use at Witjira National Park. Visitors must stay on those tracks marked in the DPP, unless in exceptional circumstances (such as emergency or road closure). Access via the Rocks Road, which traverses private leasehold land, is restricted to use in emergencies and only with prior permission from the police at Oodnadatta.

Road Conditions

DEH issues up-to-date information about road conditions and closures to DPP sales agencies, police at Birdsville and Oodnadatta, motorist associations and tourist information centres. Many of the roads within Witjira National Park are prone to flooding after heavy rains, particularly through the Spring Creek Delta. The main Spring Creek Delta Track from Dalhousie to Purnie Bore has been realigned to reduce the impact of flooding; the main Spring Creek Delta Track now stops at the Lookout (see Figure 4 Features and Zoning). Roads may be closed after rain or flooding to minimise damage caused by driving on wet roads and to reduce the risk of vehicles becoming bogged and stranded. Visitors must be vigilant of road and weather conditions when travelling through the park.

Aircraft Access

Witjira National Park has two airstrips that are maintained for aircraft use. One is at Mount Dare Homestead and the other is at Dalhousie Springs. The airstrips are occasionally used by visitors in light aircraft, and they may also be used for emergency access.

The airstrip at Mount Dare Homestead is managed and maintained by the Mount Dare lessee. Pilots wishing to use this airstrip should first make contact with the lessee.

Tour operators utilising the Dalhousie Springs airstrip are required to hold a tour operator's permit (see Section 11.6 Commercial Tourism). All visitors in the tour group are required to have a Desert Parks Pass or a camping permit. Private aircraft wishing to utilise the Dalhousie Springs airstrip should obtain permission from the regional conservator or delegate before landing.

Temporary Public Access Restrictions

Temporary road closures and access restrictions to specified areas within the park may occur where necessary for the cultural protection of ceremonial places, cultural sites or cultural activities associated with them. Consistent with the co-management agreement, any closure or restriction to public access within the Public Access Zone will not exceed a period of seven days.

Desert Parks Pass and Camping Permits

Since 1989 visitors camping in Witjira National Park and other parks in the far north of South Australia have required a Desert Parks Pass (DPP). Visitors accessing the park by vehicle are required to purchase a current DPP in advance and to display the sticker on the window of their vehicle. The pass entitles the holder to camp in and travel through National Parks and Wildlife reserves in the Desert Parks region. A short-term camping permit is also available to visitors to Dalhousie Springs. Visitors only travelling through the park on route to Mount Dare homestead do not require a DPP or camping permit.

The DPP handbook provides visitors with information about available access routes, facilities and appropriate behaviour in reserves, as well as information about the cultural and natural history of the reserves.

The DPP may be purchased by travellers at sales outlets. In advance of travelling prospective visitors may call the DPP hotline on 1800 816078 or may download and complete an application form available from the SA National Parks website at www.parks.sa.gov.au.

WHAT WE WANT – OBJECTIVES

Provide reasonable access to areas of the park, while minimising impacts on the natural and cultural values.

Ensure all visitors to Witjira National Park (excluding Mount Dare) hold a Desert Parks Pass or camping permit.

Ensure the Desert Parks Pass is an informative and useful resource to travellers in the Desert Parks of South Australia.

HOW WE WILL DO IT – STRATEGIES

- Minimise vehicle damage to wet roads through appropriate access management and conduct road maintenance works as required.
- Prohibit access along the Rocks Road track unless authorised by the Regional Conservator (and/or the Oodnadatta Police) for emergency purposes.
- Prohibit visitor access to the Homelands Track unless authorised by DEH and/or the Oodnadatta Police.
- Consult with neighbours and public road maintenance authorities to determine the route, sign-posting and maintenance standards for roads leading into the park.
- Liaise with Transport SA regarding the provision of consistent road closure signage.
- Monitor and review the location, extent and use of the Public Access Zone and camping sites, considering environmental, cultural and maintenance needs.
- Maintain the airstrip at Dalhousie Springs.
- Ensure the airstrip at Mount Dare is managed and maintained by the lessee at a suitable standard.
- Ensure tour operators utilising the Dalhousie Springs airstrip hold a valid commercial tourism permit.
- Ensure private aircraft operators obtain permission from obtain permission from the regional conservator or delegate to utilise Dalhousie Springs airstrip.
- Ensure that appropriate information regarding Witjira National Park is provided (and regularly updated) in the Desert Parks Pass.
- Undertake campground checks and compliance patrols to ensure all visitors have a Desert Parks Pass or camping permit.

11.3 Visitor Safety

The Desert Parks Pass provides information that enables people to make informed decisions regarding their own safety. It includes information on what to do in emergency situations, and provides recommendations on survival and communications equipment. The handbook is updated annually.

At Witjira National Park safety signage is installed at sites where safety precautions are required, such as at the Purni Bore artesian water outlet. 'No diving signs' are installed at Dalhousie Springs. The Dalhousie Campground has 'dingo signs' installed to inform visitors of the presence of dingoes in the park and the risks associated with them. Safety track markers along the main tracks east of Dalhousie seek to provide clear direction and act as a deterrent to off-road driving.

Appropriate signage informing visitors of safety information will be developed as part of an interpretive signage plan in the park (see Section 11.5 Interpretive and Signage Plans).

WHAT WE WANT – OBJECTIVE

Provide visitors with safety information and encourage them to act in a safe manner in the park.

HOW WE WILL DO IT – STRATEGIES

- Warn visitors (through signage and the Desert Parks Pass) of places and activities within the park that may pose a risk to their safety.
- Include guidelines, in the interpretive signage plan for Witjira National Park, for the provision of remote area travel safety information and risks that should be identified to visitors. The interpretive signage plan will include recommendations regarding the use and placement of traffic directional and regulatory signs.
- Liaise with the police to help meet their requirements for emergency evacuations.
- Provide, at Dalhousie Springs, a public telephone and a list of phone numbers for emergency services in the region.
- Provide signage at suitable locations advising UHF radio frequencies for use for convoy communications and in case of emergency.

11.4 Visitor Facilities

The majority of visitors to the park travel in 4WD vehicles and are self-sufficient. Self-sufficiency is necessary because Witjira National Park is located in a remote area where facilities and services are limited. Visitors need to bring sufficient food, water, fuel, shelter, and safety equipment. People also need to be aware of the dangers of travelling in a remote and arid environment. Where rubbish disposal facilities are not available, visitors must remove their own rubbish.

Dalhousie Springs Campground

The most popular destination in Witjira National Park is Dalhousie Springs, primarily due to the presence of deep warm pools. Visitor facilities provided at Dalhousie Springs include a campground, campsites, day visit area, shade shelters, an ablution block and interpretive information (see Figure 5).

In 1998 the campground was moved away from the spring edge and a limited number of campsites surfaced. The areas between campsites have been revegetated to provide shade and privacy for campers and to reduce run-off into the spring. Toilet and shower facilities have been designed to improve effluent management. Drinking water, information facilities and walking tracks have also been installed. These facilities were designed to reduce visitor impacts on the springs while providing quality facilities for visitors.

There is however a limit to the number of people that can camp at Dalhousie Springs without over-crowding the facilities or causing undue environmental impacts on the springs. Visitor levels are being monitored so that facilities to meet the future visitor demand can be planned.

While Dalhousie Springs is a popular visitor destination it is also a very significant cultural site for indigenous people. Visitors need to be respectful by treating the area with care and utilising a minimal impact philosophy.

Other Camp Sites

Bush campgrounds are located at Three O'Clock Creek and Purni Bore (see Figures 6 and 7). Mount Dare also provides a campground and a range of other visitor facilities and services.

Purni Bore is located at the edge of the dunes on the eastern side of the park. It is a popular camp for people travelling through the Simpson Desert. Purni Bore features an artificial wetland providing water for washing, and some vegetation for shade and shelter. A shower, toilet and shade shelter are provided for visitors. Definition of the campground is proposed to reduce impacts on vegetation.

Three O'Clock Creek bush camping ground features a stretch of creek lined with Red Mulga and Coolibah trees that provide shade and privacy. A shade shelter and drinking water are available. It is proposed that ablution facilities will be constructed at Three O'Clock Creek during the life of this plan.

Visitors with caravans and camping trailers are encouraged to use the campgrounds provided at Purni Bore and Three O'Clock Creek, as the Dalhousie Springs camping area is not suitable to accommodate towed vehicles. However, for safety reasons, it is suggested that caravans and vehicles with camping trailers do not travel further east of Purni Bore.

WHAT WE WANT – OBJECTIVES

Provide a range of camping facilities in compatibility with the objectives of the park.

Appropriately manage litter and rubbish disposal in the park.

