

Cobar's mining history

Mineral Resources

Of the major mining centres in the Cobar region, Cobar, Canbelego, Nymagee, Shuttleton and Mount Hope all have important deposits hosted in Early Devonian rocks belonging to the Cobar Supergroup.

These include leading base metal mines (Elura, CSA, Great Cobar, Chesney), as well as the State's largest (New Occidental) and second largest (Mt Boppy) gold producers. Other centres, such as Girilambone, have their deposits hosted in older basement rocks.

With the exception of Elura, all mining centres became sites for prospecting and mining following the initial collection of copper-stained samples at a native waterhole near Cobar by a party of travellers. Many deposits occur at topographic rises, assisting early discovery.

In a small minority of cases there are clear relationships with granitic intrusions, principally for late found minor prospects to the north of Cobar.

Copper was discovered at Cobar in 1869. Extraction commenced at the site of the Great Cobar mine and the first load of ore was despatched via Louth in 1871. Since then many other deposits and prospects have been found. Mining has produced major amounts of copper, lead, zinc, silver and gold; plus minor quantities of by-products such as cadmium and antimony. More recent developments include the opening of the new, deep CSA mine in 1965, the discovery of Elura in 1973, and the commissioning of The Peak. Discoveries are ongoing (e.g., McKinnon's Tank, Stones Tank).

There are three important mining belts in the Cobar area, the 'Cobar belt', 'Canbelego belt' and 'Girilambone belt'. The area's current two major mines, Elura and CSA, are both within the Cobar belt.

The Cobar belt, passing through Cobar town area, is the most important of the three major belts. It is believed to contain the largest Phanerozoic

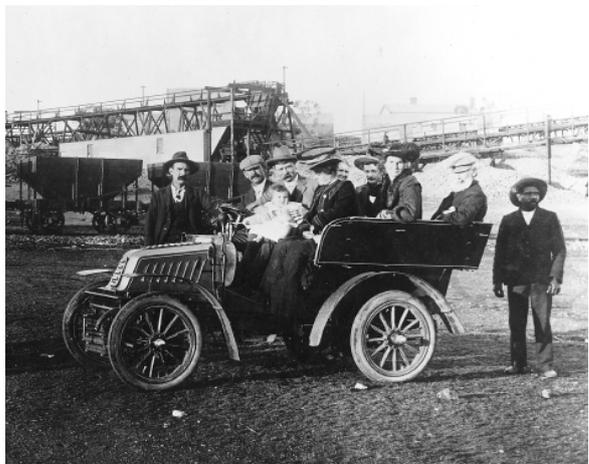
concentration of base metals in New South Wales, and one of the largest in Australia.

Cobar is a major NSW metalliferous centre, ranking second only to Broken Hill in renown and continuing importance. It is a constant major exploration target zone.

Major deposits are found along the Cobar belt for some 60km from Elura Mine in the north to the Queen Bee Mine in the south. Historical and indicated ore reserves of this belt amount to more than 431 000t copper, 1 600 300t lead, 2 500 000t zinc, 4 050t silver and 56t gold.

Larger total metal figures result if non economic disseminated metal occurrences are estimated and included.

According to its estimated total metal content, the belt contains 5.3Mt base metals, 5 000t silver and 90t gold. The estimated total content of 5.3Mt base metals might comprise 1.1Mt copper, 1.6Mt lead and 2.6Mt zinc, but this can only be a rough determination. The probable gold accompaniment to these metals would be 70t. The metals are hosted in an estimated 85Mt or more of mineralised rock.



Motoring at the Cobar Chesney Gold and Copper Mine, about 1910

The economic dependency and sensitivity of mining at Cobar is fundamental to any complete

appreciation of the deposits. The Cobar mines have long required the strictest economy in management, with the margin never very great between loss and profit since the general exhaustion of the secondary enrichment zone ores (in the 1880s in most mines, later for CSA and Elura).

The earliest prospecting activity in the area is poorly documented, but was probably in the Cobar belt in the 1860s. Settlement was being extended along the Barwon River in the 1840s, while by the 1850s the Darling River frontages were also occupied, and there was speculation as to what the ranges back from the river might hold.

The first mineral exploration in the region was to the north of Cobar, and was by prospecting parties financed by Bourke businessmen, prior to the discovery of copper and the establishment of Cobar town. Uneconomical gold traces were early discovered near Gongolgon and there is also noted to have been an early gold search in the Billagoe ranges, probably in 1866.

