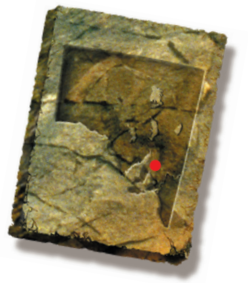
Mintaro Slate and Flagstone — more than 150 years of production



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Introduction

Mintaro Slate is produced from what is believed to be the oldest continuously operating quarry in Australia. Amongst its many uses and qualities, the perfectly flat surface of Mintaro Slate makes it ideal for billiard tables. Walter Lindrum, the Australian billiard player who was world champion from 1932 to 1950, practiced at his Melbourne home on a table made from a single slab from Mintaro. In recent times, Lleyton Hewitt, Australia's top male tennis player, has installed single-slab three-quarter-sized tables also made from Mintaro Slate in his Adelaide house and Melbourne apartment.

Location and history

The open-cut slate quarry is 1.5 km west of the township of Mintaro on the slopes of a low range of hills in the District Council of Clare and Gilbert Valleys in South Australia's Mid North.

The town of Mintaro, 126 km by road from Adelaide, began in 1849 as a private subdivision developed by Joseph Gilbert, a pioneer pastoralist. The town was a watering stop for bullock wagons carting copper from Burra, ~30 km to the north, to Port Wakefield and returning with coal. An estimated 1200 bullock drivers were involved. This route is now called the Gulf Road Copper Trail.

In the early 1850s, Mintaro farmer Peter Brady discovered outcrops of slate in a creek bed on his property and quarried slabs for his homestead. In 1856, Brady leased the quarry, now designated No. 1 quarry, to Thompson Priest, a local stone cutter and sign writer, who operated until he died in 1888.

In 1862, Mintaro Slate was exhibited at the London International Exhibition and, because of its exceptional flatness, large sheet size and suitability for many purposes, *'received the very highest awards, being classed as superior to any slate previously met with, the natural cleavage being equal to planed stone'*.

By then, Mintaro Slate was used extensively in the region for fermenting tanks at Barossa Valley and Clare wineries, and acid leaching tanks by Kapunda Copper Co. Use spread throughout Australia for private homes and the grandest of public buildings including paving in Adelaide and Melbourne. In 1883, the operating company was incorporated as a Limited Company, with Sir Samuel Way (Chief Justice of South Australia) as one of the directors.

In 1893, a local syndicate formed by F.H. Weston gained control, and in 1911 established The Mintaro Slate and Flagstone Company.

When inspected by L. Keith Ward (Government Geologist) in 1914, three quarries had been opened and 25 workmen were employed. Steam and oil power had replaced manual methods for quarrying and dressing. Production of quality slate continued with fluctuations in demand until 1958 when no. 4 quarry was opened.

In 1978, the company was acquired by a group of entrepreneurs with no interest in the slate. They wanted a company that was listed on the Australian Stock Exchange for investment purposes. Fortunately, Steve D. Tillett was able to purchase the Mintaro operation from the investors and re-establish the company as a quarrier and supplier of slate.

Mineral tenure

Private Mine 124 was proclaimed in the name of S.D. Tillett on 14 June 1973 over 118.4 ha of sections 178 and 307, hundred Clare. The current operator is Mintaro Slate Quarries Pty Ltd, a wholly owned subsidiary of Tillett Natural Stone Industries.

Geology

Dimension stone slate and flagstone quarried at Mintaro is known geologically as the Mintaro Shale, a Neoproterozoic, fine-grained sedimentary unit near the top of the Burra Group, deposited on the sea floor under low-energy conditions in the Adelaide Geosyncline ~800 million years ago. At the type section near Clare, Mintaro Shale is 1000 m thick compared to 800 m at Mintaro (Preiss, 1987). The Mintaro quarries are located in a zone of broad, open folding with bedding at the present mine site dipping at 17–18º to the west.

Mintaro Shale is grey, evenly bedded, finely laminated metasiltstone or slate with minor dolomitic siltstone. Grain size varies from 0.03 to 0.3 mm. Although the proportions of minerals vary from layer to layer, overall mineral composition is:

Mintaro Slate sawing yard, 1880. Hand-powered steel saws were fed with water and abrasive sand to cut the slabs to size and shape. The sloping quarry floor is at rear. (Photo 32702)

	%
quartz	20–25
plagioclase	20–25
dolomite	15–20
muscovite–sericite	15–20
biotite	15–20
calcite	1–3

At Mintaro, the natural jointing and fracturing are widely spaced and facilitate the mining of large slabs. Remarkably uniform bedding allows the slate to split cleanly.

