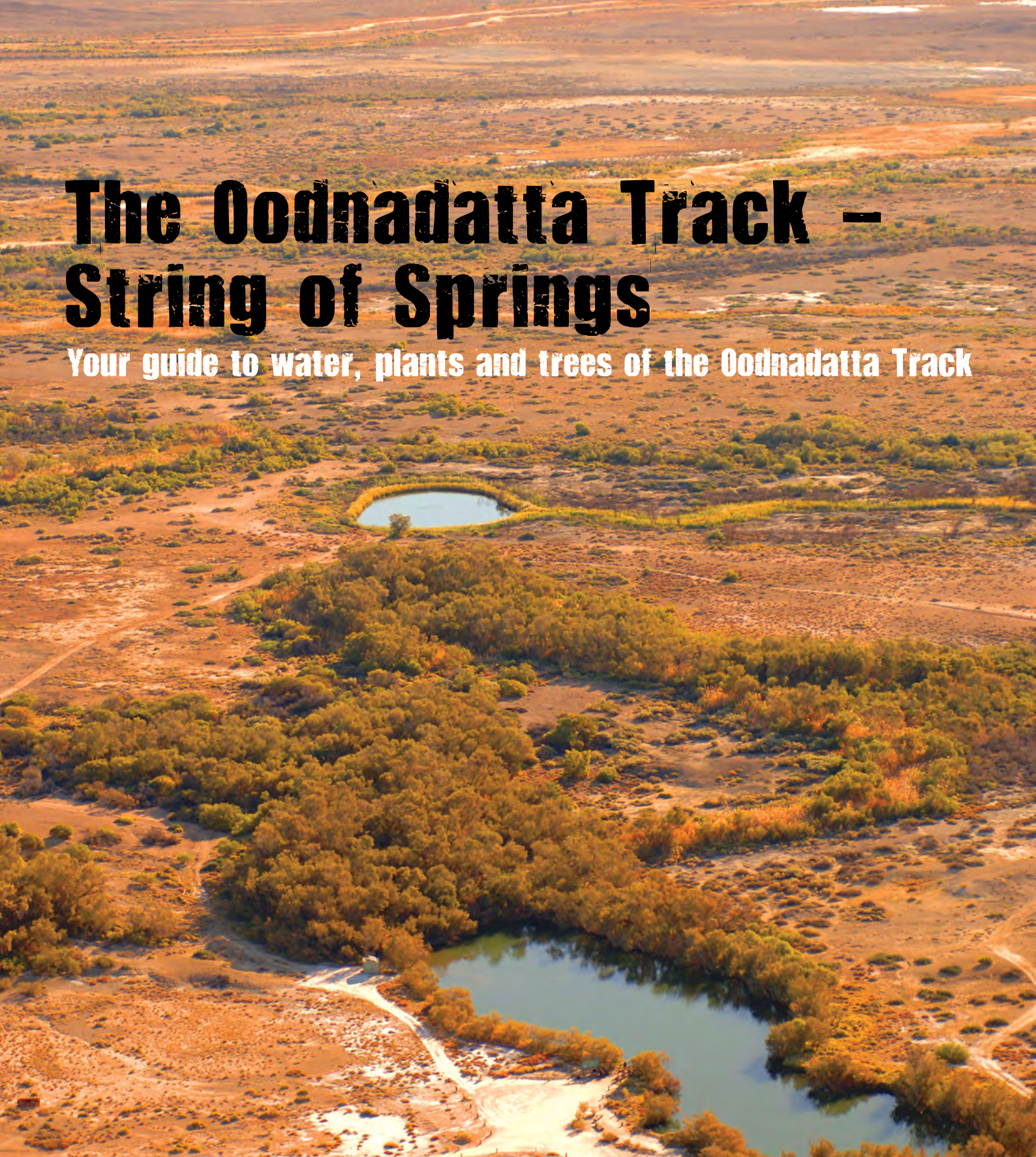


The Oodnadatta Track – String of Springs

Your guide to water, plants and trees of the Oodnadatta Track



The Oodnadatta Track



The Oodnadatta Track

Visitors to the Oodnadatta Track might think that they are journeying over waterless plains. But beneath them lies one of the world's largest aquifers, the Great Artesian Basin.

And it is along the edges of the Oodnadatta Track that the Basin squeezes to the surface, creating oases of springs and attracting birds, wildlife, industry and tourists.

There's not much rain – it varies from around 180 mm (7 inches) a year in the northern parts of the Track to around 115 mm (4½ inches) in the south. Temperatures can be high, sometimes exceeding 50°C in summer.

Rainfall patterns are largely cyclical, ranging from years of dry to heavy flood events. In wet times, plants flourish and animal numbers boom. In dry times, this country is lean and all life keeps a low profile. In these times, vegetation and wildlife concentrate around refuges, such as waterholes and mound springs.

The Oodnadatta Track crosses the traditional lands of three Aboriginal groups. In the south, between Lake Torrens and Kati Thanda-Lake Eyre are the Kuyani people; most of the west of Kati Thanda-Lake Eyre has been traditionally occupied by the Arabana people; and to the north is the land of Arrernte people. Now many people from further west, Antikirinya people, live there too.

A string of springs runs right through this country. Knowledge of these springs has been passed down through generations of Aboriginal people since ancient times. It was a path that was well travelled whether for cultural ceremonies or trading purposes. And the Aboriginal people passed their knowledge on to explorers and settlers, telling them, 'It isn't the straightest route, but it's the only one if you want to survive'.

The Track has many stories to tell. And water is at the heart of all of them.

- This is the path of ancient Aboriginal trade routes, where traders hopped from one spring to another, carrying materials from the Flinders Ranges deep into central Australia and back;
- The string of springs following the Track made it possible for John McDouall Stuart to complete the first crossing of Australia's interior from south to north in 1862;
- The overland telegraph was constructed along this pathway, linking Australia to the world for the first time;
- This was the route of the Great Northern Railway, which made the land of the Northern Territory accessible for white settlement;
- And this is pastoral country, where Sidney Kidman and others developed their leases such as Anna Creek Station.

All of this has only been possible because of the waters of the Great Artesian Basin that come to the surface along the Track, creating the 'string of springs'.

The Oodnadatta Track

HOW TO USE THIS MAP

The following symbols denote the approximate locations of springs and bores, plant types and landforms you'll discover along the Oodnadatta Track.

You will find the corresponding text and images on the following pages in this brochure.

This map is drawn to give an idea of water and plant locations and should not be regarded as a driving map.

-  Spring or waterhole
-  Water location
-  Landform location
-  Plant location
-  Public Access Route

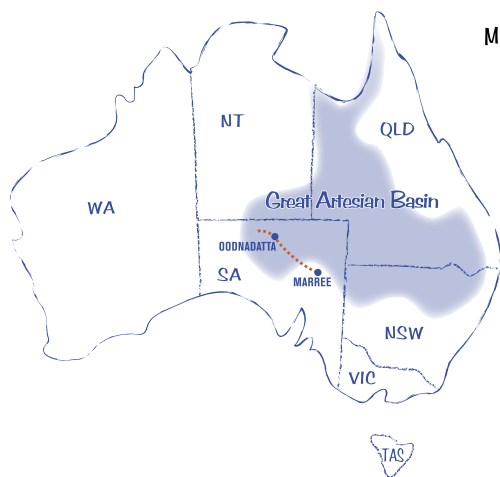


SHADES OF GREEN

Have you noticed just how many different shades of green there are in the vegetation out here?

