

Chapter 13

MINING

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Chapter 13

MINING

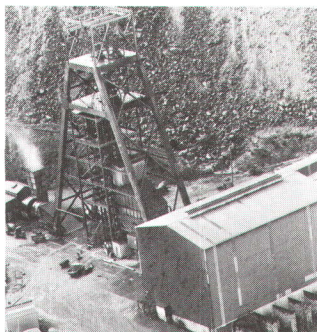
Mining in Tasmania began on the Tasman Peninsula with 61 tonnes of coal produced by convicts from Port Arthur. The mine operated for 10 years before it was closed down when better quality coal was discovered elsewhere. In 1849 gold was found near Lefroy and three years later at Mangana near Fingal.

Tin oxide was first discovered near Mt Bischoff in 1871, silver-lead ore in the Zeehan-Dundas area in 1882, and the discovery of the *Iron Blow* ore outcrop in 1883 led to the opening of the Mt Lyell copper field. These and later discoveries led to the establishment of Tasmania's mining industry which has had a significant impact on the State's development and economy.

Recently however, world prices for mineral producers have been generally depressed and unstable. Although partly offset in Australia by currency devaluation, international competitiveness has continued to be of concern to the local industry. Major features of the year were the production proving of a major new mine and several smaller ventures, although 1986 also saw the demise of several mines and of oil and gas exploratory activity. Both large-scale retrenchments and industrial disputes were at lower levels than in 1985.

Aberfoyle Ltd attained access to its rich Hellyer lode near Waratah with the completion of a 1.3 km adit (horizontal tunnel) in May 1986. Zinc, silver and lead were the main target metals with copper and gold also commercially recoverable. Scheduled to be fully operational by early 1989, almost 190 people will be employed in the new mine and concentration mill, with about 200 jobs in the construction phase. Interim production involves the output of about 250 000 tonnes of ore per annum at a converted mill at the company's defunct Cleveland mine site at Luina. Full ore production of 1 million tonnes per annum will allow an estimated 15 year lifespan. As such the Hellyer mine represents one of the most significant industrial developments for the State in recent years.

The Mt Lyell copper mine at Queenstown, long a bastion of west coast mining, but now reaching the end of its productive life, received



The Mt Lyell mine at Queenstown, the life-blood of Queenstown and Gormanston for the past century, is due to close in 1994.

Photo: Mercury

reprieves from two sources during 1986. New export markets were obtained in Japan for pyrite by-products, previously discarded as tailings, at a level of 85 000 tonnes per annum. Secondly, a State government assistance package including a deferred interest loan of \$8 million, and deferments on royalty payments and payroll tax, resulted in an agreement to defer the closure of the mine for five years, until 1994. In a related development the State government announced an allocation of \$2 million to develop a new tourist mine complex at Mt Lyell.

The EZ Company's Rosebery silver, lead and zinc mine and associated smelter at Risdon near Hobart maintained production levels during 1986 despite previous workforce cutbacks. Major

investment programs included the first phase of \$100 million modernisation of the Risdon works and equipment to improve gold recovery levels at Rosebery. Sample processing of ores from the Que River and Hellyer mines of Aberfoyle Ltd was followed by an agreement to purchase concentrates when the latter expands its own milling capabilities.

A reduction in crude oil prices early in 1986 sealed the fate of the oil and gas exploration in Bass Strait which had been upscaled in 1985 after a decade of low activity. Two wells drilled in early 1986 were abandoned as dry holes. Drillstem tests on wells commenced in 1985, and on which drilling was suspended after producing promising oil and gas shows, proved inconclusive. Although the current world climate is not encouraging, a wealth of geological information has been obtained which will be useful in the next round of drilling.

Two west coast mines closed in 1986. Aberfoyle Ltd's Cleveland tin mine at Luina exhausted its viable reserves after having produced 23 000 tonnes of the metal from 5.6 million tonnes of ore. Its 18 year operational life had originally been predicted to be 12 years. The Cleveland processing mill has been converted to treat ore from the company's nearby Hellyer mine. The closure of the EZ Company Hercules mine at Williamsford, while much smaller than the neighbouring Rosebery operation, resulted in the loss of 12 jobs. Part of its prominent 6 kilometre aerial ropeway, which carried buckets of ore from the mine to the Rosebery mill, is to be retained as an exhibit at Rosebery High School.

