



## **Witchelina Nature Reserve**



**Dunes and Wildflowers  
Nature Drive track notes**

### Witchelina track notes

We hope these track notes will help you to enjoy your nature drive by explaining some key aspects of the landscapes and features you'll be seeing.

The notes are available for you to buy (\$12.00 per copy); or if you prefer, you can return your copy to the Reserve Manager at the Homestead, at no cost, when you've finished your drive.

Nature Foundation acknowledges and respects the traditional custodians, the Adnyamathanha, Kuyani, and Arabana People, whose ancestral lands include the area bounded by the Witchelina Nature Reserve.

Nature Foundation pays its respects to their Elders past, present and emerging, acknowledging and respecting the deep spiritual attachment and the relationship that Aboriginal people have to country.

**Nature Foundation gratefully acknowledges the assistance of the following the compilation of the 2023 series of Witchelina track notes:**

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<i>Other textual sources</i>	Kutsche F and Lay B: <i>Field Guide to the Plants of Outback South Australia</i> (SA Dep't of Water, Land and Biodiversity Conservation 2003). State Records of South Australia (Pastoral map 1894)
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#### Photos

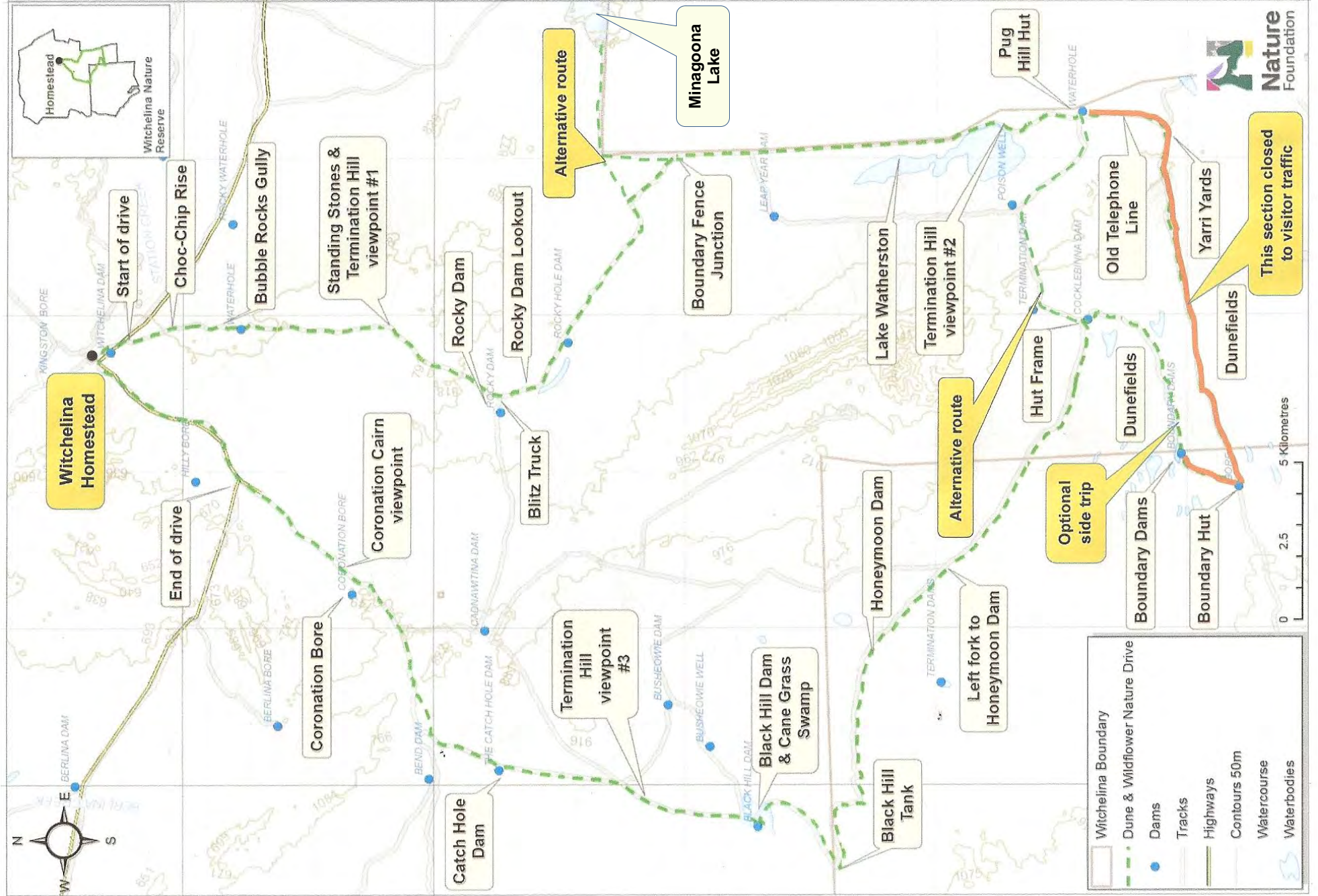
Anne Brown, Dale Burzacott, Anne Clark, Rebecca Clark, Phil Cole, Subbu Conley, Kevin Fahey, Farina Restoration Group, John Gilpin, Prof Patrick James, Coral Johnson, Alex Nankivell, Inara Powell, Lange Powell, Graeme Tonkin, Barry Wright (other images).

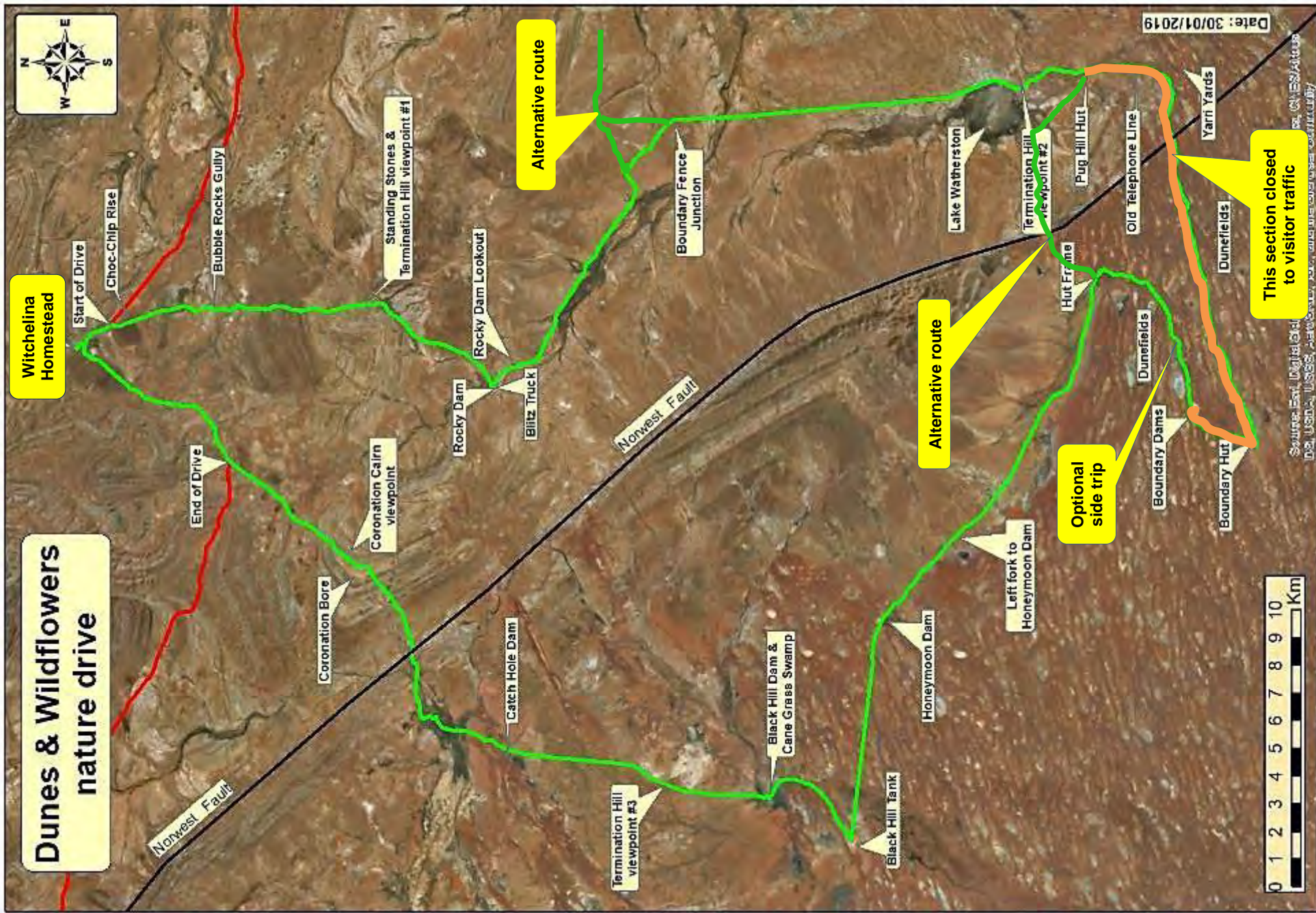
National Aeronautics and Space Administration Earth Observatory [<http://earthobservatory.nasa.gov>]; Sentinel Hub (*satellite images*).

## Dunes near Boundary Hut; Termination Hill in the background



# Dunes & Wildflowers Nature Drive





## Witchelina Nature Reserve

### Dunes and Wildflowers Nature Drive track notes



**Total distance:** Approx. 101 kms round trip from Homestead, including 94 kms off-road. Allow 6-8 hours.

**Optional side trips:** Optional side trips to Minagoona Lake (see page 24 below), and into the dune country (see page 38), will add approx. 25 kms in total off-road to your drive. Please seek advice from Reserve Manager before leaving.

**Degree of difficulty:** Easy, but may be affected by rain and soft sections. Please seek advice from Reserve Manager before leaving.

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**Nature Foundation welcomes you to Witchelina. This is one of our flagship Reserves, and we're proud of the conservation and scientific work that we and our partners do here.**

The Dunes and Wildflowers nature drive is one of several such drives on Witchelina. It takes you through a variety of landscapes, many with outstanding botanical specimens and geological features explained in these track notes. The route passes a number of other sites illustrating the Foundation's conservation work, and recalling the Reserve's history as a sheep and cattle station.

