

# EARTH RESOURCES REGULATION 2012–2013 STATISTICAL REPORT

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## Executive Summary

Activity and investment in the earth resources industries were generally subdued during the 2012-13 financial year. Falls were seen in brown coal and heavy mineral sands production, extractive industries sales including a significant drop in Dimension Stone sales, while mineral exploration expenditure also fell. Limited activity in the petroleum and geothermal sector was also observed.

In the petroleum sector, production was limited to production and injection at the Iona gas storage facility and carbon dioxide production at Boggy Creek. The major activities in petroleum exploration were the drilling of two on-shore exploration wells and the completion of two seismic surveys in the on-shore Otway Basin. No hydrocarbon discoveries were reported.

Investment in geothermal energy resource exploration was low, totalling \$1.1 million, with no wells drilled. There was no geothermal energy production.

Petroleum and geothermal licensing activity was minimal, with just two onshore petroleum exploration permits granted in 2012/13.

In the minerals sector, production of brown coal in the Latrobe Valley fell to its lowest level since 1995/96. Production of heavy minerals sands, from Iluka's operations, also fell sharply, as the company's Wimmera/Mallee operations wound down. Gold production increased by 7%, on the previous year. Antimony production from Mandalay Resources' mine at Costerfield fell slightly in 2012/13. In industrial minerals, production of kaolin and fine clay rose, while feldspar production fell to its lowest level in over a decade. Gypsum production, which fluctuates in line with seasonal demand, rose strongly in 2012/13.

Minerals licensing activity in 2012/13 was subdued compared to previous years, with significant falls in applications and grants for both exploration and mining licences. In 2012/13, 12 prospecting licences were granted and the first retention licence applications received. The total number of licences current as at 30 June 2013 changed little from a year earlier.

Mineral exploration and mining expenditures both fell. The largest falls in exploration expenditure were in the gold and brown coal sectors, with increases in the base metals and antimony. Mining activity expenditure fell most sharply in heavy mineral sands, reflecting the fall in heavy mineral sands production in 2012/13.

Sales of extractive industry (quarry) products fell by 10.7 million tonnes, or 18% in 2012/13, compared with 2011/12, reflecting fluctuating domestic demand from the building and construction sector.

State revenue (rent, royalty and administrative charges) derived from the earth resources sector totalled \$55.9 million, down from \$64.2 million in 2011/12. The fall was primarily due to lower royalties resulting from lower production of heavy mineral sands and brown coal.

# 1. Introduction

The Statistical Report is a compilation of data as reported by Victoria's earth resources industry and includes information obtained by the Department of State Development, Business and Innovation (DSDBI). The report includes data on production, exploration, expenditure, licensing, revenues and regulatory actions.

Victoria's earth resource industry production includes:

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

The Earth Resources Regulation Branch (ERR) of the Department of State Development, Business and Innovation (previously Department of Primary Industries) is responsible for regulation of the minerals, extractives, petroleum, pipelines, geothermal and carbon storage industries in Victoria and offshore (Victorian) waters. The Branch provides a consistent and transparent licensing and tenement management regime, together with monitoring and enforcement that ensure these industries comply with their obligations and meet community expectations.

The responsibility for the petroleum, pipelines and carbon storage industries in offshore (Commonwealth) waters was transferred to the National Offshore Petroleum Title Administrator (NOPTA) on 1 January 2012, and these are no longer reported on in this publication. Historical information on petroleum industry activities and production in offshore (Commonwealth) waters is available in earlier editions of the Statistical Report or from the National Offshore Petroleum Titles Administrator (Tel: 08-6424 5317).

The Earth Resources Regulation Branch administers the following Acts:

- *Mineral Resources (Sustainable Development) Act 1990* (mineral exploration, mining and quarrying)
- *Offshore Petroleum and Greenhouse Gas Storage Act 2010* (petroleum exploration and development, greenhouse gas storage and pipelines in the Victorian offshore waters)
- *Petroleum Act 1998* (petroleum exploration and development onshore)
- *Pipelines Act 2005* (licensing and regulation of high pressure pipelines onshore)
- *Geothermal Energy Resources Act 2005* (geothermal energy exploration and development)
- *Greenhouse Gas Geological Sequestration Act 2008* (greenhouse gas storage onshore).

## 2. Petroleum, Geothermal and Pipelines

### 2.1. Petroleum

Victoria's petroleum exploration and production is concentrated in the Otway and Gippsland Basins, with activities undertaken both onshore and in Victorian offshore waters ("the three mile zone").

#### 2.1.1. Petroleum tenements

There was little petroleum tenement activity in 2012/13, with just two onshore petroleum exploration permits granted. There were no other onshore or offshore petroleum tenement applications or grants.

**Table 2.1A: Onshore Exploration Permits / Retention Leases Applied for / Granted from 2006/7**

	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
PEP Application Received	3	Nil	Nil	Nil	4	1	Nil
PEP Granted	2	1	Nil	Nil	1	Nil	2
	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
PRL Application Received	1	Nil	Nil	Nil	Nil	Nil	Nil
PRL Granted	2	1	Nil	Nil	Nil	Nil	Nil

#### Onshore Petroleum Production Licences

No onshore petroleum production licences applications were received or licences granted in the period 2006/07 to 2012/13.

**Table 2.1B: Offshore Petroleum Production Licences Applied for / Granted from 2006/7**

	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
VIC/P(V) Application Received	Nil	Nil	Nil	Nil	1	Nil	Nil
VIC/P(V) Granted	Nil	Nil	Nil	Nil	Nil	1	Nil
	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
VIC/RL(V) Application Received	Nil	1	Nil	Nil	Nil	Nil	Nil
VIC/RL(V) Granted	Nil	1	Nil	Nil	Nil	Nil	Nil

#### Offshore Petroleum Production Licences

No offshore petroleum production licences are current, and no applications have been received or licences granted in the period 2006/07 to 2012/13.

**Table 2.1C: Current Petroleum Tenements as at 30 June 2013**

<b>Petroleum Exploration Permits</b>	<b>Number of PEP</b>
Onshore	9
Offshore (Vic)	1
<b>Petroleum Retention Leases</b>	<b>Number of PRL</b>
Onshore	3
Offshore (Vic)	2
<b>Petroleum Production Licences</b>	<b>Number of PPL</b>
Onshore	13
Offshore (Vic)	Nil

## 2.1.2. Petroleum exploration and development

Petroleum activities through the financial year 2012/13 are summarised below.

The level of petroleum exploration activity was low. \$3.7 million in expenditure was reported on onshore petroleum exploration permits and retention licences. Most of this expenditure was on the drilling of two wells in the Gippsland Basin and two seismic surveys in the Otway Basin, The remaining expenditure was mostly on geological and geophysical studies, geophysical logging, flaring and administration.

Petroleum exploration activity in the offshore was also limited. \$5.3 million in expenditure was reported on offshore tenements, but with no wells drilled or seismic surveys undertaken. Most expenditure was on geological studies, seismic reprocessing, drilling engineering and design, reservoir engineering, planning and administration.

## 2.1.3. Drilling

One exploration and one stratigraphic well were drilled onshore during 2012/13. No wells were drilled in Victorian offshore waters.

**Table 2.1D: Summary of Wells Drilled for the Year 2012/13**

Activity	Exploration/stratigraphic wells	Development wells	Total	Comments
Drilling	2	0	2	Holdgate 1 and Yallourn Power 1 *

\* Note: These wells were for stratigraphic analysis and gas exploration, and were not subject to any moratorium on unconventional gas exploration.

