



Witjira National Park

Management Plan 2022

Witjira National Park is the traditional land of the Wangkangurru and Lower Southern Arrernte people. We will always value the land, water, plants and animals.

We're working together to holistically maintain, protect and preserve the park for the betterment of all people, now and into the future.

This is our Country, our responsibility, so please help us to look after the place.

Witjira National Park Co-management Board



Government of South Australia
Department for Environment
and Water

Minister's foreword

Witjira National Park is a special place, full of important ecological values, rich cultural connections, and a stunning natural landscape of Gibber plains, sand dunes, stony tablelands and floodplain country on the western edge of the Simpson Desert.

Witjira National Park and the adjacent Munga-Thirri–Simpson Desert National Park protect over 4 million hectares of biodiverse desert country - the largest contiguous National Park in Australia.

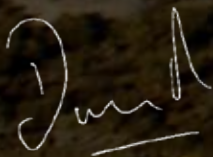
The park is renowned for its vast complex of mound springs. Fed by the Great Artesian Basin, the waters that bubble up from deep underground support rich biodiversity and are a precious resource in the harsh outback – a true oasis in the desert.

Dalhousie Springs draws visitors from far and wide to experience the secluded natural environment and bathe in the warm waters of the main thermal pool. Those who are lucky enough to visit the park after a soaking rain are rewarded with ephemeral wildflowers bursting into bloom in a spectacular display of colour. Historical relics such as Dalhousie Ruins, Purni Bore and the Old Ghan Railway are reminders of early pastoralism and the resilience of those who made a living off the land.

The objectives and strategies set out in this plan will ensure that Wangkangurru and Lower Southern Arrernte aspirations are supported, the natural desert landscape is maintained, and visitors can continue to enjoy a remote outback experience like no other.

The park has been cooperatively managed by the Wangkangurru and Lower Southern Arrernte people and the South Australian Government since 2007. The development of this new plan, and the creation of the Dalhousie Springs no-mining area, are milestone achievements for the Board and are a testament to the strength of co-management.

I am pleased to formally adopt the Witjira National Park Management Plan.



David Speirs MP
Minister for Environment and Water

Cultural Sensitivity Warning

Aboriginal people are warned that this publication may contain culturally sensitive material.





Developing this plan

The Witjira National Park Management Plan has been developed by the Witjira National Park Co-management Board - a partnership between the Wangkangurru and Lower Southern Arrernte people, and the South Australian Government.

It has been prepared following consideration of issues facing the park and after a review of the previous management plan which was adopted in 2009.

This plan is not intended to provide strategies to address all issues confronting the park or specify all strategies that will be undertaken. Rather, it seeks to provide an overview of management arrangements and outline key priorities for long term management.

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Directions for management

Since the beginning of time Wangkangurru and Lower Southern Arrernte people have looked after this Country.

Witjira National Park Co-management Board, 2017

Witjira National Park is the Country of the Wangkangurru and Lower Southern Arrernte people who have always cared for this area. Directions for management of the park have been set by the Wangkangurru and Lower Southern Arrernte people in partnership with the South Australian Government. Arrangements for the cooperative management of the park are set out in a co-management agreement which was adopted in 2007 between the Irrwanyere Aboriginal Corporation (representing the Wangkangurru and Lower Southern Arrernte people) and the South Australian Government.

The Irrwanyere Aboriginal Corporation were formally recognised as the native title holder of their Country, which includes Witjira National Park, by consent determination under the *Native Title Act 1993* on 11 September 2008.

Witjira National Park was proclaimed under the *National Parks and Wildlife Act 1972* (the Act) in 1985. As a national park it is provided with a high level of protection and is managed primarily for conservation purposes, consistent with the objectives of the Act.

The Dalhousie Mound Springs complex (Figure 1) is managed to protect its profound cultural significance and fragile ecological values. Mineral and petroleum exploration and production activities are not permitted in this area.

The remainder of the park is proclaimed simultaneously under section 43 of the Act. This provides scope for existing and future mineral and petroleum activities approved under the *Mining Act 1971* and the *Petroleum and Geothermal Energy Act 2000*.

The South Australian Government has established a lease over the majority of the national park with the Irrwanyere Aboriginal Corporation. A lease arrangement ensures that the park is managed to provide members of the Aboriginal Corporation the ability to live on, use and manage the park. A lease has also been granted over the Mount Dare Homestead precinct. This enables this area to be privately managed for tourism and other purposes.

Management directions will be informed by a combination of traditional knowledge, scientific knowledge and contemporary park management principles.

Directions for management are consistent with the SA Arid Lands Regional Landscape Plan 2021-2026.

This plan will be adopted subject to the native title rights and interests that continue to exist in relation to the land, and will be implemented in accordance with the relevant provisions of the *Native Title Act 1993* and the *Aboriginal Heritage Act 1998*.



Significance and purpose

Witjira National Park (768,853 ha) is situated in the far north of South Australia, approximately 100 km north of Oodnadatta (Figure 1). Its northern boundary abuts the Northern Territory and its eastern boundary is shared with the Munga-Thirri–Simpson Desert National Park.

The national park is of great significance for the Wangkangurru and Lower Southern Arrernte people, whose Altyerre (traditional law and customs) is strongly linked to the land. The significance of the national park to Aboriginal people is reflected through the many creation stories that weave through this Country. Knowledge of the seasons and how to care for the land is passed down through these stories. The Dalhousie Mound Springs complex is of particular significance to the traditional owners, as many stories are associated with, or pass through the springs.

The national park, together with the Munga-Thirri–Simpson Desert National Park (SA) and Munga-Thirri National Park in Queensland, forms an extensive network of interconnected protected areas which are particularly effective for the conservation of

plants, animals and a variety of habitats. The park also protects many plant and animals that are rare or threatened.

The Dalhousie Mound Springs complex is recognised as nationally important, being one of Australia's largest array of artesian springs. The mound springs provide 'islands' of permanent wetlands of relatively fresh water in the most arid part of the continent. These areas help to conserve a diverse range of flora and fauna, including a number of endemic and relict species. They also provide habitat for several migratory bird species of national environmental significance protected under bilateral migratory bird agreements.

Dalhousie Springs are one of the main attractions for visitors to this area, providing the opportunity to swim in the deep, warm waters of the main pool. The park also provides opportunities for people to travel through the park by four-wheel drive and visit sites that provide an insight into the early days of pastoralism in the Australian outback.