13.1 NEW LEASES AND LICENCES ISSUED 1985-86, TASMANIA

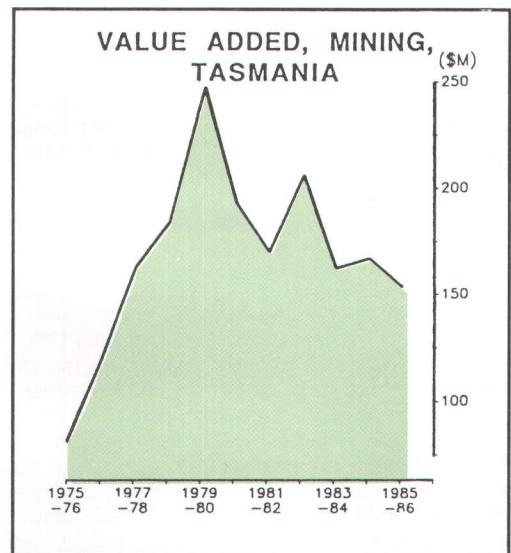
Leases and licences	Number	Area (ha)
Coal (peat)	6	2 008
Gold	2	9
Minerals	3	170
Sand and gravel	12	129
Stone	18	589
Tin	4	180
Water	1	3
Osmiridium	1	1
Total	47	3 089

New mining ventures for the State in 1986 and 1987 were small but nonetheless encouraging. Savage River, already the site of an open cut iron ore mine, is the location of two new prospects. Firstly, a \$3.5 million mine will provide high grade silica flour for refinement at Burnie. Markets for the fine-processed product include domestic use as a high grade filler, an abrasive

and a glaze, and as an export product, initially to Japan, for lead crystal and optical glass production. Secondly, a magnesite deposit just south of Savage River was proved by exploratory drilling at about 200 million tonnes. Magnesite is a source of manganese used in high strength steel alloys; it also has applications in ceramics manufacture and some soil fertilisers. Advancements in extraction technology have allowed new industries based on the reprocessing of tailings from earlier mines, principally at Zeehan for zinc and at Beaconsfield and Lefroy for gold. A new open cut gold mine near Denison in the north east, also an area prospected historically, commenced production with a workforce of 14 people.

13.1 MINERAL PRODUCTION

Tasmanian mining, in common with other sectors of the economy, has experienced fluctuating fortunes as a result of world market trends. The value of minerals produced from Tasmanian mines in 1985-86 was \$317 million, an increase of 8.6 per cent from 1984-85. The industry's contribution to the State economy (value added) declined by 8.0 per cent from 1984-85 to 1985-86 to a total of \$153 million.



Employment in the Tasmanian mining industry has continued to decline; average employment (including working proprietors) was 3 151 persons in 1985-86 compared with 3 289 in 1984-85.

At 30 June 1986 there were 49 mining establishments operating, a decrease of 5 on the number of the previous June.

13.1.1 Metallic Minerals

Metallic mineral production in Tasmania has fluctuated over recent years. In 1983-84 the figures showed a significant decline in the production of most minerals compared with previous years. However, by 1985-86 production of most metallic minerals had reversed. The most significant increases were in the production of lead-copper concentrate and zinc concentrate.

13.2 METALLIC MINERAL PRODUCTION, TASMANIA (tonnes)

Mineral	1984-85	1985-86
Copper concentrate	85 524	85 409
Copper-tin concentrate	1 053	1 065
Iron ore pellets	2 258 014	2 240 743
Lead concentrate	37 076	34 714
Lead-copper concentrate	28 200	38 209
Molybdenum concentrate	23	23
Tin concentrate	6 824	8 243
Tungsten concentrate	1 961	1 941
Zinc concentrate	165 392	173 860

Value of Metallic Minerals Produced (a) (\$'000)

Total metallic minerals	247 661	266 278
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(a) Selling value at the mine.

13.1.2 Fuel Minerals (Coal)

Coal is the only fuel mineral mined in Tasmania. There are known deposits of coal throughout much of Tasmania but the most important are those located in the north-east in the Fingal and Mt Nicholas areas.

With recent increased interest in coal deposits, considerable exploration activity in the State has established the details of other mineable reserves in the Fingal Valley, as well as reserves of sub-surface black and brown coal.