**Table 2.1E: Number of Exploration Wells Drilled from 2000**

Year	Offshore (Victoria)		Onshore			Total wells
	Gippsland	Otway	Gippsland	Otway	Murray	
1999/00	0	0	3	2	0	5
2000/01	0	0	2	5	0	7
2001/02	0	0	4	7	1	12
2002/03	0	0	3	4	0	7
2003/04	0	0	1	2	0	3
2004/05	0	1	2	0	0	3
2005/06	0	0	4	4	0	8
2006/07	1	0	4	2	0	7
2007/08	0	0	0	2	0	2
2008/09	0	0	0	1	0	1
2009/10	0	0	1	0	0	1
2010/11	0	0	0	0	0	0
2011/12	0	0	1	1	0	2
2012/13	0	0	2	0	0	2
<b>Total 1984-2012</b>	<b>1</b>	<b>1</b>	<b>27</b>	<b>30</b>	<b>1</b>	<b>60</b>

## 2.1.4. Geophysical Surveys

Two 2D seismic surveys (Mactra and Ostea) were undertaken in the Otway Basin onshore.

## 2.1.5. Hydrocarbon Discoveries

There were no hydrocarbon discoveries made onshore or offshore in 2012/13.

## 2.1.6. Production

Production is currently limited to carbon dioxide production at Boggy Creek and gas injection and withdrawal at the Iona gas storage facility, both located onshore in the Otway Basin.

**Table 2.1F: Otway Onshore Production and Injection 2012/13**

Field	Condensate (bbl)	Gas Withdrawal (MMscf)	CO <sub>2</sub> Prod. (tonnes)	Gas Injection (MMscf)	Comments
Iona	506.57	4690.90		9567.08	Gas storage
Boggy Creek	Negligible		34517.8		CO <sub>2</sub> production

MMscf = million standard cubic feet  
bbl = barrels

## 2.2. Geothermal Energy

The number of current geothermal energy exploration permits (GEEPs) fell from 23 to 16 as at 30 June 2013, following the surrender of 7 GEEPs in February/March 2013. There are no geothermal energy retention leases or production licences.

### 2.2.1. Geothermal Energy tenements

No geothermal energy tenements were applied for or granted in 2012/13.

**Table 2.2A: Geothermal Energy Exploration Permits Applied for / Granted from 2006/2007**

	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
GEP Application Received	20	26	Nil	Nil	Nil	Nil	Nil
GEP Granted	12	11	Nil	Nil	Nil	Nil	Nil

**Table 2.2B: Current Geothermal Energy Exploration Permits (GEP) as at 30 June 2013**

Tenement	Number of GEP
GEP	16

### 2.2.2. Geothermal energy exploration

Exploration activities in the geothermal energy sector in 2012/13 were at a very low level, with total expenditure reported on exploration permits being \$1.1 million. There were no exploration activities in 2012/13, involving drilling or geophysical surveys. Most of the reported activities were sampling, geological and geophysical data compilation and analysis, geothermal modelling and administration.

## 2.3. Pipelines Licences

Licences are granted for the construction and operation of high pressure pipelines, primarily to convey hydrocarbons, including natural gas, crude oil and petroleum products. Pipeline Licences are granted onshore (under the *Pipelines Act 2005*) and in offshore Victorian waters (under the *Offshore Petroleum and Greenhouse Gas Storage Act 2010*). Pipeline Licences in offshore Victorian waters are used to convey hydrocarbons originating from petroleum production facilities in offshore (Commonwealth) waters.

No pipeline licences were applied for or granted in 2012/13.



**Table 2.3A: Onshore Pipeline Licence Applications Received and Granted from 2006/2007**

	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
<b>PL Application Received</b>	9	Nil	Nil	Nil	1	Nil	Nil
<b>PL Granted</b>	7	2	1	Nil	Nil	1	Nil

**Table 2.3B: Offshore (Victoria) Pipeline Licence Applications Received / Granted from 2006/2007**

	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
<b>PL Application Received</b>	Nil	Nil	1	Nil	Nil	Nil	Nil
<b>PL Granted</b>	Nil	Nil	Nil	Nil	Nil	Nil	Nil

**Table 2.3C: Current Pipeline Licences as at 30 June 2013**

Tenement	Number of PL
<b>On shore</b>	213
<b>Off Shore (Vic)</b>	13

### 3. Minerals

#### 3.1. Minerals Tenements

In 2012/13, 172 applications were received for grant or renewal of exploration, mining, prospecting and retention licences under the MRSDA. 66% of licence applications were for exploration licences, with 20% being for mining licences. Prospecting and retention licences accounted for the remaining applications. The first applications for retention licences were received in 2012/13. Across all licence types, licence applications were down by around 17% compared with 2011/12.

In 2012/13, 130 exploration, mining and prospecting licences were granted or renewed. No retention licences were granted. 72% of licence grants and renewals were exploration licences. The total number of licences granted or renewed in 2012/13 fell by 24% compared with 2011/12, with the number of exploration licence grants and renewals falling by 32% and the number of mining licence grants and renewals falling by 24%. The fall in mining licence grants and renewals was offset by the grant of 12 prospecting licences, up from one in 2011/12.

Despite the reduction in licence grants, the total number of licences current as at 30 June 2013 (536) was little changed from a year earlier, and in line with total licence numbers in recent years.

The total area of the state covered by exploration licences (current and applications) on 30 June 2013 was 77366 km<sup>2</sup> compared with 83900 km<sup>2</sup> a year earlier.

**Table 3.1A: New licence applications and licence renewal applications for 2012/13**

	Received	Granted or Renewed	Withdrawn	Refused
New Exploration Licence Applications	56	41	2	nil
Renewal Exploration Licence Applications	58	52	nil	nil
<b>Sub Total Exploration Licence Applications</b>	<b>114</b>	<b>93</b>	<b>2</b>	<b>nil</b>
New Mining Licence Applications	6	11	nil	nil
Renewal Mining Licence Applications	29	14	nil	nil
<b>Sub Total Mining Licence Applications</b>	<b>35</b>	<b>25</b>	<b>nil</b>	<b>nil</b>
New Prospecting Licence Applications	13	12	nil	nil
New Retention Licence Applications	10	nil	nil	nil
<b>Total Licences</b>	<b>172</b>	<b>130</b>	<b>2</b>	<b>nil</b>

