

Resource Centre
Policy Branch
Dept. of Minerals & Energy



ROYALTIES AND STATISTICS BRANCH

**STATISTICAL DIGEST OF
MINERAL PRODUCTION
1984**



DEPARTMENT OF MINES
WESTERN AUSTRALIA

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MINERAL PRODUCTION
1984

COMPILED BY:

ROYALTIES AND STATISTICS BRANCH

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CONTENTS

	Page
Summary	1
Table 1. Quantity and value of minerals 1984.	2
Table 2. Quantity and value of minerals: showing gold-field/mineral-field and metallic content.	3
Table 3. Comparison of quantity and value of major mineral production between 1983 and 1984.	11
Alumina	12
Gold	14
Table 4. Quantity of gold(kg) and ore treated 1984: showing gold-field and district.	15
Table 5. Gold price 1984. (monthly averages)	16
Iron Ore	18
Nickel	20
Table 6. Royalty receipts 1984.	22
Principal minerals producers 1984.	23
Mineral production: major centres.	29

ABBREVIATIONS

cons.	concentrates	f.o.t.	free on truck
f.o.b.	free on board	inf.	infinity
f.o.r.	free on rail	n.a.	not available

REFERENCES

- (a) Value based on the average Australian value of alumina as published by the Bureau of Mineral Resources in the Australian Mineral Industry Review.
- (b) Value at works.
- (c) Estimated f.o.b. value.
- (d) Estimated f.o.r. value.
- (e) Estimated f.o.b. value based on the current price of nickel containing products.
- (f) Nett well head value.
- (g) Value based on the price per barrel as assessed by the Commonwealth for Barrow Island crude oil at Kwinana.
- (h) Value at pithead.
- (i) Metallic by-product of nickel mining.

UNITS AND CONVERSION FACTORS

	Metric unit	Symbol	Imperial unit	Conversion factors	
				Multiply imperial unit by	Multiply metric unit by
Mass	gram	g	troy (fine) ounce (oz)	31.1035	0.0321507
	kilogram	kg	pound (lb)	0.453592	2.20462
	tonne	t	long tonne (2240 lbs)	1.01605	0.984207
	tonne	t	short tonne (2000 lbs)	0.907185	1.10231
Volume	cubic metre	m ³	barrel (bbl)	0.158987	6.28981
	litre	L	gallon	4.54609	0.2199692
	kilolitre	kL			

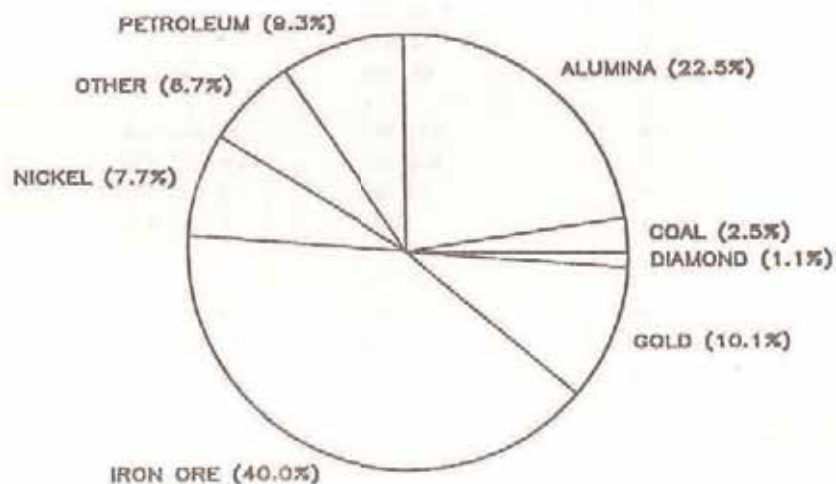
SUMMARY

Since 1983 the total value of mineral production has increased by 14% from \$3 666 million to \$4 174 million an increase of \$508 million.

Seven minerals - alumina, coal, diamond, gold, iron ore, nickel and petroleum - account for 93% of the total value of production with alumina (23%) and iron ore (40%) being by far the largest.

Alumina, gold, iron ore and petroleum all showed significant increases in production with the condensate (up 600%) sector of petroleum showing enormous gains due to the commercial production from the North West Shelf.

VALUE OF PRODUCTION



\$ 4174 MILLION

Figure 1. Percentage breakup of the total value of production for 1984 showing the seven major minerals.

TABLE 1. QUANTITY AND VALUE OF MINERALS 1984.

Mineral	Unit of Quantity	1983		1984	
		Quantity	Value(\$)	Quantity	Value(\$)
Alumina	†	3 983 098	745 084 355	5 004 998	940 855 670
Building stone					
quartz	†	2 505	112 815	2 272	102 224
quartzite	†	488	7 958	160	2 880
Clay					
alunite	†	1 147	7 003	-	-
cement clay	†	20 082	50 205	28 693	71 734
fire clay	†	152 554	183 791	221 770	226 326
kaolin	†	169	1 014	85	3 199
white clay	†	45 760	145 798	53 134	157 932
Coal	†	3 952 768	99 640 822	3 692 665	105 930 163
Cobalt	†	477	3 169 424	520	6 556 752
Construction materials					
aggregate	†	5 033	17 486	126 766	69 696
gravel	†	60	240	46 422	52 966
rock	†	72 474	144 945	47 557	94 712
sand	†	125 405	343 272	236 768	1 146 541
Copper	†	3 456	4 228 393	3 608	3 348 810
Copper concentrates	†	35 745	7 284 445	38 452	11 145 646
Diamonds	carats	6 539 544	68 978 807	5 692 193	45 155 034
Diatomite	†	-	-	257	1 029
Feldspar	†	3 551	35 507	3 158	21 425
Garnet sands	†	2 657	92 967	3 287	115 080
Gold	kg	23 881	359 374 810	32 111	422 248 335
Gypsum	†	439 444	5 500 499	637 683	7 152 245
Iron ore	†	74 983 545	1 546 325 341	90 631 128	1 671 285 288
Limestone	†	345 481	1 686 993	184 696	968 942
Magnesite	†	-	-	16 729	215 936
Mica	†	175	45 591	30	8 037
Mineral beach sands					
ilmenite	†	871 302)		1 336 332)	
reduced ilmenite	†	-)	25 149 796	140)	53 989 350
upgraded ilmenite	†	10 044)		72 133)	
leucosxene	†	10 195	1 842 513	32 110	6 951 500
monazite	†	12 877	5 485 523	15 592	6 767 117
rutile	†	86 205	20 645 888	60 651	18 834 203
xenotime	†	-	-	66	358 048
zircon	†	272 391	29 964 159	336 950	37 675 931
Nickel concentrates	†	494 007	288 621 810	496 630	320 229 972
Nickel ore	†	19 399	2 919 743	-	-
Palladium	kg	449	1 963 478	523	2 693 559
Petroleum					
condensate	†	3 170	n.a.	22 205	5 558 723
crude oil	kL	1 260 801	300 712 136	1 295 520	283 635 789
natural gas	'000m ³	1 052 738	54 528 779	1 332 156	99 538 071
Platinum	kg	52	863 905	66	1 010 176
Salt	†	3 868 254	59 706 681	4 674 017	75 252 113
Semi-precious stones					
amethyst	kg	15 463	73 751	13 676	60 193
moss opal	kg	51	33	792	511
Silica sand	†	292 003	458 499	352 577	2 251 827
Silver	kg	25 596	11 077 227	38 433	11 505 377
Spodumene	†	2 492	464 041	6 668	1 380 851
Talc	†	164 859	n.a.	160 976	n.a.
Tantalite	†	272	6 753 268	145	5 224 379
Tin concentrates	†	775	7 621 570	720	6 988 222
Vermiculite	†	55	840	423	7 275
Zinc concentrates	†	26 455	5 373 969	70 431	17 318 707
Total value			3 666 690 100		4 174 208 496

TABLE 2. QUANTITY AND VALUE OF MINERALS: SHOWING GOLD-FIELD/MINERAL-FIELD AND METALLIC CONTENT.

