

# Queensland EXPLORATION SCORECARD

TRACKING QUEENSLAND'S PROGRESS TOWARDS  
BECOMING AN EXPLORATION LEADER BY 2020,  
WITH BRISBANE AT ITS HEART



AN INITIATIVE OF THE QUEENSLAND  
EXPLORATION COUNCIL

# 2011

# FOREWORD

## WELCOME TO THE INAUGURAL QUEENSLAND EXPLORATION COUNCIL (QEC) EXPLORATION SCORECARD

The QEC is a cross-sectoral organisation formed to promote and facilitate minerals and energy exploration in Queensland with the aim of positioning the state as an exploration leader by 2020 – a goal reflecting the Queensland Government aspirations.

The exploration scorecard is a tool available to industry and policy-makers that will help monitor performance and steer the sector towards meeting objectives outlined in the industry exploration Vision 2020 document released in 2010. Developed under the auspices of the QEC, the scorecard seeks to assess the performance of the Queensland exploration sector against a number of indicators. These indicators are a combination of factors that drive exploration activity and performance (lead), and those that measure actual performance (lag).

Given the strength of the fundamentals driving global demand for minerals and energy, a successful exploration sector able to attract and retain explorers and convert the state's rich resources endowment into a pipeline of high quality resource assets will bring various benefits.

For minerals and energy producers in Queensland, consolidating the sector's reputation as a reliable, long-term supplier of choice is invaluable in increasingly competitive global markets. More broadly for Queenslanders, greater exploration and resources production will generate higher employment, wealth generation, increasing royalty and tax contributions, and higher shareholder returns.

The results of our 2011 analysis are outlined for your consideration. In some areas the results are positive, and in other areas there is room for improvement. The task for the QEC is to engage all stakeholders; carefully consider the findings; and develop and work with stakeholders – including government – to implement agreed strategies in response.

In commending this report to you, we gratefully acknowledge those who contributed the valuable data and information referenced throughout this document and in particular the hard work of the volunteer working group whose names appear below and were tasked with assisting the Queensland Resources Council secretariat in compiling this initial scorecard.

Yours sincerely



**Michael Roche**  
Chief Executive  
Queensland Resources Council



**Geoff Dickie**  
Chair  
Queensland Exploration Council

October 2011

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# CONTENTS

<b>PERFORMANCE SUMMARY</b>	<b>4</b>
1.0 Background	6
1.1 The Queensland Exploration Council	6
1.2 The Queensland exploration scorecard	7
1.3 The exploration sector in Queensland	7
<b>LEAD INDICATORS – DRIVERS OF ACTIVITY AND PERFORMANCE</b>	
2.0 Resources prospectivity and endowment	8
3.0 Explorer and investor confidence	10
3.1 State government geoscientific funding and activities	10
3.1.1 IRTM and QDEX downloads	13
3.2 Regulatory, legislative and policy stability	14
3.3 Operating and investment sentiment of exploration companies	16
3.3.1 Operating sentiment	17
3.3.2 Investment sentiment	19
4.0 Access to the factors of production	20
4.1 Access to land	20
4.2 Access to human and intellectual capital	22
4.2.1 Supply of workers	22
4.2.2 Livability of Queensland	24
4.3 Access to equity capital	25
5.0 Resource prices	26
<b>LAG INDICATORS – EXPLORATION SUCCESS</b>	
6.0 Number of lodged and current exploration permits and areas granted	28
7.0 Minerals and petroleum exploration	30
7.1 Brown and greenfield minerals and petroleum exploration expenditure: various comparisons	30
7.2 Minerals exploration and minerals revenues as a percentage of national totals: state comparisons	31
8.0 Production, levels of reserves, years of reserves and drilling success by resource	32
9.0 Minerals production and comparisons with global demand	34
10.0 Share price movements	36
Glossary	38
Acronyms	42

# PERFORMANCE SUMMARY

## THE QUEENSLAND EXPLORATION SECTOR 2011

### LEAD INDICATORS – DRIVERS OF ACTIVITY AND PERFORMANCE

#### Resources prospectivity and endowment (section 2)

- Queensland enjoys high minerals and energy prospectivity with significant endowments of coal and coal seam gas in particular

#### State government geoscientific funding and activities (section 3.1)

##### Geological Survey of Queensland (GSQ):

- Budget allocation is high compared with long-standing allocations with a range of supporting programs in place
- Since 2005 a significantly increased percentage of the state has been surveyed using gravity and airborne magnetic technology
- Strong increase in hits and volume of information downloaded from Interactive Resource and Tenure Map (IRTM)
- Strong increase in volume of information downloaded from Queensland Digital and Exploration Reports (QDEX)

#### Regulatory, legislative and policy stability (section 3.2)

- Significant changes to land access arrangements and new landowner compensation arrangements, strategic cropping land policy, land regulated as 'Wild Rivers', and new restrictions over urban areas have the combined effect of placing additional responsibilities on exploration companies and/or being increasingly restrictive in effect

#### Operating and investment sentiment of exploration companies (section 3.3)

- Queensland's high minerals and energy prospectivity and endowment is countered by weak operating sentiment towards a number of input and regulatory factors, especially when compared with other Australian resource jurisdictions
- Investment sentiment is heavily influenced by prospectivity and livability in which Queensland ranks highly

#### Access to land (section 4.1)

- Approval times for coal and mineral exploration permits in excess of 200 days (lodgement to grant period)
- Since 2009 the time taken from the close of tender for petroleum land releases to the appointment of preferred tenderers decreased by 15 weeks
- Significant increase in the number of tenure officers assessing tenures