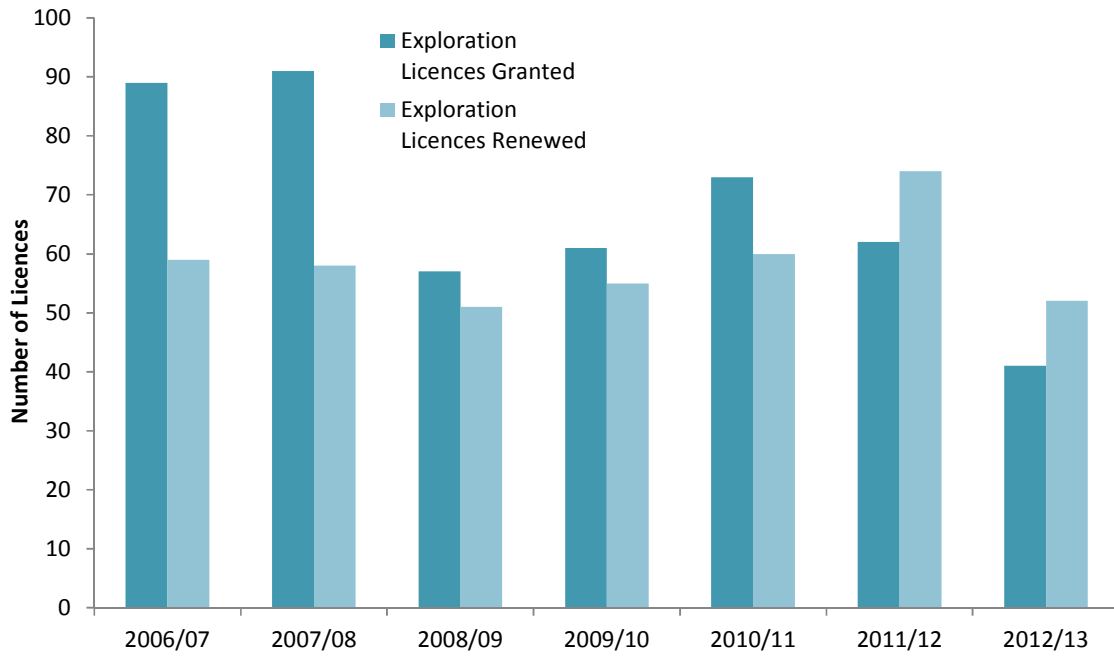
Source: DSDBI

**Table 3.1B: Licences Granted and Renewed over time from 2006/07**

	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Exploration Licences Granted	89	91	57	61	73	62	41
Exploration Licences Renewed	59	58	51	55	60	74	52
<b>Subtotal Exploration Licences Granted and Renewed</b>	<b>148</b>	<b>149</b>	<b>108</b>	<b>116</b>	<b>133</b>	<b>136</b>	<b>93</b>
Mining Licences Granted	19	11	14	15	20	12	11
Mining Licences Renewed	56	21	41	30	23	21	14
<b>Sub Total Mining Licences Granted and Renewed</b>	<b>75</b>	<b>32</b>	<b>55</b>	<b>45</b>	<b>43</b>	<b>33</b>	<b>25</b>
Prospecting Licences Granted	0	0	0	0	0	1	12
<b>Total Licences</b>	<b>223</b>	<b>181</b>	<b>163</b>	<b>161</b>	<b>176</b>	<b>170</b>	<b>130</b>