However, the entire hinterland between the Barwon and the Darling saw little permanent settlement prior to 1870s, so that prospectors were at that time unable to easily traverse it. They may not have ventured as far south as Cobar and the earliest results from the Billagoe ranges are uncertain.

Commencing about 1869, a rapid spread of settlement began, which was accompanied by well, bore and tank sinking. From that point the record is clearer, and it was in that phase of activity that the first signs of mineralisation were noted at Cobar and Girilambone. Persons engaged in the development of watering places travelled widely, and were the first to happen on copper staining at both Cobar and Girilambone. Copper staining at Cobar (Great Cobar site) attracted the attention of two travellers in 1869. One of the same men, Thomas Hartman, from his experience at Cobar, later recognised the outcrop of the Girilambone copper deposit, in 1875.

At Cobar, both copper (1869-1870) and gold (1871) were discovered in close succession, although the development of gold extraction did not commence till well after copper recovery was underway. The lack of any rich residual or alluvial concentrations of coarse gold at Cobar explains this temporary oversight.

Following the establishment of the Great Cobar mine there is a continuous record of exploration and mining within the area, although there have been two production hiatuses as described below.

Export of copper ore commenced from Cobar in 1871, and by the early 1880s the local metalliferous industry was providing work for around 500 men. Cobar's population reached 3 000

in the 1880s. The precious metal content of the mineralisation at Cobar was at first not fully appreciated, even though gold had been detected near the town as early as 1871.

The Chesney was the first successful gold mine at Cobar and other larger gold deposits were developed shortly after it. An 1880s silver boom affected the Cobar region as elsewhere, following the discovery of silver at Broken Hill (1883), Zeehan, and other places in Eastern Australia. The boom peaked about 1886-1888. It probably helped stimulate the Great Cobar amalgamation, and lead to further widespread prospecting for precious metals. Some important discoveries resulted. The Billagoe field, largely speculative, was promoted at that time. That field did not prosper, however, until the subsequent discovery of gold at Mt Drysdale.

Other early mines commenced production following the Great Cobar, at the following times: Girilambone 1881, Chesney 1887, Occidental (later New Occidental) 1889, Cobar Gold Mine (later New Cobar) 1890, Mt Drysdale 1893, Mt Pleasant 1895, Young Australian 1896, the Peak (Blue Lode) 1896, Mt Boppy 1898, Queen Bee 1902, CSA 1905, Tinto 1906, Gladstone 1908. At some of the same sites there had been earlier less successful prospecting activity, and the CSA in particular had been prospected for many years prior to any significant production.

Cobar ("Copper City") has been a major producer of copper, gold, zinc, lead and silver. It was first renowned as a copper-mining centre, and it is still most widely known in that connection. Cobar was not among the first Australian copper mines, but its discovery did play a significant role in revitalising the copper industry of the time.

Copper mining began in Australia in the 1840s, when copper was discovered in NSW at Copper Hill near Molong (1844-1845), and at other sites in the Bathurst area.

Larger copper mining centres were first established in South Australia, as at Kapunda from 1842 and Burra Burra from 1845, and the Moonta and Wallaroo mines in the 1860s.

The early copper industry centres were somewhat in decline by the time Cobar was discovered, although many smaller discoveries maintained overall production levels. The discovery of copper at Cobar, at the Great Cobar deposit, helped give renewed impetus to Australian copper mining, and to metalliferous mining in general, with numerous other important discoveries following throughout the 1870s and 1880s.

The operations at Great Cobar reached a very impressive peak. For a time Great Cobar was one of the main industrial undertakings in the State, and the largest copper mining venture in Australia.