The drive is on former station tracks, starting near the western end of the airstrip on the main Farina-Mulgaria road. It ends about 101 kms later, at a junction with the main road, approx. 7 kms from the Homestead.

#### Basic signs



green arrows show the direction to follow for the Dunes & Wildflowers drive



indicates direction to follow if you've chosen the alternative route to Minagoona Lake (see pages 24-25 of these notes).



indicates a feature or point of interest you may like to stop and inspect.



indicates a geological feature you may like to stop and inspect. *Please note: fossicking on Witchelina is prohibited.*



Indicates a site where, in the right season and in favourable conditions, you may have an opportunity to observe water birds.



*Text and images below with green shading are botanical notes, numbered to correspond to a 'tree' sign by the side of the track.*

*You may see some plants mentioned more than once in the track notes, reflecting the diverse environments in which they can flourish or survive.*

*Depending on seasonal factors at the time of year of your visit to Hiltaba, and on others such as recent rainfall or drought, trees and plants mentioned in the track notes may appear quite different to the photos included in the notes. Some may even have disappeared altogether! Please bear these natural cycles in mind as you look at the vegetation.*

### Introducing Nature Foundation

Nature Foundation is an apolitical not-for-profit foundation that invests in conserving, restoring and protecting South Australian landscapes, flora and fauna, to ensure their survival. It is governed by a Board of experienced conservationists, scientists, business and professional people.

Nature Foundation believes that the Witchelina Nature Reserve is such a beautiful and important landscape that we should share it with other people with a love of outback Australia.

*Conservation and responsible land management remain our top priority, and we hope your first-hand experience of Witchelina will encourage your support for our work. Please help us by respecting the Reserve's biosecurity. Nature Foundation is considering installation of car vacuuming and washing facilities at the Homestead, but you can already help now by minimising the risk of accidentally picking up seeds on your vehicle, and in your clothing as you walk.*

## Before you set off

- ❖ Please ensure you've signed an indemnity form, paid your entry fee, and collected a gate key (returnable deposit payable).
- ❖ Please ensure you have enough fuel for the drive. Fuel is available at Lyndhurst, 60 kms away, and at Marree (80 kms away).
- ❖ Bring all food and plenty of water – and a first-aid kit is a valuable safety measure in outback travel.

## Your safety is our concern but your responsibility.....

- ❖ The Dunes and Wildflowers nature drive is only suitable for 4WD vehicles with good clearance.
- ❖ Due to uneven terrain, roaming animals, and other factors, the Ridge Top nature drive is safe to travel only during daylight hours. Please begin your drive on the track before 12 midday.
- ❖ A 40 km/hr speed limit applies on Reserve tracks. Tracks may be rutted and uneven especially following rain events. Some tracks may be partly overgrown. Please take care and drive slowly to avoid damage. Take particular care at creek crossings.
- ❖ Signs clearly show your route from start to finish. For your own safety, and for protection of the Witchelina environment, please keep to marked roadways and tracks.
- ❖ **Please note:** mobile phone coverage on Witchelina is extremely limited and unreliable. Depending on your location, you may be able to contact the Witchelina Homestead on **UHF Channel 3 duplex**, via a repeater located on the Reserve. In northern areas of Witchelina, it may also be possible to make radio contact via repeaters on Muloorina Station (UHF Ch7 duplex), or Finnis Springs (UHF Ch8 duplex).

(cont'd next column)

**None of these can be guaranteed however**, and if available, access to a satphone or HF radio will provide an extra safety margin. The Homestead number is 08 8675 2001; or, if calling with a satphone, 0061 8 8675 2001.

- ❖ Please drive carefully and with regard to the weather and other track conditions at the time. A minimum fee of \$500 may apply if you need to be recovered !

Witchelina is a remote outback Reserve and presents natural, geological sites and historical points of interest. Ruins, wells, tanks and many artifacts used by previous generations are scattered throughout the property.

These have been left undisturbed for visitors to appreciate. As such, they present potential hazards, and visitors need to take great care when driving and walking around the Reserve.

For safety and conservation reasons, management reserves the right to alter or close sections of the drive, or deny entry to any person.

## Conditions of Entry

- ❖ Motorbikes or quad bikes are not allowed.
- ❖ Camping and campfires are not permitted outside of designated camp sites on the Homestead precinct and at Old Mount Nor'West.
- ❖ Campfires are permitted in the fire rings provided in campgrounds, but please bring your own wood, or purchase a bundle from the Homestead. Dead wood is an important habitat for wildlife, so wood collection is not permitted anywhere on the Reserve.
- ❖ Please take all rubbish with you in a plastic bag, including soiled toilet paper unless used in a toilet. There are toilets at the Witchelina homestead precinct, at the Old Mt Nor'West campground, and at Pug Hill Hut in the far south of the Reserve
- ❖ Please respect any Aboriginal sites by leaving them undisturbed, and do not remove any artifacts.

- ❖ Fossicking, and removal of any souvenirs are strictly prohibited. Plants and animals on Witchelina are protected, as are all rocks and objects from the property's pastoral and mining history (however rusty or insignificant they may appear !)
- ❖ Witchelina is a Nature Reserve. No firearms, shooting or trapping are allowed.
- ❖ For visitors' safety, entry to fenced areas (some of which contain hazards such as disused bores or wells), is not permitted. Please feel free to walk and explore in the immediate vicinity of the drive track, but observe all 'no entry' signage.
- ❖ Pets may not be brought on to Witchelina. Nature Foundation is obliged bylaw to lay poison baits for dogs and has a program to control feral cats. There could be baits anywhere on the property at any time.

***Thanks for supporting Nature Foundation's care for  
Witchelina by observing these conditions.***

#### **Accommodation and activities for visitors on Witchelina**

**Accommodation options** are available on the Witchelina Homestead precinct, the Shearers' Quarters, and at Old Mount Nor'West Homestead and campground.

Please check Nature Foundation's website for on-line bookings <https://www.naturefoundation.org.au/what-we-do/nature-based-tourism/visit-witchelina>, or speak with the Reserve Manager to check availability.

**Six nature drives** can be enjoyed on Witchelina. Designed for safe self-driving, they are signposted, and interpretive notes and maps are available. The drives are between 32kms to 101kms in length, as round trips from the Homestead, from the Farina Campground, or from the Marree Hotel.

*(cont'd next column)*

A track access fee is payable. Like accommodation, this fee can be paid on-line before your trip, through Nature Foundation's Bookeasy system. Advance booking has the additional advantage of completing your indemnity form, instead of requiring to complete it on arrival.

#### **Other important information**

If you're not already a Nature Foundation member, we hope that your nature drive may encourage you to join our organisation, or make a donation to our work ! A membership application / donation form is attached to these track notes.

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**Tel: 08 8340 2880**

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**[www.naturefoundation.org.a](http://www.naturefoundation.org.a)**




***We hope you enjoy your nature drive !***

## DUNES AND WILDFLOWERS NATURE DRIVE TRACK NOTES

*Please note: numbers in bold black font in the kms column below are cumulative distances. They are approximate and intended as a guide only: any deviation from the route shown on the map will affect the running total. Numbers in red font show the distance between locations, accurate to about 100 metres, mentioned in the track notes.*

*Unless otherwise indicated, Google Earth images in the notes are displayed with North along the top edge. A limited number of GPS co-ordinates are included in the left-hand column for the convenience of visitors with an appropriate device.*

Kms	Location	Notes
<b>0.0 / 0.1</b> S 30°01.293 E 138°02.577	Witchelina Homestead	Please complete an indemnity form, collect your gate key (returnable deposit payable), and pay your nature drive entry fee !
<b>0.1</b> <b style="color: red;">0.2</b>	 <p style="text-align: center;"><i>Plough and woolpress</i></p>	<p><b>Plough and woolpress on left</b></p> <p>Built by the Adelaide engineering firm Forwood, Down &amp; Co, the tall machine was used for compressing wool into bales for transportation. Its original place of employment was the woolshed at Old Mount Nor'West, about 15 kms north of the Witchelina homestead, which was formerly a pastoral lease in its own right. In the late 1970's the press was acquired by the Booleroo Historical Society, and moved back to Witchelina in 2013, on long-term loan to the Nature Foundation.</p> <p>A newspaper article from 1880 records that the <b>woolpress</b> was originally designed in the 1860's by a Mr G Burnell, and the improved version you see now was built when the patent expired. <i>"It has a compact and workable look about it, occupying comparatively little space, and being easily taken to pieces for removal."</i> Its pressing power exceeded 21 tonnes, achieved through ropes being hauled down around the two large wheels at the top. This applied weight, through a rack and pinion system, to a pressure plate on top of the wool.</p> <p><b>Ploughs</b>, rippers (usually mounted on a bulldozer), and scarifiers were used for dam sinking to rip a "floor", before using scoops to clear out the dirt and build up the banks. The plough you can see here is very big and heavy, so moving it around from site to site wouldn't have been easy. A section of steel wagon tyre was bolted to the</p> <p style="text-align: right;"><b>(Cont'd next page)</b></p>

	 <p>Gool Mahomet's scoop team clearing sand (Claire Mincham photo)</p>	<p>side of it, and you can see by the wear on the tyre and the back of the mould-board that it must have been tipped on its side and dragged around like that. It could also have been used to form or clean out the drains that direct water into the dam.</p> <p>The plough may have belonged to Gool Mahomet, an Afghan cameleer who arrived in Australia in the late 1890's(see photo at right). When freight carting by camel dried up due to the arrival of the railway, Gool turned his camel teams to use in dam-sinking. There is one dam on Witchelina that bears his name.</p> <p>Gool subsequently worked in WA, NSW and SA, buying the Mulgaria Station lease (to the west of Witchelina), in 1939. At the age of 83, he left Mulgaria to travel to Mecca for the Haj pilgrimage; but fell ill in Adelaide and died. He's buried in the West Terrace cemetery.</p> 
<p><b>0.3</b> <b>1.1</b></p>	<p>Main Farina - Mulgaria road</p>	<p>Turn left at the main road, towards Farina</p>
<p>1.4 from Homestead. <u>Zero GPS or odometer here</u></p> <p><b>0.0</b> <b>0.5</b></p>		<p><b>Start of Dunes and Wildflowers nature drive.</b></p> <p>Turn right at the windmill blade signpost, heading south.</p> <div style="border: 2px solid green; padding: 10px; text-align: center; margin: 20px auto; width: fit-content;"> <p><b><i>Zero your GPS or odometer here to keep track of distances shown in these notes</i></b></p> </div>