HOW WE WILL DO IT – STRATEGIES

- Limit the number of campsites at Dalhousie Springs to the capacity of the ablution facilities.
- Permit visitors to camp only at designated campgrounds and campsites.
- Encourage visitors to use a range of campsites, to reduce visitor pressures at Dalhousie Springs.
- Develop visitor facilities at Purni Bore and Three O'Clock Creek camping areas.
- Encourage travellers with caravans and camping trailers to use Purni Bore and Three O'Clock Creek campgrounds.
- Monitor visitor numbers and use of the park through vehicle counting, the Desert Parks Pass survey and sales of camping permits. Use this data to plan future visitor facility development.
- Avoid visitor disturbance by developing and enforcing rules for noise abatement, where necessary.
- Inform visitors through park signs and DPP handbook that they must remove their own rubbish where rubbish disposal facilities are not available.
- Endeavour to maximise recycling of wastes at Witjira National Park.
- Minimise spread of rubbish by animals through appropriate containment.

11.5 Interpretive and Signage Plans

Signs directing travellers to Witjira National Park are sparse and are in need of improvement. Similarly, there is great potential to improve the interpretive information available to visitors within the park. Interpretive signs are currently installed at Dalhousie Springs and Dalhousie Ruins and information is available in the Desert Parks Pass.

Walking and interpretive trails and boardwalks may be constructed and maintained in the Public Access Zone to provide educational and recreational opportunities for visitors. These boardwalks will also protect sensitive Aboriginal sites from the impacts of visitors.

The intention is to develop a coordinated regional approach to the provision of visitor safety, interpretive and directional signs. To develop such a regional approach an interpretive signage plan will be prepared for the park. This plan will:

- provide for park entrance signs that create a positive image, a sense of place, information and will identify that the park is co-managed;
- produce signs that have a regionally consistent style, theme and colour scheme;
- provide for the delivery of information on the indigenous and recent history, land, plants and animals of the park.

The Witjira Co-management Board must be consulted during the development of interpretive signs for the park, which must also be approved by the Witjira Co-management Board.

WHAT WE WANT – OBJECTIVE

Provide visitors with effective directional, educational and interpretive opportunities and resources in the park.

HOW WE WILL DO IT – STRATEGIES

- Prepare an interpretive signage plan that addresses the recommendations outlined in this management plan.
- Encourage Irrwanyere AC to provide a variety of interpretive opportunities (eg pamphlets, guided or self-guided walks) describing indigenous culture, links and knowledge of historical, cultural and economic aspects of the park, the pastoral history of the region, park management, and the park's plant and animal resources.
- Promote indigenous culture, history and resource use through guided or self-guided tours,

printed information, the DPP handbook and signs.

- Where interpretive material is provided include local indigenous names for places, plants and animals, and some interpretation in indigenous language(s).
- Maintain an asset register of signs and interpretive infrastructure.
- Maintain signs in good order.
- Develop, update or upgrade interpretative guided and self-guided walks at the Dalhousie Springs, Dalhousie Ruins and Purni Bore areas with themes such as natural history, indigenous culture and recent history.
- Provide scenic lookouts and roadside stops at places of scenic interest.

11.6 Commercial Tourism

Commercial tours at Witjira National Park consist mainly of small groups, tag-along tours and small 4WD vehicle tours. To run tours for commercial purposes within the park it is necessary to hold a Commercial Licence, pursuant to section 35(3) of the *National Parks and Wildlife Act 1972*.

Consistent with the Irrwanyere lease and ILUA for the park, Lower Southern Arrernte and Wangkangurru people have the exclusive right to conduct commercial tours that relate to, or are associated with, traditional and contemporary Aboriginal use of the park, or the explanation and interpretation of Aboriginal sites and culture. Applications for such commercial tourism operations must be referred to the Witjira Co-management Board. As part of the co-management agreement the Witjira Co-management Board has delegated, to the Director of National Parks and Wildlife, its power to issue Commercial Tourism Operator licences which do not apply solely to the park and do not permit the explanation or interpretation of Aboriginal culture within the park (see Section 4.1 Park Management Roles and Responsibilities, and Section 6.5 Indigenous Tourism Enterprises).

Licence proposals most likely to be approved would be those that focus on the park's environmental and cultural values, and can demonstrate strong linkages to the tourism theme adopted for the region.

WHAT WE WANT – OBJECTIVE

Encourage commercial tourism operators to show visitors around the park, while observing the rules and policies of the park and respecting the association indigenous people have with the land.

HOW WE WILL DO IT – STRATEGIES

- Adhere to the delegations of power regarding the issuing of commercial tour operator licences, as agreed to in the co-management agreement.
- Ensure tour operators hold an appropriate tour operator's license in accordance with DEH policies.
- Prohibit commercial tourism operations that conflict with the rights associated with the Mount Dare lease.

11.7 Compliance

Management of visitor use of facilities and behaviour in the park will include compliance patrol and inspections.

Expiation notices may be issued for activities not complying with the *National Parks and Wildlife Act 1972* and Regulations and this plan of management.

WHAT WE WANT – OBJECTIVE

Ensure all visitors comply with the activities and conditions permitted in the park.

HOW WE WILL DO IT – STRATEGY

- Conduct compliance patrols of the park and campgrounds to identify non-complying activities and issue Desert Parks Passes, warnings or expiation notices as appropriate.

11.8 Management Infrastructure

Staff housing is located near the Dalhousie Springs visitor area where the demand for visitor services is high. These houses replaced the caravan at Dalhousie Springs, which until then had been the Aboriginal ranger accommodation in the park.

In 2002 the Dalhousie precinct was provided with 24-hour power by a Remote Area Power (RAP) system utilising solar, wind and diesel generators. This also enabled improved telecommunications and connection to the Internet. Accommodation for work crews and seasonal rangers is required in the area and should be established in the Dalhousie area within the life of this plan. It is also proposed that the workshops currently located just west of the Dalhousie airstrip be relocated to the ranger accommodation precinct, near the RAP System within the Public Access Zone.

Should Irrwanyere AC or any other organisation or instrumentality seek to place a development on the park a proposal to DEH, the Witjira Co-management Board and, if necessary, the Development Assessment Commission will be required. Development proposals need to include a description of the proposal and an assessment of possible impacts to biodiversity and cultural or historic places. Proposals for new developments must comply with the *Development Act 1993* and will only be approved if they:

- are designed and built to be sustainable;
- retain and complement the qualities of the park;
- meet community expectations for facilities in the region;
- have public acceptance;
- minimise ongoing maintenance requirements; and
- incorporate design approaches that reduce energy and water use, vandalism and personal injury.

WHAT WE WANT – OBJECTIVE

Provide adequate infrastructure and visiting staff facilities for effective management of the park.

HOW WE WILL DO IT – STRATEGIES

- Prepare and implement an accommodation plan for rangers, visiting staff, park headquarters and workshop using innovative and energy efficient technology.
- Assess all proposals for infrastructure development against the *Development Act 1993* and the conditions outlined in this plan.
- Developments, other than campground or DEH management infrastructure developments, may only be placed at the Three O'Clock Creek Public Access Zone.
- Ensure new facilities have effective design consideration, suitable input from stakeholders and professional guidance.

12 MANAGING EXPLORATION AND MINING

Witjira National Park is proclaimed to allow access for exploration and mining activities administered under both the *Mining Act 1971* and *Petroleum Act 2000*, subject to specified conditions (refer Appendix 2). 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. The Minister will seek the advice of the Witjira Co-management Board, consistent with the co-management agreement, prior to any licence or activity approval.

It is a requirement of the *Mining Act 1971* that a Declaration of Environmental Factors and Notice of Entry are submitted as part of an exploration work approval for activities in sensitive areas. For mining activities companies submit a Mining and Rehabilitation Program as part of their licence application, which identifies environmental impacts and proposed management techniques, risk mitigation and rehabilitation capacity, environmental objectives and assessment criteria.

Under the *Petroleum Act 2000* activities may only be undertaken if there is an approved Statement of Environmental Objectives. This establishes objectives for management of environmental impacts, risk mitigation and rehabilitation capacity, and assessment criteria for measuring the achievement of these objectives.

Due to the environmental and cultural significance of Witjira National Park, all proposals for prospecting, exploration and mining will be assessed on a case-by-case basis and may be subject to specific conditions being included in the licence. Furthermore, since all proposals will be referred to the Witjira Co-management Board for advice, companies should submit proposals well before they wish to enter the park.

PIRSA and DEH officers are empowered to ensure that all conditions associated with any approved works are met and will inspect works to ensure that managment standards are achieved.

Exploration and Mining in Management Zones

Four management zones have been established at Witjira National Park (see Figure 4). Each contains differing levels of environmental and cultural sensitivity. Hence, each provides for differing levels of exploration and mining access.

Dalhousie Springs Zone

The Dalhousie Springs Zone has been established to protect the Dalhousie Mound Springs complex, an internationally significant part of the Great Artesian Basin (GAB) springs, and the array of cultural, tourism and ecological values associated with it. The Dalhousie mound springs are unique geomorphic structures that protect at least 14 endemic species. The tails of the mound springs also play an important functional role in spring ecology. These spring tails vary in length from short to several kilometres, and each tail extends and contracts seasonally.