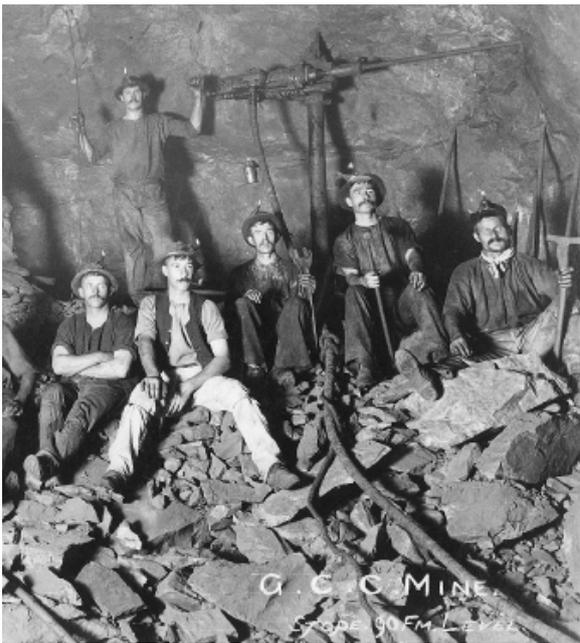
Activity along the Cobar belt has tended to be typical of the pattern of mining and exploration throughout the region. At times the developments along the Cobar belt have directly influenced exploration and mining elsewhere in the area.

A high level of activity occurred in the first decade of the present century.

The years 1906-1907 were ones of peak exploration activity in terms of tenement grant numbers. This followed discovery of rich ore at CSA mine in 1905; and in 1906 several important developments including the recapitalisation of the Great Cobar Mine in England, the re-vitalisation of the Girilambone copper mine, and establishment of the Budgeroy copper mine.

The mining boom and great surge in prospecting at that time soon came to a halt upon the fall of copper prices in 1908.

The 1920s-1950s included some particularly difficult and lean times for mining, but also a strong revival of gold demand during the 1930s general economic depression. Quiet times followed between 1952 and 1965, when none of the large Cobar mines operated.



GCC Mine, 90 fathom level, Cobar

The mining history of Cobar can accordingly be divided into three productive periods, separated by two marked hiatuses in production:

Great Cobar period, 1869-1921

(Leading mine was Great Cobar and numerous others were in production)

New Occidental period, 1935-1952

(Leading mines were New Occidental, New Cobar and Chesney)

Current period (unnamed), 1962-present

(Leading mines are CSA, Elura and The Peak, with the Chesney on hold, the Girilambone re-opened, and other old mines uneconomic, but not exhausted)

The early operations of the Great Cobar period were hampered by water shortages and high freight costs. Initially, ores were taken westward by bullock teams to the Darling River, and thence by riverboat to South Australia.

Subsequent transport by bullock and horse team was eastwards to the rail at Nyngan. Smelters were later erected at the Great Cobar mine to treat the ore from that mine, and subsequently also ores from the New Cobar, Chesney and Peak mines. Various smelting difficulties were experienced. For a time, matte (30-35% copper) was sent to the Cobar Syndicate's reverberatory furnaces at Lithgow. In group-smelting activity the basic ore of Great Cobar acted as flux to the more acid, siliceous ores from the other mines. The blister copper later produced was likewise railed to the Company's electrolytic refining works at Lithgow. Customs ore was treated from the Budgeroy, Budgerigar North, Gladstone, Young Australian, Tharsis, Tinto and CSA mines. Smelting was also carried out elsewhere in the region: at Nymagee, Mount Hope, Canbelego, Girilambone and Tottenham, and later at CSA.

Mines were able to initially exploit high-grade secondary ores. As the zone of primary sulphides was reached, the recoverable grades dropped markedly, often to 1-3% copper. Grades worked at Great Cobar declined from early rich hand-picked ore (9-11% copper) to 2.2% copper.

The leached ores of the New Cobar and Chesney mines, from which the gold was at first easily recovered, passed into complex copper-gold sulphide-rich ores at depth.

The 1880s were relative boom years at Cobar, which ranked as the Colony's richest and most promising metalliferous field prior to the discovery of Broken Hill. The emphasis remained on copper, but interest also grew in the gold content of the Cobar lodes. The considerable gold content of Cobar copper was known, and in 1882 coarse specimen gold was encountered at Great Cobar.

The mining industry was particularly strong in 1882-1884, mainly for copper, but also invigorated

with local gold mining interest. Precious metal interest at first centred on Billagoe, but the strongly auriferous nature of the New Cobar - New Occidental line was realised from 1887 onwards. Workable gold lodes had been proved by 1887, as at the Chesney where gold extraction first commenced close to Cobar.