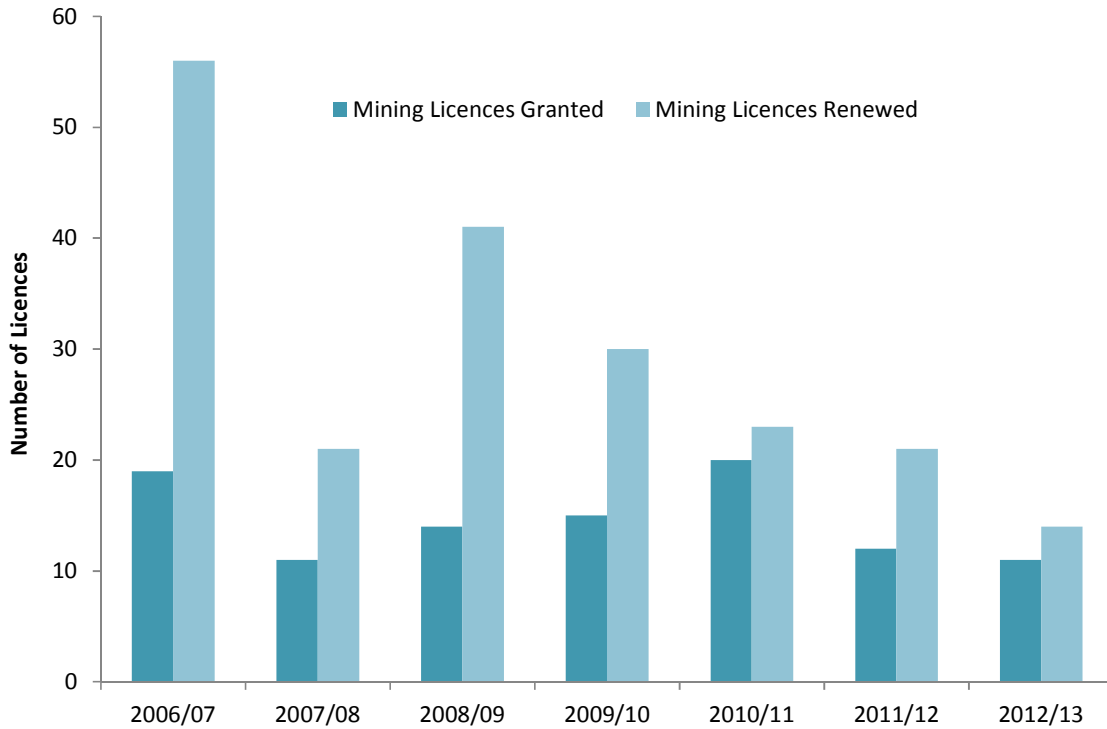
Source: DSDBI

**Figure 3.1A: Exploration Licence Grants and Renewals from 2006/07**

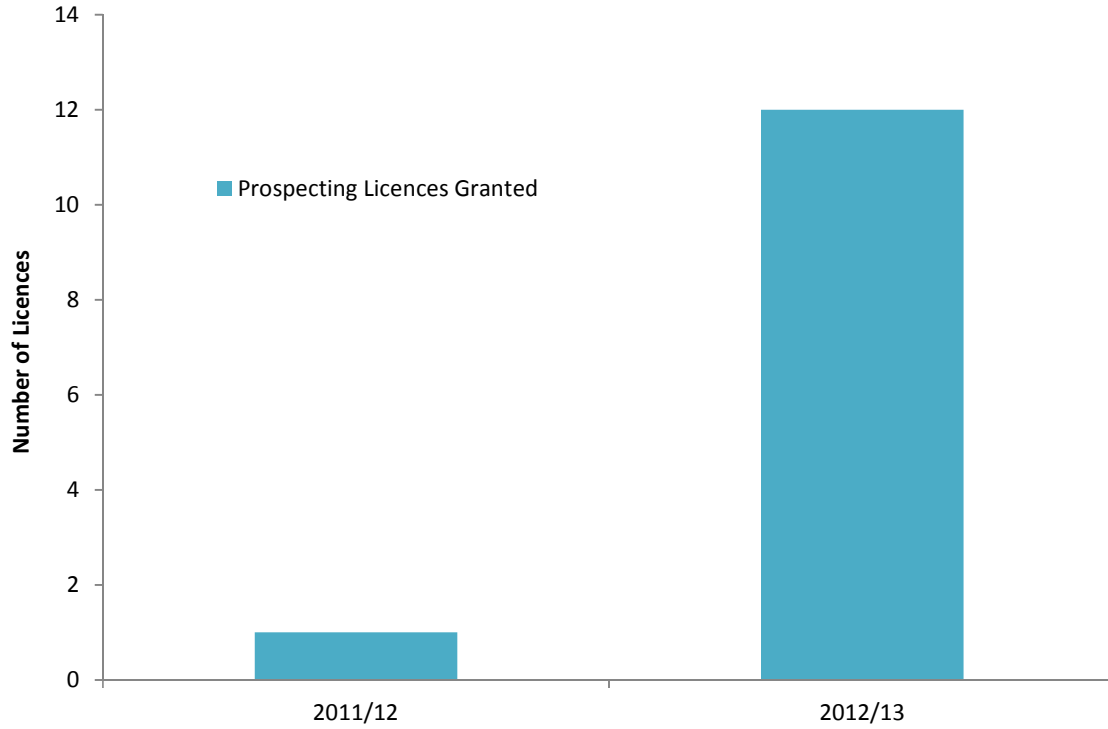


Source: DSDBI

**Figure 3.1B: Mining Licence Grants and Renewals from 2006/07**



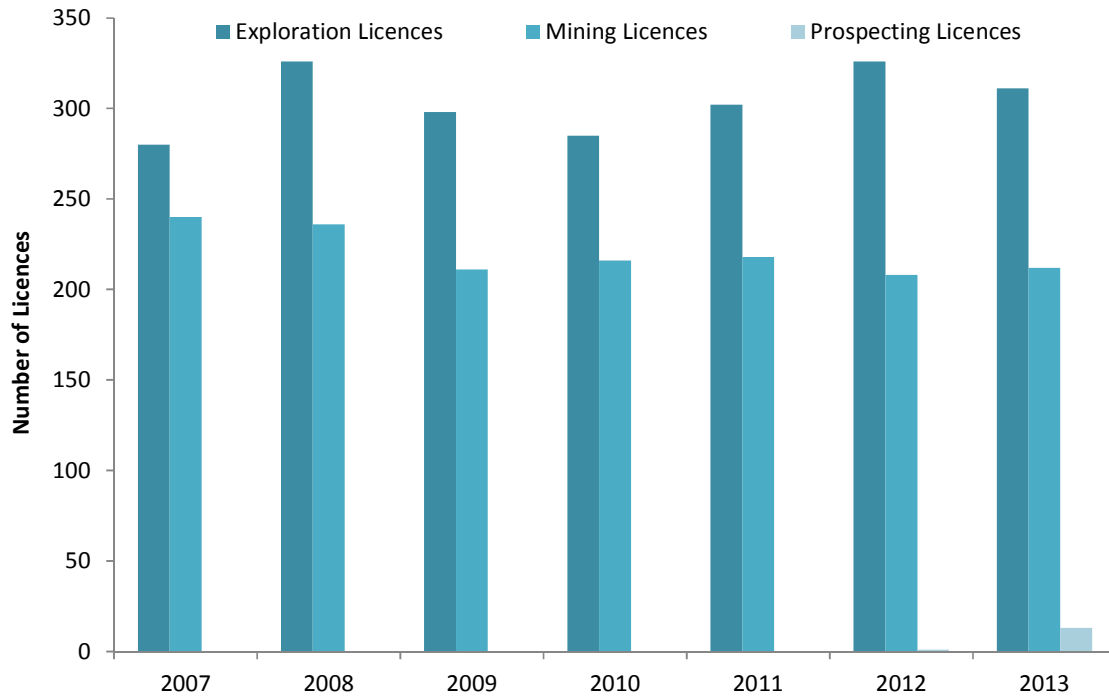
Source: DSDBI

**Figure 3.1C: Prospecting Licence Grants 2011/12 and 2012/13****Table 3.1C: Current Licences at 30 June each year from 2007**

Tenement	2007	2008	2009	2010	2011	2012	2013
Exploration Licences	280	326	298	285	302	326	311
Mining Licences	240	236	211	216	218	208	212
Prospecting Licences	na	na	na	na	na	1	13
<b>Totals</b>	<b>520</b>	<b>562</b>	<b>509</b>	<b>501</b>	<b>520</b>	<b>535</b>	<b>536</b>

Source: DSDBI

**Figure 3.1D: Current Exploration, Mining and Prospecting Licences as at 30 June each year from 2007**



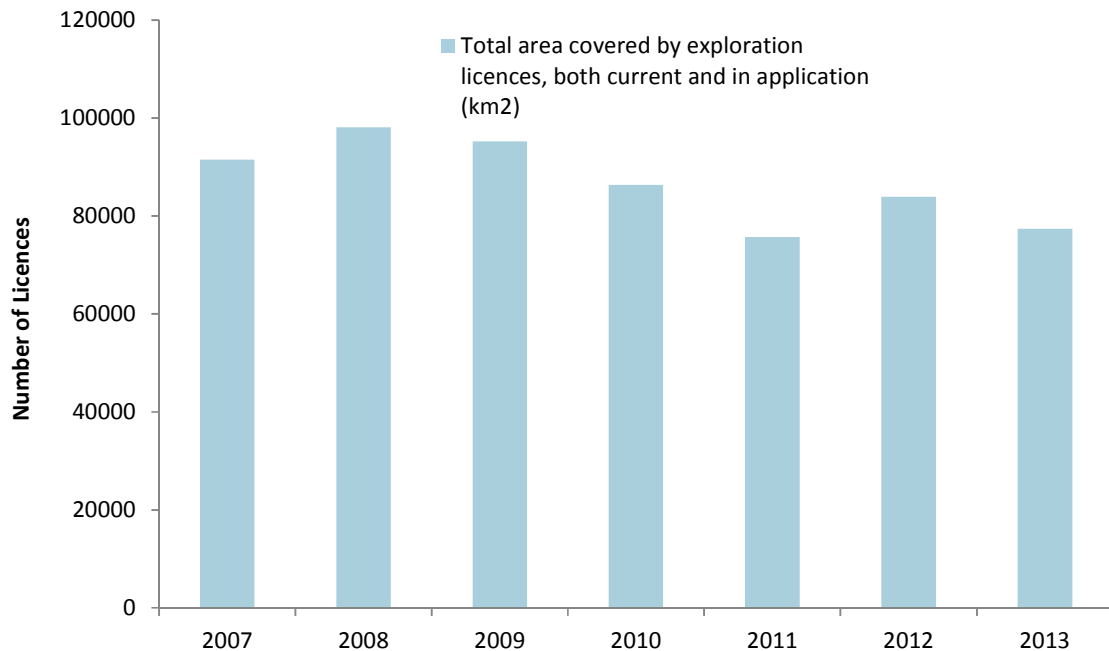
Source: DSDBI

**Table 3.1D: Area covered by exploration licences at 30 June each year from 2007**

	2007	2008	2009	2010	2011	2012	2013
Total area covered exploration licences, both current and in application (km <sup>2</sup> )	91500	98086	95240	86365	75753	83900	77366

Source: DSDBI

**Figure 3.1E: Total area covered by Exploration licences (current and in application) from 2007**



Source: DSDBI

### 3.2. Mineral Exploration and Mining Expenditure

Mineral exploration expenditure is a lead indicator of mineral industry activity. ABS data shows a sharp fall of 34% in Victorian exploration expenditure in 2012/13, compared to 2011/12. This fall is reflective of falls in exploration expenditure Australia wide in 2012/13, with national exploration expenditure falling 23% from 2011/12.

The MRSDA data also shows a smaller fall of 9% in exploration expenditure in 2012/13. By sector, there were large falls in gold (down 49%) and brown coal (down 51%), while mineral sands rose (by 9%) and all other minerals rose strongly (by 159% or \$18.3 million). Most of the increased expenditure in “other minerals” is in base metals and antimony.

Expenditure on mining activities also declined in 2012/13, by 14% (or \$112.6 million). By sector, the largest fall was in heavy mineral sands, reflecting the sharp fall in heavy mineral sands production in 2012/13. Expenditure on gold mining activities also fell significantly.

**Table 3.2A: Expenditure on Mineral Exploration and Mining Development (\$A million) from 2006/07**

	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Mineral Exploration (ABS) <sup>1</sup>	82.5	93.7	62.2	84.8	57.4	58.5	38.6
MRSDA Exploration <sup>2</sup>	105.4	107.8	103.3	94.3	64.6	65.1	59.7
MRSDA Mining <sup>3</sup>	527.8	576.6	923.3	742.0	719.2	813.8	701.2