The Dalhousie Mound Springs complex is of great cultural significance for the park's traditional owners, as the mound springs are strongly linked with Aboriginal ancestry, mythology and culture. Although the Dalhousie Springs Zone represents just 6% (50,980 hectares) of the park, it contains almost one quarter of the Aboriginal sites listed on the Register of Aboriginal Sites and Objects on AARD's Central Archive for Witjira National Park (see Section 6.7 Protection of Aboriginal Heritage for more information on Aboriginal sites). This concentration of sites reinforces the importance of the Dalhousie Mound Springs complex for Aboriginal people, and their strong desire to ensure its protection.

Tourism is an expanding industry in the far north of South Australia, and at Witjira National Park the Dalhousie Mound Springs complex is probably the most popular visitor attraction. Most travellers who cross the Simpson Desert also visit Dalhousie Springs. The presence of visitors at Witjira National Park, and particularly at Dalhousie Springs, has been accepted by the park's traditional owners, who have embraced this as an opportunity to educate people about the cultural values of the land and its importance to Aboriginal people.

The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin (including Dalhousie GAB Mound Springs fauna) are listed as a threatened ecological community under the *Environment Protection and Biodiversity Conservation Act 1999*,

therefore any obligations under this Act should be considered prior to undertaking any exploration and mining activities in the park.

The vegetation associated with the Dalhousie Mound Springs complex, specifically Sea-heath (*Frankenia* spp.), is highly susceptible to erosion. Human-induced erosion within this vegetation is primarily associated with the public access tracks, management tracks and old seismic lines. Management practices are undertaken to minimise the impacts of erosion on the public access and management tracks. While it is recognised that best-practice methods for exploration and mining have improved in recent time, the highly susceptible nature of the vegetation is such that new track formation must be strictly prohibited.

The Dalhousie Mound Springs complex lies close to the edge of the GAB, where the aquifer is close to the surface and the confining layer is thin. This places further sensitivity on the complex, as any rupture of the aquifer could lead to species extinctions. While the intrinsic relationship between the GAB, mound springs and endemic species is indisputable, exactly how the hydrogeology of the system is affected by exploration and mining activities is not well understood.

A precautionary approach has been adopted to determine the boundaries of this zone, being a five kilometre buffer around all known springs vents and spring tails, and a buffer around the outflow tail of the mound springs complex (see Figures 4 and 9). All on-ground prospecting, exploration and mining activities are prohibited in this zone. Airborne exploration surveys will be permitted over the Dalhousie Springs Zone, however use of the airstrips in the park will be negotiated through the normal licence processes.

The Spring Creek Delta Track is the only public access track linking the west and east of the park (see Figure 4). Hence, through assessment and negotiation on a case-by-case basis, 'right of passage' will be permitted through the Dalhousie Springs Zone on the Spring Creek Delta Track for vehicles associated with exploration and mining activities in other areas of the park. It is reiterated that all on-ground exploration and mining activities are prohibited within the Dalhousie Springs Zone, including in those portions of the Public Access Zone that are encompassed by the Dalhousie Springs Zone.

Other Zones

Prospecting, exploration and mining activities are permitted in the Conservation Zone, Public Access Zone and Mount Dare Homestead Zone, subject to approval and specified conditions. It is reiterated that due to the high number of naturally and culturally significant areas throughout the park, all prospecting, exploration and mining proposals will be carefully assessed on a case-by-case basis.

Areas of significant natural and cultural value in these three zones that should not receive undue disturbance, and which may be identified for higher-level conditions in the licence or works approvals for exploration and mining activities include (but are not limited to):

- all gibber and gilgai stony downs, uplands, mesas, and jump ups (which have highly erodible soils);
- flora and fauna of conservation significance known to exist in the area, including the Pickard's Wattle (nationally vulnerable), Plains Rat (nationally vulnerable), and Greater Bilby (nationally vulnerable);
- areas of cultural significance (particularly in the Conservation Zone); and
- popular visitor and tourism areas (eg visitor tracks, public access roads, Purni Bore, and Three O'Clock Creek campgrounds).

The distribution of active or dormant mound springs throughout Witjira National Park is relatively well understood, and all appear to be within the Dalhousie Springs Zone. However, should any active or dormant mound springs be discovered in other areas of the park, any proposed exploration and mining activity in the vicinity will be assessed on a case-by-case basis through the normal licence processes.

Development Activities

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 the park will be subject to

extensive consultation with the Witjira Co-management Board, and strict controls over and above general park provisions will be required and determined on a case-by-case basis.

WHAT WE WANT – OBJECTIVE

Ensure exploration or mining is conducted in Witjira National Park in a way that minimises impacts to the park's natural and cultural values, particularly those associated with the internationally significant mound springs.

HOW WE WILL DO IT – STRATEGIES

- Prohibit all on-ground prospecting, exploration and mining activities within the Dalhousie Springs Zone.
- Assess all proposals for prospecting, exploration and mining activities on a case-by-case basis against the conditions outlined in this management plan.
- Ensure the cultural values of the park are protected by seeking advice from the Witjira Co-management Board for all prospecting, exploration and mining proposals.
- Liaise with licensees regarding the natural and cultural values of the park to ensure the minimisation of environmental impacts and to ensure compliance with the objectives of this management plan.

13 PARTNERSHIPS AND COMMUNITY INVOLVEMENT

Witjira National Park is primarily managed through the partnership between the Irrwanyere Aboriginal Corporation (through the Witjira Co-management Board) and DEH.

A number of other individuals and groups (including the local community, and environmental and tourism groups) contribute to the management of Witjira National Park. Of particular importance are the Native Title Claimants, Outback Consultative Committee, Friends of Simpson Desert and the South Australian Arid Lands Natural Resources Management Board.

The management of Witjira National Park is enhanced by communicating and working with, and obtaining feedback from neighbours, the listed interest groups, and visitors to the park.

WHAT WE WANT – OBJECTIVE

Provide mechanisms for Irrwanyere AC, neighbours, friends groups, volunteers and the public to give feedback regarding park management, and to work with DEH on conservation and management programs.

HOW WE WILL DO IT – STRATEGIES

- Discuss park management issues with the Outback Consultative Committee.
- Provide opportunities for visitors to give feedback through the Desert Parks Pass, specific surveys and through the visitor's book at Dalhousie Springs.
- Regularly review feedback regarding management of the park.
- Inform the community of activities on the park through the Witjira Co-management Board, Outback Consultative Committee, meetings with Friends of Simpson Desert, South Australian Arid Lands NRM Board, DEH publications including the Desert Parks Pass, DEH website, "Across the Outback" and other newsletters.
- On specific programs or projects form partnerships with Irrwanyere Aboriginal Corporation, neighbours, regional interest groups and organisations to implement the strategies of the program or project.

SUMMARY OF MANAGEMENT STRATEGIES

STRATEGY	Page
LEGISLATIVE FRAMEWORK	
Leases and Licences • Ensure the lessees comply with the established lease conditions.	**9**
INDIGENOUS PEOPLE'S AIMS	
Continue and Maintain *Altyerre/Tjukurpa* – Aboriginal Lore and Customs • Develop a protocol for protecting ***Altyerre/Tjukurpa*** in decision-making processes for managing the park. • Develop a protocol at Witjira Co-management Board meetings by which indigenous people can comment on, and appeal, Witjira Co-management Board decisions that conflict with their knowledge of ***Altyerre/Tjukurpa***. • Ensure the Notification Protocol in Schedule 3 of the ILUA is followed for any acts and activities that are Notifiable Acts, to ensure ***Altyerre/Tjukurpa*** is protected. • Ensure the Witjira Co-management Board respects any decisions on Native Title. • Provide Aboriginal people with cultural access throughout the park, ensuring permission is granted from the lessee when accessing the Mount Dare Homestead Zone. • In accordance with the co-management agreement, allow the Witjira Co-management Board to approve the temporary closure of parts of the park for Aboriginal people to hold private ceremonies. Ensure notification of such closures is provided well in advance to minimise inconvenience to visitors.	**13**
Share our Culture with Visitors • Educate visitors about the importance of Witjira National Park for Aboriginal people through the provision of interpretive information, and the delivery of relevant and appropriate cultural tourism. • Enable the development of a Culture Centre by Irrwanyere AC within the Public Access Zone consistent with the objectives of this management plan.	**14**
Living on the Park – Homelands • Permit the establishment of homeland living areas in the Conservation Zone only. • Ensure the Witjira Co-management Board assesses all proposed homeland developments against the conditions of the Irrwanyere lease agreement, the *Development Act 1993* and the conditions outlined in this management plan. • Permit the Witjira Co-management Board to approve new access roads to homelands, where necessary and appropriate. • Ensure the privacy of homeland residents is respected by limiting public access to invitation only. • Ensure the Witjira Co-management Board assesses the keeping of pets and the establishment of domestic gardens against the conditions outlined in this management plan.	**15**