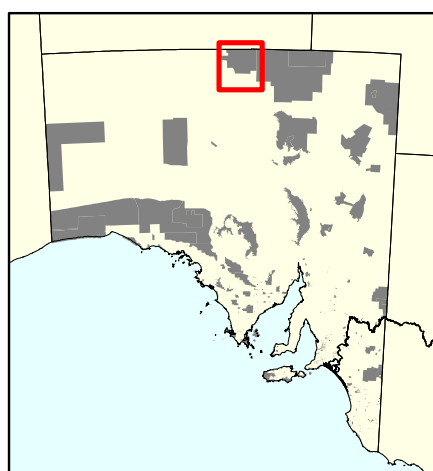
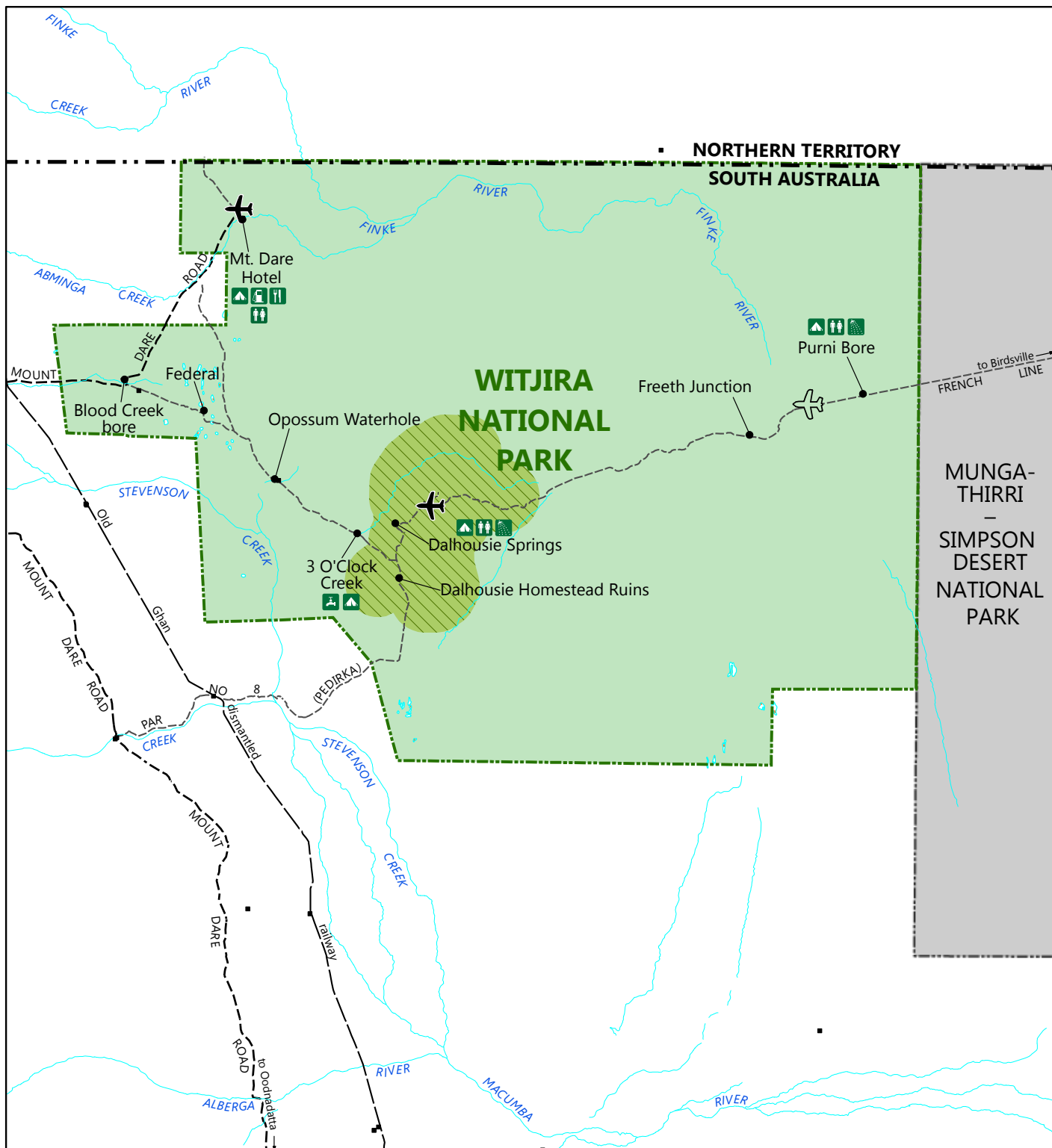
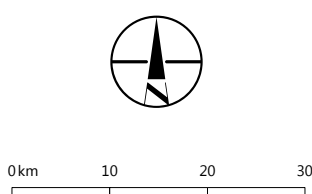


Figure 1

Witjira National Park



Legend

- | | | | |
|-----|--|-----|--|
| ■ | Building | | Campsite; toilet |
| | Landing ground (permission required) | | Shower; meals |
| | Alka Seltzer airstrip (no public access) | | Fuel; drinking water |
| --- | Unsealed Road | | Witjira NP |
| --- | Vehicular Track | | Other park |
| --- | Disused Railway | | National Heritage Place - Witjira-Dalhousie 2009 |
| --- | Watercourse | | Dalhousie Springs no-mining area |
| --- | | --- | State border |

What are we looking after?

Witjira National Park protects:

- Culturally important sites and the landscape of Wangkangurru and Lower Southern Arrernte stories and culture.
- Species of significance to the traditional owners, including the kingfisher (*Todiramphus sp.*), perentie (*Varanus giganteus*), goanna (*Varanus sp.*), and Dalhousie catfish (*Neosilurus gloveri*), many of which are attached to story lines.
- Some of the most diverse landforms and habitat in the region including relatively pristine floodplains, floodouts, gibber, and sandy country.
- High plant diversity with 543 native species recorded, reflecting the variety of habitats present.
- 20 flora species listed as vulnerable or rare under the *National Parks and Wildlife Act 1972*. The desert nancy (*Frankenia plicata*) is also listed as endangered under the *Environment Protection and Biodiversity Conservation Act 1999*.
- Threatened ecological community of native species dependant on natural discharge of groundwater from the Great Artesian Basin.
- 26 fauna species listed as endangered, vulnerable or rare under the *National Parks and Wildlife Act*. The plains mouse (*Pseudomys australis*) and crest-tailed mulgara (ampurta) (*Dasyercus cristicauda*) are also listed as vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999*.
- The terminus of the Finke River, believed to be one of the oldest rivers in the world.
- The Dalhousie Mound Springs complex, which was placed on the National Heritage List in 2009 for its exceptional natural value and outstanding heritage significance. Dalhousie Springs provides refugia for five endemic fish species, three endemic freshwater snails, and at least seven endemic crustaceans (isopods, amphipods and ostracods).
- Dalhousie Ruins and historic European features and artefacts which provide an insight into the early days of pastoralism in an extreme environment.