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

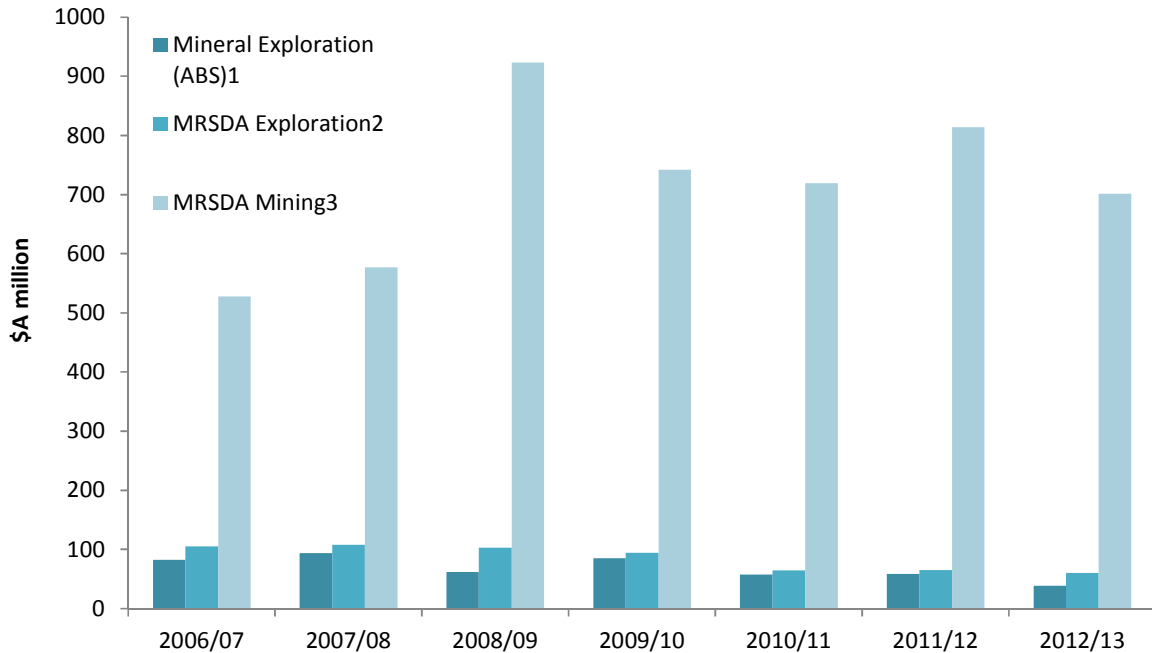
Notes:

1,2. 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 reported in accordance with the requirement of the *Mineral Resources (Sustainable Development) Act 1990* (MRSDA). The ABS exploration expenditure statistics can vary significantly from expenditure reported under the MRSDA. The difference between these two exploration expenditure data sets is mainly due to the difference in methodologies for data collection, and the inclusion of the exploration expenditure on mining licences in the MRSDA figure.

The ABS statistics are a valid basis for comparison of Victorian expenditure with that of other States/NT. However, the MRSDA figures provide greater detail.

2. The MRSDA exploration expenditure figure is derived from the activity reports required for the period 1 July 2012-30 June 2013. In some cases the reports will cover activities conducted outside the 2012/13 year. The MRSDA figure covers exploration carried out on exploration, mining and prospecting licences, and includes all expenditure on exploration licences (including overheads, wages/salaries, land access and rehabilitation expenses) and specified exploration expenditure on mining and prospecting licences.

3. The MRSDA mining expenditure figure is all expenditure on mining and prospecting licences (including capital and operating expenses), less any specified exploration expenditure on mining and prospecting licences.

**Figure 3.2A: Expenditure on Mineral Exploration and Mining Development from 2006/07**

Source: DSDBI

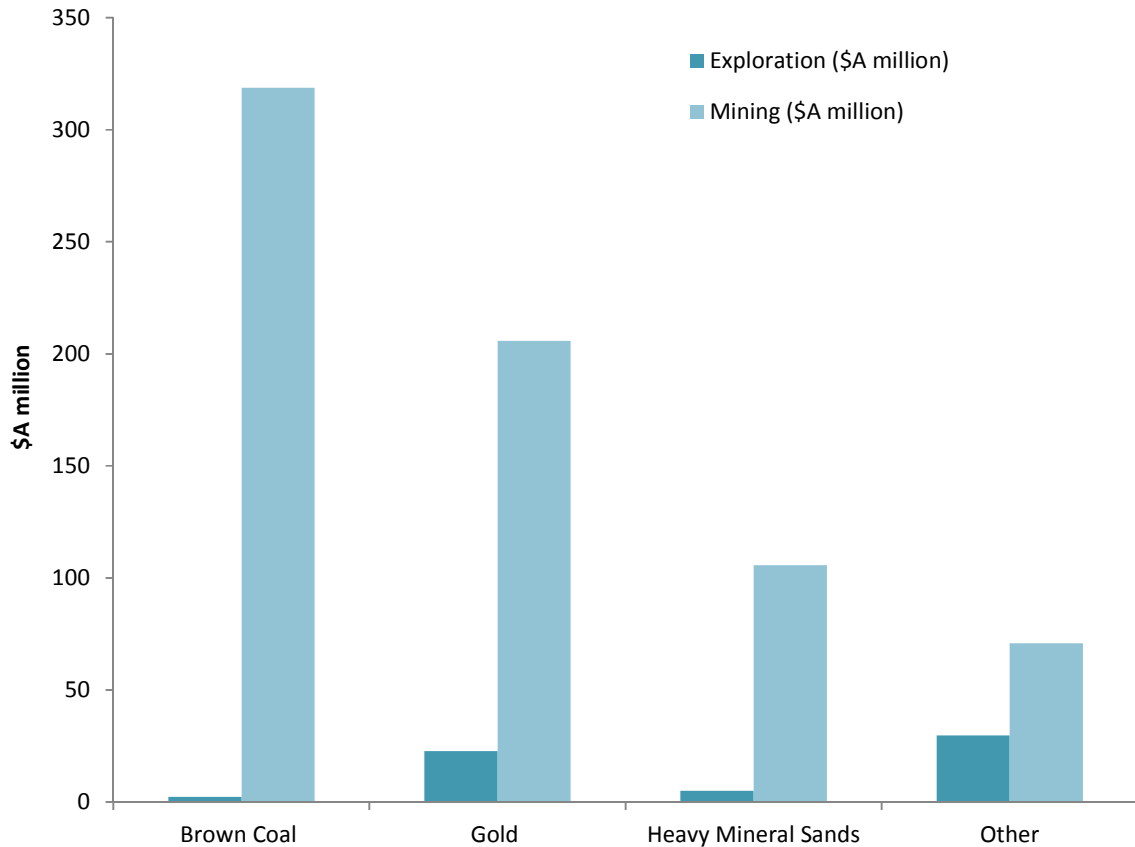
**Table 3.2B: Mineral Exploration and Mining Development Expenditure by Sector (MRSDA) 2012/13**

Sector	Exploration (\$A million)	Mining (\$A million)
Brown Coal	2.3	318.8
Gold	22.6	205.7
Heavy Mineral Sands	5.1	105.8
Other	29.8	70.9
<b>Total</b>	<b>59.7</b>	<b>701.2</b>

Source: DSDBI

Notes:

Expenditures are allocated to commodity according to the primary nominated mineral commodity on the licence.  
Brown coal includes all coal types and coal seam gas.

**Figure 3.2B: Mineral Exploration and Mining Development Expenditure by Sector (MRSDA) 2012/13**

Source: DSDBI

### 3.3. Production

Victorian mineral production is mostly derived from brown coal, mineral sands, gold and, to a lesser degree, antimony.

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 produced 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.

Brown coal production in the Latrobe Valley fell by nearly 9 million tonnes in 2012/13 to its lowest level since 1995/96. The largest fall was at the Yallourn mine, where production was affected by the collapse of the Morwell River Diversion in June 2012, which resulted in flooding of part of the mine.

Production of heavy mineral sands, from Iluka's operations, also fell sharply, with zircon and rutile falling by around half and ilmenite production increasing by over 50%. 2012/13 production was entirely from Iluka's KWR mining operation, with its Douglas/Echo and Kulwin operations having ceased production in 2011/12.

Gold production in 2012/13 was 225,776 ounces, a rise of some 14,500 ounces, or 7%, on the previous year. This is the highest production level since 2009/10 and the third highest recorded since early last century. As in previous years, the major producers were the Stawell and Fosterfield mines, with significant production also from Ballarat, Costerfield and Bendigo mines. These five mines accounted for the vast majority of gold production, with 30 smaller producers contributing a total of 1,506 ounces.

