

**MINERAL AND PETROLEUM  
EXPLORATION**

AUSTRALIA

EMBARGO: 11.30AM (CANBERRA TIME) WED 9 DEC 2009

**C O N T E N T S**

	<i>page</i>
Notes .....	2
Summary of findings .....	3

**TABLE**

<b>1</b> Private exploration, actual and expected expenditure .....	7
<b>2</b> Mineral exploration, (other than for petroleum), expenditure and metres drilled .....	7
<b>3</b> Mineral exploration, (other than for petroleum), expenditure by state and type of deposit .....	8
<b>4</b> Mineral exploration, (other than for petroleum), expenditure by state and territory .....	9
<b>5</b> Mineral exploration, (other than for petroleum), expenditure by state and mineral sought .....	10
<b>6</b> Petroleum exploration, expenditure by onshore and offshore .....	13
<b>7</b> Petroleum exploration, expenditure by state and territory .....	13

**ADDITIONAL INFORMATION**

Explanatory Notes .....	14
Glossary .....	17

**I N Q U I R I E S**

For further information about these and related statistics, contact the National Information and Referral Service on 1300 135 070 or Mark Busby on Sydney (02) 9268 4533.

# NOTES

## FORTHCOMING ISSUES

<i>ISSUE (Quarter)</i>	<i>RELEASE DATE</i>
December 2009	10 March 2010
March 2010	9 June 2010
June 2010	8 September 2010
September 2010	8 December 2010



## CHANGES TO THIS ISSUE

There are no changes in this issue.



## ABBREVIATIONS

ABS	Australian Bureau of Statistics
GST	goods and services tax
JPDA	Joint Petroleum Development Area
UNTAET	United Nations Transitional Administration in East Timor
WST	wholesale sales tax
ZOC	Zone of Cooperation

Brian Pink  
Australian Statistician

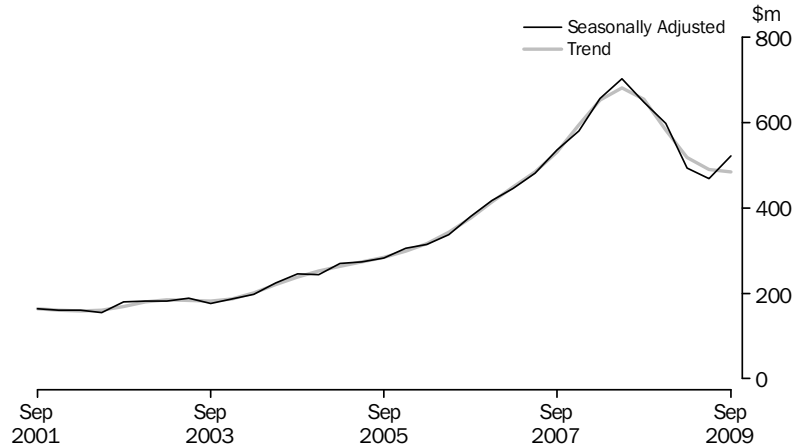
## SUMMARY OF FINDINGS

### MINERAL EXPLORATION (OTHER THAN FOR PETROLEUM)

#### TREND ESTIMATES

The trend estimate for total mineral exploration expenditure fell \$5.4m (1.1%) to \$485.0m in the September quarter 2009. The current estimate is 26.0% lower than the September quarter 2008 estimate.

#### MINERAL EXPLORATION, Seasonally adjusted and trend series



The largest contribution to the fall this quarter was in Western Australia (down \$10.9m or 4.0%). The largest rise was in Queensland (up \$4.9m or 5.9%).

The trend estimate for metres drilled rose 1.0% this quarter. The current estimate is 28.9% lower than the September quarter estimate for last year.

## SUMMARY OF FINDINGS *continued*

### MINERAL EXPLORATION (OTHER THAN FOR PETROLEUM)

**EXPLORATION  
EXPENDITURE**

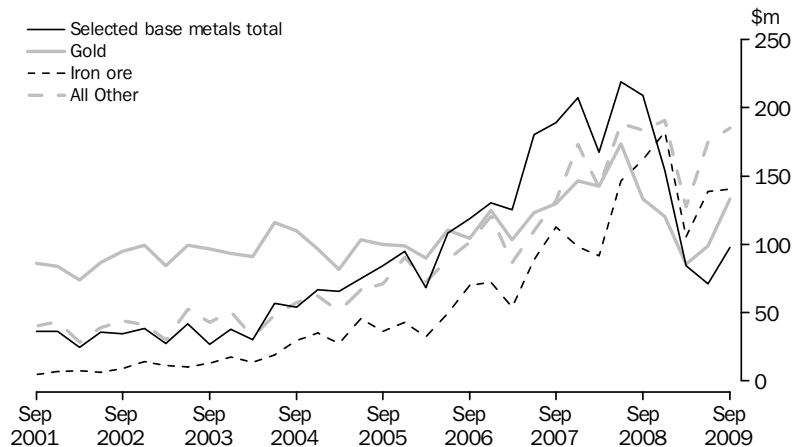
The seasonally adjusted estimate of mineral exploration expenditure rose \$53.4m (11.4%) to \$521.8m in the September quarter 2009. The largest rises this quarter were in Queensland (up \$25.6m or 35.0%) and Western Australia (up \$8.5m or 3.2%).

In original terms, mineral exploration expenditure rose \$73.9m (15.3%). Queensland had the largest rise of \$25.2m (32.1%), followed by Western Australia which rose \$24.1m (8.8%).

In original terms, exploration on areas of new deposits rose \$19.7m (10.8%), while expenditure on areas of existing deposits rose \$54.1m (17.9%).

In original terms, the largest rise by minerals sought came from expenditure on gold exploration (up \$34.6m or 35.0%), with the largest rise occurring in New South Wales. The next largest rise came from expenditure on copper exploration (up \$19.0m or 105.6%).