Mineral	Gold-field		Unit of		Value (\$)	Ref.
	Mineral-field	Quantity	Quantity	Metallic Content		
Alumina	South West	t	5 004 988		940 855 670	(a)
Building stone quartz quartzite	South West	t	2 272		102 224	
	South West	t	160		2 880	
Clay cement clay fire clay kaolin white clay			2 432		105 104	(b)
	South West	t	28 693		71 734	
	South West	t	221 770		226 326	
	Greenbushes	t	85		3 199	
	South West	t	53 134		157 932	
Coal	Collie	t	3 692 665		105 930 163	(c)
Cobalt				Cobalt t		
	Coolgardie	t		408	5 031 025	
	East Murchison	t		112	1 525 727	
				520	6 556 752	(i)

TABLE 2. QUANTITY AND VALUE OF MINERALS: SHOWING GOLD-FIELD/MINERAL-FIELD AND METALLIC CONTENT - continued.

Mineral	Gold-field		Unit of	Quantity	Metallic	Value (\$)	Ref.
	Mineral-field	Quantity					
Construction materials							
aggregate	Kimberley		t	492		1 968	
	Pilbara		t	121 314		50 366	
	West Pilbara		t	4 960		17 362	
						69 696	
gravel	Pilbara		t	44 700		44 700	
	West Kimberley		t	1 722		8 266	
						52 966	
rock	West Pilbara		t	47 357		94 712	
sand	Coolgardie		t	12 292		69 797	
	East Coolgardie		t	138 057		865 330	
	Pilbara		t	9 141		52 634	
	South West		t	55 139		65 102	
	West Pilbara		t	22 139		93 678	
						1 146 541	(b)
Copper	Copper t						
	Coolgardie			2 844		2 681 563	
	East Murchison			764		667 247	
						3 608	(i)

TABLE 2. QUANTITY AND VALUE OF MINERALS: SHOWING GOLD-FIELD/MINERAL-FIELD AND METALLIC CONTENT - continued.

Mineral	Gold-field		Unit of	Quantity	Metallic	Value (\$)	Ref.
	Mineral-field	Quantity					
Copper concentrates	Mt Margaret	t	38 452	8 397	11 145 646	(c)	
Diamonds	Kimberley	carats	5 692 193		45 155 034		
Diatomite	South West	t	257		1 029		
Feldspar	South West	t	3 158		21 425		
Garnet sands	South West	t	3 287		115 080	(c)	
Gold	State generally	kg	32 111	6 412 878	422 248 335		
				Ore treated t			
	Includes alluvial, dollied and specimens, gold obtained from tailings retreatment and gold contained in exported gold bearing material.						
Gypsum	Dundas	t	184 395		1 980 486		
	Gascoyne	t	348 144		4 549 104		
	South West	t	35 145		415 271		
	Yilgarn	t	69 999		207 384		
			637 683		7 152 245	(b)	
	46 520 t of plaster of paris were manufactured from 67 012 t of gypsum.						

TABLE 2. QUANTITY AND VALUE OF MINERALS: SHOWING GOLD-FIELD/MINERAL-FIELD AND METALLIC CONTENT - continued.

Mineral	Gold-field Mineral-field	Unit of Quantity	Quantity	Metallic Content	Value (\$)	Ref.	Assay Fe%
Iron ore							
ore shipped interstate	Peak Hill	t	4 977 138	64.00	85 004 101		
	West Kimberley	t	875 714	67.99	11 605 187		
<hr/>							
Iron ore ore exported overseas	Peak Hill	t	25 924 594	63.00	519 842 409		
	Pilbara	t	4 737 355	62.38	95 201 352		
	West Kimberley	t	2 360 403	66.67	45 001 392		
	West Pilbara	t	51 755 924	60.19	914 630 847		
				84 778 276		1 574 676 060	
<hr/>							
Limestone	South West	t	178 107		962 353		
	West Pilbara	t	6 589		6 589		
<hr/>							
			184 696		968 942		(b)
<hr/>							
Magnesite	Phillips River	t	16 729		215 936		(c)
<hr/>							
Mica	Pilbara	t	30		8 037		(c)

TABLE 2. QUANTITY AND VALUE OF MINERALS: SHOWING GOLD-FIELD/MINERAL-FIELD AND METALLIC CONTENT - continued.

Mineral	Gold-field		Unit of	Metallic		Value (\$)	Ref.
	Mineral-field	Quantity		Quantity	Content		
Mineral beach sands ilmenite reduced ilmenite upgraded ilmenite	South West	1 336 322	t	Assay TiO ₂ %	56.51)	53 989 350	(c)
	South West	140	t		65.00)		
	South West	72 133	t		92.00)		
leucoxene	South West	32 110	t	TiO ₂ t	29 038	6 951 500	(c)
monazite	South West	15 592	t	ThO ₂ units	100 469	6 767 117	(c)
rutile	South West	60 651	t	TiO ₂ t	57 825	18 834 203	(c)
xenotime	South West	66	t	Y ₂ O ₃ kg	20 010	358 048	(c)
zircon	South West	336 950	t	ZrO ₂ t	223 074	37 675 931	(c)

TABLE 2. QUANTITY AND VALUE OF MINERALS: SHOWING GOLD-FIELD/MINERAL-FIELD AND METALLIC CONTENT - continued.

Mineral	Gold-field		Unit of	Quantity	Metallic Content	Value (\$)	Ref.
	Mineral-field	Quantity					
Nickel concentrates	Coolgardie	352 768	t	11.52	221 040 279		
	East Coolgardie	30 660	t	11.87	19 703 422		
	East Murchison	71 551	t	14.02	54 598 632		
	Mt Margaret	41 651	t	10.87	24 887 639		
		496 630			320 229 972	(e)	
Palladium	Coolgardie	523	kg		2 693 559	(i)	
Petroleum condensate	North Rankin Field	19 271	t		4 822 727		
	South West	2 934	t		735 996		
		22 205			5 558 723		
crude oil	Ashburton	1 224 147	kL		272 259 680	(g)	
	South West	8 797	kL		1 830 281	(f)	
	West Kimberley	62 576	kL		9 545 828	(f)	
		1 295 520			283 635 789		
natural gas	North Rankin Field	456 648	'000m ³		47 635 789		
	South West	875 508	'000m ³		51 852 591		
		1 332 156			99 538 071		

TABLE 2. QUANTITY AND VALUE OF MINERALS: SHOWING GOLD-FIELD/MINERAL-FIELD AND METALLIC CONTENT - continued.

Mineral	Gold-field Mineral-field	Unit of Quantity	Quantity	Metallic Content	Value (\$)	Ref.
Platinum	Coolgardie	kg	56		1 010 176	(i)
Salt	State generally	t	4 674 017		75 252 113	(b)
Semi-precious stones amethyst moss opal	Gascoyne	kg	13 676		60 193	
	Dundas	kg	792		511	
			14 468		60 704	
Silica sand	East Coolgardie	t	98 171		240 518	
	South West	t	254 406		2 011 309	
			352 577		2 251 827	(b)
Silver	By-product gold mining	kg	7 125		1 748 422	
	By-product nickel mining	kg	352		106 245	
	Mt Margaret	kg	30 956		9 650 710	
			38 433		11 505 377	
Spodumene	Greenbushes	t	6 668	LiO ₂ t	1 380 851	(c)
				467		

TABLE 2. QUANTITY AND VALUE OF MINERALS: SHOWING GOLD-FIELD/MINERAL-FIELD AND METALLIC CONTENT - continued.

Mineral	Gold-field		Unit of	Quantity	Metallic	Value (\$)	Ref.
	Mineral-field	Mineral-field					
Talc	Peak Hill		t	19 318		n.a.	
	South West		t	141 658		n.a.	
<hr/>							
				160 976		n.a.	
<hr/>							
Tantalite					Ta ₂ O ₅ kg		
	Greenbushes		t	111	56	4 489 773	
	Pilbara		t	34	1	734 606	(i)
<hr/>							
				145	57	5 224 379	
<hr/>							
Tin concentrates					Tin t		
	Greenbushes		t	560	392	5 479 207	
	Pilbara		t	160	113	1 509 015	
<hr/>							
				720	505	6 988 222	(c)
<hr/>							
Vermiculite	Phillips River		t	423		7 275	(d)
<hr/>							
Zinc concentrates					Zinc t		
	Mt Margaret		t	70 431	35 640	17 318 707	(c)
<hr/>							
Total value						\$4 174 208 496	

TABLE 3. COMPARISON OF QUANTITY AND VALUE OF MAJOR MINERAL PRODUCTION BETWEEN 1983 AND 1984.

