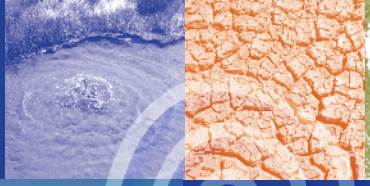


Water and Plants

THE OODNADATTA TRACK
– String of Springs

Take this brochure with you
as you drive along the Oodnadatta Track

Stop and look at the many different plants and trees along the Track

Find out how the watercourses and springs which you come across
are linked to Australia's two great inland water systems
– the Great Artesian Basin and the Lake Eyre Basin

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 ($4^1/_2$ inches) in the south. Temperatures can be high, sometimes reaching up to 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 Lake Eyre are the *Kuyani* people; most of the west of 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.

'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'.

Dalhousie Springs

A typical mound spring

Sleepy Lizard tracks in the sand

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 world's largest underground water reservoirs, with an estimated 64,900 million megalitres of water in storage. Underlying 22% of Australia, the Basin formed between 100 and 250 million years ago.

Water enters the Basin in 'intake beds' on the western edge of the Great Dividing Range on Australia's east coast, and slowly flows downwards at an average of less than three metres a year. It is estimated that water currently coming out at the south western limit of the GAB is around two million years old.

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 more than 1,700 individual springs in 23 complexes found 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 'moundsprings' but small inconspicuous soaks in the ground. The water of the GAB is generally alkaline and saline with high concentrations of dissolved solids such as carbonates, sulphates and chlorides.

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' related on the map overleaf. 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!

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 desert pea and Swainsona peas of orange, white, pink and purple hues.

Native hollyhock

Check out the roadside specials! Showy groundsel, one of the larger yellow Senecio daisy bushes, makes an unexpected splash of colour along drainage lines and in the sandy patches of road verges alongside lush stands of the purple verbine and pink native hollyhock.

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. The Sturt desert pea germinates only after summer rains, when the 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 (*Halosarcia – Sclerostegia*) 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.

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.

Werner Kutsche

Regal birdflower

Poached-egg daisies. They will flower for months in good years

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

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.

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, 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 coolibah: 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).

The Oodnadatta Track MAP 1 OF 3

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
- 1 Water location
- A Landform location
- A Plant location
- PAR Public Access Route

PUBLIC ACCESS ROUTES (PARs)

No permission is required to travel on these tracks. However, you are travelling through somebody's property. Show the same respect you would expect from them in your place!

For information, contact the Public Access Officer, 1800 678 447 (08) 8648 5174.

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.

WANT TO KNOW MORE?

Visit The Australian Arid Lands Botanic Garden at Port Augusta – the ideal place to learn more about the huge range of arid plants that grow in the South Australian Outback.

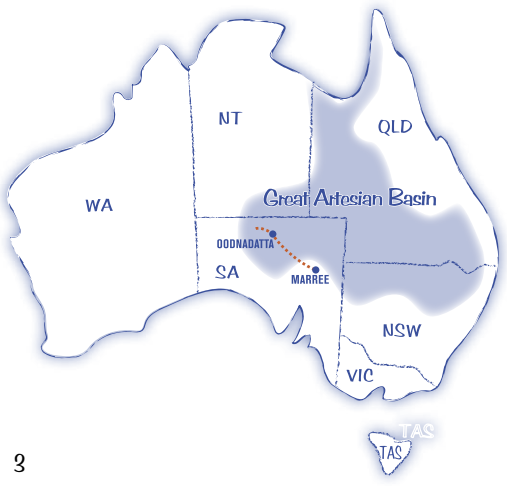
CONSERVING THE GREAT ARTESIAN BASIN

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.

TRAVELLING TIMES

(Minimum times you should allow in good weather)

Marree – Bopeechee	1.25 hours
Bopeechee – Roxby Downs	1.75 hours
Bopeechee – William Creek	2.00 hours
William Creek – Coober Pedy	2.00 hours
William Creek – Algebuckina	2.00 hours
Algebuckina – Oodnadatta	1.00 hour
Oodnadatta – Marla	3.00 hours
Oodnadatta – Coober Pedy	2.50 hours
Oodnadatta – Dalhousie Springs	3.50 hours
Dalhousie – Kulgera	3.00 hours



