DEPARTMENT OF
PRIMARY INDUSTRIES

2008/09 Statistical Review

Victoria's Minerals, Petroleum and Extractive Industries

Victoria
The Place To Be

CONTENTS

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

Earth Resources Regulation Branch of the Earth Resources 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 monitoring and enforcement that ensure these industries comply with their obligations and meet community expectations.

Earth Resources 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 activity through the financial year 2008/2009 is summarised below:

2.1.1 Drilling

Seven exploration wells were drilled through the financial year 2008/2009 in the areas administered by the Victorian Department of Primary industries compared to 10 wells drilled during the same period last year. The basin break-down is as follows:

- Five in Gippsland offshore areas;
- Two wells in Otway offshore areas.

Nine development wells were drilled in 2008/2009 compared to 14 wells drilled during the same period last year.

Table 2.1.1 : Summary of Wells Drilled for the Financial Year 2008/2009

Activity	Exploraton Wells	Development Wells	Total	Comments
Drilling	7	9	16	Onshore and offshore wells are combined

Table 2.1.2: History of the Number of Exploration Wells Drilled Since 1984

	Offshore		Onshore			
Year	Gippsland	Otway	Gippsland	Otway	Murray	Total wells
Pre 1984	-	-	-	-	-	381
1984/85	10	0	2	2	0	14
1985/86	9	1	3	5	0	18
1986/87	2	0	2	2	0	6
1987/88	1	0	2	7	0	10
1988/89	9	0	0	1	0	10
1989/90	17	0	0	2	0	19
1990/91	0	0	2	6	1	9
1991/92	5	0	0	2	0	7
1992/93	4	4	0	1	0	9
1993/94	2	1	0	3	0	6
1994/95	6	0	2	5	0	13
1995/96	2	2	0	3	0	7
1996/97	2	0	1	5	0	8
1997/98	2	0	0	1	0	3
1998/99	0	0	1	0	0	1
1999/00	3	0	3	2	0	8
2000/01	1	1	2	5	0	9
2001/02	4	2	4	7	1	18
2002/03	3	2	3	4	0	12
2003/04	2	1	1	2	0	6
2004/05	8	7	2	0	0	17
2005/06	7	1	4	4	0	16
2006/07	2	0	4	2	0	8
2007/08	6	2	0	2	0	10
2008/09	5	2	0	0	0	7
Total	112	26	38	73	2	632

Table 2.1.3: History of the Number of Development Wells Drilled

Year	No. of Wells Drilled
Pre 1984	499
1984/85	28
1985/86	10
1986/87	16
1987/88	8
1988/89	14
1989/90	17
1990/91	6
1991/92	11
1992/93	8
1993/94	10
1994/95	17
1995/96	10
1996/97	33
1997/98	30
1998/99	44
1999/00	9
2000/01	4
2001/02	14
2002/03	14
2003/04	13
2004/05	15
2005/06	19
2006/07	14
2007/08	14
2008/09	9
Total	886

2.1.2 Geophysical Surveys

No seismic activity was undertaken in the areas administered by the Victorian Department of Primary Industries during the financial year 2008 / 2009 compared to six seismic and one magnetic survey during the same period of last year.

Factors influencing the level of activity probably include the financial downturn during the last financial year and the sharp drop in oil price during the same period.

2.2 Production

2.2.1 Hydrocarbon Production

The production of crude oil and condensate from the Gippsland basin continued to decline. This trend has been evident for almost 3 decades and is a natural consequence of the extensive production and depletion of the reservoirs.

Hydrocarbon production compared to the past financial year is as follows:

- Crude oil and condensate production was 4.35 GL compared to 4.50 GL produced during the previous financial year;
- LPG is 1.63 GL compared to 1.88 GL produced during the previous financial year;
- Gas produced 7.23 GM^3 compared to 7.29 GM^3 during previous financial year.

Hydrocarbon production remains strong in Gippsland due to continuous infill drilling in the developed fields to replace old wells and work undertaken to renew the down hole equipment of old wells and open new zones.

Major gas fields continue to produce after four decades with potential for the discovery of new hydrocarbon resources or the development of known but not yet developed reservoirs.

Table 2.2.1: Summary of Gippsland Offshore Production figures for 2008/2009

Operators	Oil + Condensate (bbl)	Gas (MMscf)	LPG (bbl)	Comments
Anzon	2,567,461.00	6,304.00		Basker, Manta and Gummy
Esso	27,353,871.40	255,195.66	10,266,334.71	* See below
Basin Total	29,921,332.40	261,499.66	10,266,334.71	-

*Barracouta, Blackback, Bream, Cobia, Dolphin, Flounder, Fortescue, Halibut, Mackerel, Kingfish, Marlin, Moonfish, Perch, Seahorse, Snapper, S. Mackerel, Tarwhine, Tuna, Turrum, W. Kingfish, W. Tuna

Table 2.2.2: Summary of Otway Offshore Production figures for 2008/2009

Field	Condensate (bbl)	Gas (MMscf)	LPG (bbl)	Comments
Casino	23,809.00	32,607.00	-	-
Minerva	84,129.00	30,021.49	-	-
Basin Total	107,938.00	62,628.49	-	-

Table 2.2.3: Summary of Otway Onshore Production and Injection figures for 2008/09

Field	Condensate (bbl)	Gas Prod. (MMscf)	Gas Inj. (MMscf)	Comments
Iona	739	6,559.74	7,914.46	Gas storage
Boggy Creek	Negligible	690.51		CO2