Mineral	Unit of Quantity	Quantity			Value (\$)		
		1983	1984	% up (% down)		1983	1984
Alumina	t	3 983 098	5 004 988	26	745 084 355	940 855 670	195 771 315
Coal	t	3 952 768	3 692 665	(7)	99 640 822	105 930 163	6 289 341
Diamonds	carat	6 539 544	5 692 193	(13)	68 978 807	45 155 034	(23 823 773)
Gold	kg	23 881	32 111	34	359 374 810	422 248 335	62 873 525
Gypsum	t	439 444	637 683	45	5 500 499	7 152 245	1 651 746
Iron ore	t	74 983 543	90 631 128	21	1 546 325 341	1 671 285 288	124 959 947
Mineral beach sands	t	871 302	1 336 322	53)))
ilmenite	t	-	140	inf.)))
reduced ilmenite	t	10 044	72 133	618	25 149 796	53 989 350	28 839 554
upgraded ilmenite	t	10 193	32 110	215	1 842 513	6 951 500	5 108 987
leucoxene	t	12 877	15 592	21	5 485 525	6 767 117	1 281 592
monazite	t	86 203	60 651	(30)	20 645 888	18 834 203	(1 811 685)
rutile	t	-	66	inf.	-	358 048	358 048
xenotime	t	272 391	336 950	24	29 964 159	37 675 931	7 711 772
zircon	t	494 007	496 630	1	288 621 810	320 229 972	31 608 162
Nickel concentrates	t						
Petroleum	t	3 170	22 205	600	n.a.	5 558 723	n.a.
condensate	t	1 260 801	1 295 520	3	300 712 136	283 635 789	(17 076 347)
crude oil	kL	1 052 738	1 332 156	27	54 528 779	99 538 071	45 009 292
natural gas	'000m3	3 868 254	4 674 017	21	59 706 681	75 252 113	15 545 432
Salt	t						
Total value					3 611 561 919	4 101 417 552	

ALUMINA PRODUCTION

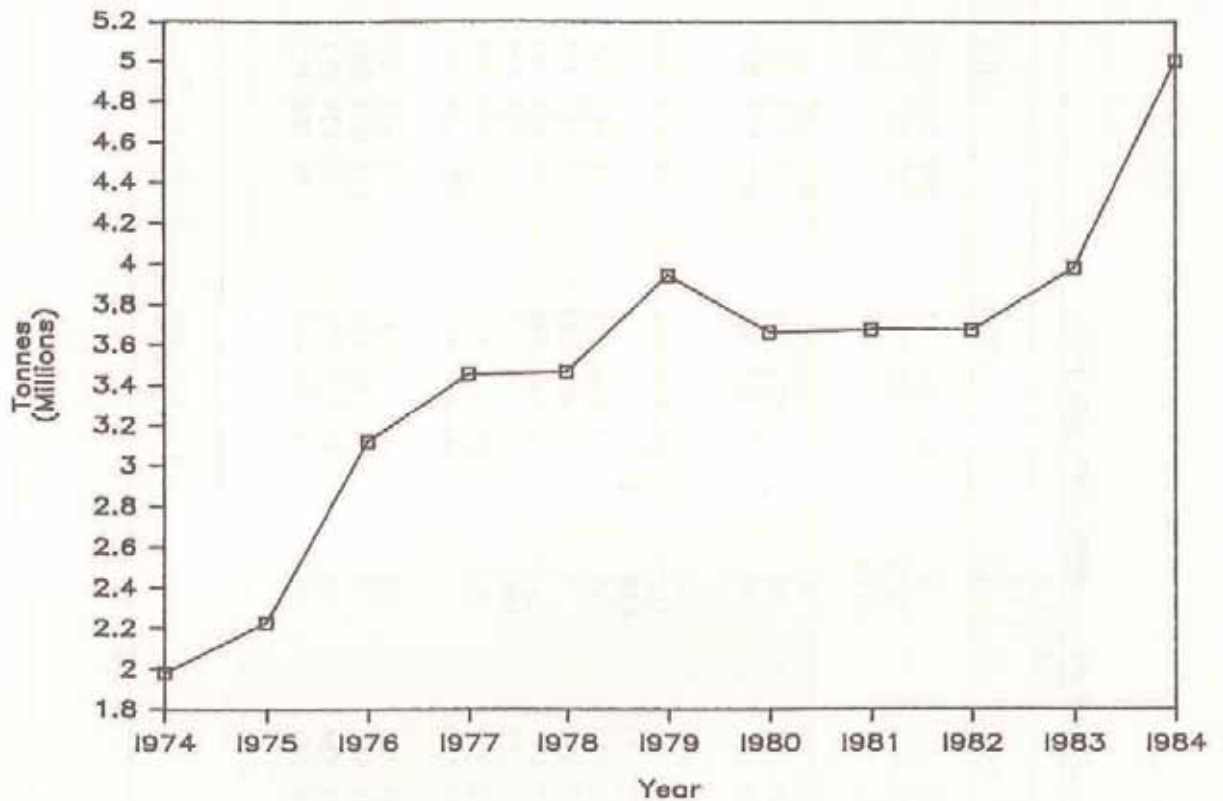


Figure 2. Western Australian alumina production 1974-1984

ALUMINA

Continued expansion of the bauxite/alumina industry resulted in a substantial increase in value of alumina in 1984. Output from both Pinjarra and Kwinana increased during the year while Wagerup and Worsley both commenced production in the March quarter.

Total production was up 26% to five million tonnes valued at \$941 million an increase of 26%.

West Australian alumina is shipped from Kwinana and Bunbury to smelters in the Eastern States, America, Japan, South Africa and Bahrain.

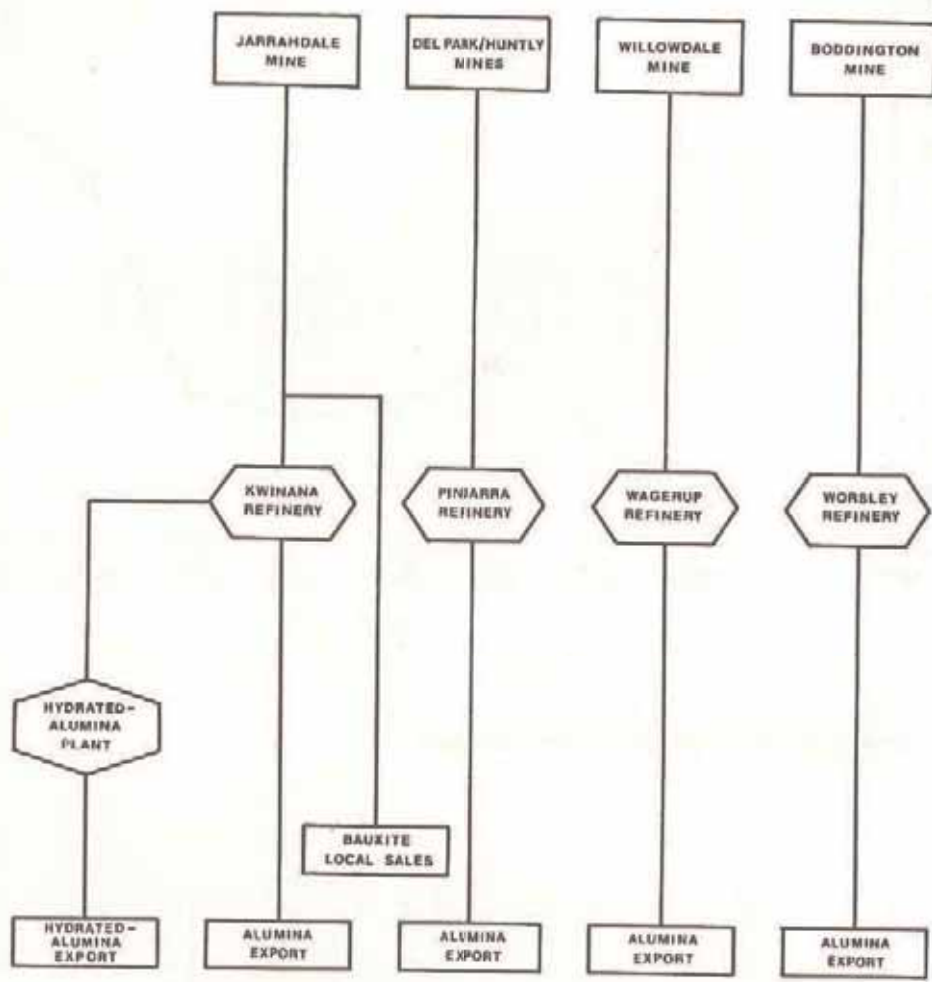


Figure 3. Flow chart: Western Australian Alumina Industry, 1984

Note: Exports refer to exports from Western Australia.

