



## Overview of mineral exploration in Western Australia for 2002–03

by D. J. Flint

### *Overview*

Western Australia continues to attract the major proportion of mineral exploration expenditure in Australia (58%), a reflection of the State's perceived prospectivity. During 2002–03, mineral exploration expenditure (excluding petroleum) figures for Western Australia rose by 8% (\$30.7 million) to \$423.6 million, after having fallen by 45% over the previous five years from a peak level of \$806 million (2002–03 dollars) in 1996–97 (Fig. 1). Recent quarterly data show mineral exploration expenditure stabilizing at over \$100 million per quarter, following the very low expenditure levels of only \$87 million (seasonally adjusted terms) in mid-2002 (Fig. 2).

The Western Australian figures are consistent with worldwide trends and Australia as a whole. The 2002–03 level of mineral exploration expenditure within Australia is \$732.5 million, which is 14% (\$92 million) higher than during 2001–02. However, mineral exploration in Australia had declined by 45% (\$508 million) during the previous five years, following the peak mineral exploration expenditure in Australia of \$1149 million (2002–03 dollars) during 1996–97. The worldwide decline in exploration expenditure has been attributed to a number of factors, including continued low commodity prices, the ongoing perception of mining as a low-profit activity, lack of venture capital, slowing world economic growth, and the events of 11 September 2001. However, Australia and Western Australia continue to maintain their share of global exploration expenditure at about 18% and 10%, respectively.

Despite the downturn in exploration activities since 1997, important discoveries are still being made. These include gold discoveries in the Ashburton Basin and the northeastern part of the Kimberley Basin, the huge resource upgrade at Telfer gold mine, further base metal discoveries at and around Golden Grove and Teutonic Bore (Jaguar), and the discovery of high-grade nickel sulfides at Waterloo.

Mine development highlights include opening of the Thunderbox and Waugh gold mines, Ellendale diamond mine, West Angelas and Mining Area C iron ore mines, and Dardanup heavy mineral sands mine. The West Angelas operation represents a new phase in Western Australian iron ore mining as the first to market Marra Mamba iron ore as a standalone product. The numerous advanced projects include the direct smelting of iron ore (HIs melt), the go-ahead for an iron ore mine at Eastern Ranges (near Paraburdoo), and the State's most advanced platinum–palladium project (Panton Sill), which is at the feasibility stage.

### *Mineral exploration expenditure by commodity*

Exploration expenditure in Western Australia for gold and base metals (including nickel–cobalt) is near its lowest level for a decade, with exploration expenditure activity similar to the recession years of the early 1990s. Despite this, Western Australia still accounts for the major proportion of the exploration dollars expended in Australia, principally for iron ore (100%), nickel–cobalt (82%), gold (70%), diamond (60%), heavy mineral sands (28%), silver–lead–zinc (26%), and copper (7%).

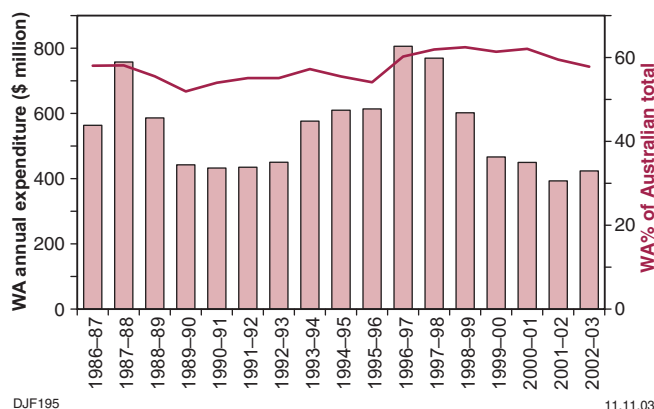


Figure 1. Mineral exploration expenditure in Western Australia, by financial year (2002–03 dollars)

Within Western Australia, gold remains the main focus of mineral exploration, accounting for about 63.6% of all exploration expenditure (Fig. 3). Other commodities, in their order of importance as exploration targets in Western Australia, are nickel–cobalt (11.7%), iron ore (8.5%), diamond (4.5%), copper–lead–zinc–silver (3.9%), heavy mineral sands (1.8%), and ‘others’ totalling 6.1%. ‘Others’ include all industrial minerals, construction materials, platinum group elements, rare earth elements, and coal–lignite.

During 2002–03, only \$266 million was expended on gold exploration in Western Australia. The level is now down 57% (\$354 million in 2002–03 dollar terms) from the 1996–97 peak, and represents a level that is equivalent to the bottom of the recession in the early 1990s (Fig. 4).