The overall poor quality of Tasmanian coal limits its use to local industry while mining difficulties adversely affect its production cost in relation to possible imports. Reduction in oil prices has halted the reconversion process for the present.

13.3 PRODUCTION OF COAL, TASMANIA

Year	Production (tonnes)	Value (a) (\$'000)
1983-84	275 716	11 357
1984-85	296 933	12 102
1985-86	329 734	14 775

(a) Selling value at the mine.

13.1.3 Construction Materials

The production of construction materials is the section of the minerals industry which has the greatest personal impact on the people of the State. Buildings, roads and most services depend on the production of construction materials while control of costs depends on their being produced locally.

13.4 PRODUCTION OF CONSTRUCTION MATERIALS (a), TASMANIA (tonnes)

Mineral	1984-85	1985-86
Dimension stone	1 061	4 210
Crushed and broken stone	2 223 835	2 002 414
Gravel (b)	1 020 407	1 286 618
Sand	563 546	586 579
Other	83 976	44 527

Value of Construction Materials Produced (c) (\$'000)

Total construction materials	24 637	27 409
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(a) Excludes quantities quarried by Government or semi-government authorities (e.g. HEC, Department of Main Roads, etc.) but includes quantities quarried by local government authorities for road material.

(b) Mainly decomposed rock for road material.

(c) Selling value at the mine.

13.1.4 Non-metallic (excluding fuel) Minerals

The quarrying of limestone for cement production is the earliest recorded mining activity for non-metallic minerals other than coal in the State and is currently at record levels.

Silica occurs in a number of locations in Tasmania, both as high quality quartzite and as deposits of silica sand.

13.5 PRODUCTION OF NON-METALLIC (EXCLUDING FUEL) MINERALS, TASMANIA (tonnes)

Mineral	1984-85	1985-86
Clays and shale —		
Brick	n.p.	n.p.
Other	n.p.	n.p.
Dolomite	14 766	15 380
Limestone (a)	802 412	891 789
Peat moss	150	180
Pebbles	n.p.	n.p.
Silica	37 488	46 366

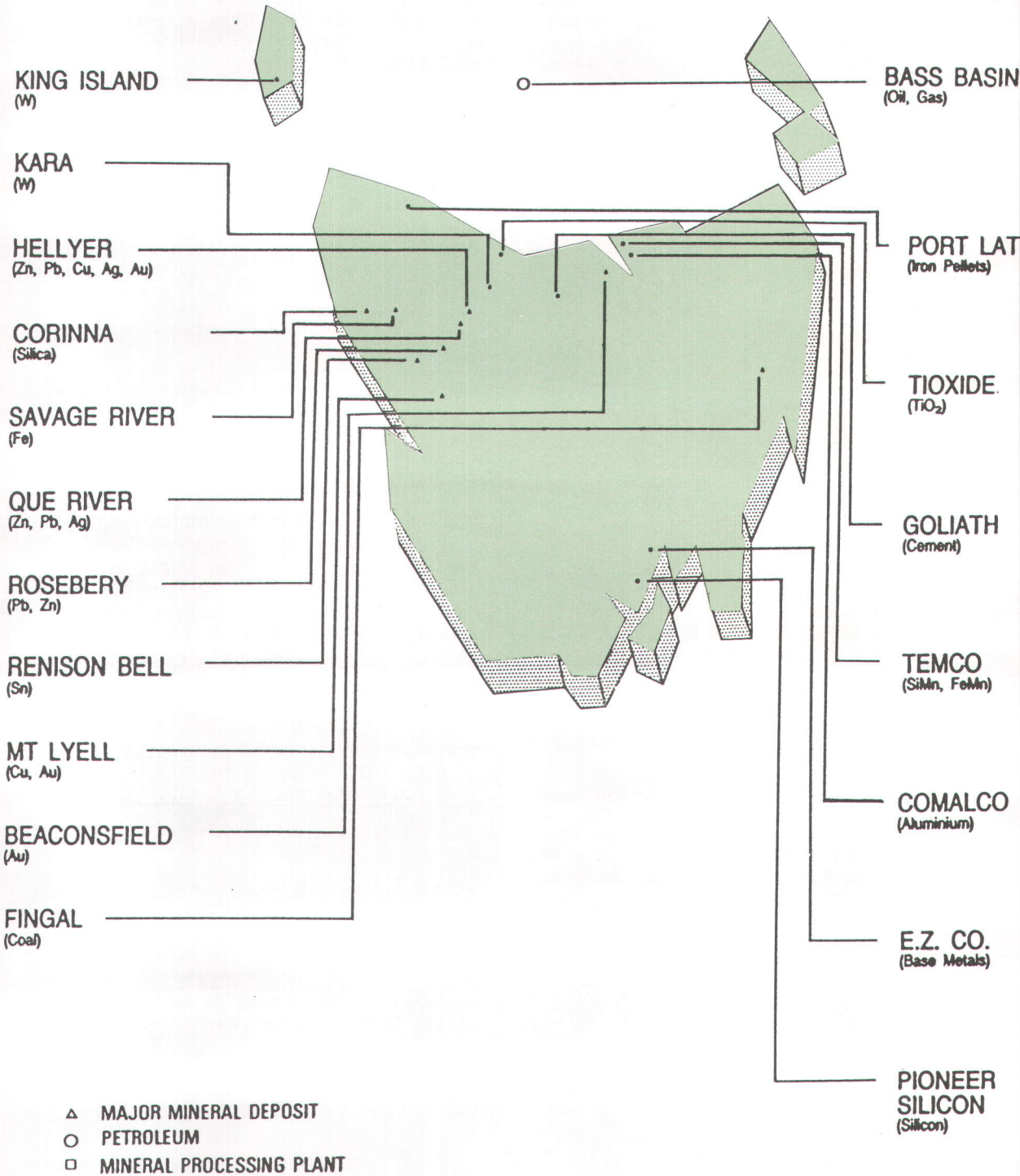
Value of Non-metallic (excluding Fuel) Minerals Produced (b) (\$'000)