*Google Earth image, showing area to the south of the Witchelina Homestead precinct; start of Dunes and Wildflowers nature drive (green line); and Choc Chip Rise (upper centre left)*



1



### Elegant Wattle (*Acacia victoriae*)

A rather straggly looking shrub, the Elegant Wattle (or Prickly Wattle), grows in all Australian mainland states. It is an important plant food for several native blue butterflies, and the seeds are also used widely in the bush food industry. It is fast growing and short lived, grows readily from root shoots (suckers) and is considered to be a colonizing plant for overgrazed areas. *(Photo at left)*

### Sea-heath (*Frankenia sp.*)

This species is a salt tolerant (halophytic) and drought tolerant (xerophytic) small herbaceous shrub. The leaves often encrusted or dotted with salt, giving the plant a greyish hue. There are 45 species native to Australia, spread widely across arid lands. It usually has plentiful pink flowers in season. *(Photo at right)*



2

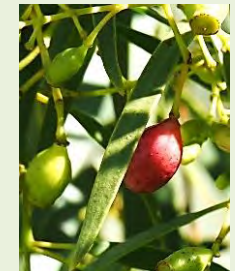


### Sampire (*sp: Tetricornia*) 4m to right of track

Sampire is a salt-tolerant, ground-hugging native succulent with light green branched segmented stems. These plants were a bushfood used by Aboriginal people and are, with the exception of one species, endemic to Australia, with 44 different species growing in many different locations across the country. It is found on salty flats, both along the coast and inland near salt lakes and swampy areas of land. Sampires are widely used in the bush food industry. *(See photos far left).*

### Native Plum (*Santalum lanceolatum*). 7m to right of track

This small semi-parasitic tree is drought tolerant and occurs widely across the property. It produces small quantities of fruit of about 1 cm diameter changing in colour from red to purplish black when mature. The fruit is edible and the explorer, Leichhardt, remarked it had 'a very agreeable taste'. It was also eaten by Aboriginal people, who mashed the roots and soaked them in water to make a liniment. *(See photos near left and above).*





2 (cont'd)



### Desert Cassia (*Senna artemisioides* ssp. *x coriaca*).

**Look for a line of shrubs 15m to right of track**

Small tree or shrub to 3 metres high. Drought tolerant although it is susceptible to frost when young. It has broadly pinnate leaves, where the Silver Senna has very narrow pinnate leaves. Desert cassia does not appear to be palatable, although the seed pods are eaten. The bright yellow flowers can appear at any time of the year, and are “buzz” pollinated by native bees.

There are several subspecies of *Senna artemisioides* on Witchelina, and the genus is a member of a sub-group of the pea family, which, unlike most peas, does not fix nitrogen in the soil. A previous name for this family of plants was Cassia, hence one of the common names.

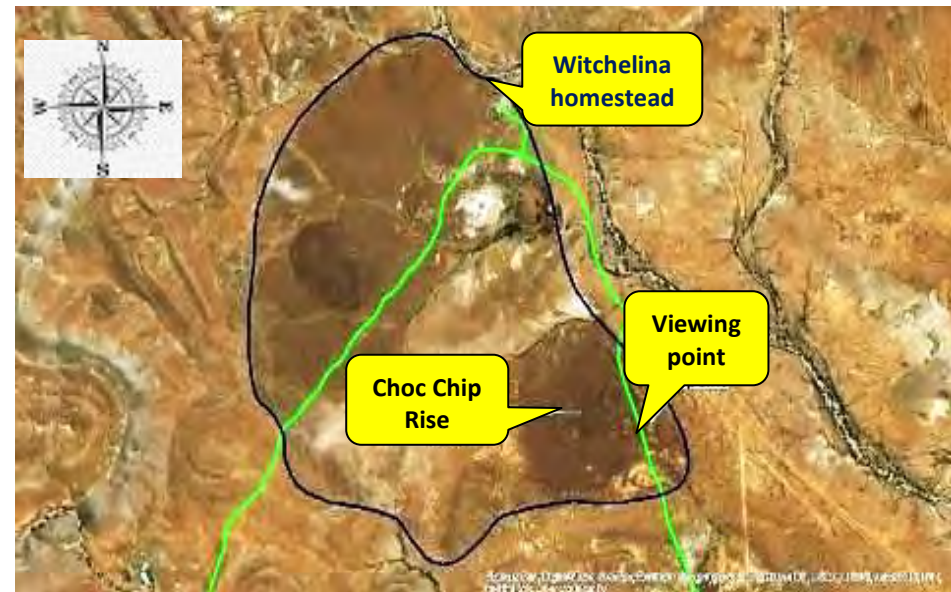
0.5

2.9



### Choc-Chip Rise

About 500m after the turn-off from the main Farina - Mulgaria Road, as the track skirts the Witchelina airstrip on the left, there is a low dark hill or rise to the right (or west). If you look on Google-Earth, you will see that this hill ('Choc-Chip Rise') appears as a small part of a much larger dark circular 'blob' outlined in black on the satellite image below. (Cont'd next page)



0.5  
2.9



**\*Gibber** – a word for ‘stone’ in the Dharug Aboriginal language of NSW, now widely used throughout the arid inland of Australia to refer to wind-polished pebbles or stones scattered across the land surface.

If you stop and walk over towards the rise, you will notice that the stony **gibber\*** plain here is made up of a uniform and spectacular tessellation of small, dark, platy stone ‘tiles’ which look like broken fragments or pieces of chocolate (hence the ‘Choc-Chip’ title given to this site). The plain is especially reflective if you look back into the sun, as the fragments reflect their shiny wind-polished and varnished surfaces. They make the scene an attractive subject for photos.

All the fragments are of a dark chocolatey-coloured shale. In some low rocky outcrops, the shaly and platy layers dip steeply and trend towards the NNE. However, as you walk across the flat ground towards the rise, you will also notice many curved and unusually-shaped fragments which really do look like broken pieces of chocolate Easter eggs. In fact, they’re fragments of iron rich nodules and concretions, and you’ll be seeing more of them at the next geosite. There are many different shapes - **but remember – no fossicking please !**



3



**River Cooba** (*Acacia stenophylla*) 8m to right of track

A small tree with a somewhat weeping habit it is tolerant of saline, alkaline and waterlogged soils and survives periodic flooding. It is widely distributed across inland Australia, and varies in form but is usually single stemmed with pendulous branchlets. It is a longer lived wattle and generally lives for more than 50 years. It can host mistletoes, and the Bag shelter moth and webbing caterpillars are minor pests. The seeds are often subject to attack by borers which drill through the pods. (See photo at near left)

**Broughton Willow** (*Acacia salicina*) 30m to right of track, behind River Cooba

An extremely long lived wattle that can grow to 20 metres in height in the right conditions. Its timber was used for making wagon axles by pioneers, but it has also been used as a furniture timber as it is similar to blackwood. Widespread throughout mainland Australia, it gets its name from the willow like appearance and the fact that it is usually found near creeks and waterholes. It spreads by root shoots (suckers) and seed which is dispersed by birds. (See photo far left)



3.4  
0.5



### Bubble Rocks Gully

Bubble Rocks Gully is a large erosional gully, where a branch of the Balawopina Creek has cut through the surface capping to reveal the older layers beneath, with their splendidly sculpted and enigmatic “bubble rock” concretions.

The yellowish-white capping layer is only 0.5-1.0 metres thick. It covers most of the surrounding plain, and is itself variably covered by sands, outwash gravels and sparse vegetation. Made of gypsum-rich sediments, it is called a *gypcrete*.

There is a small car park at the Bubble Rocks location and a walkway down into the gully. Following the walkway, you pass through the exposed gypcrete layer and see the ochre-like multi-coloured red, white and grey layers of the underlying metamorphosed sediments (sandstones and siltstones) of the Adelaidean Sedimentary Basin (*see photo at left*).

About 150 metres into the gully, the straight steeply dipping layers contain some very unusual geological features. These are an array of 10 or 20 dark coloured, football-shaped and sized nodules. The reddish colour indicates that they are iron-rich, and they sit only within some layers of the sediments. The nodules are geologically called *concretions*, because they are much harder and durable than the sediments in which they sit (*see photos at left*).

These concretions most likely started to take shape long after the sediments were deposited and compacted. During a long uplift- and weathering process, they formed layers as they came into contact with water and oxygen. A close look shows the layers to pass right through the concretions, and not to be deflected around them. This indicates that the concretions grew, not by gases bubbling through the sediments (as the name of this geosite misleadingly suggests), but by attracting and binding more iron as cement within the spaces between the sedimentary particles, gradually growing in size and solidifying.

Some of the ‘Bubble’ nodules show very fine alternating concentric layers of red, yellow and white bands representing different iron-rich minerals. These are called Liesegang Rings. An example (not from this site), is pictured at left.

*Because of its unusual character, the Bubble Rocks Gully geosite is listed on the Geoheritage Register of SA. More geological information can be found in an **Introduction to Witchelina Geology**, in *Welcome to Witchelina*, a companion volume to these track notes, available from the Witchelina Homestead.*



4



**Dead Finish** (*Acacia tetragonaphylla*).  
To left of track, immediately before creek crossing

This small wattle is extremely prickly because it has very sharp points to its phyllodes (leaves). It provides a safe habitat for small birds and reptiles, and is a long lived and very drought tolerant plant. Thought to have been named Dead Finish because it was the last thing left alive at the end of a drought !



3.9  
3.9

**Creek crossing.** It's worth taking a walk through this creek as there are many small species of plants in the understory – pimelea, senecio, ablution, lemon grass, twin-leaf and eremophila, to name a few. You may also see some birds – wrens, budgies nesting in tree hollows etc.



4 (cont'd)



**River Red Gum** (*Eucalyptus camaldulensis subspecies arida*) In creek bed

Red Gum is the most widespread species of eucalypt in Australia, occurring in every mainland State. It is notably a smooth-barked tree found along streams and creeks of permanent, seasonal or intermittent flow. The species over its whole distribution is distinguished by the seeds which have two seedcoats, the outer being yellow to brownish yellow and glossy. (All other red gum species have seeds with a single, rough-textured dark brown to black seedcoat).

The timber has a reputation for durability, strength and its known for its distinctive red colouring.