#### Access to human and intellectual capital (section 4.2)

- Potential geoscience professional graduates from Australian and Queensland universities increasing in recent years but remaining well below current vacancy rates in Australia and Queensland
- Strong increase in the number of people commencing certificate level drilling courses across Australia

## LEGEND

Good

No significant impediment

Cause for concern

Significant problems



### Livability of Queensland (city and regional hubs) (section 4.2.2)

- Brisbane and Townsville in particular rate highly for livability among those cities and regions most commonly chosen by geoscience professionals to reside

### Access to equity capital (section 4.3)

- The amount of equity finance raised by exploration companies from domestic and global sources for exploration in Queensland is considered low in comparison to Queensland's high prospectivity and high percentage share of Australia's minerals revenues

### Resource prices (section 5)

- Exploration expenditure is high in historical terms owing to commodity prices that are generally at – or close to – record highs on account of strong global demand and soft supply

## LAG INDICATORS – EXPLORATION SUCCESS

### Exploration and development permits and areas granted (section 6)

- Number of exploration permits and areas granted for coal, petroleum, and geothermal increasing strongly in recent years
- Number of exploration permits and areas granted for minerals levelling out in recent years however much stronger when compared to 2004-05

### Mineral and petroleum exploration (section 7)

- Queensland minerals greenfields activity as a percentage of total minerals exploration activity consistently low when compared with other Australian resource jurisdictions
- Significantly less minerals and petroleum exploration in Queensland in absolute spending terms compared with Western Australia
- A relatively low 0.6 percent of Queensland minerals revenues spent on Queensland minerals exploration
- Queensland accounts for 24 percent of national minerals revenues and 24 percent of national minerals exploration

### Drilling success and levels of reserves (section 8)

- Reserve to production ratios for most base and precious metals considered low

### Minerals production and comparison with global demand (section 9)

- Queensland's minerals production not keeping pace with increases in global minerals demand (long term percentage increases) but expected to pick up again given significant levels of proposed capital expenditure in a variety of resources

### Share price movements (section 10)

- All sized exploration companies active in Queensland achieved strong market capitalisation growth in 2010-11 – notably higher than companies in the S&P/ASX 200 (with the exception of the 'nanos' with market capitalisation less than \$50 million)

# 1.0 BACKGROUND

## 1.1 THE QUEENSLAND EXPLORATION COUNCIL

In October 2010 the Queensland Resources Council's (QRC) Exploration Committee launched its action agenda for the Queensland exploration industry - QRC Exploration Vision 2020.

In December 2010 the Queensland Exploration Council (QEC) was formed to drive this vision forward. This multi-sectoral group is tasked with the aim of promoting Queensland as Australia's minerals and energy exploration leader by 2020, with the city of Brisbane at its heart.

QEC is chaired by former Queensland Deputy Co-ordinator General and junior resource company executive, Mr Geoff Dickie. The strength of the QEC lies in its broad cross-section of members from major and junior resource companies, government, events and marketing, broking and finance, accounting, legal, academia and research organisations.

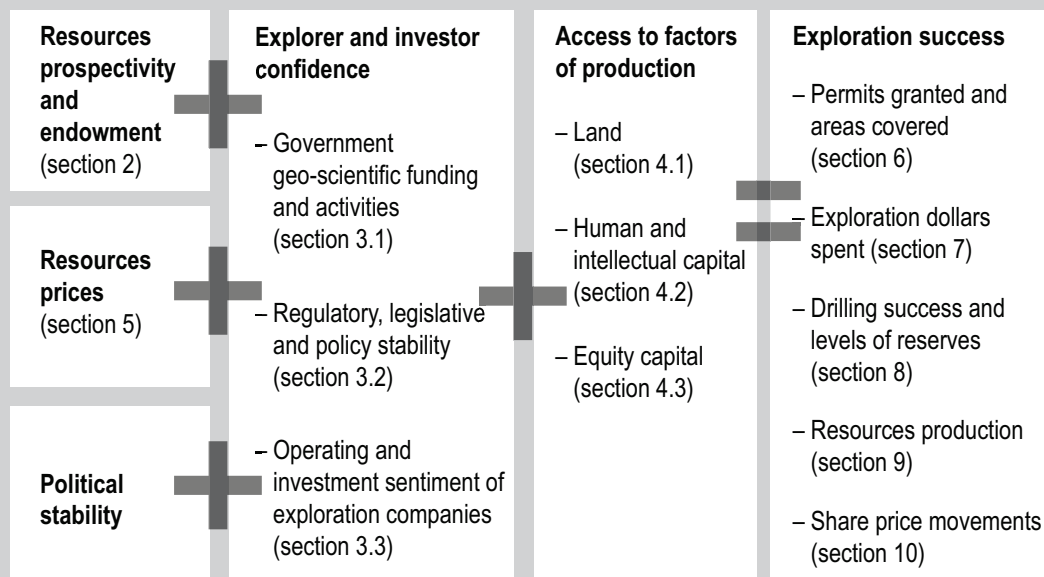
The QEC operates through quarterly plenary meetings and a number of task-related working groups.

The QEC website at [www.queenslandexploration.com.au](http://www.queenslandexploration.com.au) has more information and updates.

**CHART 1: SCORECARD STRUCTURE**

**LEAD INDICATORS –  
FACTORS THAT DRIVE EXPLORATION  
ACTIVITY AND PERFORMANCE**

**LAG INDICATORS –  
MEASURING ACTUAL  
SUCCESS**



Source: QRC

# 1.2 THE QUEENSLAND EXPLORATION SCORECARD

A key component of the QEC's agenda is the annual publication of an exploration scorecard, commencing in 2011.

