Statistical Report 2011-2012

Victoria's Minerals, Petroleum and Extractive Industries

DEPARTMENT OF
STATE DEVELOPMENT
BUSINESS AND
INNOVATION

State Government
Victoria

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Executive Summary

The 2011-12 financial year showed that activity and investment in the earth resources sector has generally returned to pre-Global Financial Crisis (GFC) levels cited in October 2008.

While mineral Exploration Licence activities (grants and renewals) did not reach pre-GFC levels (Figure 3.1.1) mineral Mining and Prospecting Licence activities did (Figure 3.1.2). Expenditure on these licences (Table 3.2.1) reflects this trend. In summary exploration licence activity has not yet returned to pre-GFC levels, whereas mining activity has exceeded pre-GFC levels.

For the minerals sector, production of brown coal resources remained steady in 11/12 compared to previous years. Gold production rose from 186,144 oz in 10/11 to 211,201 oz in 11/12, the highest value recorded since annual reporting begun in 1989/90. A significant increase in gypsum production was also observed from 289,528 in 10/11 to 630,258 in 11/12 – a growth of 117%. Overall mineral production values more than doubled from $642.6m in 10/11 to $1,654.1m in 11/12.

Extractive Industry Work Authority (quarry) rock production rose from 52.2 million tonnes in 10/11 to 58.1 million tonnes in 11/12. Dimension Stone production rose significantly from 7,763 tonnes in 10/11 to 32,361 tonnes in 11/12.

Activity in the petroleum area remained steady.

Investment in Geothermal Energy Resource Exploration Permits has been limited.

State revenue (rents and royalties) derived from the earth resources sector rose from $53m in 10/11 to $63.6m in 11/12.

1. Introduction

The Statistical Report is a compilation of data as reported by Victoria's earth resources industry. The report includes data on production, exploration, expenditure and licensing.

Victoria's earth resources industry production includes:

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

The Earth Resources Regulation Branch (ERR) of the Department of State Development, Business and Innovation (DSDBI) (previously Department of Primary Industries) is responsible for the regulation of the mineral, petroleum, greenhouse gas geological storage, extractive and geothermal industries in Victoria and offshore (Victorian) waters and shares responsibility for the oversight of the pipeline industry with Energy Safe Victoria. Responsibility for the petroleum, pipeline and carbon storage industries in offshore (Commonwealth) waters was transferred to the National Offshore Petroleum Title Administrator (NOPTA) on 1st January 2012. ERR 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

ERR administers the following Acts:

- *Mineral Resources (Sustainable Development) Act 1990* (MRSDA)
- *Offshore Petroleum and Greenhouse Gas Storage Act 2010* (Designated Authority in the 3 nautical mile zone)
- *Petroleum Act* 1998
- *Pipelines Act* 2005
- *Geothermal Energy Resources Act 2005*
- *Greenhouse Gas Geological Sequestration Act 2008.*

From the 1st January 2012 all of the titles for offshore (Commonwealth) waters were transferred to the jurisdiction of the National Offshore Petroleum Title Administrator (NOPTA). This report provides the data for these titles up to 31st December 2011.

Statistics for offshore (Commonwealth) waters are available from NOPTA. These can be obtained by calling the NOPTA hotline 08 6424 5317.

2. Petroleum and Geothermal

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 Petroleum and Geothermal Tenements

Petroleum

Victoria's petroleum exploration and production is concentrated in the Otway and Gippsland Basins.

Geothermal

In 2011/12, 16 exploration permits were current and expenditure for the year was approximately $3 m.

Table 2.1A: Summary of Petroleum and Geothermal Tenements 2005/6 – 2011/12

Geothermal Exploration Permits (GEP) Application Received and Granted

2005/2006 – 2011/2012

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
GEP Application Received	12	Nil	11	Nil	Nil	Nil	Nil
GEP Granted	12	Nil	11	Nil	Nil	Nil	Nil

Onshore Petroleum Exploration Permits (PEP) Application Received and Granted

2005/2006 - 2011/2012

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
PEP Application Received	Nil	3	Nil	Nil	Nil	4	1
PEP Granted	Nil	2	1	Nil	Nil	1	Nil

Onshore Pipeline Licences (PL) Applications Received and Granted

2005/2006 - 2011/2012

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
PL Application Received	7	9	Nil	Nil	Nil	1	Nil
PL Granted	9	7	2	1	Nil	Nil	1

Offshore (Victoria) Pipeline Licences Applications Received and Granted

2006/2007 – 2012/2013

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
PL Application Received	Nil	Nil	Nil	1	Nil	Nil	Nil
PL Granted	Nil	Nil	Nil	Nil	Nil	Nil	Nil

Offshore (Victoria) Pipeline Licences Applications Received and Granted

2006/2007 – 2011/2012

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
PL Application Received	Nil	Nil	Nil	1	Nil	Nil	Nil
PL Granted	Nil	Nil	Nil	Nil	Nil	Nil	Nil

Onshore Petroleum Retention Lease (PRL) Applications Received and Granted

2005/2006 - 2011/2012

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
PRL Application Received	1	1	Nil	Nil	Nil	Nil	Nil
PRL Granted	Nil	2	1	Nil	Nil	Nil	Nil

Offshore Joint Authority Petroleum Exploration Permits (VIC/P) Application Received and Granted *

2005/2006 - 2011/2012

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
VIC/P Application Received	Nil	3	1	Nil	Nil	Nil	Nil
VIC/P Granted	Nil	3	Nil	1	Nil	Nil	Nil

Note: 2011/12 figures only for first six months. Jan-Jun 2012 NOPTA.

Offshore Joint Authority Production Licences (VIC/L) Applications Received and Granted

2005/2006 - 2011/2012

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
VIC/L Application Received	2	1	1	Nil	Nil	Nil	Nil
VIC/L Granted	Nil	1	3	1	Nil	Nil	Nil

Note: 2011/12 figures only for first six months. Jan-Jun 2012 NOPTA.

Offshore Joint Authority Pipeline Licences (VIC/PL) Applications Received and Granted

2005/2006 - 2011/2012

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
(VIC/PL) Application Received	Nil	1	1	3	Nil	Nil	Nil
(VIC/PL) Granted	Nil	Nil	2	Nil	3	Nil	Nil

Note: 2011/12 figures only for first six months. Jan-Jun 2012 NOPTA.

