Triassic granite ridge, resistant to erosion, to south of Mole River Road

NATURAL HERITAGE ROUTES AROUND MINGOOLA

WELCOME TO MINGOOLA, A PASTORAL BORDER REGION SITUATED ON THE WESTERN SLOPES AT THE BASE OF THE GREAT DIVIDING RANGE, HALFWAY BETWEEN TENTERFIELD, NSW AND TEXAS QLD.

Happy Travelling!

CHECK FOR ROAD CLOSURES, AND CURRENT CLOSURES WITHIN NATIONAL/STATE PARKS

TAKE CARE: SOME ROUTES INCLUDE GRAVEL ROADS AND GATES

TRAVELLING STOCK ROUTES (TSR)

You may enter on foot between sunrise and sunset
Enter only through unlocked gates

There are walking tracks in Torrington State Conservation Area and Sundown National Park

THINGS TO REMEMBER WHEN STOPPING

Don't park in front of gates or block tracks.
If you stop on the road make sure you have pulled off safely
Don't park on long grass (fire danger)
Leave gates open or closed as you find them
Exercise caution around stock.

Drive slowly to avoid collisions with wildlife!

Find US !
Facebook Mingoola Community

First Nations Peoples have lived in the Mingoola district for tens of thousands of years. Tenterfield Shire Council acknowledges the traditional custodians of this land and we pay our respects to Elders past, present and emerging.

The Council proudly protects and supports the cultural, built and natural heritage values of the Mingoola district.

Acknowledgments to Heritage NSW for the grant funding to celebrate the heritage of the Mingoola Area in this project; to Julia Harpham, Janet White, Deborah Wray Clarence Heritage for research, the preparation of interpretive signage and brochures. All images Janet White.

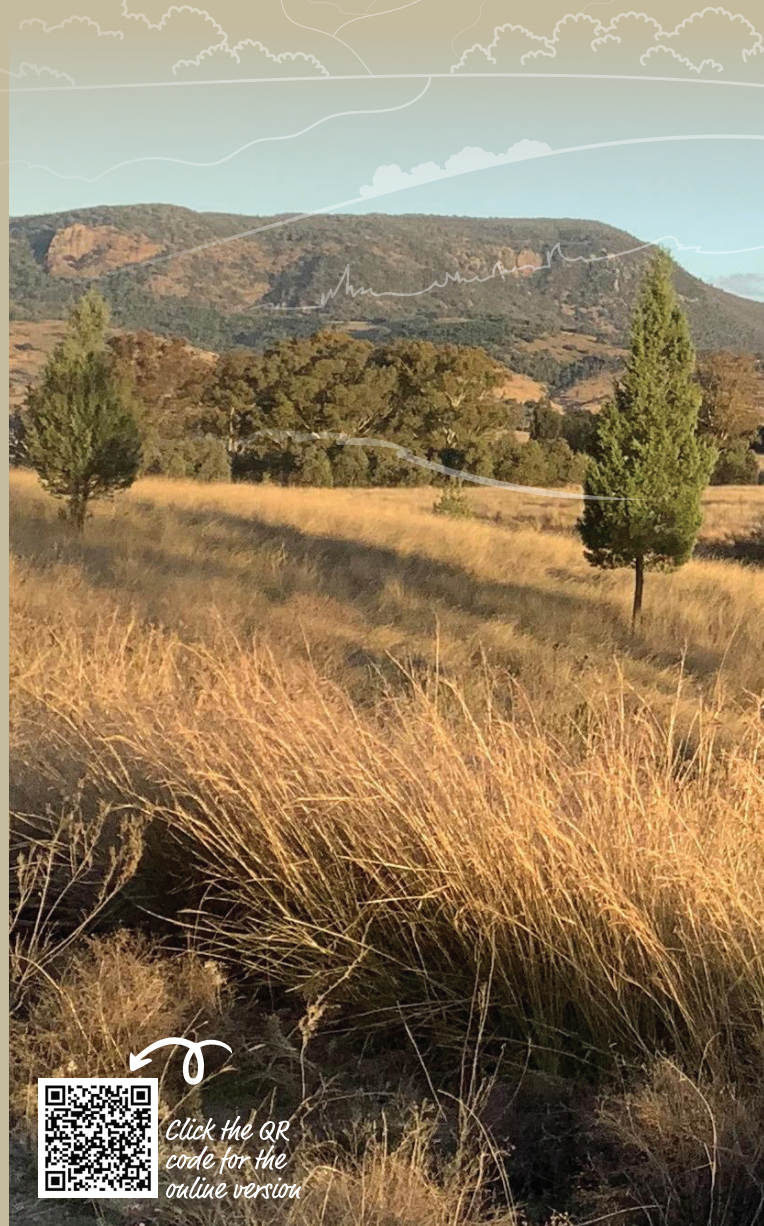
Cover: Rock of Gibraltar (*Permian ignimbrite*) from Mole River Road.