#### **Mistletoes.**

There is a spectacular example of a "mistletoe broom" on the left hand side of the track. Common mistletoes on Witchelina are Harlequin Mistletoe (*Lysiana exocarpi*), and Wireleafed Mistletoe (*Amyema pressiie*). Both are common across Australia.

Mistletoes often have a bad press, but are an important part of the ecosystem. While they are sap feeding semi-parasitic plants that can shorten the life of their host, they provide an important food source and nesting sites for many species of insects and birds, and add greatly to the biodiversity of the area.



5



**Another small creek crossing.**

On the left is an **Umbrella wattle** (*Acacia oswaldii*).

Often seen as very gnarled old trees, they are a handsome well shaped tree in their prime, hence the common name, and can grow to about 6 metres in height.

Recruitment of this species has been limited by rabbits. They are a widespread but not common species that grows throughout the arid areas of Australia. With unpleasant smelling foliage they are rarely found in cultivation.

There are also **Broughton Willows** and **Native Plums** in this creek.



6



**Rock Emu Bush** (*Eremophila freelingii*)

Near the road is a single specimen of this blue flowered Eremophila, and further back there are many along the rocky ridge. It is a common Emu Bush growing on Witchelina and occurs on the rocky slopes and hilltops.

Flowering occurs throughout the year but most commonly from August to November and is followed by fruits which are dry, woody and oval shaped. It is very drought resistant. This species is traditionally used as a medicinal plant, but it can be toxic to stock.



7.8  
0.2



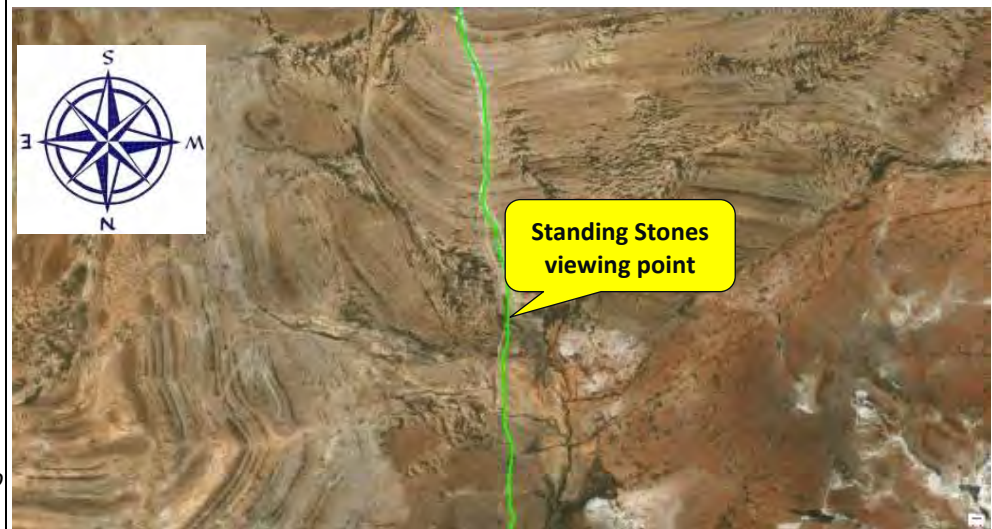
\*\* More geological information can be found in an **Introduction to Witchelina Geology**, in *Welcome to Witchelina*, a companion volume to these track notes, available from the Witchelina Homestead.

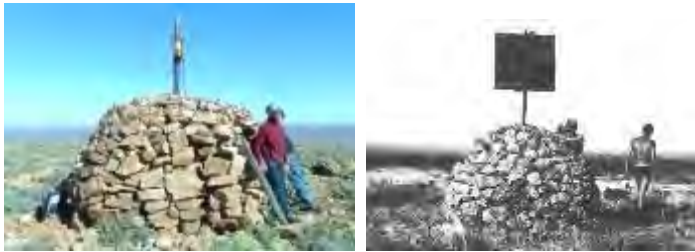
### Walls of Standing Stones

The low undulating plateau here displays a fascinating array of regular standing stone 'walls'. These look distinctly like the standing stone sites, stone lines and circles of Neolithic (3-4,000 year old) Celtic civilisation in southern England, Ireland and Brittany. Here however, they are completely natural, and were raised to their upright position in much more distant times.

The upstanding ridges are in fact hard sedimentary layers which have been tilted upright in a large folded hinge. On your right, to the west, the wall-like upstanding layers of dolomitic limestone run roughly parallel to the vehicle track, whilst on your left (to the east), the layers run at right angles from the track.

This very tight fold can be seen on Google Earth images (see photo below, especially the top centre section immediately to the left of, and slightly above the text box). It was caused by powerful tectonic compression forces resulting from the formation of the Nor'West Fault nearly 500 million years ago \*\*. Fault-related folds create most of the interesting structures on Witchelina and provide the amazing satellite images of this area.



8.0  
0.9

(Above left) the Parry/Goyder cairn today. The post leaning against the cairn may be the one placed by Goyder in 1860.

Photo above right is of a similar cairn built during the 1950's by an Australian Geodetic Survey team. The vane on the centre post assisted sighting from distant points.

### Termination Hill (*Karkalpunha*) viewing point #1

At this point, you have your first broad view of the eastern flanks of the Termination Hill Range. Looking from north (closest to you), to south, this majestic range rises gradually out of the plains and ends rather abruptly close to Termination Hill. Using binoculars, you may be able to see a cairn on the summit.




The Range here forms a scarp slope on the edge of the Nor'West Fault - one of the largest faults in the Willouran Ranges (*see the satellite image at middle left*). The Fault is almost parallel to a major ridge of very hard quartzite which forms the ridge cap. At the southeastern end of the range, the quartzite turns around the axis of an enormous synclinal downfold forming the Termination Valley on the western side of the ridge. This valley is almost totally enclosed by the fold, forming a natural pound feature. (*See satellite image at middle left*).

As a major land feature, Termination Hill has cultural significance for the Kuyani Traditional Owners of the central and southern regions of Witchelina. We are currently asked to respect their spiritual affinity with the Hill by no longer climbing it. The Kuyani are one of several groups which, together, comprise the Adnyamathanha people of the Northern Flinders Ranges and some areas around Lake Torrens.

Termination Hill (*Karkalpunha* in the Kuyani language), features in the Kuyani dreaming story of Papurdityirdityi and Kilawila. Kilawila was said to have killed Papurdityirdityi, who was then transformed into the larger of the two main hills at the southern end of the range. Kilawila is said to be the smaller hill.

Termination Hill was named in 1840 by the explorer Edward John Eyre, during his journey northwards towards the Lake now bearing his name. In 1858, the then Government Surveyor Samuel Parry built a cairn on the summit (*see photo at far left*). This was re-constructed two years later by his successor in the post, George Goyder (most widely-known for the notional line which carries his name, marking the boundary of reliable rainfall across much of South Australia).

Goyder employed the cairn as the southern point of a 20-mile baseline from which to survey land to the north that would be offered for pastoral lease. This baseline is commemorated in a monument just off the Farina-Mulgaria road to the east of the Witchelina Homestead.

<p>8.9 1.8</p>		<p><b>Locked gate – please lock behind you after passing through</b></p>
<p>7</p>		<p><b>Native apricot</b> (<i>Pittosporum angustifolium</i>)</p> <p>This tree, with drooping foliage, is one of the drought-tolerant species occasionally found on Witchelina. In season, its fruits are orange, slightly fleshy, rounded or egg-shaped capsules growing in thick clusters.</p>  <p>Despite the outward similarity to an apricot, the fruits are extremely bitter and inedible. It has been reported that Pitjantjatjara / Yankunytjatjara people use the ground seeds for medicinal purposes.</p>
<p>10.7 0.6</p>		<p><b>Grader training zone – SLOW !</b></p> <p>Maintaining tracks on a vast property like Witchelina requires the regular use of heavy equipment, including a grader. The maintenance work is largely the responsibility of a team of managers who are rostered to come and spend one or two weeks on the Reserve several times each year.</p> <p>Heavy equipment operation is a skilled and potentially hazardous occupation, and Nature Foundation has arranged appropriate training for some of its managers. This area has been the subject of an Erosion Control Workshop that skilled-up plant operators on the important task of minimising erosion of the landscape whilst track grading is undertaken. Here, you can see the ridges they have created across the track; the ridges are steep and abrupt, so please drive slowly to the top of the slope ahead of you.</p>

11.3  
1.5



### Enclosure

*Enclosures* are generally designed to keep something in. *Exlosures*, by contrast, keep unwanted animals out.

Shortly after passing through the locked gate, you may notice, on your left, a fenced-off area of land. This enclosure has been established to monitor the total grazing pressure on this site. It's one of several on Witchelina: the photo at left is of an enclosure at a different site to the one you're passing.

The enclosure prevents grazing by large native herbivores (plant-eating animals) such as kangaroos, and introduced invasive herbivores such as rabbits, sheep, cattle and goats. Sheep and goats are no longer a major issue on Witchelina – but in some areas cattle, rabbits and 'roos can still present a problem, especially in wet years.

Enclosures have been constructed in different vegetation communities on the Reserve. Some enclosures are designed to keep out specific types of grazing animals while allowing others to enter the fenced area. In this way we can determine the impact of different herbivores on native vegetation.





Vegetation within each enclosure, and at paired unfenced sites, is monitored using photopoints and other vegetation assessment methods, including detailed audits of specific areas (*see photo at right*).

Data from this monitoring will help Nature Foundation to effectively manage grazing animals to ensure the protection of native vegetation and habitats on Witchelina



12.8/ 0.6

Follow the turnoff to the right towards Rocky Dam.