TO FINKE
Finke River
Mount Dare
Appapandinna Creek
WITJIRA NATIONAL PARK
Abminga (ruins)
Abminga Waterhole
Dalhousie 13 Springs
Bloods Creek (ruins)
Eringa (ruins)
Eringa Waterhole
Stevenson Creek
Dalhousie (ruins)
Ghan
PAR No.8
Rail
Route
Hamilton Creek
Hamilton
Alberga River
Murdarinna Waterhole
TRACK
Goongra Creek
Kathleen Creek
Woodridge Creek
Olarinna Creek
Henrietta Creek
Mallee Scrub
Stony Creek
OODNADATTA
MARLA
North Branch of Neales (Nappamurra) River
South Branch of Neales (Nappamurra) River
Neales (Nappamurra)
ARCKARINGA HILLS Road
PAINTED DESERT
Painted Desert
Kempe The
STUART HWY
MOON PLAIN
THE BREAKAWAYS
Dog Fence
COOBER PEDY
MAP SCALE (approximate)
0 10 20 30 40 50 100

The Oodnadatta Track MAP 2 OF 3

SERVICES ON THE TRACK

Marree, William Creek, Oodnadatta and Marla all offer services such as fuel, water, meals and accommodation.

Always plan your trip in remote areas.

For further information, contact the Wadlata Outback Centre at Port Augusta on 1800 816 078.

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 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.

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.

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.

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- Spring or waterhole
- 1 Water location
- A Landform location
- A Plant location
- PAR Public Access Route

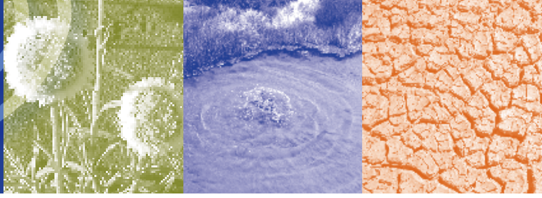
ROCKHOLES

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

MAP SCALE (approximate)

0 10 20 30 40 50 100

The Oodnadatta Track MAP 3 OF 3



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 Burtt rode through the land corridor to meet Warburton’s exploration party in 1858.

Please do not drive on the salt lake – a) you will get bogged (trust us, people do it ALL the time); and b) you will ruin the pristine nature of this landscape.

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’s 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. 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.