By the close of the 1880s, the available secondary ore grades at Cobar had declined well below the then desirable average, freight costs were high, and timber for firewood or charcoal was being hauled great distances. For underground use, local pine timber was useful as bulkheads and general stope support if laid in pigsty fashion, but owing to its brittleness it was unsuitable for sets. Box timber (eucalypt) was brought for the latter purpose from as far away as the Dubbo area.

Early stoping methods required large amounts of timber to appropriately confine the backfill as the stopes were being raised. Timber supplies close to Cobar were earlier exhausted. Owing to the long campaign with reverberatory furnaces at Cobar, consuming about 70 000 tons of firewood per annum, the country became devastated of suitable wood for a radius of many miles. Starting in 1883, the Great Cobar Company built light railway lines for wood gathering, culminating in six locomotives hauling wood along lines extending 16 miles east and 20 miles south. With a slump in copper price the Great Cobar Company was forced to close in 1889.

The renowned, but largely speculative, Mount Billagoe silver and gold developments collapsed in 1891. The 1890s saw a general recession following overdevelopment in mining and land stocking in the boom years of the 1880s. The pattern was a widespread one spanning the financial, mining and pastoral industries. As evidence of overdevelopment, sheep had been increased in the Western Division from 5 million to 14 million during an 1880s general boom in both mining and land development. The clearing and overstocking lead to large dust storms, rabbit plagues and permanent damage to pastures. Rabbit numbers reached millions after 1890, and these various degradation processes culminated in the persistent "Great Drought" (1895-1903). This is the most severe Australian drought recorded. Stock numbers were halved. Cobar was subject to severe dust storms. During the worst of the Great Drought, water was brought for use in Cobar from the artesian bore at Warren.

Despite the prevailing condition of recession and drought in the 1890s, Cobar mining did manage to make progress. The decisive factor favouring Cobar at the time was the arrival of the vital railway connection. It was foreseen that this connection would allow relatively cheap import of coke and consequent thereon a radical change in mineral

processing on the field to blast furnaces or other superior technology. Trials to replace wood as furnace fuel were made as early as 1889 and proved encouraging.

The overseas market for Great Cobar mine copper collapsed in 1889. The mine suspended operations and further development awaited the arrival of the railway line, which commenced from Nyngan in that year. The Great Cobar remained closed in the beginning of the 1890s recession. Although the copper price remained low, the general situation was improved by the arrival of the railway in 1891, allowing for cheaper transport and ready import of coke for blast furnace operation. The railway was officially opened in July 1892.

The advent of a rail link allowed mining throughout the district to show a decided upward trend. Operations were recommenced at the Great Cobar in 1893, with the mine let on tribute to a syndicate organised by Swansea smelters (Longworth Bros.). This syndicate introduced the more rapid and cheaper blast-furnace method of reduction and returned the mine to profitability even though the price of copper had not recovered when the Syndicate commenced work (e.g., copper was £60 per ton in 1889, and £39 per ton in 1893). The possibility was seen for using Lithgow coal for firing and the syndicate also moved to acquire a colliery for coking coal (Rixs Creek, near Singleton). By 1894, the Great Cobar was being hailed as having led the State's copper-mining industry into a new era of prosperity. The syndicate based on the Great Cobar also ran a Lithgow refinery and electrolytic plant treatment works. Along with the Rixs Creek colliery and coke works, the syndicate's operations provided employment for over 1000 men.

Important new gold developments also took place in the 1890s. These were at Mt Drysdale (1892), at the Occidental Mine (later New Occidental) and elsewhere; including the discovery of the Mt Boppy deposit in 1896.

In 1898 the Great Cobar Syndicate began precious metals extraction at its Lithgow refinery, with a large yield of gold and silver. The quantities of these metals previously disposed of within Cobar copper is unestimated. Mining conditions improved through to the end of the century, contemporaneous with a general copper boom elsewhere (e.g., Mount Lyell, 1896-1900). The value of copper steadily increased, from £39 per ton in 1893 to £75 per ton in 1899.

In the first decade of the present century, mining and prospecting activity at Cobar reached a very impressive level. With advancing world industrialisation and electrification, the copper industry boomed and some nations were consuming many times their production tonnage (e.g., Germany, England). World annual copper

consumption was in excess of copper production by 1906.

Employment in all branches of the copper-brass industries rose sharply in 1906-1907. Around 1906, local interest was further spurred by the rich, new stopes being opened in the CSA mine, the discovery of the Budgery orebody, the reopening of the Girilambone mine, and large influx of British capital following the sale of the Great Cobar mine in that year.