Offshore Petroleum Retention Lease VIC/RL(V) Applications Received and Granted

2005/2006 - 2011/2012

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
VIC/RL(V) Application Received	Nil	Nil	1	Nil	Nil	Nil	Nil
VIC/RL(V) Granted	Nil	Nil	1	Nil	Nil	Nil	Nil

Offshore Petroleum Exploration Permit (VIC/P(V) Applications Received and Granted

2005/2006 - 2011/2012

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
VIC/P(V) Application Received	Nil	Nil	Nil	Nil	Nil	1	Nil
VIC/P(V) Granted	Nil	Nil	Nil	Nil	Nil	Nil	1

Table 2.1B: Number of Current Petroleum and Geothermal Tenements as at 30 June 2012

Geothermal Exploration Permits (GEP)

Tenement	Number of GEP
GEP	16

Petroleum Exploration Permits (PEP)

Tenement	Number of PEP
Onshore	7
Offshore (Vic)	1
Offshore Joint authority	Nil

Note: The Offshore Joint authority permits went to NOPTA on 1st January 2012. This figure is only for 6 months.

Pipeline Licences (PL)

Tenement	Number of PL
Onshore	226
Offshore (Vic)	13
Offshore Joint authority	Nil

Note: The Offshore Joint authority permits went to NOPTA on 1st January 2012. This figure is only for 6 months.

Production Licences (PPL)

Tenement	Number of PPL
Onshore	13
Offshore (Vic)	Nil
Offshore Joint authority	Nil

Note: The Offshore Joint authority permits went to NOPTA on 1st January 2012. This figure is only for 6 months.

Retention Leases (PRL)

Tenement	Number of PRL
Onshore	3
Offshore (Vic)	2
Offshore Joint authority	Nil

Note: The Offshore Joint authority permits went to NOPTA on 1st January 2012. This figure is only for 6 months.

2.2 Exploration and Development

Petroleum activities through the financial year 2011/2012 are summarised below:

2.2.1 Drilling

Onshore

Two exploration petroleum drilling activities took place in the onshore through the financial year 2011/2012.

Table 2.2.1A: Summary of Wells Drilled for the Year 2011/12

Activity	Exploration wells	Development wells	Total	Comments
Drilling	2	0	2	

Table 2.2.1B: History of the Number of Exploration Wells Drilled from 1984

Year	Offshore		Onshore			Total wells
	Gippsland	Otway	Gippsland	Otway	Murray	
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	1	0	1	0	7
2009/10	1	0	1	0	0	2
2010/11	2	0	0	0	0	2
2011/12	0	0	1	1	0	2
Total 1984-2012	115	25	40	75	2	257
					Grand Total	**638**

2.2.2 Geophysical Surveys

Onshore

Two onshore exploration petroleum drilling activities took place in 2011/12, one of which intersected a gas column.

2.2.3 Hydrocarbon Discovery

Moreys – 1 was spudded 20 April 2012 in PEP 169, Otway Basin. The well intersected gas in its secondary target zone (the Eumeralla Formation) between 1985m and 1995m. Gas and condensate was tested and flowed to the surface.

The Department received notification of a discovery from Lakes OIL NL. This discovery was being evaluated during the reporting period.

Offshore

See note concerning transfer of jurisdiction for Offshore tenements.

2.3 Production

2.3.1 Hydrocarbon Production

Table 2.3A: Summary of Otway Onshore Production and Injection for the Year 2011/12

Field	Condensate (bbl)	Gas Prod. (MMscf)	Gas Inj. (MMscf)	Comments
Iona	1,275.47	7,460.95	5,571.76	Gas storage
Boggy Creek	Negligible	744.19		CO_2
Basin Total	**1,275.47**	**8,205.14**	**5,571.76**	

Additional information:
GL = Giga litres = 1,000,000,000 Litres = 10^9 litres
Gm^3= Giga cubic metres =1,000,000,000 meters = 10^9 metres
One barrel = 0.158987 cubic metres
One cubic meter = 1000 Litres
One cubic meter = 35.31466 cubic feet

bbl = barrels
Kscf = Kilo standard cubic feet
MMscf = million standard cubic feet
MMscm = million standard cubic metres
O+C = Oil plus Condensate

3. Minerals

Victorian mineral production, which in the past was dominated by brown coal and gold, changed in 2010/11, when gold production dropped and heavy mineral sands more than doubled. The trend of heavy mineral sands outperforming gold and coal continued in 2011/12, although production of both of these commodities increased in 2011/12.

2011/12 gold production was 211,201 ounces, a rise from the low of 186,144 ounces in 2010/11, but still under the 2009/10 figure of 241,965 ounces. Production at the Fosterville gold mine fell from 95,357 ounces in 2010/11 to 93,320 ounces in 2011/12. Production at the Stawell gold mine rose from 65,771 ounces in 2010/11 to 87,176 ounces in 2011/12. Two other licences also showed strong production for the 2011/12 year, these were Balmaine Gold Pty Ltd in Ballarat which produced 14,494 ounces and Mandalay Resources Costerfield Operations Pty Ltd which produced 15,132 ounces.

Gypsum, kaolin and feldspar are the other significant contributors to mineral production. Gypsum production, which fell by about 8% in the 2010/11 financial year, rebounded in 2011/12, reporting a production increase of more than 117% (from 289,528 cubic metres to 630,258 cubic metres). Feldspar production went up by 27%.

In relation to heavy minerals sands production, there was a very slight drop in the production of zircon (less than 1%), a substantial rise in production of rutile and a drop of nearly half in the production of ilmenite. The overall value of heavy mineral sands production in 2011/12 however was marginally higher than 2010/11.

Definition of Minerals under Section 4 of the MRSDA
'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 Minerals Tenements

In 2011/12, 190 applications were received for grant or renewal of minerals related licences under the MRSDA. Approximately 74% of these were for exploration licences. In the same period 170 exploration, mining and prospecting licences were granted or renewed, with about 80% of these being for exploration licences. It should be noted that while an application may be received in one financial year, it may not be determined within that financial year.

Table 3.1A: New/Renewal Applications for Exploration/Mining/Prospecting Licences 2011/12

	Received	Granted or Renewed	Withdrawn	Refused
New Exploration Licence Applications	63	62	7	1
Renewal Exploration Licence Applications	90	74	0	0
Sub Total Exploration Licence Applications	**153**	**136**	**7**	**1**
New Mining Licence Applications	18	12	1	1
Renewal Mining Licence Applications	28	21	0	0
New Prospecting Licence Applications	**7**	**1**	**0**	**0**
Sub Total Mining/Prospecting Licence Applications	**53**	**34**	**1**	**1**
Total Licences	**206**	**170**	**8**	**2**