Led by the Queensland Resources Council and overseen by a working group of senior government officials, legal, financial and economic consultants, and resource sector representatives, the scorecard will examine the performance of the Queensland exploration sector against a number of indicators year on year. Government and industry data and survey information from companies actively exploring in Queensland was used to inform the results.

The scorecard is developed on the assumption that exploration success is broadly driven by:

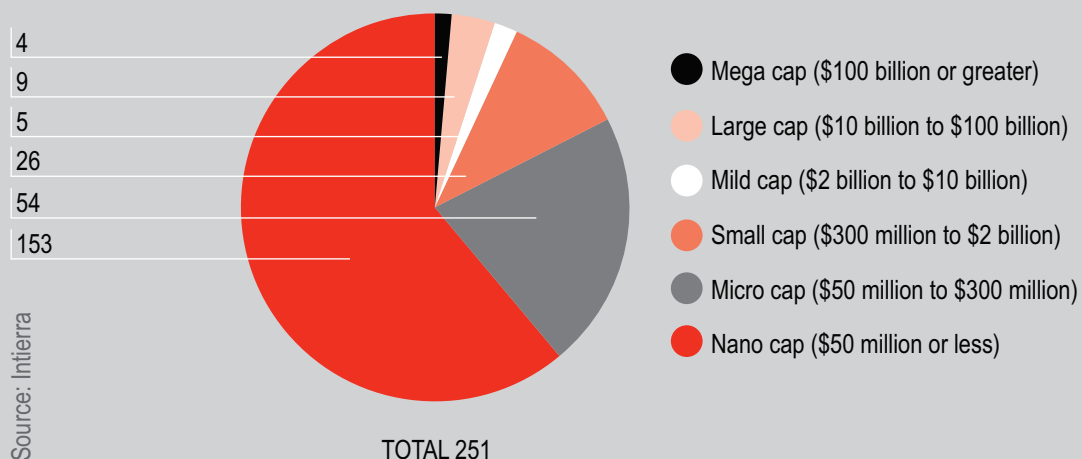
- resources prospectivity and endowment
- resources prices
- political stability
- explorer and investor confidence
- access to the essential factors of production (capital, land, skills).

As commodity prices are driven by the market, the scorecard concentrates on those lead indicators that can be influenced – namely, explorer and investor confidence and access to the essential factors of production. A number of outcome or lag indicators that measure actual exploration success are also included (see chart 1).

# 1.3 THE EXPLORATION SECTOR IN QUEENSLAND

The QRC estimates there were approximately 250 companies conducting exploration activities in Queensland in 2010-11. These companies are diverse in their size (market capitalisation), business models, and exploration targets.

**CHART 2: QRC ESTIMATES OF THE NUMBER OF COMPANIES ACTIVELY EXPLORING IN QUEENSLAND AT 30 JUNE 2010**



# LEAD INDICATORS – DRIVERS OF ACTIVITY AND PERFORMANCE

## 2.0 RESOURCES PROSPECTIVITY AND ENDOWMENT

Prospectivity – or the likelihood that specific types of mineral deposits are present in a geological province (geoprovince) and may be discovered with ongoing exploration – is a major driver of exploration activity. Queensland's high resources prospectivity for base metals, gold, and uranium resources is provided. Queensland's significant endowment of coal and coal seam gas is also shown. Queensland is also highly prospective in many other resources not demonstrated below.

### KEY FINDINGS

- **Queensland base metal prospectivity (chart 3)**

The highly prospective Carpentaria Minerals Belt hosts some of the world's largest base metal deposits. These include iron-oxide-copper-gold (Ernest Henry) Mount Isa-style copper, and sediment-hosted silver, lead and zinc (Century, Cannington and Dugald River). There are numerous old-copper porphyries and polymetallic base metal prospects in Queensland where further exploration has the potential to identify resources or increase existing lightly explored resources.

- **Queensland gold prospectivity (chart 4)**

Gold exploration is centred on the highly prospective Chillagoe, the Drummond Bason region and central Queensland districts dominated by epithermal gold deposits, and intrusion-related gold systems extending along the coast from Townsville to the south east corner of Queensland. Significant gold, often associated with copper, occurs in the Selwyn, Cloncurry and Mount Isa regions. The Selwyn-Mount Dore area was historically important for skarn-hosted copper-gold deposits and has seen renewed interest with the recent discovery of the Merlin molybdenum-rhenium deposit - opening up this region to the potential for similar rare earth discoveries.

- **Queensland uranium prospectivity (chart 5)**

Queensland plays host to highly prospective uranium deposits. The Mount Isa Minerals Province has produced uranium oxide from the Mary Kathleen deposit. Other significant uranium deposits include Valhalla and Westmoreland in the North West and Ben Lomond, an area 50 kilometres from Townsville. However, until the lifting of a Queensland Government ban on uranium mining there is no potential for development of these deposits.

- **Queensland's high quality thermal and metallurgical black coals (chart 6)**

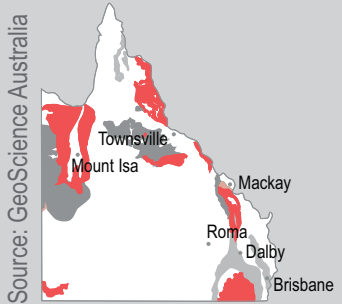
Queensland's principal black coal-producing areas are the Bowen, Surat and Clarence-Moreton Basins. The Galilee Basin is now under close scrutiny as the next coal province. Latest estimates indicate show that Queensland has 10,552 million tonnes of coal reserves (proved and probable) and 80,967 million tonnes of coal resources (inferred, indicated and measured). The potential for building on known resources in these producing basins is considered high, especially in the Galilee Basin where reserves levels are estimated to have grown ten-fold over the past 10 years.