MURDARINNA

Make a short stop here. There are examples of early pastoral technology such as the remains of the above ground 'turkey nest' dam and the timber-lined well and timber stockyards. Then take a walk through the nearby vegetation. Can you find the caustic vine, a wild tomato with its purple flowers? Can you spot the eremophilas, sennas or bladder saltbush? The young mulgas here look more like pine trees from a distance. Check out the foliage – it points upwards, directing rain to the base of the plant.



MARLA

OODNADATTA

STUART

PUBLIC ACCESS ROUTES (PARs)

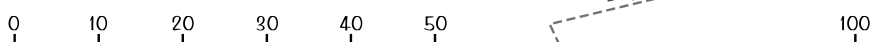
Only signposted Public Access Routes on pastoral stations can be used without first seeking landholder consent. All other station tracks are considered to be private tracks. Contact the Public Access Officer on 1800 678 447 or (08) 8648 5300 for further information.

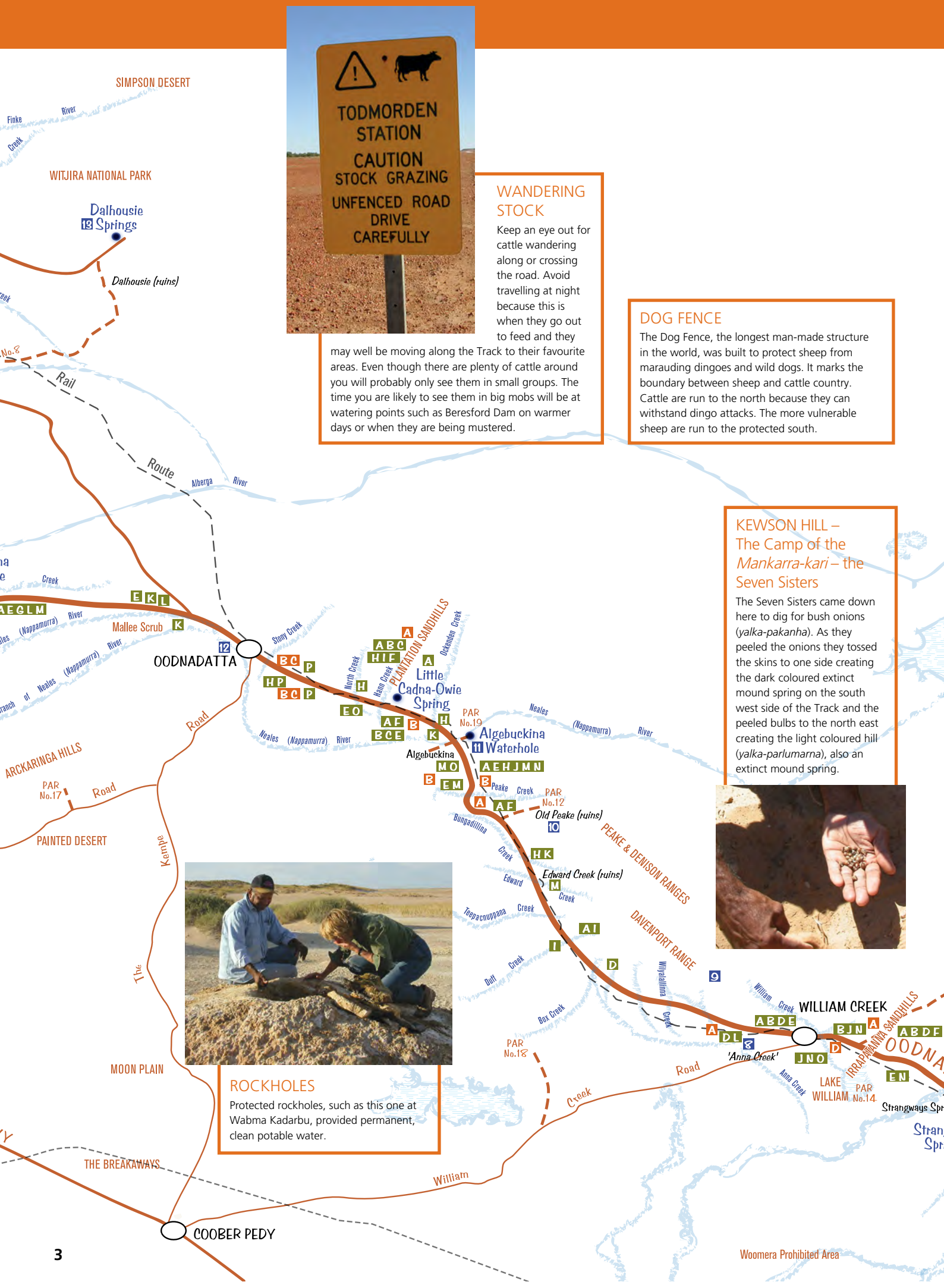
APPROXIMATE TRAVEL DISTANCES

Marree to Bopeechee	65km
Bopeechee to Roxby Downs	122km
Bopeechee to William Creek	134km
William Creek to Coober Pedy	160km
William Creek to Algebuckina	143km
Algebuckina to Oodnadatta	56km
Oodnadatta to Marla	208km
Oodnadatta to Coober Pedy	190km
Oodnadatta to Dalhousie Springs	179km
Dalhousie to Kulgera	355km



MAP SCALE (approximate)





WANDERING STOCK

Keep an eye out for cattle wandering along or crossing the road. Avoid travelling at night because this is when they go out to feed and they

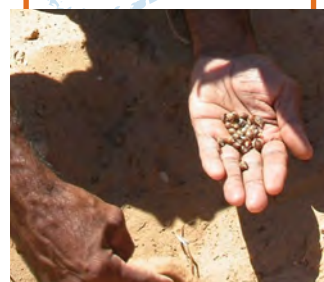
may well be moving along the Track to their favourite areas. Even though there are plenty of cattle around you will probably only see them in small groups. The time you are likely to see them in big mobs will be at watering points such as Beresford Dam on warmer days or when they are being mustered.

DOG FENCE

The Dog Fence, the longest man-made structure in the world, was built to protect sheep from marauding dingoes and wild dogs. It marks the boundary between sheep and cattle country. Cattle are run to the north because they can withstand dingo attacks. The more vulnerable sheep are run to the protected south.

KEWSON HILL – The Camp of the Mankarra-kari – the Seven Sisters

The Seven Sisters came down here to dig for bush onions (*yalka-pakanha*). As they peeled the onions they tossed the skins to one side creating the dark coloured extinct mound spring on the south west side of the Track and the peeled bulbs to the north east creating the light coloured hill (*yalka-parlumarna*), also an extinct mound spring.



ROCKHOLES

Protected rockholes, such as this one at Wabma Kadarbu, provided permanent, clean potable water.

KATI THANDA-LAKE EYRE (Halligan Bay)

Halligan Bay is the lowest point in Australia at 15.2 m below sea level and provides a vantage point for viewing Lake Eyre North.

For many years, white explorers thought that Lake Eyre was connected to Lake Torrens, forming an impenetrable horseshoe. The myth was dispelled after Corporal Alfred Burt rode through the land corridor to meet Warburton's exploration party in 1858.

The sheer enormity of Lake Eyre is mind-blowing. This is Australia's largest lake and the world's largest internally draining catchment. The rivers that feed the lake cover an area of 1.2 million square kilometres.

But for most of the time, Lake Eyre, and particularly Lake Eyre South which is the part of the system visible from the Oodnadatta Track, is a dry salt lake.

When it fills, the influx of water, of birds and of life in general is one of the most spectacular sights on earth. Floods are generally due to large monsoonal rains in Queensland which flow south via the Cooper Creek or Georgina-Diamantina river system.