Source: DSDBI

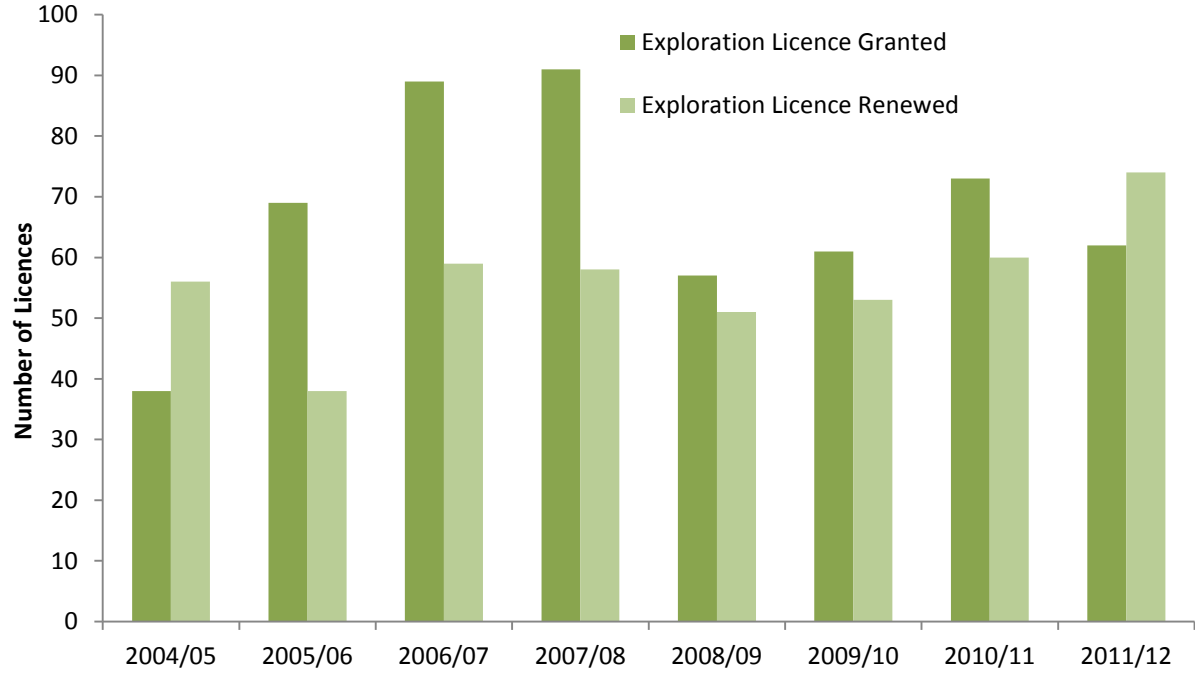
Table 3.1B: Exploration/Mining Licences – Granted/Renewed over time 2005/06 – 2011/12

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Exploration Licence Granted	69	89	91	57	61	73	62
Exploration Licence Renewed	38	59	58	51	55	60	74
Subtotal Exploration Licences Granted and Renewed	**107**	**148**	**149**	**108**	**116**	**133**	**136**
Mining Licence Granted	13	19	11	14	15	20	12
Mining Licence Renewed	22	56	21	41	30	23	21
Prospecting Licence Granted	0	0	0	0	0	0	1
Sub Total Mining/Prospecting Licences Granted and Renewed	**35**	**75**	**32**	**55**	**45**	**43**	**34**
Total Licences	**142**	**223**	**181**	**163**	**161**	**176**	**170**

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

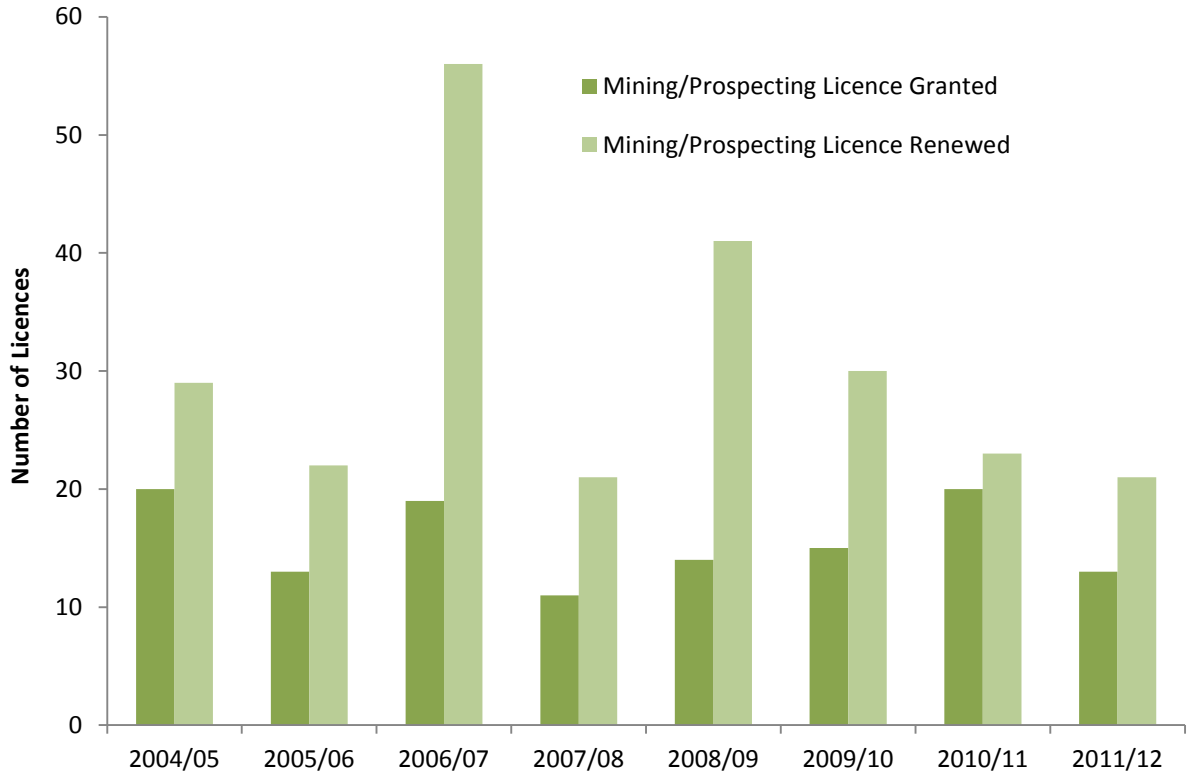
In 2011/12 the number of exploration licences granted or renewed was 136, compared to the previous year figure of 133. The total number of mining and prospecting licences granted or renewed in 2011/12 decreased to 34 from the previous year of 43 in 2010/11 primarily due to a drop of number of grants and renewals in that year.