- **Queensland's coal-seam gas endowment (chart 7)**

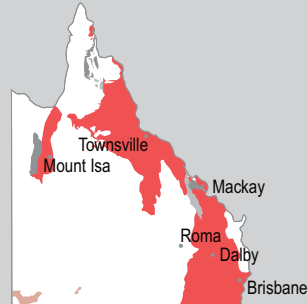
The potential for the development of extensive coal-seam gas and underground coal gasification projects in Queensland is a relatively new phenomenon. New technology is enabling extraction of coal-seam gas from deep - otherwise uneconomic coal deposits - has resulted in significant exploration interest. The most prospective areas to date include the Clarence-Moreton, Bowen and Surat Basins.



**CHART 3: QUEENSLAND BASE METAL PROSPECTIVITY**



**CHART 4: QUEENSLAND GOLD PROSPECTIVITY**

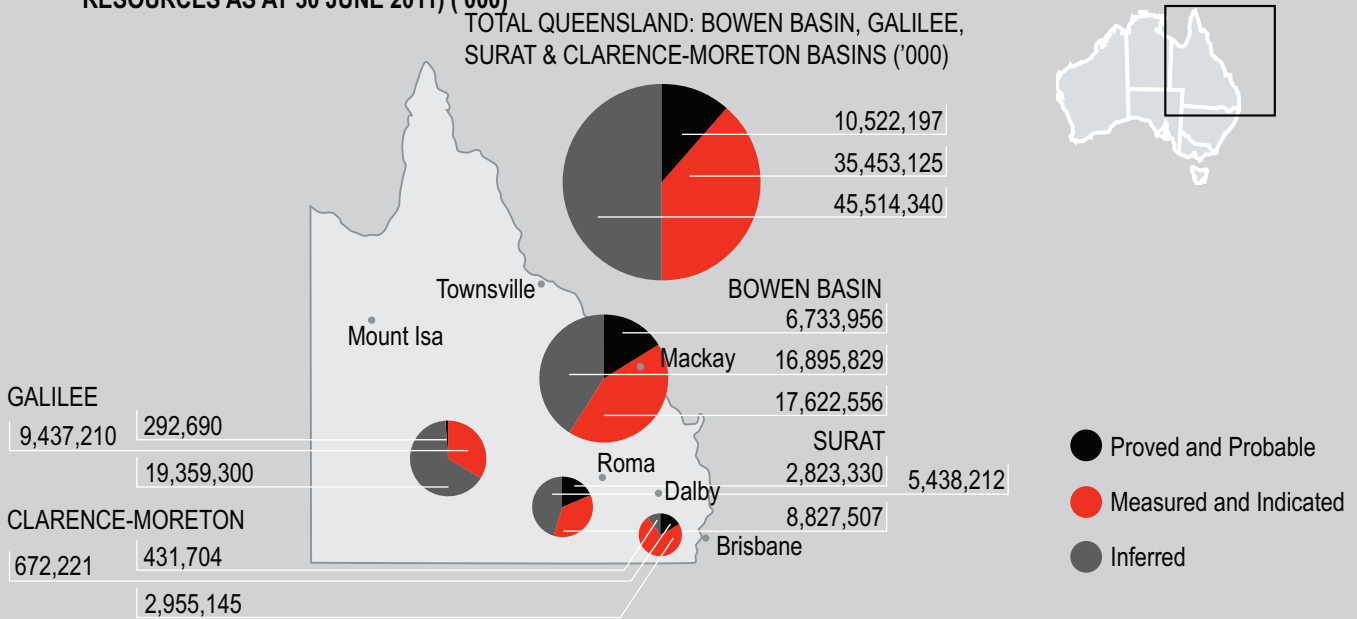


**CHART 5: QUEENSLAND URANIUM PROSPECTIVITY**



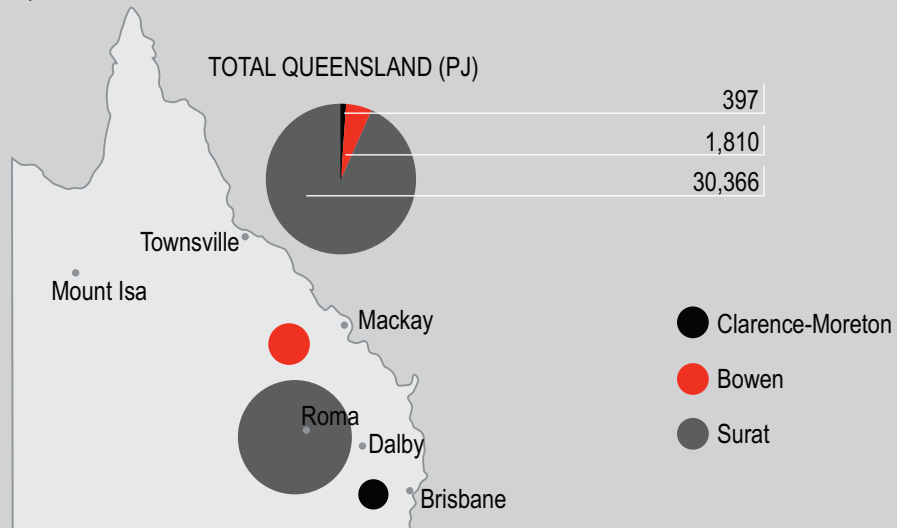
Source: GeoScience Australia

**CHART 6: QUEENSLAND COAL ENDOWMENT (TONNES OF RESERVES AND RESOURCES AS AT 30 JUNE 2011) ('000)**



Source: Interra

**CHART 7: QUEENSLAND COAL SEAM GAS 2P RESERVES (CONTRACTED AND UNCONTRACTED) PETAJOULE RESERVES AS AT 31 DECEMBER 2010**



