DEPARTMENT OF
PRIMARY INDUSTRIES

The thinking behind
our everyday essentials

Victoria’s Minerals, Petroleum and Extractive Industries
2007/08 Statistical Review

Victoria
The Place To Be

Contents

List of Tables

List of Figures

1. Introduction

The Statistical Review provides an overview of Victoria's earth resources industry – namely the petroleum, minerals and extractive industries – and includes data on production, exploration, expenditure and licensing. This report is the most comprehensive public report available for these sectors in Victoria and is relevant to anyone involved in the petroleum, mining or extractive industries.

Victoria's earth resource industry production includes:

- oil and gas – from onshore and offshore
- brown coal – used almost exclusively for power generation
- gold
- industrial minerals – including gypsum, silica, feldspar, rutile, zircon, ilmenite and kaolin
- rock, sand and clay – used mainly for building and road construction

Minerals and Petroleum Regulation Branch of the Minerals and Petroleum Division is responsible for the Regulation of the minerals, extractive, petroleum, pipelines and geothermal industries in Victoria and off-shore waters. The Branch provides a consistent and transparent tenement management regime, together with health, safety and environmental standards (Workcover responsibility from 1 January 2008), monitoring and enforcement that ensure these industries comply with their obligations and meet community expectations.

Minerals and Petroleum Regulation Branch operate under the following Acts:

- *Mineral Resources (Sustainable Development) Act* 1990
- *Extractive Industries Development Act* 1995
- *Offshore Petroleum and Greenhouse Gas Storage act 2006* (Designated Authority under this Commonwealth Act)
- *Petroleum (Submerged Lands) Act* 1982 (Vic)
- *Petroleum Act* 1998
- *Pipelines Act* 1967
- *Geothermal Energy Resources Act 2005*

2. Petroleum

Definition of Petroleum under the *Petroleum Act* 1998 (Act No. 96/1998)
(1) Petroleum is:
(a) any naturally occurring hydrocarbon (whether in a gaseous, liquid or solid state); or
(b) any naturally occurring mixture of hydrocarbons (whether in a gaseous, liquid or solid state); or
(c) any naturally occurring mixture of one or more hydrocarbons (whether in a gaseous, liquid or solid state), and one or more of the following: hydrogen sulphide, nitrogen, helium or carbon dioxide.

(2) For the purpose of this Act:
(a) petroleum includes any petroleum as defined by sub-sections 1(a), (b) or (c), and any petroleum product specified by the regulations for the purposes of this section, that has been returned to a reservoir in Victoria; but
(b) petroleum does not include any naturally occurring hydrocarbon, or mixture of hydrocarbons, within a deposit of coal or oil shale.

2.1 Exploration and Development

Petroleum activities through the financial year 2007/2008 is summarised below:

2.1.1 Drilling

Ten exploration wells were drilled through the financial year 2007/2008 in the areas administered by the Victorian Department of Primary industries compared to 8 wells drilled during the same period last year. This breaks down as follows:

- Six in Gippsland offshore areas
- Two wells in Otway offshore areas
- Two wells in Otway onshore areas

Fourteen development wells were drilled in 2007/2008 compared to 14 wells drilled during the same period last year.

Table 2.1.1 Drilling: 2007/08

Activity	Exploration wells	Development wells	Total	Comments
Drilling	10	14	24	Onshore and offshore wells are combined

2.1.2 Geophysical Surveys

Seismic activates undertaken in 2007/2008 financial year were three 3D surveys and three 2D surveys; a slight decrease from seven seismic surveys undertaken through the same period of last year.

One electromagnetic survey was conducted.

Table 2.1.2 Seismic Surveys

Activity	2D Km	3D Km 2	Comments
Seismic	502	558	Total of 3 surveys 2D and 3 Surveys 3D
Magnetic	1032 Km2		CSEM (Controlled Source Electromagnetic)
Geochemical	None		

2.2 Production

2.2.1 Hydrocarbon Production

The production of crude oil and condensate from Gippsland have been declining for almost three decades, this is associated with a gradual increase in the water cut. This is an expected profile because of the extensive production and natural depletion of the reservoirs. Continued infill drilling and work over operations kept levels similar to the same period of last year.

Hydrocarbon production from Gippsland basin remained at the same level recorded in the past financial year with a slight decease as follows:

- Crude oil and condensate production was 4.5 GL compared to 4.61 GL produced during the same period of the previous financial year.
- LPG is 1.88 GL compared to 1.89 GL produced during the previous financial year.
- Gas produced 7.29 GL compared to 7.33 GL during previous financial year.

Major gas field continue to produce for four decades with noticeable potential to produce more even with possibilities of developing new discovered but yet completed resource.

Table 2.2.1 Gippsland Annual Petroleum Production

Year	Bass Strait Annual Petroleum Production		
	C+C, GL	LPG, GL	Gas, Gm3
1984 – 85	26.40	3.00	6.00
1985 – 86	25.78	2.97	5.79
1986 – 87	24.44	2.88	5.69
1987 – 88	22.87	2.83	5.65
1988 – 89	18.61	2.68	5.91
1989 – 90	18.68	2.69	6.71
1990 – 91	17.48	2.50	6.01
1991 – 92	16.97	2.57	6.26
1992 – 93	17.80	2.74	6.14
1993 – 94	16.60	2.66	6.05
1994 – 95	14.35	2.56	6.77
1995 – 96	12.26	2.25	6.65
1996 – 97	11.93	2.12	6.01
1997 – 98	13.56	2.29	6.12
1998 – 99	9.73	1.63	5.66
1999 – 00	11.60	1.89	5.56
2000 – 01	9.40	1.75	6.44
2001 – 02	9.06	1.80	6.49
2002 – 03	7.70	1.97	6.57
2003 – 04	6.83	2.04	7.67
2004 – 05	5.46	1.98	7.93
2005 – 06	4.81	1.92	7.20
2006 – 07	4.61	1.89	7.33
2007–08	4.50	1.88	7.29
Total	617.14	86.02	197.82