Exploration for base metals (including nickel and cobalt) recovered during 2002–03, following four years of substantial decline. Base metal exploration expenditure rose by 13% (\$8.5 million) to \$72.5 million, but is still 47% (\$64 million) lower than the peak level of \$136.5 million expended in 1997–98 (in 2002–03 dollar terms; Fig. 5). The recovery during 2002–03 is being led by exploration for and development of nickel sulfide deposits, particularly in the Kambalda area.

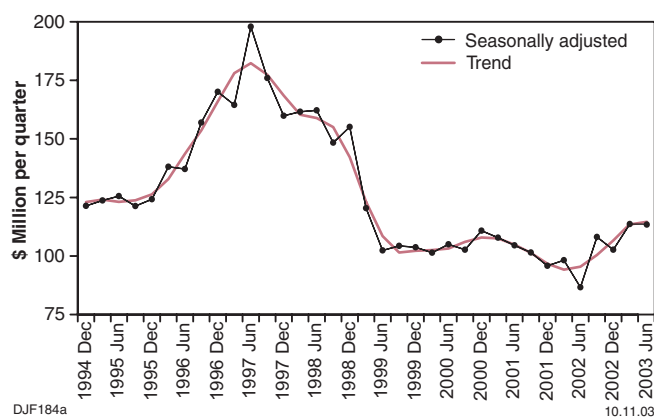


Figure 2. Mineral exploration expenditure in Western Australia, by quarter, on seasonally adjusted and trend terms (dollars of the day)

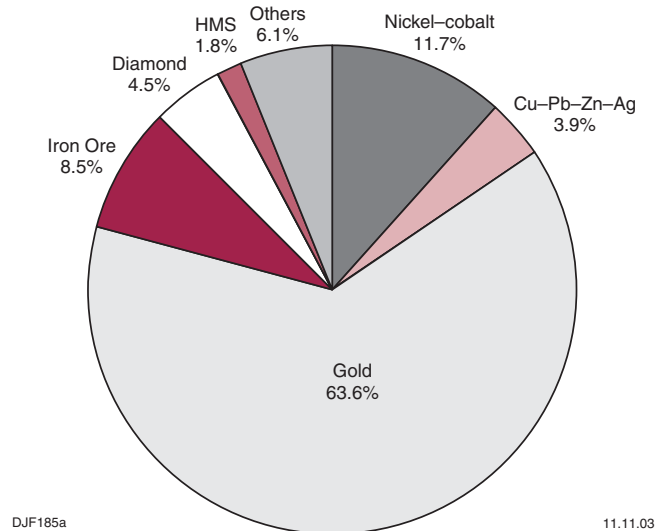


Figure 3. Mineral exploration expenditure in Western Australia, by commodity (2002–03)

Diamond exploration in Western Australia decreased by a further 43% during 2002–03, falling by \$13.3 million to only \$17.8 million for that period. The fall was primarily due to completion of a major phase of resource–reserve drilling at Argyle and to the Ellendale project moving to the production phase. Diamond exploration expenditure has been subdued for many years and is now far below the peak level of \$131 million in 1981–82 (in 2002–03 dollar terms), reflecting the general lack of exploration success in Western Australia.

During 2002–03, iron ore exploration within the State has remained steady at around \$26 million, supported by strong customer demand for iron ore, particularly from China. Significant positive developments during 2002 and 2003 included the opening of the West Angelas mine, development of Deposit C at Mining Area C, and the go-ahead for development of the Eastern Ranges deposits near Paraburdoo.

After the switch during the 1990s by mineral sand explorers to the Murray Basin in Australia's eastern states, exploration in Western Australia had stabilized at around \$8.0–\$8.5 million per year. As a result of that refocusing, Western

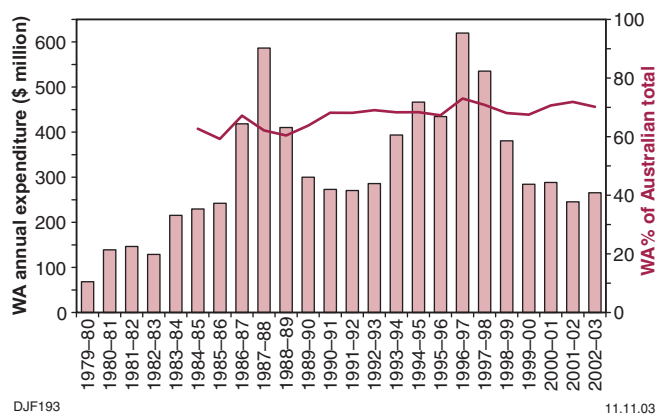


Figure 4. Gold exploration expenditure in Western Australia, by financial year (2002–03 dollars)