GOLD PRODUCTION

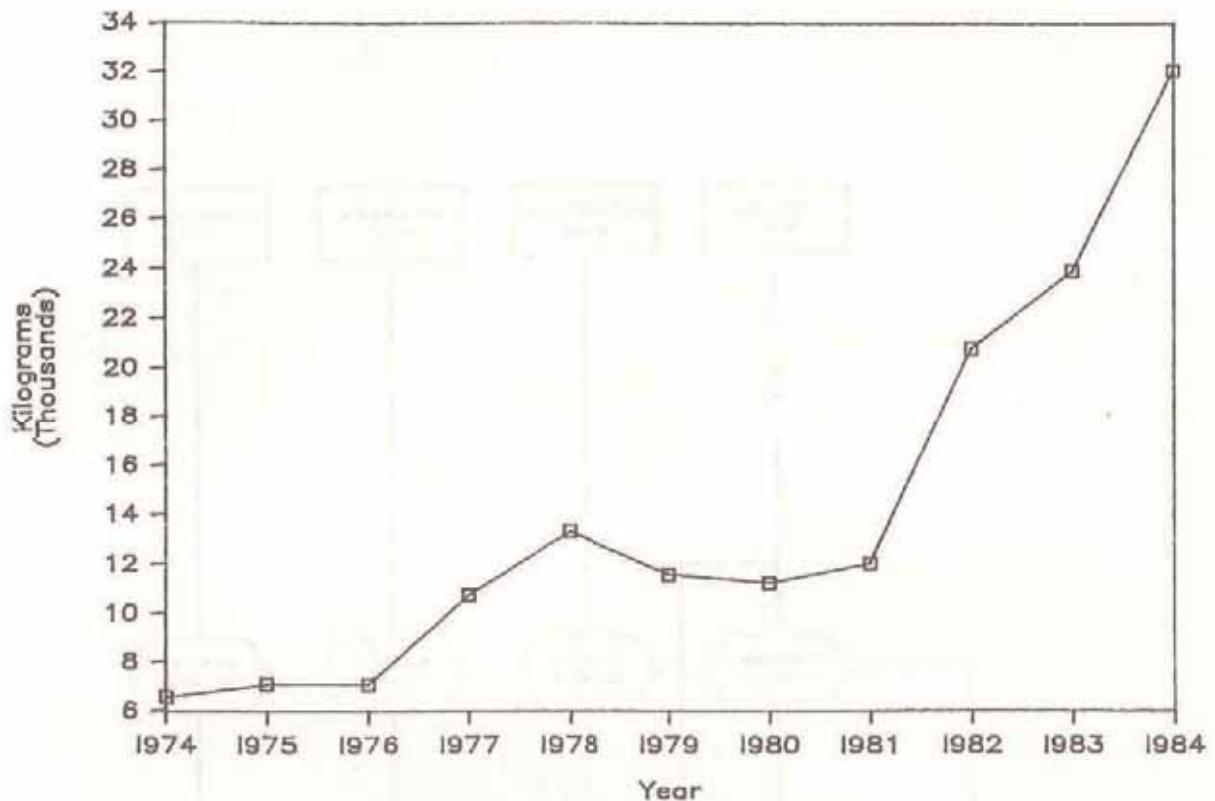


Figure 4. Western Australian gold production 1974-1984

GOLD

Gold production in 1984 increased by a massive 34% to 32 111 kilograms or one million ounces which is the first time that the one million ounce production level has been achieved since 1941. The estimated value of 1984 production was \$422 million with the average price over the year being \$410.15 per ounce.

The continuing strong gold price and modern recovery techniques, including the carbon in pulp technique for treating tailings, have played a leading role in the commencement of a significant number of new projects in Western Australia.

Kalgoorlie Mining Associates with the Charlotte Mine and the Fimiston leases is the premier producer followed by Western Mining Corporation and Newmont's Telfer project.

TABLE 4. QUANTITY OF GOLD (kg) AND ORE TREATED 1984: SHOWING GOLD-FIELD AND DISTRICT.

District (1) Gold-field (2)	Ore treated tonnes (1)	Ore trt. tonnes (2)	Gold therefrom (1)	Gold therefrom (2)	Alluvial/ Dollied (1)	Alluv/ Dollied (2)	Total gold (1)	Total gold (2)
Ashburton		581		3.843		41.620		45.463
Broad Arrow		157 953		765.033		6.202		771.235
Coolgardie	631 716		3 370.201		4.987		3 375.188	
Kunanalling	286		20.155		1.765		21.920	
Coolgardie		632 002		3 390.356		6.752		3 397.108
Dundas		350 332		3 348.126		0.897		3 349.023
Bulong	54		28.591		0.708		29.299	
East Coolgardie	2 336 874	2 336 928	11 343.058	11 371.649	12.550	13.258	11 355.608	11 384.907
East Coolgardie								
Black Range	308		45.306		43.537		88.843	
Lawlers	20 991		239.164		9.750		248.914	
Wiluna	97		504.262		2.268		506.530	
East Murchison		21 396		788.732		55.555		844.287
Gascoyne		22		0.596		3.039		3.635
Kimberley		-		-		6.854		6.854
Mt Malcolms	338 138		1 091.603		41.283		1 132.886	
Mt Margaret	210 657		1 601.592		28.545		1 630.137	
Mt Morgans	1 836		12.784		4.251		17.035	
Mt Margaret		550 631		2 705.979		74.079		2 780.058
Cue	79 801		206.805		42.859		249.664	
Day Dawn	--		24.031		22.872		46.903	
Meekatharra	576 917		979.786		93.737		1 073.523	
Mt Magnet	316 179		1 383.887		5.827		1 389.714	
Murchison		972 897		2 594.509		165.295		2 759.804
Menzies	6 167		194.797		1.834		196.631	
Niagara	102		72.701		0.561		73.262	
Ularring	53 228		47.382		-		47.382	
Yerilla	187 483		602.365		0.521		602.886	
North Coolgardie		246 980		917.245		2.916		920.161
Kanowna	533		19.957		5.090		25.047	
Kurnalpi	272		0.106		3.170		3.276	
North East Coolgardie		805		20.063		8.260		28.323

TABLE 4. QUANTITY OF GOLD (kg) AND ORE TREATED 1984: SHOWING GOLD-FIELD AND DISTRICT - continued.

District (1) Gold-field (2)	(1)		(2)		Gold therefrom therefrom	(1)		(2)		Total gold	Total gold
	Ore treated tonnes	Ore trt. tonnes	Gold therefrom	Gold therefrom		Alluvial/ Dollied	Alluvial/ Dollied				
Peak Hill		63 779		577.984		11.850				589.834	
Phillips River		-		51.732		0.066				51.798	
Marble Bar	844 643		3 706.231				29.110			3 735.341	
Nullagine	460		143.484				200.026			343.510	
Pilbara		845 103		3 849.715		229.136				4 078.851	
South West		49 496		126.670		0.040				126.710	
State Generally		-		-		4.171				4.171	
West Pilbara		-		-		7.443				7.443	
Yalgoo		4 387		46.584		5.761				52.345	
Yilgarn		179 586		904.308		4.692				909.000	
Total		6 142 878		31 463.124		647.886				32 111.010	

TABLE 5. GOLD PRICE 1984
(monthly averages)

	Perth \$/troy ounce (daily fixing)	Rong Kong \$/troy ounce (daily fixing)
January	410.90	371.10
February	413.40	386.80
March	415.45	394.80
April	413.95	381.55
May	417.00	377.45
June	428.80	378.10
July	417.10	347.80
August	411.05	347.85
September	411.25	341.70
October	406.75	339.95
November	396.00	341.30
December	380.20	319.80
1984 average	410.15	360.68