Figure 2.2.1 Gippsland Annual Hydrocarbon Production

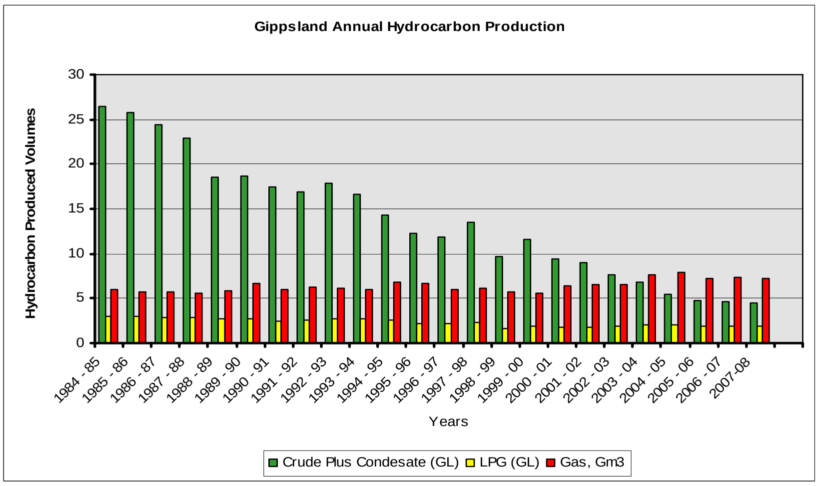


Table 2.2.2 Gippsland Basin Cumulative Production and Remaining Reserves

ESSO / BHP Billiton	Initial Recoverable Reserves			Cumulative Production			Remaining Reserves		
Year	C+C, GL	LPG, GL	Gas, Gm3	C+C, GL	LPG, GL	Gas, Gm3	C+C, GL	LPG, GL	Gas, Gm3
1982	498.00	88.20	220.90	246.00	28.10	38.90	252.00	60.10	182.00
1983	499.10	81.70	224.20	266.30	31.10	44.90	232.80	50.60	179.30
1984	502.60	81.40	212.90	290.20	34.30	51.20	212.40	47.10	161.70
1985	520.40	82.30	213.60	316.60	37.30	57.20	203.80	45.00	156.40
1986	520.40	82.30	213.60	342.38	40.27	62.99	178.02	42.03	150.61
1987	549.70	89.10	227.50	366.82	43.15	68.68	182.88	45.95	158.82
1988	566.20	91.70	232.40	389.69	45.98	74.33	176.51	45.72	158.07
1989	579.50	95.90	247.70	408.30	48.66	80.24	171.20	47.24	167.46
1990	579.10	96.20	250.20	426.98	51.35	86.95	152.12	44.85	163.25
1991	580.00	96.40	250.50	444.46	53.85	92.96	135.54	42.55	157.54
1992	581.80	96.40	250.30	461.43	56.42	99.22	120.37	39.98	151.08
1993	585.20	96.20	250.50	479.23	59.16	105.36	105.97	37.04	145.14
1994	608.60	98.30	252.70	495.83	61.82	111.41	112.77	36.48	141.29
1995	620.20	99.30	253.50	510.18	64.38	118.18	110.02	34.92	135.32
1996	632.60	100.10	255.60	522.44	66.63	124.83	110.16	33.47	130.77
1997	640.60	101.10	261.50	534.37	68.75	130.84	106.23	32.35	130.66
1998	647.60	105.30	272.30	547.93	71.04	136.96	99.67	34.26	135.34
1999	647.60	105.30	272.30	557.69	72.67	142.60	89.91	32.63	129.70
2000	647.60	105.30	272.30	569.29	74.55	148.15	78.31	30.75	124.15
2001	647.60	105.30	272.30	578.66	76.31	154.62	68.94	28.99	117.68
2002	647.60	105.30	272.30	587.72	78.11	161.11	59.88	27.19	111.19
2003	647.60	105.30	272.30	595.43	80.08	167.76	52.17	25.22	104.54
2004	647.60	105.30	272.30	602.26	82.12	175.69	45.34	23.18	96.61
2005	647.60	105.30	272.30	607.72	84.10	183.62	39.88	21.20	88.68
2006	656.40	113.60	306.70	610.60	86.00	186.60	45.80	27.60	117.80
2007	657.70	114.10	311.90	615.10	87.90	193.50	42.60	26.20	118.40
2008	657.70	114.10	311.90	619.60	89.78	200.79	38.10	24.32	111.11

Figure 2.2.2 Gippsland Historical Remaining Reserves

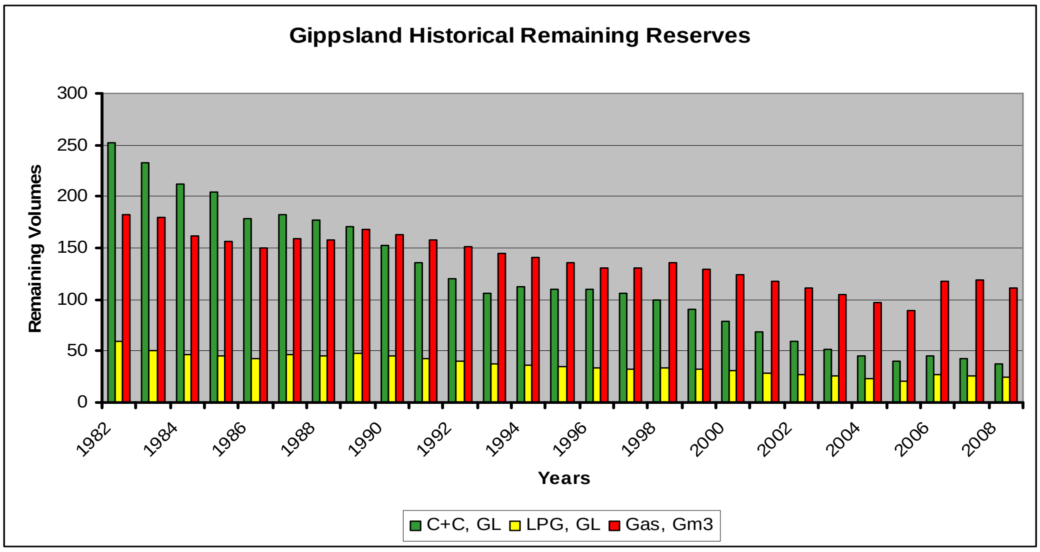


Table 2.2.3 Otway Offshore Production figures 2007/ 2008

Field	Period	Condensate bbl	Gas MMscf	LPG bbl	Comments
Casino	07 Q3	8869	11774		
	07 Q4	6352	8232		
	08 Q1	8082	107957		
	08 Q2	5400	8026		
Field Total	07/08 FY	28,703	135,989		
Minerva	07 Q3	24444	8667		
	07 Q4	26015	8838		
	08 Q1	23621	8176		
	08 Q2	16667	5519		
Field Total	07/08 FY	90,747	31,200		
Geographe / Thylacine	07 Q3		236		
	07 Q4		100		
	08 Q1	32619	3003		
	08 Q2	134671	11573	108980	
Field Total	07/08 FY	167,290	14,912	108,980	
Basin Total		286,740	182,101	108,980	

Table 2.2.4 Otway Onshore Production figures 2007/2008

Field	Condensate scm	Gas Production MMscm	Gas Injection MMscm	Comments
Iona	337	208	251.709	Gas storage
Boggy Creek	Negligible	19.176		CO_2

One barrel = 0.158987 cubic metres
One cubic meter = 35.31466 cubic feet
One cubic meter = 1000 Litres
GL = 1,000,000,000 Litres = 109 Litres
MMscf = Million Standard Cubic Feet
MMscm = Million standard cubic metres
Bbl = barrels

3. Minerals

Victorian mineral production continues to be dominated by brown coal and gold.