13.4/ 0.1		Sharp left turn; track follows the northern dam wall.
13.5 0.5	    <p data-bbox="398 935 510 959">Tom Kruse</p> <p data-bbox="752 935 891 959">and his truck</p> 	<p data-bbox="1088 268 1211 292"><b>Blitz truck</b></p> <p data-bbox="1088 339 2040 512">The Canadian Military Pattern (CMP) truck was a class of military truck made in Canada during World War II for use in the armies of the British Commonwealth allies. Most CMP trucks were manufactured by the Chevrolet division of General Motors of Canada Ltd and by the Ford Motor Company of Canada. In Australian service, these vehicles were known as the ‘Chev Blitz’ or the ‘Ford Blitz’.</p> <p data-bbox="1088 555 1973 655">There is an interesting parallel with another Blitz truck, now on display at Marree. This one was used by Tom Kruse, Australian Outback legend, dam sinker, carrier and Birdsville Track mailman (<i>see photos at left</i>).</p> <p data-bbox="1088 699 2051 834">The particular vehicle you see here was a Witchelina station truck during the 1970’s. The steel tank, also on the dam wall, was erected here in January 1979, because sheep trying to reach the last of the water still at the bottom of the dam were getting bogged, and needed a safer water supply.</p> <p data-bbox="1088 877 2051 1050">A stockman working on the station at the time recalls that the tank was originally located elsewhere on the property. Using an oxy-acetylene torch in 45° heat, the tank panels were cut off above ground level, so that the present tank is lower and shallower than most of its kind. The panels were then trucked on the Blitz to their current location.</p> <p data-bbox="1088 1093 2029 1265">Why the Blitz truck ended its serviceable days at Rocky Dam is, as yet, an unresolved mystery. It was, as the stockman remembers, “a monster to drive, because the cab mounted over the front wheels made for a particularly bumpy ride – especially for your head”. Maybe its man-eating qualities account for the Blitz’s fate, abandoned on the dam wall ?</p>
14.0 / 0.5		Junction with main track – turn right.

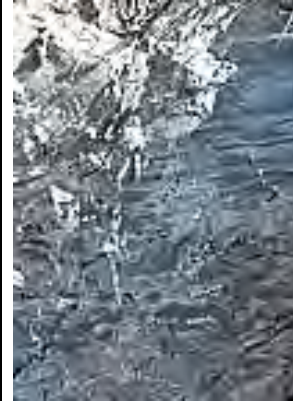
14.5  
6.9

**\*\* More geological information can be found in an *Introduction to Witchelina Geology*, in *Welcome to Witchelina*, a companion volume to these track notes, available from the Witchelina Homestead.**

### Rocky Dam Lookout

Just South of Rocky Dam and east of the drive there are a few elevated rocky outcrops rising out of the scrub. If you walk across to them you will see that they form a low ridge of very hard iron-rich layers. The rocks are brittle and fractured, and may reflect the remains of a weathered and possibly mineralized zone containing ores in addition to iron.

Sites like this are called *gossans*, and may sometimes be considered as possible locations for economic mineral deposits like copper, zinc or lead. It is unlikely though, that this particular site would have any economic potential. On the other hand, as a vantage point for a hungry Wedge-tailed Eagle, it has some distinct advantages.....



The fracturing and veining which you can see in the image at left also suggest that the outcrop has been deformed by movements on the Nor'west Fault, located only about 4 kms from this geosite. The interesting swirls and fine layers in the rock, and especially its white fractured veins, suggest that it originated from calcic, iron-rich silicate, forming as mud during periods of quiet deposition on the sea bed. The rock was then transformed by heat and pressure, and then folded and fractured during the 500 million year Delamerian Mountain building event \*\*





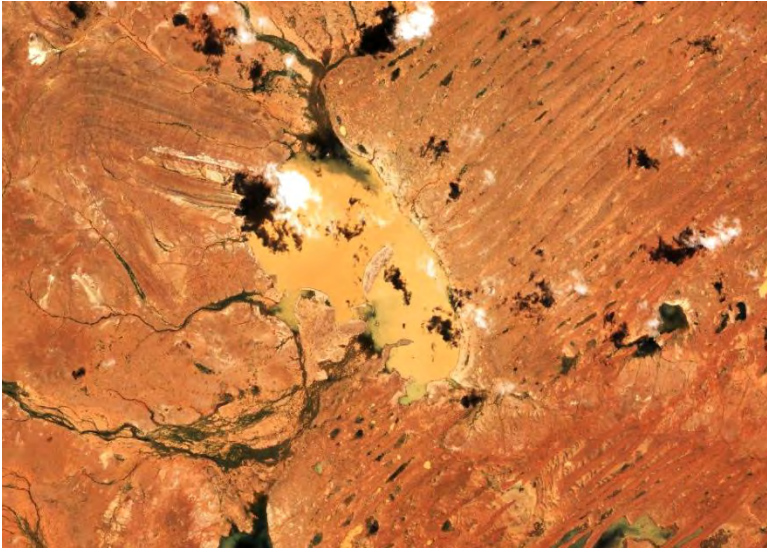
8



### Nitre Bush (*Nitraria billiardierei*)

An excellent habitat plant for birds and other small animals. Nitre bush is another extremely drought tolerant plant found in arid lands across Australia, often in saline areas. It has an insignificant flower, followed a red, purple or yellow edible berry that can be made into jam, and it was a valuable food for Aboriginal people.



21.4 / 0.8		Track joins derelict vermin-proof fence – bear left.
22.2 2.3		<p><b>Gate in the fence</b></p> <p>The fence you've just been driving along was originally erected mainly for rabbit control, although it would've also been high enough to discourage wild dogs. It may also have served as the boundary fence for one of the earlier separate pastoral leases that were later merged to create the larger property now known as Witchelina.</p>
22.2	 <p>At this point on your drive, you have the option of visiting one of the ephemeral lakes on Witchelina – Minagoona Lake.</p> <p>If you choose this option, please turn to page 25 of these notes now. Pages 25-28 will take you along this short side trip. Depending on how long you spend at the lakeside, the trip will add around 30-45 minutes, and 11.4 kms to your drive.</p> <p>If you prefer to keep going, turn right through the gate pictured above, drive on, and turn to page 28 of these notes. Your next point of reference will be at Km 24.5.</p>	 <p><i>Satellite image of Minagoona Lake after rain (February 2022)</i> Image: Sentinel Hub</p>



### ***Optional alternative route via Minagoona Lake***

In late 2022 and early 2023, the major attractions of this short drive option were seeing an extensive body of water over what is normally a dry claypan, divided by a fence; and the probability of a variety of waterbirds swimming on the lake or probing the shallows.

However, after only two summer months (February-March 2023, evaporation has seen the lake shrink to a fraction of its recent size. The photos below illustrate the dramatic changes in this cycle.



#### **Getting there**

*Before setting off, please be aware that the cumulative distance you've been recording on your GPS will be affected by the 11.4 kms you drive to and from the lake. To compensate for this, you could:*

- ***Either*** *de-activate your GPS for the 11.4 kms, and re-activate it when you re-join the main track after your side trip; **or***
- *Add 11.4 to **each** cumulative distance in the left-hand column of these track notes as you continue your drive after kilometre 24.5.*

Instead of turning right through the gate in the vermin-proof fence at 22.2kms, proceed straight ahead up the gentle slope along the fence line ahead of you (*photo at left*).



In about 1.6 kms, you'll come to another gate – keep straight ahead. You'll soon see the lake in the distance (*photo at left*), and the track follows a fence line right to the shore. The water you see in the photo may have since evaporated.

**The track is rough in places -please drive with caution.**

When you get to the lakeside, please stop near the turnaround sign, and walk from there.

**Do not attempt to drive on the lake bed !**



At the lake, please feel free to wander a little (but be careful - the underlying mud may be soft !)

**In 2022, Witchelina received well over twice its average annual rainfall.** The photos below were taken in November-December 2022, when the lake was flooded after the rains over the previous 12 months. The bird life was abundant.



**What a difference a summer makes !**

With the exception of the photo at upper left below, the following were taken in late February 2023. The fence line ahead of you is the boundary between Witchelina and Farina Station. After the rains of 2022 it was largely under water; now it's drying out rapidly. Between the caked mud flats, green shoots are beginning to appear.





When you've finished your stay at the lake, turn around (*see photo at far left*), and drive back up the slope to the last gate you saw coming in.

Turn left at the 'Alternative route' sign, and proceed with caution southwards along the boundary fence. In about 2.6 kms, you'll rejoin the main route coming in from the right. This is the junction at Km 24.5 (*see next panel below*).

*In the left-hand column of these track notes, the cumulative distances recorded by your GPS (**the figures in black font**), will be affected by the 11.4 kms you drove to and from the lake.*

*If you de-activated your GPS at 22.2 kms before taking the alternative route, please re-activate it **now** so it maintains an accurate count of your cumulative distances (**in black font** in the left-hand column).*

*If you didn't de-activate your GPS, please add 11.4 to **each** cumulative distance **in black font** in the left-hand column of these track notes, as you continue your drive after kilometre 24.5.*

**24.5**  
**1.5**



*Photos: Chris Reed*

*To date well over 120 kms of fence have been renewed on the property, including 4kms of the Witchelina/Myrtle Springs fence. Volunteers have played a vital part in much of this work.*

Track joins the boundary fence with Myrtle Springs Station, and turns south. Track runs roughly parallel to the fence for approximately 13.5 kms, with some deviations.

With over 300 kms of boundary fence on Witchelina, one of Nature Foundation's main priorities is to maintain a program of boundary fence repair and renewal. Nature Foundation has entered into an agreement with the Federal and State Governments to ensure that the property becomes and remains destocked of commercial livestock.





9



Spotted Emubush

Ruby Saltbush



**Spotted Emubush**

*(Eremophila maculata)* This is the larger of two shrubs at this location. See photos at left and right.

Probably the most common species of Eremophila both in the wild and in cultivation, this Eremophila grows to about 1 metre in height and is found in all Australian States.

Flower colours vary from pink through reds and orange, and the “spotted” refers to the spots on the inside of the flower tube, which are a distinctive feature of the plant. They are an important food source for both birds and insects.

**Ruby Saltbush** *(Enchylaena tomentosa)* \*

This common plant can be found, as here, climbing through other bush and shrub species. It is drought tolerant. One authority on Aboriginal plant use (P Latz), states that the fruits are produced soon after rain, generally from late summer to early winter; and eaten when ripe and juicy (*see insert photo at left*).

\* Notes adapted from *Field Guide to the Plants of Outback South Australia*: F Kutsche and B Lay 2003; *Bushfires and Bushtucker: Aboriginal Plant Use in Central Australia*: P Latz 1996.



**CAUTION !**

26.0  
0.4

The main track here continues along the fence line. However, the tree-lined gully immediately ahead of you may flood after heavy rain, and the track can remain affected by standing water or soft mud for several weeks after the rainfall event.

Please proceed to the gully, **and only drive through it if you're confident it's dry**. If in doubt, return to the junction just behind you, and take the right hand fork signposted WHEN WET. It will lead you a short distance up and across the gully at a spot more likely to be dry, and then back to the main track along the fence line.