Antimony production from Mandalay Resources mine at Costerfield fell slightly in 2012/13.



In industrial minerals, production of kaolin and fine clay mainly from Axedale and Pittong rose strongly, while feldspar production from Sibelco's Beechworth mine fell to its lowest level in over a decade. Gypsum production comes from a large number of operations throughout the Mallee and Wimmera. Aggregate gypsum production fluctuates in line with seasonal demand. In 2012/13, gypsum production fell from the record level of 2011/12, but at 500,000 cubic metres was still high by historical standards.

The value of mineral production (excluding brown coal) fell significantly from \$1,007 million in 2011/12 to \$660 million in 2012/13. The fall was attributed mainly to reduced production of heavy mineral sands

**Table 3.3A: Mineral Production from 1993/94**

Year	Fuel Minerals	Metallic Minerals					Heavy Mineral Sands			Industrial Minerals		
	Brown Coal ('000 tonnes)	Gold (kg)	Gold (oz)	Anti-mony (tonnes)	Copper Concentrate (tonnes)	Zinc Concentrate (tonnes)	Zircon (tonnes)	Rutile (tonnes)	Ilmenite (tonnes)	Feldspar (tonnes)	Gypsum (cubic metres)	Kaolin and fine clay (tonnes)
1993/94	49,683	3,917	125,960	nil	16,287	1,012	-	-	-	-	176,800	105,400
1994/95	49,922	4,319	138,876	nil	13,163	5,947	-	-	-	-	193,100	79,500
1995/96	54,281	4,838	155,550	nil	1,338	6,384	-	-	-	-	198,667	55,065
1996/97	60,795	4,710	151,229	nil	nil	nil	-	-	-	-	501,495	114,778
1997/98	65,274	4,979	160,122	nil	nil	nil	-	-	-	25,703	479,820	166,100
1998/99	66,648	4,947	159,088	nil	nil	nil	-	-	-	45,293	404,917	180,634
1999/00	67,363	4,790	154,043	nil	nil	nil	-	-	-	46,162	462,806	201,436
2000/01	64,958	3,814	122,632	nil	nil	nil	1,307	5,921	-	53,148	437,694	203,753
2001/02	66,661	3,492	112,283	nil	nil	nil	3,702	16,805	28,123	56,757	600,931	202,370
2002/03	66,809	3,345	107,544	nil	nil	nil	10,841	28,329	50,984	68,198	420,293	248,692
2003/04	66,343	3,240	104,188	nil	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	nil	75,683	346,522	189,237
2005/06	67,737	6,324	203,352	nil	nil	nil	Nil	nil	nil	69,876	416,294	149,218
2006/07	65,613	6,995	224,927	1033	nil	nil	48,636	22,263	nil	76,187	235,266	170,727
2007/08	66,033	5,632	181,100	1468	nil	nil	140,853	72,166	13,503	75,384	395,717	151,669
2008/09	68,252	7,741	248,918	2133	nil	nil	102,123	80,317	nil	73,893	313,145	90,553
2009/10	68,750	7,526	241,965	2357	nil	nil	90,671	117,314	27,904	66,507	315,509	92,862
2010/11	66,733	5,789	186,146	4859	nil	nil	188,663	209,919	82,075	74,806	289,528	31,683
2011/12	69,124	6,569	211,201	5007	nil	nil	187,538	261,744	42,814	95,310	630,258	80,202
2012/13	59,854	7022	225,776	4558	nil	nil	86,243	140,842	67,067	61,578	499,681	204,164

Source: DSDBI – statutory returns under the MRSDA.

**Table 3.3B: Mineral Production (Sales) Values 2012/13**

Mineral	Value (\$A million)
Brown Coal	na*
Gold	333.1
Antimony	30.8
Heavy Mineral Sands	282.7
Feldspar	2.8
Gypsum	8.3
Kaolin and fine clay	1.7
Silver**	0.2
Peat***	0.1
<b>Total (excluding brown coal)</b>	<b>659.7</b>

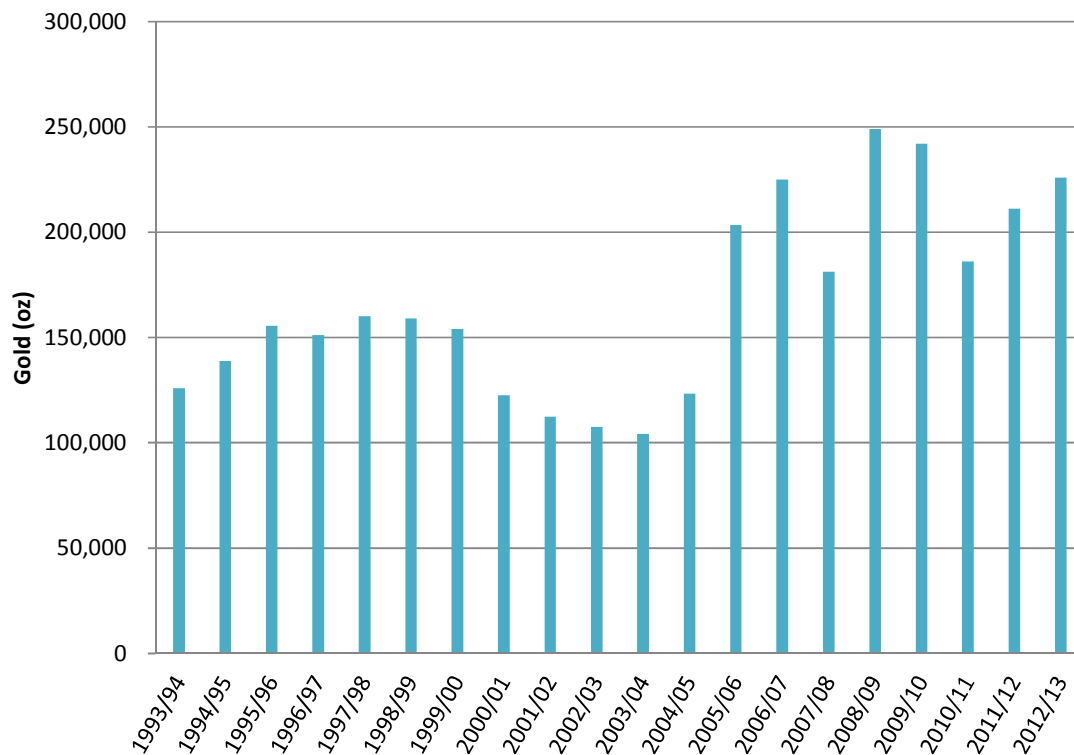
Source: DSDBI- statutory returns under the MRSDA.

Notes:

\*No unit value is assigned to brown coal for the purposes of determining its production value. Brown coal is almost entirely used for electricity production and is largely an internal transfer within mining/generation entities. As such, there is no available market price for brown coal.

\*\*8,083 ounces of silver produced by Stawell Gold Mines Pty Ltd

\*\*\* 3,200 M<sup>3</sup> of peat produced under mining licence. This is a legacy arrangement, as peat is no longer a mineral, as defined in the MRSDA

**Figure 3.3A: Gold Production (ounces) from 1993/94**

Source: DSDBI

**Table 3.3C: Gold Producers (production more than 500 ounces) 2012/2013**

Producer	Location	Licence	Production (kg)	Production (oz)	Estimated Value (\$Am)
Fosterville Gold Mine Pty Ltd	Fosterville	MIN 5404	3002.5	96 534	150.6
Stawell Gold Mines Pty Ltd	Stawell	MIN 5260	2104.1	67 649	92.1
Balmaine Gold Pty Ltd	Ballarat	MIN 5396	1004.3	32 289	46.8
Mandalay Resources Costerfield Operations Pty Ltd	Costerfield South	MIN 4644	708.2	22 769	34.3
Unity Mining Ltd	Bendigo	MIN5344	156.4	5 029	7.2
Other (in total)*			46.7	1 506	2.2**
<b>Total Production</b>			<b>7022.4</b>	<b>225 776</b>	<b>333.1</b>

Source: DSDBI - statutory returns under the MRSDA.