In 2007/08, brown coal production, predominantly from the Latrobe Valley for electricity generation, reported at 66 million tonnes, a slight increase from the previous year's production of 65.6 million tonnes in 2006/07.

Gold production in the year has dropped significantly to 181,100 ounces from the previous year's production of 224,927 ounces in 2006/07.

Gypsum, kaolin and feldspar are the other significant contributors to mineral production. Gypsum and kaolin both show a high degree of variability reflecting seasonal and market factors. Gypsum production, primarily for agricultural uses, has increased in 2007/08 to 395,717 cubic metres, reversing the decrease recorded in the previous year's production of 235,266 cubic metres. In 2007/08 kaolin production showed a reduction to 151,669 tonnes from 2006/07 production of 170,727. Feldspar production in Victoria commenced in 1997/98 by Unimin Australia Ltd at Beechworth and has steadily increased averaging 73.336 tonnes per annum in the last 5 years.

Mineral sands (ilmenite, rutile and zircon) production in Victoria commenced in 2000/01 by Murray Basin Titanium Pty Ltd from the Wemen mine in northwest Victoria, increasing each year to 2003/04. The Wemen mine stopped production in January 2004. In 2007/08 all mineral sands production of 233,592 tonnes came from the Basin Minerals Holdings Douglas mine.

Definition of Minerals under Section 4 of the Mineral Resources (Sustainable Development) Act 1990

'Mineral' means any substance which occurs naturally as part of the earth's crust

(1) including:

- oil shale and coal; and
- hydrocarbons and mineral oils contained in oil shale or coal or extracted from oil shale or coal by chemical or industrial processes; and
- bentonite, fine clay, kaolin, lignite, minerals in alluvial form including those of titanium, zirconium, rare earth elements and platinoid group elements, quartz crystals and zeolite.

(2) Excluding water,stone, peat or petroleum.

3.1 Tenements

In 2007/08, 192 new and renewal applications were received for exploration and mining licences, with about 77% of these being for exploration licences. In the same period 181 exploration and mining licences were granted or renewed, with about 82% of these being exploration licences.

Table 3.1.1 New and Renewal Applications for Exploration and Mining Licences: 2007/08

	Received	Granted	Withdrawn	Refused
New Exploration Licence Applications	85	91	3	1
Renewal Exploration Licence Applications	64	58	0	0
Sub Total Exploration Licence Applications	**149**	**149**	**3**	**1**
New Mining Licence Applications	19	11	2	1
Renewal Mining Licence Applications	24	21	0	3
Sub Total Mining Licence Applications	**43**	**32**	**2**	**4**
Total Licences	**192**	**181**	**5**	**5**

Source: DPI

Note: Number of Granted licences includes 85 applications received in 2007/08 and 6 applications that had not been determined in the previous year.

Table 3.1.2 Exploration and Mining Licences – Granted and Renewed: 2001/02 – 2007/08

	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Exploration Licence Granted	45	55	83	38	69	89	91
Exploration Licence Renewed	49	47	49	56	38	59	58
SubTotal Exploration Licences Granted and Renewed	**94**	**102**	**132**	**94**	**107**	**148**	**149**
Mining Licence Granted	24	13	17	20	13	19	11
Mining Licence Renewed	25	26	39	29	22	56	21
Sub Total Mining Licences Granted and Renewed	**49**	**39**	**56**	**49**	**35**	**75**	**32**
Total Licences	**143**	**141**	**188**	**143**	**142**	**223**	**181**

Source: DPI

Note: The total number of exploration and mining licences granted is a broad indicator of exploration and mining activity.

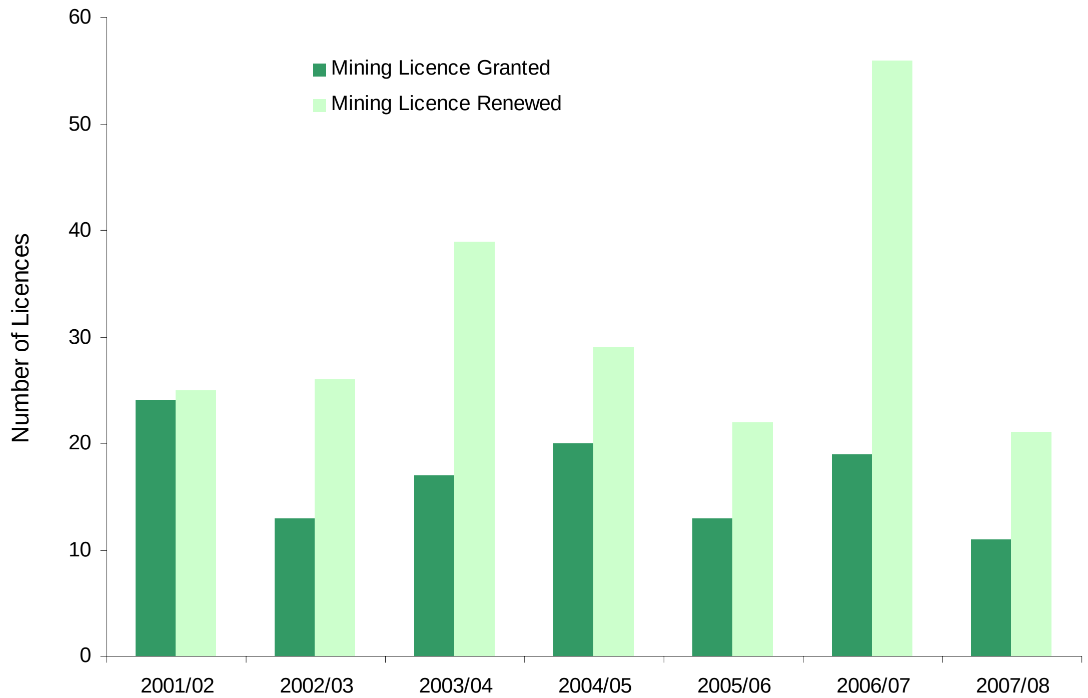
The total number of exploration and mining licences granted since 2001/02 has been variable. In 2007/08 the number of exploration licences granted was 149 about the same as previous year figure of 148. The total number of mining licences granted in 2007/08 declined to 32 from the previous year of

75 in 2006/07 primarily due to large number of renewals in that year and partly due to drop in licence grants from 19 in 2006/07 to 11 in 2007/08.