The Lake Eyre Basin is considered one of the world's last unregulated wild river systems. Those rivers sustain wildlife and pastoral enterprise throughout the Channel

Country of south west Queensland, and the north of South Australia.

The Oodnadatta Track crosses almost all of Lake Eyre's western rivers. These rivers flood infrequently. At times it may be difficult to imagine the creek beds as watercourses, but the reality of their swelling is borne out by the many old railway bridges which you can still see today. In the end, it was these floods that caused the Stuart Highway and the Adelaide to Darwin rail line to be relocated further west.

While the 969,000 hectare Lake Eyre floods only infrequently, when it does it is a haven for wildlife. When flooded, the lake supports major breeding

events of the Australian Pelican and Banded Stilt. Over 40 waterbird species have been recorded, including the threatened Freckled Duck (*Stictonetta naevosa*) Musk Duck (*Biziura lobata*) and Australasian Shoveller (*Anas rhynchotis*). Five species of fish, an endemic ostracod, and several zooplankton species have also been recorded at the lake.

Why such a salty crust? As the waters from past floods have evaporated, dissolved salts have remained behind. When the lake flooded in 1950, a 30 cm layer of salt was left in its wake.



KATI THANDA
LAKE EYRE
NATIONAL PARK

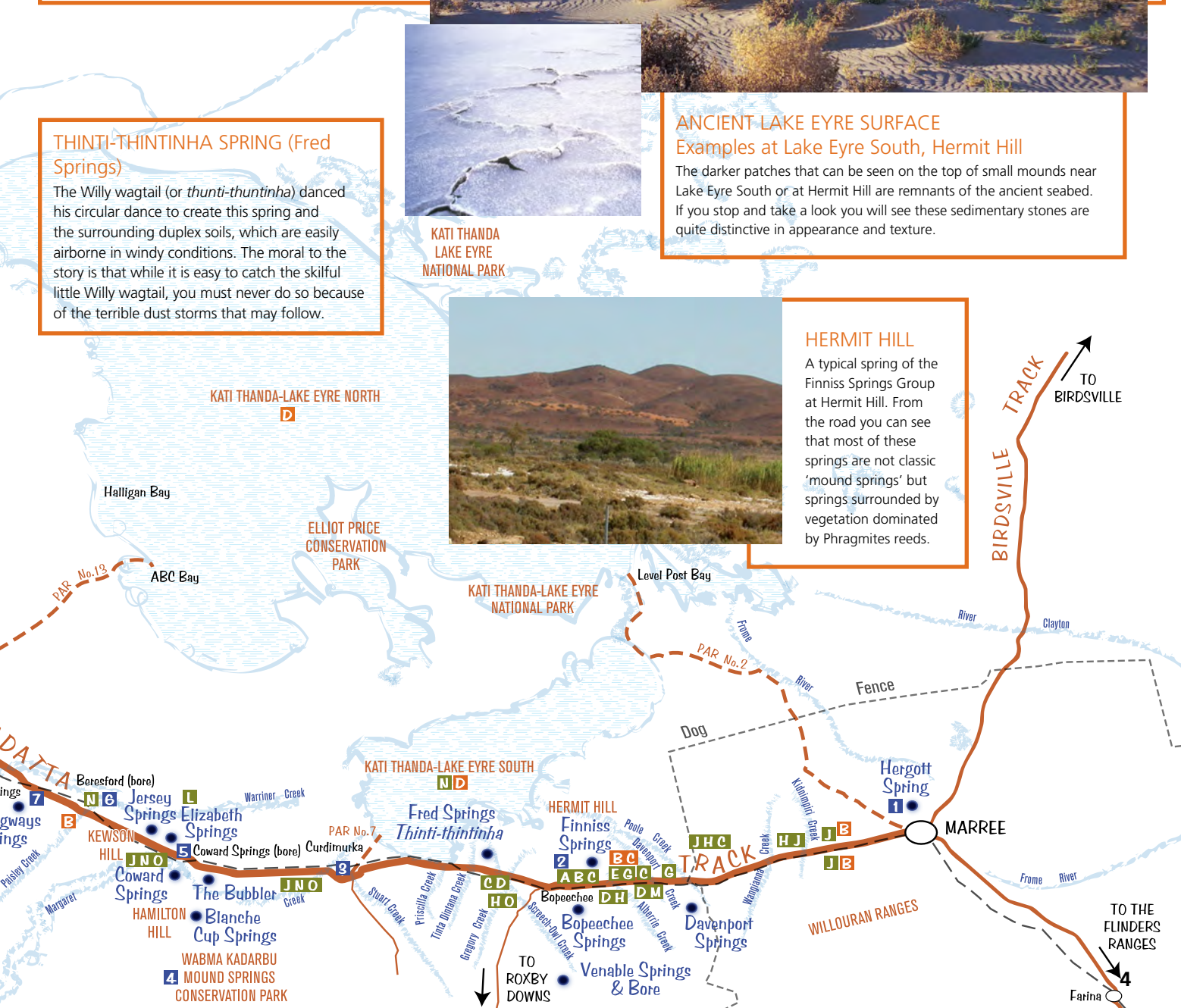
ANCIENT LAKE EYRE SURFACE Examples at Lake Eyre South, Hermit Hill

The darker patches that can be seen on the top of small mounds near Lake Eyre South or at Hermit Hill are remnants of the ancient seabed. If you stop and take a look you will see these sedimentary stones are quite distinctive in appearance and texture.



HERMIT HILL

A typical spring of the Finnis Springs Group at Hermit Hill. From the road you can see that most of these springs are not classic 'mound springs' but springs surrounded by vegetation dominated by Phragmites reeds.





A typical mound spring

CONSERVING THE GREAT ARTESIAN BASIN

Conserving water and pressure of the GAB is paramount. In 1999 the Commonwealth introduced the Great Artesian Basin Sustainability Initiative (GABSI) to cap and pipe free-flowing bores. The scheme builds on existing efforts to control flows from the GAB. It offers financial support to landholders to rehabilitate bores. In South Australia, BHP Billiton has also made a major financial contribution to the scheme.

The Great Artesian Basin

When white pioneers set out to explore Australia's interior, they thought they would find an 'inland sea'. As it turns out, they were only partly wrong.

Early explorers were devastated to find an apparently 'impassable' horseshoe of salt lakes. But beneath the surface lay an ancient water source that now sustains wildlife; a significant pastoral industry; a strong mining operation at Olympic Dam; Australia's largest inland oil and gas field, the Cooper Basin; and of course, a thriving tourism industry.

The Great Artesian Basin (GAB) is one of the largest groundwater basins in the world, underlying 22% of the Australian continent. Groundwater naturally discharges from the basin via diffuse upward leakage and spring discharge. Pumping and discharge from bores over the last 100 years has also added a significant level of discharge. Recharge occurs around the margins of the basin with most of the current recharge occurring on the eastern margin. The western margin currently receives very little local recharge

and only partial recharge from the east. However, the basin is vast and it is this reserve of water that maintains the springs through these dry periods.

The springs have been discharging GAB water for at least one million years during which the climate has changed dramatically around them. They occur in the driest parts of Australia and provide oases for unique aquatic life forms. The ecological communities dependent on natural GAB discharge are listed as 'endangered' under the *Australian Environment Protection and Biodiversity Conservation (EPBC) Act 1999*. These communities include the amazing diversity of unique and relict flora and fauna that are found in the springs of the Oodnadatta track.