Table 2.2.4: Gippsland Production and Injection Figures for 2008/2009 – Esso

Field	OIL& Cond (Bbl)	GAS (kscf)	LPG (Bbl)	WATER (Bbl)
BLACKBACK	210,170.83	598,920.12	43,183.61	1,344,745.16
BREAM A	1,329,034.56	28,748,963.35	1,280,373.80	5,162,793.15
BREAM B	1,081,769.99	8,625,260.71	555,390.19	1,999,916.33
BARRACOUTA	517,304.31	36,129,793.73	1,102,169.23	0.63
COBIA	2,756,236.89	145,137.90	159,750.94	17,741,376.86
DOLPHIN	316,790.80	73,837.63	20,414.95	4,064,968.18
FLOUNDER	2,136,121.16	11,178,405.94	815,115.99	14,044,240.01
FORTESCUE	1,565,015.06	105,514.09	92,723.54	22,605,690.89
HALIBUT	1,564,017.61	114,887.16	87,895.83	14,225,319.59
KINGFISH A	745,500.94	121,514.65	72,986.30	18,674,802.23
KINGFISH B	780,091.94	283,976.50	72,081.85	18,732,949.75
MOONFISH	2,260,294.33	2,659,647.45	96,831.98	850,821.13
MACKERAL	720,117.30	84,435.27	86,640.56	29,147,364.07
MACKERAL - INJ	0.00	0.00	0.00	-194,984.49
MARLIN	2,210,798.25	71,122,753.34	2,972,864.68	0.63
PERCH	11,727.72	1,792.74	174.47	124,743.53
SEAHORSE	447,873.11	305,143.54	70,739.03	1,155,690.71
SOUTH MACKERAL	67,920.24	7,993.22	8,196.09	2,091,633.89
SNAPPER	3,185,937.56	87,713,292.04	2,165,753.93	860,257.12
TUNA	1,977,104.01	12,131,568.82	243,034.46	7,514,021.86
TUNA - INJ	0.00	-4,421,438.78	0.00	0.00
TURRUM	67,684.88	3,044,698.53	5,380.71	6,421.91
TURRUM - INJ	0.00	-3,208,060.28	0.00	0.00
WEST KINGFISH	1,203,062.20	315,081.26	110,442.15	12,987,745.27
WEST TUNA	2,199,297.70	37,629,273.20	204,190.44	6,405,725.59
WEST TUNA - INJ	0.00	-38,316,729.31	0.00	0.00
Annual Total (FY 2008 /2009)	27,353,871.40	255,195,662.83	10,266,334.71	180,205,320.09

NOTE: Highlighted cells are the totals injected and are to be subtracted from the Platform to give the actual production volume for the platform. E.g. for Tuna Gas Production: 12,131,568.82 - 4,421,438.78 = 7,710,130.04.

Table 2.2.5: History of Base Strait Annual Petroleum Production Figures – Esso

Year	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
2008 - 09	4.35	1.63	7.23

Figure 2.2.1: History of the Total Annual Production for Base Strait of Crude & Condensate, Liquid Petroleum Gas and Gas

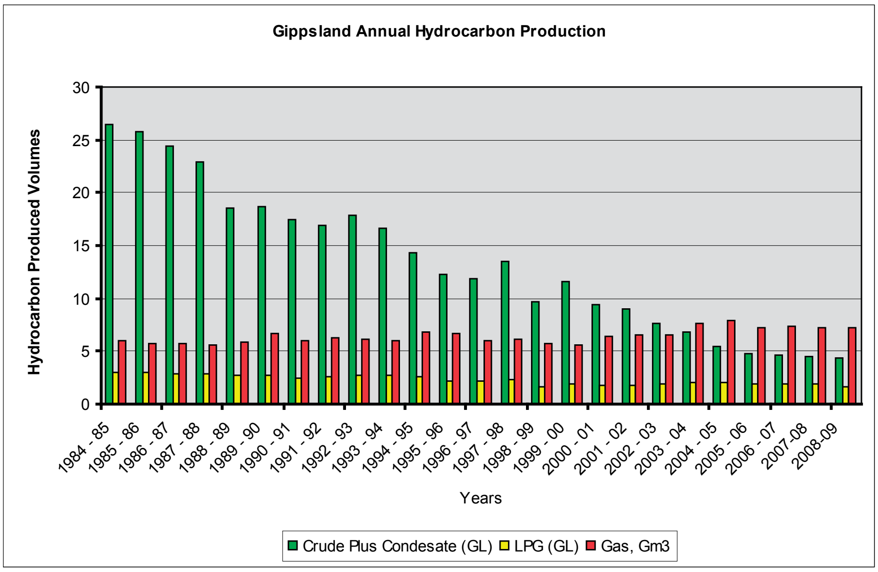
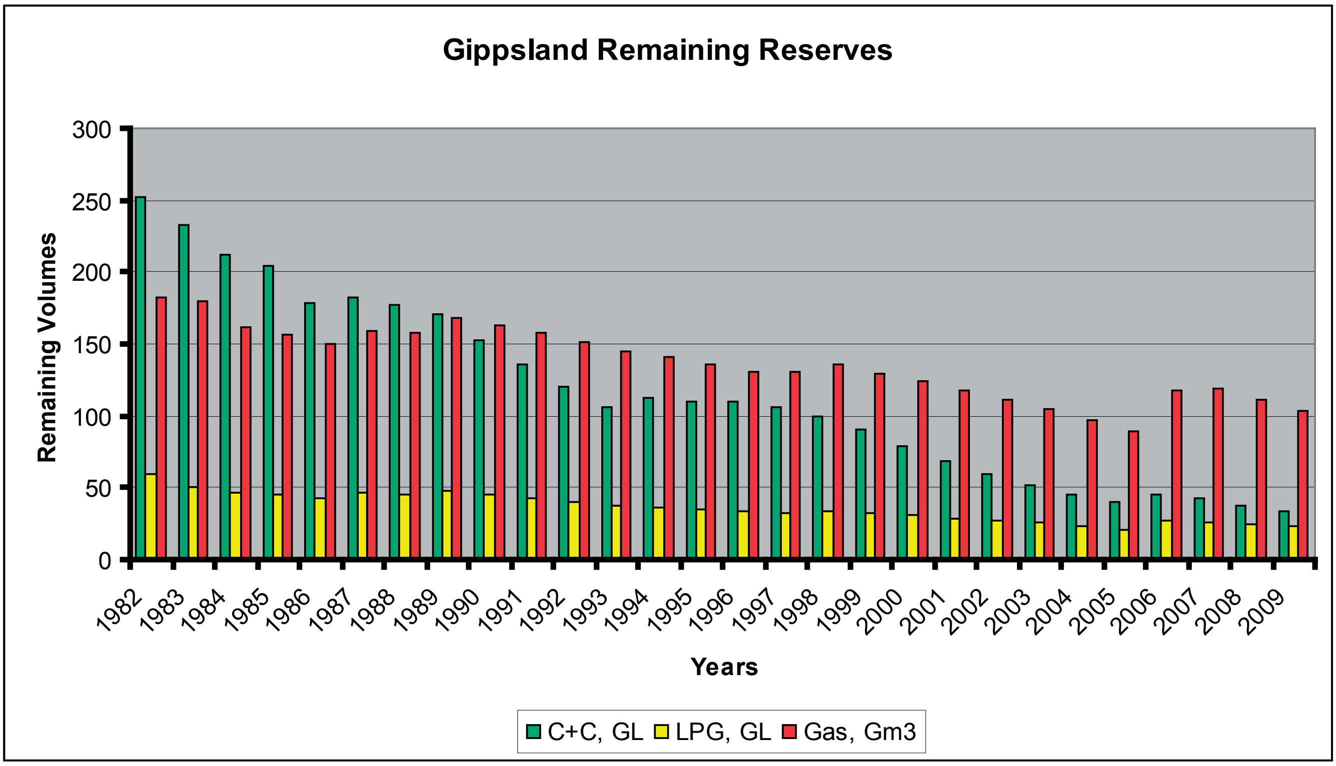