Challenges and opportunities

The park faces a number of challenges, but with these challenges are also opportunities:

- Increasing the public's understanding and appreciation for the culture of the Wangkangurru and Lower Southern Arrernte people and their role in the management of the park.
- Protecting and restoring cultural sites.
- Using the park to maintain the connection to Country of current and future generations of Wangkangurru and Lower Southern Arrernte people.
- Minimising the impact of feral animals and weeds including camels, donkeys, cattle, date palm, mimosa bush and buffel grass over a vast and remote area.
- Integrating traditional ecological knowledge and contemporary fire management practices to rejuvenate the landscape and promote mound spring ecological restoration.
- Understanding climate change and its potential influence on mound springs, native and exotic species, and fire regimes.
- Providing scope for the establishment of new nature-based tourism ventures while maintaining the existing character of the park.
- Enabling public use and enjoyment of the park whilst minimising the impact on Aboriginal and European cultural heritage sites, mound springs and the surrounding environment.
- Improving management of the park and its surrounding landscape by sharing information and knowledge, and by facilitating cooperative land management and conservation activities.
- Ensuring that mineral and petroleum activities do not compromise the park's cultural, environmental and tourism values.



Dalhousie thermal mound springs

Mound springs are the natural outlets for the Great Artesian Basin, where pressure forces water to the surface. The springs provide 'islands' of permanent, relatively fresh wetlands in the most arid part of the continent. In some areas, mounds have been building for thousands of years through the precipitation of salts and minerals along with the erosion of sands and clay in the surrounding landscape.

The warm waters of the Dalhousie Springs range in temperature from 38 to 43 degrees Celsius. The water at the discharge is warm because it flows from great depths along structural weaknesses associated with the Dalhousie anticline before reaching the surface (see Figure 2). These springs are estimated to have been discharging for 1-2 million years, longer than any of the other known springs. This means that by the time the water reaches the surface, it could be 2 million years old.

The Dalhousie Mound Springs complex includes 148 springs, of which around 20 are major flowing springs. The main spring has a daily output of 10 million litres per day, and the complex as a whole outputs 56 million litres per day.

At least 16 species are endemic to the Dalhousie Mound Springs complex (Appendix 3). Most of these are invertebrates but there are also five fish and three snail species. The vegetation of the Dalhousie springs is also 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.

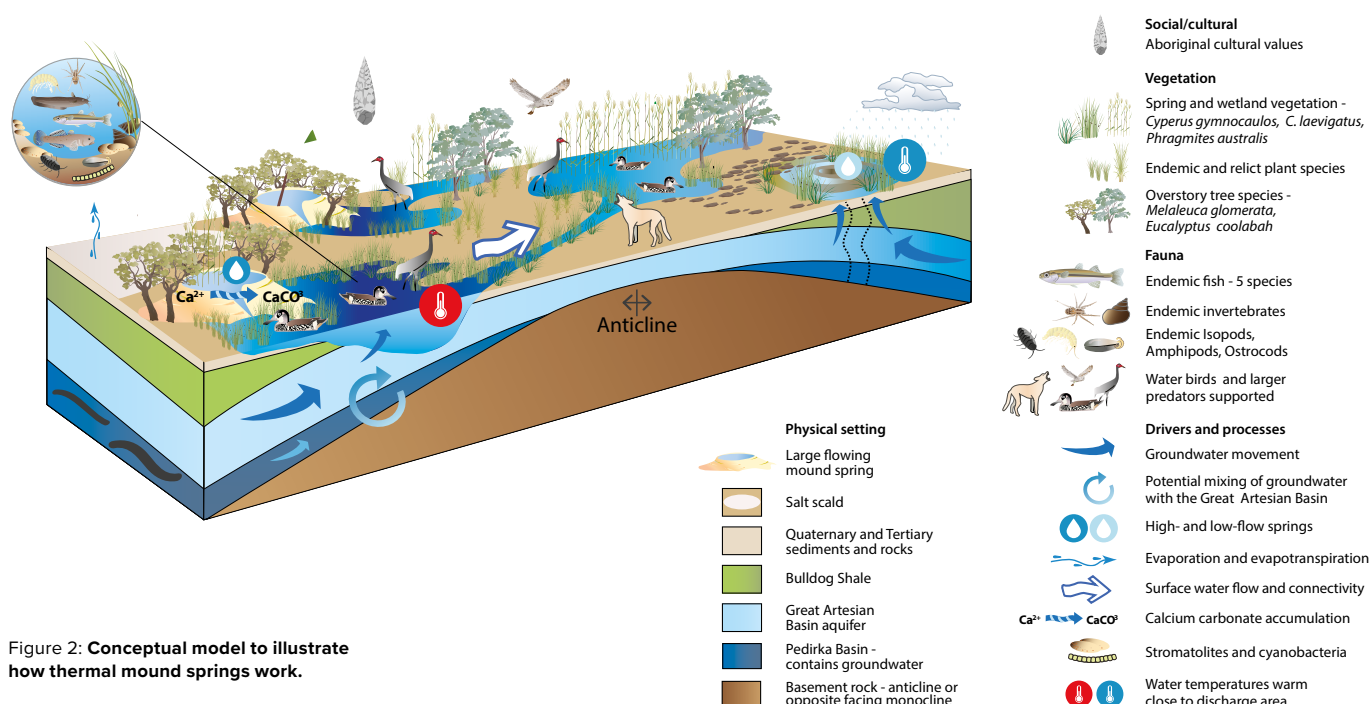
Reduced Great Artesian Basin pressure due to aquifer drawdown for town water supplies, pastoral bores, and mining creates a decrease in the flows at springs. The Far North Prescribed Wells Area (FNPWA) Water


Allocation Plan (WAP) (SAAL Landscape Board 2020) outlines the principles and rules for managing the take and use of Artesian water in the South Australian Outback to ensure its sustainability. In the case of the Great Artesian Basin (GAB) springs the primary focus is on maintaining pressure in the aquifer so that the springs and soaks continue to have water flowing to them. Regulation of water use is based on impact to the water resource, and applies to all users.