#### MINERAL EXPLORATION, ORIGINAL SERIES



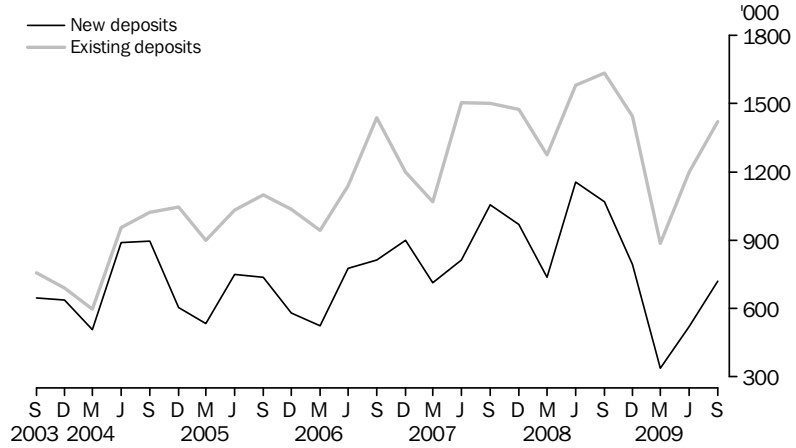
## SUMMARY OF FINDINGS *continued*

### MINERAL EXPLORATION (OTHER THAN FOR PETROLEUM)

#### METRES DRILLED

In seasonally adjusted terms, total metres drilled rose 12.0% in the September quarter 2009. In original terms total metres drilled rose 24.5%. Drilling in areas of new deposits rose 38.0% and drilling in areas of existing deposits rose 18.6%.

METRES DRILLED, Original series



## SUMMARY OF FINDINGS *continued*

### PETROLEUM EXPLORATION

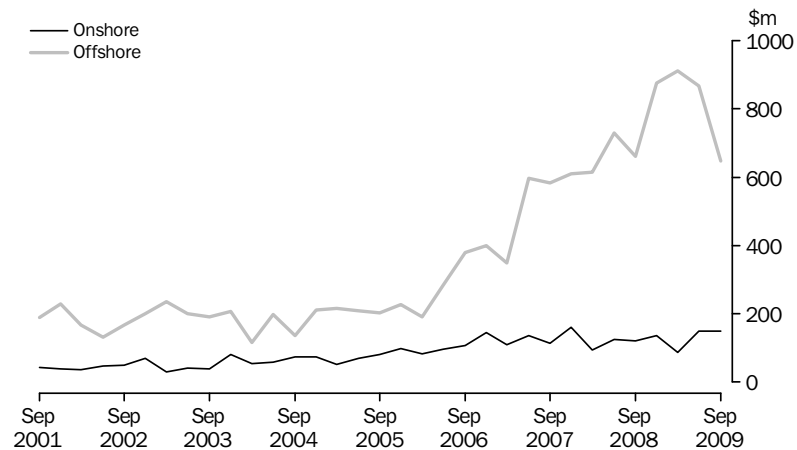
#### OVERVIEW

Expenditure on petroleum exploration for the September quarter 2009 fell \$219.7m (21.6%) to \$797.7m.

Expenditure on exploration on production leases rose \$6.7m (2.2%), while exploration on all other areas fell \$226.4m (31.6%) this quarter.

Offshore exploration fell \$218.5m (25.2%) in the September quarter 2009, while onshore exploration expenditure fell \$1.2m (0.8%).

#### PETROLEUM EXPLORATION, Original series



#### REGIONAL DATA

In the September quarter 2009, Western Australia had the largest fall in petroleum exploration expenditure of \$213.5m (26.1%), followed by Northern Territory with a fall of \$40.6m (54.9%). Queensland had the largest rise of \$19.2m (25.1%).

# 1

## PRIVATE EXPLORATION, ACTUAL AND EXPECTED EXPENDITURE

Period	MINERAL EXPLORATION					PETROLEUM ONSHORE			PETROLEUM OFFSHORE		
	Actual	Expected	Actual as a proportion of expected	Expected Adjusted (a)	Actual as a proportion of expected - Adjusted	Actual	Expected	Actual as a proportion of expected	Actual	Expected	Actual as a proportion of expected
	\$m	\$m	%	\$m	%	\$m	\$m	%	\$m	\$m	%
<b>2006-07</b>	1 714.6	1 482.9	115.6	1 671.2	102.6	498.2	436.8	114.1	1 727.3	1 542.3	112.0
<b>2007-08</b>	2 461.4	2 127.9	115.7	2 324.6	105.9	493.8	461.9	106.9	2 541.1	2 826.1	89.9
<b>2008-09</b>	2 223.9	2 166.6	102.6	2 357.6	94.3	492.3	497.1	99.0	3 318.4	2 663.4	124.6
<b>2007-2008</b> Jun half	1 272.1	1 168.8	108.8	1 250.6	101.7	220.6	204.4	107.9	1 346.0	1 558.7	86.4
<b>2008-2009</b> Dec half	1 337.0	1 328.4	100.6	1 444.9	92.5	256.2	248.8	103.0	1 538.5	1 327.2	115.9
Jun half	886.9	838.2	105.8	912.6	97.2	236.1	248.3	95.1	1 779.9	1 336.2	133.2
<b>2009-2010</b> Dec half	nya	865.0	nya	979.5	nya	nya	373.6	nya	nya	1 496.3	nya

nya not yet available

(a) Refer to Explanatory Notes paragraphs 14-16.