Figure 3.1.1 Exploration Licence Grants: 2001/02 - 2007/08

Source: DPI

Figure 3.1.2 Mining Licence Grants: 2001/02 - 2007/08



Source: DPI

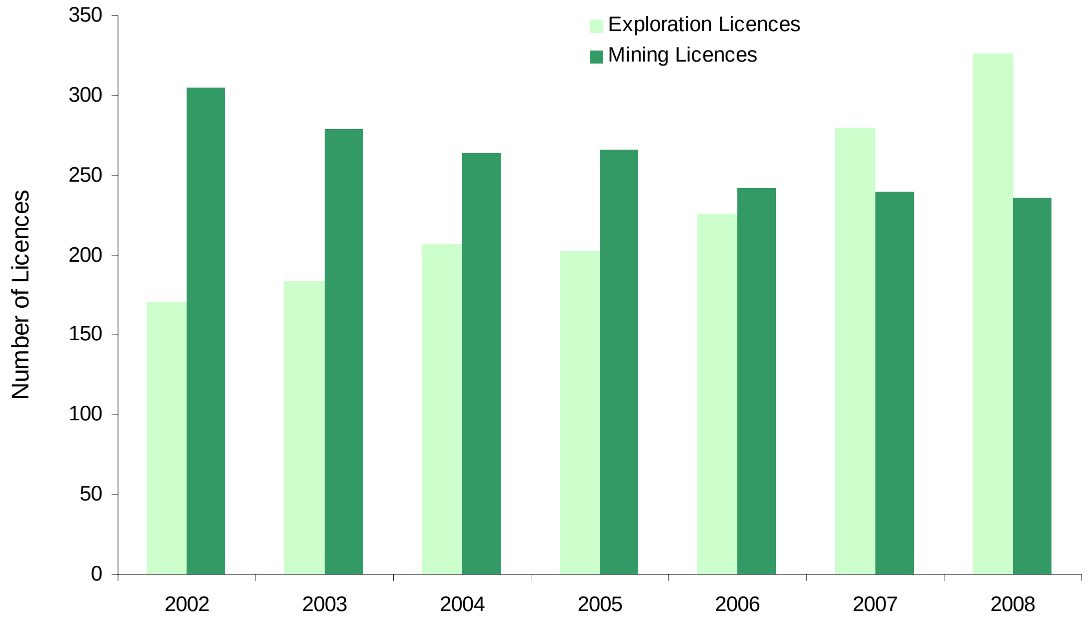
Table 3.1.3 Current Exploration and Mining Licences at 30 June each year: 2002 – 2008

Tenement	2002	2003	2004	2005	2006	2007	2008
Exploration Licences	170	184	207	203	226	280	326
Mining Licences	305	279	264	266	242	240	236
Totals	**475**	**463**	**471**	**469**	**468**	**520**	**562**

Source: DPI

The total areas covered by mining and exploration licences in 2007/08 were 653 km^2 and 98,086km^2 respectively. The number of mining licences has steadily fallen over the last seven years. A significant number of amalgamations have contributed to the lower number of mining licences. The total number of current exploration and mining licences has been steadily increasing since 2006 reaching 562 in 2008.

Figure 3.1.3 Current Exploration and Mining Licences as at 30 June each year: 2002 - 2008



Source: DPI

3.2 Mineral Exploration and Mining Expenditure

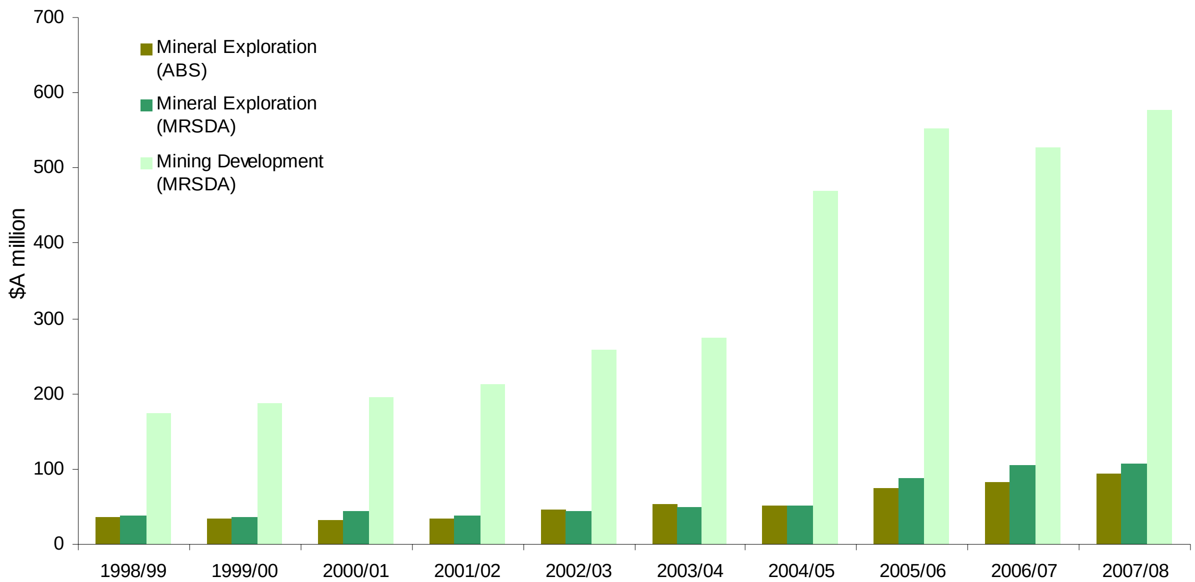
The Australian Bureau of Statistics (ABS) reports quarterly on private mineral exploration expenditure for all Australian States and the Northern Territory (NT). Victorian mineral exploration and mining expenditure is also reported in accordance with the *Mineral Resources (Sustainable Development) Act* 1990 (MRSDA). The ABS exploration expenditure statistics can vary significantly from expenditure reported under the MRSDA. However, the ABS statistics are the only basis for comparison of Victorian expenditure with that of other States/NT and are generally preferred as a guide to exploration expenditure trends.

Table 3.2.1 Expenditure on Mineral Exploration and Mining Development ($A million): 1998/99 – 2007/08

	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Mineral Exploration (ABS)	37.0	33.8	32.7	33.9	46.2	53.5	51.5	74.1	82.5	93.7
MRSDA Exploration	38.0	35.8	43.4	39.3	43.3	50.2	52.2	88.2	105.4	107.8
MRSDA Mining	174.0	188.3	195.5	213.5	258.2	274.4	469.9	553.0	527.8	576.6

Source: Figures collated from six monthly reports forwarded to DPI required by the MRSDA, and ABS: Actual and Expected Private Mineral Exploration (Catalogue No. 8412.0).
Notes: The MRSDA mining figures represent total expenditure; ie capital and operating; by commercial entities engaged in exploration and mining activity during the relevant periods.
The MRSDA exploration figures include exploration expenditure on mining and exploration licences.

Figure 3.2.1 Expenditure on Mineral Exploration and Mining Development: 1998/99 – 2007/08



Source: DPI

Mineral exploration expenditure is a lead indicator of mineral industry activity. ABS data shows a strong growth trend of exploration expenditure since 2001/02, with a slight decline in 2004/05. This trend was not as strongly observed in the MRSDA data. The strong growth continued in 2007/08 reaching $A 93.7million.