STRATEGY	Page
Indigenous Resource Use • In consultation with Irrwanyere Aboriginal Corporation, develop and implement a plan for sustainable traditional hunting and gathering by indigenous people that: - encourages responsible, minimum-impact resource-use practices; - limits the use of resources by and for the local community (ie not commercial purposes); - is carried out with weapons suitable for the humane destruction of animals; - clearly lists which plant and animal species are permitted to be taken by traditional hunting and gathering; - includes a map that clearly shows the areas in which traditional hunting and gathering practices are permitted, and clearly identifies the five kilometre buffer zone around the Public Access Zone, where hunting is not permitted; - clearly identifies the areas in which vehicle access is permitted for people undertaking traditional hunting and gathering practices (vehicle access will not be permitted in the five kilometre buffer zone around the Public Access Zone); - allows for the monitoring and reporting on the impacts of resource use and collection on populations of plant and animal species taken; - considers recommendations made by DEH staff and other experts regarding the restriction and/or prohibition of species taken, and the location and method of collection, where necessary; - provides the procedures for the Witjira Co-management Board ensuring that members of the public are warned in relation to the dangers of any traditional hunting being carried out on the park; and - addresses firewood collection and use by indigenous people. • Regularly review and update the plan for sustainable traditional hunting and gathering by indigenous people, taking into account the research undertaken and recommendations made regarding the impacts of these practices on the native flora and fauna. • Ensure indigenous people undertaking traditional hunting and gathering on the park comply with the rules set by the Witjira Co-management Board.	16
Indigenous Tourism Enterprises • Adhere to the delegations of power regarding the issuing of commercial tour operator licences, as agreed to in the co-management agreement. • Ensure all commercial activities on the park comply with relevant legislation relating to commercial activities and DEH policies.	17
Community Development and Employment • Give preference to the employment of local indigenous people in work contracts for the day-to-day management and maintenance of the park, where appropriate. • Prior to approval of commercial activities on-park, consult with the Witjira Co-management Board regarding employment of Aboriginal people in these operations, where appropriate. • Encourage Aboriginal people to develop, secure funding for, and implement employment and training programs that relate to park management.	18

STRATEGY	Page
Protection of Aboriginal Heritage • Consult with the Witjira Co-management Board and Aboriginal elders to identify and protect any Aboriginal sites, objects and remains. • Encourage indigenous people to nominate sites for the Register of Aboriginal Sites and Objects under the *Aboriginal Heritage Act 1988*. • Comply with the Notification Protocol as outlined in Schedule 3 of the ILUA prior to starting any development work, to ensure Aboriginal sites are protected. • Develop conservation plans for significant Aboriginal sites as outlined by AARD. • Inform visitors, through park signage and the Desert Park Pass, that damaging Aboriginal sites is an offence for which penalties apply.	**18**
MANAGEMENT ZONES	
• Designate and adopt the management zones as shown in Figures 4, 5, 6 and 7, and apply the management prescriptions as outlined in this plan.	**20**
MANAGING NATURAL HERITAGE	
Land Systems • Take into account the indigenous spiritual and cultural values of the land systems and their associated vegetation communities and animals when planning for future land use or visitor access, or when undertaking management activities and development works. • Encourage and support research to gain a greater understanding of the taxonomy and ecology of invertebrates in the Dalhousie Mound Springs complex. • Encourage and support research to gain a greater understanding of the taxonomy and ecology of fish and invertebrates in the Lower Finke River. • Develop strategies for protecting the land systems of the park as part of regional natural resource management initiatives. • Increase community understanding of regional biodiversity values and associated threats. • Monitor progress towards securing the biodiversity assets of Witjira National Park.	**35**
Water • Take into account the Aboriginal spiritual and cultural values of springs, waterholes and watercourses when planning for future land use or visitor access, or when undertaking management activities and development works. • Play an active role in the protection of the water resources of the GAB and Lake Eyre Basin. Inform the Witjira Co-management Board of any matters relevant to the management of the park. • With the approval of the Witjira Co-management Board, allow relevant agencies to monitor bores and artesian water use including flow rates, water quality and species composition. These agencies are required to provide a report of collected data to the District Ranger, who will present this report to the Witjira Co-management Board. • Monitor and assess the importance of Purni Bore to wildlife and visitors. • As the GAB springs are listed under the Australian Government's EPBC Act, seek approval (in addition to any state approval that may be required) for any action that has, will have, or is likely to have, a significant impact on these nationally threatened communities and species. • Encourage and support research to better understand the threats to the GAB system (particularly the hydrogeology) and how such threats may be minimised or managed.	**40**

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• Encourage and support research to better understand the relationship between the Finke River and the GAB, and to identify and minimise threatening processes. • Prohibit the use of soap and shampoo in the Mound Springs. • Maintain signs that encourage visitors to shower before swimming at Dalhousie Springs to minimise water pollution. • Install and maintain signs at strategic locations to manage potential water-polluting activities such as clothes washing, car washing, and refuelling. • Prohibit boats, including canoes, and fishing in the water bodies within the park. • Ensure boats used for aquatic research are washed before being placed in each water body.	
Soil Erosion • Take account of Aboriginal spiritual and cultural values when undertaking management activities and development works that might impact on rocks, soils or landforms. • Prohibit off-road vehicle use unless approved by for specific purposes. • Discourage off-road vehicle use by providing directional and interpretive signage, and by building and maintaining vehicle barriers where necessary. • Monitor the impacts of swimming use on the springs. • Ensure access to the springs for swimming is only by the steps and ladder provided. • Maintain signage to prohibit diving and jumping into the springs. • Develop walking trails to sites of interest to prevent visitors walking off-trail. • Undertake road grading to minimise erosion. • Disguise tracks, where necessary, to prohibit use by visitors. • Undertake restoration activities in areas where excessive soil erosion has occurred, particularly in the gibber country. • Manage feral animal populations to minimise impacts on soils.	**41**
Native Vegetation, *Punu* • Take the advice of Aboriginal people into consideration when making decisions about the conservation and protection of native vegetation. • Continue to monitor the condition of native vegetation through the use of photopoints and exclosures. • Consult with the Witjira Co-management Board, visitors, and recreation groups to develop a regional strategy for the management of firewood collection and use, educating them about the impacts such activities have on the natural values of the park. • Ensure the collection and use of firewood by visitors to the park is consistent with current guidelines.	**42**
Native Animals • Take the advice of Aboriginal people into consideration when making decisions about the conservation and protection of native animals. • Encourage and support research to gain a greater understanding of the mammal species present in the park prior to pastoral use, and to determine which species are still present in the park. • Continue to monitor the Plains Rat population and implement the management strategies outlined in the recovery plans as they are developed.	**45**

STRATEGY	Page
• Continue to monitor suitable habitat in the park for the Kowari. If present, develop and implement a recovery plan for the species. If not present, conduct research to determine the feasibility of conducting Kowari reintroductions. • Monitor suitable habitat to confirm the presence of the Southern Marsupial Mole in the park. Implement the management strategies outlined in recovery plans as they are developed.	
Weeds <u>Date Palm</u> • Continue to implement programs to control the Date Palm, while reviewing and reporting the success of programs. • Monitor terrestrial and aquatic biodiversity changes that result from the removal of Date Palms. <u>Acacia farnesiana</u> • Continue to implement necessary control programs to manage the *Acacia farnesiana* population within the park. • Monitor controlled areas to determine the success of control measures and revise methodology as appropriate. <u>Buffel Grass</u> • Identify, survey, assess and monitor Buffel Grass recruitment within the park. • Control Buffel Grass infestations and regrowth using best possible techniques and minimising impact to surrounding vegetation and soils. • Ensure road works or other activities do not contribute to the spread of Buffel Grass in the park. <u>Athel Pine</u> • Conduct regular surveys to determine the presence of new Athel Pine seedlings and regrowth within the park. • Control Athel Pine recruitment and regrowth using best possible techniques and minimising impact to surrounding vegetation and soils. <u>Camel Thorn</u> • Conduct regular surveys to determine the presence of Camel Thorn within the park. • Coordinate control programs for Camel Thorn with those implemented in the Northern Territory. • Eradicate any identified populations of Camel Thorn using best possible techniques and minimising impact to surrounding vegetation and soils.	**47**
Feral Animals • Ensure feral animals are controlled such that grazing impact on indicator plant species (white wood and eremophila) is minimal. • Control rabbits using best possible practice methods, complying with the *Aboriginal Heritage Act 1988*. • Target photopoint monitoring to assess the impacts of feral animals on indicator plant species, and to assess the benefits of feral animal control programs. • Conduct aerial surveys to assess numbers, locations, status and impacts of pest animals such as camels, brumbies, cattle, and donkeys. • Monitor and evaluate the effectiveness of feral animal control techniques.	**50**