These developments also prompted a great surge in mining lease applications throughout the region, continuing through 1907. Events at Cobar and elsewhere saw a marked advance in value of the State's copper production in 1907, when copper price rose to over £100 per ton due to the continuing world-wide industrialisation and excess of copper consumption over production. Especially significant in the 1906-1907 copper boom was the great extension in all advanced countries of electrification works.

In the peak years of 1906-1907, a maximum of 1 350 men were employed at the Cobar mines. There were 964 men employed at the Great Cobar mine and treatment works in 1907, and a high level of activity pertained for some years. Miners, mullockers and timberers in the Great Cobar mine in 1913 totalled 429. The Cobar railway line became the largest revenue-earning country line in the State.

The field was at a high level of activity, with production from Great Cobar, Cobar Gold Mine, Gladstone, Peak, Queen Bee and CSA Mines. Great Cobar Ltd had by then come to control all the important mines in the vicinity of Cobar, with the exception of the CSA mine.

Great Cobar Ltd owned the Great Cobar, Chesney and Cobar Gold mines at Cobar, and mines on the Blue, Brown and Conqueror lodes at the Peak.

As was the practice at that time in other copper mining centres, and one of the aims of the British capitalisation, group smelting, was commenced. This evolved at Cobar in such a manner as to take advantage of the large fluxing base at the command of the Great Cobar Company, and lead to consolidation of mine ownership under the control of Great Cobar Ltd. There was natural preference for using the gold-bearing siliceous ore from other Cobar mines as flux, rather than the Great Cobar mine's own siliceous copper ores.

Cobar's population, currently below 6 000, climbed above 7 000 by 1911 and may have peaked during the Great Cobar period at above 10 000 persons living in and around the Municipalities of Cobar and Wrightville. The large "Cobar" population figure of the time might also include Elouera and Illawong.

The now-vanished Illawong village is claimed by some to have reached a population of above 800 persons in 1907, but this seems excessive. The population of Cobar town itself probably reached 7 000 in 1911-1913. General optimism, however, led to a decided over-capitalisation of operations at Cobar.

The British capitalisation of Great Cobar, and the erection of a massive plant, was of much flow-on benefit to Cobar as a town, but proved an overall financial loss to shareholders. All was done at the reduction plant on such a vast scale that even after acquiring the surrounding mines, the company had difficulty maintaining the necessary ore and other supplies to keep the four modern furnaces constantly in operation.

Mine revenue was almost wholly absorbed by costs. The company paid one 15% dividend, but shareholders eventually lost the whole of their investment (£925 000), plus interest. Debenture holders received back only about £300 000 after liquidation, for the £812 000 pounds paid in.

The stage of working more complex, lower grade ores, coupled with deeper mining, had been reached in the major mines of the region well prior to 1920. A gradual decline of profitability, commencing generally about 1913, was felt at Cobar, Nymagee, Canbelego and other centres. The group smelting activities of Great Cobar Ltd were also affected by the selective depletion of the high sulphur iron rich ("basic") ores. Great Cobar Ltd experienced a succession of many difficulties. By 1911, or earlier, it had become evident that for the purposes of group smelting, the supply of basic ore was in serious decline.

Large quantities of siliceous ore within the Great Cobar mine itself contained ample reward in terms of copper, gold and silver values, but could not be smelted independently.

Rock creep and partial collapse also began to affect the central and southern sections of the workings, perhaps as early as 1911, and by 1913 had extended down as far as No. 9 Level.

In 1914 Great Cobar Ltd went into liquidation. The mine was restarted in 1915 with new capital subscribed by debenture holders, and a further sum was guaranteed by the NSW Government. Operations were sustained however, only by a phenomenal rise in the price of copper due to World War 1.

With the anticipated worldwide return to lower copper prices in 1919-1920, the Cobar mines were forced to close one after another in short succession. In early 1919 copper fell by over 40% in value and demand.

The slump in copper prices following World War 1 caused great stress for all the mines and first led to curtailment of operations at the Great Cobar Ltd mines. The Great Cobar mine closed on cessation of War Office contracts in March 1919. By the time of closure, only 2% of the ore left in the workings was direct smelting ore. The last mines to close were the CSA and the Occidental. After the Great Cobar treatment plant closed in 1919, the other Cobar field copper producers were left entirely dependent upon the viability of the CSA mine and smelters, where about 200 men were employed.