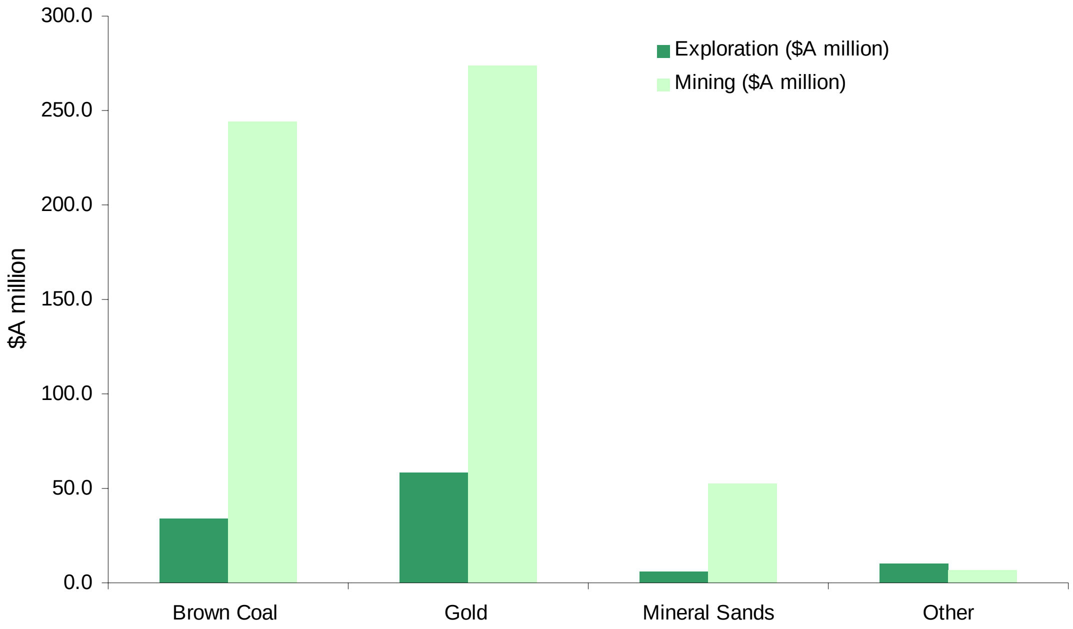
Expenditure on mining has continued the upward trend in 2007/08. The significant growth trend is largely due to the construction phase of gold mines, brown coal operation and the Basin Minerals Holdings Douglas mineral sands project.

Table 3.2.2 Mineral Exploration and Mining Development Expenditure by Sector (MRSDA): 2007/08

Sector	Exploration ($A million)	Mining ($A million)
Brown Coal	34.2	243.9
Gold	58.2	274.0
Mineral Sands	5.6	52.2
Other	9.8	6.5
Total	**107.8**	**576.6**

Source: DPI

Figure 3.2.2 Mineral Exploration and Mining Development Expenditure by Sector (MRSDA): 2007/08



Source: DPI

3.3 Production

Table 3.3.1 Mineral Production: 1984/85 – 2007/08

Year	Fuel Minerals	Metallic Minerals				Heavy Mineral Sands			Industrial Minerals		
	Brown Coal ('000 tonnes)	Gold (kg)	Gold (oz)	Copper Concentrate (tonnes)	Zinc Concentrate (tonnes)	Zircon (tonnes)	Rutile (tonnes)	Ilmenite (tonnes)	Feldspar (tonnes)	Gypsum (cubic metres)	Kaolin (tonnes)
1984/85	38,379	902	29,004	-	-	-	-	-	-	247,300	88,100
1985/86	36,069	1,272	40,901	-	-	-	-	-	-	138,800	35,900
1986/87	41,806	1,179	37,911	-	-	-	-	-	-	187,700	41,100
1987/88	44,288	1,719	55,274	-	-	-	-	-	-	203,100	100,800
1988/89	48,653	2,512	80,773	-	-	-	-	-	-	241,400	117,300
1989/90	45,960	3,515	113,025	-	-	-	-	-	-	301,500	168,900
1990/91	49,388	4,863	156,370	-	-	-	-	-	-	49,200	145,800
1991/92	50,717	3,346	107,591	-	-	-	-	-	-	53,100	87,800
1992/93	47,898	3,993	128,395	-	-	-	-	-	-	180,200	114,600
1993/94	49,683	3,917	125,960	16,287	1,012	-	-	-	-	176,800	105,400
1994/95	49,922	4,319	138,876	13,163	5,947	-	-	-	-	193,100	79,500
1995/96	54,281	4,838	155,550	1,338	6,384	-	-	-	-	198,667	55,065
1996/97	60,795	4,710	151,229	-	-	-	-	-	-	501,495	114,778
1997/98	65,274	4,979	160,122	-	-	-	-	-	25,703	479,820	166,100
1998/99	66,648	4,947	159,088	-	-	-	-	-	45,293	404,917	180,634
1999/00	67,363	4,790	154,043	-	-	-	-	-	46,162	462,806	201,436
2000/01	64,958	3,814	122,632	-	-	1,307	5,921	-	53,148	437,694	203,753
2001/02	66,661	3,492	112,283	-	-	4,043	21,328	30,627	56,757	600,931	202,370
2002/03	66,809	3,345	107,544	-	-	10,841	28,329	50,984	68,198	420,293	248,692
2003/04	66,343	3,240	104,188	-	-	4,645	11,239	19,978	69,552	439,906	251,392
2004/05	67,152	3,835	123,308	-	-	-	-	-	75,683	346,522	189,237
2005/06	67,737	6,324	203,352	-	-	-	-	-	69,876	416,294	149,218
2006/07	65,613	6,995	224,927	-	-	12,532	10,996	-	76,187	235,266	170,727
2007/08	66,033	5,632	181,100	-	-	140,853	72,166	13,503	75,384	395,717	151,669

Source: DPI – statutory returns under the MRSDA.