This detour will add approx 200-300 metres to the kilometre distances in **bold black font** in the left-hand column of these track notes.

26.4  
0.3

Wet weather detour rejoins main track from the right. Keep straight ahead.

26.7  
8.5



### Pipeline

You may notice a black polypropylene pipeline crossing under the track from the direction of the range, leading eastwards under the boundary fence (*see photo at left*).

The pipeline is a good example of how Nature Foundation seeks to work in collaboration with the pastoralists on neighbouring properties. The pipeline delivers water from the Leapyear Dam, approx. 2 kilometres to the west of this point on your right, and takes it to a stock watering point on Myrtle Springs, a section of which is leased by Farina Station (both properties to the east, on your left).

As a Nature Reserve dedicated to nurturing wildlife and vegetation in their natural state, Witchelina has no need of the water collected artificially in Leapyear Dam off the Termination Range. However, Nature Foundation recognises that it's a valuable pastoral resource. Under the current arrangement therefore, Farina Station maintains a solar pump in the dam and the pipeline itself, and is able to make use of water that would otherwise return to the aquifer. Of course, the dam relies on rainfall, and for much of 2019 (a year of record drought), it was dry.

Similar 'good neighbour' arrangements are in operation with Mulgaria Station to the west of Witchelina; and with Callanna Station to the north. Both properties run borepumps on the Reserve rather than dams, which are less susceptible to drying up.



## 10 (there are two plants at this site)



Common Senna



## 10 (cont'd)



Tar Bush

### Common Senna or Silver Cassia (*Senna artemisioides* ssp *artemisioides*)



Senna is a woody shrub that can grow up to 3 metres tall. It has bright yellow flowers and flowers in response to rain, but is predominantly a spring flowering plant. The yellow flowers are numerous and very



showy, and are pollinated by the “Buzz Pollination” method in which insects use vibrations to collect pollen from the flowers, inadvertently fertilizing them.

There are several subspecies of *Senna artemisioides* on Witchelina, and the genus is a member of a sub-group of the pea family, which, unlike most peas, does not fix nitrogen in the soil. A previous name for this family of plants was Cassia, hence one of the common names.

### Tar Bush (*Eremophila glabra*)

A variable low growing to medium sized shrub, with red, orange or yellow tubular flowers from autumn through to summer. It has grey green open foliage that can be sticky to touch.

Naturally occurring in inland arid areas through most states of Australia. Drought tolerant and frost tolerant, it is very popular as a garden plant and there are many different varieties in the nursery industry.





**Swamp Cane Grass** (*Eragrostis australasica*)

A tussock grass that is endemic to Australia. It is a tufted perennial with strongly branched, cane-like culms (hollow stems), that grow up to 2.4 m in height. It is typically found on periodically flooded land in arid and semi-arid region.

**In this area, you're driving past a large ephemeral swamp on the right hand side of the road. The main vegetation Old Man Saltbush and Canegrass**

**Old Man Saltbush**  
(*Atriplex nummularia*)

Large woody shrub that grows to 3m in height and diameter but occasionally more. Male and female flowers occur on separate plants. It can range from erect to sprawling in growth form. It provides a useful forage resource particularly in times when other feed is scarce and can be found on both saline and non-saline soils. It occurs naturally in many parts of the pastoral region and in some cases has been successfully re-established in these regions.



11



**Sandhill Wattle** (*Acacia ligulata*)

This is one of the most widespread species of Acacia in Australia, common to central and southern Australia.

A rounded, compact shrub that will reach a height of 1-5 metres, this wattle flowers profusely, is generously pollinated by the feral honeybee and has abundant and regular seed set. It is however, very short lived – usually less than ten years.





12

**Inland Paperbark (*Melaluca glomerata*)**

This is an erect, spreading small tree or shrub growing to 6 metres, with straggly branches and white, papery bark. It flowers profusely in dense, honey scented white to yellow heads at any time of the year depending on seasonal conditions.



## Termination Hill Range

Painting by Nature Foundation  
artist in residence (2019),  
**Alison Binks**

*Oil on board 27cm x 67.5 cm.  
Private collection.*



35.2  
2.7



### Termination Hill viewing point #2, and Ideyaka Hill

The track now passes across a gentle alluvial fan which slopes down from the Termination Hill Range until it reaches the plains at Poison Well and Lake Watherston (*see satellite images on the next page*).

Alluvial fans are common on edges of active scarp slopes. Here, more recent movement on the Nor'West Fault has caused rocky debris to be spread out gradually downslope.

The Range comprises very steeply dipping quartzite layers which were pushed and twisted up against the major Fault during its formation almost 500 million years ago.

From this point you have excellent views of Termination Hill, the southernmost summit of the Termination Hill range; and, in the foreground, Lake Watherston.

*Cont'd next page*



The photo at top left shows Lake Watherston after a prolonged period with minimal rain in 2017, and during the two following years of drought.

The photos at mid and lower left show the lake filled with water after heavy summer rains, with black swans and other water birds taking advantage of the inundation. The aerial images below show the lake when dry (*photo at right*), and when full (*photos below and lower right*)



Image left: Sentinel Hub



**Brecciated**, 'broken-up' rock

**Ideyaka Hill** (photo at left), which you can see to the south-west from this point, is geologically very important as it sits directly on the alignment of the Nor'West Fault. Faults as large as this one create their own special geological features as enormous movements in the earth's crust bring rocks of very different ages and formations into contact. It is estimated that this fault has had over 3000 metres of vertical movement some 500 million years ago.



Fractured rock, showing quartz veins

Large faults also create their own rock types as the sliding and grinding of huge rock masses produce **breccias\***, polished rock surfaces (striations), and powdered rock flour.

They even allow the injection along their surface of entirely different or 'foreign' rock types and unusual mineral occurrences. These exotic imports sit in a matrix of brecciated and fractured host rock (see photos at left and above right).

On the western slopes of Ideyaka Hill and in the saddle and small hillocks to the NE and SW of it, these ancient geological movements have created a zone of very mixed fractured and disrupted rock termed the *Ideyaka Megabreccia*.

The track now continues south past Pug Hill Hut and into the dune country.

**\*Breccia** – an Italian word meaning 'broken rock'

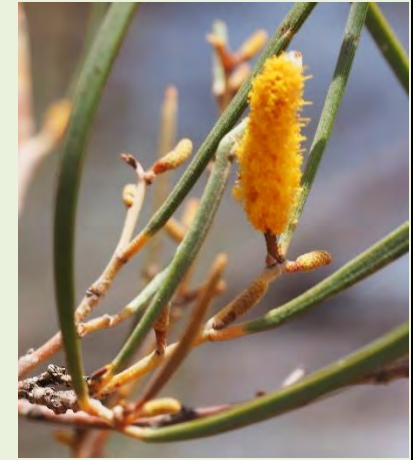


13



### Mulga (*Acacia aneura*)

Standing about 25 metres off the track to the right, this Mulga specimen is another wattle that is widespread in Australia, and varies enormously in growth habit from a small shrub to a tree over 10 metres tall. It is relatively long lived for a wattle (50+years) and very slow growing. It can flower at any time of the year. It was an important food plant for Aboriginal people, and a host for the larvae of the two spotted line blue butterfly. The timber is very resistant to white ants and was often cut for use as fence posts.



It is good to see several young Mulgas coming up around this one, as recruitment of this plant has been severely affected by rabbits in the past.



14



### Needlewood or Water Tree (*Hakea leucoptera*)

Needlewoods are large perennial shrubs or small trees, with grey cylindrical leaves that have a very sharp tip. The cylindrical leaves are an adaptation to save water loss by reducing the leaf surface area. Attractive white or cream flowers in clusters, followed by woody seed capsules with a beak that are retained on the tree (see photos below and at right).



The species is very drought resistant. The flowers produce a high quality honey favoured by bees. Aboriginal people used to make a sweet nutritious drink from them, and, as their alternative name suggests, were able to obtain water from them in times of drought.

37.9  
0.2



**Buffel Grass (*Cenchrus ciliaris*):**  
a declared plant

### Pug Hill Hut

During the time of pastoral operations, this hut was an outstation of either the Witchelina or the Ediacara lease.\*\*

When Nature Foundation purchased Witchelina in 2010, the hut was semi derelict. It was restored in 2013 by the Mt Lofty Rangers 4WD Club – one of several buildings on the Reserve that have been brought back to life by the goodwill and hard work of Club members. Nature Foundation acknowledges with gratitude the Club's contribution to this important aspect of conservation work.

Pug Hill Hut is now used occasionally as a base for teams doing fencing or other work, and for researchers and groups undertaking field studies in the southern areas of Witchelina.

Near the Hut is a long-drop toilet with a fine view of Termination Hill – your last chance for this amenity before you arrive back at the homestead !

\*\* More information on the history of Witchelina can be found in [Welcome to Witchelina](#), a companion volume to these track notes, available from the Witchelina Homestead.

**From Pug Hill Hut, there are two nature drive routes into the Dune Country.**




The main route, on the left-hand side of the aerial image below, runs southwards from the Hut, then turns westwards towards Boundary Hut, and then doubles back through dunes to Cocklebinna Dam.




**At the time of publication of these notes (March 2023), the first part of this route is closed to visitor traffic, because a buffel grass infestation has been discovered just south of the Hut, and there is a risk of vehicles picking up and spreading seeds from this noxious plant** (see photo at left). The closed section is shown as an **ochre-coloured line** in the aerial image below.

For the time being, an Alternative Route for Dunes-Wildflower drive has been signposted. Shown in yellow on the aerial image, it runs westwards from Pug Hill Hut, passes to the south of Lake Watherston, and joins the main route near Cocklebinna Dam. You'll have an option at this point to drive into the dunes to Boundary Dam, and return by the same track to Cocklebinna.

