

# Historical development

The Australian mineral industry began with the quarrying of sandstone and brick clay for early buildings at Sydney Cove.

Recognition of mineral wealth followed soon after settlement, with the discovery of coal in the Sydney Basin. The readily available, high quality black coal provided the first mineral export and underpinned industrial development in the new colony. Nevertheless, the emphasis in the early colonial years was on survival and mineral exploration was not actively pursued.

The first metal mine in Australia opened in 1841 at Glen Osmond near Adelaide to mine silver and lead. However, it was not until the discovery of payable alluvial gold in 1851 near Bathurst (N.S.W.) and later that year near Ballarat (Vic.)

that the mineral industry received its first major impetus. These and other significant gold discoveries elsewhere in eastern Australia led to a rush of immigrants, resulting in the rapid establishment of new communities and improved accessibility to large areas of the country.

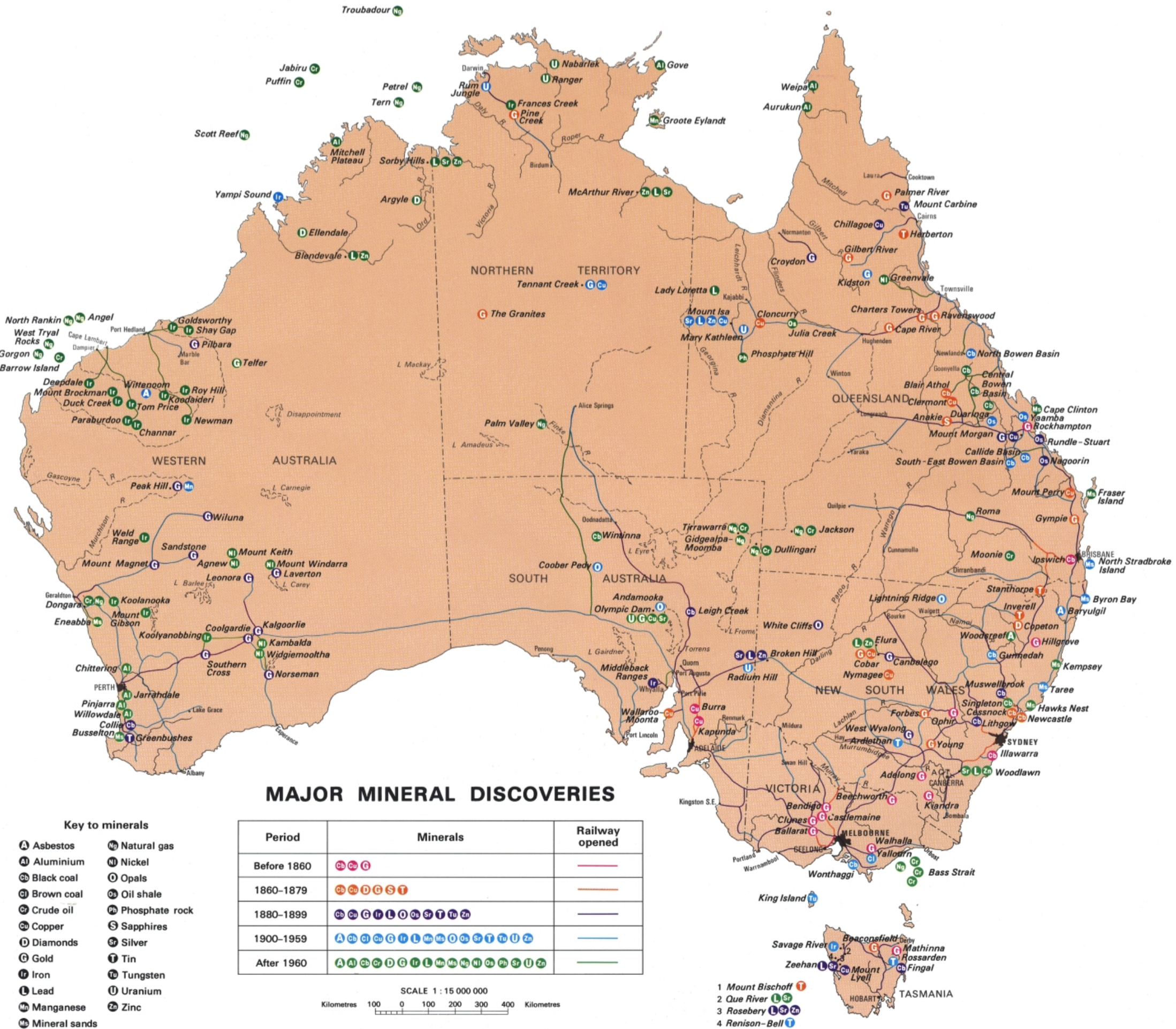
Australia's inland cities in the 19th century were mostly mining centres and many early railways owed their construction to the gold rush era. Mineral wealth was fundamental to the economic and social development of Australia from the 1850s onwards and for a time the country became the world's largest producer of gold. On the map

'Major Mineral Discoveries' the pattern of gold discoveries reveals a generally anticlockwise movement from south-eastern Australia, culminating in the Coolgardie and Kalgoorlie (W.A.) finds in the early 1890s.