Figure 3.1A: Exploration Licence Grants and Renewals: 2004/05 to 2011/12



Source: DSDBI

Figure 3.1B: Mining/Prospecting Licence Grants and Renewals: 2004/05 to 2011/12



Source: DSDBI

Table 3.1C: Current Exploration/Mining Licences at 30 June each year 2006 – 2012

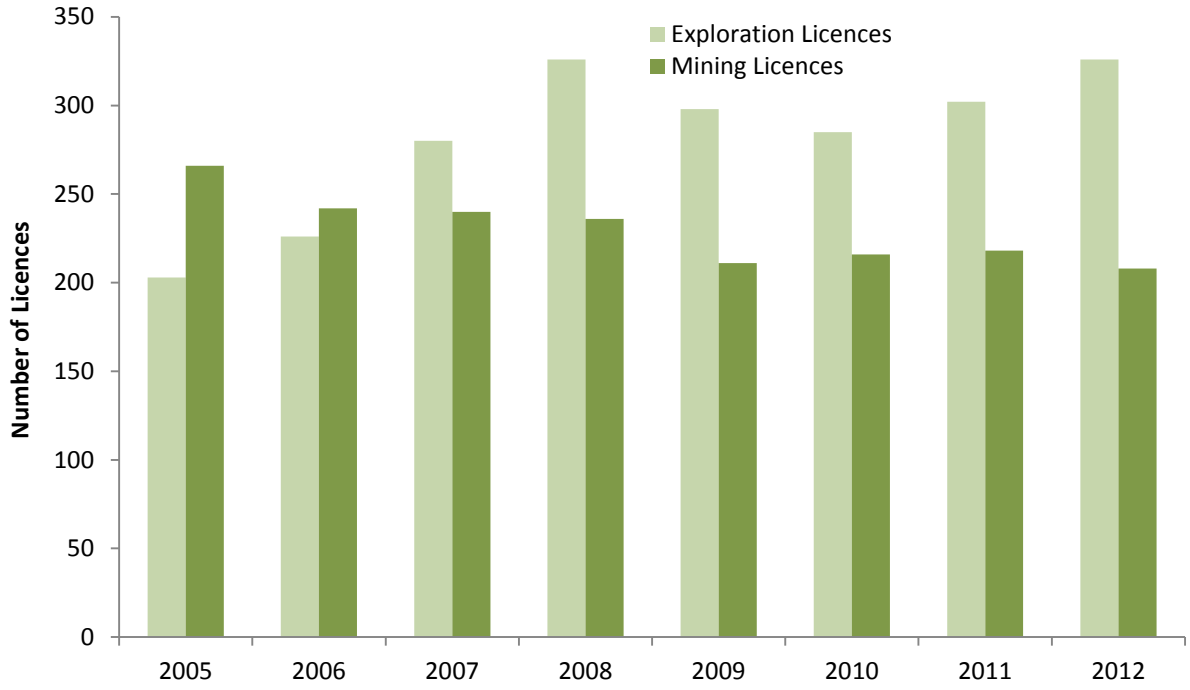
Tenement	2006	2007	2008	2009	2010	2011	2012
Exploration Licences	226	280	326	298	285	302	326
Mining Licences	242	240	236	211	216	218	208
Totals	**468**	**520**	**562**	**509**	**501**	**520**	**534**

Source: DSDBI

The total available area of the state covered by exploration licences (current and applications) on June 30th 2012 was 83,900km² (the total area covered by mining licences is not reported as it is not indicative of the extent of mining in the state). The number of mining licences had steadily fallen over the seven years to 2008/09, but this trend changed in 2009/10 with a slight increase of 5 from the previous year, and in 2010/11 to another slight increase of 2 from the previous year, this trend was reversed in 2011/12 when the number dropped by 10.

After a decrease in 2009/10 of 13 exploration licences from the previous year, this was reversed in 2010/11 with an increase of 17 from the previous year. The number of Exploration Licences rose by a further 24 in 2011/12.

Figure 3.1C: Current Exploration/Mining Licences as at 30 June each year: 2005 - 2012



Source: DSDBI

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 requirements of the 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.

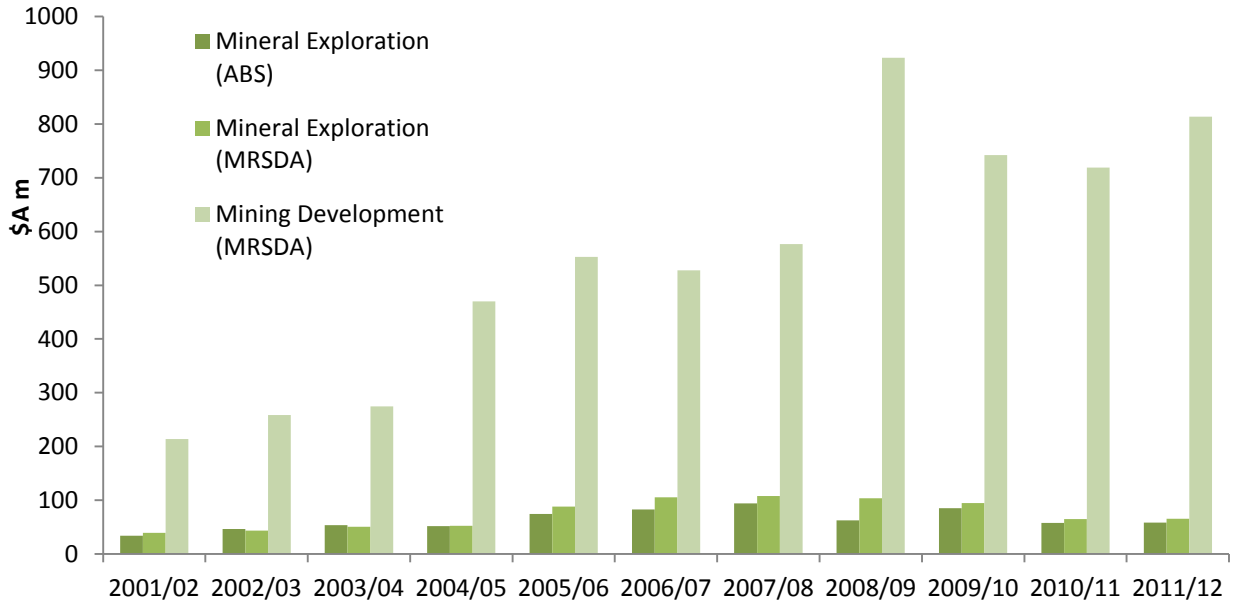
Table 3.2A: Expenditure on Mineral Exploration/Mining Development ($Am) 2002/03 - 2011/12

	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Mineral Exploration (ABS)	46.2	53.5	51.5	74.1	82.5	93.7	62.2	84.8	57.4	58.5
MRSDA Exploration	43.3	50.2	52.2	88.2	105.4	107.8	103.3	94.3	64.6	65.1
MRSDA Mining	258.2	274.4	469.9	553.0	527.8	576.6	923.3	742.0	719.2	813.8

Source: Figures collated from six monthly reports forwarded to DSDBI required by the MRSDA, and ABS: Actual and Expected Private Mineral Exploration (Catalogue No. 8412.0).

Notes**:** The MRSDA mining figures represent total mining expenditure i.e. capital and operating; by commercial entities engaged in mining activity during the relevant periods and does not include exploration on mining licences.
The MRSDA exploration figures include exploration expenditure on mining and exploration licences.