GOLD PRICE

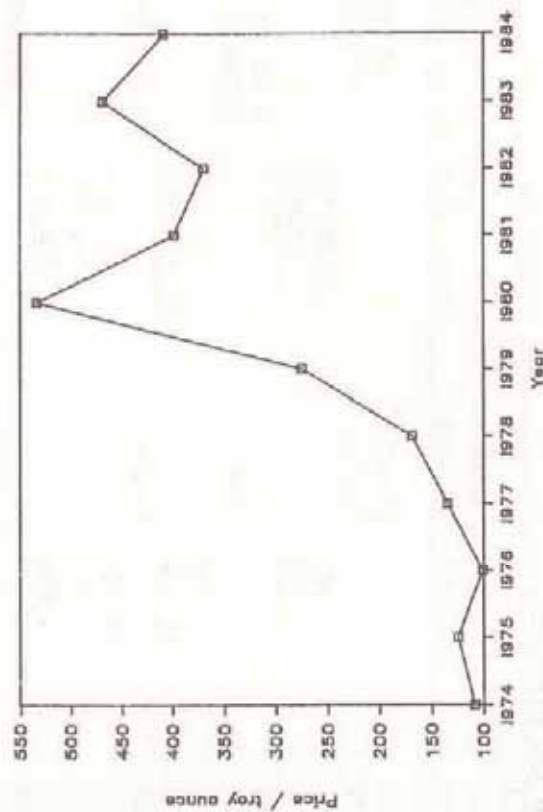


Figure 5. Australian gold price 1974-1984

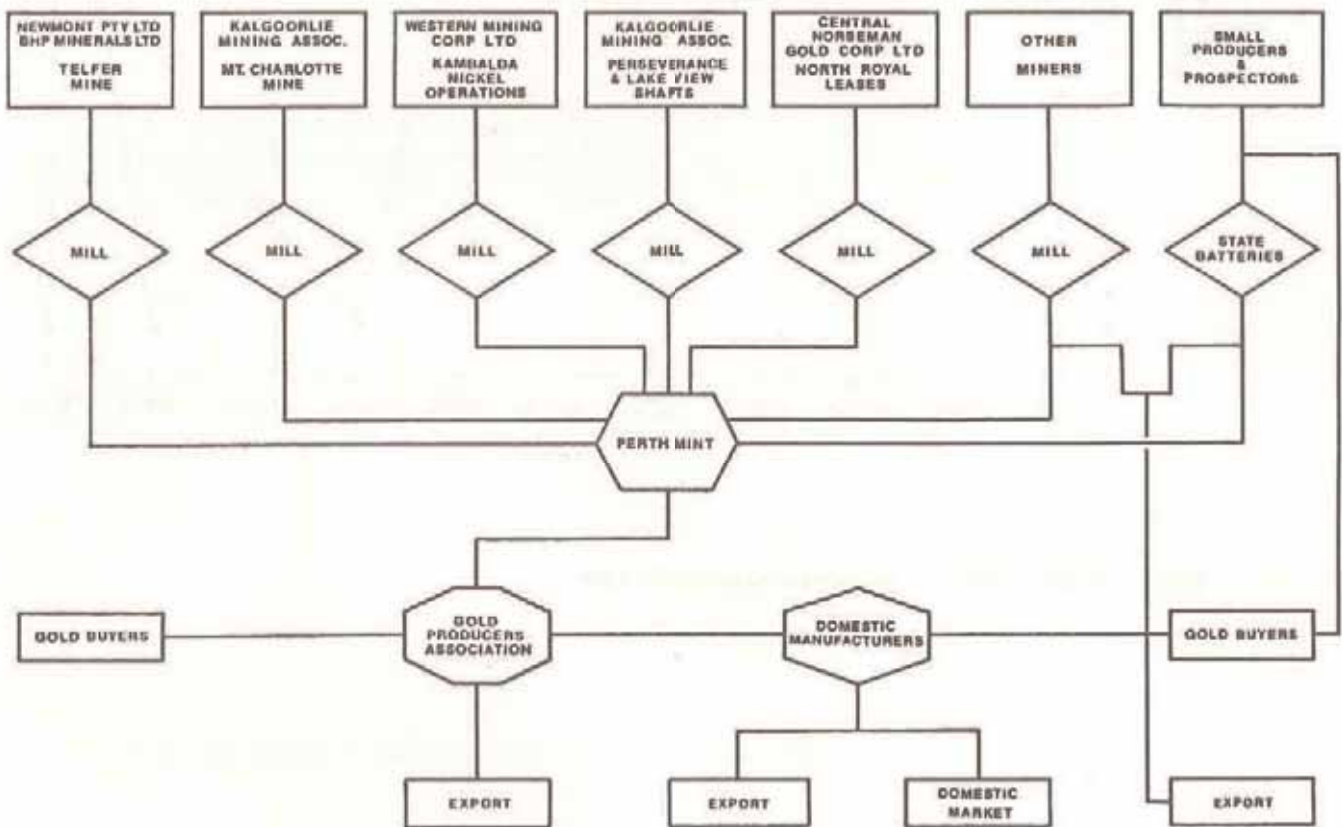


Figure 6. Flow chart: Western Australian Gold Industry, 1984.

IRON ORE PRODUCTION

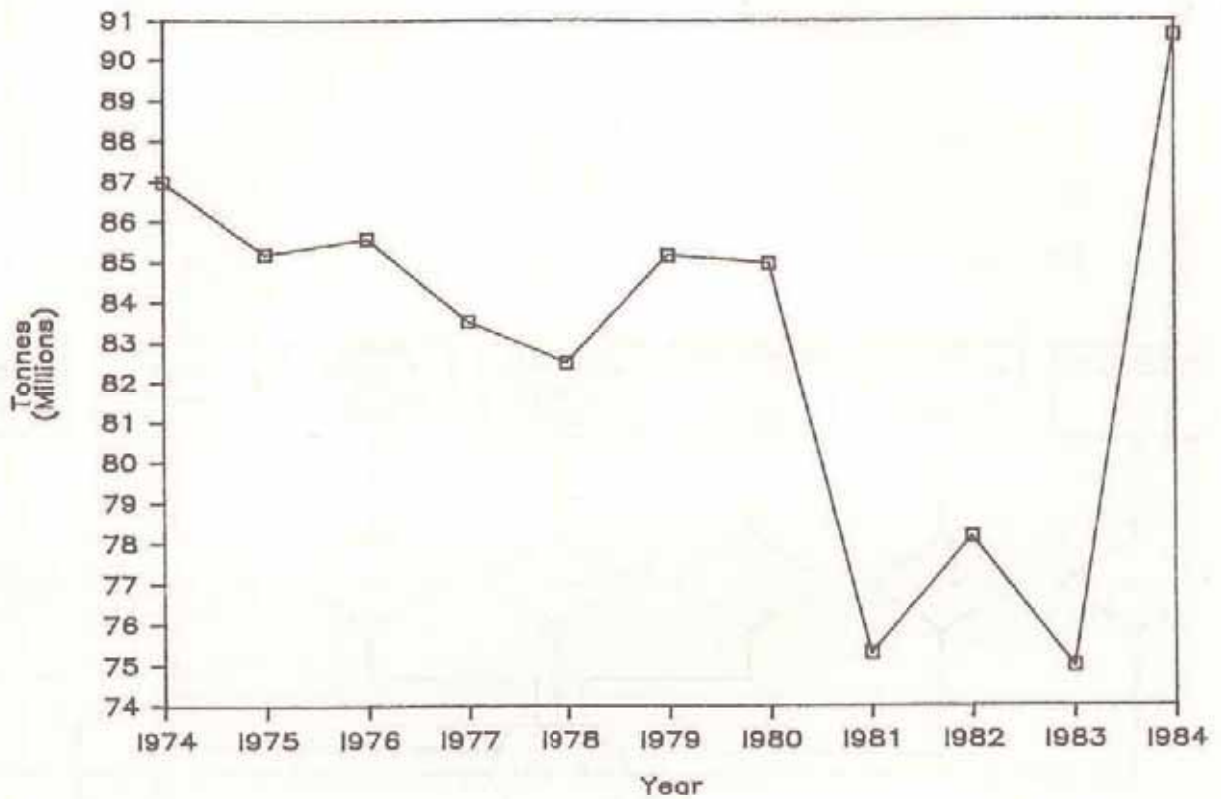


Figure 7. Western Australian iron ore production 1974-1984

IRON ORE

Iron Ore continues as the major contributor to the value of the State's mineral production with the value in 1984 comprising 40% of the total value.

Price reductions accepted by the producers for the 1984/85 ore year were offset by increased shipments which improved by 21% to 91 million tonnes. Because of the increased demand and a more favourable exchange rate towards the end of the year, the total value of 1984 shipments was \$1 671 million, an increase of \$125 million over the 1983 value.

82% of the West Australian overseas exports went to Asian markets with the remainder to European markets.