A disastrous underground fire led to closure at CSA in 1920. Even without the CSA fire, the Cobar copper industry was unlikely to have survived events. Australian metalliferous mining suffered an unparalleled decline at that time. No section of the industry was harder hit than copper mining, and few Australian copper mines remained profitable. From 1916 to 1921 the value of copper fell by 80% and the price of copper was halved. Copper in 1920 was selling at less than the typical Australian production cost. By 1921 all Cobar mines had ceased production except the Occidental, which closed down during that year, and the Conqueror which continued intermittently to produce small amounts of gold and silver.

The large Mt Boppy mine, at Canbelego, closed in 1923, and the 1920s subsided into complete mining stagnation throughout the region. Cobar's population shrank, with the suburban area of Dapville-Wrightville being then abandoned and never since re-established. During the 1920s the population along the Cobar belt fell to around one tenth of its former size, being only 600-700 people by the close of the decade.

The Cobar field lay largely inactive from 1921 till 1930, when it became of renewed interest for its gold potential. The only significant mining activity which continued in the 1920s was small scale production from the Peak mines. Only tributers were active in the other mines, looking for remnant pickings of rich ore, but finding little which would repay transport costs. However, with rising demand for gold at the commencement of the Great Depression, interest was rekindled in the Cobar gold mines.

Locally, the Mt Boppy Treatment Company started this revival of interest in 1929, with plans to retreat the Mt Boppy gold mine tailings. Australia was taken off the gold standard late in 1929. In 1930 the Occidental Ltd was formed, and it was later reorganised as New Occidental Gold Mines NL to re-open those Cobar mines well known for their gold content. In 1931, with declining labour cost and a sharp rise in the value of gold, the Occidental mine began recommissioning.

In 1934, the Cobar Gold Mine, renamed the New Cobar, was re-opened by New Cobar Gold Mines NL. In 1935 gold production recommenced at the Occidental mine, by then renamed the New Occidental and the New Cobar mine was absorbed by New Occidental Gold Mines NL. Gold production from the Great Cobar lode was resumed in 1936. After re-conditioning, New Cobar began producing in 1937. The Chesney was acquired in 1937 and re-opened in 1942, largely to supply copper for the war effort.

From 1949 onwards rising mining and realisation costs, higher treatment costs and higher rail freight costs all coupled with static metal prices, caused increasing difficulty for the company. Following World War II the new Occidental company was to become severely affected by the ongoing squeeze between fixed gold price and rising costs (labour, materials, deepening development).

In 1944-45 the company looked towards diversification and sought to interest the Commonwealth Government in re-establishment of a wider spread major Cobar copper industry. There ensued an extended program of surveys over following years by the Commonwealth's Bureau of Mineral Resources.

The Big Lode at the Peak was drilled in 1944 in pursuit of the New Occidental company's goal of diversification from gold to base metals, and plans were made for exploration further north. Deep drilling commenced at Great Cobar in 1950.

The New Occidental Company in its peak years (1943-1948) at times had over 500 employees. The average population of Cobar during the New Occidental period was about 3 000.

From 1949 onwards, rising mining and realisation costs, higher treatment costs and higher rail freight costs, all coupled with static metal prices, caused increasing difficulty for the company. It was forced to cease extractive mining operations in 1952.

The annual copper production from Cobar fell to below <3t copper in 1953, and the gold production plunged to zero by 1954. Cobar's population once again plunged to below 1 000 in the mining hiatus which followed closure at New Occidental.

Population remained low until well after the re-opening of the CSA mine (e.g., 2 400 in 1971), but began to rise after 1980 (population 3 100) when the planning for the Elura project predicted that the project would double the Cobar population from 4 000 to about 8 000 as Elura came into full production.

Mine production was very near dormant for 10 years at Cobar, from 1952 till 1962 when Cobar Mines Pty Ltd recommenced production from the CSA ore bodies.

However, unlike the first long break in production (in the 1920s), the prospects of the Cobar field were by no means being overlooked during the second of Cobar's production hiatuses.

Some 8Mt+ of ores had been raised along the Cobar belt by the close of the New Occidental period, and it was agreed by all who had evaluated the field in the 1940s that the ore reserves had by no means been exhausted.