# 2

## MINERAL EXPLORATION, (Other than for petroleum)—Expenditure and metres drilled

Period	EXPENDITURE					METRES DRILLED				
	New deposits	Existing deposits	Total	Seasonally Adjusted	Trend	New deposits	Existing deposits	Total	Seasonally Adjusted	Trend
	\$m	\$m	\$m	\$m	\$m	'000	'000	'000	'000	'000
<b>2006-07</b>	610.0	1 104.6	1 714.6	..	..	3 240	5 215	8 455	..	..
<b>2007-08</b>	1 012.8	1 448.6	2 461.4	..	..	3 920	5 836	9 756	..	..
<b>2008-09</b>	839.3	1 383.8	2 223.1	..	..	2 720	5 167	7 888	..	..
<b>2007-08</b> December	274.2	351.7	625.9	580.5	594.9	970	1 476	2 446	2 432	2 417
March	223.6	320.3	544.0	657.5	654.2	737	1 275	2 013	2 520	2 536
June	305.4	422.7	728.1	702.4	682.2	1 157	1 583	2 740	2 626	2 563
<b>2008-09</b> September	270.6	417.1	687.7	648.3	655.7	1 069	1 636	2 705	2 350	2 387
December	237.7	410.8	648.5	599.2	581.9	792	1 444	2 236	2 202	2 051
March	148.8	254.6	403.5	493.0	519.1	338	888	1 226	1 559	1 783
June	182.1	301.4	483.5	468.4	490.4	521	1 199	1 720	1 652	1 682
<b>2009-10</b> September	201.8	355.5	557.4	521.8	485.0	719	1 422	2 141	1 851	1 698

.. not applicable

## MINERAL EXPLORATION, (Other than for petroleum)—Expenditure by type of deposit

<i>Period</i>	<i>New South Wales</i>	<i>Victoria</i>	<i>Queensland</i>	<i>South Australia</i>	<i>Western Australia</i>	<i>Tasmania</i>	<i>Northern Territory</i>	<i>Australia</i>
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
NEW DEPOSITS								
<b>2006-07</b>	48.1	38.2	83.6	63.5	332.0	9.8	34.7	610.0
<b>2007-08</b>	93.5	48.0	128.1	134.4	536.9	15.0	56.9	1 012.8
<b>2008-09</b>	78.7	29.4	102.7	81.9	465.7	11.9	69.0	839.3
<b>2007-08</b>								
December	26.2	14.3	39.6	39.7	135.0	3.4	16.1	274.2
March	25.3	12.1	22.7	31.9	117.4	6.7	7.7	223.6
June	24.2	13.8	42.6	31.6	173.6	2.9	16.7	305.4
<b>2008-09</b>								
September	18.2	11.9	36.0	24.3	157.3	3.0	19.9	270.6
December	23.1	8.6	29.5	22.0	128.1	4.3	22.1	237.7
March	18.4	3.5	20.7	10.3	84.4	2.8	8.8	148.8
June	19.0	5.3	16.5	25.4	96.0	1.8	18.1	182.1
<b>2009-10</b>								
September	19.2	8.1	18.7	30.1	97.9	1.8	26.0	201.8
EXISTING DEPOSITS								
<b>2006-07</b>	96.0	44.3	188.6	197.2	507.1	14.0	57.4	1 104.6
<b>2007-08</b>	96.4	45.7	269.7	220.7	722.9	17.4	75.8	1 448.6
<b>2008-09</b>	96.6	32.8	249.0	138.8	781.1	8.4	77.1	1 383.8
<b>2007-08</b>								
December	22.1	11.0	60.3	53.8	178.8	3.6	22.1	351.7
March	27.0	11.5	63.5	47.5	154.0	1.5	15.3	320.3
June	27.2	13.3	84.2	63.5	207.6	5.4	21.5	422.7
<b>2008-09</b>								
September	30.9	10.5	73.5	50.7	226.5	4.3	20.7	417.1
December	26.5	10.8	65.5	46.0	235.9	2.7	23.3	410.8
March	21.8	6.8	47.9	25.7	139.9	0.5	12.0	254.6
June	17.4	4.7	62.1	16.4	178.8	0.9	21.0	301.4
<b>2009-10</b>								
September	19.5	6.9	85.2	18.1	201.0	1.7	23.2	355.5
TOTAL								
<b>2006-07</b>	144.1	82.5	272.3	260.7	839.1	23.7	92.2	1 714.6
<b>2007-08</b>	189.9	93.7	397.8	355.2	1 259.8	32.4	132.7	2 461.4
<b>2008-09</b>	175.3	62.2	351.7	220.7	1 246.8	20.4	146.1	2 223.1
<b>2007-08</b>								
December	48.3	25.3	99.9	93.5	313.8	7.0	38.2	625.9
March	52.3	23.6	86.3	79.3	271.4	8.2	22.9	544.0
June	51.3	27.1	126.8	95.2	381.2	8.3	38.2	728.1
<b>2008-09</b>								
September	49.2	22.4	109.5	75.0	383.8	7.3	40.6	687.7
December	49.6	19.5	94.9	68.0	364.0	7.0	45.5	648.5
March	40.2	10.3	68.6	36.0	224.2	3.3	20.9	403.5
June	36.3	10.0	78.6	41.8	274.8	2.7	39.2	483.5
<b>2009-10</b>								
September	38.7	15.0	103.8	48.2	298.9	3.5	49.2	557.4