Design: Kerry Hardy **W:** baabaa.net

Proudly funded by the NSW Government in association with Tenterfield Shire Council.

MINGOOLA HERITAGE TRAIL

LANDSCAPE & GEOLOGY



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GEOLOGY

Much of the Mingoola region is underlain by ancient rocks of **CARBONIFEROUS** age, known as the **TEXAS** beds, laid down as deep marine sediments about 350 million years ago and **PERMIAN** age rocks, the **BONDONGA** beds of the Mole Valley, deposited in shallow seas 250-270 million years ago.

In this area, the colloquial term for these rocks is 'Traprock' due to misidentification by early settlers who thought it was basalt or traprock. Fossils of seashells and plants are occasionally found in the Bondonga beds.

The Texas beds can be seen in road cuttings on the Bruxner Highway, near the junction with Gibralter Road, and in the cutting above the dam wall at Glenlyon.

The Bondonga beds can be seen in the cuttings on the Bruxner highway near the junction with with Darthula Loop Road (about 4.8km east of Mingoola).

Carboniferous, Texas Beds (metamorphosed sediments) exposed on Bruxner Way, ur Gibralter Road

Carboniferous, Texas Beds exposed at Glenlyon Dam

Permian, Bondonga Beds, metamorphosed sediments, indurated and fractured, Bruxner Way

Looking west down Mole Valley at (right) Razorback (Carboniferous Texas Beds) and (centre) Ararat (Permian Boudouga Beds). The Texas beds are more resistant to erosion than the Boudouga Beds

Over many tens of millions of years, crustal movements pushed up great thicknesses of the **SEDIMENTARY** rocks forming mountains.

This mountain-building deformed the rocks, folding, heating and pressurising them and gradually changing their appearance and physical properties in a process known as **METAMORPHISM.**

The Texas beds are composed of several different sedimentary rock types. These include occurrences of chert, a siliceous rock which fractures conchoidally and was used by aboriginal people to make various tools, and small outcrops of limestone which are mined near Riverton and at the Pinnacle mine north of Pinnacle Road.

Repeated cycles of sediment deposition, mountain-building and erosion took place over a period of about one hundred million years. In the late Permian, there was **IGNEOUS** activity both above ground (producing volcanic or extrusive rocks) and below (producing plutonic or intrusive rocks). Volcanic eruptions of hot crystal-laden gases over a large area formed rocks known as ignimbrites. These volcanic rocks have largely been eroded away but they form the Rock of Gibraltar

Permian, Wallangarra Volcanics, south end of Woodside Road

(GIBRALTAR IGNIMBRITE) and cover extensive areas around the town of Tenterfield. (*The Gibraltar ignimbrite can be seen in the cutting at the saddle on Silent Grove Road; other* **PERMIAN VOLCANIC** *rocks can be seen on the Bruxner Highway near Tarban Loop Road.* **PERMIAN PLUTONIC** *granitoid rocks can be seen by the side of the Bruxner highway 3km west of Woodside Road*).