In 1872 tin mining began at Inverell (N.S.W.), Stanthorpe (Qld) and Mount Bischoff (Tas.), and copper mining was established at Cobar (N.S.W.) at about the same time. Mount Morgan (Qld) and Mount Lyell (Tas.) were first mined for gold in the 1880s but by the close of the century they had been shown to also contain large reserves of copper ore. The mineral industry was further diversified with the discovery in 1883 of the rich lead-zinc-silver lodes at Broken Hill (N.S.W.),

which for several decades became the largest silver, lead and zinc producer in the world. The lodes were quickly developed to the stage of local smelting by 1885 and as feed to larger smelters at Port Pirie (S.A.) by 1889.

Up to this time successful mining had been confined to eastern and southern Australia but, with the discovery of alluvial gold near Coolgardie in 1892 and the gold lodes of Kalgoorlie soon after, profitable mining became established on the western side of the continent. The importance of gold mining in the west has continued up to the present time and in 1986 just over 70% of Australian gold production came from Western Australia.



During the early decades of the 20th century the only significant mineral finds were tungsten on King Island (Bass Strait) in 1904, and lead-zinc-silver and copper at Mount Isa (Old) in 1923. Lead, zinc and silver were the backbone of the mineral industry for most of the first half of this century. Mineral processing expanded during this period and technological innovations resulted in improved efficiency in both mining and processing. Notable were the development of differential flotation (basically still used world-wide) for the separation of lead and zinc sulphides from Broken Hill ores and, later, electrolytic refining of zinc sulphides to pure metal. The Australian steel industry was also established, with the construction of steelworks in New South Wales at Newcastle in 1915 and at Port Kembla by 1932.

### The last forty years

By the late 1940s low reserves and the apparent lack of many minerals in Australia was a cause of major concern. However, from then on there was an upsurge in exploration which led to the discovery of a range of mineral resources (as indicated on the map 'Major Mineral Discoveries') and their subsequent development. Strong overseas demand for minerals needed for post-war industrial growth, combined with an increased understanding of the geology of the continent, stimulated exploration.

Simultaneously, advances in exploration technology have enabled geoscientific principles to be systematically applied to the search for mineral deposits. Whereas earlier discoveries were often made by accident or at best by studying exposed outcrops and ore samples, deeply buried deposits with little or no surface expression and deposits in remote regions that had hitherto escaped notice were now detectable.

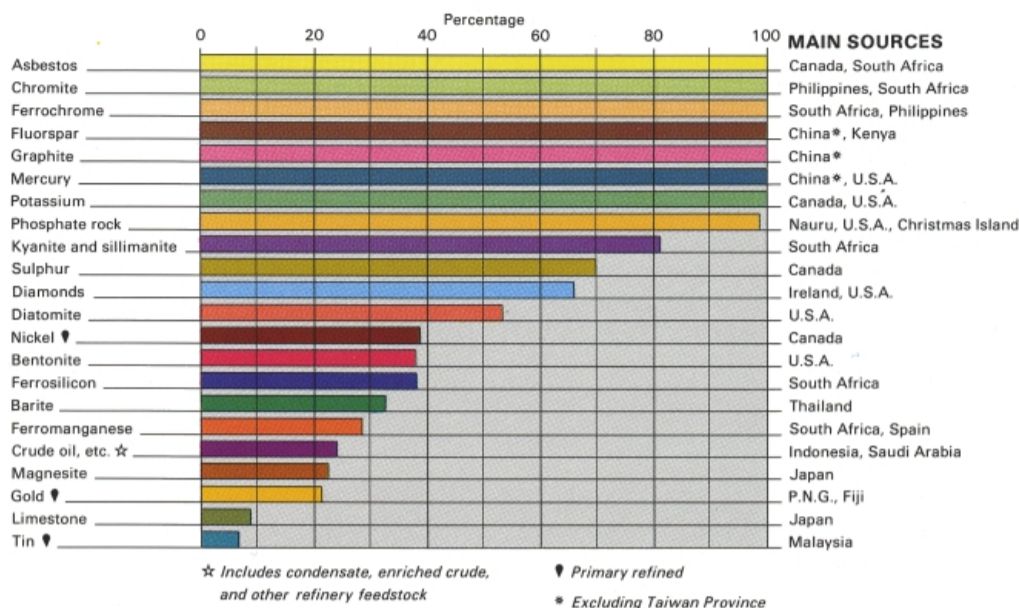
The post-war minerals boom experienced by Australia really began with uranium mining in the early