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• Encourage and support the involvement of Aboriginal people in feral animal control programs, where appropriate. • Permit the Witjira Co-management Board to approve the taking of feral animals from the park, by Aboriginal people, for personal use on-park, given their applications meet necessary procedures and conditions. • Coordinate the control of feral animal populations with neighbours through community and state government coordinating groups such as South Australian Arid Lands Natural Resource Management Board, cross-border committees, and steering groups. • Monitor the condition of fences and liaise with neighbours to prevent access to the park by stock animals. • Encourage and support research to obtain a greater understanding of cats and foxes in the park. Develop and implement control programs as appropriate.	
MANAGING FIRE	
• Develop, implement and review a fire management plan in association with the Witjira Co-management Board and other stakeholders. • Train staff to recognise and reduce fire hazards and to understand appropriate fire suppression procedures, safe operation of fire suppression equipment and safe storage of flammable materials. • Install signage at strategic locations, informing visitors of the Fire Ban Season. • Develop a better understanding of ecological fire regimes for the mound springs and woodlands in the park. • Trial ecological burning practices for the mound springs and woodlands, and once developed, introduce a burning regime with the approval of the Witjira Co-management Board. • Store flammable materials appropriately to minimise risk of ignition.	**51**
MANAGING IMPORTANT PLACES	
Important Places to Indigenous People • Maintain liaison with the Witjira Co-management Board to ensure park activities are consistent with indigenous lore. • Acknowledge that appropriate indigenous people are able to look after the places they are responsible for within the park. • Comply with the Notification Protocol as outlined in Schedule 3 of the ILUA prior to starting any development work, to ensure Aboriginal sites are protected. • Negotiate 'access and work clearance' agreements with appropriate indigenous people as part of the planning of all developments in the park, including at the Mount Dare Homestead Lease area (pursuant to this plan and to ensure compliance with the *Aboriginal Heritage Act 1988*). • Disguise tracks that lead to indigenous sites that are not part of the Public Access Zone. • Inform visitors, through park signage and the Desert Park Pass, that damaging Aboriginal sites is an offence for which penalties apply. • Develop conservation plans for significant Aboriginal sites as outlined by AARD.	**52**
Historic Places • Monitor visitor use and impact on historic places. • Monitor site stabilisation works at Dalhousie ruins and undertake works where necessary. • Develop a car-parking area, car barriers and walking trails to protect Bloods Creek, Federal	**53**

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and Dalhousie historic ruins as required and approved. • Install signs near heritage sites that provide information about the significance of the site and requesting people not to damage the sites. • Identify Date Palms of historic significance near Dalhousie ruins while controlling other palms, particularly those threatening the ecology and geomorphology of mound springs and heritage places. • Comply with the Notification Protocol as outlined in Schedule 3 of the ILUA, and consult the Witjira Co-management Board and DEH before commencement of works.	
Scenic Places • Provide roadside stops and scenic lookouts at places of scenic interest. • Build vehicle barriers to reduce vehicle off-road use and resulting soil erosion and visual impacts, where necessary. • Ensure designs for infrastructure and tracks minimise the visual impact of these developments. • Consider the visual impacts of proposed developments, and select material, textures and colours that will minimise the visual impact of new developments. • Improve, relocate or remove any existing infrastructure considered inappropriate.	**54**
Scientific, Ecological and Cultural Studies • Adhere to the delegations of power regarding the issuing of commercial tour operator licences, as outlined in the co-management agreement. • Take the advice of Aboriginal people into consideration when making decisions on scientific, ecological and cultural research and projects involving native animals and plants, and landforms. • Ensure the provisions of the *Aboriginal Heritage Act 1988* and the Notification Protocol in Schedule 3 of the ILUA are followed to ensure the protection of Aboriginal sites, objects and culture when research that is cultural in nature is undertaken. • Ensure the research proponent provides six-monthly briefings of progress and a copy of research findings and reports to DEH and the Witjira Co-management Board.	**55**
Commercial Filming and Photography • Ensure all photographers, film-makers and advertisers proposing to film in the park complete an application form that clearly depicts the storyline/theme of their filming. • Refuse applications for commercial filming and photography where the proposed activity or storyline is inconsistent with the objectives of the park. • Inspect commercial filming and photography activities to ensure they comply with the conditions of their approval.	**55**
MANAGING TOURISM AND RECREATION	
Access • Minimise vehicle damage to wet roads through appropriate access management and conduct road maintenance works as required. • Prohibit access along the Rocks Road track unless authorised by the Regional Conservator (and/or the Oodnadatta Police) for emergency purposes. • Prohibit visitor access to the Homelands Track unless authorised by DEH and/or the Oodnadatta Police. • Consult with neighbours and public road maintenance authorities to determine the route, sign-posting and maintenance standards for roads leading into the park. • Liaise with Transport SA regarding the provision of consistent road closure signage.	**58**

STRATEGY	Page
• Monitor and review the location, extent and use of the Public Access Zone and camping sites, considering environmental, cultural and maintenance needs. • Maintain the airstrip at Dalhousie Springs. • Ensure the airstrip at Mount Dare is managed and maintained by the lessee at a suitable standard. • Ensure tour operators utilising the Dalhousie Springs airstrip hold a valid commercial tourism permit. • Ensure private aircraft operators obtain permission from obtain permission from the regional conservator or delegate utilise Dalhousie Springs airstrip. • Ensure that appropriate information regarding Witjira National Park is provided (and regularly updated) in the Desert Parks Pass. • Undertake campground checks and compliance patrols to ensure all visitors have a Desert Parks Pass or camping permit.	
Visitor Safety • Warn visitors (through signage and the Desert Parks Pass) of places and activities within the park that may pose a risk to their safety. • Include guidelines, in the interpretive signage plan for Witjira National Park, for the provision of remote area travel safety information and risks that should be identified to visitors. The interpretive signage plan will include recommendations regarding the use and placement of traffic directional and regulatory signs. • Liaise with the police to help meet their requirements for emergency evacuations. • Provide, at Dalhousie Springs, a public telephone and a list of phone numbers for emergency services in the region. • Provide signage at suitable locations advising UHF radio frequencies for use for convoy communications and in case of emergency.	**59**
Visitor Facilities • Limit the number of campsites at Dalhousie Springs to the capacity of the ablution facilities. • Permit visitors to camp only at designated campgrounds and campsites. • Encourage visitors to use a range of campsites, to reduce visitor pressures at Dalhousie Springs. • Develop visitor facilities at Purni Bore and Three O'Clock Creek camping areas. • Encourage travellers with caravans and camping trailers to use Purni Bore and Three O'Clock Creek campgrounds. • Monitor visitor numbers and use of the park through vehicle counting, the Desert Parks Pass survey and sales of camping permits. Use this data to plan future visitor facility development. • Avoid visitor disturbance by developing and enforcing rules for noise abatement, where necessary. • Inform visitors through park signs and DPP handbook that they must remove their own rubbish where rubbish disposal facilities are not available. • Endeavour to maximise recycling of wastes at Witjira National Park. • Minimise spread of rubbish by animals through appropriate containment.	**60**

STRATEGY	Page
Interpretive and Signage Plans • Prepare an interpretive signage plan that addresses the recommendations outlined in this management plan. • Encourage Irrwanyere AC to provide a variety of interpretive opportunities (eg pamphlets, guided or self-guided walks) describing indigenous culture, links and knowledge of historical, cultural and economic aspects of the park, the pastoral history of the region, park management, and the park's plant and animal resources. • Promote indigenous culture, history and resource use through guided or self-guided tours, printed information, the DPP handbook and signs. • Where interpretive material is provided include local indigenous names for places, plants and animals, and some interpretation in indigenous language(s). • Maintain an asset register of signs and interpretive infrastructure. • Maintain signs in good order. • Develop, update or upgrade interpretative guided and self-guided walks at the Dalhousie Springs, Dalhousie Ruins and Purni Bore areas with themes such as natural history, indigenous culture and recent history. • Provide scenic lookouts and roadside stops at places of scenic interest.	**60**
Commercial Tourism • Adhere to the delegations of power regarding the issuing of commercial tour operator licences, as agreed to in the co-management agreement. • Ensure tour operators hold an appropriate tour operator's license in accordance with DEH policies. • Prohibit commercial tourism operations that conflict with the rights associated with the Mount Dare lease.	**61**
Compliance • Conduct compliance patrols of the park and campgrounds to identify non-complying activities and issue Desert Parks Passes, warnings or expiation notices as appropriate.	**61**
Management Infrastructure • Prepare and implement an accommodation plan for rangers, visiting staff, park headquarters and workshop using innovative and energy efficient technology. • Assess all proposals for infrastructure development against the *Development Act 1993* and the conditions outlined in this plan. • Developments, other than campground or DEH management infrastructure developments, may only be placed at the Three O'Clock Creek Public Access Zone. • Ensure new facilities have effective design consideration, suitable input from stakeholders and professional guidance.	**62**

STRATEGY	Page
MANAGING EXPLORATION AND MINING	
• Prohibit all on-ground prospecting, exploration and mining activities within the Dalhousie Springs Zone. • Assess all proposals for prospecting, exploration and mining activities on a case-by-case basis against the conditions outlined in this management plan. • Ensure the cultural values of the park are protected by seeking advice from the Witjira Co-management Board for all prospecting, exploration and mining proposals. • Liaise with licensees regarding the natural and cultural values of the park to ensure the minimisation of environmental impacts and to ensure compliance with the objectives of this management plan.	**65**
PARTNERSHIPS AND COMMUNITY INVOLVEMENT	
• Discuss park management issues with the Outback Consultative Committee. • Provide opportunities for visitors to give feedback through the Desert Parks Pass, specific surveys and through the visitor's book at Dalhousie Springs. • Regularly review feedback regarding management of the park. • Inform the community of activities on the park through the Witjira Co-management Board, Outback Consultative Committee, meetings with Friends of Simpson Desert, South Australian Arid Lands Natural Resource Management Board, DEH publications including the Desert Parks Pass, DEH website, "Across the Outback" and other newsletters. • On specific programs or projects form partnerships with Irrwanyere Aboriginal Corporation, neighbours, regional interest groups and organisations to implement the strategies of the program or project.	**66**

REFERENCES AND BIBLIOGRAPHY

Albrecht, DE, Barker, RM, Barker, WR and Gavin, J (2002) *Neurada procumbens* L. (Neuradaceae): a new record for Australia and a potential threat to Australia's sandy deserts. *Plant Protection Quarterly* **17**(4).