Before it ceased mining, the New Occidental company had commenced a drilling program to demonstrate the strong potential for reestablishing major copper production.

Seeking possible recapitalisation, or at least the best value disposal of its leases it estimated from deep drilling and other data, the possible Cobar field reserves to great depth and the cost of reestablishing low grade copper-gold production.

Major Broken Hill companies had become interested in the field from about 1942 onwards. Planning, feasibility studies and exploration were ongoing concerns throughout the 1950s.

Commencing 1947, Enterprise Exploration Co. Pty Ltd., a subsidiary of Zinc Corporation Ltd (later Consolidated Zinc Pty Ltd), engaged in work which led directly to the reopening of the CSA Mine.

Zinc Corporation Ltd in 1947 took an option over the main Peak gold leases, commenced extensive drilling operations there in 1948, and later also drilled the Dapville prospect.

Zinc Corporation Ltd became Consolidated Zinc when it joined with Imperial Smelting Corporation in 1949, and in 1962 Consolidated Zinc merged with Rio Tinto to become Conzinc Riotinto of Australia (CRA).

In the years 1947-1957, Enterprise Exploration also engaged in extensive regional exploration, and mapped much of the Cobar belt (CSA to Queen Bee), in considerable detail (1:4 800).

Almost continuous exploration in the Cobar region followed varied geochemical and geophysical procedures, often severely limited by the depth and severity of weathering. Particular focus was upon aeromagnetic anomalies.

In 1955, Broken Hill South Ltd, through its subsidiary Mines Exploration Pty Ltd, secured an option over leases and other assets held by New Occidental Gold Mines Ltd in respect of the New Cobar, Chesney and New Occidental mines.

In 1956, Broken Hill South Ltd created two wholly-owned subsidiaries, Cobar Mines Pty Ltd and Cobar South Pty Ltd, to redevelop the field.

In 1957, Broken Hill South Ltd, through these newly-formed subsidiaries, purchased the key

Cobar leases still held by New Occidental Gold Mines Ltd.

This purchase covered much of the field, with the notable exception of leases that CSA owned or held under option by Enterprise Exploration.

The CSA leases were transferred from Consolidated Zinc Pty Ltd in 1960 in return for an acquired holding in both Cobar Mines Pty Ltd and Cobar South Pty Ltd.

Exploration of all prospective areas was then taken over by Cobar Mines Pty Ltd and effort was directed chiefly to deep drilling at the CSA and Chesney mines.

The Chesney was tested to 915m below the surface, while the Western and Eastern orebody clusters at CSA were drilled to vertical depths of 915m and 760m respectively.

In 1962, Broken Hill South Ltd controlled the key Cobar leases and several major Broken Hill leases (South, BHP, Block 14, British and Junction mines).

Its Broken Hill mine reserves (since depleted) were such as to then warrant strong investment by the company and its affiliates in Cobar's future.

Enterprise Exploration Co. Pty Ltd (by then under Australian Mining & Smelting Co.) commenced repairs to the old main shaft at the CSA mine in 1952, and at the adjoining Tinto mine in 1955.

After interlinking with the Broken Hill South companies, new deep shaft sinking at CSA began in 1962.

Full scale mine development commenced in 1964, and production began in 1965.

The CSA, for long the sole renewed mainstay of Cobar mining, has continued in deepening development and has also laterally expanded the proved extent of its ore system.

Its operations have not been without difficulty. It has experienced times of lean profit, or loss.

It was very nearly forced to close by the 1975 fall in world prices for copper and other metals, at that time retrenching about half of its workers; and was again seriously affected in 1985.

Changes also took place in the management and ownership of the CSA mine and other leases controlled by Broken Hill South Ltd.

Since re-opening the CSA, significant further ore discoveries have been made east of the Eastern orebody, principally the QTS zone which was intersected 500m east of the mine in 1976.

Ore production has been continuous apart from periods of plant refurbishment and a major lower levels development program.

The mine employs between 280 (1985) and 326 (1989) persons, i.e., roughly 300 employees.

In 1972 Broken Hill South purchased back the holding allotted to Consolidated Zinc for the CSA leases, but in 1980 Conzinc Riotinto of Australia Limited (incorporating the former Consolidated Zinc), purchased Cobar Mines Pty Ltd and Cobar South Pty Ltd.