Table 2.2.6: Gippsland Basin Cumulative Production And Remaining Reserves - Esso

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
2009	657.70	114.10	311.90	623.95	91.41	208.02	33.81	22.69	103.89

Figure 2.2.2: History of the Total Crude & Condensate, Liquid Petroleum Gas and Gas Reserves Remaining for Gippsland



Note: A value for the Victorian petroleum production was intentionally not included. Oil prices fluctuate within a very wide domain. For current oil prices, analysis and information on the history of prices refer to http://www.wtrg.com/

Additional information:

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 2008/09, brown coal production, predominantly from the Latrobe Valley for electricity generation, reported at 68.2 million tonnes, represented a slight increase from the previous year's production of 66.0 million tonnes in 2007/08.

Gold production in the year has also increased significantly to 248,918 ounces from the previous year's production of 181,100 ounces in 2007/08.

Mineral sands, 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, decreased in 2008/09 to 313,145 cubic metres, from the previous year's production of 395,717 cubic metres. In 2008/09 kaolin production showed a significant reduction to 90,553 tonnes consistent with a decreasing trend since 2003/04. Feldspar production in Victoria commenced in 1997/98 by Unimin Australia Ltd at Beechworth and has steadily increased averaging 74.205 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 2008/09 all mineral sands production of 182,440 tonnes came from the Iluka owned 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 2008/09, 175 applications were received for grant or renewal of licences under the MRSDA. Approximately 68% of these were for exploration licences. In the same period 163 exploration and mining licences were granted or renewed, with about 66% of these being exploration licences.

Table 3.1.1: New and Renewal Applications for Exploration and Mining Licences: 2008/09

	Received	Granted	Withdrawn	Refused
New Exploration Licence Applications	64	57	21	0
Renewal Exploration Licence Applications	55	51	0	1
Sub Total Exploration Licence Applications	119	108	21	1
New Mining Licence Applications	20	14	4	1
Renewal Mining Licence Applications	36	41	0	0
Sub Total Mining Licence Applications	56	55	4	1
Total Licences	175	163	25	2

Source: DPI

Table 3.1.2: Exploration and Mining Licences – Granted and Renewed: 2002/03 - 2008/09

	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Exploration Licence Granted	55	83	38	69	89	91	57
Exploration Licence Renewed	47	49	56	38	59	58	51
SubTotal Exploration Licences Granted and Renewed	102	132	94	107	148	149	108
Mining Licence Granted	13	17	20	13	19	11	14
Mining Licence Renewed	26	39	29	22	56	21	41
Sub Total Mining Licences Granted and Renewed	39	56	49	35	75	32	55
Total Licences	141	188	143	142	223	181	163

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 2002/03 has been variable. In 2008/09 the number of exploration licences granted was 108 compared to the previous year figure of 149. The total number of mining licences granted in 2008/09 increased to 55 from the previous year of 32 in 2006/07, primarily due to large number of renewals in that year and partly due to increase in licence grants from 11 in 2007/08 to 14 in 2008/09.