Figure 3.2A: Expenditure on Mineral Exploration and Mining Development 2001/02 - 2011/12



Source: DSDBI

Mineral exploration expenditure is a lead indicator of mineral industry activity. ABS data shows a 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 fluctuated since 2008/09 with a decrease in 2010/11 and then a slight increase in 2011/12. 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 was on an upward trend from 2000/01 to 2008/09. This trend reversed in 2009/10 and continued in 2010/11. In 2011/12 however the trend was significantly higher than 2010/11 ($94.8m more).

There has been a gradual and significant increase in mining development expenditure since 00/01 (almost by a factor of 5 or 500%).

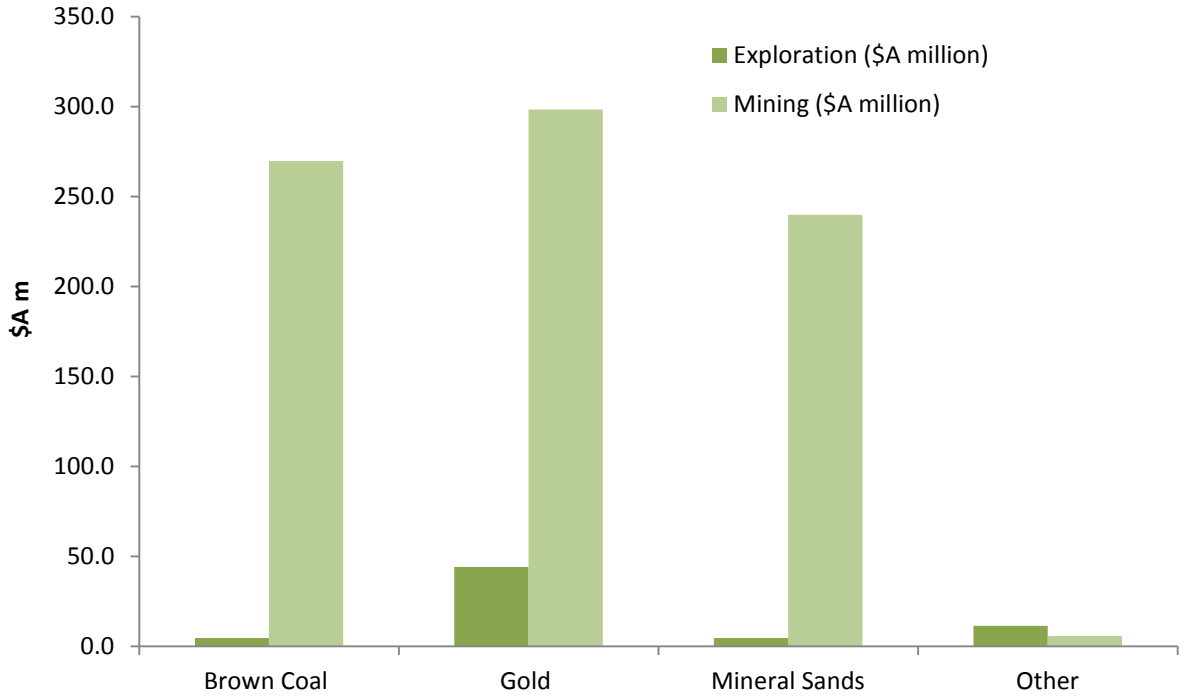
Table 3.2B: Mineral Exploration/Mining Development Expenditure by Sector (MRSDA) 2011/12

Sector	Exploration ($A m)	Mining ($A m)
Brown Coal	4.7	269.7
Gold	44.2	298.4
Mineral Sands	4.7	239.9
Other	11.5	5.8
Total	**65.1**	**813.8**

Source: DSDBI

PLEASE NOTE: The exploration figures include exploration on mining licences. The mining figures do not include exploration on mining licences.

Figure 3.2B: Mineral Exploration and Mining Development Expenditure by Sector (MRSDA) 2011/12



Source: DSDBI

3.3 Production

Table 3.3A: Mineral Production 1986/87 – 2011/12

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)
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	nil	nil	-	-	-	-	501,495	114,778
1997/98	65,274	4,979	160,122	nil	nil	-	-	-	25,703	479,820	166,100
1998/99	66,648	4,947	159,088	nil	nil	-	-	-	45,293	404,917	180,634
1999/00	67,363	4,790	154,043	nil	nil	-	-	-	46,162	462,806	201,436
2000/01	64,958	3,814	122,632	nil	nil	1,307	5,921	-	53,148	437,694	203,753
2001/02	66,661	3,492	112,283	nil	nil	3,702	16,805	28,123	56,757	600,931	202,370
2002/03	66,809	3,345	107,544	nil	nil	10,841	28,329	50,984	68,198	420,293	248,692
2003/04	66,343	3,240	104,188	nil	nil	4,645	11,239	19,978	69,552	439,906	251,392
2004/05	67,152	3,835	123,308	nil	nil	Nil	nil	nil	75,683	346,522	189,237
2005/06	67,737	6,324	203,352	nil	nil	Nil	nil	nil	69,876	416,294	149,218
2006/07	65,613	6,995	224,927	nil	nil	48,636	22,263	nil	76,187	235,266	170,727
2007/08	66,033	5,632	181,100	nil	nil	140,853	72,166	13,503	75,384	395,717	151,669
2008/09	68,252	7,741	248,918	nil	nil	102,123	80,317	nil	73,893	313,145	90,553
2009/10	68,750	7,526	241,965	nil	nil	90,671	117,314	27,904	66,507	315,509	92,862
2010/11	66,733	5,789	186,146	nil	nil	188,663	209,919	82,075	74,806	289,528	31,683
2011/12	69,124	6,569	211,201	nil	nil	187,538	261,744	42,814	95,310	630,258	80,202

Source: DSDBI – statutory returns under the MRSDA.