The Oodnadatta Track lies on the western margins of the Great Artesian Basin. In many places the Basin water has squeezed to the surface in the form of natural springs. Many of the GAB springs are known as 'mound springs' because of the characteristic mounds associated with them. The mounds have been formed by mineralised material coming to the surface with the ancient water. You can also see extinct mound springs along the track, most notably at Hamilton Hill and Beresford.

There are almost 5000 individual spring vents in

169 spring groups within the South Australian part of the GAB. The largest group is the Dalhousie complex, where more than 60 springs are located. Most springs in fact are not 'mound springs' but small inconspicuous soaks in the ground. The water in the GAB varies across the region in quality but is generally slightly saline and neutral to slightly alkaline. The water typically contains high concentrations of dissolved solids which are mainly sulphates in the north and west and carbonates in the east, with a clear transition in chemistry between Strangways and Beresford Springs.

Many springs have great significance for local Aboriginals whose ancestors relied on them as watering points and as sacred sites for important ceremonies. There are many Dreamtime stories associated with the springs such as the story behind the 'Bubbler' (told on page seven). Indigenous tourism services operate from Marree for those wanting to find out more.

Emerald Springs, and Blanche Cup were the first GAB springs to be located by white explorers. This opened the way for European settlement and by 1859 the first pastoral leases were established in this region.

You are also now part of that story!

Landforms

You will see lots of different landforms along the Track. Floodouts and watercourses are common. In between are vast sand and gibber plains and tableland dotted with mesas.

In several places the Oodnadatta Track passes through sand dune country where the dominant features are dunes and flat areas between them known as swales. There are salt lakes like Lake William and the greatest of them, Kati Thanda-Lake Eyre. The Peake and Denison Ranges in the north and Willouran Ranges close to Marree, the rocky outcrops at intervals along the Track and the dramatic shapes of Hermit and Pigeon Hill at Bopeechee provide further variations to the landscape. Each land type supports different vegetation.

You may also notice small depressions where the ground cover is denser and more diverse because water and nutrients accumulate there and are

held for extended periods. These are gilgais (crab holes to the locals) ranging from a few metres in diameter up to 10 metres in the gibber plain.

Walk along a dry creek bed where the soil has been nourished regularly by the nutrients washed down after rains. You will usually see a much greater variety of plants than on the surrounding plains. You will notice this if you stop and take a short stroll along some of the larger watercourses you cross as you travel the Track. Here too you will find gidgee (in the northern part) and coolabah: two of the largest trees that need the deep moisture that accumulate along these watercourses. By contrast there is very little vegetation on the sides of most mesas (flat topped hills).

Plants

Good rains that can fall at any time of the year change everything along the string of springs.

In late autumn and winter they turn enormous stretches of countryside into spectacular landscapes of colour. Dunes and sandy plains might be covered in carpets of numerous varieties of annual flowers – yellow, white and pink daisies, the spectacular regal birdflower or blue cattle bush. Summer rains can produce brilliant spreads of Sturt's desert pea and Swainsona peas of orange, white, pink and purple hues.

ground is warm. It is also programmed not to germinate in the same area in two consecutive years even when the rainfall is apparently adequate and seed is in the ground.

Temperature affects germination. Bladder saltbush will not germinate above a certain temperature to avoid 'cooking' in the heat. Timing can be very specific. For instance you'll see button grass, a favourite of the budgerigars, following rains during February, when optimum ground temperatures and rainfall are likely to coincide.

Seeds can remain dormant in the ground protected by their tough outer coverings for many years until the right conditions return to trigger germination.

How plants survive

Dry times are a normal part of the climate cycle out here and most plants are drought evading.

Drought-resistant perennials are present all the time. Tall shrubs and trees maximise their access to water by a combination of shallow roots to capitalise on light rains, and a deep tap root system to reach the deeper reservoirs of moisture.

In exceptionally dry times most arid perennial plants will cease growing. Some partially or completely shed leaves to preserve nutrients and energy.

Chenopod shrubland

Chenopod shrublands are plant communities largely from the family Chenopodiaceae. It includes saltbush (*Atriplex*), bluebush (*Maireana*), samphire (*Tecticornia*) species and bindyi (*Sclerolaena*) and buckbush, better known as roly poly or tumbleweed (*Salsola kali*). Much of the low vegetation you see along the Track is from this family. They are all plants that have adapted to South Australian arid zone conditions.



Regal birdflower (*Crotalaria cunninghamii*)

Poached-egg daisies (*Polycalymma stuartii*). They will flower for months in good years

Frankenia (*Frankenia serpyllifolia*) A hardy sea-heath. Look for it on gibber plains and around salt pans and mound springs



Native hollyhock (*Malva preissiana*)

Why is there such a wonderful variety of plants out here?

Climate, landforms and soil types determine where and when plants will grow.

The climate in this country is erratic. So, to survive, plants have evolved in many different ways. Soil types vary – ranging from clays to sandy loams; from sand plains to limestone and saline soils; from alluvial soils associated with swamps and watercourses to rocky ridges, hill slopes and hard gibber country. All are habitats for different plants where the distribution of nutrients varies greatly.

Germination

Plants out here can be quite particular about when they germinate and grow. Grasses and some wildflowers usually germinate after summer rains; short-lived herbs and most wildflowers do so following winter rains. Sturt's desert pea germinates only after summer rains, when the

What do livestock eat out here?

Stock have a greater choice of feed in pastoral country than in the more settled areas. They find that a whole range of grasses, shrubs, herbs, forbs and trees are palatable to varying degrees. Most grasses, especially the dominant Mitchell grasses which grow after summer rains, are excellent cattle fodder. Good seasons can also produce an abundance of the fleshy-leaved plants munyeroo and native spinach (also known as New Zealand spinach). These are particularly useful because on a diet of these moisture-laden plants stock can spend extended periods of time away from their watering points. Early white settlers used to eat them as well.

In drier times cattle graze on nearly all of the chenopods with the exception of the samphires. But a diet high in saltbush requires a supply of reasonable water to counteract the salt.

Why did so many pastoral settlements fail in the early days?

Early white settlers along the string of springs were misled by the presence of permanent waters of the springs. They failed to recognise that, while there was water, the surrounding vegetation was insufficient and quickly eaten out. This led to early failures until bores were sunk into the GAB and water distributed via open bore drains to more distant grazing areas.

SAND DUNES

The conversion of much of central Australia into sand dunes has been the product of low elevations, widespread sediment deposition, aridity and the extremes of a wildly fluctuating climate over the last million years. Some geologists believe the dunes formed in the last 8,000 to 10,000 years; others suggest 200,000 years.

Why do dunes vary so much in colour?

Most dunes are brownish pink or brick red; some are yellow-brown or grey brown; others near Lake Eyre are much lighter. The lighter-coloured dunes are generally found closer to the source areas of the sand. For example, where they have blown in from flood plains along Eyre's Creek and Goyder's Lagoon, they are white or light yellow. Generally dunes a long way from the primary source are red to dark red in colour and more stable. The longer the sands remain in the aeolian (windblown) environment, the redder they become as a

result of oxidation and the release of iron oxide from within the small clay fraction in the sands. The lighter coloured dunes support less vegetation because of their instability and lack of nutrients.

CADNA-OWIE (in the Plantation Sandhills)

Dunes provided comfortable and sheltered campsites at numerous locations along the 'string of springs' for Aboriginal people. This is one of the larger ones.



1. Hergott Spring

There are hundreds of mound springs along the Oodnadatta Track, and Hergott Spring, out of Marree, will be the first seen by south-north travellers. Marree was once the most northern railhead and Afghan cameleers were based here for many years, as it was the most reliable form of freight transport from the railway to remote properties. The town still has a strong Afghan heritage.