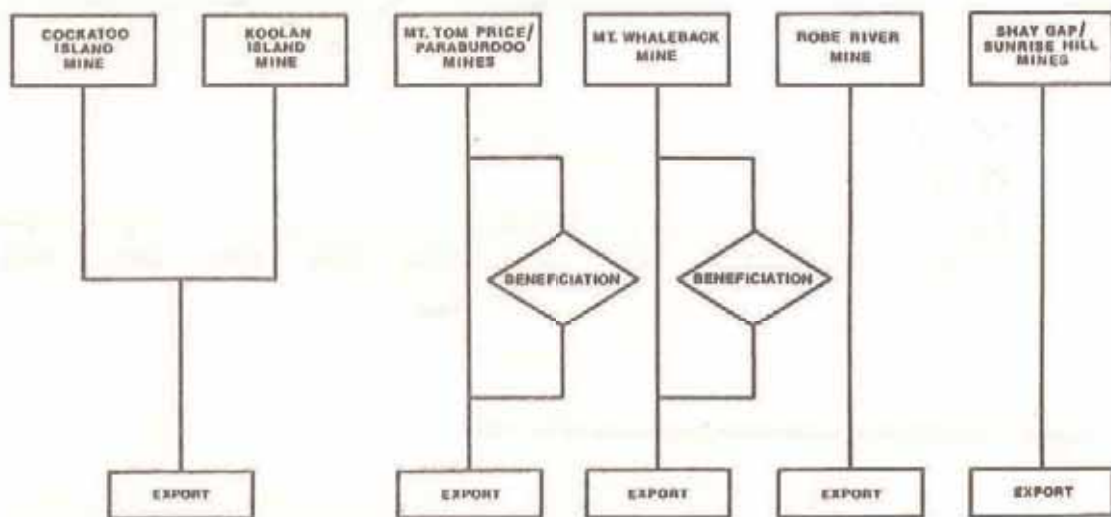


Figure 8. Flow chart: Western Australian Iron Ore Industry, 1984

Note: Exports refer to exports from Western Australia.

NICKEL PRODUCTION

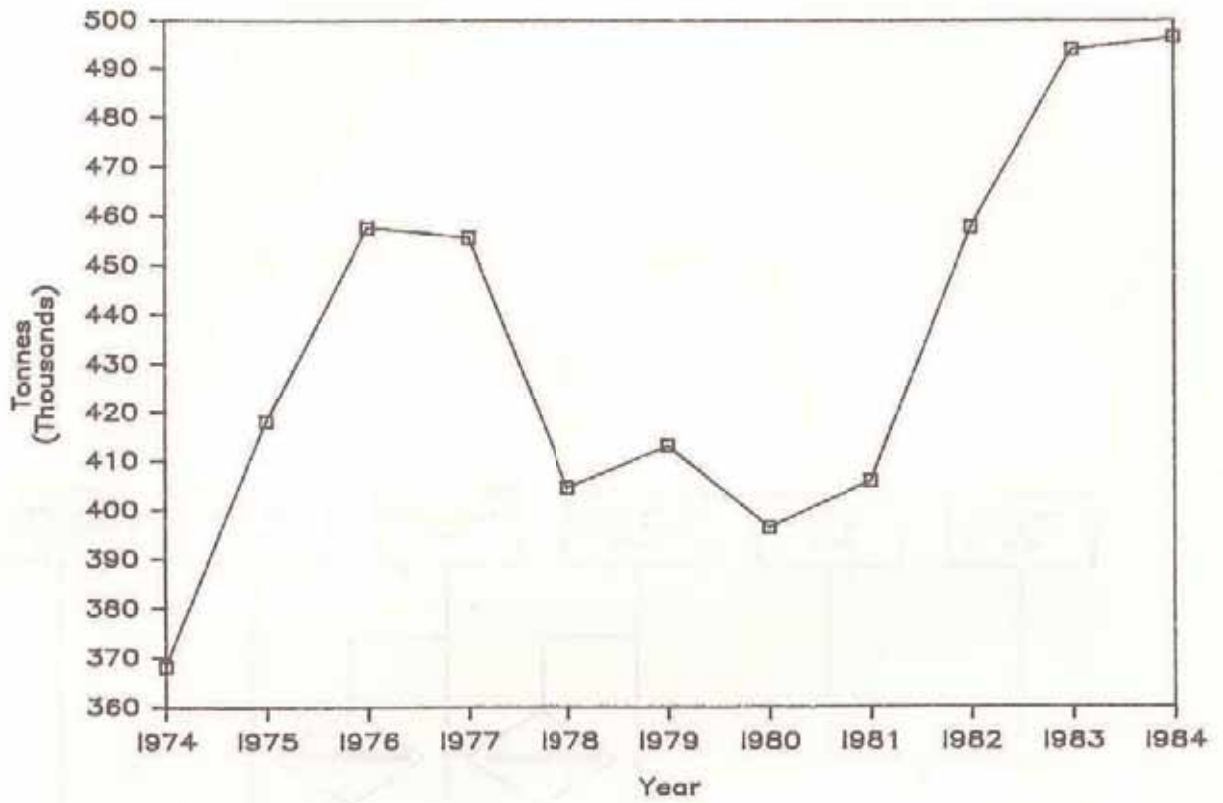


Figure 9. Western Australian nickel production 1974-1984

NICKEL

Nickel concentrate production showed a marginal increase of 1% to 496 630 tonnes with an estimated value of \$320 million.

Producers continue to be affected by depressed market conditions of the past three years but as nickel is sold in US Dollars, the producers have gained from favourable exchange rates in recent times.

West Australian nickel is sold as refined metal or matte mainly to Japan and America.

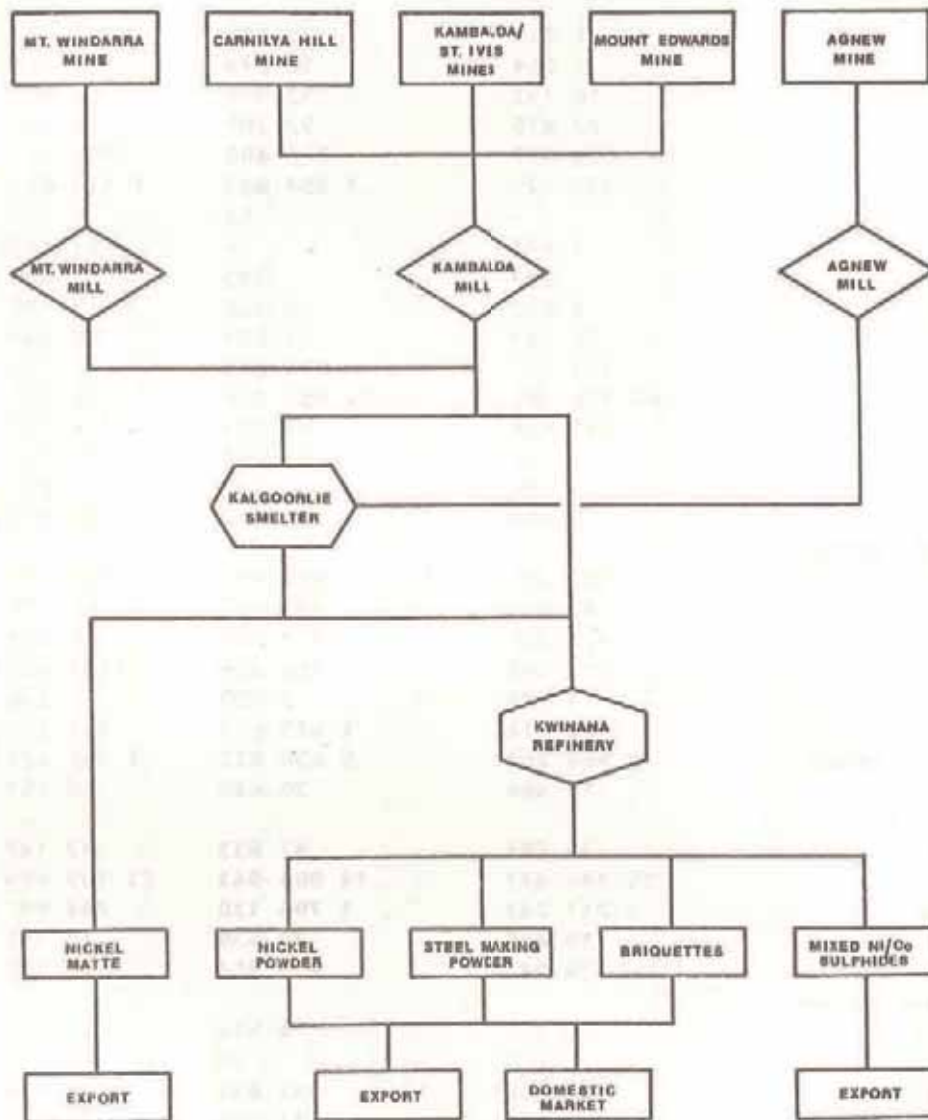


Figure 10. Flow chart: Western Australian Nickel Industry, 1984

TABLE 6. ROYALTY RECEIPTS 1984.