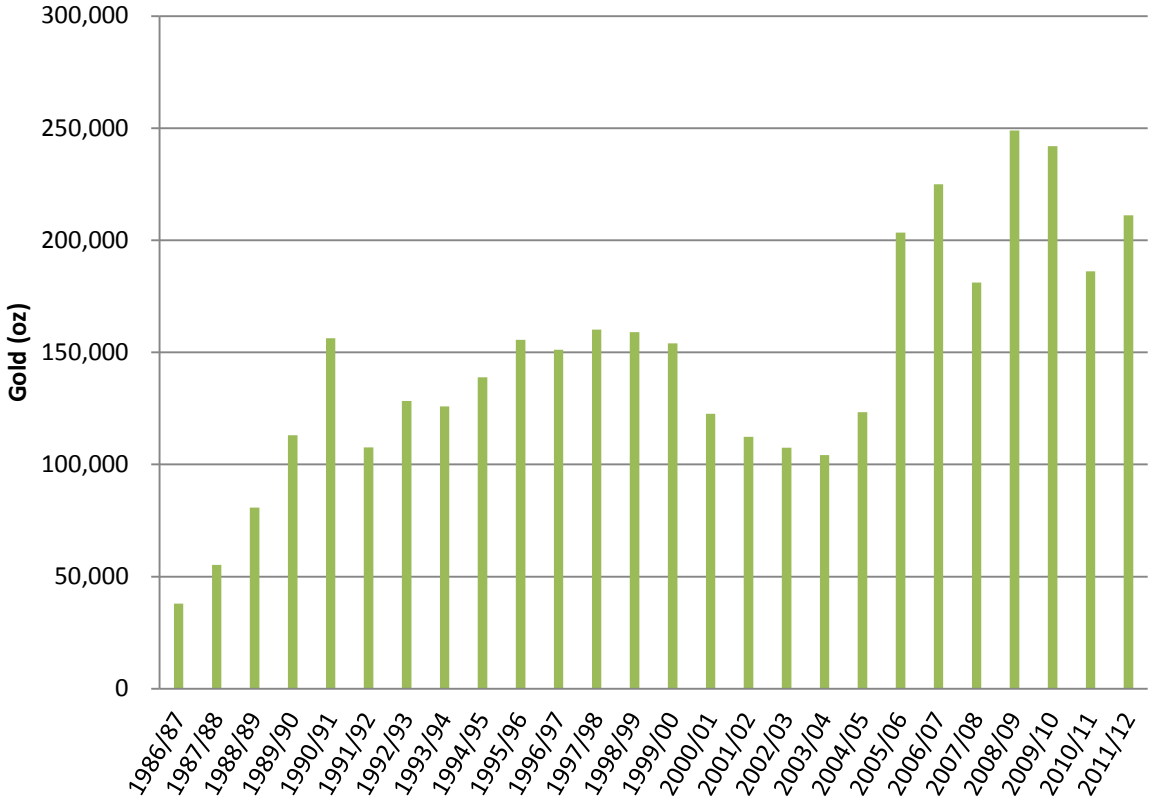
Table 3.3B: Mineral Production Values 2011/12

Mineral	Value ($A m)
Brown Coal	494.6
Gold	332.1
Heavy Mineral Sands	663.5
Feldspar	3.9
Gypsum	6.4
Kaolin	1.4
Total	**1,501.9**

Source: DSDBI

Note: Unit value for Brown Coal was not available in 2010/11.
In 2011/12 the unit value of coal was available and is included.
The total value excluding coal in 2010/11 was $642.6m and 2011/12 the value excluding coal was $1,160.1m.
The rises were mainly due to greatly increased production of gold and heavy mineral sands.

Figure 3.3A: Gold Production (ounces) 1986/87 - 2011/12



Source: DSDBI

Table 3.3C: Gold Producers (Production more than 100 kg) 2011/2012

Producer	Location	Licence	Production (kg)	Production (oz)	Estimated Value ($A)*
Fosterville Gold Mine Pty Ltd	Fosterville	MIN 5404	2,903	93,320	152,286,873
Stawell Gold Mines Pty Ltd	Stawell	MIN 5260	2,711	87,176	122,189,000
Balmaine Gold Pty Ltd	Ballarat	MIN 5396	451	14,494	22,047,000
Mandalay Resources Costerfield Operations Pty Ltd	Costerfield South	MIN 4644	470	15,132	33,900,000
Total			**6,535**	**210,122**	**330,422,873**
Other			34	1,079	1,638,708
Total Production*			**6,569**	**211,201**	**332,061,581**

Source: DSDBI - statutory returns under the MRSDA.
Note: *based on the reported average gold price of $1,572.25/oz.

Most of Victoria's gold production in 2011/12 was from mines owned by Fosterville Gold Mines Pty Ltd, Stawell Gold Mines Pty Ltd, Balmaine Gold Pty Ltd and Mandalay Resources Costerfield Operations Pty Ltd. In the 2010/11 year production was also reported by Unity Mining Limited (formerly Bendigo Mining Limited). MIN5396, held by Balmaine Gold Pty Ltd, went into care and maintenance in March 2010 and there was no production on this licence in 2010/11. In 2011/12, however they resumed production and 14,494 ounces of gold was extracted at a value of $22m. MIN4644 held by Mandalay Resources Costerfield Operations Pty Ltd, which had not previously reported major production produced 15,132 ounces of gold at a value of $33.9m. MIN5404, held by Fosterville Gold Mine Pty Ltd, reported a small decrease in production and MIN5260, held by Stawell Gold Mines Pty Ltd reported a rise of nearly 25% in production.

Other than the four main producers in 2011/12, there were 29 licences that also produced small quantities of gold in the period.

Table 3.3D: Brown Coal Production (thousand tonnes) 1984/85 - 2011/12

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	65,273
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	64,957
2001/02	10	1,069	-	30,949	15,650	18,982	66,660
2002/03	15	1,051	-	29,017	17,515	19,210	66,808
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	67,736
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
2009/10	11	1,077	-	30,446	17,685	19,531	68,750
2010/11	16	1,070	-	29,895	17,705	18,047	66,733
2011/12	21	1,022	-	30,237	17,404	20,440	69,124

Source: DSDBI

Brown coal production is dominated by the electricity generation companies in the Latrobe Valley – Hazelwood Power Corporation, Loy Yang Power Ltd and Yallourn Energy Pty Ltd.

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.

In the 2010/11 year, Hazelwood showed a production drop of approximately 1.5 million tonnes. This was due to one unit of the power station being out of service for a considerable time during that period. The 2011/12 year reversed this trend with a rise of nearly 2.4 million tonnes of production from this mining licence.

4. Extractive Industry

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

In 2011/12 there were 884 quarries operating under the MRSDA in Victoria. This number has increased from 876 in 2010/11. The bulk of the 58.2 million tonnes produced was extracted from 541 of the 884 operating quarries; this is an increase of approximately six million tonnes on 2010/2011 production figures.