## MINERAL EXPLORATION, (Other than for petroleum)—Expenditure by state and territory

<i>Period</i>	<i>New South Wales</i>	<i>Victoria</i>	<i>Queensland</i>	<i>South Australia</i>	<i>Western Australia</i>	<i>Tasmania</i>	<i>Northern Territory</i>	<i>Australia</i>
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
ORIGINAL								
<b>2006-07</b>	144.1	82.5	272.3	260.7	839.1	23.7	92.2	1 714.6
<b>2007-08</b>	189.9	93.7	397.8	355.2	1 259.8	32.4	132.7	2 461.4
<b>2008-09</b>	175.3	62.2	351.7	220.7	1 246.8	20.4	146.1	2 223.1
<b>2007-08</b>								
December	48.3	25.3	99.9	93.5	313.8	7.0	38.2	625.9
March	52.3	23.6	86.3	79.3	271.4	8.2	22.9	544.0
June	51.3	27.1	126.8	95.2	381.2	8.3	38.2	728.1
<b>2008-09</b>								
September	49.2	22.4	109.5	75.0	383.8	7.3	40.6	687.7
December	49.6	19.5	94.9	68.0	364.0	7.0	45.5	648.5
March	40.2	10.3	68.6	36.0	224.2	3.3	20.9	403.5
June	36.3	10.0	78.6	41.8	274.8	2.7	39.2	483.5
<b>2009-10</b>								
September	38.7	15.0	103.8	48.2	298.9	3.5	49.2	557.4
SEASONALLY ADJUSTED								
<b>2007-08</b>								
December	44.4	22.9	93.1	88.5	291.1	7.7	33.0	580.5
March	53.8	26.4	106.1	96.1	332.7	7.6	34.8	657.5
June	53.5	27.4	117.4	87.8	370.8	8.4	37.0	702.4
<b>2008-09</b>								
September	50.4	22.0	105.2	72.9	355.3	7.1	35.4	648.3
December	45.3	17.4	89.0	63.8	337.3	7.7	38.8	599.2
March	41.4	11.8	84.3	43.8	276.5	3.1	32.0	493.0
June	37.9	10.3	73.2	38.6	267.3	2.8	38.2	468.4
<b>2009-10</b>								
September	39.7	14.4	98.8	46.9	275.8	3.4	42.8	521.8
TREND								
<b>2007-08</b>								
December	45.8	22.9	95.0	90.3	300.5	8.1	32.4	594.9
March	51.5	25.7	107.1	92.5	334.4	7.8	35.1	654.2
June	53.2	26.2	111.4	87.2	359.7	8.0	36.5	682.2
<b>2008-09</b>								
September	50.6	22.5	105.5	75.3	357.6	7.7	36.6	655.7
December	45.5	16.9	91.6	59.6	326.5	6.2	35.7	581.9
March	41.5	13.1	82.9	48.2	293.1	4.4	35.9	519.1
June	39.3	11.8	83.2	42.4	272.7	3.1	37.9	490.4
<b>2009-10</b>								
September	38.7	12.1	88.1	41.4	261.8	2.6	40.2	485.0

## MINERAL EXPLORATION, (Other than for petroleum)—Expenditure by mineral sought

## SELECTED BASE METALS

Period	Copper	Silver, lead, zinc	Nickel, cobalt	Total	Gold	Iron ore	Mineral sands	Uranium	Coal	Diamonds	Other(a)	Total Mineral Exploration
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
NEW SOUTH WALES												
<b>2006-07</b>	24.5	np	np	47.5	22.8	—	6.5	—	59.8	1.2	6.4	<b>144.1</b>
<b>2007-08</b>	31.7	28.3	2.8	62.9	37.3	np	6.6	—	69.6	np	13.0	<b>189.9</b>
<b>2008-09</b>	14.4	np	np	27.2	21.4	1.2	7.2	0.1	105.0	0.2	13.1	<b>175.3</b>
<b>2007-08</b>												
December	6.4	8.2	0.3	14.8	8.9	np	np	—	19.3	np	np	<b>48.3</b>
March	8.2	7.5	0.6	16.4	9.5	np	np	—	21.1	np	np	<b>52.3</b>
June	7.5	6.0	0.8	14.3	11.5	np	np	—	19.4	—	np	<b>51.3</b>
<b>2008-09</b>												
September	7.6	np	np	11.9	5.9	np	np	—	23.3	np	4.1	<b>49.2</b>
December	3.8	2.7	0.3	6.9	6.3	np	np	np	29.9	np	4.2	<b>49.6</b>
March	1.7	3.4	0.1	5.2	3.3	np	np	—	28.4	np	2.1	<b>40.2</b>
June	1.3	1.9	0.1	3.3	5.9	np	np	—	23.4	np	2.6	<b>36.3</b>
<b>2009-10</b>												
September	2.8	np	np	6.4	16.0	np	np	—	12.1	np	2.8	<b>38.7</b>
VICTORIA												
<b>2006-07</b>	—	0.4	0.3	0.7	61.4	—	2.1	—	np	np	2.9	<b>82.5</b>
<b>2007-08</b>	0.9	0.8	0.4	2.1	63.0	np	7.8	—	15.4	np	4.3	<b>93.7</b>
<b>2008-09</b>	3.3	2.6	—	5.9	43.4	0.6	1.9	—	7.0	—	3.4	<b>62.2</b>
<b>2007-08</b>												
December	np	np	np	np	14.2	—	np	—	6.7	np	np	<b>25.3</b>
March	np	np	np	np	16.6	np	np	—	np	np	np	<b>23.6</b>
June	0.3	np	np	np	20.4	np	np	—	np	np	np	<b>27.1</b>
<b>2008-09</b>												
September	np	np	np	np	14.9	np	np	—	np	np	2.2	<b>22.4</b>
December	np	np	np	np	14.4	np	0.5	—	np	np	np	<b>19.5</b>
March	0.6	np	np	0.9	7.5	np	np	—	np	np	np	<b>10.3</b>
June	np	np	np	0.7	6.5	np	np	—	np	—	np	<b>10.0</b>
<b>2009-10</b>												
September	0.6	np	np	0.8	11.6	np	np	—	np	—	np	<b>15.0</b>
QUEENSLAND												
<b>2006-07</b>	63.0	32.3	7.1	102.4	38.0	1.0	np	np	113.7	0.9	6.1	<b>272.3</b>
<b>2007-08</b>	106.5	43.1	5.8	155.4	48.0	1.4	np	38.0	141.7	np	10.4	<b>397.8</b>
<b>2008-09</b>	65.1	np	np	88.6	38.8	np	0.6	np	173.3	1.2	19.5	<b>351.7</b>
<b>2007-08</b>												
December	27.1	np	np	41.1	12.3	0.2	np	11.1	30.7	np	3.7	<b>99.9</b>
March	26.9	9.1	1.1	37.1	7.5	np	np	9.1	29.0	np	1.7	<b>86.3</b>
June	34.0	np	np	44.2	17.8	np	np	13.9	47.2	np	3.0	<b>126.8</b>
<b>2008-09</b>												
September	28.4	np	np	40.8	13.6	np	np	10.9	40.2	np	3.5	<b>109.5</b>
December	19.0	3.4	2.7	25.1	10.3	np	np	7.9	45.3	np	5.8	<b>94.9</b>
March	10.8	1.8	0.6	13.3	7.9	np	np	np	37.7	np	4.9	<b>68.6</b>
June	6.9	1.8	0.8	9.5	7.1	np	np	6.3	50.0	np	5.4	<b>78.6</b>
<b>2009-10</b>												
September	14.6	np	np	17.5	11.9	np	0.1	5.6	65.9	np	2.9	<b>103.8</b>