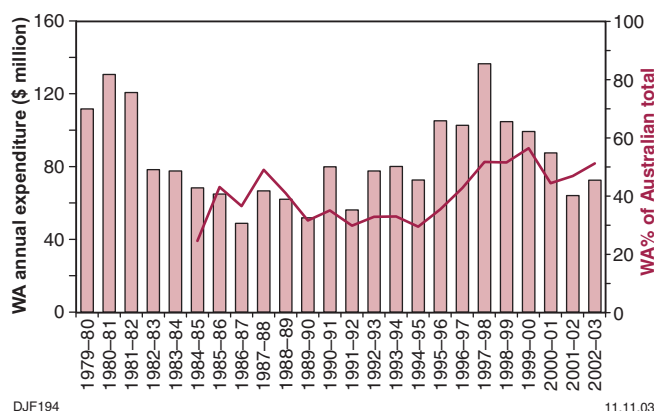


Figure 5. Base metal exploration expenditure in Western Australia, by financial year (2002–03 dollars). Base metals include copper, lead, zinc, silver, nickel, and cobalt

Australia's share of the Australian exploration expenditure for heavy minerals has fallen from around 70% of the total in the mid-1990s to only 28% in 2002–03. During 2002–03, exploration expenditure for heavy minerals in Western Australia dropped further, falling by 40% (\$3.7 million) to only \$5.5 million for that year.

### Mining tenement activity

In general, the broad trends in mineral exploration expenditure were also reflected in the 2002–03 mineral tenement statistics<sup>1</sup>. For all tenement types under the Mining Acts of 1904 and 1978, the number of tenements in force decreased by 2.9% (478 tenements) to 16 009 tenements, whereas the area under tenure has increased significantly (11.6%) from 24.0 million hectares in 2001–02 to 27.9 million hectares in 2002–03 (Fig. 6).

Figure 6 illustrates that the tenement activity has declined substantially since the peaks in about 1995–96 and 1996–97. The number of tenements and area held under tenure in Western Australia show falls of 21% and 43%, respectively. However, the area under tenure is showing signs of an increase, presumably from the grant of more or larger exploration licences.

Figure 6 also illustrates the magnitude of the continuing backlog of pending tenements. The backlog situation increased in the early and mid-1990s, but has stabilized in recent years. There are now more exploration licences and mining leases pending than are granted. This backlog is widely interpreted to be largely the result of lengthy delays in progressing many tenement applications through the Native Title process.

### Drilling activity

Drilling activity<sup>2</sup> in Western Australia has declined markedly since the peak of exploration in 1996–97, demonstrating that cut backs in exploration budgets have adversely affected all types of drilling (Fig. 7). Rotary air blast (RAB), reverse circulation (RC), and diamond drilling have now declined by about 80%, 65% and 65%, respectively, since their peaks in 1996–98. RAB drilling was the first to be affected when companies began to reduce expenditure and move away from grassroots (greenfields) exploration. This reduction in RAB drilling was followed one year later by declining RC drilling, as expenditure cuts deepened. RAB and RC drilling continued to decline during 2001–02, and were joined by a decrease in diamond drilling during 2001–02. As this data series is a trailing indicator, it is not expected that the drilling statistics will show any improvement when the data for 2002–03 become available.

<sup>1</sup> Tenement data supplied by DoIR's Mineral Titles Division

<sup>2</sup> Drilling statistics extracted from DoIR's WAMEX database, as supplied by the mining industry and best regarded as a trailing indicator. Data for 2002–03 not yet available

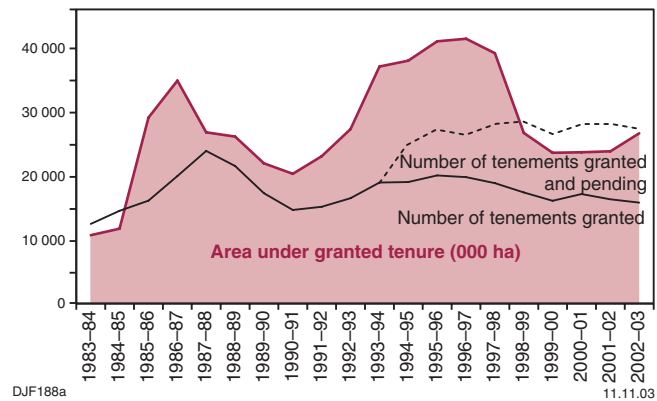


Figure 6. Tenement activity, Western Australia (1904 and 1978 Mining Acts)

Such declines in drilling activity greatly diminish the number of opportunities for significant discoveries, which are necessary to boost mineral resource inventories, sustain the current level of mining development, and provide opportunities for growth in the industry.