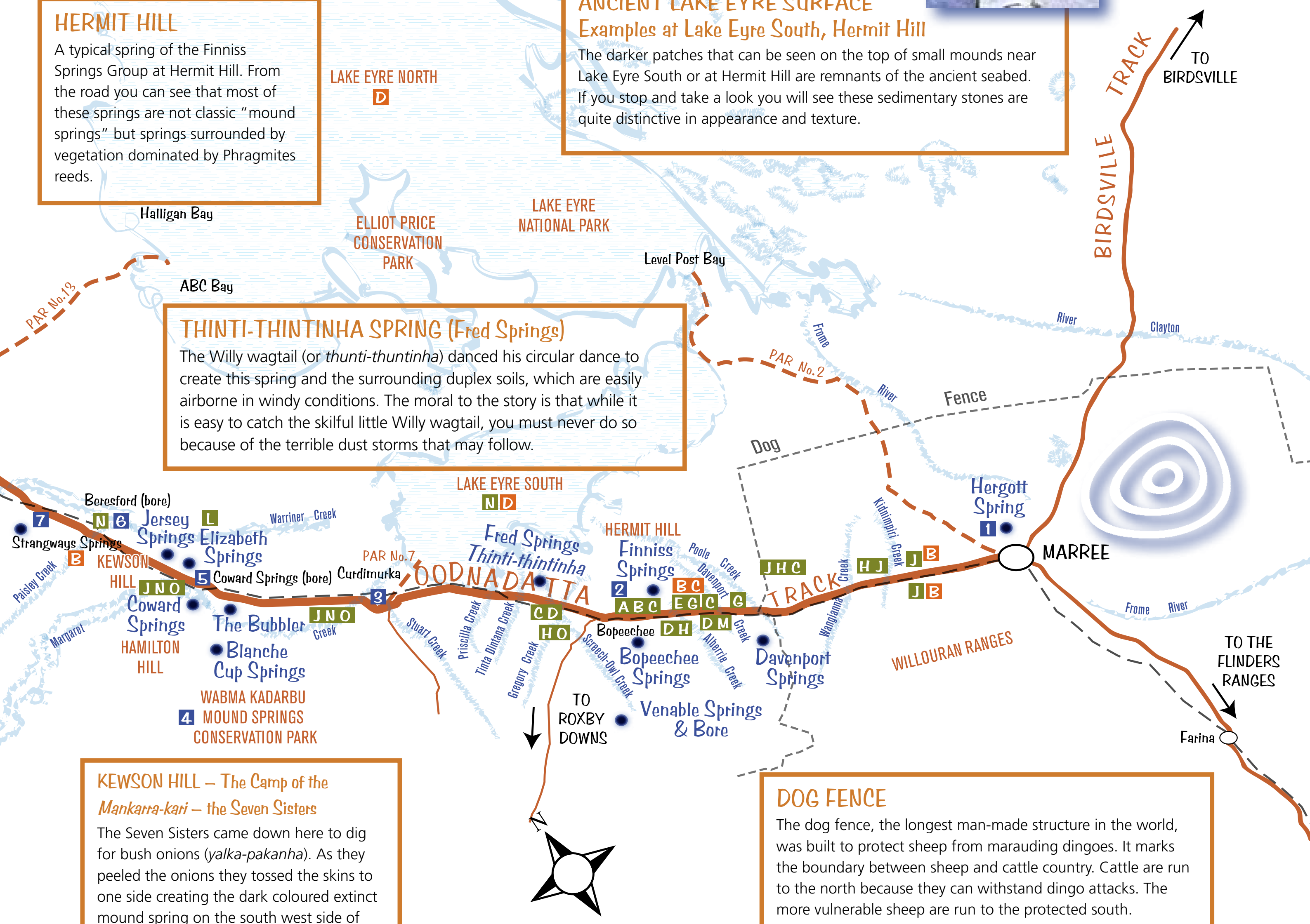
ANCIENT LAKE EYRE SURFACE

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 Finniss 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.



THINTI-THINTINHA SPRING (Fred Springs)

The Willy wagtail (or *thunti-thuntinha*) danced his circular dance to create this spring and the surrounding duplex soils, which are easily airborne in windy conditions. The moral to the story is that while it is easy to catch the skilful little Willy wagtail, you must never do so because of the terrible dust storms that may follow.

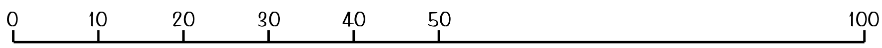
KEWSON HILL – The Camp of the *Mankarra-kari* – the Seven Sisters

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.

DOG FENCE

The dog fence, the longest man-made structure in the world, was built to protect sheep from marauding dingoes. 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.

MAP SCALE (approximate)



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.


Strangways Springs

2. Finniss Springs/Hermit Hill – Wibma-malkara

The Hermit Hill spring complex contains 9 active spring groups and hosts a number of rare plants and organisms, including salt pipewort. Vegetation linking back to the rainforest era can be found here – button grass (*Eriocaulon carsonii*), cutting grass (*Ghania*) and sedge (*Baumea*). The Aboriginal word for this complex is *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 1930's 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. Read more about this type of spring in the section on the GAB.


Blanche Cup

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 neighboring 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 3);
- 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.

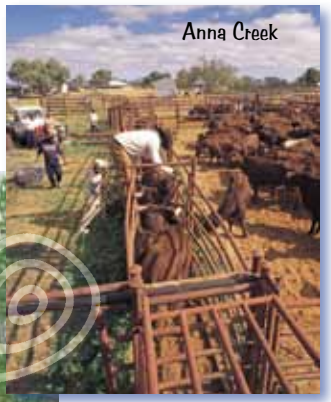
Stop and read the signs here for more information.

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.


Anna Creek

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. For more information, check out The Kidman Track brochure.

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.)

Grinding stone quarry

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 1860's. An Overland Telegraph repeater station and copper mine were both once located at Peake, partly because of the good waters from the numerous permanent springs. This was also an important site for Aboriginal people.

11. Algebuckina Waterhole

The Algebuckina 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.

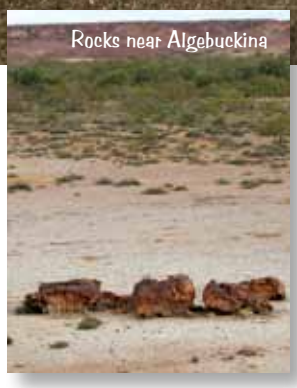
The Neales has small flows most years, and experiences large floods every 10-15 years. Generally floods in the western rivers do not carry enough volume to fill Lake Eyre. (Lake Eyre floods are normally the result of flooding in the northern rivers, such as the Georgina-Diamantina or the Cooper).