Total non-metallic minerals	7 565	8 659
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(a) Excludes quantities used directly as a building or road material.

(b) Selling value at the mine.

LOCATIONS OF TASMANIAN MINERAL ACTIVITIES



Production of silica for Pioneer Silicon Industries comes from the north-west area of the State and may eventually come from the Glovers Bluff region in the South West Conservation Area. Silica for the Temco silico-manganese plant comes from Beaconsfield, and the identification of high-grade silica sand in the Savage River-Corinna region has led to the establishment of a new industry on the West Coast by Monier Limited, producing a high grade basic supply source for the optical glass industry.

13.2 MINERAL PROCESSING INDUSTRIES

Tasmania's ability to produce low-cost power from hydro-electric development has led to the establishment of metallurgical treatment plants to treat both local and imported ores.

13.6 MINING OPERATIONS, TASMANIA

Operation	Average annual employment (including working proprietors)	Wages and salaries	Turn-over
	No.	\$'000	\$'000
1983-84	3604	82 727	353 855
1984-85	3289	88 840	383 074
1985-86 —			
Metallic (a)	2755	83 124	340 369
Coal	n.p.	n.p.	n.p.
Construction materials	156	3 170	24 322
Total	3 151	92 345	389 541

(a) Small tin producers with a sales value of under \$20 000 have not been included.

Major mining companies operating within the State include:

- *Comalco Aluminium (Bell Bay) Ltd* is an aluminium smelter and refinery producing: rolling block, extrusion billet, foundry ingot, bus bar (horizontally cast), sows, T-ingot and granules. Comalco Aluminium Powder, an associated company, produces aluminium powder, aluminium paste and high alloy briquettes.
- *Electrolytic Zinc Company of A/Asia Ltd* produces zinc and zinc alloys as well as cadmium, sulphuric acid, superphosphate and ammonium sulphate at its Risdon factory. Silver-lead-zinc-copper-gold ore mined at the company's mines at Rosebery as well as concentrates from Aberfoyle Co.'s Que River and Hellyer mines are processed by EZ at Risdon.

- *Renison Goldfields Consolidated Limited (Mt Lyell)* produces copper in the form of concentrates from ore largely mined underground and hauled to the surface by a major diesel trucking operation.
- *Renison Goldfields Consolidated Limited (Renison)* is the largest tin mine in Australia and the world's largest producer of tin metal in concentrates from a hard rock underground mining operation.
- *Savage River Mines* produces high-grade iron ore pellets which are sold to Japanese steel mills.