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) From September quarter 2000 Publication tin, tungsten, scheelite, wolfram and construction materials were added to this category.

continued

## SELECTED BASE METALS

Period	Copper	Silver, lead, zinc	Nickel, cobalt	Total	Gold	Iron ore	Mineral sands	Uranium	Coal	Diamonds	Other(a)	Total Mineral Exploration
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
SOUTH AUSTRALIA												
<b>2006-07</b>	114.7	25.7	2.2	142.6	31.0	10.1	9.2	63.8	1.3	2.0	0.7	<b>260.7</b>
<b>2007-08</b>	106.9	36.1	2.9	145.9	58.6	19.0	6.2	118.1	np	np	2.1	<b>355.2</b>
<b>2008-09</b>	62.0	15.2	1.8	79.0	42.1	14.2	6.7	72.6	2.7	1.7	1.6	<b>220.7</b>
<b>2007-08</b>												
December	25.5	5.7	0.7	31.9	16.4	np	2.2	37.3	np	np	np	<b>93.5</b>
March	18.6	9.7	0.7	28.9	15.9	6.1	1.2	26.2	np	np	np	<b>79.3</b>
June	38.4	9.6	0.9	48.9	11.6	np	1.8	27.1	np	np	np	<b>95.2</b>
<b>2008-09</b>												
September	28.5	2.9	0.7	32.2	13.6	4.0	np	22.4	np	np	0.7	<b>75.0</b>
December	20.7	np	np	25.7	13.0	6.5	2.3	17.8	np	np	0.2	<b>68.0</b>
March	7.6	np	np	15.2	6.0	2.5	np	10.7	np	np	np	<b>36.0</b>
June	5.1	np	np	5.9	9.6	1.2	np	21.7	np	np	np	<b>41.8</b>
<b>2009-10</b>												
September	8.5	0.3	0.2	9.0	8.3	2.3	np	25.2	np	np	np	<b>48.2</b>
WESTERN AUSTRALIA												
<b>2006-07</b>	22.8	41.8	158.2	222.8	276.5	272.1	16.5	np	np	14.2	23.2	<b>839.1</b>
<b>2007-08</b>	39.0	56.2	280.0	375.1	347.9	420.7	14.7	26.7	np	np	60.1	<b>1 259.8</b>
<b>2008-09</b>	28.1	24.5	246.8	299.5	262.7	558.7	12.9	28.3	8.6	5.0	71.2	<b>1 246.8</b>
<b>2007-08</b>												
December	9.0	19.7	79.5	108.2	85.8	94.0	3.7	6.4	np	np	12.4	<b>313.8</b>
March	9.0	9.7	58.2	76.9	85.2	82.9	3.2	np	np	3.2	12.8	<b>271.4</b>
June	10.3	10.5	81.0	101.8	100.3	139.3	4.3	np	np	np	23.7	<b>381.2</b>
<b>2008-09</b>												
September	11.0	13.1	90.3	114.4	75.9	153.2	2.7	np	np	1.3	27.9	<b>383.8</b>
December	9.4	6.5	73.7	89.6	67.7	170.6	4.1	np	4.5	np	19.0	<b>364.0</b>
March	4.4	3.0	39.4	46.9	56.6	100.1	3.1	5.6	np	np	10.1	<b>224.2</b>
June	3.3	2.0	43.3	48.6	62.5	134.8	3.1	9.9	np	np	14.2	<b>274.8</b>
<b>2009-10</b>												
September	7.9	4.4	46.1	58.4	70.7	134.2	3.8	10.6	np	np	20.1	<b>298.9</b>
TASMANIA												
<b>2006-07</b>	3.3	11.2	5.4	20.0	np	—	np	—	—	—	1.5	<b>23.7</b>
<b>2007-08</b>	1.7	10.8	7.4	19.9	np	4.4	0.2	—	np	—	5.5	<b>32.4</b>
<b>2008-09</b>	1.7	np	np	7.3	np	6.2	—	—	—	—	np	<b>20.4</b>
<b>2007-08</b>												
December	np	np	2.0	np	0.3	0.8	np	—	—	—	1.8	<b>7.0</b>
March	np	1.6	np	np	0.9	np	np	np	—	—	2.1	<b>8.2</b>
June	0.8	np	np	4.2	np	np	—	np	np	—	np	<b>8.3</b>
<b>2008-09</b>												
September	0.8	1.9	np	np	0.4	np	np	np	—	—	0.7	<b>7.3</b>
December	np	0.9	np	np	1.7	1.8	np	np	np	—	np	<b>7.0</b>
March	np	0.8	np	1.4	0.4	np	—	np	np	—	0.5	<b>3.3</b>
June	np	np	np	1.0	0.4	0.6	np	—	np	—	0.7	<b>2.7</b>
<b>2009-10</b>												
September	0.2	np	np	1.0	0.8	np	np	—	—	—	1.2	<b>3.5</b>

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) From September quarter 2000 Publication tin, tungsten, scheelite, wolfram and construction materials were added to this category.