2. Finniss Springs/Hermit Hill – Wibma-malkara

The Hermit Hill spring complex contains nine active spring groups and hosts a number of rare plants and organisms, including salt pipewort. Vegetation can be linked back to the rainforest era can be found here – salt pipewort or button grass (*Eriocaulon carsonii*), cutting grass (*Gahnia trifida*) and sedge (*Baumea juncea*). The Arabana people refer to this spring complex as 'Wibma-malkara' meaning, 'Initiation ground of the Dreamtime'.

In the past this area was a burial ground and a place of men's business, and both the site and the surrounding vegetation remain very important to local indigenous people.

Along with Stuart Creek, Strangways Springs and Mount Margaret, Finniss Springs was the first of the pastoral properties along the Oodnadatta Track. The station was also the home to a unique Aboriginal settlement, thanks to the extraordinary lessee, Francis Dunbar Warren. By the 1930s the station was home to a United Aborigines Mission school, a church and a community of up to 200 people. Access is only available through agreement with the local Arabana people.

3. Curdimurka

Stop and read the signs here for more history of the Great Northern Railway.

4. Wabma Kadarbu Mound Springs Conservation Park

The Park hosts a number of mound springs, notably The Bubbler, Blanche Cup and the now extinct Hamilton Hill spring. The springs support unique crustaceans and gastropods.

These springs are excellent examples of the 'mound springs', of the Lake Eyre supergroup.



Blanche Cup

Read more about this type of spring in the section on the GAB on page 5.

This set of springs were extremely important to local Aboriginal groups, both for water in lean times, and as places of spiritual significance. The story of how they were formed goes something like this:

The Kuyani ancestor Kakakutanha followed the trail of the rainbow serpent Kanmari to Bidalinha (or the Bubbler) where he killed it. He then threw away the snake's head, which is represented by Hamilton Hill, and cooked the body in an oven-Dirga, which is now Blanche Cup. Kakakutanha's wife, angry at missing out on the best meat from the snake, cursed her husband and he went on to meet a gruesome death at Kudna-ngampa (Curdimurka). The bubbling water represents the convulsions of the dying serpent.

5. Coward Springs

This spring complex has 12 active spring groups, including those in the neighbouring conservation park. Their Aboriginal name is *Pitha Kalti-kalti* (after the crooked box tree which once stood at the site). The springs were a resting spot for the Urumbula people as they travelled north for trade.

The bore was sunk in 1886-87 and unsuccessfully capped in 1889. The artificial wetland developed as a result.

The many date palms were planted in 1898 and are an example of early commercial diversification. Date palm plantations were also established at Oodnadatta, Marree and Lake Harry (on the Birdsville Track).



Coward Springs

6. Beresford

Beresford Springs was an important railway siding, telegraph station and radar station, as evidenced by the many structures still remaining today. The site epitomises the clustering of settlement around water in

these parts. Here travellers will see:

- Natural GAB springs;
- An operating artesian bore (rehabilitated under the GABSI scheme – for further information see page 5);

- The Beresford Dam, now used to water stock from Anna Creek station;
- An elevated cast iron water tank that was used to re-water the early steam locomotives; and
- A Kennicott water softener, installed during World War Two to treat mineralised bore water and prevent lime and gypsum building up in train engines. The softener was made redundant when the line was dieselised in 1954.

Stop and read the signs here for more information.

7. Strangways Springs

One of the earliest pastoral leases in the area, Strangways was also one of the first to learn the harsh lessons of drought. The drought from 1864 to 1866 saw 6,000 sheep die on Strangways – about two-thirds of the stock. Throughout the district, around 30,000 animals perished.

Because of the secure spring water supply here, the manager's house was used as one of the first repeater stations on the Overland Telegraph, in January 1871. (The Peake, to the north, was built at the same time.) Repeater stations were located



every 200 miles and were exactly that – operators needed to listen to each message and repeat it down the line.

The telegraph line was a massive engineering feat. A total of 36,000 poles were used to cross the nation, a pole every 100 yards. Construction teams worked out from Port Augusta, Darwin and in both directions from the MacDonnell Ranges. The line was finally completed on 22 August 1872.

The repeater stations were closed in 1896 and replaced by automatic stations at Oodnadatta and William Creek. In 1876 the station homestead moved to Anna Creek.

8. Anna Creek

The largest pastoral lease in Australia, at around 24,000 square kms, Anna Creek Station is part of the Kidman group of properties. The station is the only property in the region that has been continuously occupied and never abandoned because of drought.

It was also one of the first places in South Australia to drill for GAB water. Many of the early wells were failures, with only 27 of 84 wells sunk in 1898 able to keep stock.

Eringa Station, to the north was purchased by Sir Sidney Kidman in 1899, and was the first property he owned in his own right. He went on to become the largest landholder in the country, focusing on establishing large pastoral runs that could withstand the harsh seasonal changes of the outback.

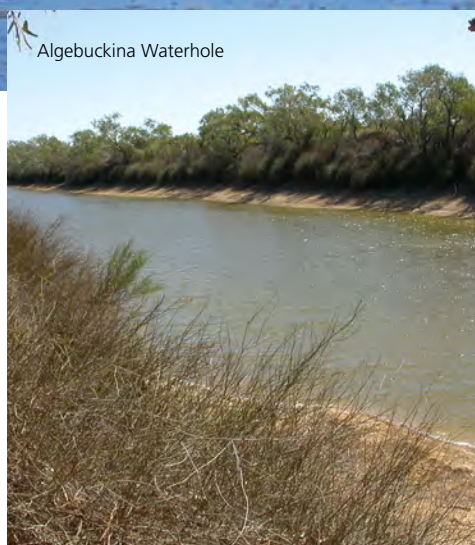


9. Grinding stone quarry

For many thousands of years indigenous people quarried this site by hand to get slabs of sandstone to split and shape into grinding stones. From time to time they would trade these for shields and spears brought down by visitors from the north. The northerners had no suitable stone for grinding, but plenty of wood for shield making, so the exchange suited both parties. (There is no public access here.)

10. Old Peake

Old Peake is one of the largest and best preserved pastoral homestead ruins, accessible via a public access route. Taken up as a pastoral lease by Philip Levi in 1859, like many stations in the area it was abandoned because of drought in the 1860s. An Overland Telegraph repeater station and copper mine were both once located at Old Peake, partly because of the good waters from the numerous permanent springs. This was also an important site for Aboriginal people.



11. Alge buckina Waterhole

The Alge buckina Waterhole has never dried up in living memory. It is the largest refuge waterhole in the Neales-Peake river system and crucial to the survival of both wildlife and stock.

The Neales is one of the western rivers of the Lake Eyre Basin. The rivers and creeks of Lake Eyre are considered to be some of the last 'wild' river systems in the world. These rivers are capable of extreme variability in flow – generally short periods of high flow following rain and extended periods of no flow.

The Neales has small flows most years, and experiences large catchment scale floods every 2½-3 years. These floods generally contribute

some flow into Lake Eyre North. Generally floods in the western rivers do not carry enough volume to fill Lake Eyre. (Lake Eyre floods are normally the result of flooding in the northern rivers, such as the Georgina-Diamantina River or the Cooper Creek).

The enormous Alge buckina Bridge demonstrates the extent of flooding possible in this region and the engineering feats necessary to construct the railway around such flood conditions.



12. Oodnadatta

Oodnadatta, on the Neales River, began life as the terminus of the Great Northern Railway in 1889. It became South Australia's most northerly railway town, the starting point for travellers heading to the Northern Territory, and a major railhead for cattle walked down the stock route from Charlotte Waters to the north, and from the Musgrave and Everard Ranges to the north-west. By 1893 there were some 50 Afghans based at Oodnadatta working 400 camels in every direction from the town. A Chinese community also flourished, setting up market gardens at Hookey's Hole on the Neales River.