AACWMB (Arid Areas Catchment Water Management Board) (2004) *Catchment Water Management Plan: South Australian Arid Lands Region*. Arid Areas Catchment Water Management Board, South Australia.

Boyd, WE (1990) Mound Springs. In: *Natural History of the North East Deserts* (Eds MJ Tyler, CR Twindale, M Davies and CB Wells). Royal Society of South Australia Inc, South Australia.

Brandle, R (1998) *A Biological Survey of the Stony Deserts, South Australia, 1994 – 1997.* Biological Survey and Research Section, Heritage and Biodiversity Division, Department of Environment, Heritage and Aboriginal Affairs, and National Parks Foundation of South Australia Inc.

Christian, CS and Stewart, GA (1968) *Methodology of integrated survey*. Aerial Surveys and Integrated Studies/UNESCO, Paris. Pp 233-280.

Clarke, PJ, Latz, PK and Albrecht, DE (2005) Long-term changes in semi-arid vegetation: Invasion of an exotic perennial grass has larger effects than rainfall variability. *Journal of Vegetation Science* **16**: 237-248.

Davey, AG, Davies, J and Helman, PM (1985) *Mount Dare: A conservation and management appraisal of the former Mount Dare station in relation to the proposed national park*. A report to the SA National Parks and Wildlife Service.

DEH (Department for Environment and Heritage)(2005) *Draft Biodiversity Strategy Stony Plains Bioregion South Australian Arid Lands*. Department for Environment and Heritage, South Australia.

Department of Environment and Natural Resources (1995) *Witjira National Park Management Plan*. Department of Environment and Natural Resources, Adelaide.

Department of the Environment, Sport and Territories (1996) *National Strategy for the Conservation of Australia's Biological Diversity*. Department of the Environment, Sport and Territories, Australia.

Ehmann, H (2005) *South Australian Rangelands and Aboriginal Lands Wildlife Management Manual*. Department of Water, Land and Biodiversity Conservation, South Australia.

Environment Australia (1998) *Code of Practice for the Humane Shooting of Kangaroos*. Department of the Environment and Heritage, Australia.

Environment Australia (2001) *A Directory of Important Wetlands In Australia* (3rd Edition). Department of the Environment and Heritage, Australia.

Environment Australia (2002) *Revision of the Interim Biogeographic Regionalisation for Australia (IBRA) and Development of Version 5.1. Summary Report.*

Glover, CMJ (1989) Fishes. In: *Natural History of Dalhousie Springs* (Eds W Zeidler and WR Pondler). South Australian Museum, Adelaide.

Goddard, C (1987) *A Basic Pitjantjatjara/Yankunytjatjara To English Dictionary*. Institute for Aboriginal Development Inc, Northern Territory.

Great Artesian Basin Consultative Council (2000) *Great Artesian Basin Strategic Management Plan*. Great Artesian Basin Consultative Council, Australia.

Habermehl, MA (1980) The Great Artesian Basin, Australia. *BMR Journal of Australian Geology and Geophysics* **5**: 9-38.

Hammer, M, Wedderburn, S, van Weenen, J (2007) *Draft Action Plan for South Australian Freshwater Fishes: 2007-2012*. Native Fish Australia (SA) Inc., Adelaide.

Harrington, GA, Herczeg, AL and Cook, PG (1999) *Groundwater Sustainability and Water Quality in the Ti-Tree Basin, Central Australia*. Technical Report 53/99 (Updated January 2001), CSIRO Land and Water.

ICOMOS International Charter for the Conservation and Restoration of Monuments and Sites (1999) *The Burra Charter*. http://www.icomos.org/australia/burra.html

Kendrick, P (2000) *Exotic Palm Control at Millstream-Chichester National Park*. Unpublished Interim Management Guidelines. National Parks Nature Conservation Authority.

Lampert, R (1985) Archaeological reconnaissance on a field trip to Dalhousie Springs. *Australian Archaeology* **21**: 57-62.

Lange, RT and Fatchen, TJ (1990) Vegetation. In: *Natural History of the North East Deserts* (Eds MJ Tyler, CR Twindale, M Davies and CB Wells). Royal Society of South Australia Inc, South Australia.

Laut, P, Heyligers, PC, Keig, G, Löffler, E, Margules, C, Scott, RM, and Sullivan, ME (1977) *Environments of South Australia.* Province 8, CSIRO, Canberra.

Marla-Oodnadatta Soil Conservation Board (1997) *Marla-Oodnadatta Soil Conservation District Plan.* Primary Industries and Resources South Australia.

Mollemans, FH (1989) Terrestrial and semi-aquatic plants. In: *Natural History of Dalhousie Springs* (Eds W Zeidler and WR Ponder). South Australian Museum, South Australia.

Nicholson, A, Lowe, B, Taylor, H and Ah Chee, D (1999) *Keeping Culture Strong: Witjira National Park Heritage and Management*. Prepared for Irrwanyere Aboriginal Corporation. Funded by the National Estate Grants Program.

Noack, D (2002) *Introduced Plant Species at Dalhousie Springs*. Department of Geographical and Environmental Studies, University of Adelaide. Unpublished.

NSW NPWS (NSW National Parks & Wildlife Service) (2002) *Salt Pipewort (*Eriocaulon carsonii*) Recovery Plan.* NSW National Parks & Wildlife Service, New South Wales.

Purdie, R (1984) *Land Systems of the Simpson Desert Region*. Natural Resource Series Number 2. Division of Water and Land Resources, CSIRO.

Thompson, R and Barnett, S (1985) Geology, Geomorphology and Hydrogeology In: *South Australia's Mound Springs* (Eds L Joseph and A Reeves). Nature Conservation Society of South Australia Inc., South Australia.

Webster Publishing (2000) *Australian Mammals CD*. Webster Publishing**.**

Zeidler, W and Ponder, WR (Eds) (1989) *Natural History of Dalhousie Springs*. South Australian Museum, Adelaide.

APPENDIX 1: CONSERVATION STATUS CODES

Australian Conservation Status Codes

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

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

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

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

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

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

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

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

South Australian Conservation Status Codes

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

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

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

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

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

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

Regional Status Codes

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

Birds

Regional conservation status for birds follow:

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

The regions are defined as follows:

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

Plants

Regional conservation ratings for plants follow:

> Lang, PJ & 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.

APPENDIX 2: PROCLAMATION OF WITJIRA NATIONAL PARK

The proclamation for Witjira National Park reads as follows:

NATIONAL PARKS AND WILDLIFE ACT 1972: SECTIONS 28 AND 43: CONSTITUTION OF WITJIRA NATIONAL PARK

SOUTH AUSTRALIA	*Proclamation by His Excellency the Governor of the State of South Australia*
to wit	

(L.S.) D.B. DUNSTAN

PURSUANT to the National Parks and Wildlife Act, 1972, I, the Governor, with the advice and consent of the Executive Council, make the following proclamation:

1. The following Crown lands are constituted as a National Park to be known as "Witjira National Park":

Section 1495, Out of Hundreds (Dalhousie).

2. Subject to clause 4, existing rights of entry, prospecting, exploration or mining under the Mining Act, 1971, or the Petroleum Act, 1940, may continue to be exercised in respect of the lands constituting Witjira National Park.

3.(1) Subject to subclause (2), rights of entry, prospecting, exploration or mining may, with the approval of the Minister for Environment and Planning, be acquired pursuant to the Mining Act, 1971, or the Petroleum Act, 1940, in respect of the lands constituting Witjira National Park.

(2) The approval of the Minister for Environment and Planning is not required for the acquisition of mining rights under the Petroleum Act, 1940, by the holder of an exploration licence in force under that Act in relation to the lands immediately before the making of this proclamation.