Source: Interra

# 3.0 EXPLORER AND INVESTOR CONFIDENCE

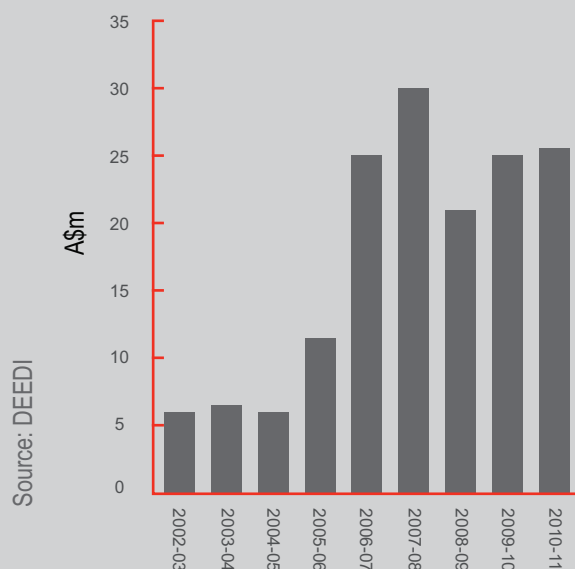
A key driver of exploration activity is explorer and investor confidence, influenced by perceptions of business risk and the likelihood of success.

Risk and success perceptions are in turn influenced by factors such as geoscientific funding and associated activities, legislative, regulatory and policy stability and operating and investment sentiment.

This section outlines a number of measures assessing each aspect.

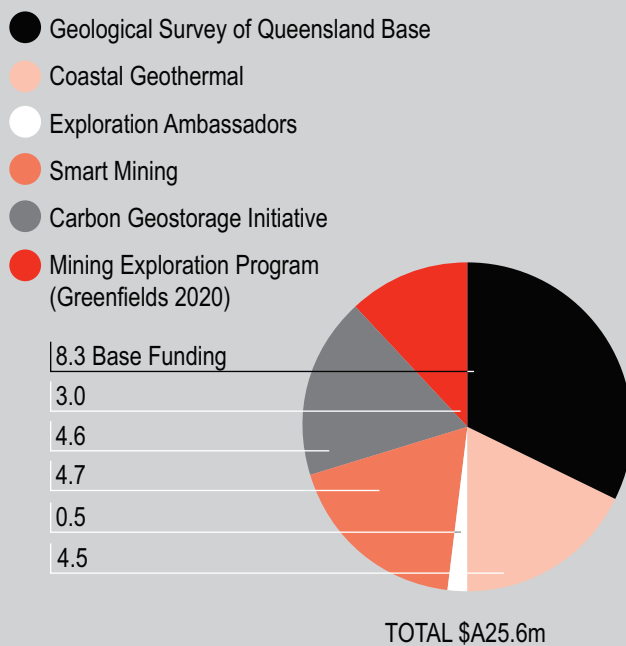
## 3.1 STATE GOVERNMENT GEOSCIENTIFIC FUNDING AND ACTIVITIES

**CHART 8: GEOLOGICAL SURVEY OF QUEENSLAND BUDGET ALLOCATIONS (\$m) 2002-03 TO 2010-11**



Source: DEEDI

**CHART 9: GEOLOGICAL SURVEY OF QUEENSLAND BUDGET ALLOCATION (BASE FUNDING AND LIMITED LIFE PROJECTS) (\$m) 2010-11**



## KEY FINDINGS

- Budget allocations to the Geological Survey of Queensland (GSQ) have increased substantially in recent years (chart 8) with a \$25.6 million allocation in 2010-11 (chart 9).
- **The Smart Mining - Future Prosperity Program** has \$29 million over four years (final year 2010-11) comprising:
  - \$19 million for geoscientific data acquisition
  - \$7.3 million for collaborative drilling grants to industry
  - \$1.2 million to facilitate land access subject to Native Title
  - \$1.6 million to the Office of Women for the Women in Hard Hats program

### Major program achievements include:

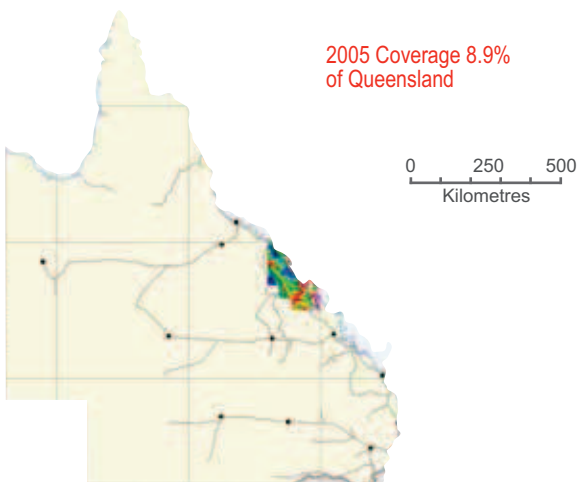
- Airborne magnetic/radiometric coverage has increased from 64 percent to 89 percent
  - Gravity survey coverage increased from 34 percent to 65 percent
  - Geochemical and drill hole data released totalled 1,383,541 points
  - Seismic tape transcription completed
  - Geochemical and drill hole data extraction for reports continued
  - Major airborne hyperspectral surveys completed
  - Major deep seismic reflection surveys completed
  - Completion of North-West Queensland Mineral and Energy Province report / models / GIS
  - Major magneto-telluric surveys completed
  - Resource assessment in Drummond and Hodgkinson areas
  - Increase in promotion and marketing - national and international
  - Establishment of Collaborative Drill Initiative (grants).
- The **Smart Exploration Program** has funding of \$20 million over four years for the acquisition of new geophysical data in the Mount Isa region, Bowen and Surat Basins, Drummond Basin and Mount Rawdon corridors.