The increased temperatures associated with climate change also threatens the biodiversity of the springs complex as evaporation is expected to increase. This may lead to some springs drying in summer, or becoming more saline, increasing the vulnerability of endemic species to extinction.

Grazing pressure and trampling from feral and domestic herbivores can cause significant damage around the springs through the destruction of vegetation, soil compaction, and soil erosion. Introduced weeds and pests also pose a threat, and human interaction can have impacts on water quality, fringing plants and soil stability.

Generally swimming is not compatible with maintaining healthy mound springs. The mound springs is also of great cultural significance to Wangkangurru and Lower Southern Arrernte people, and swimming is not considered culturally appropriate in many of these significant sites. The main pool at Dalhousie Springs is an exception due to its size and high rate of water flow-through, and visitors are encouraged to enjoy this special place respectfully. Allowing visitors to experience the mound springs in this way adds to the tourism value of the park, and builds their appreciation for the park's conservation values.



An aerial photograph of a dry, cracked landscape. The ground is a mix of reddish-brown and tan colors, with numerous deep, winding cracks and channels. Some of these channels contain dark, still water, while others are empty. The overall texture is rough and uneven, suggesting a harsh, arid environment.

We have been taking care of this land since the beginning of time. Water ensures survival, and the springs have always been a life source. We knew when there was a dip in the ground, that a spring was coming up. We knew how to follow the rivers. We know how to care for them. What has been learned through science, we learned through stories. We already knew these things, we have always known them, because they were passed on by the old people.

Marilyn Ah Chee, traditional owner and member of the Witjira National Park Co-management Board, 2017

THEME 1:

Increasing connection to Country for Wangkangurru and Lower Southern Arrernte people

Witjira National Park lies within an area of great significance for the Wangkangurru and Lower Southern Arrernte people, whose Altyerre (traditional law and customs) is strong. Their connection to Country was formally acknowledged in September 2008 with their native title rights being recognised over an area which includes Witjira National Park.

Descendants of Wangkangurru and Lower Southern Arrernte people who lived in Witjira National Park now live in communities and towns across Central Australia and northern South Australia including 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.

Altyerre and its relationship to the land are the foundations of Aboriginal culture. There are different parts of Altyerre for men and women, and for younger, older and initiated people. The strong connection that Wangkangurru and Lower Southern Arrernte people have with Witjira National Park is reflected through the number of dreaming stories that weave through the landscape. Different Aboriginal groups may have different dreaming stories associated with the same location or landscape feature but it is through these dreaming stories along with songs, dance, initiation ceremonies and art that Altyerre is passed down by the Elders. The mound springs complex is of particular significance to traditional owners, as many stories are associated with, or pass through the springs.

Accessing Witjira National Park is particularly important for traditional owners to strengthen cultural knowledge and pass it down to younger generations. Prior to accessing the Mount Dare lease area and sites outside of public access, Wangkangurru and Lower Southern Arrernte people are required to communicate with the Board and the lessees. This ensures their health, safety and privacy, and ensures the proper operation of the Park. The Board may temporarily close parts of the park for up to a week for Wangkangurru and Lower Southern Arrernte people to hold private ceremonies. Notification of upcoming closures is provided well in advance to minimise the inconvenience to visitors.

The Homelands, in the north-west of the park, is a culturally significant area which is defined with fences and signage.

In this area, traditional owners are able to live on Witjira National Park. Visitors are not permitted to access the area without invitation. This exclusion area does not affect visitors travelling through the park and all of the main sites of the park are accessible.

Traditional owners have the right to collect plants, animals and minerals for food, craft and ceremonial activities, and use campfires for traditional use. The continuation of these resource-use practices is important to maintain culture and share knowledge. All hunting activities must abide by any operational policy developed by the Board. The development and application of this policy is intended to ensure that hunting is safe, humane, and sustainable. Any future policy will continue to exclude hunting within 5km of public roads and campgrounds to ensure visitor safety.

Witjira National Park protects a cultural landscape that is of profound significance to Wangkangurru and Lower Southern Arrernte people, including specific sites and places of particular importance. While there are currently 132 sites and places at Witjira National Park that are documented in the Register of Aboriginal Sites and Objects under the *Aboriginal Heritage Act 1988*, this does not reflect a comprehensive survey of the park and there are likely to be many more culturally important sites.

It is important that visitors understand, appreciate and respect why the land is important to Wangkangurru and Lower Southern Arrernte people. Witjira National Park provides an excellent opportunity for visitors to learn about Wangkangurru and Lower Southern Arrernte people's connection to Country, their culture and customs, creation stories and other associations they have with the land. Interpretive walks, signage and information provided in publications will assist in educating visitors.

Traditional owners aspire to develop enterprises relating to nature-based and cultural tourism activities. This opportunity is two-fold as it will assist in increasing visitor understanding of Wangkangurru and Lower Southern Arrernte culture, and also provides employment for traditional owners. Wangkangurru and Lower Southern Arrernte 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 Wangkangurru

and Lower Southern Arrernte culture within the park. Commercial tours that are operated by persons other than Wangkangurru or Lower Southern Arrernte 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 traditional owner employed for that purpose. Such commercial tours must originate outside the park.

The Board may grant permission for access, commercial photography and film making in areas not publically

accessible. An approved cultural representative may be required to be in attendance during these activities.

Creation stories take place on Country through animals, plants and landforms.

They guide our laws, customs, and rules for living and form our spiritual connection to Country.

Our creation stories guide us today, and they'll guide us into the future.

Objective and strategies

Care for and conserve cultural sites and enhance Wangkangurru and Lower Southern Arrernte people's connection to Country.