continued

## SELECTED BASE METALS

Period	Copper	Silver, lead, zinc	Nickel, cobalt	Total	Gold	Iron ore	Mineral sands	Uranium	Coal	Diamonds	Other(a)	Total Mineral Exploration
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
NORTHERN TERRITORY												
<b>2006-07</b>	6.2	7.2	5.6	19.0	np	2.0	2.2	30.1	np	8.3	6.1	<b>92.2</b>
<b>2007-08</b>	6.8	11.3	4.0	22.1	35.6	3.9	np	48.7	np	5.6	15.0	<b>132.7</b>
<b>2008-09</b>	4.1	np	np	11.4	26.7	7.9	1.2	54.5	0.8	2.0	41.6	<b>146.1</b>
<b>2007-08</b>												
December	1.5	4.1	1.3	6.9	8.7	np	np	14.9	np	1.4	4.6	<b>38.2</b>
March	1.6	np	np	3.8	6.7	np	np	8.0	np	1.2	2.0	<b>22.9</b>
June	2.0	np	np	np	np	np	np	13.8	np	1.1	5.5	<b>38.2</b>
<b>2008-09</b>												
September	np	1.5	np	4.2	8.9	np	np	17.1	np	np	7.8	<b>40.6</b>
December	1.2	1.5	0.7	3.4	7.1	np	np	19.4	np	0.6	11.5	<b>45.5</b>
March	np	np	np	1.6	3.9	np	np	6.9	np	np	5.6	<b>20.9</b>
June	0.8	0.8	0.6	2.2	6.8	np	np	11.1	—	np	16.7	<b>39.2</b>
<b>2009-10</b>												
September	2.4	1.2	1.3	4.9	14.1	np	np	12.5	np	np	10.2	<b>49.2</b>
AUSTRALIA												
<b>2006-07</b>	234.5	139.4	181.1	555.0	455.8	285.3	37.4	114.1	193.3	26.9	46.8	<b>1 714.6</b>
<b>2007-08</b>	293.5	186.6	303.3	783.4	592.7	449.8	37.1	231.6	234.8	21.7	110.4	<b>2 461.4</b>
<b>2008-09</b>	178.7	80.5	259.8	519.0	438.1	588.7	30.5	185.3	297.3	10.1	154.1	<b>2 223.1</b>
<b>2007-08</b>												
December	70.2	51.5	85.9	207.6	146.7	98.5	10.5	69.6	59.8	5.3	27.8	<b>625.9</b>
March	64.8	39.0	64.0	167.8	142.4	91.9	8.9	49.2	54.1	6.1	23.5	<b>544.0</b>
June	93.3	39.1	86.5	219.0	173.9	146.6	10.4	62.7	70.8	5.3	39.4	<b>728.1</b>
<b>2008-09</b>												
September	79.2	34.8	95.0	209.0	133.2	162.0	9.1	56.7	68.5	2.4	46.8	<b>687.7</b>
December	55.7	20.2	78.5	154.4	120.4	182.5	9.1	51.9	82.9	3.5	43.7	<b>648.5</b>
March	25.8	17.6	41.2	84.5	85.6	105.6	5.4	27.7	69.2	2.0	23.3	<b>403.5</b>
June	18.0	7.9	45.2	71.1	98.8	138.6	7.0	48.9	76.7	2.1	40.3	<b>483.5</b>
<b>2009-10</b>												
September	37.0	12.3	48.6	97.9	133.4	140.5	9.5	53.9	82.1	2.7	37.4	<b>557.4</b>

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) From September quarter 2000 Publication tin, tungsten, scheelite, wolfram and construction materials were added to this category.

## 6

## PETROLEUM EXPLORATION EXPENDITURE

Period	ONSHORE			OFFSHORE			TOTAL EXPENDITURE		
	Drilling	Other	Total	Drilling	Other	Total	On production leases (a)	On all other areas (a)	Total
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
<b>2006-07</b>	310.0	188.3	498.2	1 121.0	606.3	1 727.3	533.7	1 691.7	2 225.5
<b>2007-08</b>	371.8	122.0	493.8	1 738.8	802.3	2 541.1	591.9	2 443.1	3 034.9
<b>2008-09</b>	317.7	174.6	492.3	2 159.4	1 159.0	3 318.4	943.4	2 867.4	3 810.8
<b>2007-08</b>									
December	124.4	35.4	159.8	397.6	212.7	610.2	142.3	627.6	770.0
March	58.3	36.3	94.6	403.1	211.8	614.8	145.6	563.9	709.4
June	98.9	27.1	126.0	525.2	206.0	731.2	150.9	706.3	857.2
<b>2008-09</b>									
September	85.9	34.6	120.4	479.0	181.8	660.9	199.0	582.3	781.3
December	92.7	43.1	135.8	520.4	357.3	877.6	234.7	778.7	1 013.4
March	49.5	36.7	86.2	634.5	277.9	912.4	209.2	789.4	998.6
June	89.7	60.2	149.9	525.5	342.1	867.5	300.5	716.9	1 017.4
<b>2009-10</b>									
September	118.1	30.6	148.7	462.9	186.1	649.0	307.2	490.5	797.7

(a) Refer to Glossary for definition.

## 7

## PETROLEUM EXPLORATION, By state and territory

Period	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	Northern Territory (a)	Total
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
<b>2006-07</b>	np	np	191.9	161.2	1 481.0	17.5	279.4	2 225.5
<b>2007-08</b>	30.1	120.1	165.5	196.2	2 174.9	84.4	263.8	3 034.9
<b>2008-09</b>	np	140.8	288.2	112.2	2 945.1	np	246.7	3 810.8
<b>2007-08</b>								
December	8.4	15.4	43.7	72.5	512.7	4.0	113.3	770.0
March	9.0	38.2	22.7	31.8	498.7	24.5	84.4	709.4
June	8.6	53.9	55.0	39.3	616.9	50.9	32.6	857.2
<b>2008-09</b>								
September	np	57.3	63.7	37.9	539.5	np	69.5	781.3
December	9.3	33.2	87.9	22.2	798.9	32.7	29.3	1 013.4
March	4.4	43.7	60.1	17.9	789.4	9.2	73.9	998.6
June	5.5	6.6	76.5	34.2	817.4	3.2	74.0	1 017.4
<b>2009-10</b>								
September	8.2	25.1	95.7	27.1	603.9	4.2	33.4	797.7

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Also contains some additional areas. See paragraphs 5 and 6 of the Explanatory Notes.

## EXPLANATORY NOTES

### INTRODUCTION

**1** The private sector exploration statistics appearing in this publication have been collected and compiled from the Mineral Exploration and Petroleum Exploration quarterly censuses conducted by the Australian Bureau of Statistics. This publication contains actual and expected exploration expenditure.

### SCOPE AND COVERAGE

**2** The Mineral Exploration and Petroleum Exploration censuses cover private enterprises known to be engaged in exploration in Australia, and in Australian waters including the Joint Petroleum Development Area (JPDA), regardless of the main activity of the explorer.