4. A person in whom rights of entry, prospecting, exploration or mining are vested pursuant to the Mining Act, 1971, or the Petroleum Act, 1940 (whether those rights were acquired before or after the making of this proclamation) shall not exercise those rights in respect of the lands constituting Witjira National Park unless he complies with the following conditions:

(a) at least 3 months before commencing any drilling or excavation, any vegetation clearance, the making of any road, track or airstrip or the construction of any building or other structure, the person shall notify the Minister for Environment and Planning and the Minister of Mines and Energy of the proposed work and shall supply each Minister wish such information relating to the proposed work as that Minister may require;

(b) the person in carrying out any work referred to in paragraph (a)--

(i) shall comply with such directions as the Minister for Environment and Planning may give in writing in relation --

(A) to carrying out the work in a manner that minimises damage to the land or the environment or to vegetation or wildlife on the land;

(B) to preserving objects, structures or sites of historic, scientific or cultural interest;

or

(C) to rehabilitating the land upon the completion of the work;

and

(ii) if the work is being carried out in pursuance of a right of entry, prospecting, exploration or mining acquired after the making of this proclamation (other than a mining right acquired under the Petroleum Act, 1940, by the holder of an exploration licence in force under that Act immediately before the making of this proclamation), shall comply with such directions as the Minister for Environment and Planning or the Minister of Mines and Energy may give in writing in relation to prohibiting or restricting access to any specified area of the lands that the Minister believes would suffer significant detriment as a result of carrying out the work.

(c) if a plan of management is in operation under section 38 of the National Parks and Wildlife Act, 1972, in respect of Witjira National Park, the person shall have regard to the provisions of the plan of management;

(d) the person, in addition to complying with any directions given under paragraph (b)--

(i) shall take such steps reasonably necessary to ensure that objects, structures and sites of historic, scientific or cultural interest, features of scientific or scenic interest and any wildlife on the lands are not unduly affected by the exercise of those rights;

(ii) shall take reasonable steps to minimise damage to vegetation;

(iii) shall maintain all work areas in a clean and tidy conditions;

and

(iv) shall, upon the completion of any work, obliterate or remove all roads, tracks, airstrips, buildings or other structures (other than a road, track, airstrip, building or structure designated by the Minister for Environment and Planning and the Minister of Mines and Energy as suitable for retention) used exclusively for the purposes of that work.

Given under my hand and the public seal of South Australia, at Adelaide, 21 November, 1985.

By command,

D.J. Hopgood, for Premier

D.E. & P., 459/83TC1

GOD SAVE THE QUEEN !

APPENDIX 3: THE COMMUNITY OF NATIVE SPECIES DEPENDENT ON NATURAL DISCHARGE OF GROUNDWATER FROM THE GREAT ARTESIAN BASIN

Recommendation to the Minister for the Environment and Heritage from the Threatened Species Scientific Committee (TSSC) on a public nomination for an ecological community listing on the *Environment Protection and Biodiversity Conservation Act 1999*.

1. Generally accepted name

The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin.

2. International/National Context

The Great Artesian Basin (GAB) lies within Queensland, New South Wales, South Australia and the Northern Territory. The GAB underlies about 22% of the Australian continent and is one of the largest artesian basins in the world.

Springs arising from the GAB occur within Queensland, New South Wales and South Australia.

3. How judged by TSSC in relation to the *Environment Protection and Biodiversity Conservation Act 1999* criteria.

The TSSC judges the ecological community to be eligible for listing as Endangered under the *Environment Protection and Biodiversity Conservation Act 1999*. The justification against the criteria is as follows:

Criterion 1 – Decline in geographic distribution

Excessive extraction of artesian groundwater from the Great Artesian Basin (GAB) has led to both the extinction of springs and a reduction in water flow of many of the remaining springs. The discharge rate of flowing artesian wells (bores) has declined considerably since the early 1900s. This is particularly pronounced within the Mulga Lands and Brigalow Belt South bioregions.

Active springs arising from the Queensland component of the GAB have declined to <10-30% of their original existence following the construction of bores for pastoralism in the late 1800s.

Despite the implementation of the State and Federal Government Great Artesian Bore Rehabilitation Program, ongoing extraction of artesian water is likely to play a continued role in the decline of these springs.

Therefore, the decline in artesian water pressure and the resultant degradation and extinction of spring communities means that **The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin** is eligible for listing as **Vulnerable** under this criterion.

Criterion 2 – Small geographic distribution coupled with demonstrable threat.

Springs of the GAB are very restricted in their patch sizes, ranging from a few centimetres to approximately 100 metres in diameter. Individual springs may be isolated by tens of kilometres from the next nearest spring.

Existing and proposed threats include draw down of the waters of the GAB, grazing and trampling by livestock and feral animals, mechanical modification of structure (ie dam creation) and the introduction of exotic pasture species. The impact of these threatening processes within a particular timeframe is unknown, however, it is likely that their continuation and intensification may cause the extinction of many more springs in the near future.

Therefore, in view of the reduction in active springs across the GAB and ongoing threatening processes, **The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin** is eligible for listing as **Endangered** under this criterion.

Criterion 3 – Loss or decline of functionally important species

The nominations provide no information under this criterion.

Criterion 4 – Reduction in community integrity

The Great Artesian Bore Rehabilitation Program provided an incentive to landholders to encourage the rehabilitation of uncontrolled flowing artesian bores. The Commonwealth Government has made a commitment to further invest in these activities through the Great Artesian Basin Sustainability Initiative. It is hoped that the better management of artesian bores will increase the pressure of the artesian groundwater, removing one of the key threats to the survival of the artesian springs.

It is unclear the positive impact that these programs will have on the artesian springs, nor is it clear what the negative impact of other threatening processes may be in the longer term.

Criterion 5 – Rate of continuing detrimental change

The nominations provide no information under this criterion.

Criterion 6 – Quantitative analysis showing probability of extinction

The nominations provide no information under this criterion.

4. Conclusion

Under criterion 2, **The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin** is eligible for listing as an **Endangered** ecological community as it has a very restricted geographic distribution and is subject to threatening processes that could cause it to be lost in the near future.

5. Recommendation

The TSSC recommends that the nominations for:

(2.10.8) Springs usually in sandstone valleys or at cliff bases and all spring fed ecosystems - Gulf Plains;

(4.3.22) Mound springs arising from the Great Artesian Basin - Mitchell Grassland Plains;

(6.3.23) Mound springs associated with the Great Artesian Basin discharge areas - Mulga Lands; and

(5.3.23) Mound springs associated with the Great Artesian Basin discharge areas - Channel country.

be rejected as individual nominations. The TSSC further recommends that, the list referred to in section 181 of the *Environment Protection and Biodiversity Conservation Act 1999* be amended by including in the list in the **endangered** category the ecological community as described at attachment (iii):

The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin

Attachment (i) Summary description for the determination

The listing, **The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin**, includes springs within the GAB discharge area (see Figure 4 in Great Artesian Basin Consultative Council, 2000) that are the natural surface discharge points of aquifers in the Triassic, Jurassic and Cretaceous sedimentary sequence of the Great Artesian Basin (Habermehl, 1982). Not included are those springs arising from Tertiary sediments and basalts.

Natural discharge from the Great Artesian Basin may occur as springs, mound springs, mud springs, boggomoss springs (see Noble, et al., 1998), spring pools or groundwater seeps.

Natural discharge springs mainly occur within twelve "spring groups" across the Basin (Habermehl and Lau, 1997). A number of these - the Cape York, Flinders River, Barcaldine, Springsure and Mulligan River groups - include some springs that arise from recharge rejection within the recharge areas of the Basin. These springs are not included in this determination.

The community is comprised of native species which depend on the natural discharge of groundwater from the Great Artesian Basin for their existence. The community is characterised by combinations of native species that may occur more widely than the GAB, as well as endemic species (restricted to one or more GAB spring). Not every species of the ecological community will be present at every spring.

Examples of such species include:

Jardinella sp. (endemic snail)

Schoenoplectus pungens (flora species)

Utricularia sp. (aquatic forb)

Cyperus gymnocaulos (flora species)

Cyperus laevigatus (flora species)

Eriocaulon carsonii (aquatic herb)

Eucalyptus camaldulensis (flora species)

Heliotropium curassavicum (flora species)

Myoporum deserti (flora species)

Sclerostegi sp. (flora species)

Chlamydogobius sp. (Elizabeth Springs goby)

Further species are documented in Wilson (1995) and Fensham (2000).

APPENDIX 4: NATIONAL HERITAGE LIST VALUES FOR DALHOUSIE SPRINGS

Dalhousie Springs has recognised heritage significance under *Environment Protection and Biodiversity Conservation Act 1999.* Dalhousie Springs was included on the National Heritage List in 2009. To satisfy inclusion in the National Heritage a place must satisfy one or more of nine National Heritage criteria. Dalhousie has satisfied five of the National Heritage Criteria. A description of these values is provided below.

Criterion A – The place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history.

Dalhousie Springs is one of a suite of important artesian discharge springs in the Great Artesian Basin (GAB) for endemic fish, invertebrates (including hydrobiid gastropod molluscs) and plants (ANHAT 2005 & 2008). Dalhousie is the most important place in the Australian arid zone for endemic fish (ANHAT 2005; Allen *et al* 2002; DEW 2007c; Morton *et al* 1995a, p. 95). Dalhousie Springs has also been ranked by CSIRO as a nationally 'highly significant' semi-arid and arid refugia in Australia for regional endemics of aquatic invertebrates (isopods, ostracods, and hydrobiid molluscs) and fish (Morton *et al* 1995a, p.11, p. 95 & p. 133).