Cleveland Tin Mine Closed

After 18 years production, the Cleveland tin mine at Luina closed down in May 1986, when falling world tin prices made the depleted ore reserves and declining grade no longer a viable operation.

At its peak in the mid 1970s, the Cleveland mine had about 80 underground workers out of a total work force of over 300 people. When it closed it had only 60.

The mine and its treatment plant were commissioned in 1968 with proven ore reserves for a production life of 12 years. Subsequent discoveries of additional reserves maintained production for an extra six years. In that period the mine has produced 5.6 million tonnes of ore for about 23 000 tonnes of tin metal.

13.3 EXPLORATION

The continuous attrition of ore bodies inherent in mining activity means that ongoing exploration is necessary, not only to establish new mines but also to maintain a skilled labour force and to extend the productive life of capital equipment. Recent events, including the opening of Hellyer mine with its forecast 20 year life on the one hand and the closure of the Cleveland and Hercules mines on the other, illustrate the dynamism of the industry.

Early exploration was undertaken by generations of prospectors who roamed the rugged terrain in western and north-eastern Tasmania for over a century to discover the rich rewards of Mt Bischoff (tin), Savage River (iron), Zeehan (silver/lead/zinc), Mt Lyell (copper/gold/silver), Renison Bell (tin), Magnet (silver/lead/zinc), Rosebery (zinc/lead/, silver/copper), Hercules (zinc/lead/silver), Tullah (silver/lead/zinc) and Cleveland (tin/ copper) in western Tasmania,

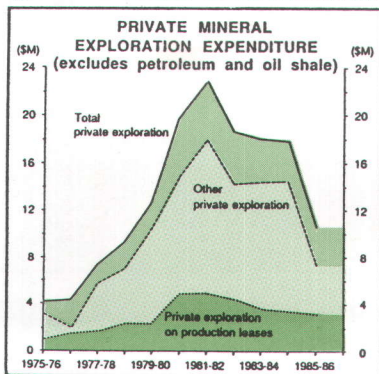
and Storys Creek/ Aberfoyle (tin/tungsten), Blue Tier (tin) and Briseis (tin) in eastern Tasmania.

Although the more mineralised regions of the State, such as the Queenstown-Zeehan-Rosebery area in western Tasmania, have been extensively explored on the surface, much of Tasmania remains relatively unexplored and the search for 'blind' mineral deposits is still in its infancy.

Mineral exploration today is aimed primarily at discovering 'blind' ore bodies that are concealed either by superficial overburden or overlying rocks that have not been removed by erosion.

Modern mineral exploration programs demand a combination of many geological, geophysical and geochemical techniques and applications and may take five, ten or even fifteen years to come to fruition. Only a very small proportion of mineral exploration programs are successful.

Expenditure on private mineral exploration steadily increased for a number of years and peaked in 1981-82. Since that time exploration funding in the State has declined substantially.



Major exploration interests are centred on four main areas.

- The Mt Read Volcanics region from Elliott Bay to Que River, where the prospects are excitingly high for more zinc/lead/copper/gold/silver deposits.
- The Mt Bischoff-Savage River-Pieman River-Zeehan region, where prospects are high for tin, tungsten, lead, zinc, silver, gold, nickel, osmiridium, iron, copper, asbestos and chromium.
- The Hampshire-Sheffield region, where the attractions are tungsten, tin, zinc, lead, copper, silver, gold, iron and molybdenum.
- North eastern Tasmania, bounded by Scamander-Avoca-Lefroy, which has long been prospected for gold, tin, tungsten, silver and lead.

13.3.1 Petroleum Exploration

Offshore

Petroleum exploration during 1986-87 continued at very low levels, largely due to the collapse of international oil prices early in 1986. During this period no wells were drilled and no new seismic surveys were undertaken.

Early in 1987 two areas on the west Tasmanian continental shelf were made available for work-program tendering. Despite the downturn in exploration caused by the 1986 price collapse, interest in the area was high.

Onshore

Conga Oil Ltd increased their exploration activities in south eastern Tasmania during the year. Exploration is directed to finding hydrocarbons sourced from Ordovician carbonate sequences and drilling was expected to commence late in 1987.

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