BURRA MINE





THE MONSTER MINE

Burra Mine was world famous for the richness of its copper ores and, for the first ten years of its life, was the largest mine in Australia. Wealth from the mine made fortunes for many of its original shareholders and its discovery marked the beginning of a period of unprecedented growth and prosperity for South Australia.

The story of the mine began in 1845 with the chance discovery of copper ore by a shepherd near Burra Creek. Soon after, a similar find was made by another shepherd further to the north. News of the discovery reached Adelaide, a town already infected with mining mania because of the success of the recently opened Kapunda Mine. The struggle for possession of this new copper bearing land quickly followed.

The interested parties resolved into two groups: the 'Nobs' and the 'Snobs'. The Nobs were capitalists and included the owners of the Kapunda Mine. The Snobs were shopkeepers and merchants from Rundle and Hindley Streets in Adelaide, who formed the SA Mining Association.

The government insisted that mineral rights to the two deposits could only be obtained by purchasing the ore-bearing ground and land between. A special survey was carried out in 1845 and the rival groups jointly bought the land, now known as 'The Monster Mine', and agreed to divide it equally, with each half containing one of the copper deposits.

Lots were drawn and the Nobs drew the southern half, naming their mine the Princess Royal; unfortunately the amount of mineable ore proved small and the mine closed in 1851. The northern half, drawn by the Snobs, became the Burra Mine; this developed rapidly into one of the great copper mines of the world. By 1850, Burra was the largest metalliferous mine in Australia, and produced 5 per cent of the world's copper up to 1860. More than 1000 men and boys were employed during this period, most of them Cornish.

Production declined after 1860 and eventually underground mining ceased in 1867, after reaching a depth of 183 metres. From 1870 until closure in 1877 it was worked by the revolutionary open-cut method. This was one of the earliest attempts to open cut low-grade metalliferous ore in Australia, but proved unprofitable.

Between 1845 and 1877, the mine produced about 50 000 tonnes of copper metal valued at about £5 million (approximate value \$150 million in 1994).

The mine was reworked between 1971 and 1981 by a modern open cut to a depth of 100 metres. Ore containing about 24 000 tonnes of copper metal was produced during this period. The ore was converted to black copper oxide in a nearby plant.



Thomas Roberts, first captain of the Burra Mine in 1845. Roberts was replaced by Henry Roach from Cornwall who managed the mining operations from 1846 until his retirement in 1867.

GEOLOGY

The Burra orebody formed in a zone of heavily fractured dolomite rock confined between two faults. The trace of one of these, Kingston Fault, is visible in the southern face of the open cut as a distinct, steeply dipping, white band. This fault, up to 10 metres wide, marks the western limit of copper mineralisation.

The ore zone was up to 70 metres wide and contained brightly coloured oxidised copper minerals, chiefly malachite (green) and azurite (blue). These occurred as veins, blebs and nodules in the dolomite host rocks. The rich oxidised ores were formed from a much poorer body of copper sulphide mineralisation over a period of millions of years, by a process know as secondary enrichment. The primary copper sulphide minerals were possibly deposited 300 to 400 million years ago near the end of a period of volcanic activity in this area.

The oxide ores originally cropped out at the surface but have now been mined to a depth of 100 metres. Low-grade copper mineralisation continues beneath the pit but cannot be mined profitably.



Longitudinal section through the Burra Mine workings.

COVER: Burra Mine, 1858. Taken from a panorama drawn by William Bentley, a lad whose father worked at the mine. This view shows Peacocks Enginehouse (centre) and Schneiders Enginehouse (right), with the mine offices and captains' residences in the background. Courtesy National Trust.

THE SMELTS

Burra Mine began operations at a time when Swansea in Wales smelted much of the world's copper and led the world in smelting technology.

Copper prices were high and the Burra Mine was so rich that the company earned huge profits from the sale of its ore to the Swansea smelters. However, the potential for even greater profit existed if Burra ore could be smelted close to the mine.

Henry Ayers, secretary of the SA Mining Association, was not prepared to commit company funds to the construction of a smelter. He did manage, however, to convince an English industrialist, H.W. Schneider, to form the Patent Copper Company specifically to smelt Burra ore at the mine.

In 1848, 30 skilled Welsh smeltermen left Swansea with all the equipment needed for a smelting works. Within six months of reaching Burra the first furnace was fired; when completed in 1849, the Burra smelting house was the largest building in South Australia. A second smelting house was completed in 1854. Smelting at Burra ceased in 1868 although most of the ore was smelted at Port Adelaide after 1861.



S.T Gill (1818-1880). Burra Burra Mine from the rear of the P.C.C. smelting works (detail), 1849. Collection: The Art Gallery of South Australia, Adelaide.

MINES AND ENERGY - SOUTH AUSTRALIA 191 GREENHILL ROAD, PARKSIDE 5063

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BURRA MINE HISTORIC SITE





A panoramic view of the Burra Mine c.1867

At left are the large waterwheel, which powered the saw mill and crusher, and Morphetts Enginehouse and Windinghouse. The water pumped from the mine ran along the overhead launder to drive the waterwheel. In the left foreground are shingle-roofed ore dressing sheds; in the centre is Peacocks Enginehouse, which hauled from several shafts, and at right are the mine offices and captains' cottages. Courtesy Mortlock Library.

Crusher and ore floors, 1858, by William Bentley.

Ore was mined by the Cornish tribute method whereby groups of miners worked separate areas underground by contract. The ore was hauled to the surface and crushed in the water-powered crusher house (left). Crushed ore was concentrated in long sheds (centre) by hand-powered jigs and placed in separate flattopped piles (front). At the end of the contract period, individual piles were sampled and weighed to determine their copper content. Each tribute party was then paid a percentage of the value of the ore. Courtesy National Trust.

