



Government of **Western Australia**
Department of **Mines and Petroleum**

Western Australian Mineral and Petroleum Statistics Digest 2009



2009

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WESTERN AUSTRALIAN RESOURCES INDUSTRY SHOWS ENCOURAGING SIGNS IN 2009 DESPITE DIFFICULT ECONOMIC CLIMATE

Western Australia's mineral and petroleum industry performed relatively well in 2009. Despite the global economic downturn it was worth an impressive \$61.0 billion. This was down by 17 per cent compared to 2008 (\$73.1 billion). However, 2008 was an exceptional year and longer term analysis shows that the value of the State's resources sector in 2009 is still significantly higher than in previous years. Over the past ten years the value of Western Australia's mineral and petroleum industry has grown strongly achieving average annual growth of 15 per cent.

The decline in value of the State's mineral and petroleum industry in 2009 was expected and can largely be attributed to the global financial crisis which saw the world economy fall into recession in late 2008 and early 2009. The global economic downturn resulted in falling commodity prices and a sharp contraction in world trade and industrial production. One of Western Australia's key commodity exports is iron ore and contract prices for iron ore lumps and fines fell on average by 37 per cent. However, gold was a standout and bucked the downward trend in prices, increasing by 12 per cent in US dollar terms.

World economic recovery supported by government intervention has seen commodity prices improve from the lows reached in early 2009. Australia's strong economic performance relative to other major economies and recent interest rate rises has also seen the Australian dollar appreciate strongly against the US dollar. In November 2009, the Australian dollar peaked at US94 cents.

The rising exchange rate combined with lower commodity prices had an adverse effect on commodity export earnings in 2009. However, increased export volumes of key commodities such as iron ore helped to partially offset the price falls. In 2009, mineral and petroleum exports contributed a substantial 85 per cent towards the State's total merchandise exports

which were valued at \$76.9 billion. China was again the State's largest export market accounting for 34 per cent of all Western Australian merchandise exports.

Western Australia maintained its position as the nation's foremost exporter in 2009 contributing a dominant 39 per cent to Australian merchandise exports which totalled \$196 billion. Queensland followed with 22 per cent, then New South Wales with 17 per cent and Victoria contributing around nine per cent.

In 2009, the major sources of value in the State's resources sector came from iron ore, petroleum (which includes crude oil, condensate and LNG) and gold. Together, these sectors accounted for 83 per cent or \$50.6 billion of all mineral and petroleum sales (\$61.0 billion).

Iron ore is the State's largest sector in terms of value accounting for \$28.1 billion or 46 per cent of total sales in 2009. Whilst the fall in the contract price for iron ore had an adverse impact on sales values, this was partially offset by higher volumes to result in a 12 per cent fall in overall value. The sector set another record with the quantity of iron ore sold reaching 342 million tonnes in 2009.

The State's petroleum sector which includes crude oil, condensate and LNG is Western Australia's second largest sector accounting for 28 per cent or \$16.8 billion of total sales. In 2009, the petroleum sector experienced a 28 per cent or \$6.5 billion drop in value which coincided with the sharp fall in oil prices which averaged around US\$63 a barrel, down 37 per cent from 2008.

The gold sector continued to perform strongly and was worth \$5.7 billion in 2009 supported by a strong gold price which was up by 20 per cent in Australian dollar terms.

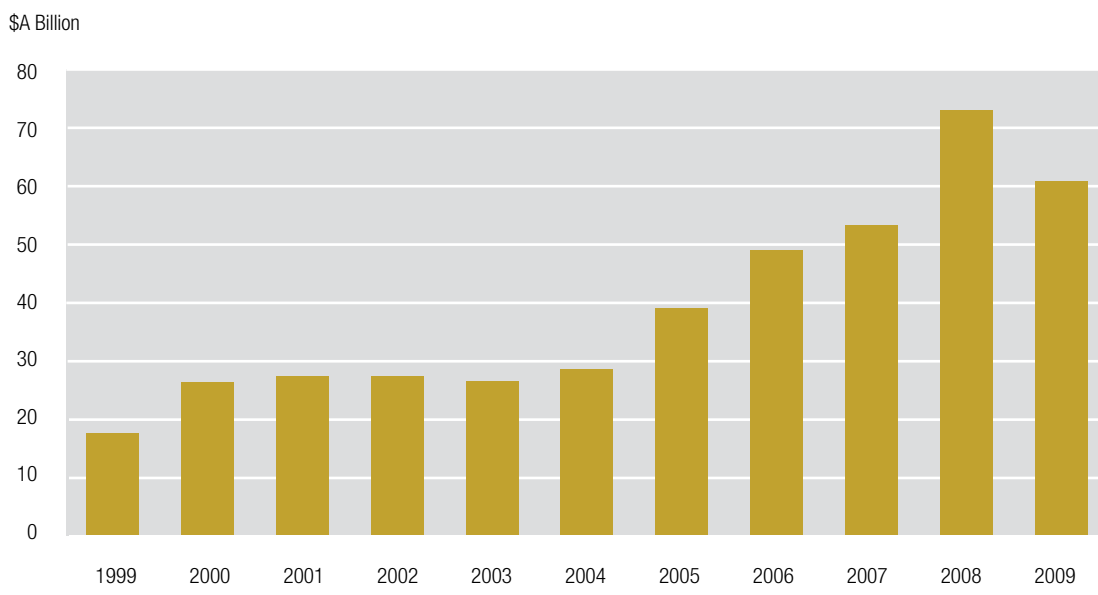


Figure 1 | **Value of Western Australia's Mineral and Petroleum Industry**
Source: DMP

Whilst 2009 was clearly a challenging year, the State's mineral and petroleum industry still managed to achieve a good result overall and delivered \$2.8 billion in royalties to the State Government. The long-term outlook for the industry remains positive and underpinned by high levels of investment expenditure on major projects such as Gorgon and Oakajee. As the economies of key export markets in Asia improve as part of world economic recovery, strong demand for the State's mineral and petroleum resources is likely to continue in the years ahead.

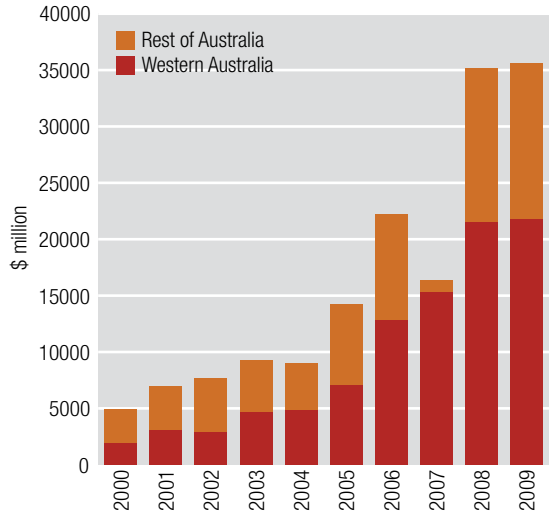


Figure 2 | **Mining Investment**
Source: ABS

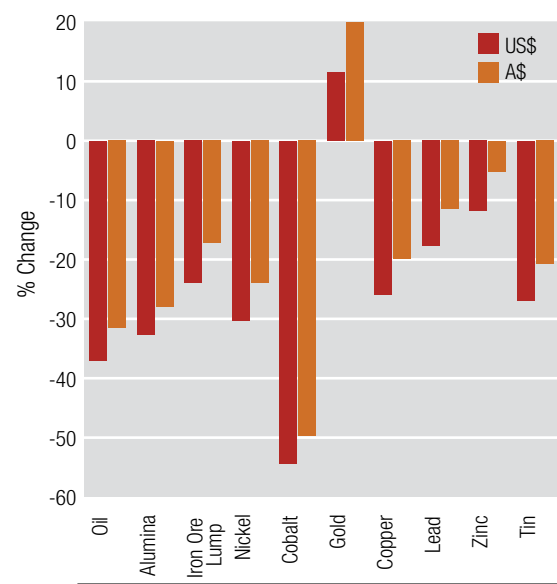


Figure 3 | **Average Price Comparison 2008 and 2009**
Source: LME, Kitco, TEX Report, Metal Prices

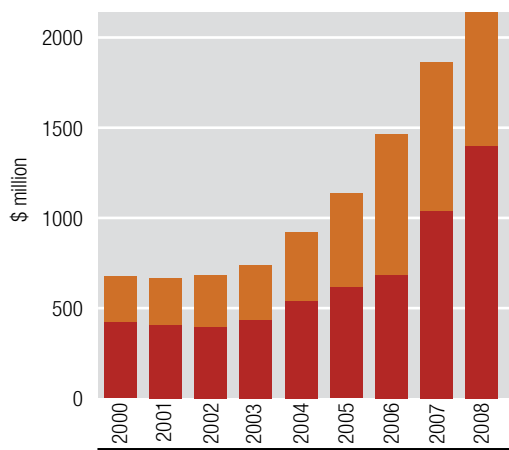


Figure 4 | **Mineral Exploration Expenditure**
Source: ABS

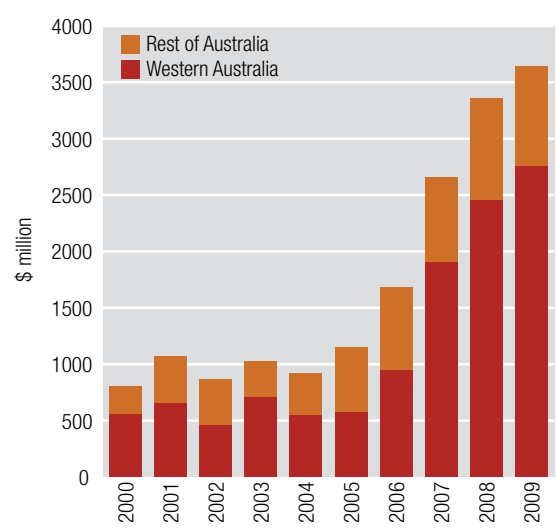


Figure 5 | **Petroleum Exploration Expenditure**
Source: ABS

HIGHLIGHTS IN 2009

Statistics compiled by the Department of Mines and Petroleum show that the value of Western Australian mineral and petroleum sales reached \$61.0 billion in 2009. Iron ore, petroleum and gold together accounted for 83 per cent or \$50.6 billion of all sales. Western Australia's mineral and petroleum resources in order of value for 2009 are:

Commodity	Billion
Iron Ore	\$28.1
Crude Oil and Condensate	\$8.70
LNG	\$6.30
Gold	\$5.70
Alumina	\$3.60
Nickel	\$3.30
Others	\$5.30
Total	\$61.00

Prices for most commodities apart from gold were adversely affected by the global economic downturn. A strong appreciation in the Australian dollar against the US dollar in the latter half of 2009 also weighed on commodity earnings. Between September and December 2009, the Australian dollar averaged US90 cents. Refer to the list below showing average commodity price movements in 2009 in both US and Australian dollar terms:

Commodity	US\$	A\$
Gold	Up 12%	Up 20%
Zinc	Down 12%	Down 5%
Lead	Down 18%	Down 12%
Iron Ore	Down 24%	Down 17%
Copper	Down 26%	Down 20%
Tin	Down 27%	Down 21%
Nickel	Down 30%	Down 24%
Alumina	Down 33%	Down 28%
Crude Oil	Down 37%	Down 32%
Cobalt	Down 54%	Down 50%

Iron ore maintained its position as the largest sector by value and accounted for almost half of the total value of the State's mineral and petroleum sales. The sector set another record with the quantity of iron ore sold reaching 342 million tonnes in 2009. The value of iron sales reached \$28.1 billion in 2009 which was 12 per cent lower than the previous year. The drop in value can be explained by a decrease in the contract price for both iron ore lump and fines which fell on average by 37 per cent from April 2009. However, at the beginning of 2010 iron ore spot prices for lump and fines reached US\$155 and US\$125 per tonne respectively, which is double the benchmark contract price.

The Tapis oil price averaged US\$65 per barrel in 2009, down 37 per cent from 2008 which coincided with the slowing world economy. The value of **crude oil** sales fell sharply as a consequence, falling by 43 per cent to \$5.5 billion. Output fell by 16 per cent to 71 million barrels in 2009. **Condensate** output increased by 30 per cent to 47 million barrels, while sales value decreased by 8 per cent to \$3.2 billion.

LNG production increased by 23 per cent in 2009 however the influence of low oil prices saw the sales value decreasing by 22 per cent to \$6.3 billion. This resulted in LNG holding the position of third most valuable commodity in the State.

Gold proved to be the standout performer in 2009 to set a record value of \$5.7 billion, up 29 per cent. In terms of overall value it ranked fourth among commodities and now accounts for nine per cent of all sales. Continued investment activity and depreciation of the US dollar saw the gold price averaging US\$973 per ounce. It also broke through the US\$1000 per ounce mark in September 2009 and has remained above that level in recent months. Encouraged by higher prices, the State's gold producers increased output by 29 per cent to 4.6 million ounces.

Alumina claimed fifth place in 2009, as output remained fairly constant resulting in 12.4 million tonnes of alumina being shipped. Increased alumina inventory levels around the world placed downward pressure on prices which saw the average US alumina price fall a sizeable 33 per cent in 2009. As a consequence, the value of alumina sales in 2009 decreased sharply by 27 per cent to \$3.6 billion.

Nickel, in sixth place, contributed \$3.3 billion to the total value of the State's resources in 2009. Sales quantities decreased by eight per cent to 172 thousand tonnes. Soft market conditions saw a 30 per cent decrease in the US dollar nickel price and resulted in the value of nickel sales falling by 19 per cent in 2009.

Base metals were down in terms of overall value by 16 per cent to \$1.2 billion in 2009.

A ten per cent increase in **copper** output to 142 thousand tonnes was not enough to offset the 26 per cent decrease in the average US copper price which resulted in an 11 per cent fall in the value of copper sales to \$924 million in 2009.

Sales volumes of **zinc** decreased by a sizeable 33 per cent to 105 thousand tonnes in 2009. Reduced output combined with a 12 per cent fall in the US dollar price of zinc saw sales values drop by 35 per cent to \$213 million.

Lead output almost doubled to 27 thousand tonnes in 2009 and can be attributed to the recommencement of Ivernias Magellan lead operations during the year following regulatory approval. The value of lead sales increased by 36 per cent to \$44 million.

Domestic **natural gas** sales volumes increased by ten per cent to 9.3 billion cubic metres in 2009 whilst the sales value of this gas fell slightly by three per cent to \$1.2 billion.

LPG butane and propane followed a similar trend with output rising by 24 per cent and sales value falling to \$613 million, which is a 16 per cent decrease on the previous year.

The total value of **mineral sands** sales decreased by 22 per cent to \$621 million in 2009. Sale volumes were down for most types on mineral sands with ilmenite and zircon falling by 34 and 41 per cent respectively. The fall in the quantities for mineral sands needs to be interpreted with caution because falls in output are partly attributed to products being sourced from private land and therefore not reported to this Department.

The value of **salt** sales increased by 56 per cent in 2009 to \$432 million. In contrast, salt volumes decreased by 17 per cent to 9.5 million tonnes.

Coal output decreased slightly by three per cent to 6.6 million tonnes in 2009 with coal sales revenue remaining steady at \$308 million.

Diamond sales volumes fell sharply by 44 per cent to reach 11.9 million carats. As expected, sales values decreased significantly by 53 per cent to \$230 million.

Cobalt sales volumes were down by a modest three per cent however a 54 per cent fall in the US dollar price of cobalt in 2009 contributed to a similar 53 per cent decline in the value of sales which reached \$179 million.

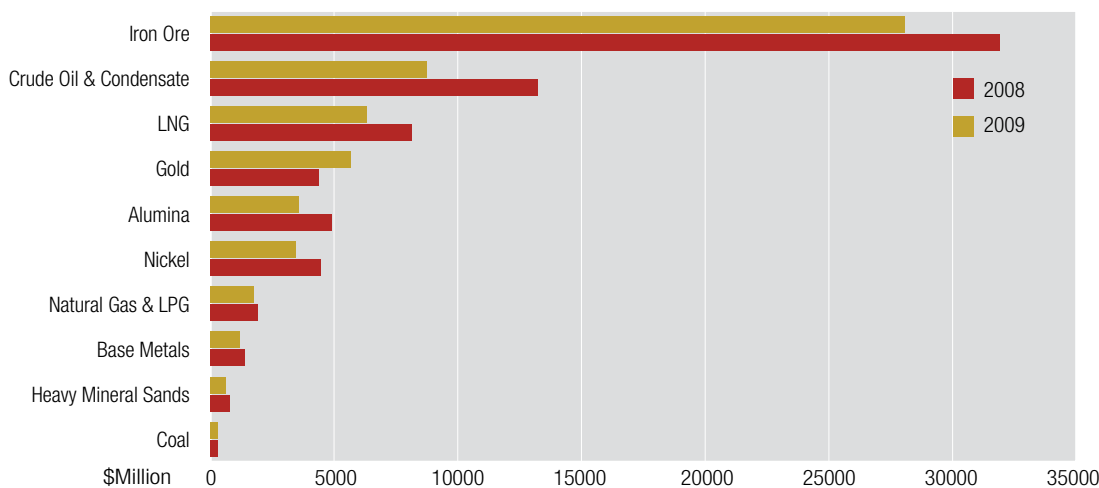


Figure 6 **Major Commodities by Value**
Source: DMP

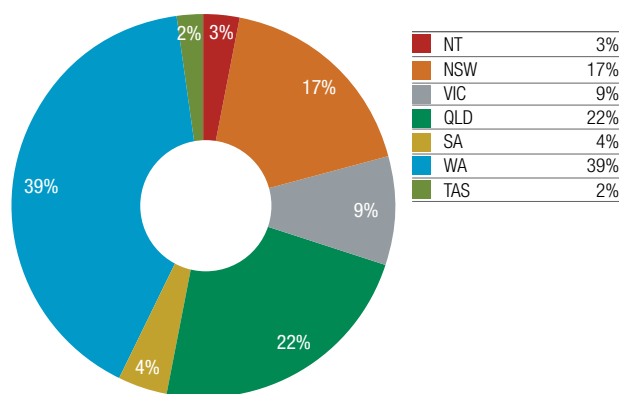


Figure 7 **Australian Merchandise Exports 2009**
\$196.09 billion Source: ABS
Note: These percentages are based on data which includes \$8.6 billion of re-exported goods and of no state origin available and account for around 4% of the total.

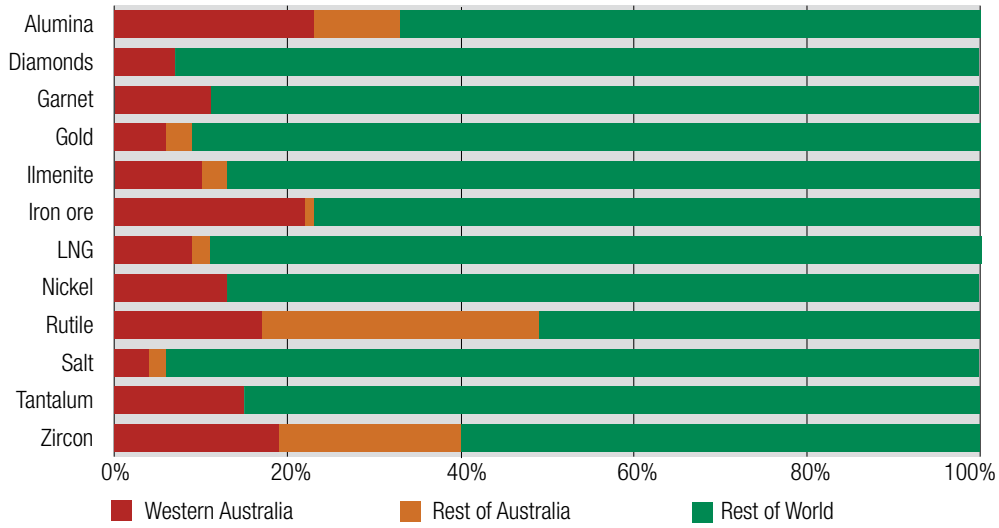


Figure 8 | **Selected WA Commodities Relative to World Production Ending 2009 by Quantity** Source: DMP, ABARE, USGS

The latest comparable data show that the Western Australian share (by quantity) of the world's output of the following products was: alumina 23%, garnet 11%, gold 6%, ilmenite 10%, iron ore 22%, LNG (sea-borne trade) 9%, nickel 13%, rutile 17%, salt 4%, tantalum 15%, zircon 19% and 7% of diamonds (mainly industrial grade)

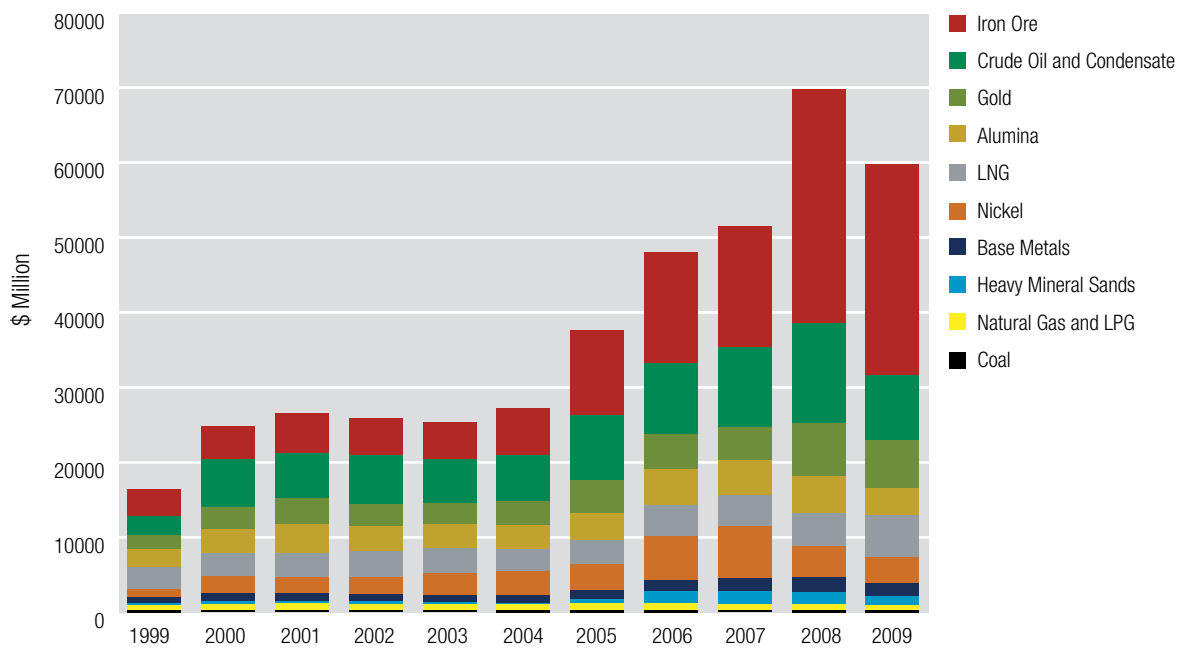


Figure 9 | **Value of Minerals and Petroleum by Commodity** Source: DMP

EXCHANGE RATES



Figure 10 | **Exchange Rate US\$/A\$**
Source: Reserve Bank of Australia

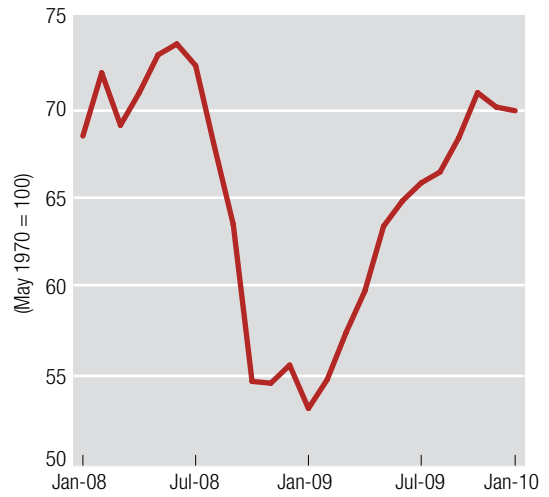


Figure 11 | **Exchange Rate Trade Weighted Index (units of foreign currency per A\$)**
Source: Reserve Bank of Australia

Definition: "Trade weighted index" is the average value of A\$ in relation to the currencies of Australia's major trading partners.