**Please follow this alternative route until further notice.**



<p><b>38.1</b> <b>5.0</b></p>		<p>To join the Alternative Route, retrace your track northwards from Pug Hill Hut. In about 200 metres, take the left hand turn as shown (<i>photo at left</i>).</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">  <p><b>Please note:</b> ‘tree’ signposted plants #15 to 20 inclusive are in the section of this nature drive currently closed to visitor traffic (as at March 2023). There are no further signposted plants on the drive.</p> </div>
<p><b>43.1</b> <b>1.6</b></p>		<p>At this directional sign, you have fine views of Termination Hill to your right (north), and Ideyaka Hill to the left (south).</p>
<p><b>44.7</b> <b>0.6</b></p>		<p>Road forks – keep straight ahead</p>

<p><b>45.3</b> <b>1.3</b></p>		<p>At this point you should be able to see Termination Dam and yards on your right, (<i>photo at left</i>), and pass through an open gate.</p> <p><b>CAUTION ! In another 400 metres a dangerous gutter crosses the road. Please observe the Slow sign.</b></p> 
<p><b>46.6</b></p>		<p><b>Cocklebinna T junction</b></p> <p>8.7 kms from Pug Hill Hut, the Alternative Route joins the main track, coming out of the dunefields to your left. You may see the frame of a ruined hut over to your left. While in use, it was probably thatched with canegrass harvested from swales amongst the dunes (<i>see photo at left</i>).</p>
<p><b>46.6</b></p>	<p>At this point on your drive, you have the option of driving into the dunes for a return trip to Boundary Dam (<i>see the aerial image on page 39 above, or the route map on page 4</i>).</p> <p>If you choose this option, please turn to page 42 of these notes now. Pages 42-45 will take you along this short side trip and back. Depending on how long you spend in the dunes, the return trip will add around 45-60 minutes, and 13.9 kms to your drive.</p> <p>If you prefer to keep going, keep straight ahead at the T junction, drive on, and turn to page 46 of these notes. Your next point of reference will be at Km 55.9.</p>	

## Driving the dune track

**Dune crossings can be through soft sand. Engaging 4WD for this side trip of the nature drive to and from Boundary Dam is strongly recommended.**

In places during this side trip, the drive at this point enters a valley between two dunes. These valleys are known as 'swales'. Vegetation in this zone consists largely of grasses, but you may also see a stand of canegrass – a sure sign that after rains, moisture remains in this lowest point of the swale for some considerable time.

**Take care as you approach swales like this. For most of the year they are dry and quite safe to cross; but for some time after heavy rain, they may remain soft or even spongy, posing a bogging risk for vehicles. If in doubt, turn around and come back to Cocklebinna.**

44.6  
6.9

Turn left at the T junction, passing the hut ruins on your right.



The track winds through dunes, sometimes crossing them, and crossing three claypans in swales, including the last just before Boundary Dam.

Dunes have their own beauty and interest in the variety of their colours and vegetation.



Depending on the season of your visit, you may find this region alive with trees, grasses and wildflowers, all wonderfully lush. But even in drier times, the landscape is rich in natural features.

**But, as at Minagoona Lake, what a difference a summer makes !**



**December 2022**



**Late February 2023**

The above two photos of a claypan covered in healthy Nardoo (*Marsilea drummondii*), were taken only two months apart.





Cattle-induced track damage in the Dune Country (2020)



Track in much better condition without cattle traffic (December 2022)

The dunes – especially in their most spectacular vegetational state after good rains – provide a fine example of the benefits of Nature Foundation’s environmental management on the Reserve.

Up until 2020/21, the presence of cattle in the Dune Country presented a particular challenge. There were broadly two sources of cattle on Witchelina – those remnant animals and their descendants dating from the time of the property’s purchase in 2010, and which had evaded mustering since then; and those belonging to neighbouring stations which either broke through the boundary fence, or found a crossing where the fence had collapsed.



Both groups were looking for water, feed, or both, and several dams in the southern region of the Reserve (some in the dunes), were an irresistible temptation when, as in early 2020, they were holding water.

The photo at top left shows a small example of the kind of damage that cattle can do to tracks – pockmarked and devoid of vegetation. Native vegetation, wetlands, and other important aspects of the Reserve’s ecology can also be impacted.

As the Google Earth image on page 5 of these track notes shows, the Dune Country is vast, and it would be optimistic to think that there were no remnant cattle at all left in the region. However, in co-operation with neighbouring properties, an intensive program of boundary fence restoration and upgrading since 2020/21 has dramatically reduced the risk of incursions, costly and logistically difficult though it is on a Reserve whose boundary crosses mountains and dunes, and extends to over 300 kms in length.

6.9 kms  
from  
Cocklebinna  
T junction



**Boundary Dam**









In just over 6kms, the track crosses a low dune, and descends to a claypan as you approach Boundary Dam (there are, in fact two dams – see Google Earth image at right)







**As always, take care as you approach the claypan. If it appears spongy or soft, it may be safer to skirt the area on the slightly higher ground to your right, rejoining the track at the far end of the pan near the dam – or turning back before moving on to the claypan.**

At the signposted point (*photo left*), turn around, and return to the Cocklebinna T junction where you started this side trip.



<p>46.6 9.3</p>	 	<p><b>Hut frame</b></p> <p>Pass the hut frame on your left, and when you reach the T junction, turn left. You are now on the route that will lead you back to the homestead. Much of the return track of this nature drive runs north-west and northwards, roughly parallel to the western side of the Termination Range and Termination valley. The route runs generally close to the boundary between the very old rocks of the Range and the encroaching desert dunes.</p> <p><i>In the left-hand column of these track notes, the cumulative distances recorded by your GPS (<b>the figures in black font</b>), will be affected by the 13.9 kms you drove to and from Boundary Dam.</i></p> <p><i>If you de-activated your GPS at 46.6 kms before taking the side trip, please re-activate it <b>now</b> so it maintains an accurate count of your cumulative distances (<b>in black font in the left-hand column</b>).</i></p> <p><i>If you didn't de-activate your GPS, please add 13.9 to <b>each</b> cumulative distance <b>in black font</b> in the left-hand column of these track notes, as you continue your drive.</i></p>
<p>55.9 3.6</p>		<p>Fork in track – bear left towards Honeymoon Dam.</p>
<p>59.5 5.0</p>	 	<p><b>Wildflowers</b> <i>Honeymoon Dam is on your left at this point</i></p> <p>For approximately the next 6 kms, the nature drive winds through another dune zone. During August and September after good winter rains, the area is carpeted in wildflowers, offering a stunning spectacle of colour contrasting with the red sands of the dunes</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>Poached-egg Daisy <i>Portulaca oleracea</i></p> </div> <div style="text-align: center;">  <p>Sturt's Desert Pea <i>Swainsona Formosa</i></p> </div> <div style="text-align: center;">  <p>Broad-leaved Parakeelya <i>Calandrinia balonensis</i></p> </div> <div style="text-align: center;">  <p>Bluebells <i>Wahlenbergia gracilentia</i></p> </div> </div>

<p>64.5 1.4</p>	 	<p><b>Dunes viewing point</b></p> <p>You are now in another swale between two dunes, and on either side the vegetation is different to that which you saw between Pug Hill Hut and Boundary Dams.</p> <p>The trees you can see on the dunes are Mulga Wattle (<i>Acacia aneura</i>). The upwards-pointing 'leaves' are said to aid in directing water to the soil beside the trunk. The 'leaves' are actually flattened branches known as '<i>phylloides</i>', similar to leaves in appearance and function. The hard and durable Mulga timber was widely used for fence posts on Witchelina, and by Aboriginal people for making tools and hunting implements. The seeds are also an important food source for Aboriginal desert-dwellers, being roasted and ground to a paste*.</p> <p>Regenerating Mulga is an important management objective on Witchelina.</p> <p>* Notes adapted from <i>Field Guide to the Plants of Outback South Australia</i>: F Kutsche and B Lay 2003</p>
<p>65.9 1.9</p>		<p>Track joins, and runs along fence line for approx. 2 kms</p>
<p>67.8 4.4</p>	<p><i>Black Hill Tank was fed by water pumped through the pipeline by a windmill at Black Hill Dam, which you'll reach shortly. The pipeline is a remarkable feat of station engineering – and of stamina - on the part of the station hands laying it out. Most of the heavy lengths of steel pipe would have been transported on a truck, but some would've needed manhandling: not for the faint-hearted !</i></p>	<p><b>Black Hill Tank.</b></p> <p>Turn right across the fence line – track runs along a steel pipeline, with some deviations, for approx 4 kms.</p>
<p>72.2 0.2</p>	 	<p><b>Cane Grass Swamp and Black Hill Dam.</b></p> <p>When you reach the dam wall, the track veers left and skirts its base. After about 200 metres, turn sharp right through a gate, up on to the dam wall, sharp left, and follow the track around the dam.</p> <p>The canegrass (<i>Eragrostis australasica</i>) you can see around the dam can withstand long periods of dry conditions as well as long periods standing in water. It is frequently found in swampy areas throughout Witchelina. (cont'd next page).</p>



Canegrass can form dense stands which act as protection and habitat for the many bird species that frequent swamps and standing water. In the days of early settlement, canegrass was used to line the roofs of meat houses and as thatching on other buildings (*see image at left*)\*.

The wiry looking plant in this area is lignum (*Duma florulenta* – *see photo previous page*). Its thin, tangled branches often end in a sharp point. Its tangled growth offers a great habitat for wildlife. It is highly tolerant of drought and salinity, and has a very deep root system. Usually appearing leafless, it can produce new leaves and shoots in response to rainfall. Small cream flowers are produced along the stem. This plant is associated with wetland habitats, especially those in arid and semiarid regions subject to cycles of intermittent flooding and drying out.

\* Notes adapted from *Field Guide to the Plants of Outback South Australia*: F Kutsche and B Lay 2003

72.4  
3.3

Track crosses a drain (usually dry), then heads northwards.

75.7  
1.1



### Termination Hill viewpoint #3



From this point you have a fine view eastwards to the Termination Hill Range. The Hill itself is the tall peak towards the southern end of the Range.



The khaki-coloured plain you see beyond the low breakaway on which you're standing drains into Busheowie Creek, which in turn drains into the vast dune region to the south west.

On the other side of the track, looking NW, Mt Nor'West rises on the far horizon. This mountain and Termination Hill are in alignment along the same Nor'West Fault \*\*, that you encountered earlier on during your drive (*see image below*)



\*\* More geological information can be found in an **Introduction to Witchelina Geology**, in *Welcome to Witchelina*, a companion volume to these track notes, available from the Witchelina Homestead.

