



## BRIEF BACKGROUNDS

# MINERVA HILLS

## SPRINGSURE

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The Minerva Hills are a group of sharp rocky peaks and plateaux just northwest of the town of Springsure in central Queensland. They are visible from a considerable distance across flat country to the north, while at Springsure itself the cliff-fringed plateau of Mount Zamia forms a spectacular backdrop to the town. This plateau is encompassed in the Minerva Hills National Park, where there is road access to summit lookouts, walking tracks and picnic areas.

The area is thought to have been one of the centres of eruption of extensive basalt lavas which cover much of the surrounding district. These were erupted between 29 and 26 million years ago (middle of the Tertiary period), probably as this part of the Australian crustal plate drifted northwards across a 'hot-spot' deep below in the Earth's mantle. (Other volcanoes developed later further south about 24 to 23 million years ago, as southeast Queensland drifted across the hotspot, to give the Bunya Mountains, the Main Range and the border ranges.)

The peaks of the northern Minerva Hills are formed by small intrusive bodies of trachyte or rhyolite composition, many of which are thought to be late-stage fillings occupying the vents of now-eroded volcanoes. The positive relief today results from their relative resistance to erosion, compared to the surrounding basalt lavas and older sandstones beneath, which they intrude.

Various types of intrusions are present. *Plugs* are thought to be the exhumed vent-fillings of the

eroded volcanoes; they are commonly roughly circular in plan, but some associated with multiple dyke swarms are more irregular. The largest and most spectacular peak, St Peter, is a plug about a kilometre long and several hundred metres wide with sheer flanks rising to a flat summit nearly 330m high. Some of the smaller plugs are only about a hundred metres wide, such as the needle southeast of St Peter.

*Dykes* form rocky ridges and vary greatly in length and width; they most probably represent fillings of fractures emanating from eroded volcanic centres now visible as plugs; in places a radial arrangement is noticeable. Several dykes, radiating from a plug about 2km south of Red Hill are over 1km long and only 3m wide, but most are shorter and wider.

*Domes* are broader in plan and have more sloping sides than the plugs. They were most probably extruded as masses of viscous lava over vents, with some lateral displacement from the vent. They represent an intermediate situation between a vent infilling and a true lava flow. Red Hill is a dome with a marked depression in the centre which was probably caused by some withdrawal of lava from the vent. Other domes are present northeast of St Peter.

The cliff-fringed plateau of Mount Zamia near Springsure town is an eroded remnant of relatively flat-lying, extensive flows of trachyte, which are thought to have been erupted from vents to the north in the St Peter area towards the

end of the volcanic episode. (In this type of volcano a switch from basalt to trachyte or rhyolite eruption towards the end of its life is common). The trachytes rest on basalt lavas, which can be seen in mesas to the west, particularly on Mount Boorambool. Some of the basalts are inter-layered with beds of tuff and agglomerate, resulting from more explosive eruptions.

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