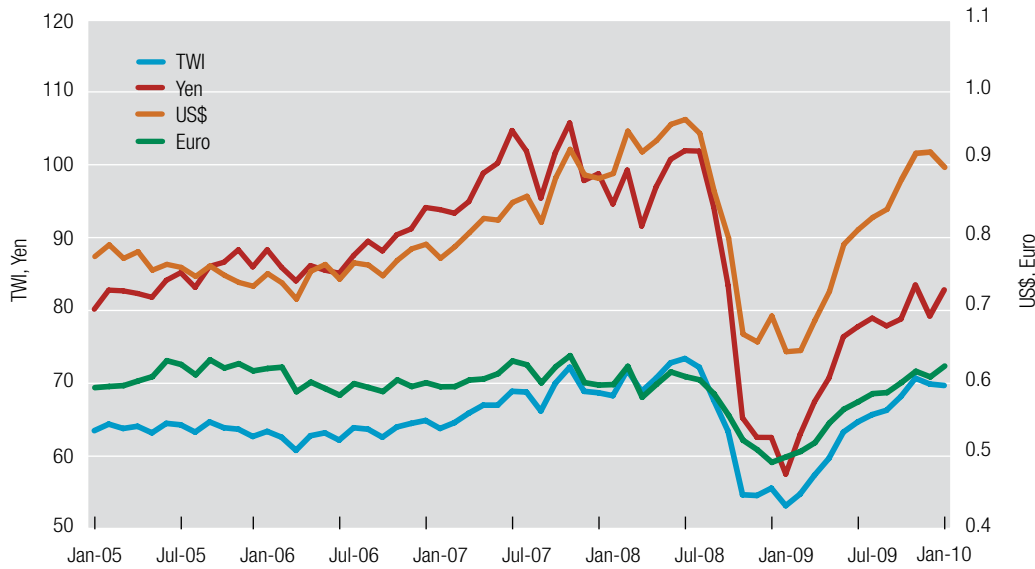


Figure 12 | **Australian Dollar Exchange Rate Against Major Currencies** Source: Reserve Bank of Australia

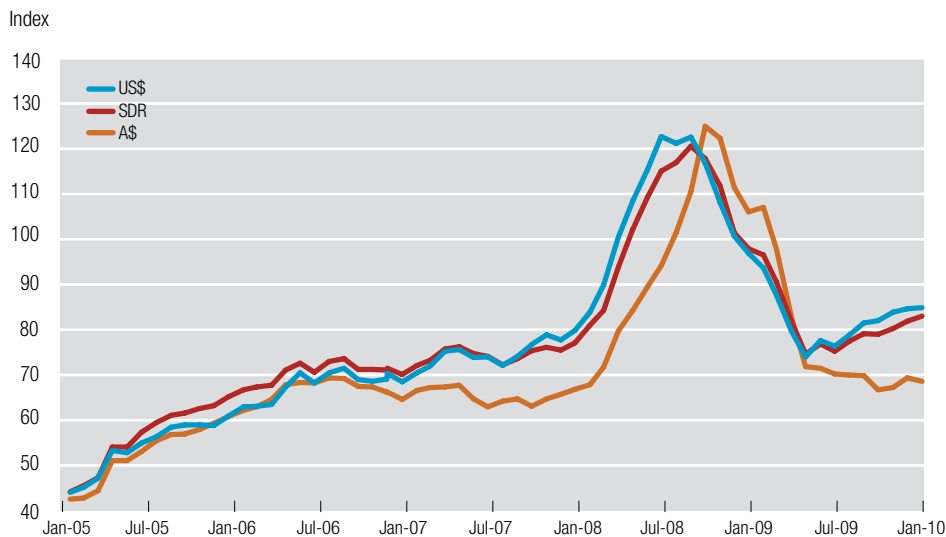


Figure 13 | **Non-Rural Commodity Price Index (2008-09 = 100)** Source: Reserve Bank of Australia

EXPORTS

GOLD EXPORT UPDATE 2009

The Australia Bureau of Statistics (ABS) release trade data that indicated a significant rise in Western Australian gold exports. However, this apparent increase in gold exports from Western Australia has been due to a restructuring of Australia's gold refining industry.

In October 2002, AGR Matthey was formed. This is a partnership between Johnson Matthey (Aust) in Victoria, WA Mint (The Perth Mint) and the Australian Gold Alliance. As a result of the merger, all Australian gold is now refined in Western Australia. The Victorian refinery still refines silver and jewellery products.

Gold export data published by the ABS from Western Australia must therefore be interpreted with some caution. It includes gold produced in other States and Territories, in addition to production from overseas operations, namely Papua New Guinea and Asia, which is refined and exported from Western Australia. This export figure is therefore larger than Western Australia's own level of gold production.

The ABS estimates that gold exports from Western Australia in 2009 amounted to approximately \$14.97 billion. Approximately 38% or \$5.65 billion was gold produced in Western Australia. The remaining 62% (approximately \$9.32 billion) can be attributed to gold refined and exported from Western Australia but produced from mining operations in other States, Territories and overseas.

Overseas imported gold also includes scrap which is refined in Western Australia and exported.

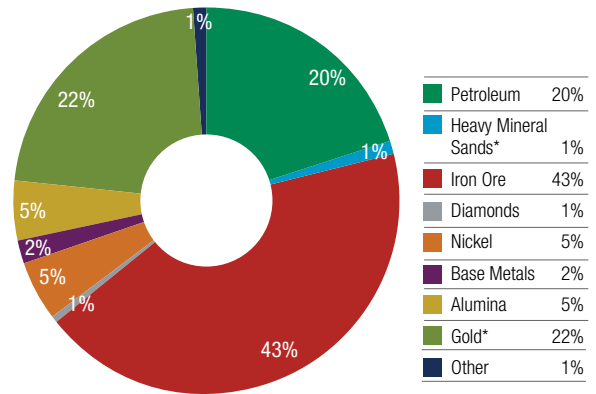


Figure 14 **Western Australian Mineral and Petroleum Exports 2009**

Total Value A\$65.62 billion Source: DMP

* Includes \$9.32 billion of gold and \$107 million of heavy mineral sands refined/processed and exported from Western Australia, but produced from mining operations in other States, Territories and overseas.

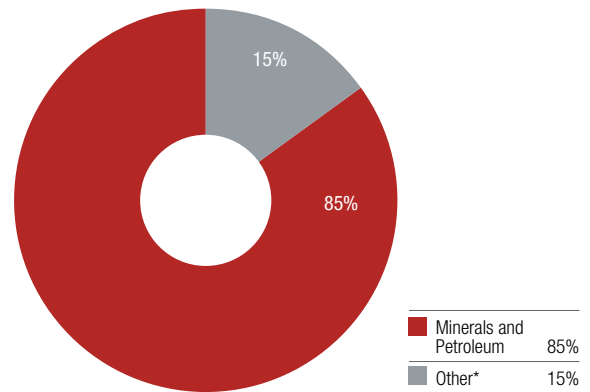


Figure 15 **Western Australian Merchandise Exports 2009**

\$76.86 billion Source: DMP and ABS

* Other includes wheat, wool, live animals, seafood, meat, pearls and other agricultural and manufactured items.

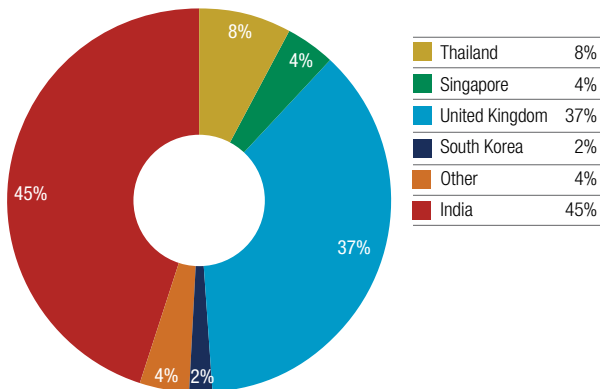


Figure 16 **Gold Exports**

Total Value \$14.97 billion Source: ABS and DMP

Note: Includes gold refined/processed and exported from Western Australia, but produced from mining operations in other States, Territories and overseas.

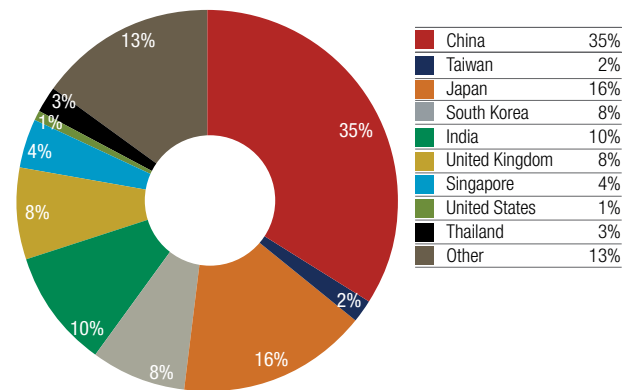


Figure 17 **Western Australian Merchandise Exports 2009**

\$76.86 billion Source: ABS

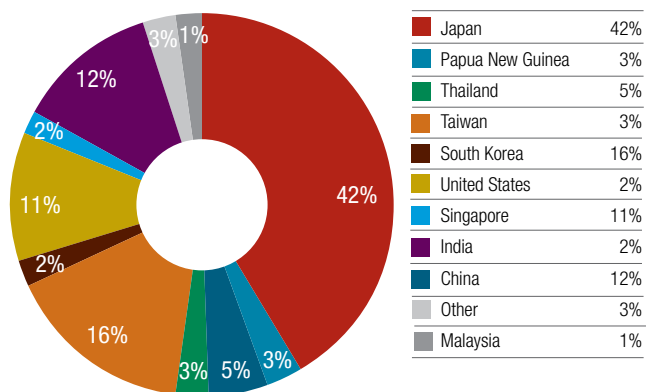


Figure 18 **Petroleum Exports**
Total Value \$13.28 billion Source: DMP and ABS

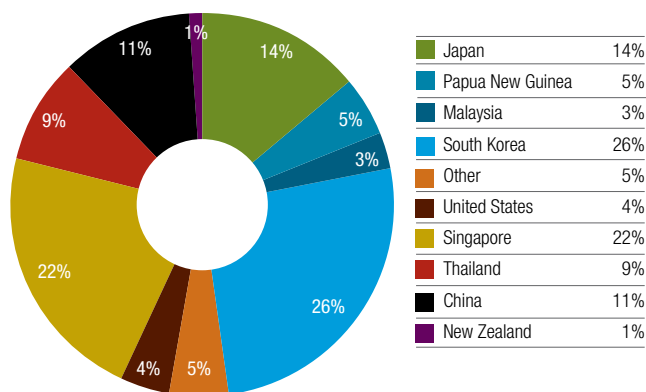


Figure 19 **Crude Oil and Condensate Exports**
Total Value \$7.01 billion Source: DMP and ABS

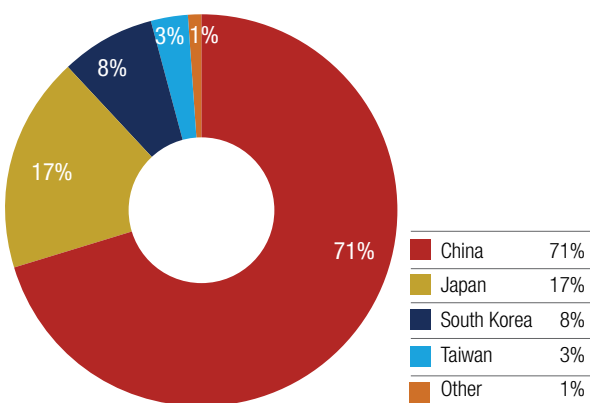


Figure 20 **Iron Ore Exports**
Total Value \$28.09 billion Source: DMP

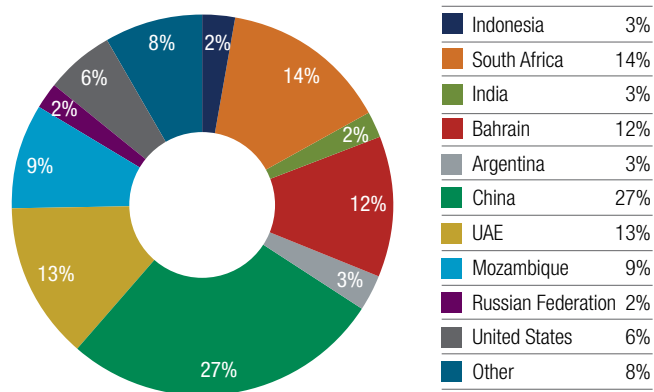


Figure 21 **Alumina Exports**
Total Value \$3.3 billion Source: DMP

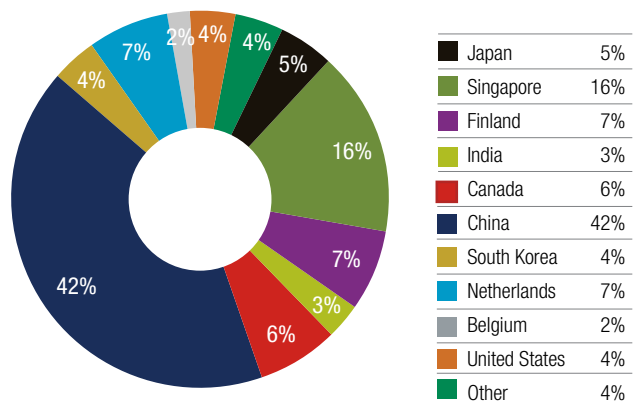


Figure 22 **Nickel Exports**
Total Value \$2.9 billion Source: DMP

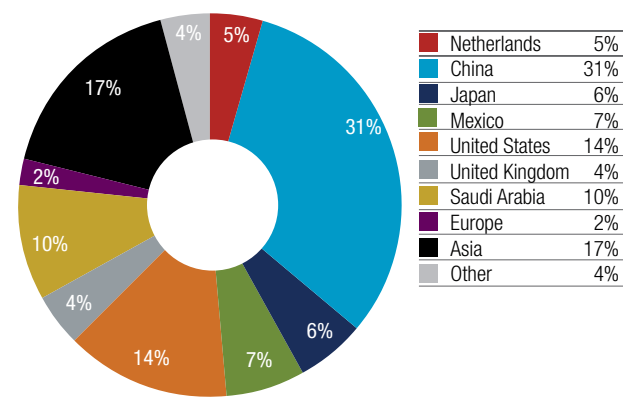


Figure 23 **Heavy Mineral Sands Exports**
Total Value \$727.368 million Source: DMP
Note: Exports include titanium dioxide and product sourced from private land, overseas and other States and processed in Western Australia

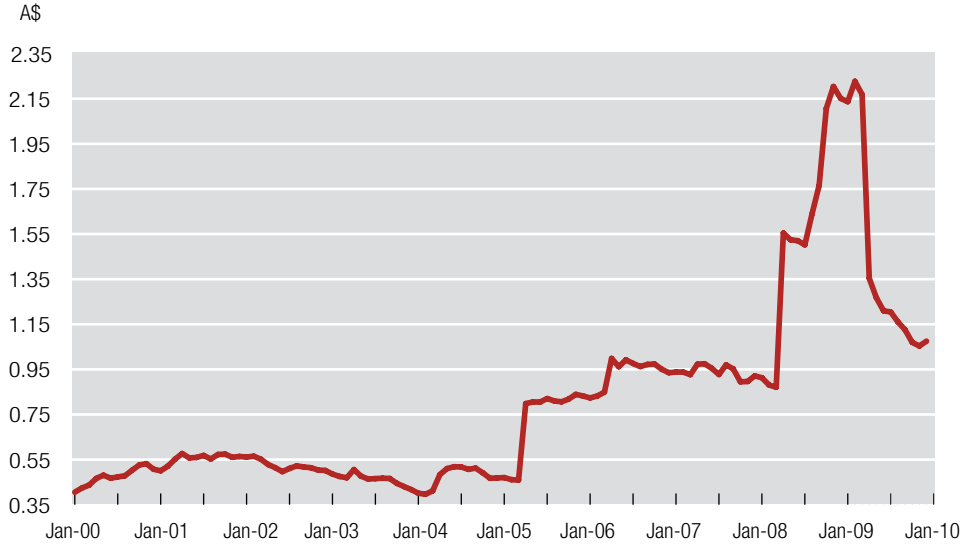


Figure 24 **Iron Ore Price A\$/Fe unit** Source: Tex Report, High Grade Fine Ore Prices

Note: Price is per 1%. An 'Fe unit' is equivalent to each 1% of iron ore.
Hence, ore shipped at 63% Fe commands a price of 63 x 'Fe unit price'.