- Ensure cultural values and practices continue to be recognised, promoted and respected in all decision making on park management activities now and into the future.
- Ensure that cultural sites are properly recorded so that they can inform future planning and management.
- Educate visitors about the importance of Witjira National Park for Wangkangurru and Lower Southern Arrernte people through the upgrade and maintenance of digital interpretive information and signage, and the delivery of relevant and appropriate cultural tourism.
- Enable the development of sustainable nature-based and cultural tourism enterprises that provide employment for traditional owners and their communities, and increase visitor's understanding of Wangkangurru and Lower Southern Arrernte culture.
- Continue to recognise, respect, protect and maintain cultural sites in partnership with the traditional owners and native title holders.



THEME 2:

Protecting and enhancing the Witjira National Park environment

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. Drought is a common occurrence in the region.

The park comprises undulating gibber tablelands supporting mitchell grass (*Astrelba spp.*) grasslands and chenopod low open shrublands, which are dissected by shallow creek lines supporting gidgee (*Acacia cambagei*) and red mulga (*Acacia cyperophylla*).

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. It is the largest drainage system on the western side of Lake Eyre/Kati Thanda, although it does not often flood. The Finke River, thought to be one of the oldest rivers in the world, travels hundreds of kilometres south through Central Australia to end its journey on the edge of the Simpson Desert. Wangkangurru and Lower Southern Arrernte people have strong associations with the Lower Finke and occupation sites have been located along the Finke River in Witjira National Park.

The wetlands associated with the Finke River are very productive ecosystems when the river floods. The river floodplains and terminal floodouts support various plant and animal species of conservation significance (see Appendices 1 and 2). The Finke River is also thought to have a role in recharging the western margin of the Great Artesian Basin.

The major feature of Witjira National Park is the nationally important Dalhousie Mound Springs complex, being one of Australia's largest array of artesian springs. The mound springs provide 'islands' of relatively fresh permanent wetlands in the most arid part of the continent. As an ecological community associated with Great Artesian Basin mound springs, the entire Dalhousie Mound Springs complex is protected as a matter of National Environmental Significance under the *Environment Protection and Biodiversity Conservation Act 1999*.

These thermal springs contain rare aquatic and terrestrial plant and animal species including relict and fossil species, and endemic species that have evolved due to biogeographical isolation.

The isolated aquatic environments of the mound springs have led to the development of new species of fish and other aquatic species. Five of the six fish species recorded at Dalhousie Springs are endemic to the area and there are at least 16 species in total that are endemic to the Dalhousie Mound Springs complex (Appendix 3). Most of these are invertebrates and most are found in the northern portion of the springs. It is also the only spring complex in Australia's arid zone with a closed forest (*Melaleuca*) community.

Further east, Purni Bore provides a permanent, albeit artificial, wetland that supports extensive bullrush (*Typha domingensis*) and common reed (*Phragmites australis*) stands and numerous birds. The wetland was created when the wellhead on a 1,880 metre deep bore installed in 1963 by the French Petroleum Company corroded. Most artificial water points in the park have been capped to conserve Great Artesian Basin water and restore the environment to its natural state. Although the flow was reduced in 1987 and again in 2011, Purni Bore is maintained as it provides water for native animals that have come to rely on it, including migratory waders listed under the EPBC Act and international conservation treaties such as the China-Australia Migratory Birds Agreement (CAMBA), Japan-Australia Migratory Birds Agreement (JAMBA) and Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA). The site also attracts feral animals such as camels and donkeys, allowing control activities to be conducted on the outer eastern section of the park. The wetland also provides a backdrop to a campsite and visitor facilities. 3 O'Clock Creek and Mount Dare Homestead Great Artesian Basin bores are controlled for domestic use.

The main threat to the park's 543 native plant species are donkeys, cattle, and camels as these feral animals impact mound springs through trampling and grazing native aquatic plants and fouling the water. Numbers of donkeys and camels have been reduced over the years through the success of a large herbivore aerial control program and on-ground shooting programs. An ongoing fencing program aims to prevent cattle wandering into the park from neighbouring properties. These fences need to be routinely checked and relationships fostered with neighbouring pastoralists to remove stray cattle from the park.



The main creation story that takes place in the park features the Perentie (*Varanus giganteus*)

Mineral and petroleum exploration and production activities

To protect the significant cultural and ecological values of the springs, a no-mining area has been established over the Dalhousie Mound Springs complex (Figure 1). Mineral and petroleum exploration and production activities are not permitted in this area.

The remainder of Witjira National Park is proclaimed under section 43 of the *National Parks and Wildlife Act 1972*, allowing for existing and future resource development activities. Processes for the assessment, approval and regulation of mineral and petroleum exploration and production activities are directed by the *Mining Act 1971* and the *Petroleum and Geothermal Energy Act 2000*. Companies are also required to comply with other legislation, including the *Native Title Act 1993*, the

Aboriginal Heritage Act 1988, the *Environment Protection and Biodiversity Conservation Act 1999*, the *Landscapes Act 2019* and the *National Parks and Wildlife (National Parks) Regulations 2016*. Under these Acts, the Witjira National Park Indigenous Land Use Agreement, and as part of the co-management arrangement, any future exploration or mining activity must involve traditional owners early in the planning process so that the natural, cultural and tourism values of the park can be protected.

Due to the environmental and cultural significance of Witjira National Park, all proposals for mineral and petroleum exploration and production activities will be assessed in close consultation with co-regulators, Irrwanyere Aboriginal Corporation, and other relevant stakeholders to ensure activities are carried out in a safe and sustainable manner.

While feral horse sightings on the park are now very rare, there have been significant numbers in the past. In the case that horses repopulate the park, their numbers should be controlled.