Figure 3.1.1: Exploration Licence Grants: 2002/03 - 2008/09

Source: DPI

Figure 3.1.2: Mining Licence Grants: 2002/03 - 2008/09

Source: DPI

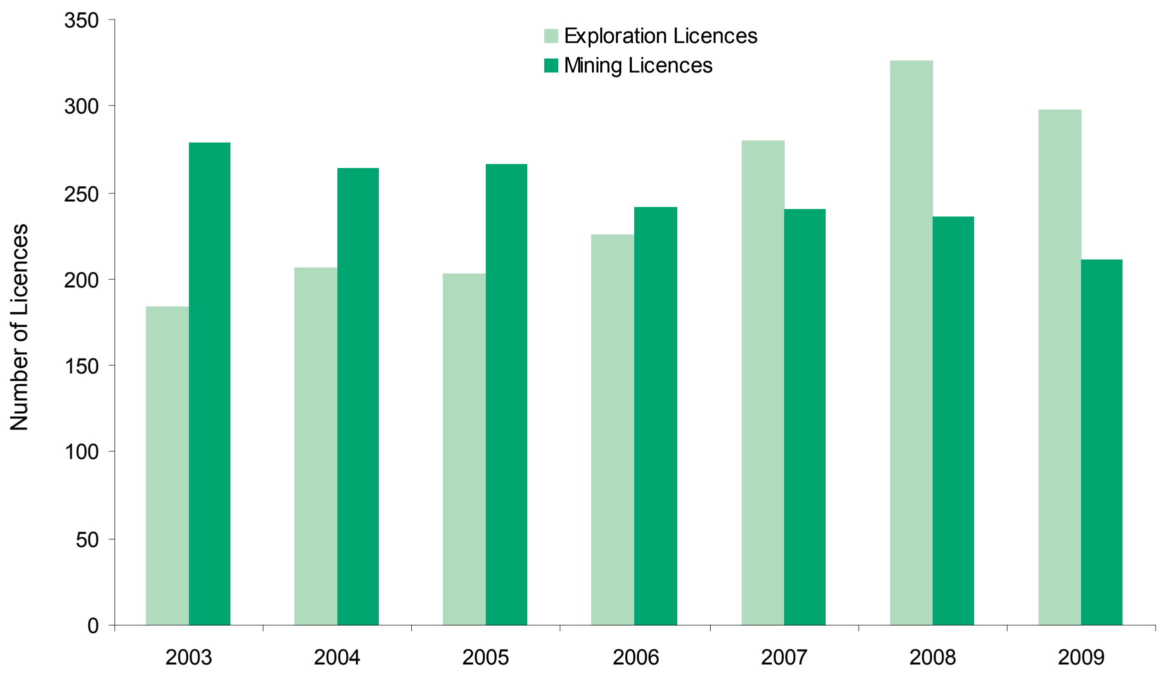
Table 3.1.3: Current Exploration and Mining Licences at 30 June each year: 2003 – 2009

Tenement	2003	2004	2005	2006	2007	2008	2009
Exploration Licences	184	207	203	226	280	326	298
Mining Licences	279	264	266	242	240	236	211
Totals	463	471	469	468	520	562	509

Source: DPI

The total areas covered by mining and exploration licences in 2008/09 were 661 km2 and 95,240km2 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 also declined in 2009 reversing the steadily increasing trend since 2006.

Figure 3.1.3: Current Exploration and Mining Licences as at 30 June each year: 2003 - 2009



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): 1999/00 - 2008/09

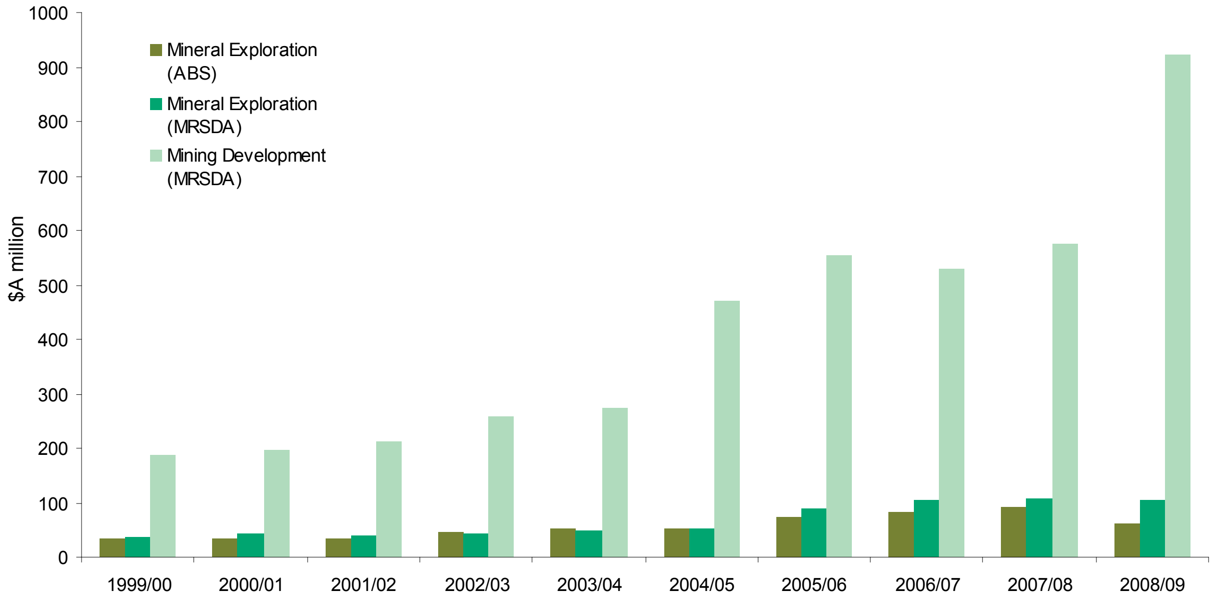
	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Mineral Exploration (ABS)	33.8	32.7	33.9	46.2	53.5	51.5	74.1	82.5	93.7	62.2
MRSDA Exploration	35.8	43.4	39.3	43.3	50.2	52.2	88.2	105.4	107.8	103.3
MRSDA Mining	188.3	195.5	213.5	258.2	274.4	469.9	553.0	527.8	576.6	923.3

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: - 1999/00 - 2008/09



Source: DPI

Mineral exploration expenditure is a lead indicator of mineral industry activity. ABS data shows a strong growth trend of exploration expenditure from 2001/02 to 2007/08, with a slight decline in 2004/05. According to ABS data this trend has sharply reversed in 2008/09. This change was not observed as strongly in the MRSDA data. The difference in these two exploration expenditure data sets is considered to be mainly due to the difference in methodologies for data collection, and the inclusion of the exploration expenditure on mining licences in the MRSDA figure.