The Oodnadatta area is a place of immense cultural significance to the Arabana people. There is a spiritual account of three large rocks as frogs and smaller scattered rocks as people. These rocks are visible from the plateau on the northern approach to Alge buckina. A group of water hole frogs set out from Utapuka (Hookey's waterhole at Oodnadatta) and headed down the Neales River to go to war with some frogs from further east. On the way, at Alge buckina the frogs were teased by the people, 'What have you come for, you with the big, wide mouths?' The angry frogs turned the people into stone. The jumbled rocks are now seen as the people, while the larger boulders are the frogs.

13. Dalhousie Springs

The Dalhousie Spring Group consists of thirteen active spring groups, representing some of the largest and finest examples of artesian springs in Australia. The springs range in size and composition, with the largest pool 160 metres long and 12 metres deep. This group accounts for around 40% of the water naturally discharged from the Great Artesian Basin. Witjira National Park was created in 1985 to protect the springs. They are home to at least thirteen crustaceans, three snails and five fish that are found only at Dalhousie Springs. In addition to this there are several other species that only occur in single springs and more than 90 species of plants found within the springs. The springs are ringed by paperbark trees (*Melaleuca glomerata*).



Mr Ned Chong in his garden at Hookey's Waterhole, 1910 (John Dallwitz & Horrie Simpson)

A. Mulga wattle (*Acacia aneura*)



You will see lots of mulga trees along the length of the track. Sometimes they occur as single trees along watercourses on gibber plains. Or they grow in communities on the sand dunes with sandhill wattles, sennas (formerly cassias), eremophilas and dead finish trees or as denser plantations as at Hermit Hill.

Mulga had a number of uses for Aboriginal people. They used the timber to make digging sticks, boomerangs, shields and spears. It was also an important food source. Seeds were collected, roasted and ground into a nutritious paste similar in texture and taste to peanut butter. They also cooked the paste in the coals as 'damper'. The lerp scale makes a tasty honey-like substance and edible insect galls (mulga 'apples') on the trees contain nutritious edible grubs.

Europeans find the colourful timber excellent for timbercraft and early pastoralists used it for fence posts. Mulga survives the harshest of climatic conditions, but not fire. Rabbits strip the bark seeking moisture in dry times, and cattle graze it when there is little else offering.

B. Sandhill wattle (*Acacia ligulata*)



This bright green shrub often grows in dense stands on dunes, swales, sandy plains and also around salt lakes. Sandhill wattle has a fairly short lifespan (10-25 years). Whole populations die within a few years of each other and are then replaced following the next major rainfall event. Stock rarely graze this plant.

C. Native apricot (*Pittosporum angustifolium*)



Look for this tree with a drooping habit. It either stands alone or as a parent plant surrounded by a number of young plants on the plains or along smaller watercourses in gibber country. It is hardy and drought-resistant and produces bitter, inedible, orange, olive-shaped fruits. Aboriginal people ground the seeds into a poultice that they applied externally to relieve stomach pains or cramps. The oil coating the seed is said to be useful for rubbing into sore muscles and sprains. From a distance you might confuse it with the native plum which grows in the same habitats and has a similar shape and drooping foliage. Good examples are at Poole Creek and 99 km from Marree.

D. Native plum (*Santalum lanceolatum*)



The plum, although unrelated to the native apricot, is very similar in appearance. Its dark rough bark is a distinguishing feature. It is related to the quandong and sandalwood and all three are root parasites. So it is not unusual to see a native plum growing together with another shrub. You'll see it with a dead finish tree (*Acacia tetragonophylla*) near the dam you pass on Anna Creek Station, about 2km north of William Creek. They sucker readily too. So look for them growing in small clusters at various points along the track. The ripe fruits are small, deep-purple and are sweet and juicy, but have little flesh. It has a number of uses aside from being an important food. The kernels were sometimes roasted and ground into a paste by Aboriginal people or they used the ground fresh kernels as a medical linament. They also boiled the bark in water and then used it to help fight coughs and colds.

E. Dead finish (*Acacia tetragonophylla*)



This extremely slow-growing spiny tree is scattered in numerous locations along the Oodnadatta Track, often close to the road. It has one of the hardest of Australian native timbers, after the endangered waddy tree (*Acacia peuce*) and the red mulga or mineritchie (*Acacia cyperophylla*) found further north.

Its common name probably comes from the fact that when it defoliates in dry times it looks quite dead and is one of the last plants to die in a drought. The dense nature of its prickly branches makes it an excellent refuge for small birds such as nesting zebra finches. One dead finish bush might host up to 20 separate zebra finch nests. Look for the bush and these little birds in the Algebuckina Bridge area.

Except in extremely dry times stock generally stay away from the spiny foliage, whereas camels and goats are not so choosy. The seeds were ground and eaten by Aboriginal people who also used its colourful timber for artefacts.

F. Sandhill canegrass (*Zygochloa paradoxa*)



When you are travelling along the swales in sandhill country look for the large clumps of perennial sandhill canegrass growing on the sides of the dunes. This tough grass is very drought-resistant and a valuable sandhill stabiliser. In dry times the above-ground parts die right back taking on a blue/grey hue. They become dormant and can remain so for years while the root systems survive underground.

The plants we have highlighted have been chosen because they are some of the most common and more interesting plants you'll see growing along the Track

G. Caustic vine
(*Sarcostemma viminale*)



Take time to climb through the fence 45.5km from Marree to observe this most unusual looking plant. The caustic vine was known to Aboriginal people as a 'medicine bush'. Its milky sap was applied to burns, sores and warts forming a skin over the affected area that would then heal after four to five days. It is poisonous and so not grazed by animals.



H. Coolabah (*Eucalyptus coolabah*)

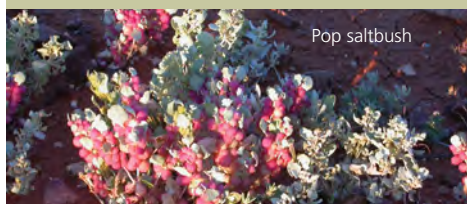
The coolabah grows along watercourses and on the flood plains of creeks. You won't find them on the gibber plains and rarely in dunes. But there is one place 26km south of William Creek where they are growing in the dunes indicating that the dunes have moved. Have a look at the bark on these trees. It is rough and flaky in the lower parts and smooth and white higher up. The timber is resistant to termites so the early pastoralists used it for fencing and stockyards. It is a very resilient tree, being fire, flood and drought tolerant. Birds, especially galahs and little corellas, love the coolabah because it has ideal hollows for nesting.

Aboriginal people liked it too – they stripped the bark of certain coolabahs, dried it out and burnt it. The ashes were then mixed with the leaves of the native tobacco plant, brought down from the north, to produce a gum that was chewed and enjoyed for its narcotic effect.

Saltbush (*Atriplex* species)

Saltbush gets its name because it can grow in saline soils.

There are many saltbushes, both perennial and annual. They are found in a variety of habitats, from dunes to clay soils, gibber plains or along watercourses and flood plains. Look for the small colourful annual pop saltbush with its pink fruits that grows along the verges of the Track after good rains.



Pop saltbush

I. Bladder saltbush
(*Atriplex vesicaria*)

Bladder saltbush can live for 20-30 years and gets its common name from the tiny bladders on the leaves that can be seen under a microscope. It is very drought-resistant, shedding its leaves in dry conditions. It is also a useful fodder plant but because of its saltiness, livestock feeding on this plant need good quality water to drink. In spite of its saltiness early pastoral pioneers are known to have eaten bladder saltbush in extremely dry times when there was no water to grow vegetables. It is a very useful indicator of rangeland condition.