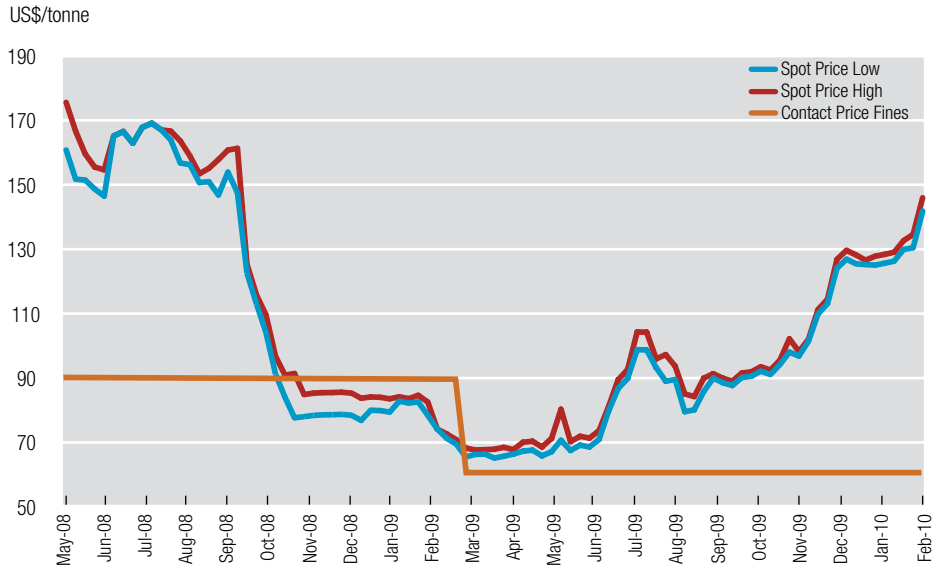


Figure 25 **Pilbara Blend Fines 62-62.5%Fe** Source: Interfax China Ltd, Barry Rogliano Salles and DMP

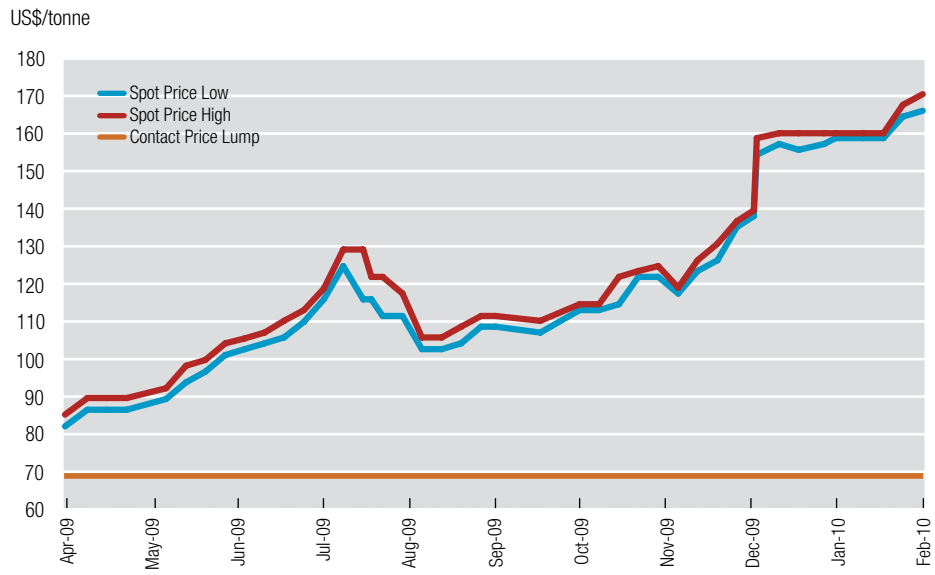


Figure 26 **Pilbara Blend Lump 62%Fe** Source: Interfax China Ltd, Barry Rogliano Salles and DMP

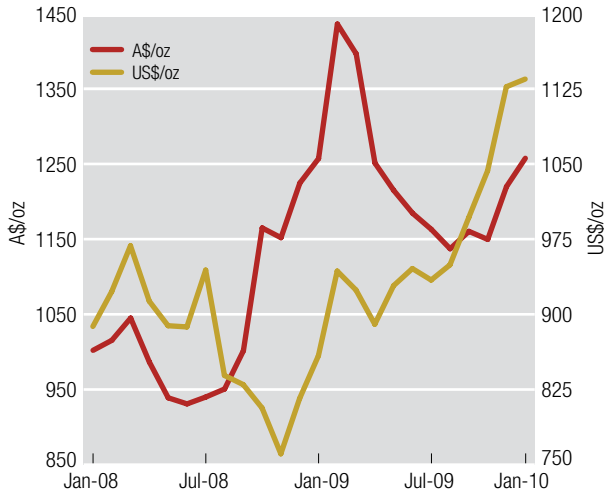


Figure 27 | **Gold Price**
Source: Perth Mint and London Fix

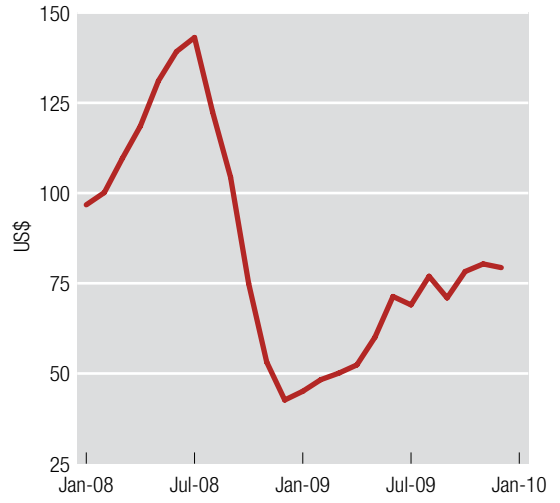


Figure 28 | **Tapis Crude Oil Price US\$/bbl**
Source: WA Treasury Corporation

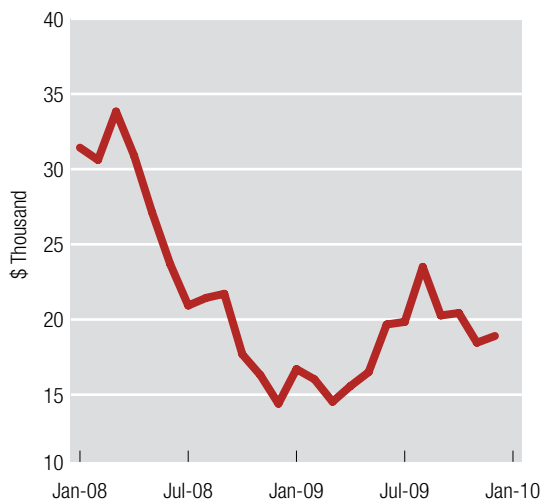


Figure 29 | **Nickel Price A\$/tonne**
Source: LME Cash, Monthly Average

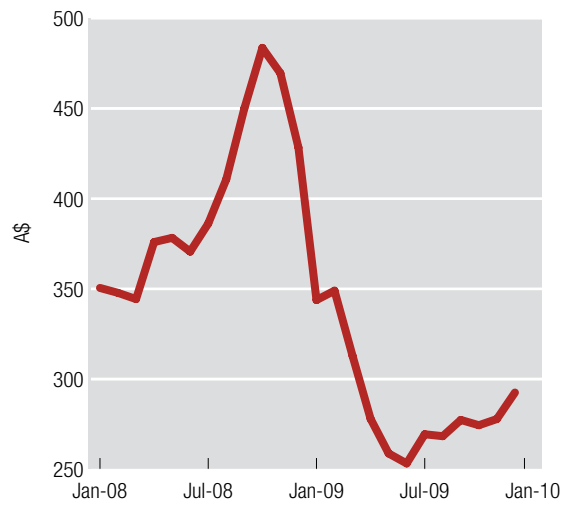


Figure 30 | **Alumina Price A\$/tonne**
Source: ABS

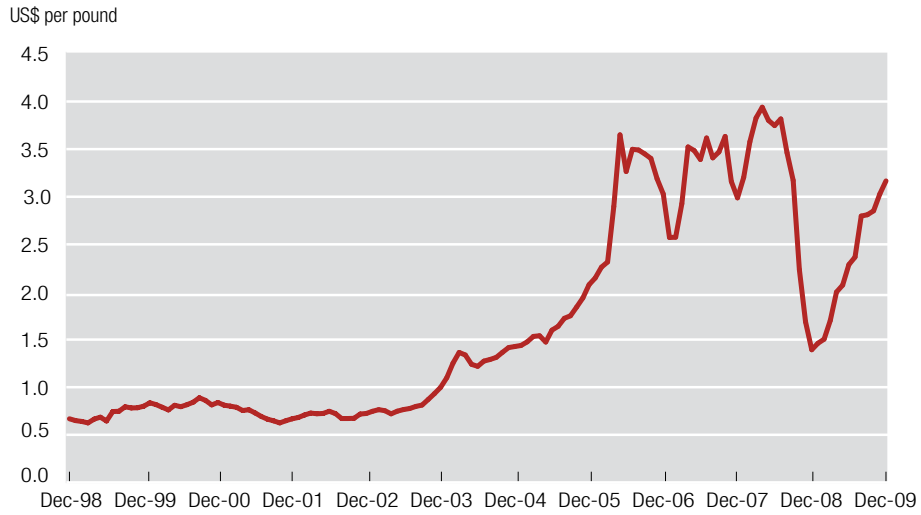


Figure 31 | **Copper Price** Source: Metalprices.com

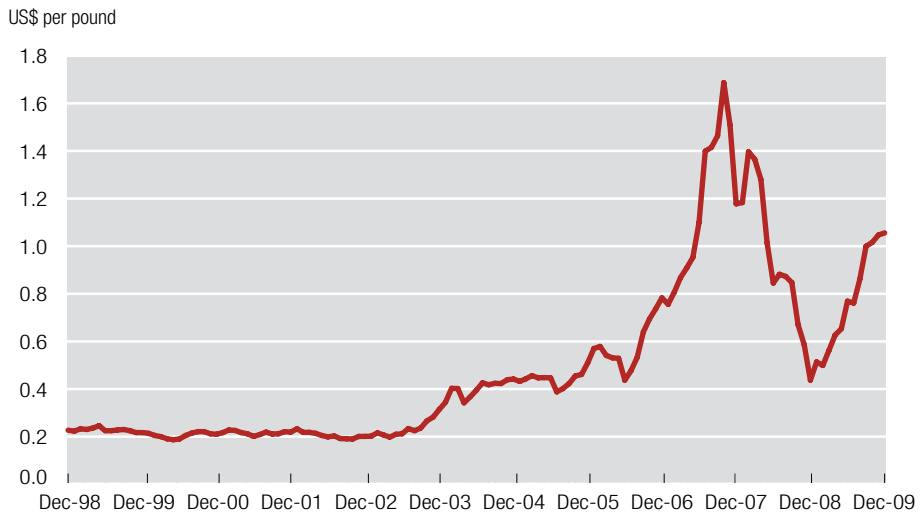


Figure 32 | **Lead Price** Source: Metalprices.com

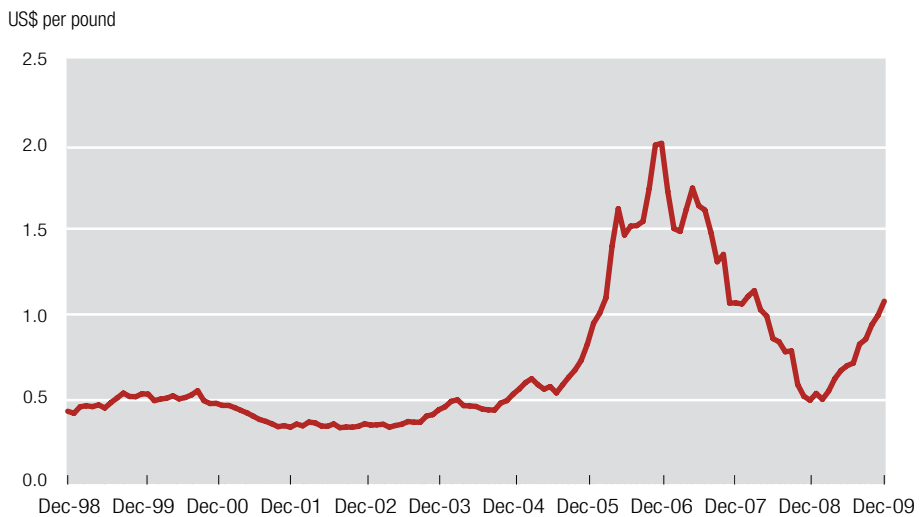


Figure 33 | **Zinc Price** Source: Metalprices.com

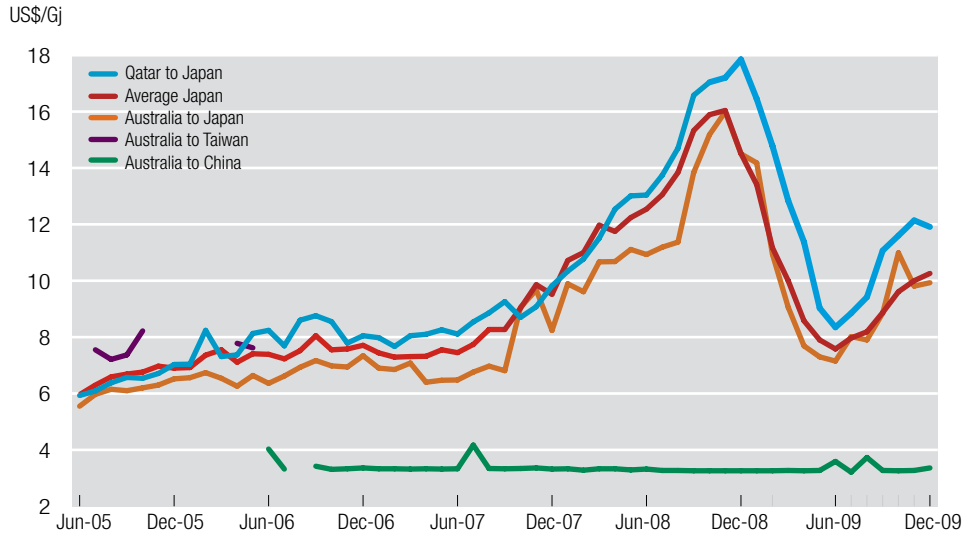


Figure 34 | **LNG Import Prices** Source: Argus Monthly LNG (Prices include freight and regassing)

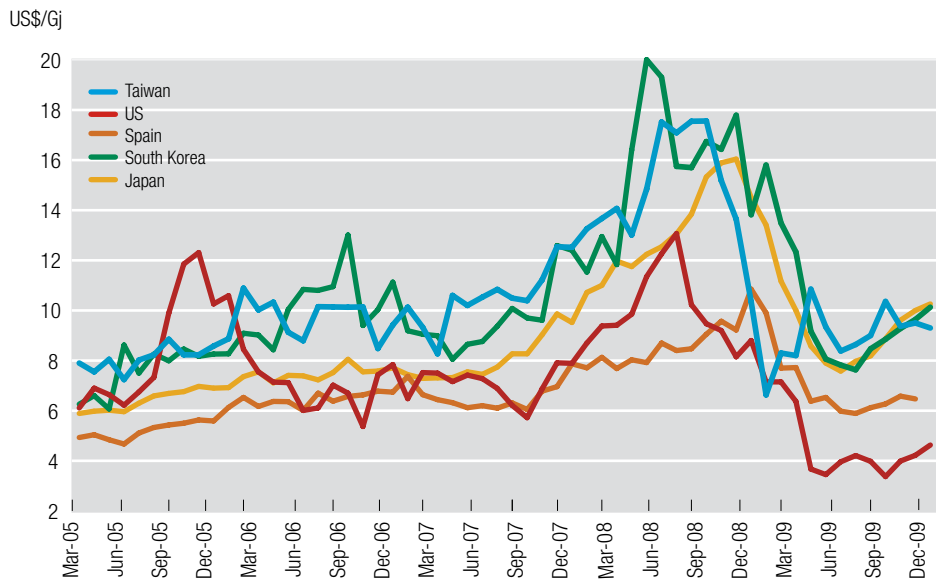


Figure 35 | **Average LNG Import Prices** Source: Argus Monthly LNG (Prices include freight and regassing)

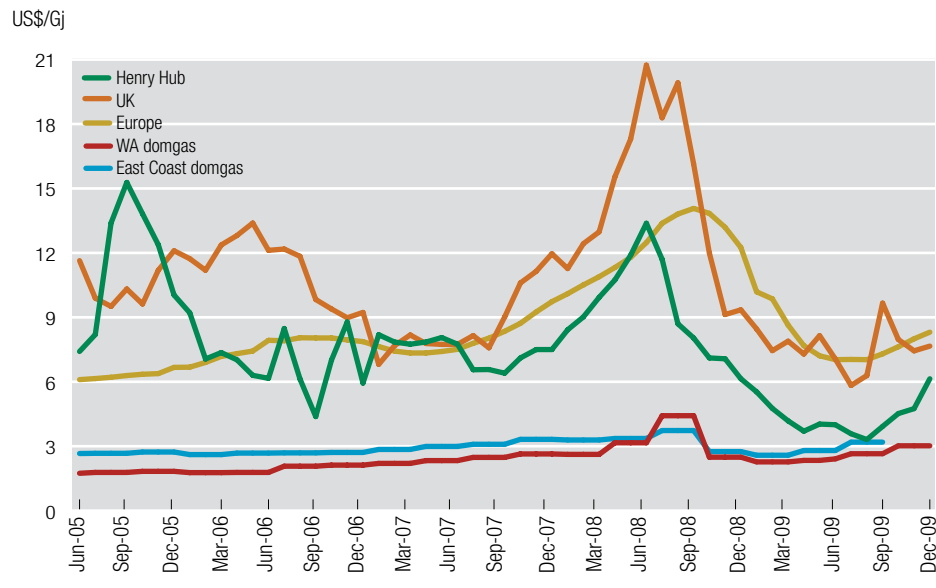


Figure 36 | **Average Natural Gas Prices** Source: Argus Monthly LNG, EnergyQuest, DMP

HISTORIC PRICES

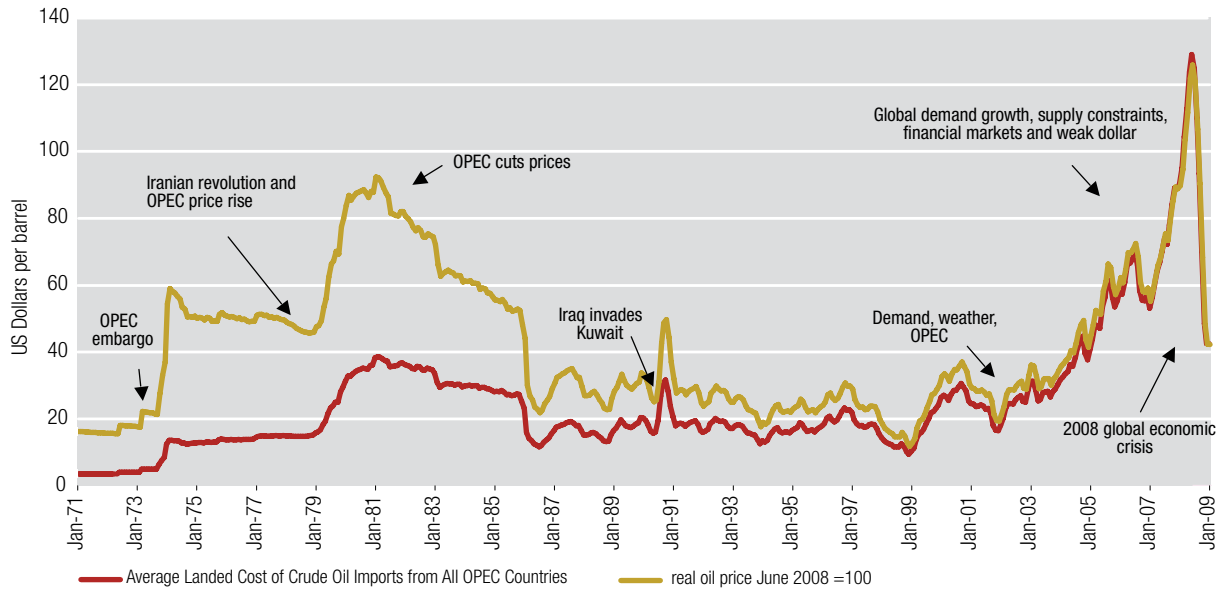


Figure 37 | **Historic Oil Prices** Source: Energy Information Administration, US Department of Energy; DMP

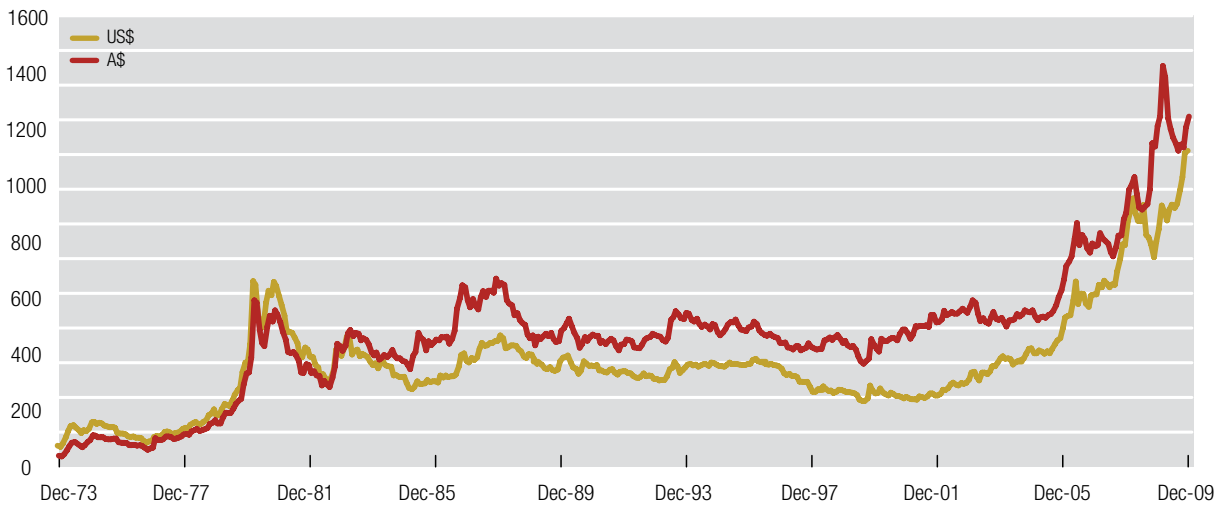


Figure 38 | **Historic Gold Prices, US\$/A\$ per ounce**
Source: World Gold Council, Perth Mint and London PM Fix