Mineral			Value (\$)	% up
	1983	1984	variance	(% down)
Alumina	6 708 516	8 859 777	2 151 261	32
Building stone	254	794	540	213
Clay	57 786	95 558	37 772	65
Coal	738 422	879 162	140 740	19
Cobalt	50 772	84 372	33 600	66
Construction materials				
aggregate	1 252	36 548	35 296	2 819
gravel	264	12 399	12 135	4 597
rock	16 193	13 728	(2 465)	(15)
sand	22 875	92 381	69 506	304
Copper	624 097	276 480	(347 617)	(56)
Diamonds	2 035 245	3 450 883	1 415 638	70
Diatomite	-	51	51	inf.
Emeralds	1 841	-	(1 841)	inf.
Feldspar	209	795	586	280
Garnet sands	4 282	5 302	1 020	24
Gold	72 143	92 987	20 844	29
Gypsum	194 217	191 675	(2 542)	(1)
Iron ore	68 996 585	84 053 078	15 056 493	22
Limestone	142 556	83 051	(59 505)	(42)
Magnesite	-	10 797	10 797	inf.
Magnetite	51	-	(51)	inf.
Mica	2 280	402	(1 878)	(82)
Mineral beach sands				
ilmenite	542 206	901 471	359 265	66
leucoxene	49 979	146 184	96 205	192
monazite	122 256	170 989	48 733	40
rutile	661 662	550 256	(111 406)	(17)
xenotime	1 761	2 059	298	17
zircon	742 614	1 013 877	271 263	37
Nickel concentrates	3 968 209	5 030 833	1 062 624	27
Palladium	10 488	20 645	10 157	97
Petroleum				
condensate	35 686	47 833	12 147	34
crude oil	15 196 442	14 086 943	(1 109 499)	(7)
natural gas	3 211 243	3 706 130	494 887	15
Platinum	10 488	20 639	10 151	97
Salt	324 041	433 364	109 323	34
Semi-precious stones				
amethyst	5 531	4 514	(1 017)	(18)
moss opal	2	38	36	1 800
Silica sand	108 598	157 039	48 441	45
Silver	131 583	11 378	(120 205)	(91)
Spodumene	1 225	80 128	78 903	6 441
Talc	75 970	73 430	(2 540)	(3)
Tantalite	78 561	89 663	11 102	14
Tin concentrates	247 045	195 849	(51 196)	(21)
Vermiculite	42	270	228	543
Zinc concentrates	538 525	561 311	22 786	4
Total value	105 733 997	125 545 063	19 811 066	19

PRINCIPAL MINERAL PRODUCERS 1984 - Head office postal address, telephone number: minesite.

ALUMINA

Alcoa of Australia (WA) Ltd, P O Box 161, Kwinana 6167, (09) 419 1566: Del Park, Huntly, Jarrahdale
Worsley Alumina Pty Ltd, P O Box 344, Collie 6225, (097) 34 3022: Boddington.

BUILDING STONE - quartz

Snowstone Pty Ltd, P O Box 209, Cannington 6107, (09) 453 6777: Mukinbudin.

CLAY - cement clay

Bell Basic Industries Ltd, P O Box 75, Guildford 6055, (09) 279 0000: Armadale, Karragullen.

- fire clay

Clackline Refractories Ltd, P O Box 893, West Perth 6005, (09) 386 7833: Clackline.
Midland Brick Company Ltd, Bassett Road, Middle Swan 6056, (09) 274 5522: Bullsbrook.

- kaolin

Greenbushes Tin Ltd, GPO Box J646, Perth 6001, (09) 325 8900: Greenbushes.

- white clay

Bristle Ltd, 212 Adelaide Terrace, Perth 6000, (09) 325 7299: Goomalling, Jarrahdale.

COAL

Griffin Coal Mining Company Ltd, GPO Box G474, Perth 6001, (09) 325 8155: Collie.
Western Collieries Ltd, GPO Box X2231, Perth 6001, (09) 325 2711: Collie.

COBALT

Agnew Mining Company Pty Ltd, P O Box 22, Leinster 6437, (090) 37 6005: Agnew.
Western Mining Corporation Ltd, P O Box 80, Belmont 6104, (09) 478 0711: Kambalda.

CONSTRUCTION MATERIALS - aggregate

Bell Basic Industries Ltd, P O Box 75, Guildford 6055, (09) 279 0000: Poondano.
Calsil Ltd, 5 Mill Street, Perth 6000, (09) 321 8552: Port Hedland.
Stove J, 15 Bassendean Parade, Bassendean 6054, (09) 279 3797: Roebourne.

PRINCIPAL MINERAL PRODUCERS 1984 - continued.

CONSTRUCTION MATERIALS - gravel

Brenel Pty Ltd, 178 St George's Terrace, Perth 6000, (09) 321 2698: Broome.
Leslie Salt Company, P O Box 420, Port Hedland 6721, (09) 72 3777: Port Hedland.
Pioneer Concrete (WA) Pty Ltd, P O Box 187, Victoria Park 6100, (09) 362 1100: Port Hedland.

- rock

Specified Services Pty Ltd, P O Box 89, West Perth 6005, (09) 321 3086: Mt Regal.

- sand

Calsil Ltd, P O Box 7214, Cloisters Square, Perth 6000, (09) 321 8552: Port Hedland.
Clackline Refractories Ltd, P O Box 893, West Perth 6005, (09) 386 7833: Clackline.
Cottiers Pty Ltd, P O Box 311, Port Hedland 6721, (09) 72 1553: Port Hedland.
Specified Services Pty Ltd, P O Box 89, West Perth 6005, (09) 321 3086: Maitland.
The Readymix Group (WA), P O Box 20, Bentley 6102, (09) 451 5566: Boulder, Jones River, Rocklea,
Turner River, Widgeemooltha.

COPPER

Agnew Mining Company Pty Ltd, P O Box 22, Leinster 6437, (090) 37 6005: Agnew.
Teutonic Bore Mine Project, GPO Box R1274, Perth 6000, (09) 325 4511: Teutonic Bore.
Western Mining Corporation Ltd, P O Box 80, Belmont 6104, (09) 478 0711: Kambalda.

DIAMONDS

Argyle Diamond Mines Pty Ltd, Private Bag No 11 Post Office, West Perth 6005, (09) 325 1166: Argyle.

DIATOMITE

Hines, Horton and Rule, C/- 141 Robinson Street, Gingin 6503, (095) 75 2261: Sabys Peak.

FELDSPAR

Snowstone Pty Ltd, P O Box 209, Cannington 6107, (09) 453 6777: Mukinbudin.

GARNET SANDS

Target Minerals N L, P O Box 188, Geraldton 6530, (099) 23 3644: Port Gregory.

PRINCIPAL MINERAL PRODUCERS 1984 - continued.

GOLD

Central Norseman Gold Corporation N L, P O Box 56, Norseman 6443, (09) 39 1101: Norseman.
Gold Resources Pty Ltd, Private Mail Bag 90, Kalgoorlie 6430, (09) 21 5544: Fimiston.
Hill 50 Gold Mine N L, 140 St George's Terrace, Perth 6000, (09) 322 6915: Mt Magnet.
Kalgoorlie Mining Associates, P O Box 105, Fimiston 6433, (09) 21 3411: Fimiston, Mt Charlotte.
Newmont Holdings Pty Ltd, P O Box 211, Cloverdale 6105, (09) 277 7011: Telfer.
North Kalgurlu Mines Ltd, P O Box 88, Fimiston 6433, (09) 21 0600: Fimiston.
Western Mining Corporation Ltd, P O Box 80, Belmont 6104, (09) 478 0711: Agnew, Boulder, Kambalda,
Lancefield, Ora Banda.
Whim Creek Consolidated N L, P O Box 144, West Perth 6005, (09) 325 5855: Meekatharra.