J. Old man saltbush
(*Atriplex nummularia*)



Old man saltbush has a deep root system spread over a large volume of soil. It is very resilient and can tolerate extended droughts when it defoliates, as well as long periods of shallow flooding. Livestock graze this plant. It has been cultivated for a variety of purposes – including hedges, wind and fire breaks.

Oodnadatta saltbush
(*Atriplex incrassata*)

Just about all of the saltbush you see on the gibber plains around Oodnadatta is Oodnadatta saltbush which is a variety of old man saltbush.

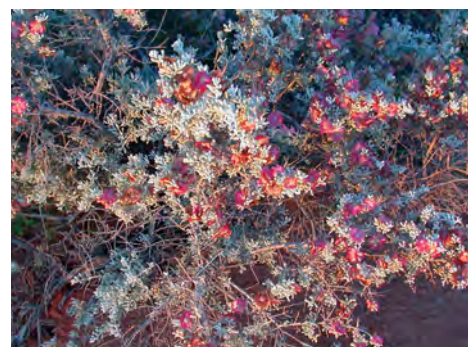


K. Gidgee
(*Acacia cambagei*)



Gidgee is one of the larger trees you see lining watercourses and at creek crossings along the northern parts of the Track, often alongside the coolabah. The tree is also known as 'stinking wattle' because in wet or humid weather it gives off a very strong, unpleasant smell.

L. Bluebush
(*Maireana* species)



Bluebush gets its name from its attractive blue/grey or blue/white succulent foliage. You'll find it on rocky rises, the slopes of mesas and growing in duplex soils (a mix of sand over clay) in the swales between dunes and on some of the plains. All are perennial, some living for hundred of years.

Plants

M. Emu bush (*Eremophila*)

The botanical name *Eremophila* means desert-loving, so most are found in regions of rainfall up to 300mm. One of the common names, emu bush, comes from the idea that seeds germinate after passing through the digestive system of emus which like to feed on the fruits.



Bob Chinnock

What makes emu bushes so interesting?



Bob Chinnock

Aboriginal people use some for food and some for medicinal purposes for treating colds, headaches or body sores.

Flowers vary in form and in colour depending on whether pollination is by bird or insect. Birds pollinate yellow red/pink flowers that are usually long and tubular.

The birds insert their beaks to reach the nectar, brushing their heads on the stamens and picking up pollen which they then pass on to the next flower they visit. Insects pollinate lavender, white, and purple and blue flowers that are flatter in form.

Where do they grow?

They grow in just about all soils with the exception of saline ones, from rocky, gravelly and clay loams to kopi rises. Most are found in regions that have harsh climatic conditions where day temperatures are high or there may be light frosts. Some in arid areas can survive up to two years without rain.

In the rangelands they often grow as undershrubs in low woodlands and mulga scrub or they are found in open situations south of the Neales River where they are dominant. Some grow as solitary bushes in stony country.

Where can you see them at their best?

The Australian Arid Lands Botanic Garden in Port Augusta has the largest collection of *Eremophilas* in Australia with more than 155 varieties growing there. Call in if you can – it's well worth a visit.

www.aalbg.sa.gov.au

N. Nitrebush (*Nitraria billardierei*)



Nitrebush, although not a chenopod, often grows in chenopod communities. It is an extremely drought-resistant shrub that you will see growing on large soil mounds in numerous locations along the Track. Look for it around salt lakes, mound springs, on flood plains, dam banks, and on sandy soils and plains. In a good year the fruit can be made into jam.

O. Samphire (*Tecticornia* species)

Samphires are salt-loving succulent shrubs without true leaves. Their nodule-like branch tips function as leaves. They grow in saline soils and country prone to flooding. They are widespread across the whole of the arid region. They are the most saline of all the chenopods. Livestock seldom graze samphire but humans have been known to eat it.

Look for them at the many watercourses and salty areas along the Track. They will vary in colour from a rusty-pink colour to green.



P. Mitchell grass (*Astrebla* species)

Mitchell grass is an 'icon' rangeland plant that has enormous value for the pastoral industry. This is because of its ability to respond rapidly to a good rain after extended dry periods. Barley mitchell grass is the commonest variety. It is widespread – you'll see tufts of it on gibber plains, around gilgais and also in watercourses and floodouts.



Frank Kutsche

Landforms

A. Sand dunes and swales – The soft country

Dunes like these provided excellent shelter, comfortable campsites, and timber and food for Aboriginal people. They are largely stable, with movement restricted to the crests. The vegetation you see on them, in particular the sandhill canegrass, sandhill wattle and horse mulga, helps prevent movement of the sand.

A short walk on an undisturbed dune will reveal a multitude of tracks and burrows of the wildlife that inhabit this country. Take time to do this and see how many different types of tracks you can spot.



Clay pan under water after rain,
with swamp canegrass



Goanna tracks in the sand

B. Gibber plains – the hard country

Gibber plains – or as the locals say, the 'hard country' – are stretches of country covered in small polished rocks or pebbles called gibbers. These are polished fragments of the original duricrust (a layer of silica formed by the deposition of silica, iron oxides or calcium carbonate) that capped the plain some 65 million years ago. Fine abrasive material has swept past, wearing them down and rounding them off during rain and wind scour.

Today they remain as a surface lag, protecting the underlying soils from water and wind erosion. You need to get out and pick up a few to appreciate their smoothness and the intensity of their wonderful colours. Gibber plains are common along the Track. A couple of favourite spots are on Allandale Station and just north of Algebuckina Waterhole where the gibbers are black rather than red-brown, the colour being derived from the type of iron mineral (goethite) they contain.



Gibber plains on Allandale Station



Goethite gibber pavement

C. Tablelands and mesas

The stony tablelands and isolated mesas found on the plains are the remnants of an ancient plain and indicate its original level.

D. Salt lakes and claypans

Walk to the top of the mesa on the western side of the Track and you will get a very good view over the dunes and see how they are separated by flat areas called swales. Some of these are covered in gibbers. Others contain salt pans or claypans.

Claypans fill with water following rains, providing fresh water and often the right habitat for swamp canegrass.

Swamp canegrass (*Eragrostis australasica*) grows in low-lying areas that fill after good rains. It is very hardy and survives long periods of dry conditions as well as long periods of standing in water. Early settlers used it to line meat houses and for thatching on other buildings. It can grow in dense stands over large areas providing protection and habitat for many water bird species.

In dune country you will notice that the Oodnadatta Track follows the swales, every now and then crossing a dune to move into and along the next swale.

REMOTE AREA TRAVEL

Arid landscapes are incredibly fragile. Whilst they may appear barren and isolated they support a wide range of truly unique and amazing plants and animals. Every step you take off the path and every wheel you take off the track will have a lasting impact.

If you are not travelling through a national park or conservation reserve, then you are most likely travelling through a pastoral property, someone else's backyard.

Please consider your actions carefully.

- Stay on the tracks.
- Camp only in designated areas or with the permission of the appropriate land manager in other areas.
- Use public toilet facilities if you can. If a public toilet is unavailable, dig a deep hole, burn any toilet paper and fill in the hole.
- Take your rubbish and waste cassettes to the nearest town facilities for disposal in identified waste bins. Do not empty cassettes into public toilets.
- Camping close to stock watering points can affect grazing stock and because of this, you are not permitted to camp within 500 metres of these areas. Please don't use soap or detergents in or near waterholes, stock watering points or artesian springs.
- Pastoral homesteads and out-buildings are people's homes and businesses. Please respect their backyard and don't camp within one kilometre of a homestead or other buildings.
- Bring your firewood with you and check fire restrictions with the Country Fire Service on 1300 362 361. Some National Parks do not allow wood fires and we ask you not to collect wood in outback areas as it is so limited.