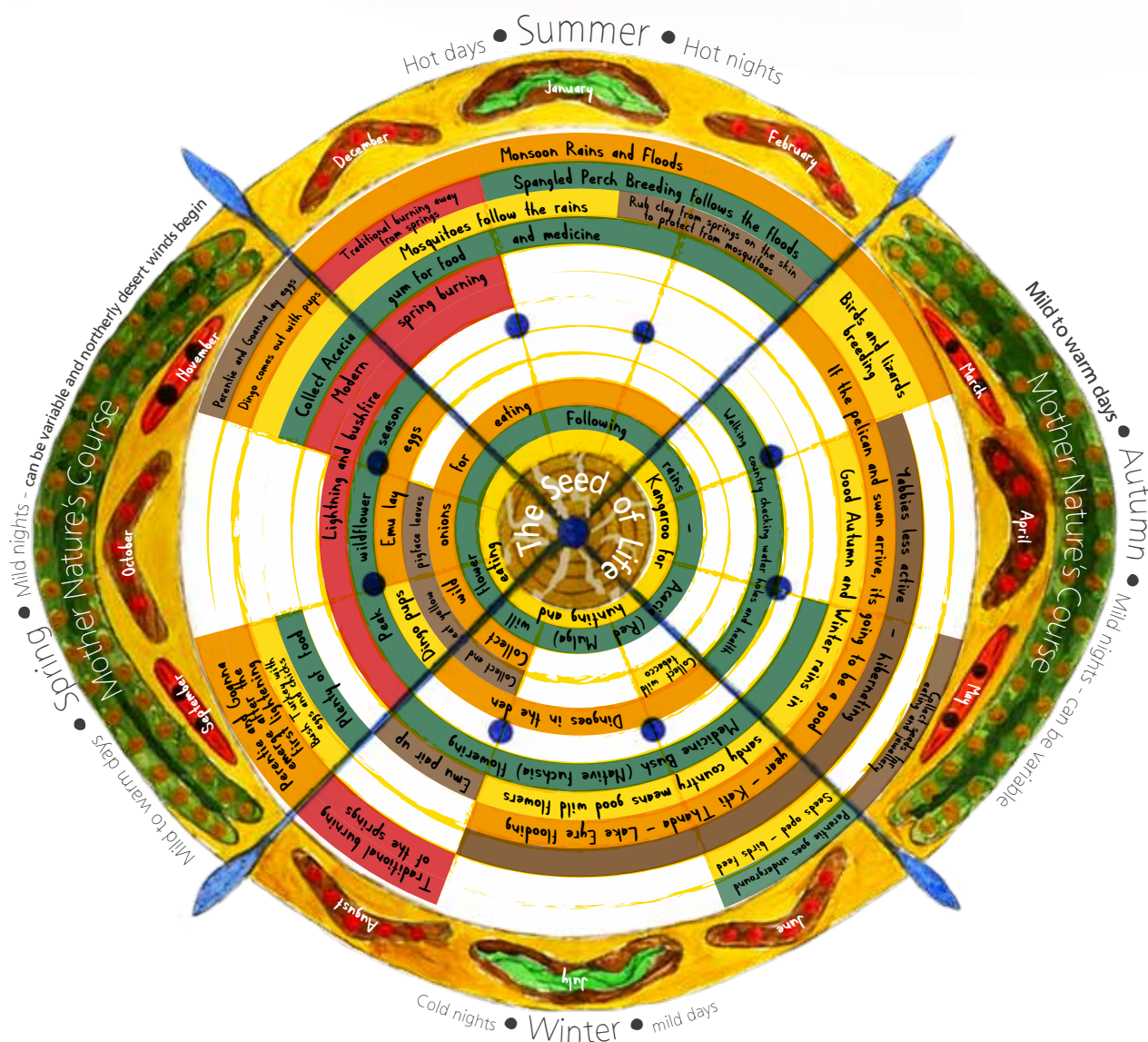
Native plants and animals are also impacted by introduced date palms (*Phoenix dactylifera*) that were planted at some of the mound springs in 1899 by settlers. As an aggressive invader, the palms pose a threat to the ecology of the mound springs. Date palms can grow in high densities, forming a continuous and dense canopy, which effectively blocks light from reaching plants 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. Date palm removal has been undertaken through various programs since 2005 and needs to continue.

The native yet overly abundant common reed (*Phragmites australis*) also threatens the mound springs as it grows

quickly and forms a dense mat, choking out other plants. Fire has been found to be particularly successful in reducing *Phragmites*, creating open water habitat which is crucial for the survival of several endemic species.

Mimosa bush (*Acacia farnesiana*), buffel grass (*Cenchrus ciliaris*), athel pine (*Tamarix aphylla*), beard grass (*Polypogon monspeliensis*), and camel thorn (*Neurada procumbens*) are the other main exotic flora species that need to be managed across the park.

Fire is a natural part of the landscape and has been used as a tool for managing the environment for tens of thousands of years. In recent history, since European settlement, this burning practice has been interrupted which has led to changes in the landscape. The *Witjira Waru Pulka (Fire) Management Strategy 2018-2028* and seasonal calendar has been developed to be a teaching resource about the use of fire in managing Country and practicing culture.



Artwork by Dean Ah Chee

Prescribed burns guided by the strategy will help to improve the landscape through the rejuvenation of native plants, which in turn assists the health of native animals. Care needs to be taken in areas containing buffel grass as increased fire intensity could have detrimental impact for native plants. Fire is also used as a management tool for the control of weed species at mound springs.

Climate change is expected to bring increased temperatures and decreased rainfall to the South Australian Arid Lands region (Suppiah et al 2006; Beecham 2015). Potential implications of climate change include an increase in weeds and pest animals, a change in density and distribution of native plants, increased risk of extinction of vulnerable species, changes to the fire regime, and increased soil erosion. Park management actions should be adaptive to take climate change into account.

Fire for fish

The endemic fish found in the mound springs require a diversity of habitat types to thrive, from open water, closed flowing channels to mixed shallow cool water.

Native plants like common reed (*Phragmites australis*) choke out the open water habitats as a result of the disruption of traditional spring management practices such as selective burning.

The incorporation of traditional fire management practices with strong scientific support is an effective method to increase the habitat diversity available in springs and connectivity between springs. These burns have also proven useful to facilitate the removal of weed species such as date palms (*Phoenix dactylifera*).

Objective and strategies

Improve the health of Country, particularly around mound springs, watercourses and other important sites.