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

13. Dalhousie Springs

The Dalhousie Spring Group consists of 8 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 50 metres long and 10 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 10 species of snail, 90 species of plant and three species of fish that are found nowhere else in the world. The springs are ringed by paperbark trees, Melaleuca glomerate.

Algebuckina Waterhole



Rocks near Algebuckina

Three large rocks visible from the plateau on the northern approach to Algebuckina represent frogs in Arabana myth. The story goes something like this: A group of Water hole frogs set out from Utapuka (Hookey's waterhole at Oodnadatta), and head down the Neales River to go to war with some frogs from further east. At Algebuckina they are teased by local people, 'What have you come for, you with the big wide mouths?'. So the angry frogs turned the people into stone. The jumbled rocks are now seen as the people, while the larger boulders are the frogs.

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.

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

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.

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 where the gibbers are black rather than red-brown, the colour being derived from the type of iron mineral (goethite) they contain.

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.

Clay pan under water after rain, with Swamp canegrass

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.

Gibber plains on Allandale Station

Plants

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.

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, boomerang 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 lerpe 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. It is popular firewood because it burns slowly and provides good coals for cooking. 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 kms from Marree.

Frank Kutsche, DWLBC

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 near the dam you pass on Anna Creek Station, about 2 kms 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 lineament. They also boiled the bark in water and then used it to help fight coughs and colds.

E. Dead finish (*Acacia tetragonaphylla*)

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.

G. Caustic vine (*Sarcostemma viminale*)

Take time to climb through the fence 45.5 kms from Marree to observe this most unusual looking plant. The caustic vine was known to indigenous 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. Coolibah (*Eucalyptus coolabah*)

The coolibah 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 coolibah because it has ideal hollows for nesting.

Aboriginal people liked it too – they stripped the bark of certain coolibahs, 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

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 coolibah. 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.

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 (*Halosarcia 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*)

Frank Kutsche , DWLBC

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.

M. Emu bush or native fuscia.

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 Chinnoch

Bob Chinnoch

What makes emu bushes so interesting?

- 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 2 years without rain.

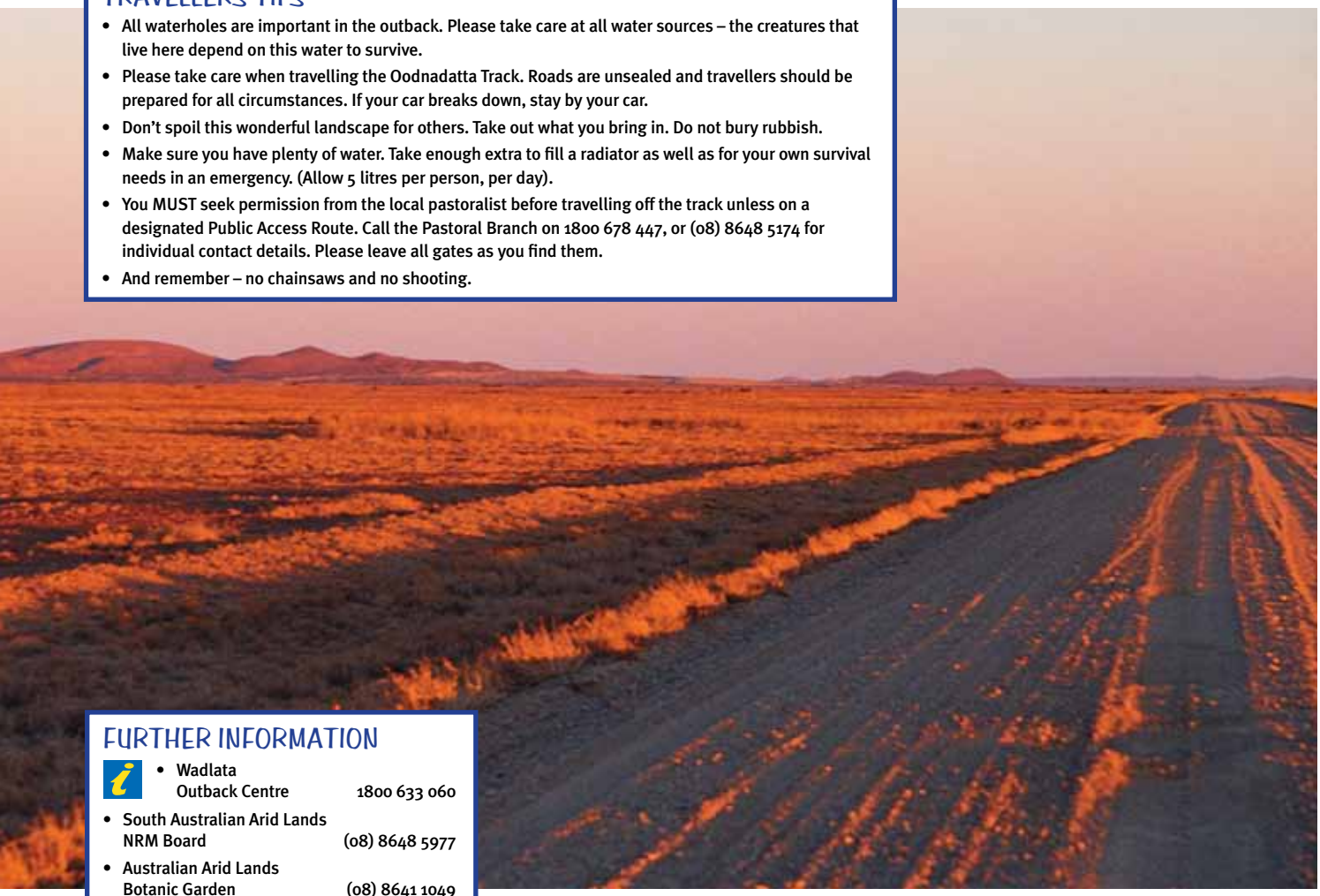
In the rangelands they often grow as undershrubs in low woodlands and mulga scrub (Murdarinna is an example) or they are found in open situations south of the Neales where they are dominant. Some grow as solitary bushes in stony country.