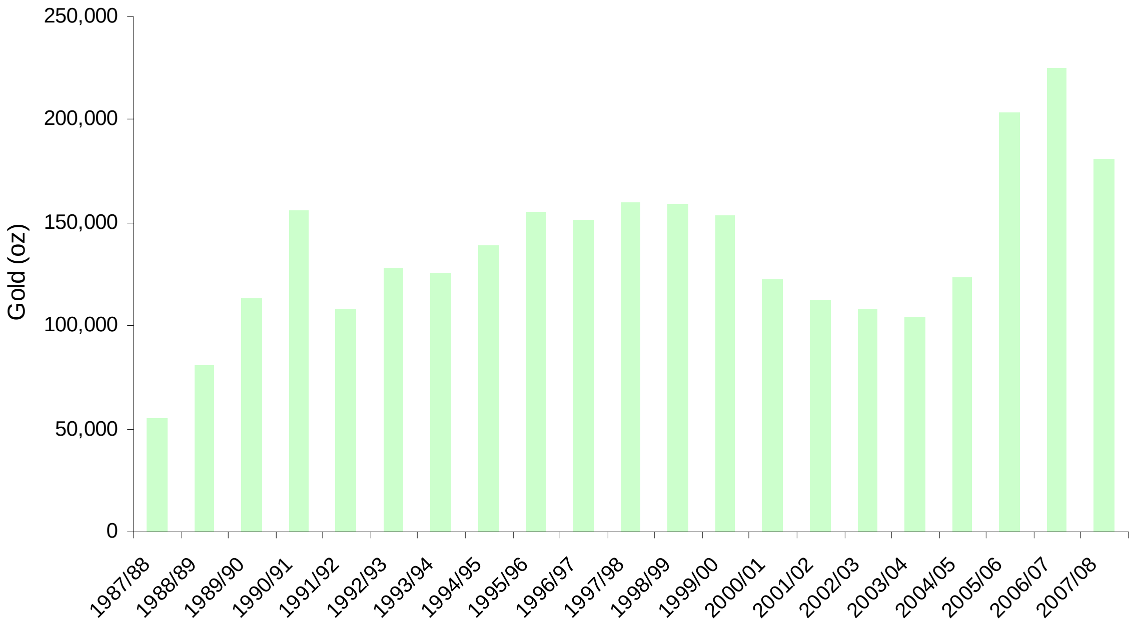
Table 3.3.2 Mineral Production Values: 2007/08

Mineral	Value ($A million)
Brown Coal	1,246.7
Gold	160.3
Heavy Mineral Sands	142.2
Feldspar	5.4
Gypsum	5.3
Kaolin	4.1
Total	1,564.0

Source: DPI

Note: Unit value of $A18.88/tonne for Brown Coal and $A885/oz for gold were used. The values of all other minerals are as reported by tenement holders.

Figure 3.3.1 Gold Production: 1987/88 – 2007/08



Source: DPI

Table 3.3.3 Gold Producers (Production more than 100 kg): 2007/08

Producer	Location	Licence	Production (kg)	Production (oz)	Estimated Value ($A)*
Stawell Gold Mines Pty Ltd	Stawell	MIN 5260	3,241	104,215	94,553,000
Perseverance Exploration Pty Ltd	Fosterville	MIN 5404	1,998	64,236	55,348,000
AGD Operations Pty Ltd	Costerfield	MIN 4644	280	9,003	6,922,200
Total			**5,519**	**177,454**	**157,046,790**
Other			113	3,646	3,226,710
Total Production			**5,632**	**181,100**	**160,273,500**

Source: DPI – statutory returns under the MRSDA.
Note: *Based on the estimated gold price of $A885/oz.

Most of Victoria's gold production in 2007/08 was from mines owned by Leviathan Resources Ltd at Stawell, Perseverance Exploration Pty Ltd at Fosterville and by AGD Operations at Costerfield. However, many smaller companies and individuals (19 in total) also produced small amounts of gold.

Table 3.3.4 Brown Coal Production (thousand tonnes): 1983/84 - 2007/08

YEAR	Maddingley Brown Coal Co. Bacchus Marsh	Alcoa Anglesea	SECV	Loy Yang	Yallourn	Hazelwood	Annual Total	Production Value* ($A)
1983/84	80	1,066	32,052	-	-	-	33,198	-
1984/85	89	1,205	37,085	-	-	-	38,379	-
1985/86	60	1,119	34,890	-	-	-	36,069	-
1986/87	43	1,272	40,491	-	-	-	41,806	-
1987/88	45	1,173	43,070	-	-	-	44,288	-
1988/89	47	1,253	47,353	-	-	-	48,653	-
1989/90	22	1,067	44,871	-	-	-	45,960	-
1990/91	40	1,179	48,169	-	-	-	49,388	-
1991/92	40	1,175	49,502	-	-	-	50,717	-
1992/93	36	1,084	46,778	-	-	-	47,898	-
1993/94	31	1,093	48,559	-	-	-	49,683	-
1994/95	43	1,162	48,717	-	-	-	49,922	-
1995/96	40	836	-	25,000	17,460	10,945	54,281	434,248,000
1996/97	39	1,005	-	27,808	17,083	14,860	60,795	486,360,000
1997/98	28	1,030	-	29,766	17,924	16,525	65,274	522,192,000
1998/99	22	1,091	-	30,510	17,350	17,675	66,648	533,184,000
1999/00	4	926	-	30,865	16,098	19,470	67,363	538,904,000
2000/01	11	963	-	28,686	16,234	19,063	64,958	519,664,000
2001/02	10	1,069	-	30,949	15,650	18,982	66,661	533,287,000
2002/03	15	1,051	-	29,017	17,515	19,210	66,809	534,472,000
2003/04	18	1,107	-	29,577	16,585	19,056	66,343	530,744,000
2004/05	19	943	-	29,826	17,663	18,701	67,152	843,429,000
2005/06	22	1,101	-	30,937	16,933	18,743	67,737	850,776,720
2006/07	15	1,049	-	29,146	16,090	19,313	65,613	1,016,345,000
2007/08	16	1,066	-	30,745	15,467	18,739	66,033	1,246,709,572

Source: DPI

Notes: * Estimated value of $A8/tonne has been used until 2003/04. In 2004/05 this value was re-assessed as $A12.56 and in 2007/08 the value has increased to $18.88/tonne.

Brown coal production is dominated by the electricity generation companies in the Latrobe Valley – International Power Hazelwood, Loy Yang Power Management Pty Ltd and TRUenergy Yallourn Pty Ltd. The largest producer is Loy Yang followed by Hazelwood and TRUenergy.

The other major brown coal miner is Alcoa Australia Ltd, which produces brown coal at Anglesea to generate electricity for its Point Henry aluminium smelter. The Maddingley Brown Coal Company produces a very small amount of coal at Bacchus Marsh, mainly for fuel and soil conditioning purposes.

4. Extractive Industry

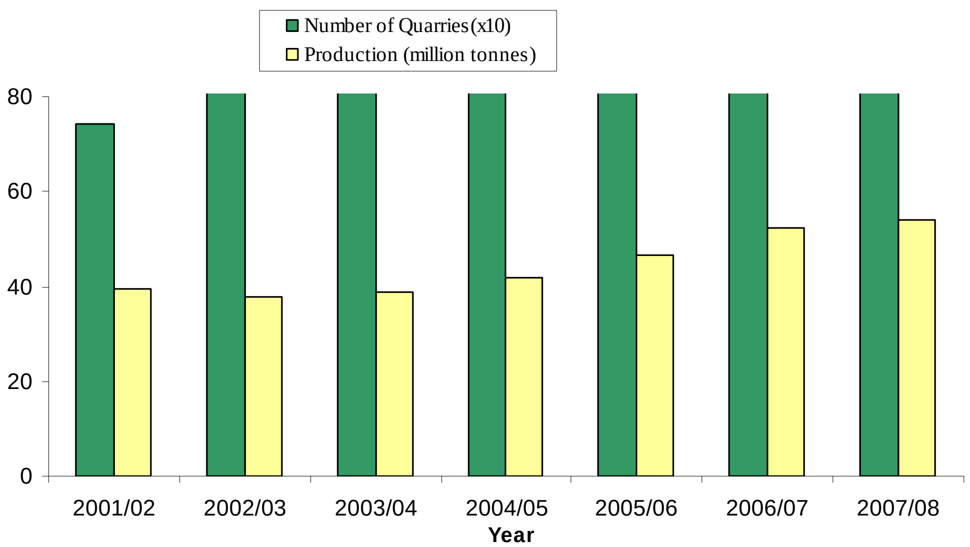
Extractive industries provide the raw materials for building and construction, which is vital to the State's development. The industry operates quarries that produce a range of hard rock, clay, sand and gravel.