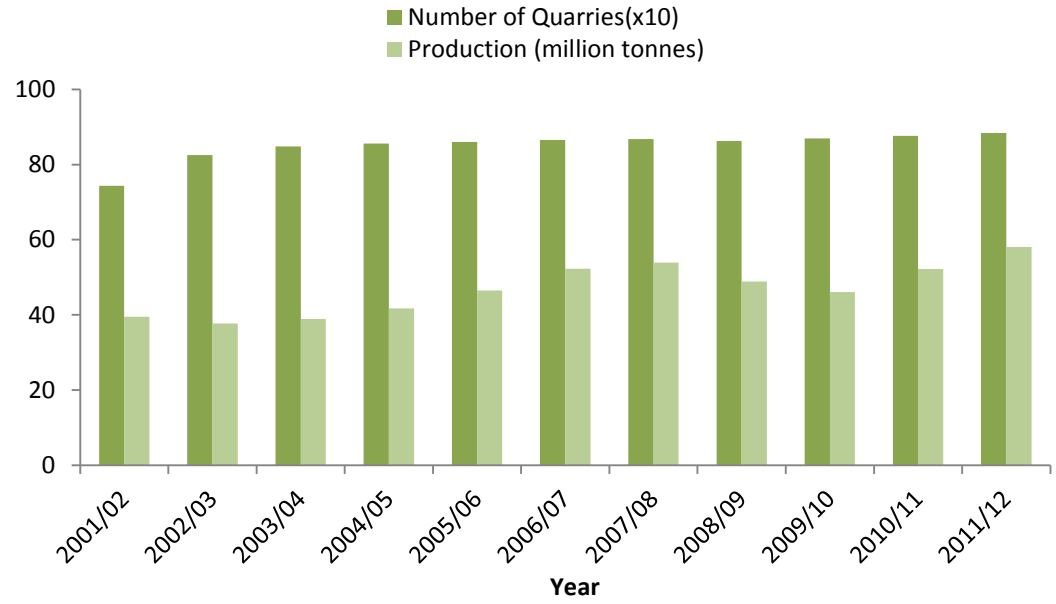
Definition of the Extractive Industry under Section 4 of the *Mineral Resources (Sustainable Development) Act 1990*

"Extractive industry" means the extraction or removal of stone from land if a 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 involving the extraction or removal of stone from land, 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 – 2011/12



The number of quarries operating in Victoria rose considerably between 2001/02 and 2003/04 because of the licensing of smaller pits in the state, but has remained relatively stable since then. There has been considerable fluctuation in production output reflecting demand drivers for stone resources. The dip in 2008/09 and 2009/10 was likely caused by economic factors including the global financial crisis.

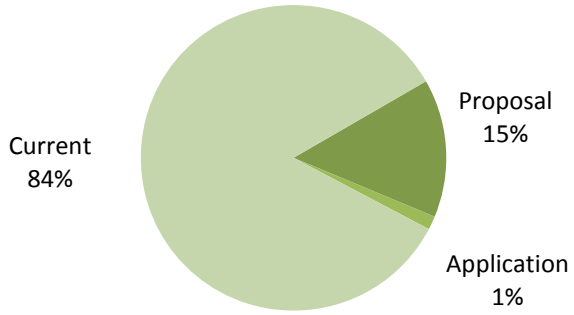
4.1 Work Authorities

Table 4.1: Status of Extractive Industry Work Authorities at 30 June 2012

Tenement	Proposal[1]	Application[2]	Current
Work Authority	154	15	884

Source: DSDBI

Figure 4.1: Status of Extractive Industry Work Authorities at 30 June 2012



Note: A Work Authority is granted under the *MRSDA.*

[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. The overall proportions have not changed from 2011/12 although the numbers have slightly.

The number of Work Authorities in Victoria is a proponent driven activity rather than a reflection of DSDBI activity. Over the last 5 years the average number of current work authorities is 872.

4.2 Production

Table 4.2A: Victorian Extractive Industries Production and Sales by Rock Type 2011/2012

Product Group	Product Type	Sales - volume (tonnes)	Sales - value ($A)
Hard Rock	BASALT	18,518,555	306,977,968
	DOLERITE	315,661	6,530,446
	GNEISS	0	0
	GRANITE	6,373,664	125,967,852
	HORNFELS	4,093,402	54,801,718
	MARBLE	0	0
	QUARTZITE	218,101	1,473,934
	RHYODACITE	1,590,240	30,905,508
	SCHIST	281,444	4,866,585
	SEDIMENTARY	6,599,896	41,419,388
	SLATE	56,165	808,112
	TRACHYTE	0	0
Hard Rock Total		**38,047,128**	**573,751,511**
Soft Rock	CLAY & CLAY SHALE	1,801,548	4,714,138
	LIMESTONE	2,875,397	54,986,175
	SAND & GRAVEL	14,115,869	191,371,501
	SCORIA	649,423	10,234,683
	SOIL	35,385	369,624
	TUFF	636,394	4,469,632
Soft Rock Total		**20,114,015**	**266,145,754**
GRAND TOTAL		**58,161,143**	**839,897,266**

Source: DSDBI - statutory returns under the *MRSDA*.

Table 4.2B: Victorian Extractive Industries Production and Sales by Products 2011/12

Product Group	Product Type	Sales - volume (tonnes)	Sales - value ($A)
Single size products	Aggregate	15,669,477	309,497,167
	Armour	239,714	3,525,483
	Single size products total	**15,909,191**	**313,022,650**
Multi size products	Road base	8,737,186	136,370,669
	Road sub-base	11,874,183	145,951,748
	Fill	6,801,042	34,667,658
	Multi size products total	**27,412,411**	**316,990,075**
Sand products	Concrete sand	5,880,848	106,229,774
	Fine sand	2,037,153	18,208,917
	Industrial	1,598	12,954
	Foundry	0	0
	Glass sand	604,474	13,750,000
	Unspecified	1,676,479	18,092,866
	Sand products total	**10,200,552**	**156,294,511**
Limestone Products	Cement	901,180	15,619,869
	Agriculture	481,811	9,863,345
	Lime	93,510	10,140,081
	Unspecified	255,246	2,561,986
	Limestone products total	**1,731,747**	**38,185,282**
Clay products	Brick	1,726,503	4,446,877
	Stoneware	1,398	13,980
	Tile/pipe	33,080	120,000
	Clay products total	**1,760,981**	**4,580,857**
Miscellaneous	Dimension stone	32,361	907,778
	Unspecified	1,113,899	9,916,114
	Miscellaneous total	**1,146,260**	**10,823,892**
	Grand Total	**58,161,142**	**839,897,266**

Source: DSDBI - Statutory returns under the *MRSDA*.
Note: Only operations reporting under the *MRSDA* are included in tables 4.2.1 and 4.2.2

Table 4.2C: Victorian Dimension Stone Production 2002/03 – 2011/12

	2002/03 (tonnes)	2003/04 (tonnes)	2004/05 (tonnes)	2005/06 (tonnes)	2006/07 (tonnes)	2007/08 (tonnes)	2008/09 (tonnes)	2009/10 (tonnes)	2010/11 (tonnes)	2011/12 (tonnes)
Basalt	12,200	13,864	13,875	21,552	27,280	27,559	3,735	3,733	2,942	18,518
Granite	2,212	1,600	879	636	797	448	867	680	400	6,374
Sandstone*	185	258	1090	5,059	4,214	3,437	2,873	1,402	0	0
Quartzite	0	0	0	0	0	0	0	0	860	218
Sedimentary	0	0	0	0	0	0	0	0	1,880	6,559
Slate	617	548	2,382	334	879	1,710	1,000	255	1,621	56
Tuff	0	0	0	0	0	0	0	0	60	636
TOTAL	**15,214**	**16,270**	**18,226**	**27,581**	**33,170**	**33,154**	**8,475**	**6,070**	**7,763**	**32,361**

Sources: Operators, DSDBI records and statutory returns under the *MRSDA*.
*Include some sedimentary and limestone production.