GAB artesian springs are important for illustrating the role of evolutionary refugia for relict animal and plant species (Morton et al 1995a, p. 11), which have evolved into distinct and endemic species in the GAB springs. Dalhousie Springs contain five endemic species of fish: the Dalhousie mogurnda (Mogurnda thermophila), Dalhousie catfish (Neosilurus gloveri), Dalhousie hardyhead (Craterocephalus dalhousiensis), Glover's hardyhead (C. gloveri), and Dalhousie goby (Chlamydogobius gloveri) (Fensham et al 2007, p. 13 & p. 42; Allen et al 2002; DEW 2007c; Morton et al 1995a, p. 95). Dalhousie Springs contains three endemic hydrobiid freshwater snail species: Austropygus centralia, Caldicochlea globosa and Caldiochlea harrisi (Fensham et al 2007, p. 13 & p. 42; ANHAT 2005 & 2008; Perez et al 2005; Morton et al 1995a, p. 95; Ponder and Clark 1990, p. 301,; Ponder et al 1995, p. 554). Dalhousie Springs also has a phraetoicidean isopod (Phreatomerus latipes), which is endemic to Dalhousie and the Lake Eyre springs, and two endemic amphipod species (Phraetochiltonia anophthalma and Austrochiltonia dalhousiesnsis), and five endemic ostracods (Ngararwa dirga, Candanopsis sp., Cyprideis sp., Darwinula sp. Entocytheridae sp.) (DEW 2007c; Morton et al 1995a & b). The outflows of Dalhousie Springs also support at least one endemic plant known only from the spring complex, a native tobacco, Nicotiana burbidgeae, as well as at least six relict plant species better known from mesic areas to the south, including; duck weed (Lemma disperma), swamp twig-rush (Baumea arthrophylla), spike rush (Eleocharis geniculata), a fringe-rush (Fimbristylis ferruginea) and two herbs: shield pennywort (Hydrocyte verticullata) and creeping brookweed (Samolus repens) (DEW 2007c; DEH(SA) 2007a; Morton et al 1995a, p. 95; Morton et al 1995b, pp. 55-56; Mollemans 1989, pp. 65-66; McLaren et al 1985, pp. 9 -12).

Criterion B – The place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history.

Extant artesian springs in the GAB area geologically rare phenomenon, each one covering a tiny area within the basin (Ponder 1989, p. 416, Wilson, 1995 p. 12). Dalhousie Springs is regarded a sone of the most important artesian springs because of its isolation, relative intactness and the extinction of other springs in the GAB (Morton *et al* 1995a, p. 95 & p. 133; Morton *et al* 1995b, p. 55 and pp. 64-65; Wolfgang Zeidler pers comm., 1/3/2005; Ziedler and Ponder 1989, p. ix).

Criterion D – The place has outstanding heritage value to the nation because of the place's importance in demonstrating the principle characteristics of (i) a class of Australia's natural or cultural places, or (ii) a class of Australia's natural or cultural environments.

Mound Springs in arid and semi arid Australia are associated with traditional stories and song lines, rain making rituals and evidence for concentrated Aboriginal occupation during dry seasons and periods of drought. The Dalhousie Mound Springs are an outstanding example showing the principle characteristics of mound springs as a class of Aboriginal cultural places. They are located in one the driest zones in Australia and the Lower Southern Arrernte and the Wangkangurru Traditional Owners relied on the springs as a refuge during the dry season and times of drought. They are associated with an exceptionally large number of traditional song lines and story lines (Hercus and Sutton 1985; 64; Davey, Davies and Helman 1985), rainmaking rituals were performed there (Kimber 1997) and the density of artefacts and the large size of Aboriginal

camp sites, some measuring up to a kilometre in length and thousands of square metres in extent, is usual (Lambert 1985; Florek 1987, 1993; Kimber 1997; AARD 2008).

The GAB is the world's largest example of an artesian basin with its associated artesian springs an important component of the system (Harris 1992, p. 157, Perez *et al* 2005). It is regarded as the best example of such an artesian system in Australia (Yeates 2001, pp. 64-65; Morton *et al* 1995a, p. 11, p. 95 & pp. 132-134; Morton *et al* 1995b. pp. 65-66). Artesian springs are the primary source of permanent fresh water within the arid zone since at least the late Pleistocene (the last 1.8 million years) and are therefore a unique feature of the arid Australian landscape (Ponder 1986, p. 416; Morton *et al* 1995b, p. 55; Bowler 1982, pp. 35-45). As the primary natural source of permanent fresh water in most of the arid zone, GAB artesian springs represent vital habitat for more widespread terrestrial vertebrates, and invertebrates with aquatic larvae (Ponder 1986, p. 415). Dalhousie Springs is one of a suite of important artesian discharge GAB Springs that are outstanding examples of the endemism exhibited by artesian springs individually and collectively. Species found at Dalhousie Springs include endemic fresh water hydrobiid snails *Austropygus centralia*, *Caldicochlea globosa* and *C.harrisi*, and five endemic fish species, the Dalhousie mogurnda (*Mogurnda thermophila*), Dalhousie catfish (*Neosilurus gloveri*), Dalhousie hardyhead (*Craterocephalus dalhousiensis*), Glover's hardyhead (*C. gloveri*), and Dalhousie goby (*Chlamydogobius gloveri*) (Fensham *et al* 2007, p. 13 & p. 42; Perez *et al* 2005; Allen *et al* 2002; DEW 2007c; Ponder 2003; Fensham and Fairfax 2004; Morton *et al* 1995a, pp. 55-56).

Criterion D – The place has outstanding heritage value to the nation because of the place's importance in demonstrating the principle characteristics of (i) a class of Australia's natural or cultural places, or (ii) a class of Australia's natural or cultural environments.

Dalhousie Springs is regarded as one of the best examples of an artesian 'mound' spring complex in Australia (Morton *et al* 1995a, p.95 & p. 133), and Yeates (2001) also considers it "the best place (in Australia) to see the artesian processes and artesian springs in a natural state" (Yeates 2001, pp. 6-65). Kreig (1989) also states "as a geological feature the (Dalhousie Anticline) springs complex is unique in Australia. It illustrates on a huge scale the cause and effect of an artesian mound system ", including "top of aquifer, mound spring material ... and large pools and rivulets of artesian water all convincingly displayed". These geological values are amply illustrated within the springs complex place, the core or 'hub' of the Dalhousie Anticline (Kreig 1989, p. 26).

Criterion I – The place has outstanding heritage value to the nation because of the place's importance as part of Indigenous tradition.

Dalhousie Mound Springs has outstanding heritage value to the nation for its association with an exceptional density of story or song lines most of which are associated with mound springs (Hercus and Sutton 1985; 64). There are twenty four recorded song lines including: the Kestral story, the Printi and the Goanna Women, the Rain Ancestor (*Anintjola*), the Dog story, the Frill Neck Lizard story, the Boy from Dalhousie, the Goanna Party and the Echidna Woman, Old Man Kingfisher and Old Woman Kingfisher, the Blind Rainbow Snake, Old Man Rainbow Snake, Perentie and the Boys, the Big Boys, the Perentie Goanna Camp, the Perentie Staked His Foot and the two Boys song line. Unlike the traditional associated with the mound spring groups at Lake Eyre and Lake Frome, a tradition has been recorded that explains why some of the mound springs at Dalhousie produce hot water (Hercus nd.; Hercus and Sutton 1985).

Further details (including references) are available at:
http://www.environment.gov.au/heritage/places/national/index.html

APPENDIX 5: MANAGEMENT PRINCIPLES FOR NATIONAL HERITAGE LISTED PLACES

Environment Protection and Biodiversity Conservation Regulations 2000

Statutory Rules 2000 No. 181 as amended *under the Environmental Protection and Biodiversity Conservation Act 1999.*

Schedule 5B National Heritage Management Principles (regulation 10.01E)

1 The object in managing National Heritage places it to identify, protect, present and transmit, to all generations, their National Heritage values.

2 The management of National Heritage places should use the best available knowledge, skills and standards for those places, and include ongoing technical and community input to decisions and actions that may have significant impact on their National Heritage values.

3 The management of National Heritage places should respect all heritage values and seek to integrate, where appropriate, any Commonwealth, state, territory government responsibilities for those places.

4 The management of National Heritage places should ensure that their use and presentation is consistent with the conservation of their National Heritage values.

5 The management of National Heritage places should make timely and appropriate provision for community involvement, especially by people who:

a. Have a particular interest in, or associations with, the place, and

b. May be affected by the management of the place

6 Indigenous people are the primary source of information on the value of their heritage and active participation of Indigenous people in identification, assessment and management is integral to the effective protection of Indigenous heritage values.

7 The management of National Heritage places should provide for regular monitoring, review and reporting on the conservation of National Heritage values.