There are 868 quarries operating under the *Extractive Industries Development Act* 1995 (EIDA) in Victoria. A total of 580 of these reported a total production of 53.9 million tonnes in 2007/08. This is higher than the previous year's production of 52.3 million tonnes and is the highest recorded production since data collection commenced in 1996 under the EIDA. The reported higher production is a reflection of an increased demand for extractive materials and improvement in reporting.

Definition of the Extractive Industry under Section 3 of the *Extractive Industries Development Act* 1995

"Extractive industry" means the extraction or removal of stone from land if the primary purpose of the extraction or removal is the sale or commercial use of the stone or the use of the stone in construction, building, road or manufacturing works and includes:
(a) the treatment of stone or the manufacture of bricks, tiles, pottery or cement products on or adjacent to land from which the stone is extracted; and
(b) any place, operation or class of operation declared by the Minister, by notice published in the Government Gazette, to be an extractive industry for the purposes of this Act.

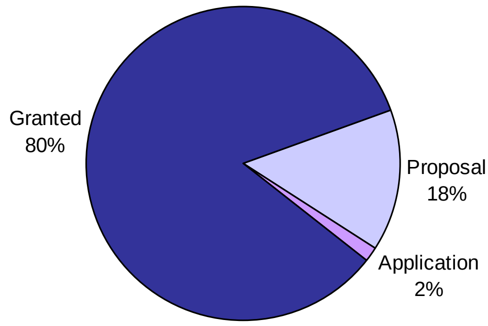
Figure 4.1 Extractive Industry Quarries and Production: 2001/02 – 2007/08



4.1 Work Authorities

Table and Figure 4.1.1 Status of Extractive Industry Work Authorities at 30 June 2008

Tenement	Proposal[1]	Application[2]	Granted
Work Authority	153	14	868



Source: DPI

Note: A Work Authority is granted under the *Extractive Industries Development Act* 1995.

[1] Work Authority is in proposal stage when a site meeting takes place attended by the Inspector and other relevant parties.

[2] Application stage is when a Work Authority application is lodged with all requirements to obtain an approved Work Plan.

4.2 Production

Table 4.2.1 Victorian Extractive Industries Production and Sales by Rock Type: 2007/08

Product Group	Product Type	Sales - volume (tonnes)	Sales - value ($A)
Hard Rock	Basalt	18,603,579	273,180,950
	Dolerite	302,818	3,720,110
	Gneiss	2,320	36,250
	Granite	6,016,694	95,313,529
	Hornfels	3,649,051	46,889,124
	Quartzite	196,252	1,226,404
	Rhyodacite	2,175,432	37,314,100
	Schist	234,403	2,724,119
	Sedimentary	1,978,772	17,908,013
	Slate	34,747	673,626
Hard Rock Total		**33,194,068**	**$478,986,225**
Soft Rock	Clay & clay shale	1,676,284	5,525,894
	Limestone	2,973,748	45,719,424
	Sand & gravel	14,150,403	186,741,993
	Scoria	1,210,763	17,436,874
	Soil	46,219	468,977
	Tuff	657,580	4,514,184
Soft Rock Total		**20,714,997**	**$260,407,346**
GRAND TOTAL		**53,909,064**	**$739,393,571**

Source: DPI – statutory returns under the *Extractive Industries Development Act* 1995.

Table 4.2.2 Victorian Extractive Industries Production and Sales by Products: 2007/08

Product Group	Product Type	Sales - volume (tonnes)	Sales - value ($A)
Single size products	Aggregate	15,671,148	282,982,323
	Armour	355,269	5,096,949
Single size products total		**16,026,416**	**288,079,272**
Multi size products	Road base	7,716,551	112,622,743
	Road sub-base	11,456,127	99,003,801
	Fill	3,395,127	21,813,421
Multi size products total		**22,567,805**	**233,439,965**
Sand Products	Concrete sand	7,505,328	122,626,936
	Fine sand	1,923,628	18,405,656
	Industrial	10,142	193,169
	Glass sand	436,428	12,000,000
Sand products total		**9,875,527**	**153,225,762**
Limestone Products	Cement	963,544	9,494,368
	Agriculture	864,869	20,215,647
	Lime	165,738	6,829,970
	Flux	2,200	58,000
Limestone products total		**1,996,351**	**36,597,985**
Clay Products	Brick	1,163,713	4,581,821
	Firebricks	183	1,830
	Stoneware	1,930	34,740
	Tile/pipe	48,726	179,902
Clay products total		**1,214,552**	**4,798,293**
Miscellaneous	Dimension stone	33,154	969,011
	Unspecified	2,194,939	22,282,844
Miscellaneous total		**2,228,093**	**23,251,855**
GRAND Total		**53,908,744**	**739,393,131**

Source: DPI – Statutory returns under the *Extractive Industries Development Act* 1995.

Note: Only operations reporting under the *Extractive Industries Development Act* 1995 are included in tables 4.2.1 and 4.2.2

Table 4.2.3 Victorian Dimension Stone Production: 1999/00 – 2007/08

	1999/00 (tonnes)	2000/01 (tonnes)	2001/02 (tonnes)	2002/03 (tonnes)	2003/04 (tonnes)	2004/05 (tonnes)	2005/06 (tonnes)	2006/07 (tonnes)	2007/08 (tonnes)
Basalt	19,063	20,868	18,803	12,419	13,864	13,875	21,552	27,280	27,559
Granite	3,462	943	1,058	1,993	1,600	879	636	797	448
Sandstone*	343	103	492	185	258	1090	5,059	4,214	3,437
Slate	538	938	613	617	548	2,382	334	879	1,710
TOTAL	**23,406**	**22,852**	**20,966**	**15,214**	**16,270**	**18,226**	**27,581**	**33,170**	**33,154**

Sources: Operators, DPI records and statutory returns under the *Extractive Industries Development Act* 1995.

*Include some sedimentary and limestone production.