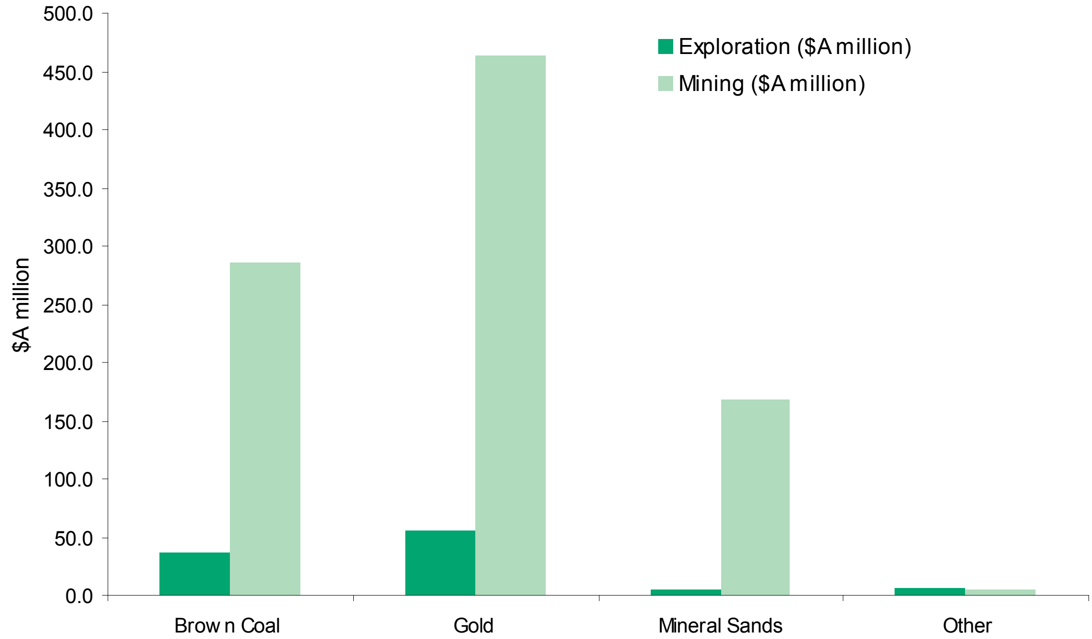
Expenditure on mining has continued the upward trend in 2008/09. This growth trend is largely due to the construction phase of gold mines, brown coal operation and the Basin Minerals Holdings Douglas mineral sands project.

Table 3.2.2: Mineral Exploration and Mining Development Expenditure by Sector (MRSDA): 2008/09

Sector	Exploration ($A million)	Mining ($A million)
Brown Coal	36.7	285.6
Gold	55.3	463.7
Mineral Sands	4.2	168.7
Other	7.1	5.3
Total	103.3	923.3

Source: DPI

Figure 3.2.2: Mineral Exploration and Mining Development Expenditure by Sector (MRSDA): 2008/09



Source: DPI

3.3 Production

Table 3.3.1: Mineral Production: 1985/86 – 2008/09

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)
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
2008/09	68,252	7,741	248,918	-	-	102,123	80,317	-	73,893	313,145	90,553

Source: DPI – statutory returns under the MRSDA

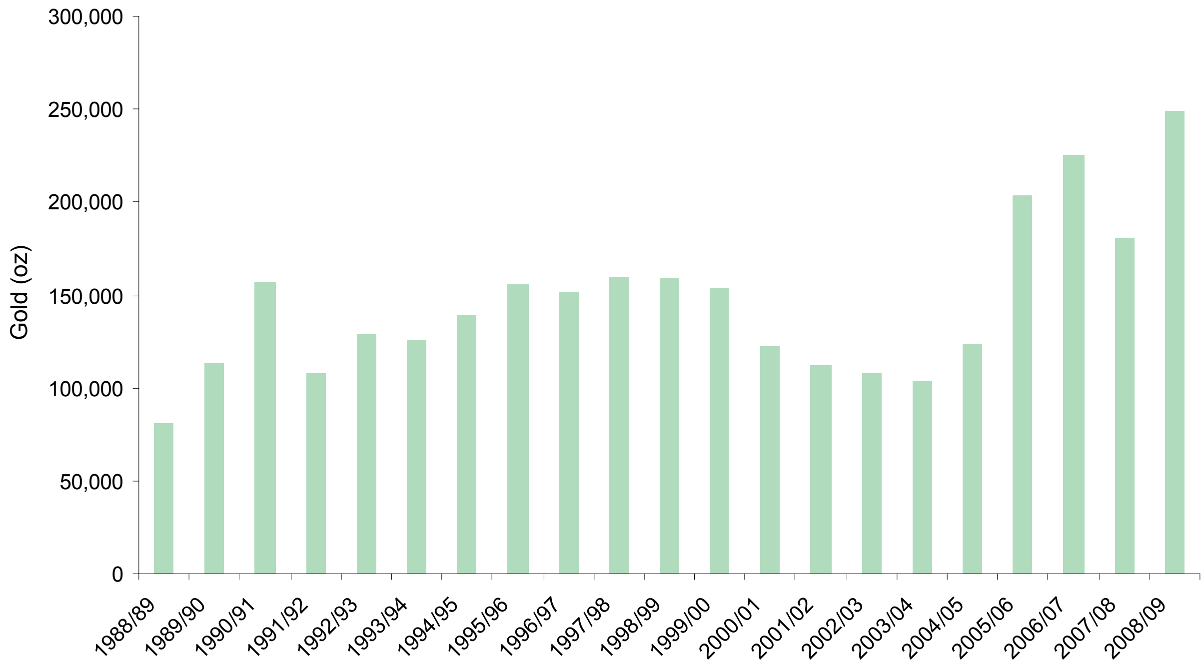
Table 3.3.2: Mineral Production Values: 2008/09