Note:

\* Production of under 500 ounces was reported from 30 producers

\*\*based on the reported average gold price of major producers

**Table 3.3D: Brown Coal Production (thousand tonnes) from 1993/94**

Year	Maddingley Brown Coal Co. Bacchus Marsh	Alcoa Anglesea	SECV	Loy Yang	Yallourn	Hazelwood	Annual Total
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
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
2012/13	18	913		28,921	12,885	17,118	59,854

Source: DSDBI

## 4. Extractive Industry

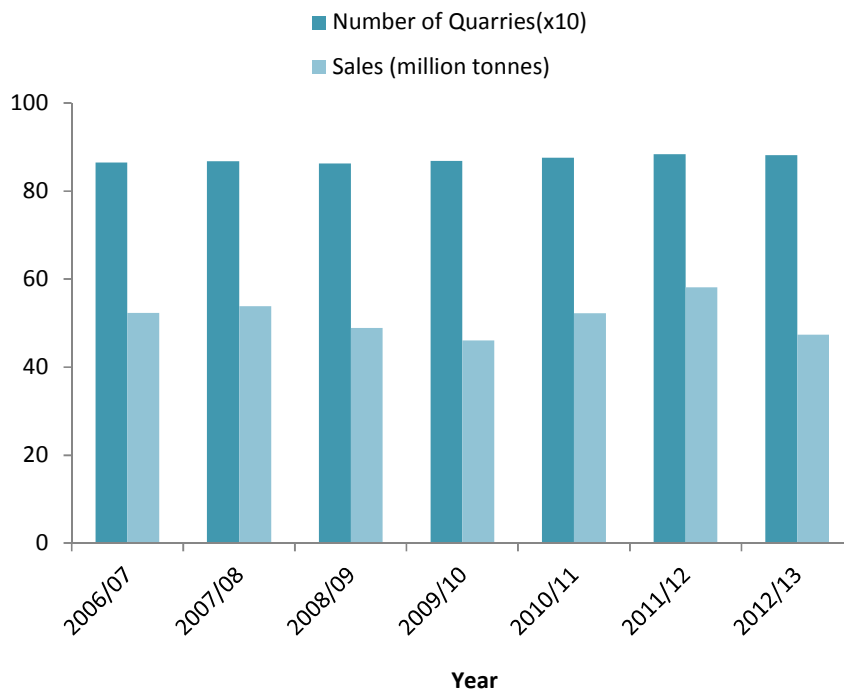
Extractive industries provide the raw materials for building and construction, which are vital to the State's development. The industry operates quarries that produce a range of "stone" products, predominantly being hard rock, clay, sand and gravel.

As of 30 June 2013, there were 882 quarries operating under the *Mineral Resources (Sustainable Development) Act 1990* (MRSDA) in Victoria. The total number of quarries has been relatively stable over the last decade, and fell by just two over the 2012/13 year.

535 quarries reported production in 2012/13, with total sales volume being 47.4 **million tonnes**. This represents a fall of 10.7 million tonnes, or 18%, compared with 2011/12. This is the lowest sales volume recorded since 2009/10. Sales of quarry products fluctuate from year to year, reflecting domestic demand from the building and construction sector. The fall in demand in 2012/13 is likely due to a slowing of activity related to major infrastructure projects.

Dimension stone production represents a very small part of quarry production, but has a relatively high unit value. Dimension stone sales decreased significantly in 2012/13, to 7,850 tonnes from 32,361 tonnes in 2007/08. However, such large fluctuations are not unusual and the 2012/13 sales volume is in line with sales in most recent years.

**Figure 4A: Extractive Industry Quarries and Sales from 2006/07**



### 4.1. Work Authorities

**Table 4.1A: Status of Extractive Industry Work Authorities at 30 June 2013**

Tenement	Proposal*	Application**	Current
<b>Work Authority</b>	152	16	882

Source: DSDBI

Notes:

\* A Work Authority is granted under the *Mineral Resources (Sustainable Development) Act 1990*.

\*\* Work Authority is in proposal stage when an initial site meeting takes place attended by the Inspector and other relevant parties.

\*\*\* Application stage is when a Work Authority application is lodged with all requirements to obtain an approved Work Plan.

## 4.2. Sales

Table 4.2A: Victorian Extractive Industries Sales by Rock Type 2012/2013

Product Group	Product Type	Sales - volume (m tonnes)	Sales - value (\$Am)
Hard Rock	BASALT	16.36	268.4
	DOLERITE	0.34	6.6
	GNEISS	0.15	3.1
	GRANITE	3.92	64.0
	HORNFELS	2.50	52.9
	MARBLE	0	0
	QUARTZITE	0.05	0.4
	RHYODACITE	1.42	30.6
	SCHIST	0.05	0.6
	SEDIMENTARY	3.20	27.6
	SLATE	0.03	0.9
	TRACHYTE	0	0
<b>Hard Rock Total</b>		<b>28.02</b>	<b>455.1</b>
Soft Rock	CLAY & CLAY SHALE	1.55	4.1
	LIMESTONE	2.70	52.4
	SAND & GRAVEL	14.05	216.5
	SCORIA	0.68	7.1
	SOIL	0.21	0.8
	TUFF	0.23	1.4
<b>Soft Rock Total</b>		<b>19.42</b>	<b>282.3</b>
<b>GRAND TOTAL</b>		<b>47.44</b>	<b>737.4</b>

Source: DSDBI - statutory returns under the *Mineral Resources (Sustainable Development) Act 1990*.

**Table 4.2B: Victorian Extractive Industries Sales by Products 2012/13**

Product Group	Product Type	Sales - volume (m tonnes)	Sales - value (\$Am)
Single size products	Aggregate	14.47	292.0
	Armour	0.22	3.7
<b>Single size products total</b>		<b>14.69</b>	<b>295.7</b>
Multi size products	Road base	5.71	94.8
	Road sub-base	9.15	124.0
	Fill	4.60	32.0
<b>Multi size products total</b>		<b>19.46</b>	<b>250.7</b>
Sand products	Concrete sand	4.23	77.9
	Fine sand	1.50	14.0
	Industrial	0.10	0.5
	Foundry	0.73	8.4
	Glass sand	0.56	13.4
<b>Sand products total</b>		<b>7.12</b>	<b>114.2</b>
Limestone Products	Cement	0.92	13.6
	Agriculture	0.55	14.1
	Lime	0.06	9.7
<b>Limestone products total</b>		<b>1.53</b>	<b>37.4</b>
Clay products	Brick	1.10	3.0
	Stoneware	0.001	0.004
	Tile/pipe	0.03	0.1
<b>Clay products total</b>		<b>1.13</b>	<b>3.1</b>
Miscellaneous	Dimension stone	0.008	1.4
	Unspecified	3.50	34.9
<b>Miscellaneous total</b>		<b>3.51</b>	<b>36.3</b>
<b>GRAND Total</b>		<b>47.44</b>	<b>737.4</b>

Source: DSDBI - Statutory returns under the *Mineral Resources (Sustainable Development) Act 1990*.