1950s. In the 1960s enormous open-cut iron ore mines began production in the Pilbara region of Western Australia; established coal mines in New South Wales were expanded and new mines developed, both in New South Wales and Queensland; large scale manganese production began at Groote Eylandt in the Northern Territory; oil and gas fields were developed in Bass Strait, at Moonie and Roma in Queensland, at Moomba in South Australia, and at Barrow Island in Western Australia; nickel mining and processing were established in Western Australia; the mining and export of bauxite became a major industry; and vast uranium resources were discovered in the Northern Territory.

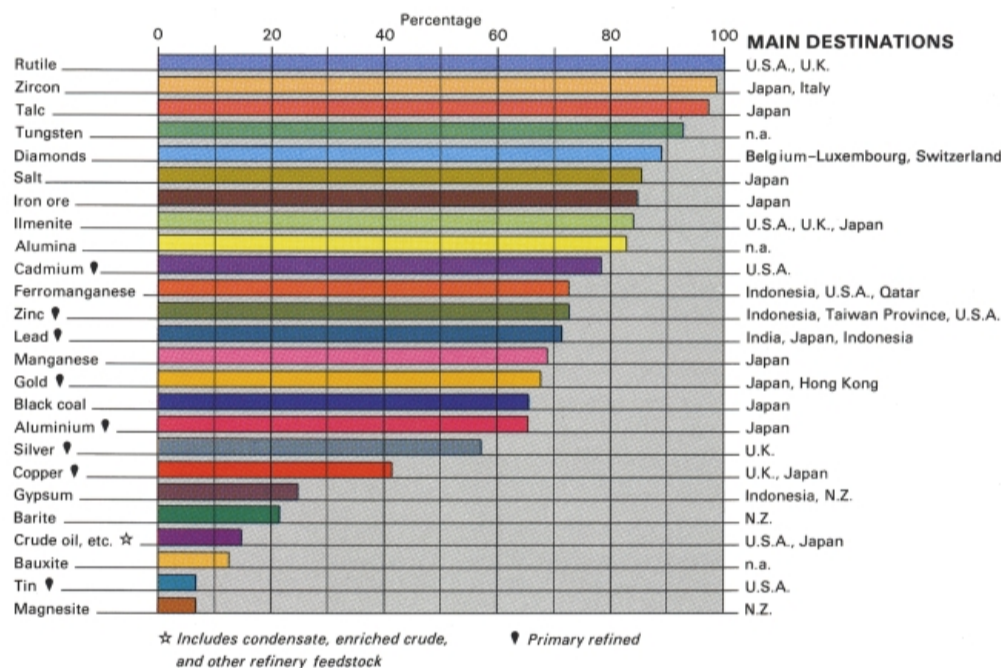
Three main factors have altered the face of Australia's mineral industry since 1965:

- Iron ore and aluminium have displaced the traditional base metals—copper, lead and zinc—which, along with silver and coal, had up to then formed the basis of the industry.
- There has been expansion of long established industries such as tin, black coal and mineral sands and the development of new ones such as nickel.
- Export markets have been considerably widened, particularly in Japan but also elsewhere in South-East Asia and Europe—as illustrated by the diagram (right) showing the percentage of mineral production exported in 1986 and the main destinations for the various minerals.

The most recent impacts on the Australian mineral industry have come from the development of petroleum and uranium resources following the energy crises of the 1970s; the resurgence of gold mining from 1980 onwards in response to greatly increased world prices; and the establishment of diamond mining. On the other hand, low world prices over the last few years for some minerals, such as nickel and tin, have resulted in declining production levels and the closure of marginal mines.



Percentage of mineral consumption imported, 1986



Percentage of mineral production exported, 1986



One of six daily ore trains on its 425 km journey from Newman to Port Hedland (W.A.) Around 20 trains, each carrying up to 21 000 t of iron ore in 210 wagons, travel between the Pilbara region mines and ports each day.