Mineral	Value ($A million)
Brown Coal	2,341.0
Gold	293.5
Heavy Mineral Sands	164.7
Feldspar	5.5
Gypsum	3.6
Kaolin	3.3
Total	2,811.6

Source: DPI

Note: Unit value of $A34.30/tonne for Brown Coal and $A1179/oz for gold were used. The values of other minerals are as reported by tenement holders.

Figure 3.3.1: Gold Production: 1988/89 - 2008/09



Source: DPI

Table 3.3.3: Gold Producers (Production more than 100 kg): 2008/09

Producer	Location	Licence	Production (kg)	Production (oz)	Estimated Value ($A)*
Leviathan Resources Ltd	Stawell	MIN 5260	2,956	95,044	112,091,227
Perseverance Exploration Pty Ltd	Fosterville	MIN 5404	2,895	93,082	109,777,327
Bendigo Mining Limited	Kangaroo Flat	MIN 5344	1,282	41,213	48,605,018
Ballarat Goldfields NL	Ballarat East	MIN 5396	523	16,805	19,819,152
Total			**7,656**	**246,144**	**290,292,724**
Other			85	2,774	3,271,602
Total Production			**7,741**	**248,918**	**293,564,326**

Source: DPI - statutory returns under the MRSDA

Note: *Based on the reported average gold price of $A1179/oz.

Most of Victoria's gold production in 2008/09 was from mines owned by Leviathan Resources Ltd at Stawell, Perseverance Exploration Pty Ltd at Fosterville, Bendigo Mining Limited at Kangaroo Flat and Ballarat Goldfields NL operation at Ballarat East. However, many smaller companies and individuals (19 in total) also produced small amounts of gold.

Table 3.3.4: Brown Coal Production (thousand tonnes): 1984/85 - 2008/09

YEAR	Maddingley Brown Coal Co. Bacchus Marsh	Alcoa Anglesea	SECV	Loy Yang	Yallourn	Hazelwood	Annual Total
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
1996/97	39	1,005	-	27,808	17,083	14,860	60,795
1997/98	28	1,030	-	29,766	17,924	16,525	65,274
1998/99	22	1,091	-	30,510	17,350	17,675	66,648
1999/00	4	926	-	30,865	16,098	19,470	67,363
2000/01	11	963	-	28,686	16,234	19,063	64,958
2001/02	10	1,069	-	30,949	15,650	18,982	66,661
2002/03	15	1,051	-	29,017	17,515	19,210	66,809
2003/04	18	1,107	-	29,577	16,585	19,056	66,343
2004/05	19	943	-	29,826	17,663	18,701	67,152
2005/06	22	1,101	-	30,937	16,933	18,743	67,737
2006/07	15	1,049	-	29,146	16,090	19,313	65,613
2007/08	16	1,066	-	30,745	15,467	18,739	66,033
2008/09	14	966	-	29,007	18,229	20,036	68,252

Source: DPI

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 863 quarries operating under the *Extractive Industries Development Act* 1995 (EIDA) in Victoria. A total of 579 of these reported a total production of 48.7 million tonnes in 2008/09. This is lower than the previous year's production of 53.9 million tonnes which was the highest recorded production since data collection commenced in 1996 under the EIDA. The reported decreased production is a reflection of a lower demand for extractive materials in the year.

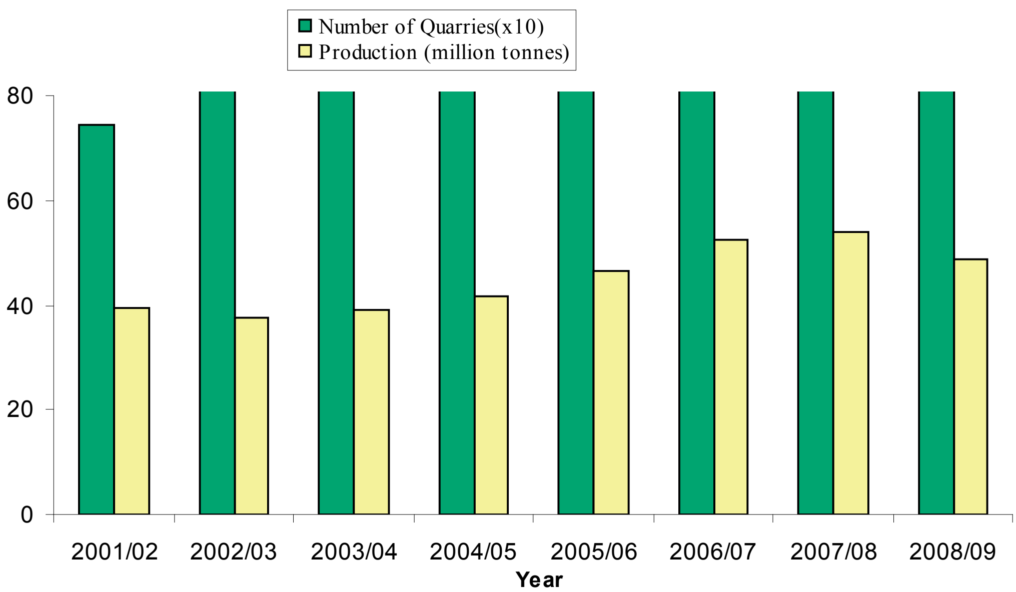
Definition of the Extractive Industry under Section 3 of the *Extractive Industries Development Act* 1995