Note: Only operations reporting under the *Mineral Resources (Sustainable Development Act) 1990* are included in tables 4.2A and 4.2B

**Table 4.2C: Victorian Dimension Stone Sales from 2006/07**

	2006/07 (tonnes)	2007/08 (tonnes)	2008/09 (tonnes)	2009/10 (tonnes)	2010/11 (tonnes)	2011/12 (tonnes)	2012/13 (tonnes)
Basalt	27,280	27,559	3,735	3,733	2,942	18,518	4152
Granite	797	448	867	680	400	6,374	301
Sandstone*	4,214	3,437	2,873	1,402	0	0	0
Quartzite	0	0	0	0	860	218	0
Sedimentary	0	0	0	0	1,880	6,559	1825
Slate	879	1,710	1,000	255	1,621	56	1572
Tuff	0	0	0	0	60	636	0
<b>TOTAL</b>	<b>33,170</b>	<b>33,154</b>	<b>8,475</b>	<b>6,070</b>	<b>7,763</b>	<b>32,361</b>	<b>7850</b>

Source: Statutory returns under the *Mineral Resources (Sustainable Development) Act 1990*.

## 5. Revenue and Bonds

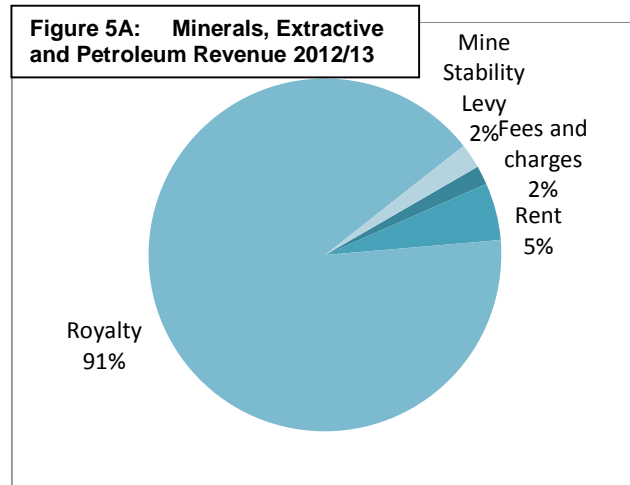
DSDBI collected a total of **\$57.2 million** in royalties, rentals and levies, fees and charges in 2012/13 under the *Mineral Resources (Sustainable Development) Act 1990 (MRSDA)*, *Petroleum Act 1998*, *Offshore Petroleum and Greenhouse Gas Storage Act 2010*, *Geothermal Energy Resources Act 2005* and *Pipelines Act 2005*

Royalties fell by \$9.7 million or 16% in the 2012/13 compared with 2011/12. This was due to reduced mineral royalties, resulting from lower production of heavy mineral sands and brown coal. Extractive industries royalties rose by \$2.7 million.

**Table 5A: Minerals, Extractive and Petroleum Revenue 2012/13**

Revenue Stream	Revenue (\$A million)
Fees and charges	1.0
Rent	3.0
Royalty	51.9
Mine Stability Levy	1.3
<b>Total</b>	<b>57.2</b>

Source: DSDBI

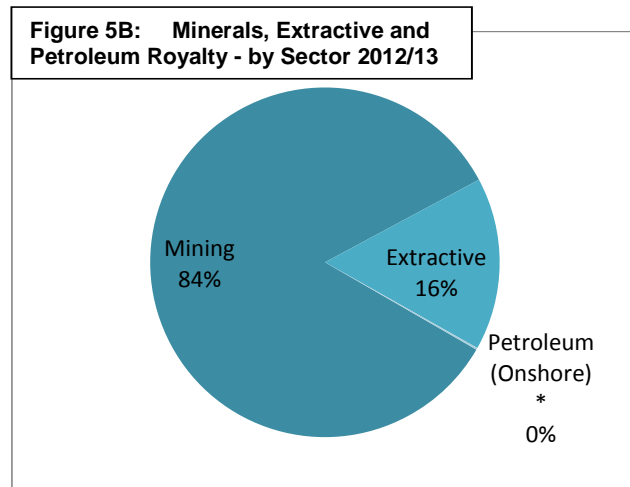


**Table 5B: Minerals, Extractive and Petroleum Royalty - by Sector 2012/13**

Sector	Revenue (\$A million)
Mining	43.5
Extractive	8.3
Petroleum (Onshore)*	0.1
<b>Total</b>	<b>51.9</b>

Source: DSDBI

\*Includes some calendar year payments.

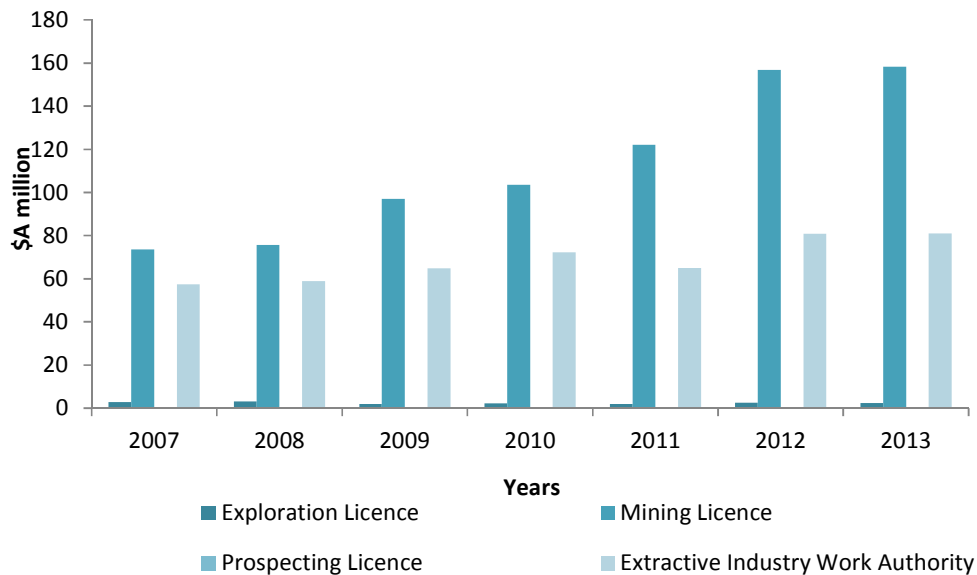


The sum of rehabilitation bonds held by DSDBI for minerals and extractive operations remained relatively steady, increasing only slightly from \$240.3 million as at 30 June 2012 to \$241.7million as at 30 June 2013.

**Table 5C: Value of Rehabilitation Bonds by Authority Type (\$A million) 30 June 2007 – 30 June 2013**

Date	Exploration Licence	Mining Licence	Prospecting Licence	Extractive Industry Work Authority	Total
Jun-07	2.8	73.7	na	57.5	<b>134.0</b>
Jun-08	3.1	75.6	na	58.8	<b>137.5</b>
Jun-09	2.0	97.1	na	64.9	<b>164.0</b>
Jun-10	2.3	103.7	na	72.3	<b>178.3</b>
Jun-11	1.9	122.1	na	65	<b>189.0</b>
Jun-12	2.5	156.9	0	80.9	<b>240.3</b>
Jun-13	2.4	158.3	0.025	81.0	<b>241.7</b>

Source: DSDBI

**Figure 5C: Value of Rehabilitation Bonds by Authority Type 30 June 2007 – 30 June 2013****Table 5D: Rehabilitation Bond Reviews from 2006/07**

Year	Number of Bonds Reviewed	Result of Bond Review		
		Bond Increase	No Change	Bond Decrease
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
2012/13	258	37	220	1

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.



## 6. Monitoring, Compliance and Enforcement

The Earth Resources Regulation Branch of DSDBI is responsible for the regulation of the earth resources industries. The Branch undertakes a monitoring and compliance program to ensure that authority holders comply with their obligations and meet community expectations. DSDBI monitoring, compliance and enforcement activities under the MRSDA are summarized in Table 6A.

**Table 6A: Monitoring, Compliance and Enforcement Activities 2012/13**

Inspections and Site Visits	443
Completed Compliance Audits	62
High Risk Issues Audits	105
Complaints Received	75
Investigations Initiated	2
MRSDA Notices Issued (section 110)	23
Infringement Notice issued	3

Source: DSDBI