Dimension stone production showed a significant decrease in 2008/09 to 8,475 tonnes from 33,154 tonnes in 2007/08, and then a further decrease in 2009/10 to 6,070 tonnes. However, there was an increase in 2010/11 to 7,763 tonnes. These figures are taken from operator's statutory returns on production at the end of each financial year. The figures for the three low years reflect a reduction in demand attributed to the global financial crisis (GFC). In 2011/12 this trend reversed with the production showing a sharp return near to pre GFC production figures.

5. Regulation

DSDBI collected a total of **$64.2m** in royalties, rentals and administration fees in 2011/12 under the MRSDA, the *Offshore Petroleum and Greenhouse Gas Storage Act 2006*, the *Petroleum (Submerged Lands) Act 1982,* the *Offshore Petroleum and Greenhouse Gas Storage Act 2010* and the *Petroleum Act 1998.*

Note: The *Offshore Petroleum and Greenhouse Gas Storage Act 2010* came into effect on 1 January 2012 and as a result the *Petroleum (Submerged Lands) Act 1982* was repealed on 1 January 2012.

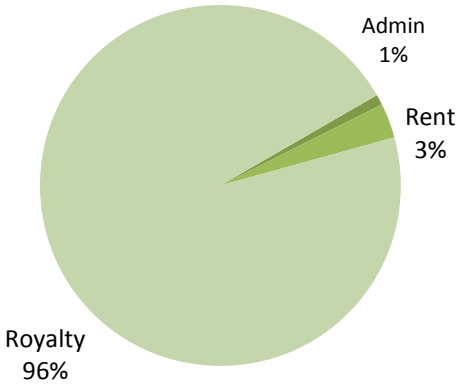
Rehabilitation bonds held by DSDBI for minerals and extractive sites increased from $189m in 2010/11 to $240.3m in 2011/12, as a result of bond reviews and the issuing of new licences (see Table 5.1C and Figure 5.1C).

5.1 Regulation, Revenue and Enforcement

Table 5.1A: Minerals, Extractive and Petroleum Revenue 2011/12

Revenue Stream	Revenue ($Am)
Administration	0.6
Rent	2.0
Royalty	61.6
Total	**64.2**

Figure 5.1A: Minerals, Extractive and Petroleum Revenue 2011/12

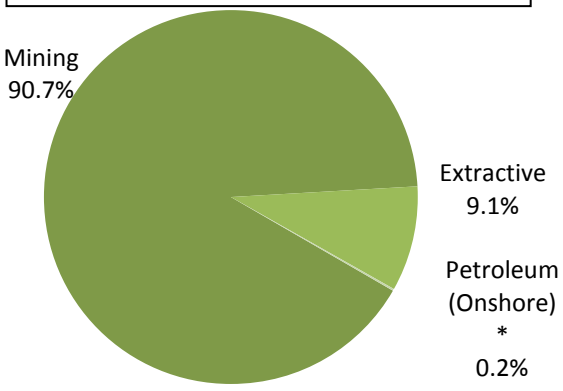


Source: DSDBI
Note: Royalty collected for the production/sales reported in the year ending 30/6/12.

Table 5.1B: Minerals, Extractive and Petroleum Royalty - by Sector: 2011/12

Sector	Revenue ($Am)
Mining	55.9
Extractive	5.6
Petroleum (Onshore)*	0.1
Total	**61.6**

Figure 5.1B: Minerals, Extractive and Petroleum Royalty - by Sector: 2011/12



Source: DSDBI *Includes some calendar year payments.

Table 5.1C: Rehabilitation Bonds by Sector - Value ($A million) June 2000 - June 2012

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**
Jun-10	2.3	103.7	72.3	**178.3**
Jun-11	1.9	122.1	65	**189.0**
Jun-12	2.5	156.9	80.9	**240.3**

Source: DSDBI

Figure 5.1C: Rehabilitation Bond by Sector: June 2000 – June 2012

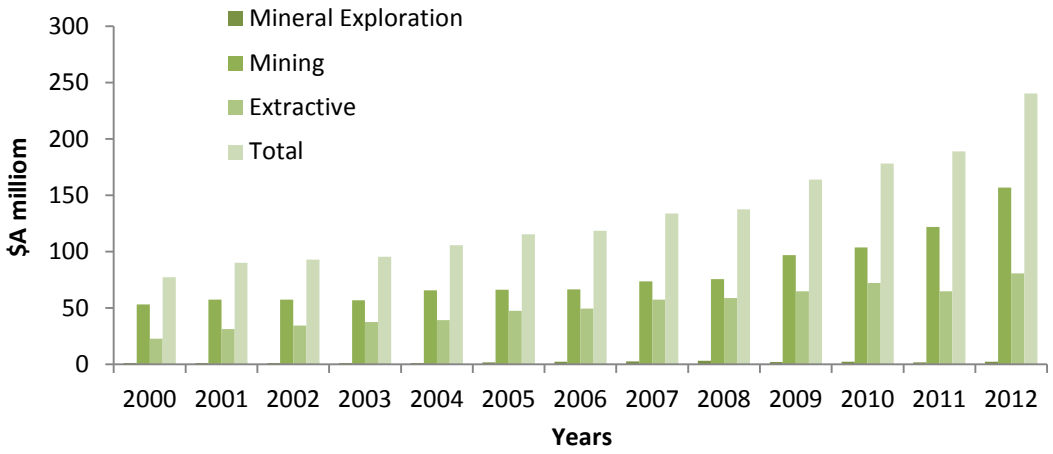


Table 5.1D: Rehabilitation Bond Reviews 2000/01- 2011/12

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
2009/10	413	55	344	14
2010/11	185	15	166	4
2011/12	216	19	193	4

Source: DSDBI
Note: DSDBI 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 5.1E: Enforcement and Compliance Activities 2011/12

Inspections and Site Visits	**408**
Completed Compliance Audits	**66**
High Risk Issues Audits	**108**
Complaints Received	**98**
Investigations Initiated	**1**
MRSDA Notices Issued (section 110)	**22**
Infringement Notice issued	**2**

Source: DSDBI

Appendix A: Glossary

ABS: Australian Bureau of Statistics

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

OPGGSA: *Offshore Petroleum and Greenhouse Gas Storage Act 2010*

Work Authority: A title granted under the *MRSDA*

Appendix B: Abbreviations, Symbols and Conversions

$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 *MRSDA*

Mm^3 million cubic metres

oz Troy ounce (31.1 g)