**3** The Joint Petroleum Development Area (JPDA) is an area in the Timor Sea, about 500 km north west of Darwin. The JPDA consists of the area previously referred to as Area A of the Zone of Cooperation (ZOC). A treaty was signed with Indonesia in 1989 to enable exploration for and development of petroleum resources in this area. Following East Timor's separation from Indonesia, arrangements continued on a transitional basis between Australia and the United Nations Transitional Administration in East Timor (UNTAET) on behalf of East Timor. On 20 May 2002, the newly independent East Timor and Australia accepted arrangements as proposed in the new Timor Sea Treaty (based on an 'Exchange of Notes' between the two countries). A new Treaty, which entered into force on the 2 April 2003, provides the necessary framework arrangements for companies to exploit resources in the JPDA.

**4** The areas formerly known as Areas B and C of the Zone of Cooperation no longer exist under this arrangement. Since 20 May 2002, ZOCCB is simply a part of Australia's waters, and ZOCC a part of East Timor's.

**5** Exploration in the JPDA is included in estimates for the Northern Territory. Further, as a reflection of the joint Australia/East Timor administration of exploration and production activity in the JPDA, 50% of exploration expenditure in the JPDA is excluded from the estimates. The feature article 'Statistical Treatment of Economic Activity in the Timor Sea' published in the September Quarter 2003 issue of *Australian National Accounts: National Income, Expenditure and Product* (cat. no. 5206.0) provides further details.

**6** The tenements in the Ashmore and Cartier Islands are administered by the Northern Territory Department of Mines and Energy. Therefore all petroleum exploration expenditure in this area has been included with the Northern Territory data.

### SEASONAL ADJUSTMENT

**7** Seasonal adjustment is a means of removing the estimated effects of normal seasonal variation from the series so that the effects of other influences can be more clearly recognised. Seasonal adjustment does not aim to remove the irregular or non-seasonal influences which may be present in any particular series.

**8** These irregular influences that are volatile or unsystematic can make it difficult to interpret the movement of the series even after adjustment for seasonal variation. This means that quarter-to-quarter movements of seasonally adjusted estimates may not be reliable indicators of trend behaviour.

**9** In this publication, the seasonally adjusted estimates are produced by the concurrent seasonal adjustment method which takes account of the latest available original estimates. This method improves the estimation of seasonal factors, and therefore, the seasonally adjusted and trend estimates for the current and previous quarters. As a result of this improvement, revisions to the seasonally adjusted and trend estimates will be observed for recent periods. In most instances the only noticeable revisions will be to the previous quarter and the same quarter one year ago. A more detailed review is conducted annually prior to the June quarter release using data up to and including the March quarter.

## EXPLANATORY NOTES *continued*

### SEASONAL ADJUSTMENT

*continued*

**10** The revision properties of the seasonally adjusted and trend estimates can be improved by the use of autoregressive integrated moving average (ARIMA) modelling. ARIMA modelling relies on the characteristics of the series being analysed to project future period data. The projected values are temporary, intermediate values, that are only used internally to improve the estimation of the seasonal factors. The projected data do not affect the original estimates and are discarded at the end of the seasonal adjustment process. The Mineral Exploration collection now uses ARIMA modelling where appropriate for individual time series. The ARIMA model is assessed as part of the annual reanalysis and following the 2008 annual reanalysis, all directly adjusted Mineral Exploration series use an ARIMA model. For more information on the details of ARIMA modelling see the feature article: *Use of ARIMA modelling to reduce revisions* in the October 2004 issue of *Australian Economic Indicators* (cat. no. 1350.0).

### TREND ESTIMATES

**11** The smoothing of seasonally adjusted series to create trend estimates reduces the impact of the irregular component of the seasonally adjusted series.

**12** The trend estimates are derived by applying a 7-term Henderson moving average to the seasonally adjusted series. The 7-term Henderson average is symmetric but, as the end of a time series is approached, asymmetric forms of the average are applied. Unlike the weights of the standard 7-term Henderson moving average, the weights employed here have been tailored to suit particular characteristics of the individual series. While the asymmetric weights enable trend estimates for recent quarters to be produced, it does result in revisions to the estimates for the most recent three quarters as additional observations become available. There may also be revisions because of changes in the original data and as a result of the re-estimation of the seasonal factors.

**13** *Information Paper: A Guide to Interpreting Time Series, Monitoring Trends, an Overview* (cat. no. 1349.0), can be obtained by contacting Time Series Analysis Canberra on (02) 6252 6345 or e-mail <time.series.analysis@abs.gov.au>.

### EXPECTED EXPLORATION EXPENDITURE

**14** Expected expenditure is collected in June and December quarter each year. Businesses are asked to report their expected expenditure for the next six months.

**15** From the June quarter 2000 publication, the basis for the Expected Mineral Exploration Expenditure series changed. Prior to June 2000, the expected estimates released were simple aggregates of data compiled through the quarterly Mineral Exploration collection. However, these aggregates underestimated actual expenditure to a fairly consistent degree. The consistency with which the published data underestimated actual expenditure suggested that adjustments to improve the accuracy and usefulness of the estimates of expected expenditure would be possible.

**16** In the period since June 2000, such adjustments have been made to reported expected exploration data resulting in estimates which better predict actual expenditure for the same period. For more information regarding the adjustments made to the Expected Mineral Exploration Expenditure series, see the feature article in the June quarter 2000 and the appendix in the December quarter 2002 issue of this publication. Since the June quarter 2003 issue, both unadjusted and adjusted expectations data have been presented in this publication.

### ACKNOWLEDGMENT

**17** ABS publications draw extensively on information provided freely by individuals, businesses, government and other organisations. Their continued cooperation is appreciated: without it a wide range of statistics published by the ABS would not be available. Information received by the ABS is treated in strict confidence as required by the *Census and Statistics Act 1905*.