### Major program achievements include:

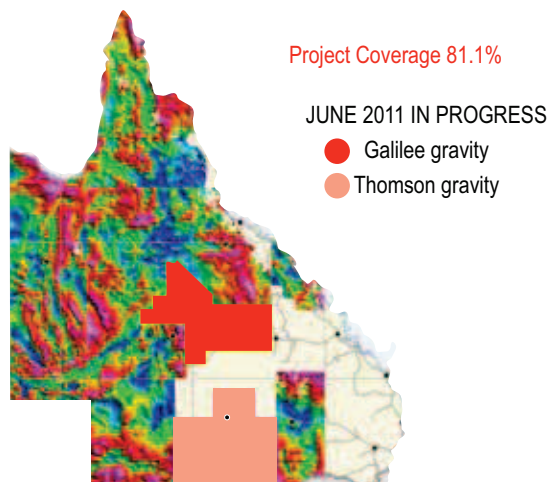
- Airborne magnetic / radiometric coverage increased from 43 percent to 64 percent
- Gravity coverage increased from 9 percent to 34 percent
- Modern digital geological map coverage increased from 22 percent to 38 percent
- Scanning of open file company exploration reports at QDEX completed
- Seismic tape transcription 80 percent complete
- First airborne hyperspectral surveys in Mount Isa area
- Major deep seismic transects in Mount Isa area
- Finalisation of SRK Structural Synthesis of Bowen-Surat Basins
- Completion of Regolith Map and Atlas with CRCLEME
- Numerous reports on Mount Isa with pmd\*CRC
- Geochemical and drill hole data collation from company reports
- Increased promotional activities.

The maps below show the significant increases in gravity and airborne magnetic surveys pre-2005 and post-2011 under the Smart Exploration and Smart Mining programs (charts 10-13).

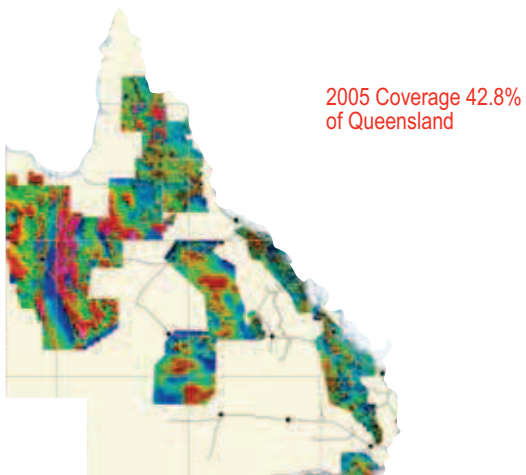
**CHART 10: GRAVITY SURVEYS PRE-SMART EXPLORATION AND SMART MINING 2005**



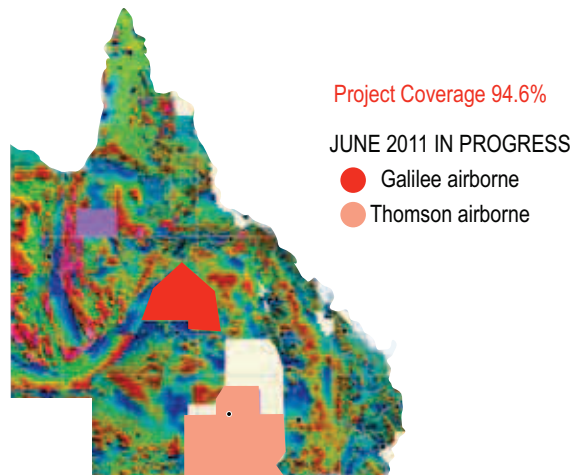
**CHART 11: GRAVITY SURVEYS POST-SMART EXPLORATION AND SMART MINING 2011**



**CHART 12: AIRBORNE MAGNETIC SURVEYS PRE-SMART EXPLORATION AND SMART MINING 2005**



**CHART 13: AIRBORNE MAGNETIC SURVEYS POST-SMART EXPLORATION AND SMART MINING 2011**



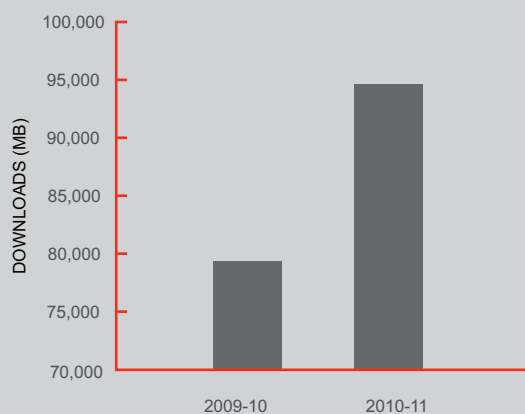
# 3.1.1

## IRTM AND QDEX DOWNLOADS

**CHART 14: INTERACTIVE RESOURCE AND TENURE MAP (IRTM) DOWNLOADS AND HITS, 2009-10 AND 2010-11**



**CHART 15: QUEENSLAND DIGITAL EXPLORATION REPORTS (QDEX) DOWNLOADS, 2009-10 AND 2010-11**



Source: DEEDI

### KEY FINDINGS

- Users accessed greater geological data (mining and exploration tenure information) in 2010-11 with the volume of downloads (Mb) and number of hits registered on the Queensland government's interactive resource and tenure map (IRTM) database increasing 41 and 10 percent respectively, compared with 2009-10 (chart 14).
- Users accessed greater historic (company) exploration tenure reports in 2010-11 with the volume of downloads (Mb) registered on the Queensland government's Queensland digital exploration reports (QDEX) database increasing 19 percent in 2010-11 compared with 2009-10 (chart 15).