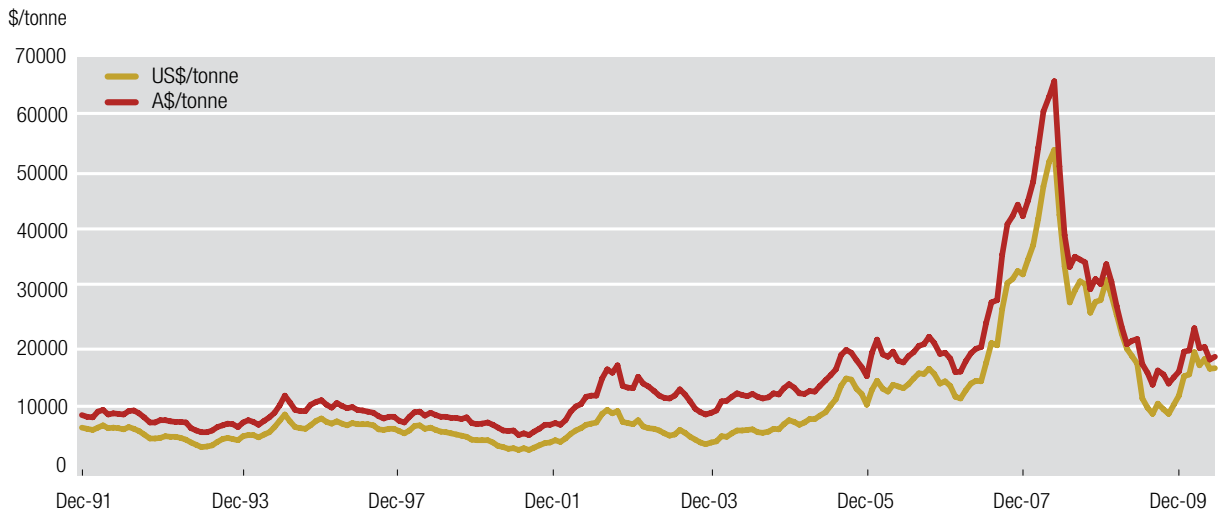


Figure 39 | **Historic Nickel Prices** Source: LME

QUANTITY AND VALUE BY QUARTER

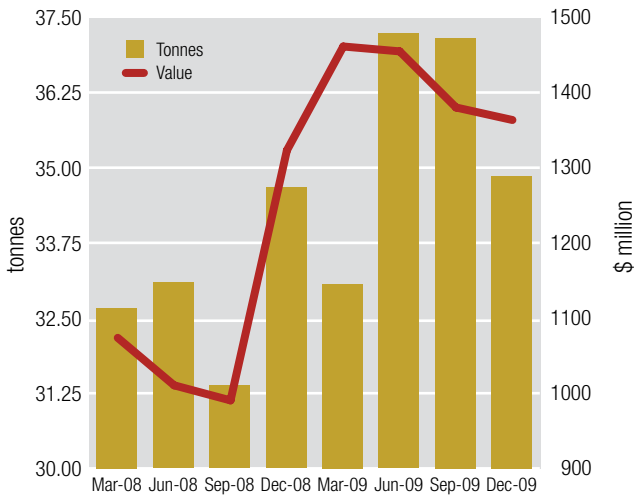


Figure 40 **Gold**
Quantity and Value by Quarter
Source: DMP

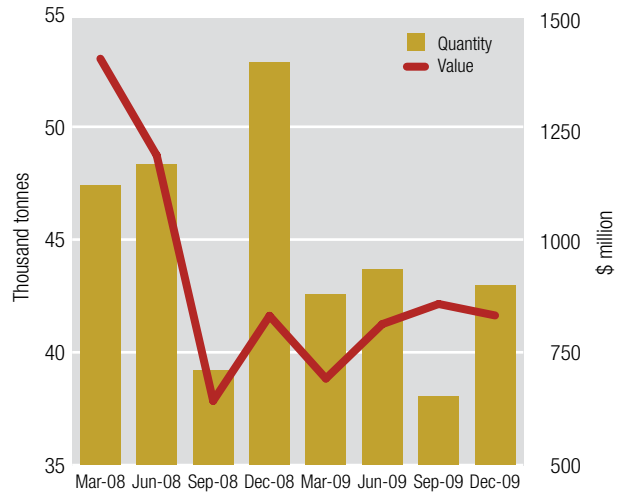


Figure 41 **Nickel**
Quantity and Value by Quarter
Source: DMP

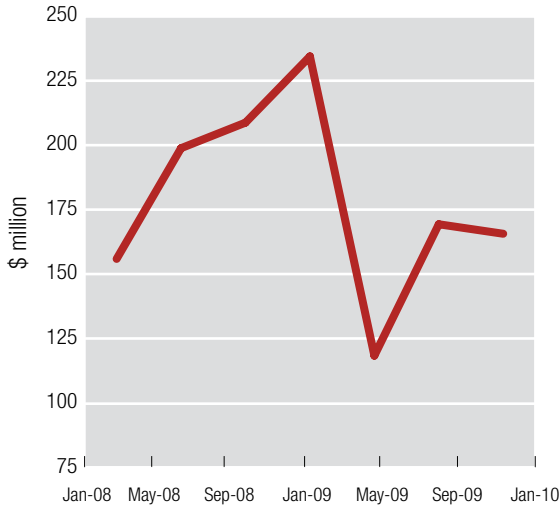


Figure 42 **Heavy Mineral Sands**
Value by Quarter
Source: DMP

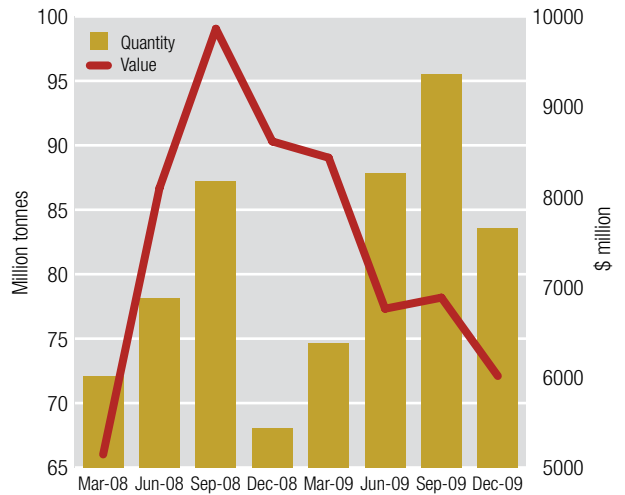


Figure 43 **Iron Ore**
Quantity and Value by Quarter
Source: DMP

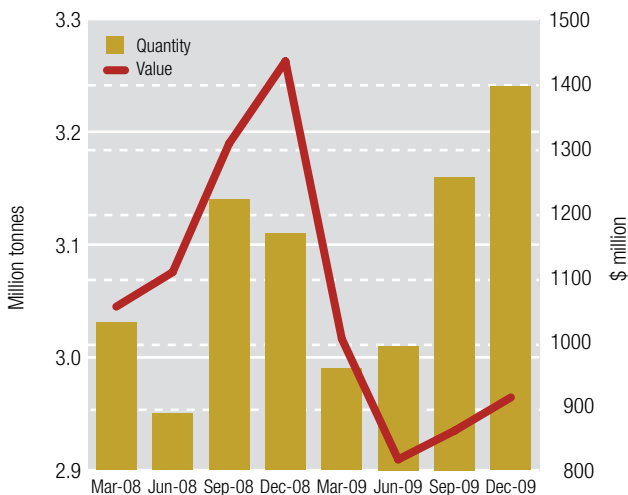


Figure 44 **Alumina**
Quantity and Value by Quarter
Source: DMP

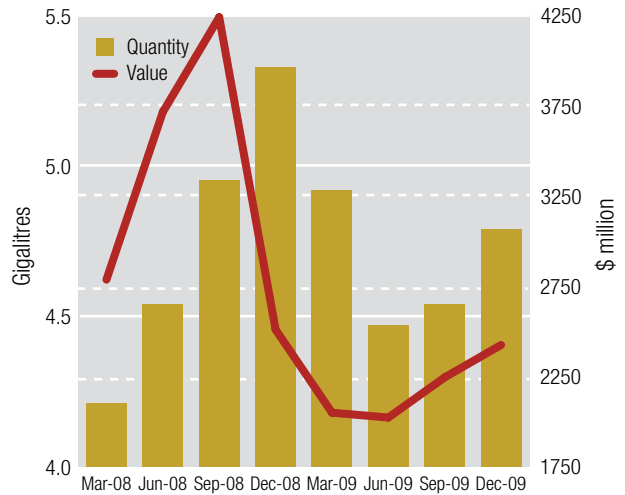


Figure 45 **Crude Oil and Condensate**
Quantity and Value by Quarter
Source: DMP

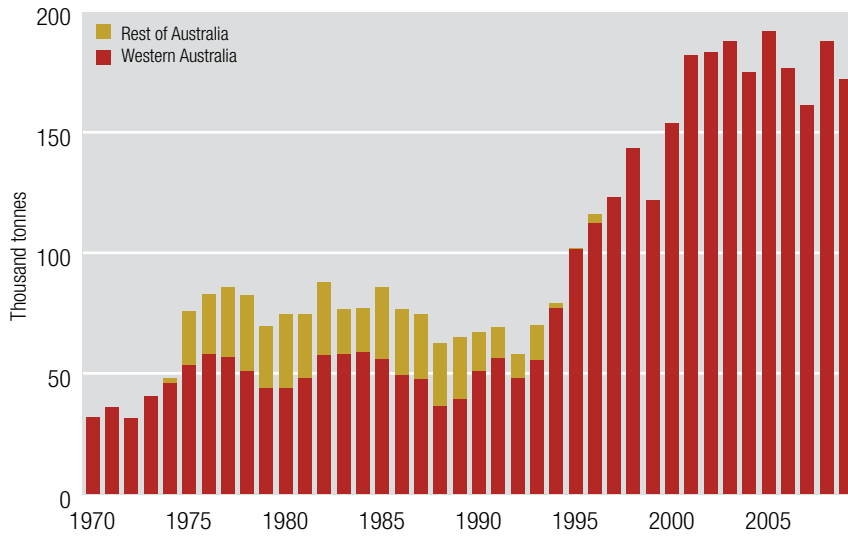


Figure 46 | **Nickel Quantity up to 2009** Source: DMP and ABARE

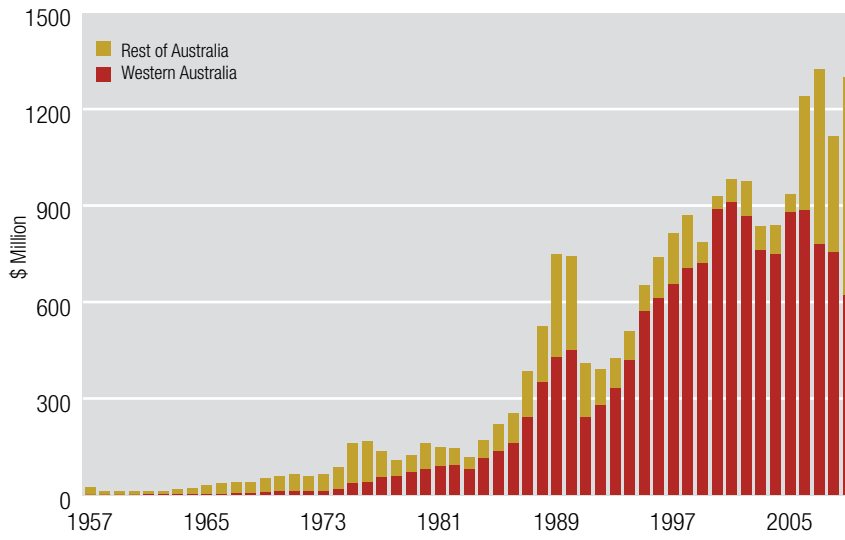


Figure 47 | **Heavy Mineral Sands Value of Production up to 2009**
Includes Ilmenite, Leucoxene, Upgraded Ilmenite, Rutile, Zircon and Monazite
Source: DMP and ABARE

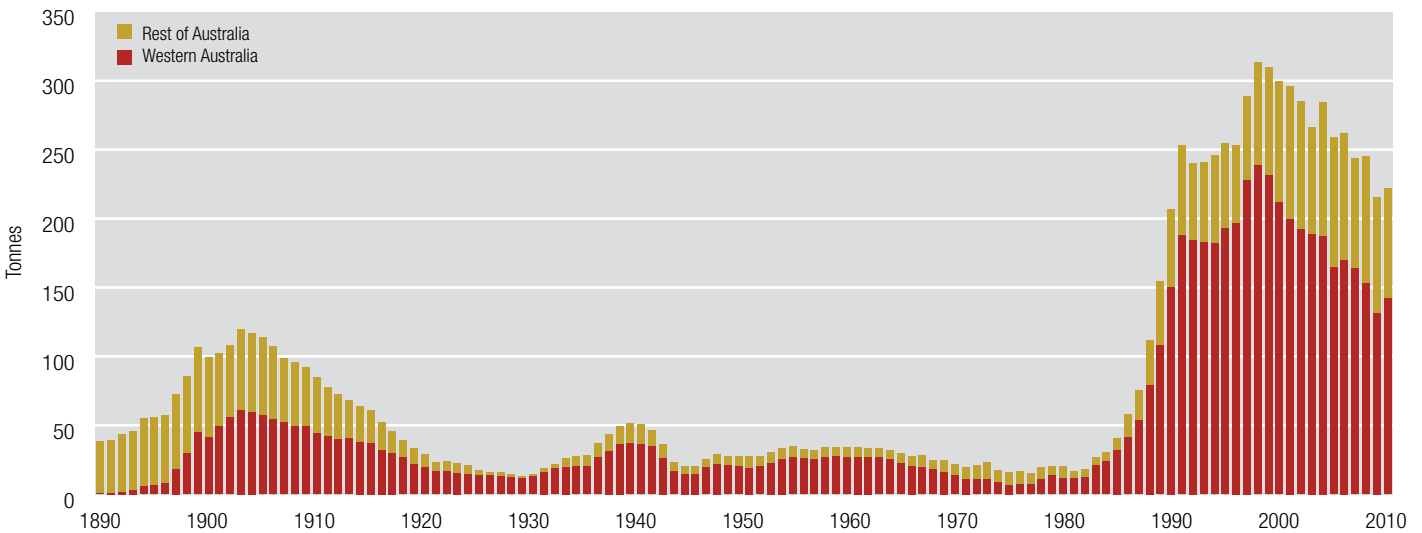


Figure 48 | **Gold Production up to 2009** Source: DMP and ABARE

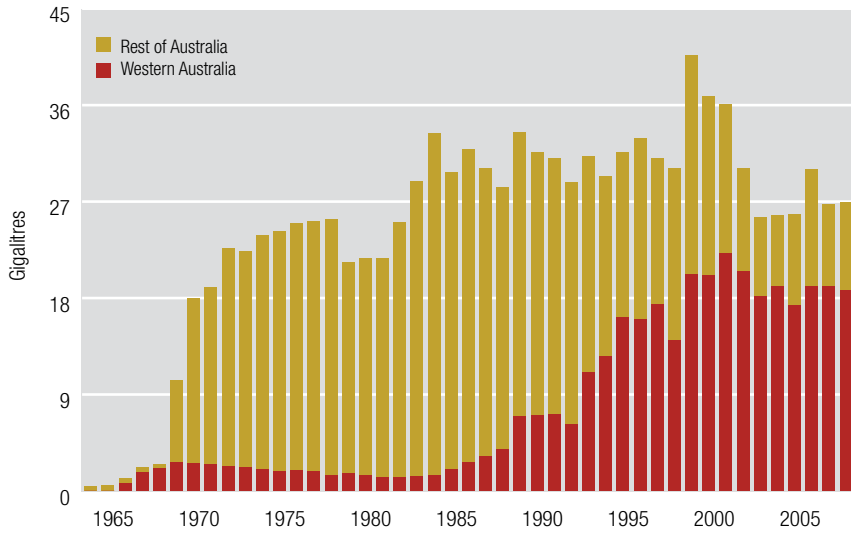


Figure 49 | **Crude Oil and Condensate Quantity up to 2009**
Source: DMP and ABARE

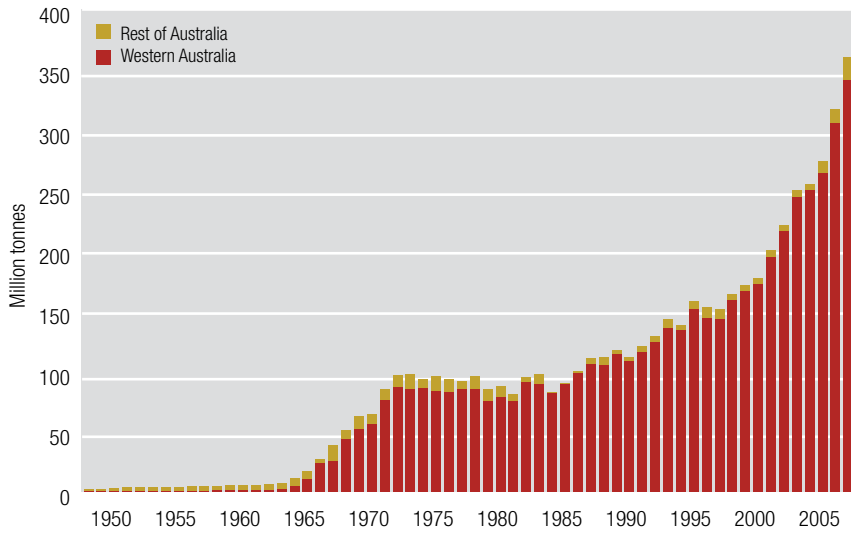


Figure 50 | **Iron Ore Quantity up to 2009**
Source: DMP and ABARE

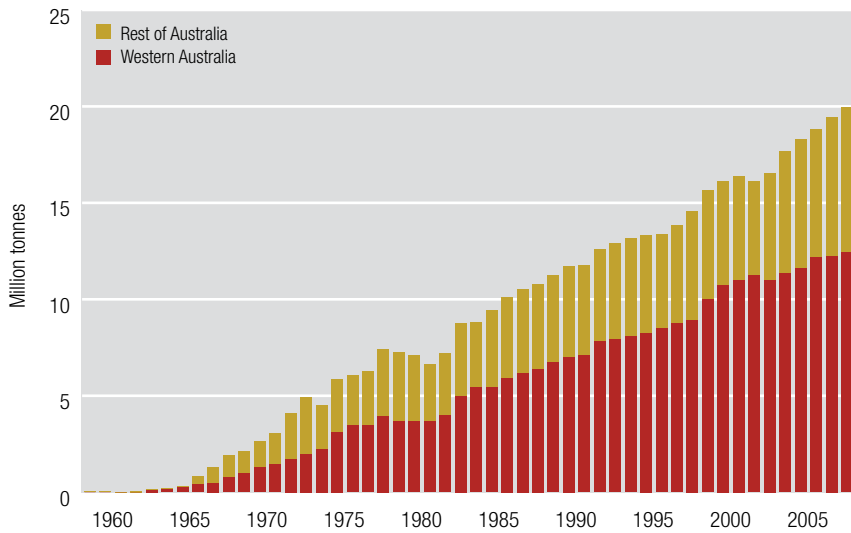


Figure 51 | **Alumina Quantity up to 2009**
Source: DMP and ABARE

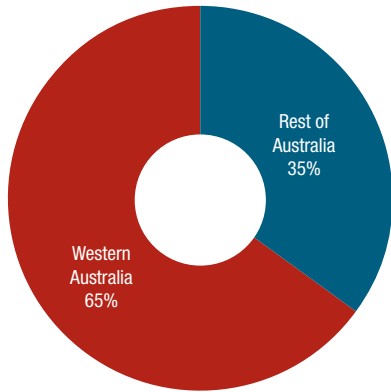


Figure 52 | **Crude Oil and Condensate Production 2009**
Source: ABARE

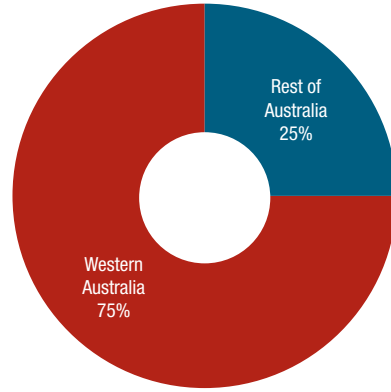


Figure 53 | **Natural Gas Production 2009**
Source: ABARE

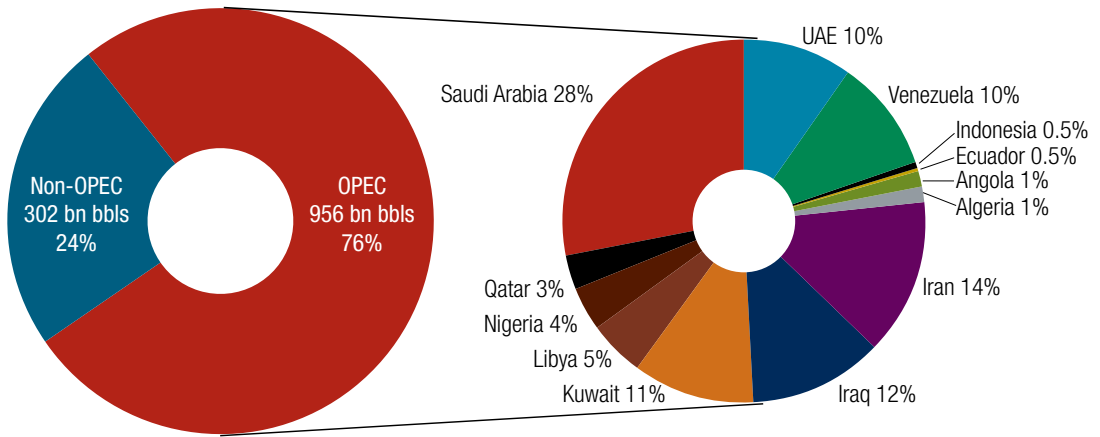


Figure 54 | **OPEC Share of World Crude Oil Reserves (2008)** Source: BP World Energy Statistics 2009

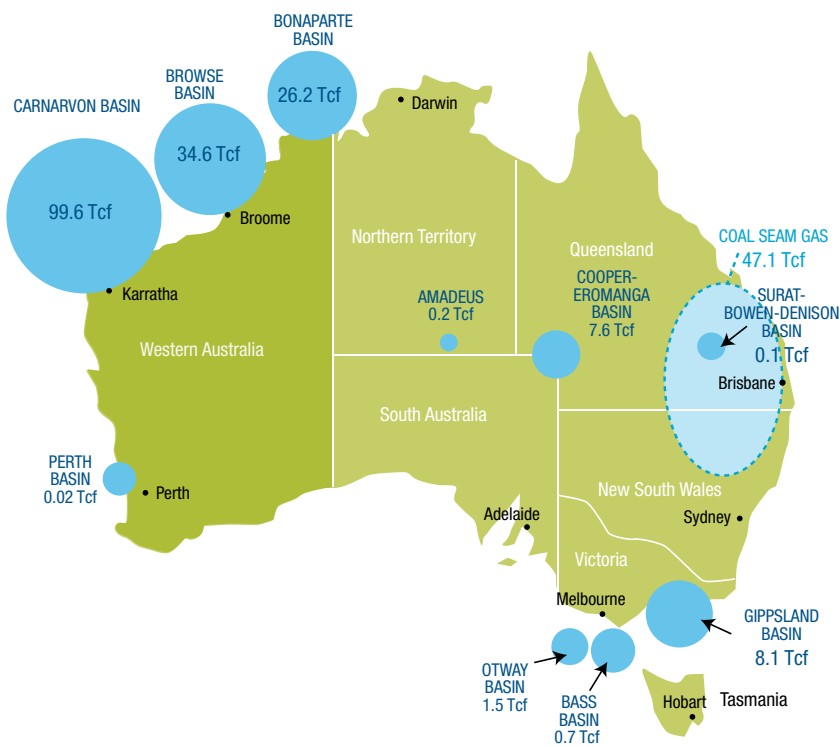


FIGURE 55 **AUSTRALIAN NATURAL GAS RESOURCES** Source: DMP. Current as at end 2008.