Mining

The present working site is designated No. 5A Extended. A vertical diamond saw cuts a groove across the gently dipping quarry floor to 550 mm depth on lines spaced 1.6–2.0 m apart. Saw blades are 700 or 1200 mm in diameter. Slabs 3.0–3.5 m long and 200–300 mm thick are freed manually by plug and feather on natural splitting bedding planes.

Loose slabs (locally termed 'bankers') are lifted out of the quarry by a Favco stiff-leg crane with a capacity of 5 t and transferred to banker stock (rough slab stockpile) either by large forklift or Hitachi 50 t excavator. A crawler Volvo 30 t excavator and a front-end loader keep the quarry floor clear of debris and assist with lifting the quarried slabs.

Slabs in the banker stock are seasoned three months to a full summer to enable the natural splitting planes to develop. Each slab is catalogued to record its former location in the quarry. The bankers are now stored horizontally with spacer blocks in between rather than vertically as was the previous practice. The bottom slab rests on reject pieces of slate and there are spacers between each slab. This reduces moisture penetration, eliminates the rising damp experienced with the former practice, and improves exposure to sun and wind.

On-site processing

Split slabs are transported to the processing shed for cutting to size with a Monalame gang saw, three multi-blade saws, and a single-blade saw which is used mainly for width. A polishing machine is used when thickness has to be exact. Hand grinders produce special features such as bull nose for steps. The finished articles are palletised and shrink-wrapped.

Workforce

There are 16 on-site staff comprising a manager, office assistant, five miners, three splitters, five processors and one maintenance person.

Volvo excavator and front-end loader cleaning the Mintaro quarry floor, which dips gently to the right. A stiff-leg crane on top of the face is about to lift slab to right of excavator. September 2005. (Photo 401879)

Slab of Mintaro Slate from the quarry floor being lowered for pickup by forklift. (Photo 401880)

Production

From 1995 to the end of 2004, annual output has varied from 654 t in 1997 to 1412 t in 2002, with an average of 930 t.

Markets include all states of Australia, Japan, Hong Kong and New Zealand. Products include billiard tabletops, kitchen and laboratory bench tops, fireplace hearths, doorsteps, tiles, verandah edging, paving flagstones, headstones, and random garden and driveway paving.

Earlier uses were cricket pitches, troughs, tanks, vats, urinals, animal feed and water troughs, switchboards and blackboards.

In-ground resources are sufficient to maintain production at the present rate of extraction for many years.

Banker stock at Mintaro, September 2005. (Photo 401881)

Mintaro Slate used as pavement along King William Street outside the Adelaide Town Hall. (Photo 401878)

Buildings of note

A stroll around Adelaide will show that virtually any building of prominence incorporates Mintaro Slate, including Parliament House, St Francis Xavier Cathedral, South Australian Museum, Supreme Court, St Peters Cathedral, GPO, Adelaide Town Hall and the Mortlock Library.

More recent applications for steps, flooring and paving have been:

Adelaide: Art Gallery of South Australia; King William Street footpath

Darwin: Casuarina Library

HobartSupreme Court

Melbourne: Federated Insurance Building, St Kilda Road

Perth: Exchange Plaza

Sydney: Intercontinental Hotel; Australian Museum

Reference

Preiss, W.V. (Compiler), 1987. The Adelaide Geosyncline: late Proterozoic stratigraphy, sedimentation, palaeontology and tectonics. *South Australia. Geological Survey. Bulletin,* 53.

Further information

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Willunga Slate Museum opens

A new slate museum was recently opened in Willunga, 40 km south of Adelaide. The old police stables have been converted by National Trust volunteers and now house fascinating displays that tell the story of how *Willunga Slate,* discovered in 1840, became a boom export and a defining building material.

During the 1850s–1900s, Willunga was the roofing slate capital of Australia with five quarries operating. Willunga Slate has been used extensively throughout the town for drains, bridges, tombstones, seats, pavement, roofing and flooring, and when sealed together made excellent rainwater tanks. Slate was also used for buildings all over Australia including a Perth cathedral, Melbourne's GPO and the Adelaide Town Hall.

Many Cornishmen were employed for their mining and quarrying talents. The cutting, splitting, chiselling and shaping were all done by hand and there is a marvellous collection of tools on display.

Two of the old quarries (Bangor and Martin Bastian) are still producing slate for paving, landscaping and roofing tiles. Although slate quarrying began at Willunga prior to Mintaro, mining here has not been continuous which is why Mintaro is regarded as one of the oldest operating mines in Australia.

For further information visit the Willunga Slate Museum at 61 High Street, Willunga (ph. 08 8556 2195, email fayelush@ozemail.com.au). Opening times are 1–5 pm on weekends and public holidays, and 11–4 pm on Tuesdays.

(Photo 401927)