## 3.2 REGULATORY, LEGISLATIVE AND POLICY STABILITY

In a globalised and increasingly competitive operating environment, the pressure is on governments to ensure that regulation remains minimal and achieves the desired outcome at least cost.

Any regulation of exploration activities can be categorised as follows:



1. *Minimum entry process* requirements are those common to all seeking to explore.
2. *Potential additional requirements* arise only in certain circumstances and are not necessarily common to all explorers. For example, the location of the proposed exploration program may be in a more sensitive geographic environment.
3. *Process barriers* present complete obstacles to exploration activities such as where exploration is prohibited in certain areas.
4. *Process hurdles* don't necessarily prohibit exploration but may make it harder for an explorer to secure exploration rights.
5. *Grant of exploration rights* may be subject to conditions that make the exploration more expensive or more difficult.
6. *Post-grant regulatory controls* are those that apply to the exploration program after exploration rights have been conferred.

The following analysis of regulatory changes in Queensland has been tabulated according to the above categorisation of regulatory controls. Table 1 is designed to give an indication of regulatory changes from 2005-2011 and their influence on exploration activities in Queensland.

### KEY FINDINGS

- Since 2005 Queensland exploration has been closely regulated in many significant aspects.
- There has been a marginal increase in the regulatory controls placed on exploration in Queensland from 2005-2011.
- However, four key areas of new and proposed policy and regulation affecting exploration are:
  1. activities in designated Wild Rivers and their catchments
  2. activities in areas of designated strategic cropping land
  3. changes to landowner compensation arrangements and
  4. application of exploration and urban living policies

These changes impose either significant new direct and indirect responsibilities and/or constraints on exploration in Queensland.

- Currently there are programs under way in Queensland government looking at ways and means of identifying and implementing streamlining of relevant regulatory processes.

### NOTE ON RECENT REGULATORY CHANGES

Exploration activity is now restricted or effectively prohibited in approximately 10 percent of Queensland, consisting:

- National parks: 4.7 percent (prohibited)
- Wild Rivers: 1 percent (restricted)
- Nature refuges: 1.2 percent (prohibited)
- Urban areas: 2.2 percent (restricted)
- Strategic cropping land: 1.5 percent (restricted)

**TABLE 1: CHANGE IN REGULATORY CONTROLS ON QUEENSLAND EXPLORATION ACTIVITY 2005-2011**

PROCESS STAGES	2005	2011
<i>1. Minimum entry process:</i>		
• Application for exploration rights (oil and gas rights subject to tender process)	✓	✓
• Application for environmental authority	✓	✓
<i>2. Potential additional requirements:</i>		
• Aboriginal cultural heritage arrangements	✓	✓
• Native title arrangements	✓	✓
• Federal environmental assessment and approval	✓	✓
• Applications and approvals to disturb native vegetation	✓	✓
• Applications and approvals to work in waterways	✓	✓
<i>3. Potential process barriers:</i>		
• Land regulated as "Restricted Area"	✓	✓
• Land otherwise off limits for environmental reasons (eg. national park)	✓	✓
• Land subject to other third party interests (eg. mining leases)	✓	✓
<i>4. Potential process hurdles:</i>		
Above processes (at 1. and 2.) may be subject to following which could either present a higher hurdle for the applicant explorer or, in some cases, a barrier:		
• Proposed/declared Wild Rivers areas	x	✓
• Application of strategic cropping land policy	x	✓
• Application of exploration and urban living	x	✓
• Land subject to other third party interests (eg. other exploration rights such as coal v gas)	✓	✓
• Need to make applicaiton for non-code compliant EA	✓	✓
<i>5. Grant of exploration rights:</i>		
• Recommendation obligations	✓	✓
• Expenditure conditions	✓	✓
<i>6. Post-grant regulatory controls</i>		
• Landowner compensations arrangements (large changes in 2011)	✓	✓
• Renewal of exploration rights	✓	✓
• Periodic relinquishment of sub-blocks	✓	✓

Source: Blake Dawson Lawyers

**KEY**

- ✓ = regulatory control in place in year specified
- x = regulatory control not in place in year specified

# 3.3 OPERATING AND INVESTMENT SENTIMENT OF EXPLORATION COMPANIES

In mid-2011, the Queensland Resources Council asked 211 companies actively exploring in Queensland for their views on a range of factors thought to influence operational and investment confidence.

The response rate was approximately 36 percent (75 responses). Respondents did not answer every question and were varied in size (market capitalisation) and exploration interests.