- Continue monitoring and managing weeds at key sites. Monitor the impact of management actions on endemic species to enhance the management effort and reduce any side effects for native plants and animals.
- Continue control programs for camels, donkeys, stray stock and other targeted feral animals, focussing efforts around key ecological and cultural sites.
- Increase understanding and recognition for broader impacts to the mound springs, particularly the influence of the Great Artesian Basin and Pedirka Basin, to better understand the potential impacts of developments within the greater system.
- Ensure all management actions consider any impact on species listed under national and state legislation (see Appendices 1 and 2). Encourage management actions to support these species in alignment with priorities identified in relevant recovery plans.
- Include river floodplains and terminal floodplains as key sites for management actions to ensure the health of plants and animals of conservation significance.
- Encourage a collaborative approach to planning between Wangkangurru and Lower Southern Arrernte people and mining companies with early engagement to ensure that cultural and environmental values are properly understood and protected.
- Implement traditional and ecological fire regimes as guided by the fire management strategy for landscape rejuvenation and weed management at mound springs.
- Implement climate change strategies consistent with any future regional natural resources management climate change adaptation plan.
- Ensure mineral and petroleum exploration and production companies are aware of the Dalhousie Springs no-mining area. Continue to ensure any exploration or production activities in the remainder of the park are managed in accordance with the frameworks that are in place for the appropriate regulation of mineral and petroleum exploration and production activities.

THEME 3:

Providing a unique cultural and nature-based experience for visitors

Witjira National Park is one of the most popular parks in the outback, with approximately 17,000 visitors a year. Accessible from the Stuart Highway and the Oodnadatta Track, many visitors stop at Witjira National Park either before or after crossing the Simpson Desert. Those who visit the park in the weeks following a soaking rain are rewarded with the ephemeral wildflowers bursting into bloom in the sand dune country. On average, visitors spend a couple of nights camping or staying in accommodation at Mount Dare, allowing time to relax and swim at Dalhousie Springs, go for walks and take in the sights of Dalhousie Ruins and the relics of the Old Ghan Railway scattered between Federal, Opossum Waterhole, Bloods Creek and 3 O'Clock Creek.

Campsites are located at Dalhousie Springs, 3 O'Clock Creek and Purni Bore. To protect vegetation, camping is not permitted outside designated camping areas anywhere within the park. Generators are permitted throughout the park during daylight hours. The Dalhousie campsite offers toilets, showers, shade and barbeques, and is quickly filled during the peak season of May to September. There is a supply of drinking water and a shade shelter at 3 O'Clock Creek. Purni Bore campsite offers shelter, shower and toilet facilities. There are no rubbish bins located at the campsites. Visitors can dispose of rubbish at tips located 3km east and west of the Dalhousie campground.

Papa Inura – Dingoes

Wangkangurru and Lower Southern Arrernte people have strong cultural ties with Papa Inura (dingoes) (*Canis lupus dingo*) and the dingo is a functional part of the Australian ecological system, filling the role of a top-order predator.

While some pastoralists dislike dingoes due to their impact on livestock and their livelihoods, dingoes are useful in limiting the impacts of foxes and cats as dingoes compete with these species for resources and will predate on them too.

Campgrounds attract dingoes because people and food are regularly present. While dingoes are usually very cautious of humans, their instinctive aggressive behaviour can be dangerous. Signage at the Dalhousie campground provides visitors with information on how to stay safe around dingoes.

There are three walking trails in the park; the Idnjundura Kingfisher springs walk, the Irrwanyere nature walk and the Dalhousie Ruins walk. All routes provide easy to moderate walks and interpretive signage that illustrate the area's geological, hydrological, biological and European



history, with a Wangkangurru and Lower Southern Arrernte perspective. Plants are also depicted on the signs and information is provided on their traditional use.

Dead wood provides valuable habitat for reptiles, small mammals, insects and emerging plants. To protect this habitat, a ban on wood fires has been in place since 2013. Wood collection and campfires are not permitted in Witjira National Park.

The main drawcard for visitors coming to Witjira National Park is a dip in the main pool of Dalhousie Springs. This is the only spring pool that visitors are allowed to swim in. Safe access is provided via steps and the pool is only a short walk from the campsite and parking area. Fishing, the use of pollutants such as washing liquid, and boats (with the exception of those used for authorised research) are not permitted.

It is also very important that visitors do not jump or dive into the pool. Since access steps replaced a platform and ladder in 2002, less sediment disturbance has been observed. As a result, the fringing plant, spike-rush (*Eleocharis geniculata*), has returned. The new steps installed in 2015 by the Friends of the Simpson Desert Parks have minimised sedimentation even further. The presence of spike-rush, listed as rare in South Australia, provides a good indication of the impact of visitors on the pool. Visitor impacts on the main pool, as well as more broadly across the park, should be monitored and mitigation actions developed as required.

The speed limit throughout the park is 40 km/hr. Visitors are encouraged to use vehicles that are suitable for the fragile environment. Tracks in the park are designed to be four-wheel drive only. Use of camper trailers, caravans and motorhomes in the park can degrade the dunes and native vegetation. Ongoing monitoring of the impacts of these vehicles on tracks is required. Should significant environmental damage be observed, management controls may come into effect in the future. The Desert Parks Bulletin provides further information about track use.

The development of facilities for tourism including accommodation, alternative walking options and improved signage may be investigated. The Dalhousie airstrip has been closed since 2009, but further investment may be warranted to realise the potential for cultural and nature-based tourism, with the opportunity to provide a fly-in-fly out experience for visitors through commercial tour operators.

The Board seeks to foster collaboration with tourism operators to assist in the establishment of nature-based tourism enterprises that encourage responsible tourism through increasing community understanding of the ecology of the park and how visitor impacts can be mitigated. Wangkangurru and Lower Southern Arrernte people aspire to share their culture and educate visitors about the importance of Witjira National Park to traditional owners through the delivery of interpretive information and relevant cultural tourism. Any future development of tourism facilities should be complementary to the local environment to maintain the natural and cultural values of Witjira National Park.

Objective and strategies

Provide for an enjoyable outback experience for visitors whilst maintaining the ecological and cultural values of Witjira National Park.

- Encourage respectful visitor use and monitor the impact of visitors on the main pool at Dalhousie and other key sites. Develop mitigation actions as required.
- Ensure vehicular and pedestrian tracks provide for tourism experiences but do not jeopardise cultural or historically significant sites.
- Monitor the condition of tracks to minimise the environmental impact of 4WD vehicles and trailers.
- Conduct an assessment of feasibility including identifying potential impacts and fulfilling the requirements of State and Commonwealth approval processes before developing any further infrastructure facilities within the park.
- Ensure that historic European sites are protected through monitoring and maintenance, and artefacts are documented in an inventory. Actions to preserve sites and artefacts should be undertaken as necessary.
- Support Wangkangurru and Lower Southern Arrernte people in developing cultural and nature-based tourism enterprises.
- Educate visitors about the importance of Witjira National Park for Wangkangurru and Lower Southern Arrernte people through the provision of interpretive information, and the delivery of relevant cultural tourism at key sites across the park.