Southeast of Mingoola, in the Torrington area, is the Mole Tableland. This is the range of hills you see to the southeast of the Bruxner Highway between Reedy Creek and Beardy River. This plateau sits 200m above the surrounding countryside and was formed by emplacement of the **MOLE GRANITE** during the **TRIASSIC** period (c. 237-249mya) into overlying older metamorphosed rocks. This gigantic granite intrusion, known as a batholith, occupies about 800sq km and caused mineralisation over a large area. Ores are found both within the granite and in the surrounding rocks and over 150 small mineral deposits have been found. Metals and minerals found here include tin, arsenic, gold, silver, tungsten and topaz. The Mole River Arsenic Mine was in fact first worked for tin in 1889, with arsenic, (used as an herbicide for Prickly Pear cactus) mined from 1923-40. Other smaller Triassic granitic intrusions also occur in the area. (**TRIASSIC GRANITE**

Looking SE to Permian, Gibraltar Ignimbrite - Rock of Gibraltar from Mole River Road

rock can be seen at Ugly Corner Falls in Torrington State Conservation Area).

The youngest rocks (under 65 million years old!) in the region are **TERTIARY** basalts; small remnants of the once extensive flows remain (seen as reddish soils) just southwest of Rock of Gibraltar and west of the Beardy River. (When viewing the Rock of Gibraltar from Mole River Road these reddish soils can be seen on the slopes to the right of the rock).

The rocks of the Mingoola area have been subject to weathering processes over at least 230 million years. Processes include the physical effects of glaciation and the chemical effects of wet temperate climates. The soils that now overlie these weathered rocks are usually thin and low in fertility as minerals have been leached from the rocks. They are also poor at holding water and highly erodible. Consequently, they are not suitable to be worked for arable farming but with careful management are used to graze sheep and cattle.