<p><b>76.8</b> <b>2.6</b></p>		<p>Turn left immediately before the gate, and continue along fence line leaving it on your right for approx 3.7 kms.</p> <p>You may notice periodic gaps in the fence line, each about 30 metres long. In good rainfall years the paddocks on either side of the fence are frequently grazed by large numbers of kangaroos and emus, and Nature Foundation aims to reduce the risk of injury to them when they collide with the fence.</p> <p>Removing the entire fence would be a preferable, though labour-intensive solution; but for the time being the gaps provide an avenue for large wildlife to roam over their habitat.</p>
<p><b>79.6</b> <b>0.9</b></p>		<p>Gate on right – keep straight ahead.</p>
<p><b>80.5</b> <b>4.3</b></p>		<p>Approaching <b>Catch Hole Dam</b>. Turn right through gate, then immediately left.</p> <p><b>The track can become indistinct in some places over the next 4 kms, and there is a low dune which, when soft, is recommended for crossing in 4WD.</b></p> <p><b>Proceed with caution, and carefully follow the signs !</b></p>
<p><b>84.8</b> <b>2.2</b></p>		<p>Track joins road leading to The Bend Hut. Turn right at this junction.</p>

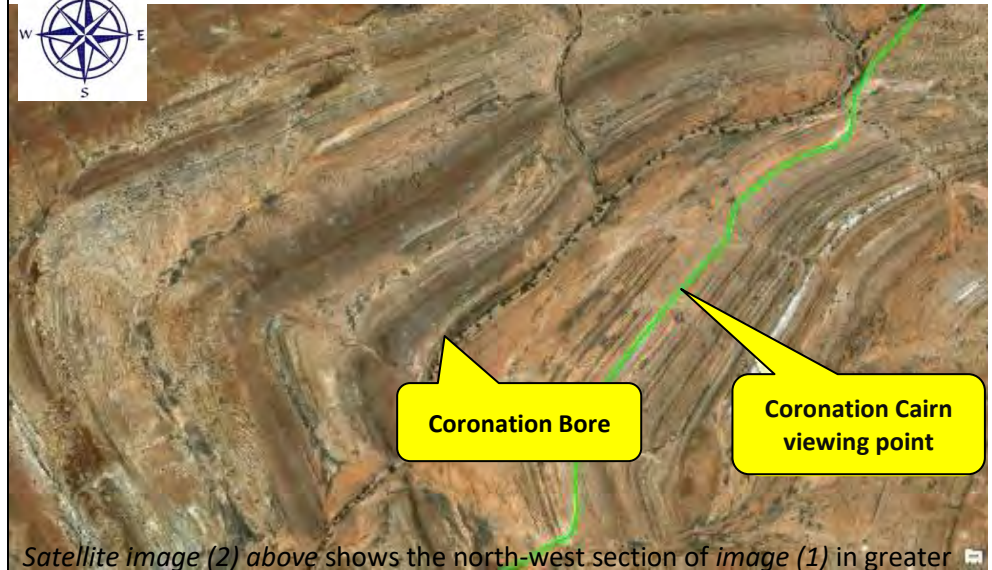
<p><b>87.0</b> <b>2.9</b></p>		<p>Road to Termination Dam enters from right. Keep straight ahead.</p> <p>As you drive this section, you may notice, in the middle distance, on a hilltop to your right a steel tower. This is part of a telecommunications system operated by Telstra, and relays telephone communications to another tower on Mt Scott, above Leigh Creek.</p>
<p><b>89.9</b> <b>4.3</b></p>	 <p><i>Satellite image (1)</i></p> 	<p><b>Coronation Arrowhead</b></p> <p>You are now in the area of Witchelina known as the Coronation Paddock, and near the Coronation Bore next to the creek on your left.</p> <p>To the right of the road (the green line in <i>satellite image (1)</i>, at left), you can see a section of the edge of one of the largest and most unusually-patterned structures in the area, known as the <i>Coronation Arrowhead</i>. It is so named because, when seen from above, the landscape shows a concentric pattern of fine-layered sediments tracing out a diamond or arrowhead shape 6 kms wide from east to west, and more than 15 kms long north to south. The shape is formed by a large synclinal* down-fold.</p> <p><i>Satellite image (1)</i> also shows the fine layering of the sediments turning round the north west corner of the Coronation Arrowhead Basin. The multicoloured stripes look like train tracks running across the countryside.</p> <p>In the ground-level photo at lower left you can see one of these stripes, with others stretching into the distance.</p> <p>In this area you may also notice occasional pure white layers (<i>see, for example, satellite image (2) on page 51 below, immediately above the 'Coronation Cairn viewing point' text box</i>). These layers are wholly magnesium-rich carbonate rocks called magnesites, which, among other uses, are important products used in blast furnaces and kilns. This particular deposit is too small to have any commercial value.</p> <p>*<b>Synclines</b> are downfolds where the layers are bent down into the earth, whilst <b>anticlines</b> are upfolds which have been folded upwards like arches.</p>



Cairn on rampart, to the right of the track



\*\* More geological information can be found in an **Introduction to Witchelina Geology**, in *Welcome to Witchelina*, a companion volume to these track notes, available from the Witchelina Homestead.




Satellite image (2) above shows the north-west section of image (1) in greater detail, and illustrates how the layers are dipping into the earth towards the south east.

This arrowhead structure is a natural geological basin where all of the layers dip inwards towards each other, meeting in a roughly pear-shaped area at the heart of the Arrowhead (see satellite image 1 on previous page). Intense faulting by the Nor'West Fault on the eastern edge of the structure is likely to have been the cause of its formation during the Delamerian mountain building event 500 million years ago\*\*.

From the road, you can approach the basin on foot across a scrubby plain, bordered by a rampart about 5 metres high. Look for the cairn (see photo at upper left).

The variable colours of the layers in the rocks that make up the arrowhead are related to their different chemical composition. Limy sediments turn into dolomites which are mostly grey, while higher iron and magnesium content gives the rock layers a brown or rusty colour (see photos at right, and lower left).



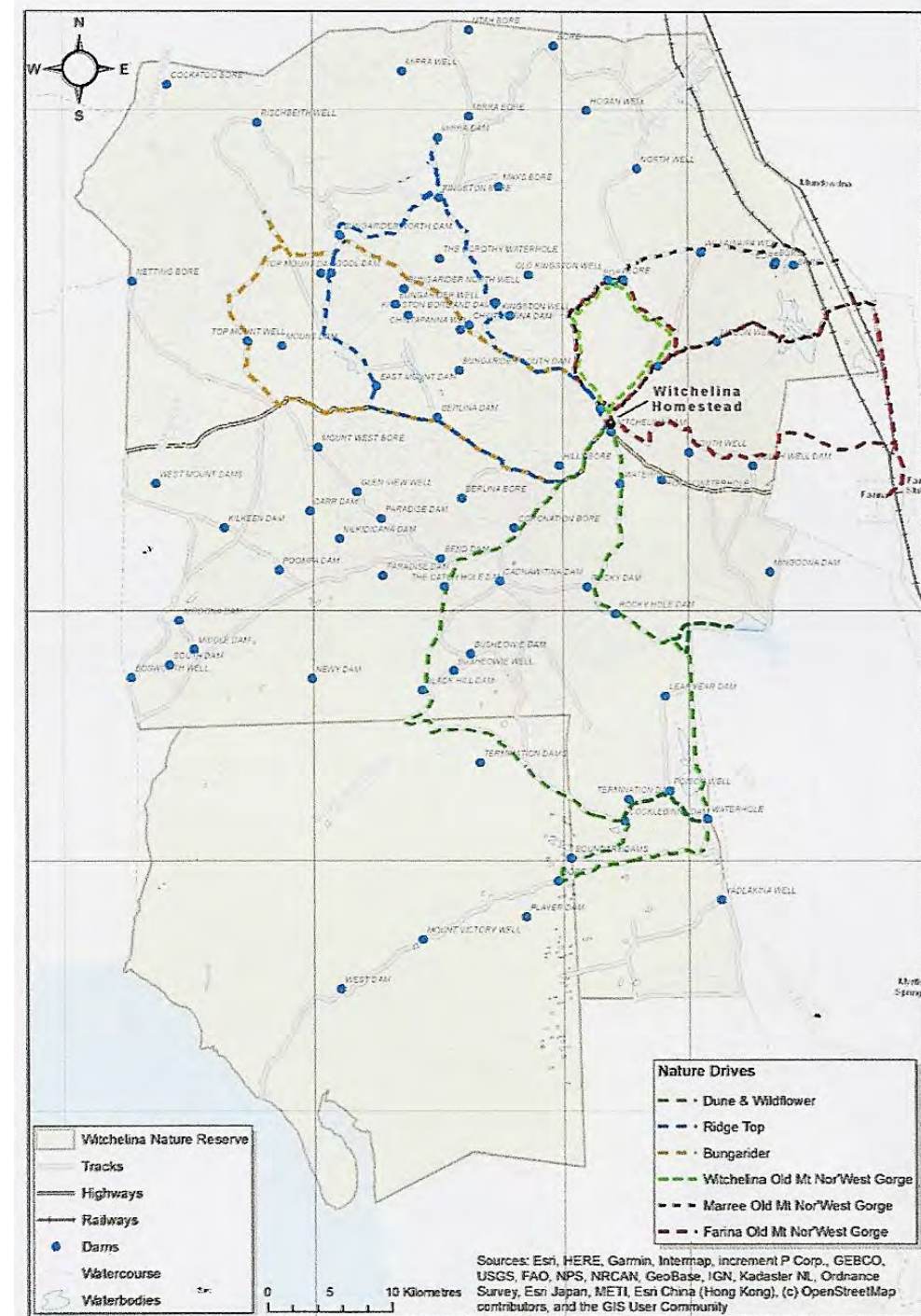
<p>94.2 6.7</p>		<p><b>End of Dunes and Wildflowers nature drive.</b></p> <p>Turn right at the windmill blade signpost, heading east.</p>
<p>101.9</p>		<p>Witchelina Homestead.</p>

**We hope you've enjoyed your drive !**

**Please return your key to the Reserve Manager, and collect your deposit.**

## Track notes are available for 6 Witchelina Nature Drives

- ❖ Ridge Top
- ❖ Bungarider
- ❖ Dunes & Wildflowers
- ❖ Witchelina – Old Mt Nor'West Gorge
- ❖ Marree - Old Mt Nor'West Gorge
- ❖ Farina - Old Mt Nor'West Gorge





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\* Organisation membership includes 10 copies of each Nature Matters newsletter and 3 copies of the annual report

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