"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: Extractive Industry Quarries and Production: 2001/02 – 2008/09



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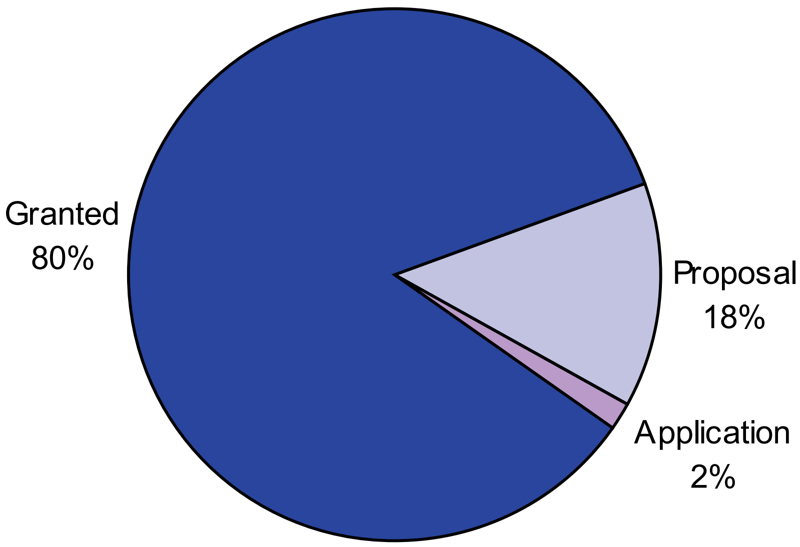
4.1 Work Authorities

Table and Figure 4.1.1: Status of Extractive Industry Work Authorities at 30 June 2009

Tenement	Proposal[1]	Application[2]	Current
Work Authority	139	16	863



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

1. Work Authority is in proposal stage when an initial 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.

Source: DPI

The number of Work Authorities in Victoria is approponent driven rather than DPI acitivity, and over the last 5 years the average current work authority number is 862.

4.2 Production

Table 4.2.1: Victorian Extractive Industries Production and Sales by Rock Type: 2008/09

Product Group	Product Type	Sales - volume (tonnes)	Sales - value ($A)
Hard Rock	BASALT	**16,559,461**	**252,490,628**
	DOLERITE	**372,776**	**5,352,726**
	GNEISS	**1,136**	**17,750**
	GRANITE	**3,456,546**	**61,802,189**
	HORNFELS	**5,423,841**	**85,200,249**
	QUARTZITE	**104,387**	**1,133,517**
	RHYODACITE	**1,317,129**	**26,746,170**
	TRACHYTE	**21,137**	**422,740**
	SCHIST	**281,505**	**3,466,671**
	SEDIMENTARY	**2,014,153**	**18,325,444**
	SLATE	**27,476**	**822,509**
Hard Rock Total		**29,579,547**	**455,780,593**
Soft Rock	Clay & clay shale	**1,268,715**	**5,268,625**
	Limestone	**2,843,926**	**46,626,773**
	Sand & gravel	**13,491,070**	**178,466,335**
	Scoria	**1,006,942**	**13,441,764**
	Soil	**23,195**	**169,850**
	Tuff	**473,847**	**3,059,500**
Soft Rock Total		**19,107,695**	**247,032,847**
GRAND TOTAL		**48,687,242**	**702,813,440**

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

Table 4.2.2: Victorian Extractive Industries Production and Sales by Products: 2008/09

Product Group	Product Type	Sales - volume (tonnes)	Sales - value ($A)
Single size products	Aggregate	**15,080,019**	**275,708,106**
	Armour	**292,250**	**6,034,355**
Single size products total		**15,372,269**	**281,742,461**
Multi size products	Road base	**6,625,731**	**96,579,458**
	Road sub-base	**9,791,205**	**101,430,221**
	Fill	**3,069,337**	**24,524,443**
Multi size products total		**19,486,273**	**222,534,122**
Sand products	Concrete sand	**7,316,242**	**113,850,444**
	Fine sand	**1,705,209**	**16,206,643**
	Industrial	**3,048**	**40,567**
	Foundary	**124,635**	**4,200,000**
	Glass sand	**120,000**	**4,000,000**
Sand products total		**9,269,135**	**138,297,655**
Limestone Products	Cement	**898,163**	**10,245,704**
	Agriculture	**774,663**	**18,543,190**
	Lime	**86,895**	**6,983,671**
Limestone products total		**1,759,720**	**35,772,565**
Clay products	Brick	**1,128,778**	**4,668,475**
	Stoneware	**1,248**	**22,464**
	Tile/pipe	**38,609**	**244,356**
Clay products total		**1,168,635**	**4,935,295**
Miscellaneous	Dimension stone	**8,475**	**386,938**
	Unspecified	**1,620,826**	**19,125,898**
Miscellaneous total		**1,622,735**	**19,144,405**
GRAND Total		**48,687,242**	**702,813,440**

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: 2000/01 - 2008/09

	2000/01 (tonnes)	2001/02 (tonnes)	2002/03 (tonnes)	2003/04 (tonnes)	2004/05 (tonnes)	2005/06 (tonnes)	2006/07 (tonnes)	2007/08 (tonnes)	2008/09 (tonnes)
Basalt	20,868	18,803	12,419	13,864	13,875	21,552	27,280	27,559	3,735
Granite	943	1,058	1,993	1,600	879	636	797	448	867
Sandstone*	103	492	185	258	1090	5,059	4,214	3,437	2,873
Slate	938	613	617	548	2,382	334	879	1,710	1,000
TOTAL	22,852	20,966	15,214	16,270	18,226	27,581	33,170	33,154	8,475

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

*Include some sedimentary and limestone production.