The falls in 'metres drilled' from earlier peak levels in 1996–97 show a more dramatic trend in reduced exploration activity than the more general fall shown in the overall trend for exploration expenditure. The decline of about 80% in RAB, 65% in RC, and 65% in diamond drilling, since the peak of the boom, should be compared with the corresponding drop of 'only' 46% in total exploration expenditure and the 57% decline in gold exploration expenditure. The generalized Australian Bureau of Statistics (ABS) data for the whole of Australia are similar, and show a decline in metres drilled of 65% for the same time.

Recent quarterly data from the ABS for Australia show that the downward trend in drilling activity since 1997 has levelled off during 2002, and drilling activity is perhaps recovering slightly in late 2002 and early 2003 (Fig. 8).

### *Government inquiries into reduced mineral exploration*

Both the Western Australian and Federal Governments recognize that the declining level of mineral expenditure is a major issue, and two parliamentary inquiries were commissioned during 2002 — the Bowler and Prosser Inquiries, respectively.

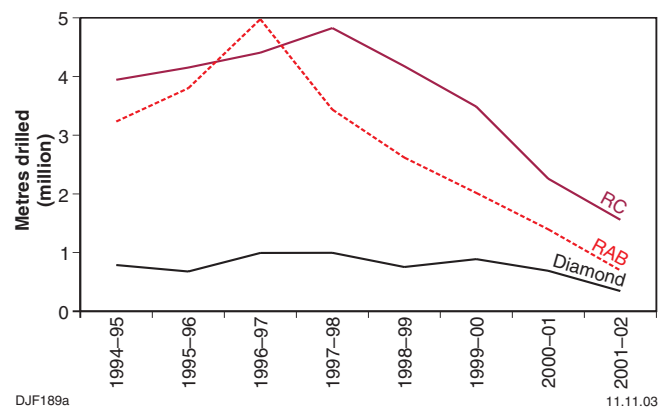


Figure 7. Mineral exploration drilling in Western Australia, by drilling type and year

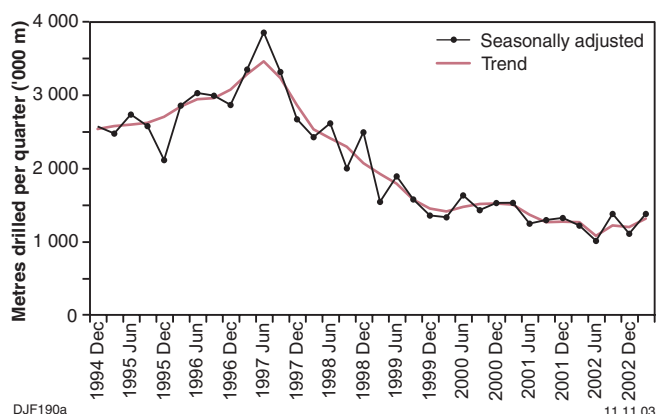


Figure 8. Australian mineral exploration drilling, by quarter

In Western Australia, the State Government instigated a Ministerial Inquiry, chaired by Mr John Bowler MLA, Member for Eyre. The Inquiry was to investigate all avenues that could lead to the increase of private investment in mineral exploration in Western Australia, particularly in greenfields or frontier areas.

The key factors identified as impacting on greenfields exploration in Western Australia included the following: reducing the backlog of mining lease applications, improving perceptions of prospectivity and the attractiveness of investing in exploration projects, managing native title issues and mineral titles, facilitating research and development, facilitating land access, Federal Government issues, including taxation, and increasing community understanding of the mineral resources sector.

The Inquiry's report, which is detailed and very comprehensive, has been presented to the Minister for State Development, Hon. Clive Brown, MLA and can be viewed in full at the website of the Department of Industry and Resources.

The Federal Government has instigated a House of Representatives Inquiry, chaired by the Hon. Geoffrey Prosser MP, Federal Member for Forrest (WA). The Prosser Inquiry aims to identify impediments to increasing investment in mineral and petroleum exploration in Australia.