TABLE 1. TENEMENTS IN FORCE 1978 ACT

	2000-01		2001-02		2002-03		2003-04		2004-05		2005-06		2006-07		2007-08		2008-09	
	Number	000 ha	Number	000 ha	Number	000 ha	Number	000 ha	Number	000 ha	Number	000 ha	Number	000 ha	Number	000 ha	Number	000 ha
Prospecting Licences	5,512	711	4,964	634	4,566	575	4,561	568	4,665	586	5,056	638	5,376	682	6,260	800	7,110	913
Exploration Licences	3,162	18,152	2,899	18,556	2,855	21,123	2,917	20,896	3,066	22,215	3,966	30,822	4,766	40,031	5,427	51,790	4,959	42,367
Mining Leases	4,841	1,803	4,820	1,774	4,770	1,762	4,713	1,716	5,172	1,805	5,118	1,806	5,090	1,824	5,475	2,036	5,618	2,065
Other	3,625	2,840	3,618	3,002	3,629	3,299	3,590	3,115	3,258	2,982	3,432	3,037	3,629	3,248	3,678	4,119	2,512	3,477
Mineral Claims & Other 1904 Act	186	21	186	22	186	22	186	22	186	22	186	21	186	21	186	21	186	21
Total	17,326	23,829	16,487	23,988	16,006	26,781	15,967	26,317	16,347	27,610	17,758	36,324	19,047	45,806	21,026	58,766	20,385	48,843

Source: DMP

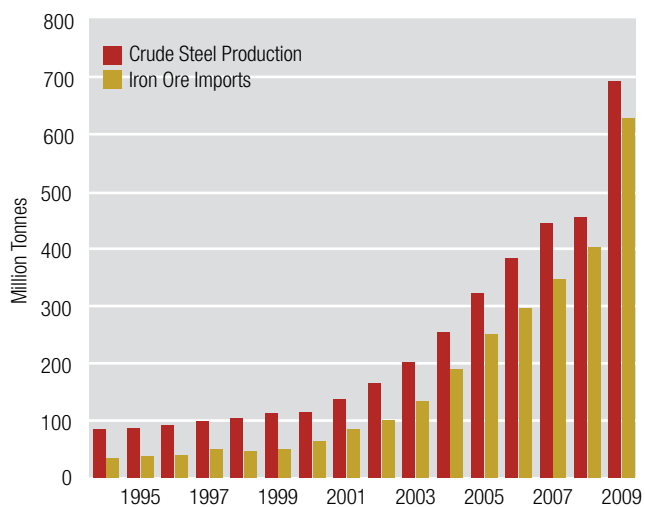


Figure 56 | **China's Crude Steel Production and Iron Ore Imports**
Source: TEX Report and Interfax China Ltd

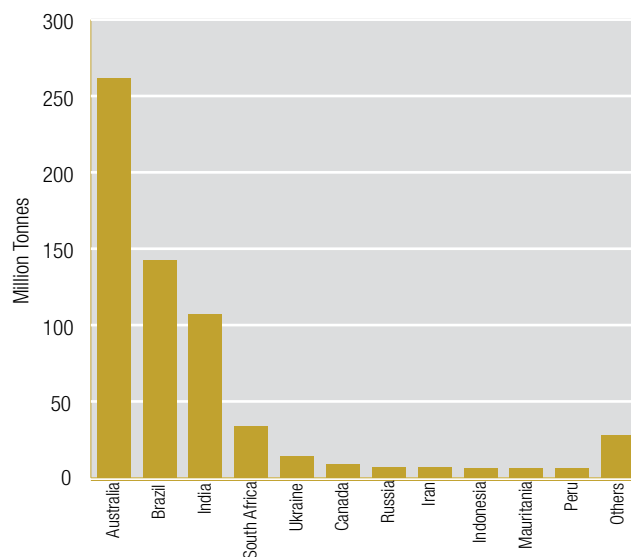


Figure 57 | **China's Iron Ore Imports by Country 2009**
Source: Interflax China Ltd

TABLE 2 QUANTITY AND VALUE OF MINERALS AND PETROLEUM

COMMODITY	UNIT	CALENDAR YEAR 2008				CALENDAR YEAR 2009	
		QUANTITY		VALUE		QUANTITY	VALUE
ALUMINA	t	12,245,511		4,901,123,868		12,421,970	3,593,456,264
BASE METALS							
Copper Metal	t	129,533	(r)	1,041,598,947	(r)	142,493	923,582,066
Lead Metal	t	13,782		32,611,615		26,698	44,325,170
Zinc Metal	t	156,015		329,125,130		104,694	213,471,653
TOTAL BASE METALS				1,403,335,692	(r)		1,181,378,889
CHROMITE	t	56,881	(r)	n/a		74,789	n/a
CLAYS		63,697		1,225,758	(r)	57,846	1,089,071
COAL	t	6,731,266	(r)	305,499,633	(r)	6,559,380	308,156,873
CONSTRUCTION MATERIALS							
Aggregate	t	2,619,511	(r)	65,067,523	(r)	3,038,067	81,877,052
Gravel	t	145,592	(r)	1,321,717	(r)	150,137	1,418,841
Rock	t	1,229,299	(r)	19,925,191	(r)	1,074,735	14,563,217
Sand	t	3,362,306	(r)	25,160,242	(r)	3,774,285	28,944,002
TOTAL CONSTRUCTION MATERIALS				111,474,673	(r)		126,803,112
DIAMONDS	ct	21,240,529		490,710,045		11,899,326	229,986,771
DIMENSION STONE		1,468		312,173		5,980	333,130
GEM & SEMI-PRECIOUS STONES	kg	3,007,059	(r)	402,977	(r)	406,506	346,349
GOLD	kg	131,824	(r)	4,391,320,191	(r)	142,519	5,660,207,979
GYPSUM	t	916,577	(r)	15,402,318	(r)	642,887	13,891,927
HEAVY MINERAL SANDS							
Garnet	t	298,290		n/a		275,560	n/a
Ilmenite	t	598,905	(r)	76,945,319	(r)	393,349	53,801,028
Leucosene	t	68,699	(r)	20,864,638	(r)	59,264	21,267,152
Zircon	t	356,393	(r)	309,499,987	(r)	206,950	188,775,786
Other	t			390,581,906	(r)		356,766,699
TOTAL HEAVY MINERAL SANDS				797,891,850	(r)		620,610,665
IRON ORE	t	305,716,499	(r)	31,896,032,293	(r)	341,640,058	28,085,647,229
LIMESAND-LIMESTONE-DOLOMITE		3,833,242	(r)	17,526,641	(r)	3,238,347	16,957,540
MANGANESE ORE	t	270,706	(r)	n/a		538,718	n/a
NICKEL INDUSTRY							
Cobalt	t	4,785		378,708,168	(r)	4,629	178,901,991
Nickel	t	187,792	(r)	4,059,155,739	(r)	171,969	3,281,088,232
Palladium and Platinum By-Product	kg	710		8,753,701		726	7,543,695
TOTAL NICKEL INDUSTRY				4,446,617,607	(r)		3,467,533,918

COMMODITY	UNIT	CALENDAR YEAR 2008			CALENDAR YEAR 2009	
		QUANTITY	VALUE		QUANTITY	VALUE
PETROLEUM						
Condensate	kl	5,725,013		3,512,416,904		7,492,544 3,232,733,058
Crude Oil	kl	13,324,422		9,737,620,320		11,246,917 5,505,448,018
LNG	t	12,381,004		8,157,477,516 (r)		15,272,516 6,327,686,818
LPG - Butane and Propane	t	764,668		731,502,315		950,524 612,776,966
Natural Gas	'000m ³	8,502,567		1,191,442,427		9,312,415 1,156,235,342
TOTAL PETROLEUM				23,330,459,482 (r)		16,834,880,202
SALT	t	11,488,633	(r)	276,724,711 (r)		9,547,122 432,436,495
SILICA-SILICA SAND		507,736	(r)	7,562,006 (r)		462,314 10,006,288
SILVER	kg	94,428	(r)	50,203,565 (r)		102,475 58,968,095
TIN-TANTALUM-LITHIUM						
Spodumene	t	239,528	(r)	n/a		197,482 n/a
Tantalite	t	680	(r)	n/a		105 n/a
Tin Metal	t	170	(r)	2,265,026 (r)		7,637 1,376,090
TOTAL TIN-TANTALUM-LITHIUM				194,890,438 (r)		92,741,498
OTHER (Includes Feldspar, Red Oxide, Spongolite, and Talc)	t			425,986,670 (r)		260,904,425
TOTAL VALUE				73,064,702,591 (r)		60,996,336,720

Note: Quantities used in this table only apply to Minerals and Petroleum covered by the *Mining Act 1978*, the *Petroleum Act 1967*, the *Petroleum (Submerged Lands) Act 1982* and relevant State Agreement Acts.

(r) Revised from previous edition.

n/a Breakdown of feldspar, garnet, red oxide, talc, spodumene and tantalite not available

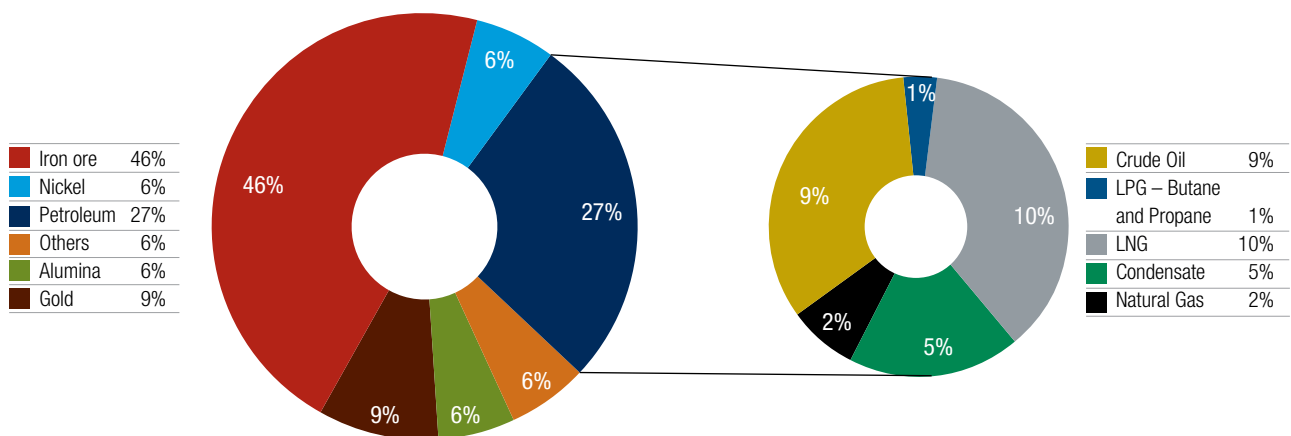


Figure 58 | Sales by Commodity 2009 Source: DMP

TABLE 3 QUANTITY AND VALUE OF SELECTED MAJOR COMMODITIES (CALENDAR YEARS)

	Unit	2000		2001		2002		2003	
		Quantity	Value \$M	Quantity	Value \$M	Quantity	Value \$M	Quantity	Value \$M
ALUMINA	Mt	10.00	3,187.47	10.75	3,766.55	11.00	3,339.25	11.23	3,140.48
BASE METALS									
Copper Metal	kt	34.04	82.61	50.24	120.71	64.29	145.49	58.78	145.09
Lead Metal	kt	73.08	25.76	91.38	44.90	70.40	32.69	56.49	24.32
Zinc Metal	kt	257.72	290.11	210.84	208.72	218.80	173.06	174.55	139.73
TOTAL BASE METALS			398.48		374.33		351.24		309.15
COAL	Mt	6.20	257.84	6.20	258.21	6.26	266.40	6.03	266.41
COBALT	kt	3.59	157.66	4.26	146.27	4.70	118.95	5.17	145.04
DIAMONDS	M ct	42.30	713.68	21.68	499.53	34.37	650.34	35.48	661.86
GOLD	t	199.50	3,078.65	192.20	3,236.20	188.86	3,460.87	187.50	3,364.96
HEAVY MINERAL SANDS									
Ilmenite	Mt	1.30	185.47	0.83	137.32	0.85	131.26	0.86	110.46
Rutile	kt	122.15	100.58	112.93	99.01	125.41	102.66	123.63	80.28
Zircon	kt	347.93	172.11	353.17	230.00	369.92	246.74	420.55	242.10
Other HMS			27.27		24.23		21.54		17.60
TOTAL HEAVY MINERAL SANDS			862.93		909.22		855.87		760.75
IRON ORE	Mt	158.87	4,365.19	162.25	5,245.93	171.77	5,064.62	194.75	5,061.06
MANGANESE ORE ***	kt	259.53	33.61	498.60	76.09	578.39	75.63	587.84	65.18
NICKEL METAL	kt	153.51	2,243.28	181.17	2,074.48	183.00	2,242.55	190.21	2,680.24
PETROLEUM									
Condensate	Gl	6.20	1,946.37	6.02	1,787.91	6.88	1,928.58	6.39	1,765.46
Crude oil	Gl	13.74	4,472.42	14.06	4,246.65	15.29	4,502.72	14.12	4,034.63
LNG *	Btu 10 ¹²	385.61	2,986.97	389.57	3,482.87	394.11	2,791.22	408.27	2,874.61
LPG - Butane **	kt	450.57	225.36	475.25	217.54	458.15	197.56	425.20	182.83
LPG - Propane	kt	364.53	183.36	385.83	185.08	357.41	165.88	319.97	142.72
Natural Gas	Gm ³	6.93	607.64	7.67	642.08	7.75	650.20	8.11	690.45
TOTAL PETROLEUM			10,422.12		10,562.13		10,236.16		9,690.71
SALT	Mt	7.71	197.32	8.58	249.24	9.17	250.53	9.75	197.01
OTHER			297.01		379.55		389.16		343.08
TOTAL			26,215.24		27,777.73		27,301.57		26,685.93

* Expressed in million tonnes from 2005 onwards

** LPG Butane and Propane combined from 2005 onwards and expressed in million tonnes

*** Manganese values are not available from 2008 onwards

2004		2005		2006		2007		2008		2009	
Quantity	Value \$M	Quantity	Value \$M	Quantity	Value \$M	Quantity	Value \$M	Quantity	Value \$M	Quantity	Value \$M
10.99	3,178.95	11.35	3,655.84	11.87	4,767.05	12.17	4,704.33	12.25	4,901.12	12.42	3,593.46
42.68	160.94	83.88	434.71	99.96	917.78	119.41	1,018.75	129.53	1,041.60	142.49	923.58
1.17	0.31	30.27	41.17	74.85	130.61	42.02	115.57	13.78	32.61	26.70	44.33
51.78	57.78	63.61	118.91	138.84	607.12	180.73	685.54	156.01	329.13	104.69	213.47
	219.03		594.79		1,655.50		1,819.86		1,403.34		1,181.38
6.31	281.91	6.41	283.26	7.25	317.90	5.81	265.15	6.73	305.50	6.56	308.16
4.55	262.18	4.59	166.95	5.13	220.43	4.73	343.08	4.78	378.71	4.63	178.90
24.23	414.81	34.31	740.1	17.07	446.9	23.54	555.0	21.24	490.71	11.90	230.0
164.42	2,940.98	169.83	3,146.54	163.84	4,234.61	152.69	4,073.29	131.82	4,391.32	142.52	5,660.21
0.76	87.94	0.67	74.00	0.74	84.44	0.73	79.80	0.60	76.95	0.39	53.80
112.93	69.02	100.45	63.79	102.21	64.39	92.92	56.30	n/a	n/a	n/a	n/a
414.07	265.07	416.92	329.80	370.18	358.82	289.88	263.93	356.39	309.50	206.95	188.78
	327.05		412.78		376.01		412.97		390.58		356.77
	749.08		880.37		883.67		780.28		797.89		620.61
215.85	6,173.16	244.64	11,308.57	250.40	14,751.69	264.45	16,165.25	305.72	31,896.03	341.64	28,085.65
593.68	106.48	785.01	184.39	906.68	195.25	430.45	185.71	270.71	n/a	538.72	n/a
174.70	3,261.21	191.71	3,484.39	175.18	5,844.17	161.01	6,958.08	187.79	4,059.16	171.97	3,281.09
5.94	2,011.14	5.88	2,576.86	5.61	2,940.19	5.86	3,236.76	5.73	3,512.42	7.49	3,232.73
12.25	4,211.56	13.18	6,168.82	11.95	6,602.75	13.20	7,384.29	13.32	9,737.62	11.25	5,505.45
454.12	3,150.81	11.03	4,320.27	11.96	4,550.76	12.38	4,448.58	12.38	8,157.48	15.27	6,327.69
398.84	189.28	870.73	544.22	862.23	613.83	893.91	686.64	764.67	731.50	950.52	612.78
322.85	151.13										
7.71	655.46	7.41	661.61	8.36	816.67	9.17	1,002.47	8.50	1,191.44	9.31	1,156.24
	10,369.39		14,397.85		15,524.20		16,758.73		23,330.46		16,834.88
10.40	185.08	11.48	213.78	10.72	241.64	10.39	229.60	11.49	276.72	9.55	432.44
	353.17		579.55		605.10		638.27		833.74		589.59
	28,495.43		39,452.04		49,492.86		53,290.94		73,064.70		60,996.34

TABLE 4 VALUE OF MINERALS AND PETROLEUM BY REGION BY LGA CALENDAR YEAR 2009

Pilbara Region	2009 Value
East Pilbara	18,658,176,712
Ashburton	9,672,755,826
Roebourne	239,871,380
Port Hedland	224,690,515
Karratha and Marble Bar	200,394
Total	28,795,694,827

Offshore Petroleum	16,772,795,847
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Goldfields–Esperance Region	2009 Value
Coolgardie	2,073,693,222
Leonora	1,917,721,397
Kalgoortie–Boulder	1,610,743,069
Laverton	872,269,626
Dundas	157,406,699
Esperance and Ravensthorpe	80,696,688
Menzies	5,367,057
Total	6,717,897,758

Peel Region	2009 Value
Waroona	2,569,271,179
Boddington	1,130,170,501
Total	3,699,441,680

Mid West Region	2009 Value
Wiluna and Three Springs	984,090,807
Yalgoo	449,683,485
Carnamah and Murchison	346,390,587
Morawa, Mullewa	217,089,353
Meekatharra	211,728,513
Northampton, Perenjori and Sandstone	95,262,574
Irwin	58,685,151
Coorow and Cue	18,896,231
Total	2,381,826,701

Kimberley Region	2009 Value
Derby–West Kimberley	352,856,038
Halls Creek	238,182,601
Wyndham–East Kimberley	137,149,691
Broome	3,449,033
Total	731,637,363

Wheatbelt Region	2009 Value
Yilgarn	853,248,394
Dandaragan	199,627,163
Dalwallinu and Kondinin	163,064,214
Corrigin, Lake Grace and Moora	3,016,768
Gingin	1,441,138
Mukinbudin, Northam and Wyalkatchem	766,938
Total	1,221,164,615

South West Region	2009 Value
Collie	308,320,403
Bridgetown–Greenbushes and Capel	167,823,158
Bunbury, Dardanup and Manjimup	71,925,531
Total	548,069,092

Gascoyne Region	2009 Value
Carnarvon	59,283,265
Shark Bay and Upper Gascoyne	40,778,407
Total	100,061,672

Perth Metropolitan Region	2009 Value
Wanneroo	12,546,051
Cockburn and Kwinana	6,828,496
Kalamunda and Swan	4,862,105
Total	25,194,012

Great Southern Region	2009 Value
Albany, Denmark, Kent and Plantagenet	3,774,149

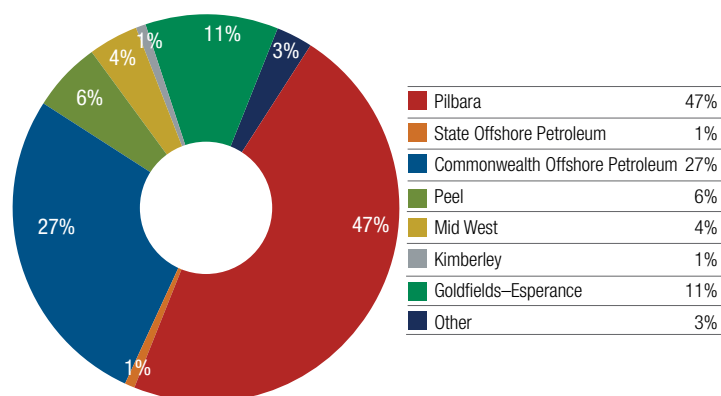


Figure 59 | Value of Minerals and Petroleum by Region 2009
Total \$61 billion Source: DMP

**TABLE 5 VALUE OF MINERALS AND PETROLEUM BY REGION
BY COMMODITY CALENDAR YEAR 2009**

Pilbara Region	2009 Value
Iron Ore	26,820,026,183
Gold	717,755,331
Copper	599,738,263
Manganese and Salt	550,352,096
Other	107,822,954
Total	28,795,694,827

Offshore Petroleum	
Crude Oil and Condensate	8,699,005,967
Liquefied Natural Gas	6,327,686,818
Natural Gas	1,133,326,096
LPG Butane and Propane	612,776,966
Total	16,772,795,847

Goldfields–Esperance Region	
Gold	3,747,156,752
Nickel, Platinum and Palladium	2,654,202,367
Cobalt	151,750,856
Copper and zinc	142,711,787
Silver	15,756,175
Construction Materials	3,461,378
Other	2,858,443
Total	6,717,897,758

Peel Region	
Alumina	3,593,456,264
Gold and Copper	105,985,416
Total	3,699,441,680

Mid West Region	
Gold	896,142,642
Copper, Lead and Zinc	386,540,055
Nickel, Cobalt and Talc	349,203,352
Iron Ore and Gypsum	341,123,623
Heavy Mineral Sands	276,727,462
Chromite, Manganese and Silver	69,351,026
Crude Oil and Condensate	36,349,155
Natural Gas	22,909,246
Other	3,480,140
Total	2,381,826,701

Kimberley Region	2009 Value
Nickel, Cobalt and Diamonds	394,450,678
Iron Ore and Gold	300,577,833
Copper, Silver and Crude Oil	31,408,329
Other	5,200,523
Total	731,637,363

Wheatbelt Region	
Iron Ore, Feldspar and Gold	844,544,660
Gypsum and Heavy Mineral Sands	201,888,238
Nickel, Cobalt and Salt	166,012,639
Other	8,719,078
Total	1,221,164,615

South West Region	
Coal	308,156,873
Heavy Mineral Sands	146,944,680
Tin, Tantalum and Spodumene	92,741,498
Other	226,041
Total	548,069,092

Gascoyne Region	
Salt and Gems	91,321,783
Gypsum and Limesand–Limestone	8,714,659
Other	25,230
Total	100,061,672

Perth Metropolitan Region	
Construction Materials, Silica Sand and Limesand-Limestone	25,194,012

Great Southern Region	
Limesand, Silica Sand and Spongolite	3,774,149

TABLE 6 ROYALTY RECEIPTS FOR CALENDAR YEARS 2008 AND 2009

COMMODITY	2008	2009	2009 Growth	
	Total A\$	Total A\$	A\$	%
Alumina	78,222,581	66,627,260	-11,595,321	(15)
Diamonds	30,998,568	18,332,883	-12,665,685	(41)
Gold	99,877,858	139,588,820	39,710,962	40
Heavy Mineral Sands	22,530,518	21,462,494	-1,068,024	(5)
Iron Ore	1,518,472,327	1,701,603,049	183,130,722	12
Nickel	116,720,356	67,742,963	-48,977,393	(42)
Petroleum	929,258,722	691,695,214	-237,563,508	(26)
Other	125,425,651	85,733,527	-39,692,124	(32)
TOTAL REVENUE	2,921,506,581	2,792,786,210	-128,720,371	(4)

Note: All Royalty Receipts above are only those paid into the State's Consolidated Revenue Fund during the period. It does not include royalty receipts collected on behalf of the Commonwealth.