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.

TRAVELLERS TIPS

- All waterholes are important in the outback. Please take care at all water sources – the creatures that live here depend on this water to survive.
- Please take care when travelling the Oodnadatta Track. Roads are unsealed and travellers should be prepared for all circumstances. If your car breaks down, stay by your car.
- Don't spoil this wonderful landscape for others. Take out what you bring in. Do not bury rubbish.
- Make sure you have plenty of water. Take enough extra to fill a radiator as well as for your own survival needs in an emergency. (Allow 5 litres per person, per day).
- You MUST seek permission from the local pastoralist before travelling off the track unless on a designated Public Access Route. Call the Pastoral Branch on 1800 678 447, or (08) 8648 5174 for individual contact details. Please leave all gates as you find them.
- And remember – no chainsaws and no shooting.



FURTHER INFORMATION

• Wadlata Outback Centre	1800 633 060
• South Australian Arid Lands NRM Board	(08) 8648 5977
• Australian Arid Lands Botanic Garden	(08) 8641 1049
• Department of Environment and Natural Resources	1800 816 078
• Transport SA (road conditions)	1300 361 033
• Public Access Officer (access to pastoral leases)	1800 678 447 (08) 8648 5174
• Desert Parks Hotline	1800 816 078

FURTHER READING

- *Desert Parks Pass* – NPWSA
- *Field Guide to the Plants of Outback South Australia* – Frank Kutsche and Brendan Lay (DWLBC)
- *Natural History of the North East Deserts*, – Royal Society of South Australia Inc.
- *Plants of Western NSW* – Cunningham et al
- *RAA Outback Motoring Guide*
- *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 SA Inc.
- Westprint Maps

WEB SITES

- www.saalnrm.sa.gov.au
- www.gab.org.au
- www.lakeeyrebasin.org.au
- www.australian-aridlands-botanic-garden.org

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BHP BILLITON

BHP Billiton is committed to sustainable management of the water and land resources through which the Oodnadatta Track passes.

BHP has demonstrated this commitment in recent years through –

- financial support to enable pastoralists to close down open bore drains and replace with the networks of closed pipes and troughs to enable more efficient use of water
- extensive monitoring of the mound spring systems in the region
- transfer of part of a BHP pastoral lease into the Wabma Kadarbu Conservation Park – the area transferred included six mound spring groups and two European Heritage sites
- management of BHP pastoral leases in the region to minimise land impacts

As the operator of the Olympic Dam mine, about 100 km south of the Oodnadatta Track, BHP works to ensure the region benefits from the company's presence.

BHP welcomes visitors and trusts that, as well as enjoying the experience, they will share the company's respect for the environment of this unique region of Australia.