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Appendix 1

Flora species of conservation significance

Flora SPECIES	Common name	Conservation status	
		EPBC Act Cwlth ²	NPW Act SA ³
<i>Frankenia plicata</i>	desert nancy	En	Vu
<i>Cyperus dactylotes</i>			Vu
<i>Nicotiana burbridgeae</i>			Vu
<i>Plantago multiscapa</i>	many-stem plantain		Vu
<i>Brachyscome eriogona</i>			Ra
<i>Callitriche sonderi</i>	matted water starwort		Ra
<i>Calocephalus sonderi</i>	pale beauty-heads		Ra
<i>Cyperus bifax</i>	downs flat-sedge		Ra
<i>Eleocharis geniculata</i>	spike-rush		Ra
<i>Eremophila pentaptera</i>			Ra
<i>Goodenia anfracta</i>			Ra
<i>Lepidosperma avium</i>	central Australian rapier-sedge		Ra
<i>Pimelea penicillaris</i>	sandhill riceflower		Ra
<i>Ptilotus aristatus ssp. aristatus</i>			Ra
<i>Sclerolaena blackiana</i>	black's bindyi		Ra
<i>Sclerolaena fontinalis</i>	mound spring bindyi		Ra
<i>Swainsona oligophylla</i>			Ra
<i>Zygophyllum crassissimum</i>	thick twinleaf		Ra
<i>Zygophyllum humillimum</i>	small-fruit twinleaf		Ra
<i>Zygophyllum hybridum</i>			Ra

Appendix 2

Fauna species of conservation significance

Fauna species	Common name	Conservation status	
		EPBC Act Cwlth ²	NPW Act SA ³
<i>Pseudomys australis</i>	plains mouse	Vu	Vu
<i>Dasycercus cristicauda</i>	crest-tailed mulgara (Ampurta)	Vu	En
<i>Anseranas semipalmata</i> *	magpie goose		En
<i>Ardeotis australis</i>	Australian bustard		Vu
<i>Cladorhynchus leucocephalus</i>	banded stilt		Vu
<i>Grus rubicunda</i>	brolga		Vu
<i>Stictonetta naevosa</i>	freckled duck		Vu
<i>Mormopterus eleryi</i>	bristle-faced free-tailed bat		Vu
<i>Anas rhynchotis</i> *	Australasian shoveler		Ra
<i>Anhinga novaehollandiae</i>	Australasian darter		Ra
<i>Aprosmictus erythropterus</i>	red-winged parrot		Ra
<i>Biziura lobate</i> *	musk duck		Ra
<i>Cacatua leadbeateri</i>	Major Mitchell's cockatoo		Ra
<i>Elanus scriptus</i>	letter-winged kite		Ra
<i>Emblema pictum</i>	painted finch		Ra
<i>Falco hypoleucos</i>	grey falcon		Ra
<i>Falco peregrinus</i>	peregrine falcon		Ra
<i>Hamirostra melanosternon</i>	black-breasted buzzard		Ra
<i>Neophema splendida</i>	scarlet-chested parrot		Ra
<i>Oxyura australis</i> *	blue-billed duck		Ra
<i>Phaps histrionica</i>	flock bronzewing		Ra
<i>Plegadis falcinellus</i>	glossy ibis		Ra
<i>Porzana tabuensis</i>	spotless crake		Ra
<i>Stipiturus ruficeps</i>	rufous-crowned emuwren		Ra
<i>Aspidites ramsayi</i>	woma		Ra
<i>Notoscincus ornatus</i>	desert glossy skink		Ra

¹ Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
En - Endangered
Vu - Vulnerable

² National Parks and Wildlife Act 1972 (South Australia)
En - Endangered
Vu - Vulnerable
Ra - Rare
*only visits occasionally

Source: Biological Databases of South Australia (accessed December 2016)

Appendix 3

Springs endemic or relict species

Species group	Scientific name	Common name	Status
Amphibian	<i>Limnodynastes tasmaniensis</i>	spotted grass frog	Relict
Arachnids	<i>Venatrix fontis</i>		Endemic
Arachnids	<i>Artoria victoriensis</i>	Australian wolf spider (subspecies)	Relict
Crustaceans	<i>Austrochilontonia dalhousiensis</i>		Endemic
Crustaceans	<i>Phreatochilontonia anophthalma</i>		Endemic
Crustaceans	<i>Halicyclops sp</i>		Proposed Endemic
Crustaceans	<i>Copepoda: Ectinosomatidae</i>		Endemic
Crustaceans	<i>Cherax sp</i>		Proposed Endemic
Crustaceans	<i>Caradinia sp</i>		Proposed Endemic
Crustaceans	<i>Isopoda: Armadillidae</i>	woodlice	Proposed Endemic
Crustaceans	<i>Isopoda: Phillosciidae</i>		Proposed Endemic
Crustaceans	<i>Ostracoda: Candonidae</i>		Proposed Endemic
Crustaceans	<i>Ostracoda: Cytheidae</i>		Proposed Endemic
Crustaceans	<i>Ostracoda: Darwinulidae</i>		Proposed Endemic
Crustaceans	<i>Ostracoda: Entocytheridae</i>		Proposed Endemic
Crustaceans	<i>Ostracoda: Limnocytheridae</i>		Proposed Endemic
Fish	<i>Chlamydogobius gloveri</i>	Dalhousie goby	Endemic
Fish	<i>Craterocephalus dalhousiensis</i>	Dalhousie hardyhead	Endemic
Fish	<i>Craterocephalus gloveri</i>	glovers hardyhead	Endemic
Fish	<i>Mogurnda thermophila</i>	Dalhousie mogurnda	Endemic
Fish	<i>Neosilurus gloveri</i>	Dalhousie catfish	Endemic
Fish	<i>Leiopotherapon unicolor</i>	spangled perch	Australian Endemic
Mollusc	<i>Austropyrgus centralia</i>		Endemic
Mollusc	<i>Caldicochlea harrisi</i>		Endemic
Mollusc	<i>Caldicochlea globosa</i>		Endemic

For further information please contact:

Department for Environment and Water.
Phone Information Line (08) 8204 1910, or see
SA White Pages for your local Department for
Environment and Water office.

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