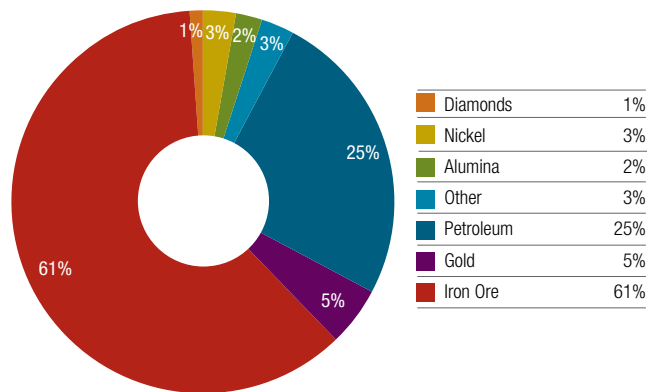


Figure 60 | **Royalty Receipts 2009**
Source: DMP

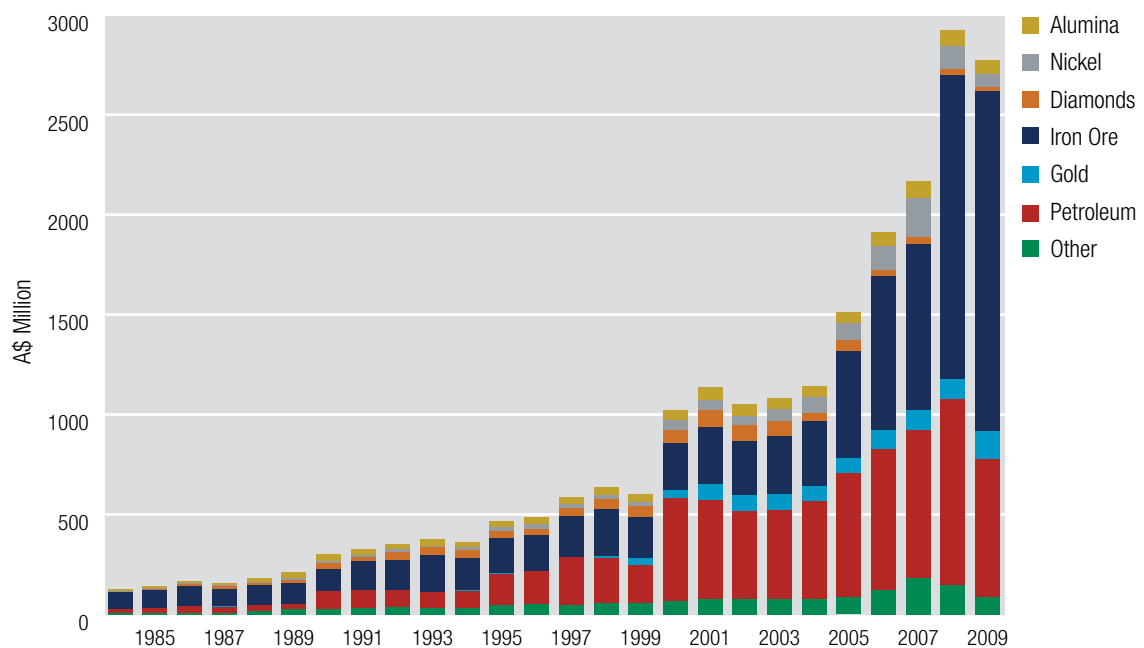


Figure 61 | **Royalty Receipts by Commodity** Source: DMP

TABLE 7 AVERAGE NUMBER OF PERSONS EMPLOYED IN THE WA MINERALS AND PETROLEUM INDUSTRIES

MINERAL/Company	Operating Site	2008	2009
BAUXITE – ALUMINA			
Australian Fused Materials Pty Ltd	Rockingham Fused Alumina Plant	85	69
Alcoa World Alumina Australia	Huntly	830	688
	Kwinana Alumina Refinery	1,583	1,410
	Pinjarra Refinery	1,868	1,633
	Wagerup Alumina Refinery	1,215	1,015
	Wagerup Co-Generation Plant	5	0
	Willowdale	403	313
Bauxite Resources Limited	Bindoon Bauxite Quarry	0	9
Worsley Alumina Pty Ltd	Boddington Bauxite	296	370
	Worsley Refinery	1,916	2,705
TOTAL BAUXITE – ALUMINA		8,201	8,212
BASE METALS			
Birla (Nifty) Pty Ltd	Nifty	694	541
CBH Sulphur Springs Pty Ltd	Panorama	9	0
Jabiru Metals Ltd	Jaguar	101	163
Lennard Shelf Pty Ltd	Pillara	99	8
Magellan Metals Pty Ltd	Magellan	64	24
Minerals and Metals Group	Golden Grove	1,118	655
Straits (Whim Creek) Pty Ltd	Whim Creek	157	65
TOTAL BASE METALS		2,242	1,456
COAL			
Griffin Coal Mining Co. Pty Ltd	Muja Open Cut	425	436
Wesfarmers Premier Coal Ltd	Premier	472	289
TOTAL COAL		897	725
DIAMONDS			
Argyle Diamond Mines Pty Ltd	Argyle Diamond Mine	1,687	1,247
Kimberley Diamond Company Ltd	Ellendale/Kimberley Diamonds	528	353
North Australian Diamonds Limited	Wangara Laboratory	3	2
TOTAL DIAMONDS		2,218	1,602
GOLD			
A1 Minerals Ltd	Brightstar Beta-Midado	0	15
Agnew Gold Mining Company Pty Limited	Agnew-Emu	328	454
AngloGold Ashanti Australia Ltd	Sunrise Dam	883	837
Apex Gold Pty Ltd	Wiluna Group	326	409
ATW Gold Corp Australia Pty Ltd	Burnakura	19	91
	Gullewa	0	9
Avoka Resources Ltd	Higginsville Gold Project	272	463

TABLE 7 AVERAGE NUMBER OF PERSONS EMPLOYED IN THE WA MINERALS AND PETROLEUM INDUSTRIES

MINERAL/Company	Operating Site	2008	2009
GOLD (CONTINUED)			
Barra Resources Ltd	Burbanks Group	5	1
Barrick Gold of Australia Limited	Darlot	257	299
	Granny Smith	379	423
	Kalgoorlie West Group	646	836
	Lawlers	382	324
	Plutonic	262	529
Catalpa Resources Limited	Edna May Gold Project	0	94
Central Norseman Gold Corporation	Central Norseman Group	245	262
Crescent Gold Limited	Laverton Gold Project	79	116
Davyhurst Gold Pty Ltd	Davyhurst	86	3
Diora - HBJ Minerals Pty Ltd	South Kal Operations	238	159
Equigold NL	Kirkalocka	40	0
Focus Minerals Ltd	Coolgardie Group	62	169
	The Mount	0	3
Golden Stallion Resources Pty Ltd	Minjar Gold Project	4	29
Haoma Pty Ltd	Bamboo Creek	9	11
Higginsville Mining Pty Ltd	Greenfields-Higginsville Plant	51	54
Intrepid Mines Limited	Paulsens	154	182
Jervois Mining Limited	Bullabulling	11	6
Kalgoorlie Consolidated Gold Mines Pty Ltd	Golden Mile - Super Pit	1,565	1,408
Kingrose Mining Pty Ltd	Sand Queen	25	23
La Mancha Resources Australia Pty Ltd	Frogs Legs Group	162	193
Mercator Gold Australia Pty Ltd	Meekatharra Gold Operations	74	10
Mount Magnet Gold NL	Mt Magnet	38	18
Mt Ida Gold Operations Pty Ltd	Mt Ida Group	24	6
Navigator (Bronzewing) Pty Ltd	Bronzewing	65	2
Newcrest Mining Ltd	Telfer	1,832	1,605
Newmont Boddington Gold Pty Ltd	Boddington	2,348	3,815
Newmont Mining Corporation	Jundee	553	745
Norilsk Nickel Australia Pty Ltd	Bannockburn Gold Mine	0	5
Paddington Gold Mine Pty Ltd	Paddington Gold	288	325
	Binduli	14	26
Ramelius Milling Services Pty Ltd	Burbanks Treatment Plant	14	22
Ramelius Resources Ltd	Wattle Dam	26	65
Range River Gold Ltd	Indee Group	28	5
Silver Lake Resources Limited	Christmas Flat	0	8
	Daisy-Milano	64	95
	Lakewood - Fimtails Plant	40	32

MINERAL/Company	Operating Site	2008	2009
Saracen Gold Mines Pty Limited	Carosue Dam	17	66
St Barbara Mines Ltd	Southern Cross - Marvel Loch and Hercules mines	499	443
	Leonora Operations - Sons of Gwalia	447	380
St Ives Gold Mining Company Pty Limited	Kambalda/St Ives	1,306	1,242
Tanami Gold NL	Coyote Group	118	157
The Perth Mint	Perth Mint	119	103
Troy Resources Ltd	Sandstone Group	37	98
Other	Various	18	11
TOTAL GOLD		14,459	16,686
HEAVY MINERAL SANDS			
BHP Titanium Minerals Pty Ltd	Beenup	7	2
Bemax Resources Limited	Bunbury	205	224
Doral Mineral Sands Pty Ltd	Dardanup	296	132
Mintech Chemical Industries Pty Ltd	Rockingham Fused Materials	10	11
GMA Garnet Pty Ltd	Narngulu Garnet Plant	38	34
	Port Gregory	33	30
Iluka Resources Limited	Capel	604	294
	Eneabba	501	326
	Narngulu Synthetic Rutile Plants	346	201
	Gingin	84	54
TiWest Pty Ltd	Chandala-Muchea	302	226
	Cooljarloo	223	398
	Bunbury Port	21	2
TOTAL HEAVY MINERAL SANDS		2,670	1,934
IRON ORE			
Atlas Iron Ltd	Pardoo RSD Group	19	147
	Wodgina	0	10
Australian Premium Iron JV	Upper Cane	3	0
Ngarda Civil and Mining Pty Ltd.	Yarrie Nimingarra	160	262
BHP Iron Ore (Jimblebar) Ltd	Jimblebar	84	0
	RGP4 Jimblebar Construction	72	8
BHP Iron Ore Ltd	Boodarie HBI Plant	47	29
	Mining Area C	1,110	1,363
	Mt Newman Railway	1,039	1,050
	Mt Whaleback	2,103	2,018
	Nelson Point	761	1,244
	Newman Joint Venture Hub	0	1,370
	PACE-RGP Group	189	1,020

TABLE 6 AVERAGE NUMBER OF PERSONS EMPLOYED IN THE WA MINERALS AND PETROLEUM INDUSTRIES

MINERAL/Company	Operating Site	2008	2009
IRON ORE (continued)			
Calibre Engenium Joint Venture Pty Ltd	Mesa A Rail Construction	0	418
Citic Pacific Mining Management Pty Ltd	Cape Preston Group	428	631
Cliffs Natural Resources Pty Ltd	Koolyanobbing	584	792
Crosslands Resources Ltd	Cuddingwarra	0	103
	Jack Hills	92	245
Fast (Fluor & SKM Team)	Yandi	0	213
Ferro Metals Australia Pty Ltd	Balla Balla Group	11	4
Fortescue Metals Group Ltd	Anderson Point Port Facility	0	158
	Christmas Creek	0	281
	Cloudbreak	1,599	2,326
	Cloudbreak Team 45	0	27
Hamersley HMS Pty Ltd	Hope Downs	453	787
	Hope Downs Village	14	0
Hamersley Iron Pty Ltd	Brockman	445	539
	Dampier Port Operations and Power Plant	1,619	1,290
	Hismelt Kwinana	612	86
	Marandoo	250	355
	Paraburdoo/Channar/Eastern Range	1,324	1,081
	Paraburdoo Power Plant	35	1
	Tom Price	1,701	1,515
	Yandicoogina	957	953
Henry Walker Eltin Cockatoo Pty Ltd	Cockatoo Island	169	127
Henry Walker Eltin Contracting Pty Ltd	Orebody 23/25	420	308
	Yandi	775	1,049
Henry Walker Eltin Mining Pty Ltd	Mesa A	0	45
Kellog Brown & Root Pty Ltd	Hope Downs Construction Group	665	80
MacMahon Holdings Pty Ltd	Orebody 18 - Wheelarra	300	473
Mount Gibson Iron Limited	Geraldton Port Storage Facility	18	18
	Koolan Island	503	518
	Ruvidini Rail Terminal	70	56
	Tallering Peak	305	278
Process Minerals International	Boodarie RSI	0	6
Robe River Mining Co. Pty Ltd	Cape Lambert Port Operations and Power Plant	1,601	1,151
	Pannawonica	1,012	627
	West Angelas	867	989
TOTAL IRON ORE		23,185	26,051
NICKEL			

MINERAL/Company	Operating Site	2008	2009
Australian Mines Limited	Blair	52	0
BHP Billiton Minerals Pty Ltd	Ravensthorpe	1,075	221
BHP Billiton (Nickel West)	Cliffs	316	207
	Kalgoorlie Nickel Smelter	1,526	638
	Kambalda	514	136
	Kwinana Refinery	463	436
	Leinster	1,836	1,163
	Mt Keith	1,599	968
Consolidated Nickel Pty Ltd	Beta-Hunt Nickel Group	220	10
Consolidated Minerals Limited	Armstrong - Kambalda	21	0
Copernicus Nickel Mines Pty Ltd	Copernicus	25	0
Focus Minerals Ltd	Nepean	9	1
Fox Resources Pty Ltd	Radio Hill	74	26
Heron Resources Limited	Jump Up Dam	6	0
Lightning Nickel Pty Ltd	Long Nickel	162	169
Mincor Resources NL	Miitel, Wannaway, Redross, Mariners	371	176
	Carnilya Hill	76	57
	Mincor Operations	139	176
	Otter Juan	0	162
Norilsk Nickel Avalon Pty Ltd	Avalon-Bulong Plant	16	6
	Black Swan	524	64
	Cawse	376	11
	Emily Ann	400	55
	Waterloo	177	10
Murrin Murrin Operations Pty Ltd	Murrin Murrin	1,893	1,292
Panoramic Resources Limited	Lanfranchi	287	242
	Savannah Group	294	246
Poseidon Nickel Ltd	Windarra Group	24	2
Xstrata Nickel Australasia Operations Pty Ltd	Cosmos	286	630
	Sinclair	147	166
Southern Cross Energy	Southern Cross Energy Power Group	100	0
Western Areas Limited	Forrestania	299	291
TOTAL NICKEL		13,307	7,561
PETROLEUM PRODUCTS			
Apache Energy Ltd	Harriet, John Brookes, Stag, Legendre	155	463
AWE Energy Ltd	Dongara, Hovea-Eremia, Mt Horner, Woodada, Xyris	40	44
BHP Billiton Petroleum (North West Shelf Pty) Ltd	Stybarrow, Pyrenne	110	140
Buru Energy Limited	Blina	3	3
Chevron (Australia) Pty Ltd	Barrow Island, Crest, Roller-Skate, Saladin, Yammaderry Wheatstone and Gorgon	1,400	(e)1,630**
ENI Australia	Woollybutt	36	200
Origin Energy Resources Ltd	Beharra Springs, Tarantula, Jingemia	21	33
Roc Oil (WA) Pty Ltd	Cliff Head	18	31
Santos Limited	Mutineer-Exeter	73	(e) 78
Vermillion Oil and Gas Australia Pty Ltd	Wandoo	22	26

TABLE 6 AVERAGE NUMBER OF PERSONS EMPLOYED IN THE WA MINERALS AND PETROLEUM INDUSTRIES

MINERAL/Company	Operating Site	2008	2009
PETROLEUM PRODUCTS (continued)			
Woodside Energy Ltd	Athena, Cossack, Echo-Yodel, Goodwyn, Hermes, Laminaria East, North Rankin, Wanaea, Angel, Vincent, Enfield	3,099*	2,904*
TOTAL PETROLEUM PRODUCTS		4,977	5,552
SALT			
Dampier Salt Ltd	Dampier	199	162
	Lake MacLeod	170	163
	Port Hedland	240	154
WA Salt Supply Koolyanobbing Pty Ltd	Lake Deborah	11	7
Onslow Solar Salt Pty Ltd	Onslow	161	143
Shark Bay Salt JV	Useless Loop	79	145
Western Salt Refinery Pty Ltd	Pink Lake	7	4
TOTAL SALT		867	778
TIN, TANTALUM AND LITHIUM			
Galaxy Resources Ltd	Mt Catlin (Spodumene)	0	5
Haddington Resources Limited	Bald Hill West	2	1
Nagrom and Co.	Kelmscott	31	28
Talisson Minerals Pty Ltd	Greenbushes	213	188
	Wodgina	219	54
TOTAL TIN, TANTALUM AND LITHIUM		465	276
TOTAL CHROMITE		115	40
TOTAL CLAYS		139	86
TOTAL CONSTRUCTION MATERIALS		600	580
TOTAL DIMENSION STONE		138	107
TOTAL INDUSTRIAL PEGMATITE MINERALS		20	13
TOTAL LIMESTONE - LIMESAND		108	121
TOTAL MINERAL EXPLORATION		n/a	2,254
TOTAL PHOSPHATE		151	125
TOTAL RARE EARTHS		37	12
TOTAL SILICA - SILICA SAND		198	186
TOTAL SILVER		6	2
TOTAL TALC		81	32
TOTAL TUNGSTEN AND MOLYBDENUM		50	9
TOTAL VANADIUM		67	128
TOTAL VARIOUS PORTS		443	416
ALL OTHER MATERIALS		48	13
TOTAL		76,202	75,615

SOURCE: AXAT Reporting System, Resources Safety Division, Department of Mines and Petroleum, for minerals data and petroleum producing companies for petroleum data. Figures are as provided by the various operating companies and include employees as well as contractors.

* Does not include third party contractors

** Includes operational personnel as well as Gorgon and Wheatstone development personnel (both site and Perth-based, direct and contract) .