GYPSUM

Agnew Clough Ltd, P O Box 7005, Cloisters Square, Perth 6000, (09) 322 4811: Shark Bay.
Amalgamated Industries Pty Ltd, Private Bag 16 Post Office, West Perth 6005, (09) 322 6444:
Wyalkatchem.
Blake and Sita, P O Box 144, Merredin 6415: Lake Brown.
Brady H B and Company Pty Ltd, P O Box 42 Bayswater 6053, (09) 279 4422: Lake Brown.
CSR Building Materials, P O Box 91, Bentley 6102, (09) 451 4444: Yellowdine.
D & C Nominees Pty Ltd, P O Box 155, Yerecoin 6571: Wongan Hills.
Fitzgerald E M and E J, P O Box 404, Merredin 6415, (09) 41 1146, Hines Hill.
Green X L and P M, Newdegate 6355: Newdegate.
McAndrew Mining, Yelbeni 6487: Yelbeni.
Nixon P F and R S, P O Box 69, Moora 6510: Lake Hillman.
Southern Asiatic Enterprises Pty Ltd, 41 St George's Terrace, Perth 6000, (09) 325 7417: Norseman.
Swan Portland Cement Ltd, P O Box 78, Rivervale 6103, (09) 361 8822: Lake Hillman.

IRON ORE

BHP Minerals Pty Ltd, P O Box 160, Kwinana 6167, (09) 410 1111: Cockatoo Island, Koolan Island.
Cliffs Robe River Iron Associates, GPO Box P1224, Perth 6001, (09) 325 9288: Pannawonica.
Goldsworthy Mining Ltd, GPO Box B80, Perth 6001, (09) 322 1788: Shay Gap, Sunrise Hill.
Hammersley Iron Pty Ltd, P O Box A42, Perth 6000, (09) 327 2327: Mt Tom Price, Paraburdoo.
Mt Newman Mining Company Pty Ltd, P O Box 7122, Cloisters Square, Perth 6000, (09) 322 0691: Mt Whaleback.

PRINCIPAL MINERAL PRODUCERS 1984 - continued.

LIMESTONE

Bell Basic Industries Ltd, P O Box 75, Guildford 6055, (09) 279 0000: Wanneroo.
Bellombra V, 6 Park Street, Tuart Hill 6060, (09) 349 3312: Wanneroo.
Cypress Nominees Pty Ltd, 4 Phillips Place, Karrinyup 6018, (09) 446 3930: Moore River.
Specified Services Pty Ltd, P O Box 89, West Perth 6005, (09) 321 3086: Cleaverville.
Swan Portland Cement Ltd, P O Box 78, Rivervale 6103, (09) 361 8822: Wanneroo.

MAGNESITE

Norseman Gold Mines N L, GPO Box E221, Perth 6001, (09) 325 2333: Bandalup.

MICA

Pilbara Mica Corporation Pty Ltd, 20 Howard Street, Perth 6000, (09) 321 2735: Pippingarra.

MINERAL BEACH SANDS

Allied Eneabba Ltd, P O Box 6115, Hay Street East, Perth 6000, (09) 325 2599: Eneabba.
Associated Minerals Consolidated Ltd, 45 Stirling Highway, Nedlands 6009, (09) 386 8611: Capel, Eneabba.
Cable Sands Pty Ltd, P O Box 133, Bunbury 6230, (097) 21 4111: Capel.
Westralian Sands Pty Ltd, P O Box 96, Capel 6271, (097) 27 2002: Boyanup, North Capel, Yoganup.

NICKEL

Agnew Mining Corporation Pty Ltd, P O Box 22, Leinster 6437, (090) 37 6005: Agnew.
BHP Minerals Ltd, GPO Box 86A, Melbourne 3001, (03) 60 0701: Carnilya Hill.
Western Mining Corporation Ltd, P O Box 80, Belmont 6104, (09) 478 0711: Carnilya Hill, Kambalda, Windarra.

PALLADIUM

Western Mining Corporation Ltd, P O Box 80, Belmont 6104 (09) 478 0711: Kambalda.

PETROLEUM - condensate

Strata Oil N L, GPO Box G474, Perth 6001, (09) 325 8155: Woodada.
West Australian Petroleum Pty Ltd, GPO Box C1580, Perth 6001, (09) 325 0181: Barrow Island, Dongara.
Woodside Offshore Petroleum Pty Ltd, GPO Box D188, Perth 6001, (09) 425 1211: North Rankin.

PRINCIPAL MINERAL PRODUCERS 1984 - continued.

PETROLEUM - crude oil

Home Energy Company Ltd, P O Box 6176, Hay Street East, Perth 6000, (09) 325 1555: Blina.
Pacific Basin Exploration Pty Ltd, 100 Mill Point Road, South Perth 6151, (09) 368 2800: Mt Horner.
West Australian Petroleum Pty Ltd, GPO Box C1580, Perth 6001, (09) 325 0181: Barrow Island, Dongara.

- natural gas

Strata Oil N L, GPO Box G474, Perth 6001, (09) 325 8155: Woodada.
West Australian Petroleum Pty Ltd, GPO Box C1580, Perth 6001, (09) 325 0181: North Perth Basin.
Woodside Offshore Petroleum Pty Ltd, GPO Box D188, Perth 6001, (09) 425 1211: North Rankin.

PLATINUM

Western Mining Corporation Ltd, P O Box 80, Belmont 6104, (09) 478 0711: Kambalda.

SALT

Dampier Salt Ltd, P O Box 7073, Cloisters Square, Perth 6000, (09) 327 2327: Dampier, Lake MacLeod.
Leslie Salt Company, P O Box 420, Port Hedland 6721, (091) 72 3777: Port Hedland.
Shark Bay Salt Joint Venture, P O Box 7005, Cloisters Square, Perth 6000, (09) 322 4811: Shark Bay.

SEMI-PRECIOUS STONES - amethyst and moss opal

Soklich Trading Company, Dale Place, Orange Grove 6109 (09) 459 1449: Gascoyne.

SILICA SAND

Australian Glass Manufacturers Co, 35 Baille Road, Canning Vale 6155 (09) 455 1111: Lake Gnangara.
Bell Basic Industries Ltd, P O Box 75, Guildford 6055, (09) 279 0000: Jandakot.
Monier Sands, P O Box 5, Willetton 6155, (09) 455 1488: Jandakot.
The Readymix Group (WA), P O Box 20, Bentley 6102, (09) 451 5566: Jandakot.
Western Mining Corporation Ltd, P O Box 80, Belmont 6104, (09) 478 0711: Douglas Lake.
Westralian Sands Ltd, P O Box 96, Capel 6271, (097) 27 2002: Boyanup.

SILVER

Teutonic Bore Mine Project, GPO Box R1274, Perth 6000, (09) 325 4511: Teutonic Bore.
Western Mining Corporation Ltd, P O Box 80, Belmont 6104, (09) 478 0711: Kambalda.

PRINCIPAL MINERAL PRODUCERS 1984 - continued.

SPODUMENE

Greenbushes Tin Ltd, GPO Box J646, Perth 6001, (09) 325 8900: Greenbushes.

TALC

Western Mining Corporation Ltd, P O Box 80, Belmont 6104, (09) 478 0711: Three Springs.
Westside Mines Pty Ltd, P O Box 572, Cloverdale 6105, (09) 277 4422: Mt Seabrook.

TANTALITE

Goldrim Mining Australia Ltd, 317 Hunter Street, Newcastle, NSW 2300, (049) 22 433: Wodgina.
Greenbushes Tin Ltd, GPO Box J646, Perth 6001, (09) 325 8900: Greenbushes.
Kincora Pty Ltd, P O Box 6009, Hay Street East, Perth 6000, (09) 325 6442: Old Shaw.

TIN

Endeavour Resources Ltd, Private Bag 16 Post Office, West Perth 6005, (09) 322 6444: Moolyella.
Goldrim Mining Australia Ltd, 317 Hunter Street, Newcastle, NSW 2300, (049) 22 433: Wodgina.
Greenbushes Tin Ltd, GPO Box J646, Perth 6001, (09) 325 8900: Greenbushes.
Kincora Pty Ltd, P O Box 6009, Hay Street East, Perth 6000, (09) 325 6442: Old Shaw.

VERMICULITE

Vermiculite Industries Pty Ltd, 101 Ewing Street, Welshpool 6106: Young River.

ZINC

Teutonic Bore Mine Project, GPO Box R1274, Perth 6000, (09) 325 4511: Teutonic Bore.

MINERAL PRODUCTION MAJOR CENTRES