Travelling in remote outback South Australia can be a rewarding and enjoyable experience. It can also be very hazardous with rapid onset of extreme weather conditions, challenging terrain, and isolation from services.

You are responsible for your own safety and planning. Don't forget to keep in agreed regular contact with a responsible person and advise them of your travel plans.

OUTBACK ROADS AND WEATHER CONDITIONS

Be aware of weather forecasts as you are travelling. Always check road and weather conditions before you leave. Severe penalties apply for driving on closed roads and these are enforced.

Call the Department of Planning, Transport and Infrastructure on 1300 361 033 for information about road closures and conditions in the Outback.

Tracks within National Parks and on pastoral properties may also be subject to closures and advice on road conditions via the Desert Parks Bulletin. Call (08) 8648 5300 for further information.

Only signposted Public Access Routes on pastoral stations can be used without first seeking landholder consent. All other station tracks are considered to be private tracks. Contact the Public Access Officer on 1800 678 447 or (08) 8648 5300 for further information.

OUTBACK COMMUNICATIONS

Only about 5% of the outback has mobile phone range with the majority of coverage in townships on main sealed roads. Coverage is sporadic on the unsealed road network. Satellite telephones provide alternative communications to almost anywhere in Australia and around the world and some outback locations (such as Birdsville and Mt Dare) hire satellite telephones to travellers.

UHF radios are also a popular means of communication in the outback. To prevent confusion and ensure satisfactory communications for everyone using this part of the radio band frequency, protocols are in place. Please familiarise yourself with UHF use prior to departure on a long outback adventure.

Travellers can use channels 9 to 30 and 39 for conversations as well as channels 49 to 70, but should be aware that anyone within range (line of sight) can hear your conversation.

Channels 5 & 35 are for emergency use only. Be aware that emergency channels are monitored by volunteers and may not always be available in outback regions. (Fines and imprisonment can apply for misuse.)

Channels 1 to 8 and 41 to 48 are repeater channels, and as such broadcast over a longer distance (up to 100 km). They should only be used to seek assistance when required. Channel 40 is the Road or 'truckies' channel. Channels 22 & 23 are for data only. Channels 31 to 38 and 71 to 78 are repeater inputs. (Do not use these channels for simplex transmissions as you will interfere with conversations on channels 1 to 8 and 41 to 48.)

FUEL

Your fuel economy will vary greatly on the tracks you take. Make sure you plan ahead and carry enough fuel between all stops. Be aware that heavy track conditions such as soft sand, muddy tracks and slow, hilly terrain will increase your fuel consumption.

WATER

It is essential to always carry adequate supplies of water (plus a 3-4 day reserve supply). During mild weather estimate six litres per person per day. During warmer weather estimate 10 litres of water per person per day.

FURTHER INFORMATION IMPORTANT TELEPHONE NUMBERS

POLICE CONTACT NUMBERS

Coober Pedy (08) 8672 5056
Marree (08) 8675 8346
Marla (08) 8670 7020
Oodnadatta (08) 8670 7805
Port Augusta (08) 8648 5040
www.sapolice.sa.gov.au

ROYAL FLYING DOCTOR SERVICE MEDICAL EMERGENCY

(08) 8648 9555
yourhealth.flyingdoctor.org.au

REGIONAL HOSPITALS – FOR ALL EMERGENCIES CALL '000'

COOBER PEDY (08) 8672 5009
Oodnadatta (08) 8670 7803
Port Augusta (08) 8648 5500
Roxby Downs (08) 8671 9020
www.countryhealthsa.gov.au

ROAD CONDITIONS

(Department of Planning, Transport and Infrastructure)
1300 361 033
www.dpti.sa.gov.au

DESERT PARKS HOTLINE

1800 816 078
www.environment.sa.gov.au

COUNTRY FIRE SERVICE (CFS) HOTLINE

1300 362 361
www.cfs.sa.gov.au

VISITOR INFORMATION

SOUTH AUSTRALIAN TOURISM COMMISSION

www.southaustralia.com

FLINDERS RANGES AND OUTBACK VISITOR GUIDE

flindersrangesandoutbackvisitorguide.realviewdigital.com

WADLATA OUTBACK CENTRE

Port Augusta 1800 633 060
www.wadlata.sa.gov.au

COOBER PEDY

Coober Pedy Visitor Information Centre
1800 637 076
www.cooberpedy.sa.gov.au

MARREE

Marree Hotel (08) 8675 8344
www.marreehotel.com.au

Marree Roadhouse & General Store (08) 8675 8352
www.marreelakeeyreflights.com.au/oasis-cafe-bistro

Oasis Motel, Caravan Park & Campground (08) 8675 8352
www.marreelakeeyreflights.com.au/accommodation/marree-motel-caravan

MARLA

Marla Roadhouse 08 8670 7001
www.marla.com.au

OODNADATTA

The Pink Roadhouse 1800 802 074
www.pinkroadhouse.com.au

ROXBY DOWNS

Roxby Downs Visitor Information Centre (08) 8671 2001
www.roxbyleisure.com/VisitorInformationCentre/Intro.html

WILLIAM CREEK

William Creek Hotel (08) 8670 7880
www.williamcreekhotel.net.au

WRIGHTS AIR

(08) 8670 7962
www.wrightsair.com.au

ACKNOWLEDGEMENTS & FURTHER READING

FURTHER READING

- *Allocating Water and Maintaining Springs of the Great Artesian Basin Report Series*, edited by Andy Love and Travis Gotch, NWC Canberra.
- *Field Guide to the Plants of Outback South Australia*, Frank Kutsche and Brendan Lay, 2003, Dept. Water, Land & Biodiversity Conservation.
- *Natural History of the North East Deserts*, Michael Tyler, 1990, Royal Society of South Australia Inc.
- *Plants of Western NSW*, G Cunningham, W Mulham, P Milthorpe & J Leigh, CSIRO Publishing
- *Red Sand, Green Heart, Ecological Adventures in the Outback*, John L Read.
- *The Simpson Desert, A Natural History and Human Endeavour*, Mark Shephard, 1992, Royal Geographical Society of South Australia Inc.
- Westprint Maps, Tel: (03) 5391 1466, www.westprint.com.au
- Natural Resources SA Arid Lands, www.naturalresources.sa.gov.au/aridlands
- Parks South Australia, www.parks.com.au
- South Australian Tourism Commission, www.southaustralia.com

PHOTOGRAPHY CREDITS

Bob Chinnock, Prue Coulls, John Dallwitz, Pat Katnich, Frank Kutsche, Werner Kutsche, Brendan Lay, Joc Schmichen, Natural Resources SA Arid Lands, South Australia Tourism Commission

THIS BROCHURE HAS BEEN COMPILED WITH ALL INTERESTS IN MIND BY USING NON-TECHNICAL TERMS.

VISIT US

The Natural Resources Centre SA Arid Lands provides a one-stop service where you can access services and information on National Parks and the management of wildlife, land and water.

Level One, 9 Mackay Street, Port Augusta.
SAAridlands@sa.gov.au
(08) 8648 5300
www.naturalresources.sa.gov.au/aridlands

PUBLIC ACCESS OFFICER (For access to Pastoral Leases)
1800 678 447
www.environment.sa.gov.au



GOVERNMENT
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Management Board

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