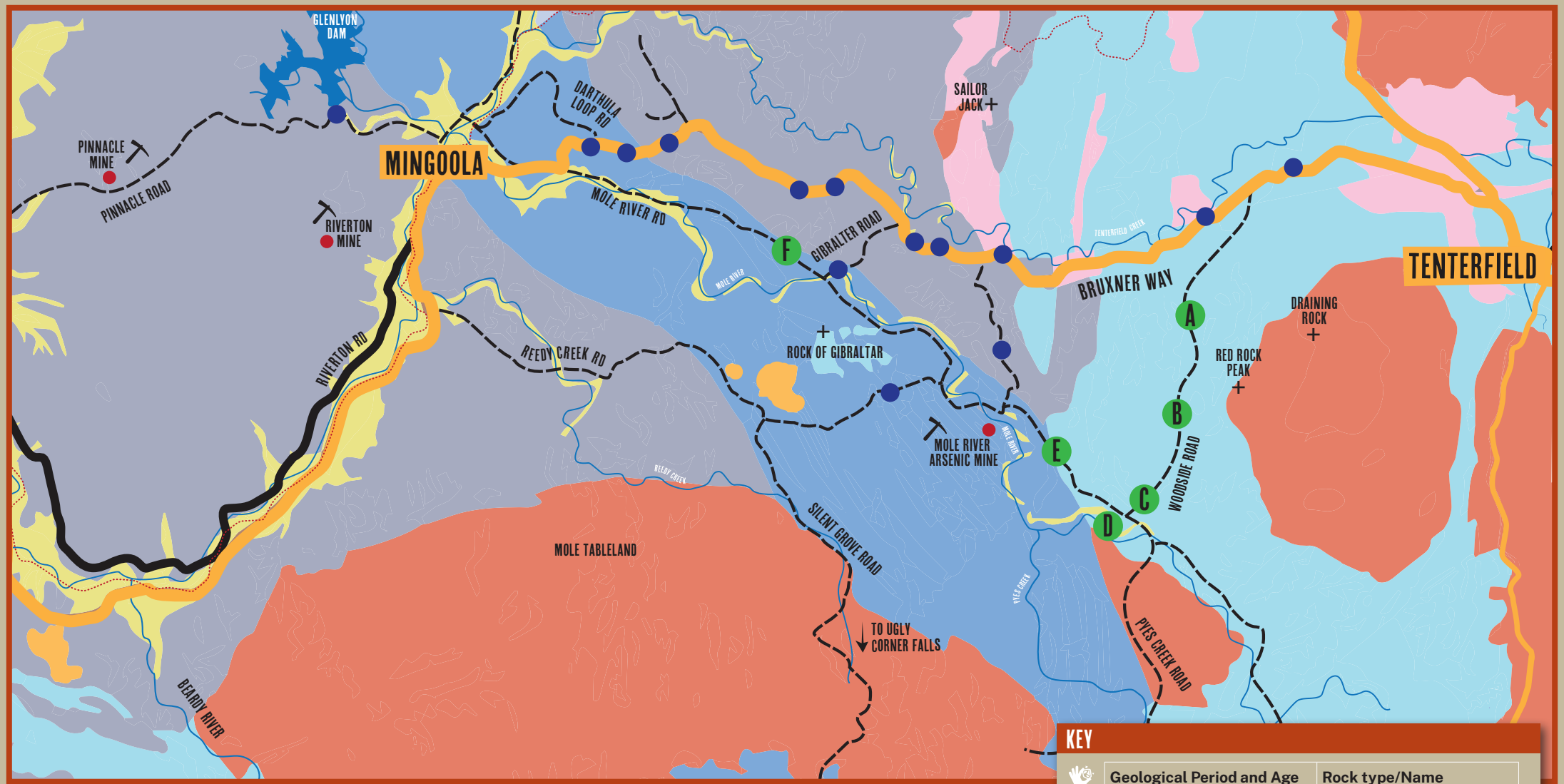
Adjacent to the rivers flood events form deep alluvial loams and on these soils lucerne, oats and (more recently) pecan trees are grown.

Permian, Wallangarra volcanics Donnybrook section of Roberts Range, seen from Woodside Road

Permian, Wallangarra Volcanics exposed on Bruxner Highway near Tarban Loop Road. Dense rock with large crystals in a glassy matrix

Triassic Mole Granite in Upper Reedy Creek

Triassic granite Red Rock Peak, looking NE from Woodside Road



NOTES

Sedimentary rocks form when particles (clay, sand, gravel) are deposited by rivers or in lakes or seas, accumulate in layers and ultimately become rock.

Igneous rocks form when magma cools and solidifies. If the magma is ejected from a volcano it forms Extrusive or Volcanic rocks, for example basalt or ignimbrite. If the magma solidifies below ground it forms Intrusive or Plutonic rocks, for example granite.

Metamorphism occurs when igneous or sedimentary rocks are subjected to heat and/or pressure which changes their physical nature and mineral composition. For example, metamorphosis transforms mudstone to shale and ultimately slate whilst a sandstone would crystallise into strong dense quartzite.

Late Permian granitoid exposed on Bruxner Highway west of Woodside Road

Permian, Gibraltar Ignimbrite exposed at saddle on Silent Grove Road

KEY

Geological Period and Age	Rock type/Name
Quaternary (recent) 1.8mya	Alluvium
Tertiary 65mya	Basalt
Triassic 250mya	Granite
Late Permian	Igneous, intrusive rocks
Late Permian 270mya	Igneous, extrusive rocks
Early Permian 300mya	Bondonga Beds
Carboniferous 350mya	Texas Beds

Rock exposure

View of geological feature

QUEENSLAND/NSW BORDER

MAIN ROAD

UNSEALED ROAD

MINOR ROAD