(e) estimated by DMP

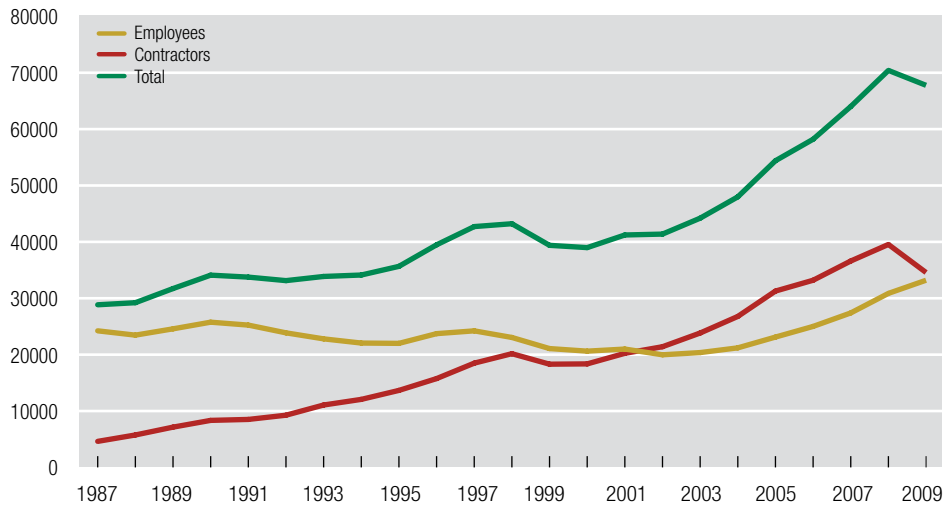


Figure 62 | Mining Employment 1987–2009 Source: DMP

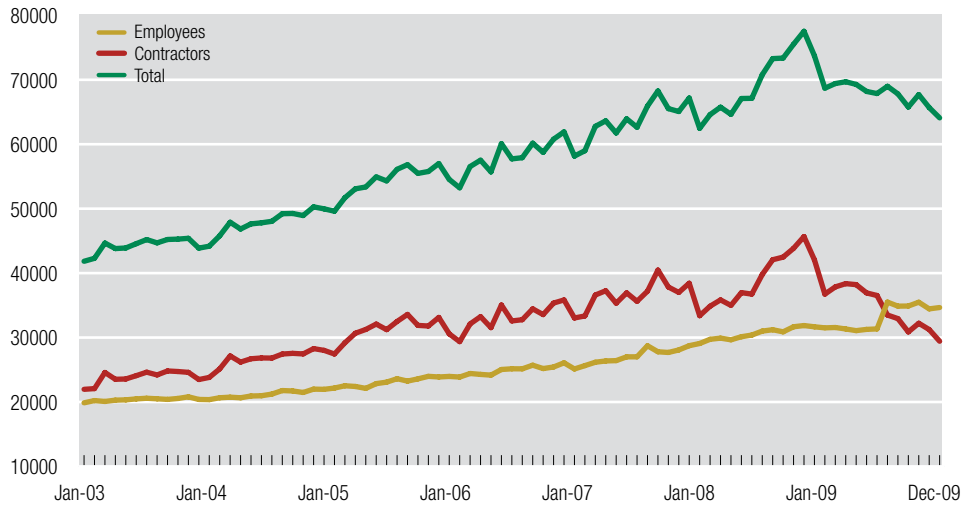


Figure 63 | Mining Employment January 2003 to December 2009 Source: DMP

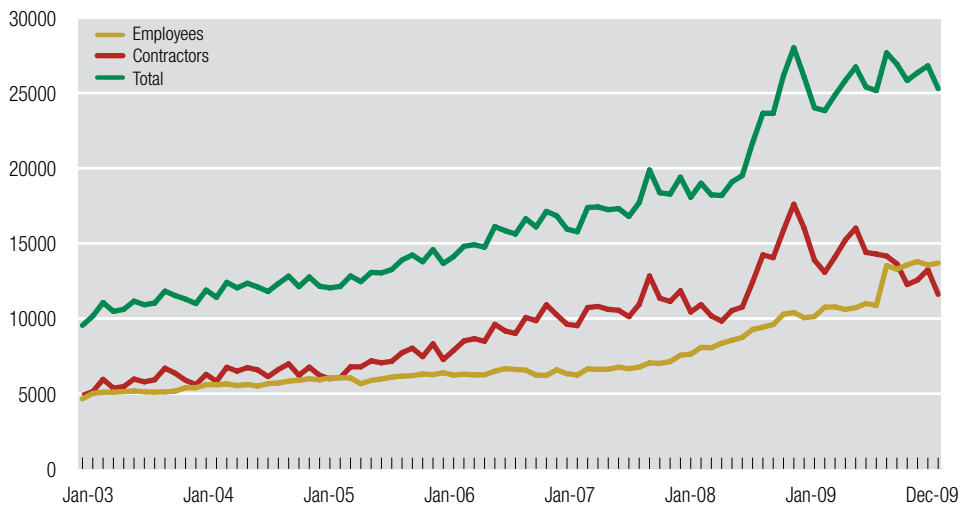


Figure 64 | Mining Employment Iron Ore January 2003 to December 2009 Source: DMP

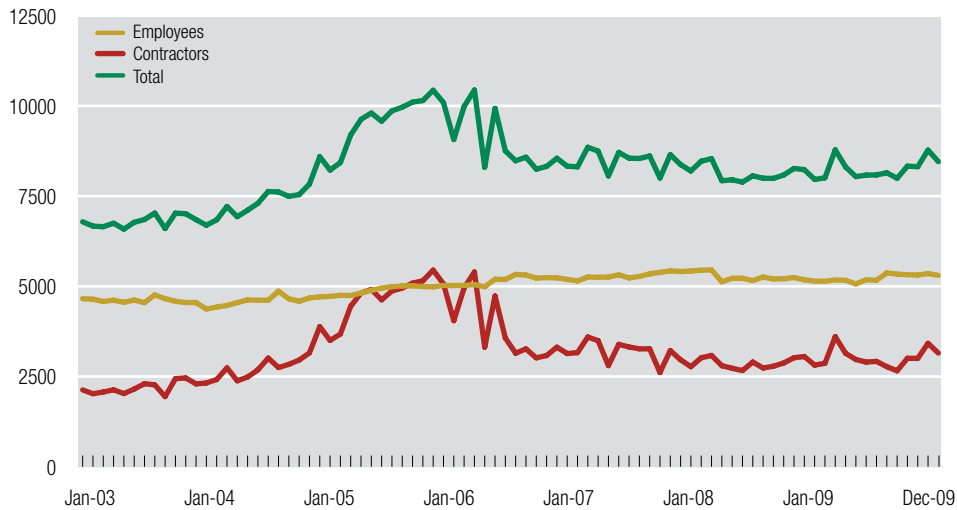


Figure 65 | **Mining Employment Alumina** January 2003 to December 2009 Source: DMP

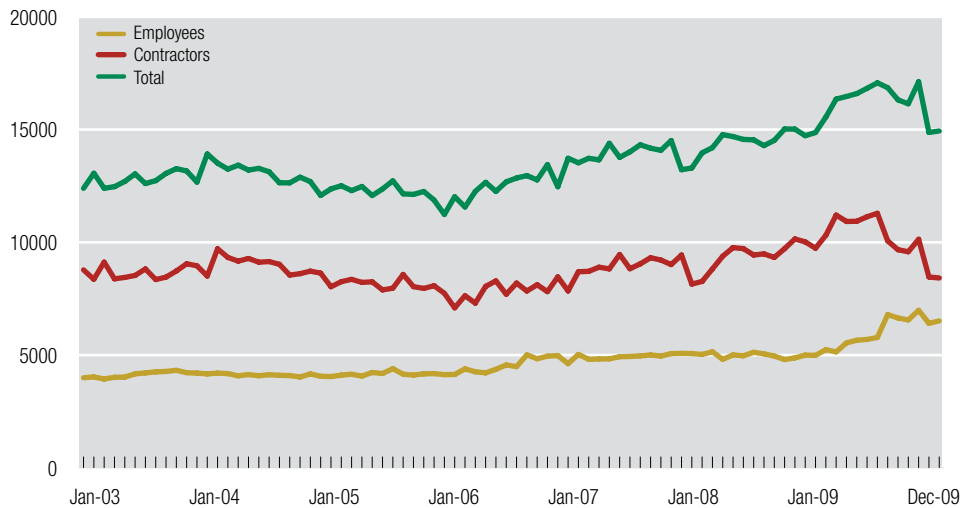


Figure 66 | **Mining Employment Gold** January 2003 to December 2009 Source: DMP

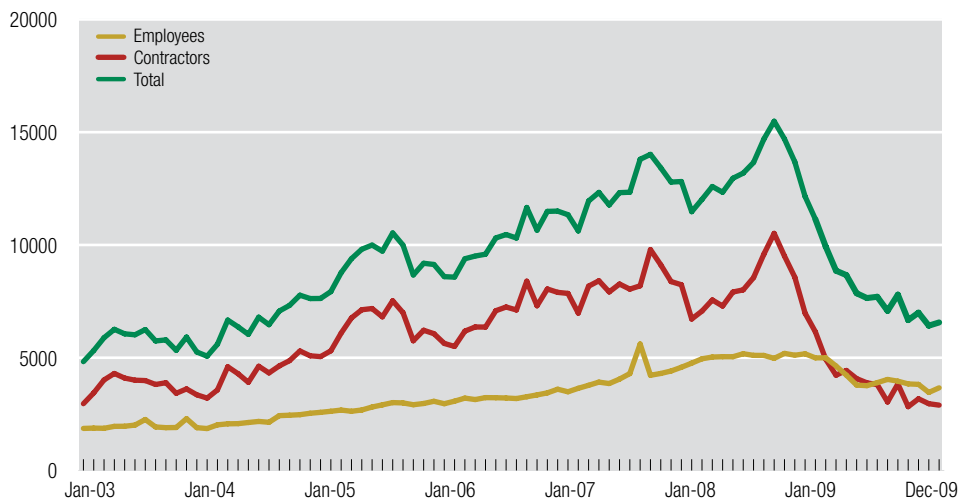


Figure 67 | **Mining Employment Nickel** January 2003 to December 2009 Source: DMP

TABLE 8 PRINCIPAL MINERAL AND PETROLEUM PRODUCERS effective September 2009

BASE METALS

Copper–Lead–Zinc

Aditya Birla Minerals Ltd

Level 3, 256 Adelaide Terrace,
Perth WA 6000,
(08) 9366 8800,
Nifty.
[www.adityabirlaminerals.com.au/
aboutusoverview.asp](http://www.adityabirlaminerals.com.au/aboutusoverview.asp)

BHP Billiton (Nickel West)

191 Great Eastern Highway,
Belmont WA 6104,
(08) 9479 0500,
Kambalda.
www.bhpbilliton.com

China Minmetals Corporation

Level 8,
564 St Kilda Road,
Melbourne Vic 3004,
(03) 9520 6800,
Golden Grove.
www.minmetals.com/index.jsp

Jabiru Metals Limited

Ground Floor,
1205 Hay Street,
West Perth WA 6005,
(08) 9426 8300,
Jaguar.
www.jabirumetals.com.au

Magellan Metals Pty Ltd,

96 Welshpool Road,
Welshpool WA 6106,
(08) 9267 7000,
Magellan.
www.magellanmetals.com.au

Newcrest Mining Ltd

Level 2, 30 Terrace Road,
East Perth WA 6004,
(08) 9270 7070,
Telfer.
www.newcrest.com.au

BAUXITE–ALUMINA

Alumina

Alcoa of Australia Limited

181–205 Davy Street,
Booragoon WA 6154,
(08) 9316 5111,
Del Park, Willowdale, Huntly.
www.alcoa.com.au

Worsley Alumina Pty Ltd

PO Box 344,
Collie WA 6225,
(08) 9734 8311,
Boddington.
www.wapl.com.au

CLAY

Attapulgite

Hudson Resources Ltd

2 Kemp Street, Narngulu,
Geraldton WA 6530,
(08) 9923 3604,
Lake Nerramyne.
www.hudsonresources.com

Clay Shale

The Griffin Coal Mining

Company Pty Limited,

28 The Esplanade,
Perth WA 6000,
(08) 9261 2800,
Collie.
www.griffincoal.com.au

Saponite

Watheroo Minerals Pty Ltd

PO Box 1761,
Osborne Park WA 6916,
(08) 9446 1533,
Watheroo Clays.
www.bentoniteproductswa.com.au

COAL

The Griffin Coal Mining Company Pty Limited

28 The Esplanade,
Perth WA 6000,
(08) 9261 2800,
Collie.
www.griffincoal.com.au

Wesfarmers Premier Coal Ltd

Premier Road,
Collie WA 6225,
(08) 9780 2222,
Collie.
www.wesfarmers.com.au

CONSTRUCTION MATERIALS

Aggregate

Cemex

Technology Park,
18–20 Brodie–Hall Drive,
Bentley WA 6102
(08) 9212 2000,
Burrup–Dampier, Newman,
Turner River.
www.cemex.com.au

Gravel

WA Limestone Co.

41 Spearwood Avenue,
Bibra Lake WA 6163,
(08) 9434 2299,
Pickering Brook.

Sand

Boral Resources (WA) Ltd

63–69 Abernethy Road,
Belmont WA 6104,
(08) 9333 3400,
Gnangarra, Gosmont.
www.boral.com.au

TABLE 8 PRINCIPAL MINERAL AND PETROLEUM PRODUCERS effective September 2009

Rocla Quarry Products,

130 Fauntleroy Avenue,
Redcliffe WA 6104,
(08) 9475 2555,
Gnangara, Banjup, Gingin,
Lexia, Baldivis.
www.rocla.com.au

Cemex

Technology Park,
18-20 Brodie–Hall Drive,
Bentley WA 6102
(08) 9212 2000,
Various sites.
www.cemex.com.au

Tuma Holdings Pty Ltd

T/as Action Sand Supplies
42 Noel Road,
Gooseberry Hill WA 6076,
(08) 9275 1100,
Mobile: 0408 923 801,
Chidlow.

DIAMONDS

Argyle Diamonds Australia

2 Kings Park Road,
West Perth WA 6005,
(08) 9482 1166,
Argyle.
www.argylediamonds.com.au

Kimberley Diamond Company

Level 3, 52 Kings Park Road,
West Perth WA 6005,
(08) 9426 9888,
Ellendale.
www.gemdiamonds.com

DIMENSION STONE

Granite

Fraser Range Granite NL

Eyre Highway,
Norseman WA 6443,
(08) 9039 3442,
Fraser Range Granite.

FELDSPAR

Unimin Australia Ltd

26-28 Tomlinson Road,
Welshpool WA 6106,
(08) 9362 1655,
Mukinbudin.
www.unimin.com.au

GOLD

Agnew Gold Mining Co Pty Ltd

PMB 10,
Leinster WA 6437,
(08) 9088 3822,
Agnew.
www.goldfields.co.za

AngloGold Australia Ltd

Level 13, St Martin's Tower,
44 St Georges Terrace,
Perth WA 6000,
(08) 9425 4604,
Sunrise Dam.
www.anglogoldashanti.com

Apex Minerals NL

Level 1, 10 Ord Street,
West Perth WA 6005,
(08) 6311 5555,
Wiluna.
www.apexminerals.com.au

Avoca Resources Limited

Level 1, 31 Ventnor Avenue,
West Perth WA 6005,
(08) 9226 0625,
Higginsville.
www.avocaresources.com.au

Barrick Gold of Australia Limited

Level 10, 2 Mill Street,
Perth WA 6000,
(08) 9212 5777,
Darlot, Lawlers, Plutonic,
Granny Smith, Kanowna Belle,
East Kundana, Kalgoorlie.
www.barrick.com

Dioro Exploration NL

Level 2, 45 Stirling Highway,
Nedlands WA 6009,
(08) 9389 8799,
South Kal Mines, Frogs Leg.
www.dioro.com.au

Focus Minerals Limited

Level 10, Exchange House,
68 St Georges Terrace,
Perth WA 6000,
(08) 9215 7888,
Coolgardie–Redemption.
www.focusminerals.com.au

Kalgoorlie Consolidated Gold Mines Pty Ltd

Private Mail Bag 27,
Kalgoorlie WA 6433,
(08) 9022 1100,
Golden Mile Fimiston Super Pit.
www.superpit.com.au

Intrepid Mines Limited

Level 1, WBM Building,
490 Upper Edward Street,
Spring Hill QLD 4004,
(07) 3007 8000,
Paulsens.
www.nustarmining.com.au

La Mancha Resources Inc.

Level 1, 12 St Georges Terrace,
Perth WA 6000,
(08) 9268 4000,
Mungari East.
www.lamancharresources.com

Mercator Gold Australia Pty Ltd

41 Kishorn Road,
Applecross WA 6153,
(08) 9316 9400,
Meekatharra Bluebird.
www.mercatorgold.com

TABLE 8 PRINCIPAL MINERAL AND PETROLEUM PRODUCERS effective September 2009**Newcrest Mining Ltd**

Level 2, 30 Terrace Road,
East Perth WA 6004,
(08) 9270 7070,
Telfer.
www.newcrest.com.au

Newmont Mining Corporation

Level 1, 388 Hay Street,
Subiaco WA 6008,
(08) 9423 6100,
Boddington, Jundee, Kalgoorlie.
www.newmont.com

Norseman Gold Plc

Level 2, 75 Canning Highway,
Victoria Park WA 6979,
(08) 9473 2200,
Norseman.
www.norsemangoldplc.com

Paddington Gold Pty Ltd

Menzies Highway,
PO Box 1653,
Kalgoorlie WA 6430,
(08) 9080 6800,
Paddington, Golden Feather.
www.nortongoldfields.com.au

Ramelius Resources Limited

14 The Avenue,
Midland WA 6056,
(08) 9250 6644,
Wattle Dam.
www.rameliusresources.com.au

Silver Lake Resources Limited

31 Malcolm Street,
West Perth WA 6005,
(08) 6313 3800,
Mt Monger–Silver Lake.
www.silverlakeresources.com.au

St Barbara Limited

Level 14, 90 Collins Street,
Melbourne Vic 3000,
(03) 8660 1900,
Marvel Loch–Southern Cross,
Sons of Gwalia.
www.stbarbara.com.au

St Ives Gold Mining Co Pty Ltd

POB 359,
Kambalda WA 6442,
(08) 9088 1111,
Kambalda–St Ives.
www.goldfields.co.za

Tanami Gold NL

Level 4, 50 Colin Street,
West Perth WA 6005,
(08) 9212 5999,
Coyote.
www.tanami.com.au

Troy Resources NL

44 Ord Street,
West Perth WA 6005,
(08) 9481 1277,
Sandstone.
www.try.com.au

GYPSUM**Cockburn Cement Ltd**

Lot 242 Russell Road East
Munster WA 6166,
(08) 9411 1000,
Lake Hillman.
www.cockburncement.com.au

Dampier Salt Pty Ltd

37 Belmont Avenue
Belmont WA 6104,
(08) 9270 9270,
Lake MacLeod.
www.dampiersalt.com.au

Gypsum Industries

Suite 1, 110 Robinson Avenue,
Belmont WA 6104,
(08) 9277 5529,
Lake Cowcowing.
www.aglime.com.au

Lake Hillman Mining Pty Ltd

PO Box 1,
Kalannie WA 6468,
(08) 9666 2045,
Lake Hillman.

HEAVY MINERAL SANDS**Garnet Sand****GMA Garnet Pty Ltd**

PO Box 188,
Geraldton WA 6531,
(08) 9923 6000,
Port Gregory.
www.garnetsales.com

**Ilmenite, Leucoxene,
Rutile and Zircon****Cable Sands (WA) Pty Ltd**

Koombana Drive, North Shore,
Bunbury WA 6230,
(08) 9721 0200,
Ludlow, Gwindinup Mine.
www.cablesands.com.au

Doral Mineral Sands Pty Ltd

Lot 7 Harris Road,
Picton WA 6229,
(08) 9725 5444,
Dardanup.
www.doral.com.au

Iluka Resources Ltd

Level 23, 140 St Georges Terrace,
Perth WA 6000,
(08) 9360 4700.
Capel, Eneabba, Gingin.
www.iluka.com

TABLE 8 PRINCIPAL MINERAL AND PETROLEUM PRODUCERS effective September 2009**TiWest Pty Ltd**

1 Brodie-Hall Drive,
Bentley WA 6102,
(08) 9365 1333,
Cooljarloo.
www.tiwest.com.au

IRON ORE**Atlas Iron Ltd**

Ground Floor, 10 Richardson Street,
West Perth WA 6005,
(08) 9476 7900,
Pardoo.
www.atlasiron.com.au

BHP Billiton Iron Ore (Goldsworthy) Ltd

225 St Georges Terrace,
Perth WA 6000,
(08) 6224 4444,
Mining Area C, Nimingarra–Yarrie.
www.bhpbilliton.com

BHP Billiton Iron Ore Ltd

225 St Georges Terrace,
Perth WA 6000,
(08) 6224 4444,
Jumblebar, Newman, Yandicoogina.
www.bhpbilliton.com

Channar Mining Pty Ltd

152 St Georges Terrace,
Perth WA 6000,
(08) 9327 2327,
Channar.

Cliffs Natural Resources Pty Ltd

Level 12, 1 William Street,
Perth WA 6000,
(08) 9426 3333,
Cockatoo Island, Koolyanobbing.
www.cliffsnaturalresources.com

Fortescue Metals Limited

Level 2, 87 Adelaide Terrace,
East Perth WA 6004,
(08) 6218 8888,
Cloud Break.
www.fmgl.com.au

Hamersley Iron Pty Ltd

152 St Georges Terrace,
Perth WA 6000,
(08) 9327 2327,
Brockman, Namuldi, Mesa J,
Channar, Eastern Range, Hope
Downs, Marandoo, Paraburdoo,
Tom Price, West Angelas,
Yandicoogina.
www.hamersleyiron.com

Hope Downs Management Services Pty Ltd

152 St George's Terrace,
Perth WA 6000,
(08) 9327 7000,
Hope Downs.
www.hancockprospecting.com.au

Midwest Corporation Limited

PO Box 1915,
West Perth WA 6872,
(08) 9226 2033,
Koolanooka.
www.midwestcorp.com.au

Mt Gibson Iron Limited

1st Floor,
7 Havelock Street,
West Perth WA 6005,
(08) 9426 7500,
Tallering Peak, Koolan Island.
www.mtgibsoniron.com.au

Murchison Metals Ltd

Level 1, 50 Kings Park Road,
West Perth WA 6005,
(08) 9492 2600,
Jack Hills.
www.mml.net.au

Robe River Iron Associates

Level 22 Central Park,
152-158 St Georges Terrace,
Perth WA 6000,
(08) 9327 2000,
Pannawonica, West Angelas.
www.riotinto.com

LIMESAND–LIMESTONE**Cockburn Cement Ltd**

Lot 242, Russell Road East,
East Munster WA 6163,
(08) 9411 1000,
Cockburn, Denison, Wanneroo.
www.cockburncement.com.au

Gypsum Industries of Australia

PO Box 952,
Canning Bridge WA 6153,
(08) 9364 4951,
Cervantes, Lancelin, Jurien.
www.aglime.com.au/gypsum.htm

Limestone Resources Australia Pty Ltd

25-29 Frobisher Street,
Osborne Park WA 6017,
(08) 9340 0022,
Wanneroo, Moore River,
Carabooda.
www.limestone-resources.com.au

WA Limestone Co.