Since that time, the Chesney mine has also been refitted with a deep new shaft, ready to renew operations whenever conditions become economically favourable, and exploration has been carried out in many parts of the district.

As a result of ongoing exploration and evaluation, deep level mining was commenced on CRA ground at The Peak, by the subsidiary Peak Gold Mines NL. The Peak ore system at depth was estimated by 1989 to contain around 4.5Mt of ore, with early studies indicating a grade of about 6.5g/t gold.

The mining at CSA, and other operations of Cobar Mines Pty Ltd, was for a time managed under CRA by the subsidiary Australian Mining & Smelting Ltd. It is currently managed by Enterprise Metals Pty Ltd which was formed as a CRA business unit when the base metal interests of CRA Ltd and North Broken Hill Peko Ltd were merged to become Pasminco Ltd. Copper concentrates are railed to the Electrolytic Refining and Smelting Co. works at Port Kembla. Zinc and lead concentrates are railed to the Cockle Creek smelter near Newcastle, and smaller amounts are shipped to overseas smelters. Cobar operations remain very sensitive to metal prices, particularly copper prices. The CSA, for example, was threatened with closure in 1985, following a loss of about \$11 million by Cobar Mines Pty Ltd in 1984, and the Elura mine has also been in periods of loss-making or much reduced production.

The second half of the 1980s produced some improvement in the mining industry particularly in gold, which saw boom conditions and has been the subject of continuing strong exploration and development through the decade.

During the 1980s Australian gold production increased 17-fold. This gold boom saw numerous prospects in the Cobar area re-evaluated for gold. Core from some base metal prospects were assayed for gold for the first time.

The development of the large new gold mine at the Peak commenced and a gold discovery at McKinnons Tank was significant as the first economic ore deposit to be found west of the Cobar belt. Metal prices peaked in the late 1980s and 1990-1991 witnessed downturn in the mining industry.

National gold production commenced a steep decline after its strong rise since 1986, which

peaked in 1990. The rate of gold exploration in the Cobar district slowed down in the late 1980s, with some return of exploration focus to copper and general base metals search.

The commencement of the Elura mine was the district's most notable development in the 1980s. The Electrolytic Zinc Co. of A'asia Ltd commenced work on the Elura prospect, then a magnetic anomaly, in 1973-74.

The prospect was found to be a world class zinc-lead-silver deposit. By 1980, EZ Industries Ltd had predicted a mining project to employ about 500 people during the construction phase and 350-400 during mining operations at an initially planned annual capacity of 1.1Mt.

The company commenced production from it in March 1983, following 10 years of ongoing exploration and development. A major underground mine with a range of about 200-350 employees during the 1980s mining and treatment, Elura became the second largest metallic mine in the State, with many up-to-date features ensuring high efficiency and productivity.

The total cost of the mine and associated facilities was about \$200 million, and by mid decade it was operating at a high level, in excess of 1Mt per annum. The development of a totally new mine gave a strong economic boost to Cobar, as well as further stimulating exploration within the region.

However, only two years after its official opening a dramatic decline in metal prices in 1985 rendered the Elura operation a significant loss maker. The slump was most dramatic in zinc prices, but also affected the CSA mine, where closure was contemplated. Both mines weathered the crisis, although Elura remained in a loss situation through 1986 and beyond.

The Elura mine was acquired by North Broken Hill Holdings Ltd in 1985, after the latter took over EZ Industries Ltd in 1984. Subsequently it became part of Pasminco Ltd Holdings in 1988. Pasminco Ltd operates three lead-zinc mines in NSW, the North mine and ZC mine at Broken Hill, and the Elura mine.

Through merging the lead-zinc mining and smelting assets of North Broken Hill Peko Ltd and CRA Ltd in 1988, Pasminco Ltd became one of the world's largest base metal mining and smelting companies.

The recession of 1991 again severely threatened the operation of the Cobar area mines, with Elura reducing staff by over 260 employees and Pasminco Ltd suffering a loss.

In the late 1980s the price of copper was pushed to record highs because of supply disruptions such as the Bougainville conflict. This stimulated the slackened local interest in copper exploration, and

Nord Pacific Ltd commenced work aimed at bringing the old Girilambone copper mine back into production as an open cut mine.

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