Dimension stone production showed a big drop to 8,475 tonnes in 2008/09 from 33,154 tonnes production reported in 2007/08. This may be seen as an indication of slowdown of the construction industry in the State resulting in a decreased demand for a such product.

5. Regulation

DPI collected a total of $51.0 million in royalties, rentals and administration fees in 2008/09 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 $137.5 million in 2007/08 to $162.4 million in 2008/09, 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: 2008/09

Revenue Stream	Revenue ($A million)
Administration	0.6
Rent	3.3
Royalty	47.1
Total	**51.0**

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

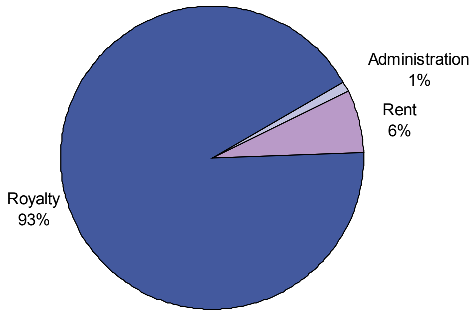


Table and Figure: 5.1.2 Minerals, Extractive and Petroleum Royalty - by Sector: 2008/09

Sector	Revenue ($A million)
Mining	42.1
Extractive	4.9
Petroleum (Onshore)*	0.1
Total	**47.1**

Source: DPI
*Includes some calendar year payments

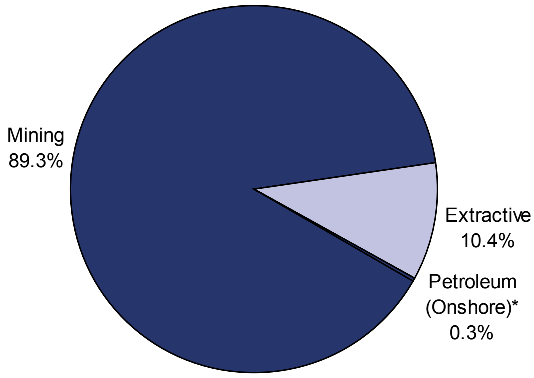


Table 5.1.3: Rehabilitation Bonds by Sector - Value ($A million): June 2000 - June 2009

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
Jun-09	2.0	97.1	64.9	164.0

Source: DPI

Figure 5.1.3: Rehabilitation Bond by Sector : June 2000 – June 2009

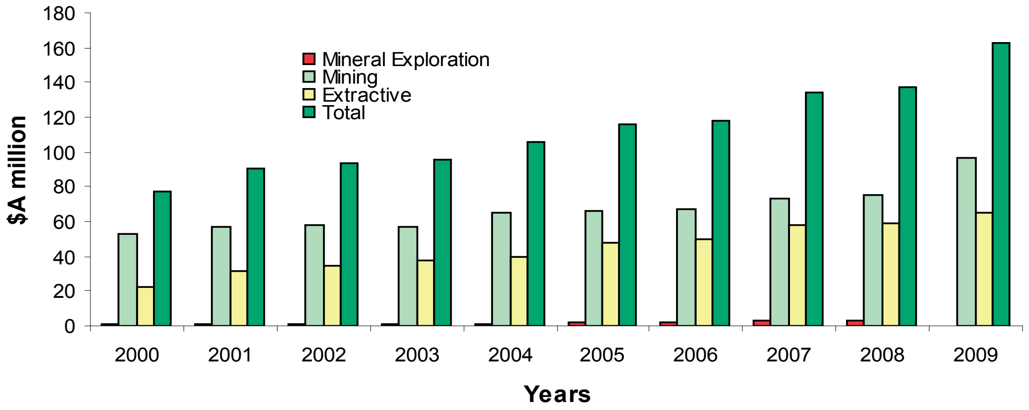


Table 5.1.4: Rehabilitation Bond Reviews: 2000/01- 2008/09

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
2008/09	382	49	323	10

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 2008/09

Site Visits	897
Inspections	640
Completed Compliance Audits	257
Complaints Received	42
Improvement Notices Issued	0
EIDA Notices Issued	37
Investigations Initiated	42
MRSDA Notices Issued	5
Workplans & Variations Administration	753
Management of Rehabilitation Liabilities	427

Source: DPI

Appendix A: Glossary

ABS: Australian Bureau of Statistics

EIDA: *Extractive Industries Development Act* 1995

MRSDA: *Mineral Resources (Sustainable Development) Act* 1990

OPGGSA: *Offshore Petroleum and Greenhouse Gas Storage Act* 2006 (Designated Authority under this Commonwealth Act)

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
Bm3	billion (109) cubic metres
Bscf	billion (109) cubic feet (0.0283 Gm3)
C+C	crude oil and condensate
cond.	condensate
GL	gigalitre (109 L; 6.29 Mbbl)
Gm3	billion (109) cubic metres (35.336 Bscf)
kL	kilolitre (103 L)
L	litre
LPG	Liquefied petroleum gas
ML	megalitre (106 L)
Mbbl	million barrels
Mcf/d	Million cubic feet per day
MIN	Mining licence granted under the *Mineral Resources (Sustainable Development) Act* 1990
Mm3	million cubic metres
oz	Troy ounce (31.1 g)

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