41 Spearwood Avenue,
Bibra Lake WA 6163,
(08) 9434 2299,
Various sites throughout State.
www.walimestone.com/quarries.htm

MANGANESE**Pilbara Manganese Pty Ltd**

28 Ventnor Avenue,
West Perth WA 6005,
(08) 9321 3633,
Woodie Woodie.
www.consminerals.com.au

TABLE 8 PRINCIPAL MINERAL AND PETROLEUM PRODUCERS effective September 2009

NICKEL

BHP Billiton (Nickel West)

191 Great Eastern Highway,
Belmont WA 6104,
(08) 9479 0500,
Kambalda, Leinster, Mt Keith,
Kalgoorlie, Kwinana.
www.bhpbilliton.com

Glenmurrin Pty Ltd

30 The Esplanade,
Perth WA 6000,
(08) 9226 1099,
Murrin Murrin.
www.glencore.com

Independence Group NL

Suite 1, 183 Great Eastern
Highway,
Belmont WA 6104,
(08) 9479 1777,
Long Nickel,
www.independencegroup.com.au

Minara Resources Ltd

Level 4, 30 The Esplanade,
Perth WA 6000,
(08) 9212 8400,
Murrin Murrin.
www.minara.com.au

Mincor Resources NL

Level 1, 56 Ord Street,
West Perth WA 6005,
(08) 9476 7200,
Carnilya Hill, Mariners, Miitel,
Redross, Wannaway.
www.mincor.com.au

Panoramic Resources Ltd

Level 9, 553 Hay Street,
Perth WA 6000,
(08) 9225 0999,
Savannah, Lanfranchi Tramways.
www.panoramicresources.com

Western Areas NL

Level 1, 11 Ventnor Avenue,
West Perth WA 6005,
(08) 9334 7777,
Flying Fox.
www.westernareas.com.au

Xstrata Nickel Australasia

3rd Floor, 24 Outram Street,
West Perth WA 6005,
(08) 9213 1588,
Cosmos,
www.xstrata.com

PALLADIUM

BHP Billiton (Nickel West)

191 Great Eastern Highway,
Belmont WA 6104,
(08) 9479 0500,
Kambalda.
www.bhpbilliton.com

PETROLEUM

Apache Energy Ltd

Level 3, 256 St Georges Terrace,
Perth WA 6000,
(08) 9422 7222,
Agincourt, Albert, Artreus, Bambra,
Double Island, East Spar, Endymion,
Gipsy, Gudrun, Harriet, Hoover,
Legendre, John Brookes, Linda, Little
Sandy, Mohave, Monet,
North Alkimos, North Pedirka, Pedirka,
Rose, Simpson, Sinbad, South Plato,
Stag, Tanami, Victoria, Wonnich.
www.apachecorp.com

AWE Ltd

88 Colin Street,
West Perth WA 6005,
(08) 9263 4620,
Hovea–Eremia, Mt Horner,
Dongara, Woodada, Xyris.
www.awexp.com.au/irm/content/project_australia.html

Buru Energy Limited

Level 1, 418 Murray Street,
Perth WA 6000,
Free Call: 1800 337 330,
Blina.
www.buruenergy.com.au

BHP Billiton Petroleum (North West Shelf) Pty Ltd

Level 42, Central Park,
152-158 St Georges Terrace,
Perth WA 6000,
(08) 9338 4888,
Chinook–Scindian, Griffin,
Stybarrow.
www.bhpbilliton.com

Chevron Australia Pty Ltd

Level 24, QV1 Building,
250 St Georges Terrace,
Perth WA 6000,
(08) 9216 4000,
Barrow Island, Crest,
Roller-Skate, Saladin,
Yammaderry.
www.chevron.com

ENI Australia Limited

Level 3, 40 Kings Park Road,
West Perth WA 6005,
(08) 9320 1111,
Woollybutt.

Origin Energy Resources Ltd

34 Colins Street,
West Perth WA 6005,
(08) 9324 6111,
Beharra Springs, Jingemina.
www.originenergy.com.au

Roc Oil Company Limited

Level 14, 1 Market Street,
Sydney NSW 2000,
(02) 8023 2000,
Cliff Head.
www.rocoil.com.au

Santos Limited

Level 28, Forrest Centre,
221 St George's Terrace,
Perth WA 6000,
(08) 9333 9500,
Mutineer–Exeter.
www.santos.com.au

Vermilion Oil and Gas Australia Pty Ltd

Level 5, 30 The Esplanade,
Perth WA 6000,
(08) 9215 0300,
Wandoo.
www.vermilionenergy.com/australia.html

Woodside Energy Ltd

240 St Georges Terrace,
Perth WA 6000,
(08) 9348 4000,
Angel, Athena, Cossack,
Echo-Yodel, Goodwyn, Hermes,
Laminaria East, North Rankin,
Wanaea, Vincent, Enfield.
www.woodside.com.au

PLATINUM

BHP Billiton (Nickel West)

191 Great Eastern Highway,
Belmont WA 6104,
(08) 9479 0500,
Kambalda.
www.bhpbilliton.com

SALT

Dampier Salt Pty Ltd

37 Belmont Avenue,
Belmont WA 6104,
(08) 9270 9270,
Dampier, Lake MacLeod,
Port Hedland.
www.dampiersalt.com.au

Onslow Salt Pty Ltd

PO Box 23,
Onslow WA 6710,
(08) 9184 9000,
Onslow Salt.

Shark Bay Salt Joint Venture

Level 16, 2 The Esplanade,
Perth WA 6000,
(08) 9265 8000,
Useless Loop.

WA Salt Supply Ltd

Cockburn Road,
Hamilton Hill WA 6163,
(08) 9430 5495,
Lake Deborah East, Pink Lake.
www.wasalt.com.au

SILICA–SILICA SAND

Silica

Simcoa Operations Pty Ltd

PO Box 1389,
Bunbury WA 6231,
(08) 9780 6744,
Dalaroo, Kemerton.
www.simcoa.com.au

Silica Sand

Autsand Pty Ltd

Princess Royal Drive,
Albany WA 6330,
(08) 9846 1288,
Mindijup.

Kemerton Silica Sand Pty Ltd

PO Box A283,
Australind WA 6233,
(08) 9720 0000.
www.ksspl.com.au

Rocla Quarry Products

130 Fauntleroy Avenue,
Redcliffe WA 6105,
(08) 9475 2555,
Gnangara.
www.rocla.com.au

SPONGOLITE

Opalbase Nominees Pty Ltd

Red Gum Pass,
Kendenup WA 6323,
(08) 9841 7549.
Red Gum Spongolite.

TALC

Luzenac Australia Pty Ltd

37 Belmont Avenue,
Belmont WA 6104,
(08) 9270 9270,
Three Springs.
www.luzenac.com

Unimin Australia Ltd

26 Tomlinson Road,
Welshpool WA 6106,
(08) 9362 1655,
Mt Seabrook.
www.unimin.com.au

TIN–TANTALUM–LITHIUM

Spodumene

Talison Minerals Ltd

Level 4, 37 St Georges Terrace,
Perth WA 6000,
(08) 9263 5555,
Greenbushes.
www.talison.com.au

Tantalite–Tin

Talison Minerals Ltd

Level 4, 37 St Georges Terrace,
Perth WA 6000,
(08) 9263 5555,
Greenbushes.
www.talison.com.au

ABBREVIATIONS, UNITS AND CONVERSION FACTORS

ABBREVIATIONS

A\$	Australian dollar	km	kilometres
ABARE	Australian Bureau of Agricultural and Resource Economics	km ²	square kilometres
ABS	Australian Bureau of Statistics	LME	London Metal Exchange
bbl	barrels of oil	Mct	million carats
Bcm	billion cubic metres	Moz	million ounces
ct	carat	oz	ounce
DRI	Direct Reduced Iron	RBA	Reserve Bank of Australia
f.o.b.	free-on-board	t/a	tonnes per annum
f.o.t.	free-on-truck	Tcf	trillion cubic feet
GDP	Gross Domestic Product	US\$	United States dollar
HBI	Hot Briquetted Iron	WTI	West Texas Intermediate

UNITS AND CONVERSION FACTORS

	Metric Unit	Symbol	Imperial Unit
Mass	1 gram	g	= 0.032151 troy (fine) ounce (oz)
	1 kilogram	kg	= 2.204624 pounds (lb)
	1 tonne	t	= 1.10231 United States short ton [1 US short ton = 2,000 lb]
	1 tonne	t	= 0.98421 United Kingdom long ton [1 UK long ton = 2,240 lb]
	1 tonne LNG	t	= 52,000,000 British Thermal Units (Btu)
Volume	1 kilolitre	kl	= 6.28981 barrels (bbl)
	1 cubic metre	m ³	= 35.3147 cubic feet (ft ³) [1 kilolitre (kl) = 1 cubic metre (m ³)]
Energy	1 kilojoule	kj	= 0.94781 British Thermal Units (Btu)
	Energy Content	Prefix	
Coal	19.7 GJ/t	kilo (k)	10 ³
Condensate	32.0 MJ/L	mega (M)	10 ⁶
Crude oil	37.0 MJ/L	giga (G)	10 ⁹
LNG	25.0 MJ/L	tera (T)	10 ¹²
Natural gas	38.2 MJ/m ³	peta (P)	10 ¹⁵
LPG-butane	28.7 MJ/L (1tonne LPG-butane = 1,720 litres)		
LPG-propane	25.4 MJ/L (1tonne LPG-propane = 1,960 litres)		

DATA SOURCES

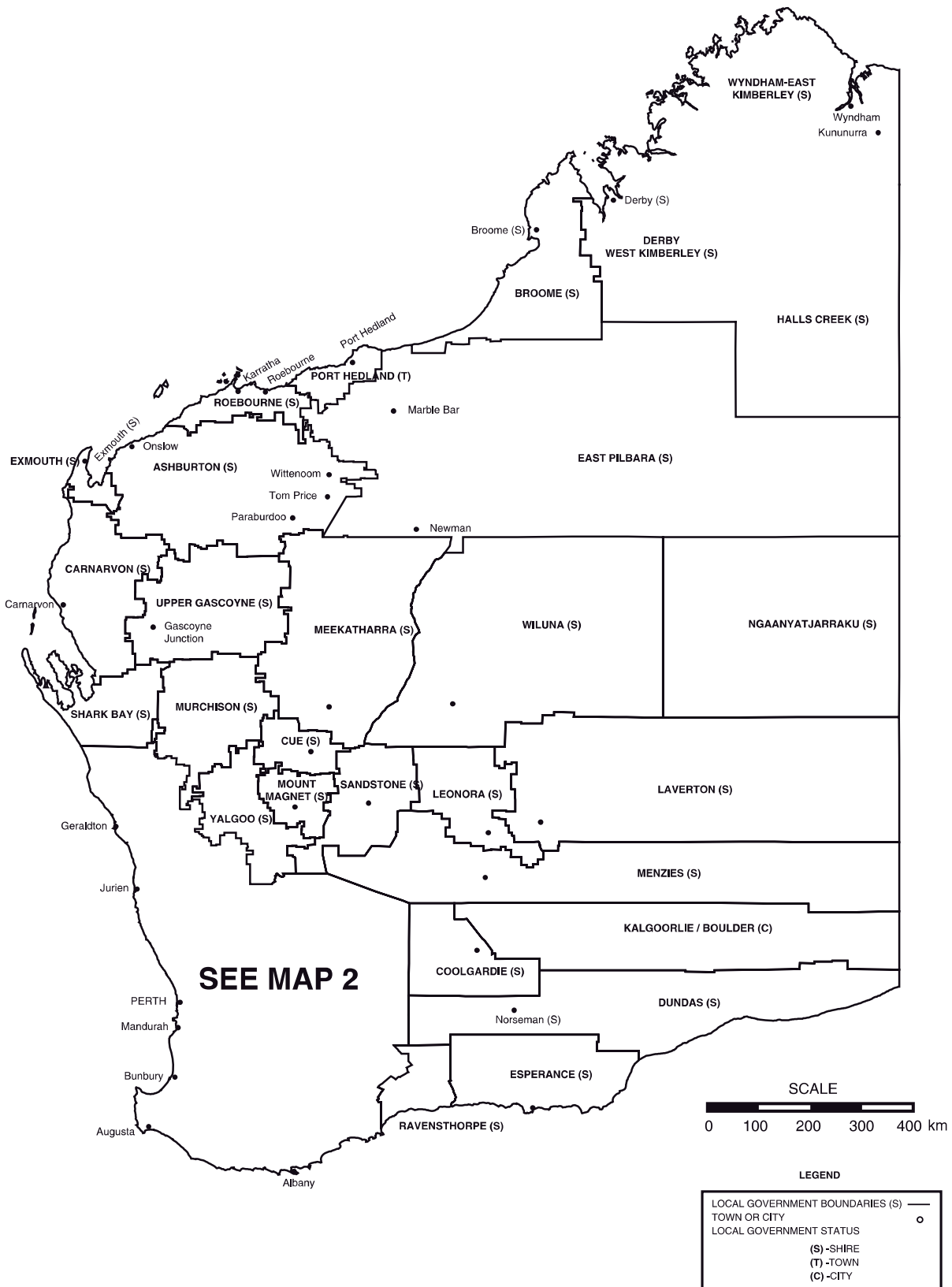
Quantities and values for minerals and petroleum in this publication are collected from a variety of sources including:

The Department's royalty returns, various company annual reports and quarterly Australian Stock Exchange reports, State port authority statistics, the ABS and ABARE.

Quantities specified relate to either mine production or sales as listed below for each commodity.

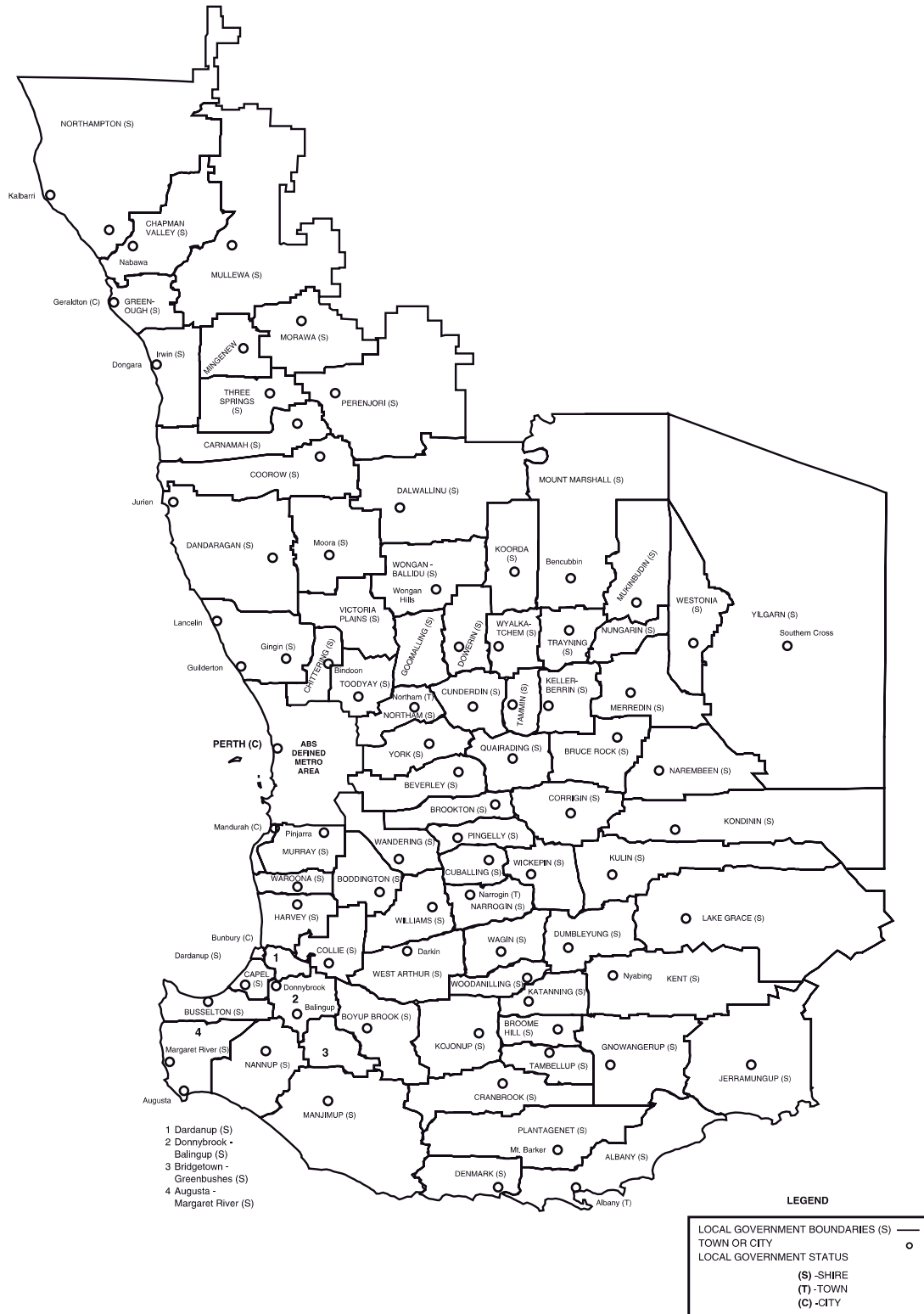
Mine Production
Clays
Coal
Construction Materials
Dimension Stone
Gold
Gypsum
Limesand–Limestone–Dolomite
Silica–Silica Sand
Talc
Sales
Alumina
Base Metals (Copper, Lead and Zinc)
Chromite
Diamonds
Gem and Semi-Precious Stones
Heavy Mineral Sands
Industrial Pegmatite Minerals
Iron Ore
Manganese
Nickel Industry (Nickel, Cobalt, Platinum and Palladium)
Petroleum
Pigments
Salt
Silver
Spongolite
Tin–Tantalum–Lithium
Vanadium

MAP 1. LOCAL GOVERNMENT BOUNDARIES



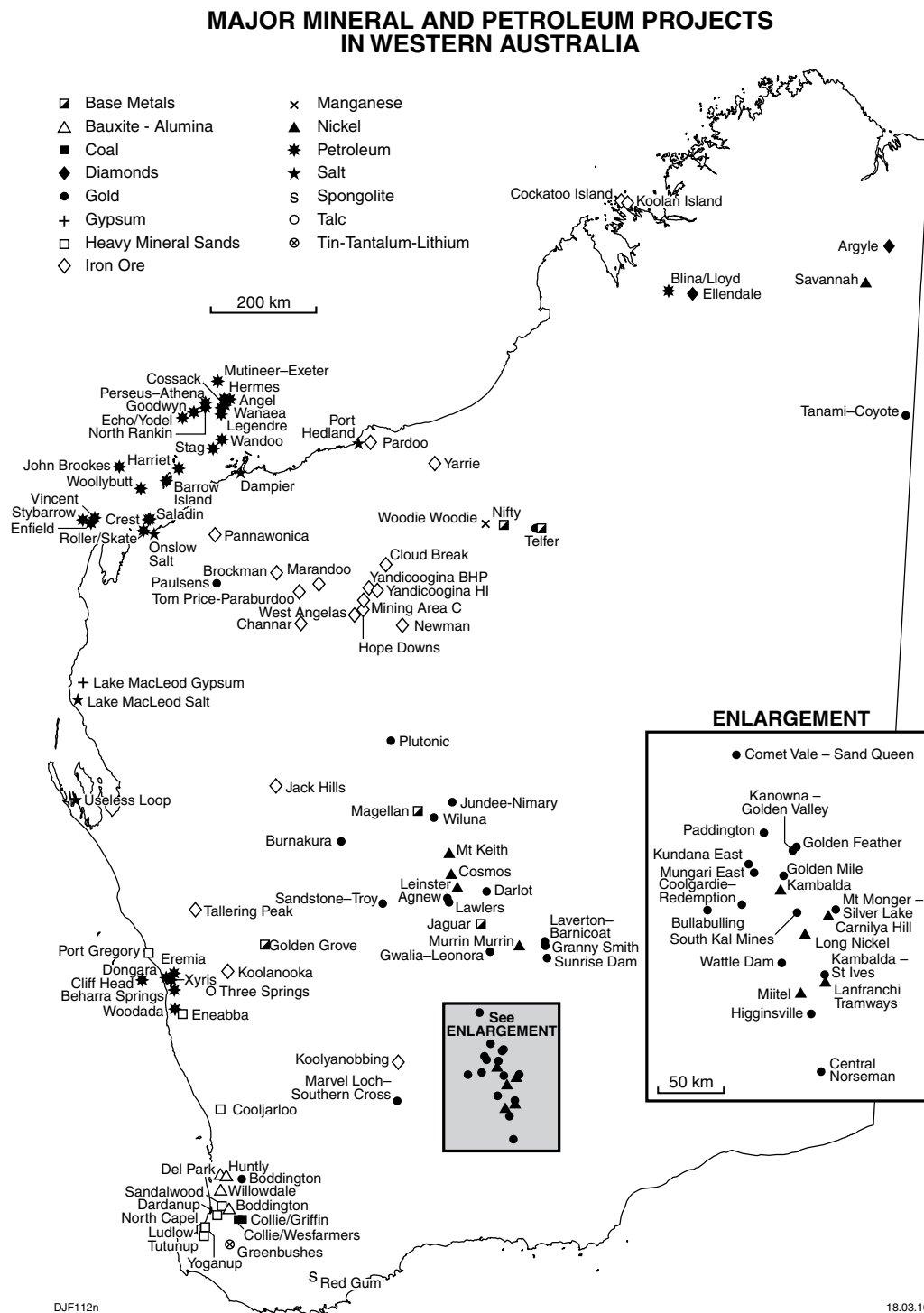
Map 1 Local Government Boundaries

MAP 2. LOCAL GOVERNMENT BOUNDARIES



Map 2 Local Government Boundaries

MAP 3. MAJOR MINERAL AND PETROLEUM PROJECTS IN WESTERN AUSTRALIA



Map 3 Major Mineral and Petroleum Projects in Western Australia

Government of Western Australia
Department of Mines and Petroleum
Mineral House, 100 Plain Street
East Perth, Western Australia 6004

Telephone: +61 8 9222 3333
Facsimile: +61 8 9222 3568
Email: dmp@dmp.wa.gov.au
Website: www.dmp.wa.gov.au

For specific enquiries regarding this publication,
please email: jill.gregory@dmp.wa.gov.au

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