### RELATED PUBLICATIONS

**18** Users may also wish to refer to the following publications which are for sale and available on request:

## EXPLANATORY NOTES *continued*

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### RELATED PUBLICATIONS

*continued*

- *Private New Capital Expenditure and Expected Expenditure, Australia* (cat. no. 5625.0)
- *Australian Mining Industry* (cat. no. 8414.0)
- *Mining Operations, Australia* (cat. no. 8415.0)

### ABS DATA AVAILABLE

ELECTRONICALLY

**19** All ABS publications (html and pdf) can be downloaded free of charge from the ABS web site. See the back page for more details.

**20** Current publications produced by the ABS are listed in the *Catalogue of Publications and Products* (cat. no. 1101.0), which is available from any ABS office. The ABS also issues a *Release Advice* which lists publications to be released in the next few days. The Catalogue and Release Advice are available on the ABS web site <<http://www.abs.gov.au>>.

**21** Publications showing the details of wells and metres drilled in petroleum exploration are available from the Petroleum Resources Program of Geoscience Australia.

### EFFECTS OF ROUNDING

**22** Where figures have been rounded discrepancies may occur between the sums of the component items and their totals.



## GLOSSARY

<b>Development</b>	Phase usually following exploration where a prospective discovery (e.g. proven oil or gas field or concentrate of ore) is brought into production or for extending the life of a current mine or well. Activities may include preparing the ground by the removal of overburden, constructing shafts, drives and winzes; or by drilling and completing wells. All activities are for the purposes of commencing extraction/mining or extending production.
<b>Exploration</b>	Activity involves searching for concentrations of naturally occurring solid, liquid or gaseous materials and includes new field wildcat and stratigraphical and extension/appraisal wells and mineral appraisals intended to delineate or greatly extend the limits of known deposits by geological, geophysical, geochemical, drilling or other methods. This includes drilling of boreholes, construction of shafts and adits primarily for exploration purposes but excludes activity of a developmental or production nature. Exploration for water is excluded.
<b>Exploration expenditure</b>	Covers all expenditure (capitalised and non-capitalised) during the exploratory or evaluation stages in Australia, Australian waters, and the JPDA. Costs include cost of exploration, determination of recoverable reserves, engineering and economic feasibility studies, procurement of finance, gaining access to reserves, construction of pilot plants and all technical and administrative overheads directly associated with these functions. Examples are costs of satellite imagery, airborne and seismic surveys, use of geophysical and other instruments, geochemical surveys and map preparation; licence fees, land access and legal costs; geologist inspections, chemical analysis and payments to employees and contractors. Cash bids for offshore petroleum exploration permits are also included.
<b>Exploration licence/permit</b>	Is designed to cover the exploration phase of a project and confers exclusive rights to the exploration for and recovery of samples from the area designated. These rights are granted by relevant Commonwealth, State or Territory Governments.
<b>Minerals</b>	Are a naturally occurring inorganic element or compound having an orderly internal structure and characteristic chemical composition, crystal form, and physical properties. These, for example, comprise of metallic minerals, such as copper, silver, lead-zinc, nickel, cobalt, gold, iron ore, mineral sands, uranium and non-metallic minerals such as coal, diamonds and other precious and semi-precious stones and construction materials (e.g. gravel and sand).
<b>Mining licence/lease</b>	Covers the commercial mining phase of a project for the licenced area. This licence authorises both full recovery and further exploration to occur.
<b>Offshore</b>	Commences from the low water mark to three nautical miles out (referred to as coastal waters) under State and Northern Territory legislation and extends to those areas beyond coastal waters governed by the Commonwealth under the <i>Petroleum (Submerged Lands) Act 1967</i> .
<b>Onshore</b>	Includes all Australian territorial lands to the low water mark.
<b>Petroleum</b>	Is a naturally occurring hydrocarbon or mixture of hydrocarbons. As oil or gas in solution (e.g. Liquid Petroleum Gas), it is widespread in Australian sedimentary rocks.
<b>Retention licence</b>	Is an intermediate form of tenure between the exploration licence and mining licence allowing the holder of the exploration licence to retain title to the area for a limited time. It is designed to ensure the retention of rights pending the transition of a project from the exploration phase to the commercial mining phase.
<b>Selected base metals</b>	Are made up of the following minerals: copper, silver, lead-zinc, nickel and cobalt.

## GLOSSARY *continued*

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<b>Type of deposit</b>	<p>Classification used:</p> <p><i>Existing deposits</i> – Exploration that is delineating or proving up an existing deposit, including extensions and infill, which has been classified as an Inferred Mineral Resource or higher.</p> <p><i>New deposits</i> – Exploration on previously unknown mineralisations or known mineralisations yet to be classified as an Inferred Mineral Resource or higher. They include:</p> <ul style="list-style-type: none"><li>– Exploration resulting in finding mineralisation that was previously unknown.</li><li>– Exploration on previously known mineralisation that has not been subjected to modern exploration.</li><li>– Exploration within an existing mining tenement for the purpose of finding new sources of mineralisation that have not already been classified as at least an Inferred Mineral Resource.</li></ul>
<b>Type of expenditure</b>	<p>Classification used:</p> <p><i>Drilling expenditure</i> – includes wages and salaries paid to employees; purchase, rental, hiring as well as operation and maintenance of drilling equipment together with activities associated with accessing the areas where drilling is to occur (e.g. road creation, vessel/transport hiring, site preparation and restoration). Also includes expenditure on drilling done by contractors.</p> <p><i>Other expenditure</i> – includes all other exploration costs, other than those associated with drilling expenditure. This expenditure includes purchase of capital and non-capital items, rental or hiring fees, service fees relating to surveying and analysis, administrative and legal fees associated with obtaining licences/permits, land access, map preparation, feasibility studies, environmental impacts studies and restoration costs.</p>
<b>Type of lease</b>	<p>Classifications used:</p> <p><i>Production lease</i> – is an area on which development to extract coal, minerals, liquids or gaseous materials is underway or where extraction/mining of these substances is already occurring. See also mining licence/lease.</p> <p><i>All other areas</i> – are those areas outside the Production lease. These include areas under exploration licence/permit or retention licence, as well as non-licensed areas being assessed for exploration, e.g. through airborne surveys.</p>



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