5. Regulation

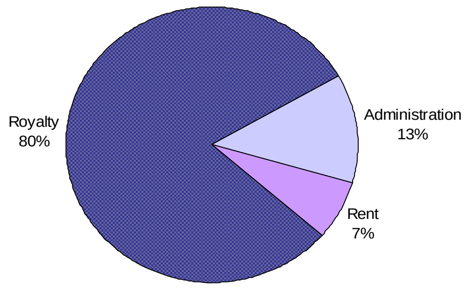
DPI collected a total of $A48.7 million in royalties, rentals and administration fees in 2007/08 under the *Mineral Resources (Sustainable Development) Act* 1990, the *Extractive Industries Development Act* 1995, the *Petroleum (Submerged Lands) Act* 1967, the *Petroleum (Submerged Lands) Act* 1982 and the *Petroleum Act* 1998.

Rehabilitation bonds held by DPI increased from $A134.0 million in 2006/07 to $A137.5 million in 2007/08, as a result of bond reviews and the issue of new licences.

5.1 Regulation, Revenue and Enforcement

Table and Figure 5.1.1 Minerals, Extractive and Petroleum Revenue: 2007/08

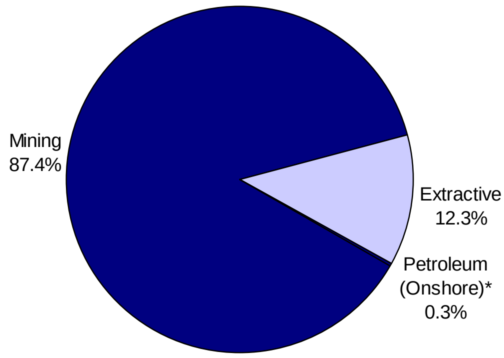
Revenue Stream	Revenue ($A million)
Administration	6.2
Rent	3.4
Royalty	39.0
Total	**48.7**



Source: DPI
Note: Royalty collected for the production/sales reported in the year ending 30/6/08.

Table and Figure 5.1.2 Minerals, Extractive and Petroleum Royalty – by Sector: 2007/08

Sector	Revenue ($A million)
Mining	34.1
Extractive	4.8
Petroleum (Onshore)*	0.1
Total	**39.0**



Source: DPI
*Includes some calendar year payments.

Table 5.1.3 Rehabilitation Bonds by Sector - Value ($A million): June 2000 - June 2008

Date	Mineral Exploration	Mining	Extractive	**Total**
Jun-00	1.3	53.3	22.8	**77.3**
Jun-01	1.2	57.4	31.4	**90.1**
Jun-02	1.1	57.5	34.5	**93.1**
Jun-03	1.1	57.0	37.5	**95.7**
Jun-04	1.2	65.6	39.2	**105.9**
Jun-05	1.8	66.3	47.5	**115.5**
Jun-06	2.3	66.7	49.4	**118.5**
Jun-07	2.8	73.7	57.5	**134.0**
Jun-08	3.1	75.6	58.8	**137.5**

Source: DPI

Figure 5.1.3 Rehabilitation Bond by Sector : June 2000 - June 2008

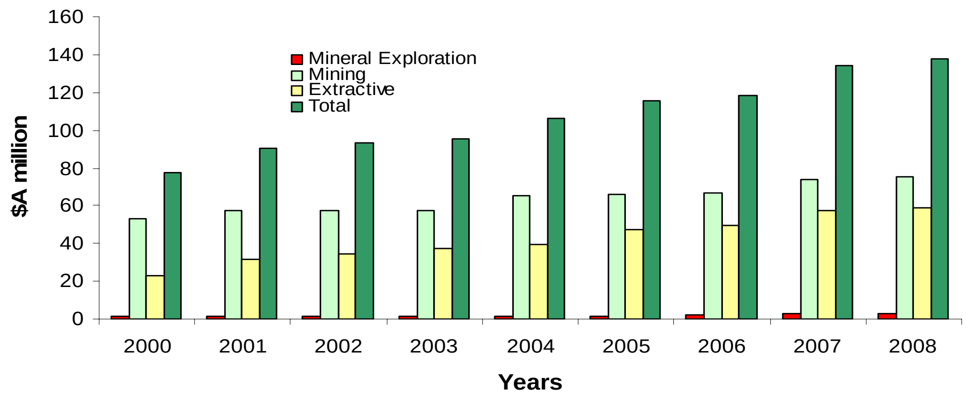


Table 5.1.4 Rehabilitation Bond Reviews: 2000/01- 2007/08

Year	**Number of Bonds Reviewed**	**Result of Bond Review**		
		Bond Increase	No Change	Bond Decrease
2000/01	370	94	270	6
2001/02	389	49	332	8
2002/03	332	85	237	10
2003/04	367	78	282	7
2004/05	344	99	238	7
2005/06	340	59	279	2
2006/07	258	65	190	3
2007/08	402	58	335	9

Source: DPI

Note: DPI has a program of regular bond review for active sites. Bonds are reviewed every one to six years depending on the risk associated with the operation.

Table 5.1.5 Enforcement and Compliance Activities 2007/08

Site Visits	1256
Inspections	833
Completed Compliance Audits	423
Complaints Received	65
Improvement Notices Issued	19
EIDA Notices Issued	41
Investigations Initiated	67
Prohibition Notices Issued	28
MRDA Notices Issued	8
Workplans & Variations Administration	1340
Mangement of Rehabilitation Liabilities (inc Bond Reviews)	1039

Source: DPI

Appendix A: Glossary

ABS: Australian Bureau of Statistics
EIDA: *Extractive Industries Development Act* 1995
MRSDA: *Mineral Resources (Sustainable Development) Act* 1990
PSLA 1967: *Petroleum (Submerged Lands) Act* 1967 *(Commonwealth)*
PSLA 1982: *Petroleum (Submerged Lands) Act* 1982 *(Victoria)*
Work authority: A title granted under the *Extractive Industries Development Act* 1995

Appendix B: Abbreviations, Symbols and Conversions

(to be updated when petroleum stats are included in this publication)

$A	dollar (Australian)
$A/GJ	dollar (Australian) per gigajoule
$m	million dollars (Australian)
$US	dollar (United States)
bbl	barrel (42 US Gallons;158.987 L)
bbl/d	barrels per day
Bm^3	billion (10^9) cubic metres
Bscf	billion (10^9) cubic feet (0.0283 Gm^3)
C+C	crude oil and condensate
cond.	condensate
GL	gigalitre (10^9 L; 6.29 Mbbl)
Gm^3	billion (10^9) cubic metres (35.336 Bscf)
kL	kilolitre (10^3 L)
L	litre
LPG	Liquefied petroleum gas
ML	megalitre (10^6 L)
Mbbl	million barrels
Mcf/d	Million cubic feet per day
MIN	Mining licence granted under the *Mineral Resources (Sustainable Development) Act* 1990
Mm^3	million cubic metres
oz	Troy ounce (31.1 g)