**TABLE 2: SURVEY RESPONDENT DETAILS, BY MARKET CAPITALISATION**

Your company's market capitalisation in 2010-11	Response (percent)	Response count
Large cap (\$10 billion or greater)	3%	2
Mid cap (\$2 billion to \$10 billion)	4%	3
Small cap (\$300 million to \$2 billion)	12%	9
Micro cap (\$50 million to \$300 million)	24%	18
Nano cap (\$50 million or less)	55%	41
<b>TOTAL</b>		<b>73</b>

Skipped question = 2

**TABLE 3: SURVEY RESPONDENT DETAILS, BY MAIN EXPLORATION TARGET**

Your company's main exploration target in 2010-11	Response (percent)	Response count
Coal (all types)	25%	19
Oil	0%	-
Gas	5%	4
Base and/or precious metals	49%	37
Bauxite	3%	2
Phosphate	0%	-
Other	15%	11
<b>TOTAL</b>		<b>73</b>

n = 211

Skipped question = 2



# 3.3.1

## OPERATING SENTIMENT

For their Queensland operations only, companies were asked to indicate to what degree did 13 individual factors positively or negatively impact upon their commercial objectives during 2010-11. The factors chosen were considered important in the day-to-day operations of a resources exploration company.

Companies were also asked to nominate which Australian jurisdiction they are most active in apart from Queensland. For that jurisdiction, they were asked to indicate to what degree the same 13 factors positively or negatively impacted upon their commercial objectives in that jurisdiction during 2010-11. These results were aggregated to present a 'rest of Australia' comparison.

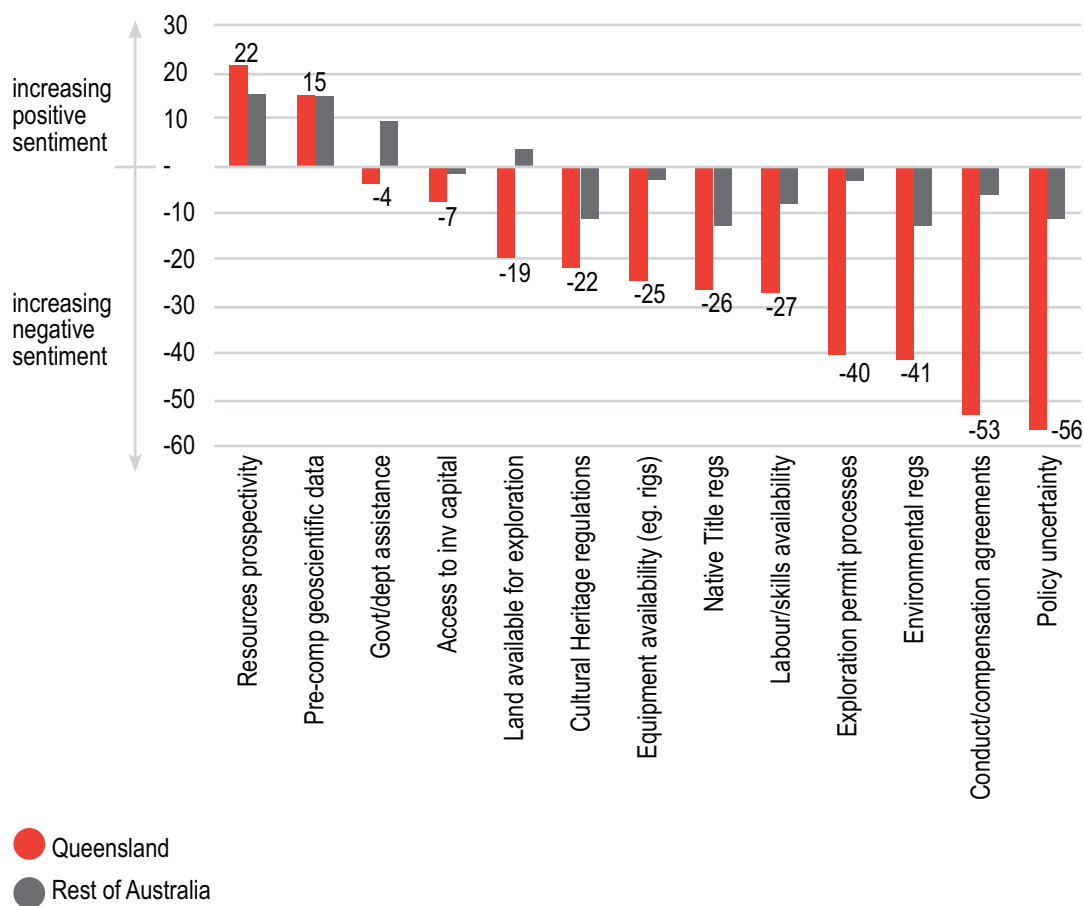
Companies responded *very positively*, *positively*, *not at all*, *negatively* or *very negatively* to each of the 13 factors with various positive and negative weightings assigned to each response to provide an overall factor index score (see example at box 1). The same methodology was used to calculate sentiment towards the seven investment factors (see below).

**BOX 1: CALCULATION OF WEIGHTED SURVEY RESULTS (EXAMPLE)**

Environmental regulation	Weights	Responses	Percentage of responses	Weighted responses
Very positively	1	0	0%	0%
Positively	0.5	3	4%	2%
Not at all	0	17	25%	0%
Negatively	-0.5	36	54%	-27%
Very negatively	-1	11	16%	-16%
		<b>67</b>	<b>100%</b>	<b>-41%</b>

For interpretation, the higher the negative score the more negative the sentiment recorded. Vice versa, the higher the positive score, the higher the positive sentiment.

**CHART 16: RESULTS OF SURVEY, SENTIMENT TOWARDS CERTAIN OPERATIONAL FACTORS, AND COMPARISON TO OTHER AUSTRALIAN JURISDICTIONS 2010-11**



**Note:** For Queensland specific factors the number of responses to this section of the survey was 67 and for other jurisdictions the number of responses was 42.

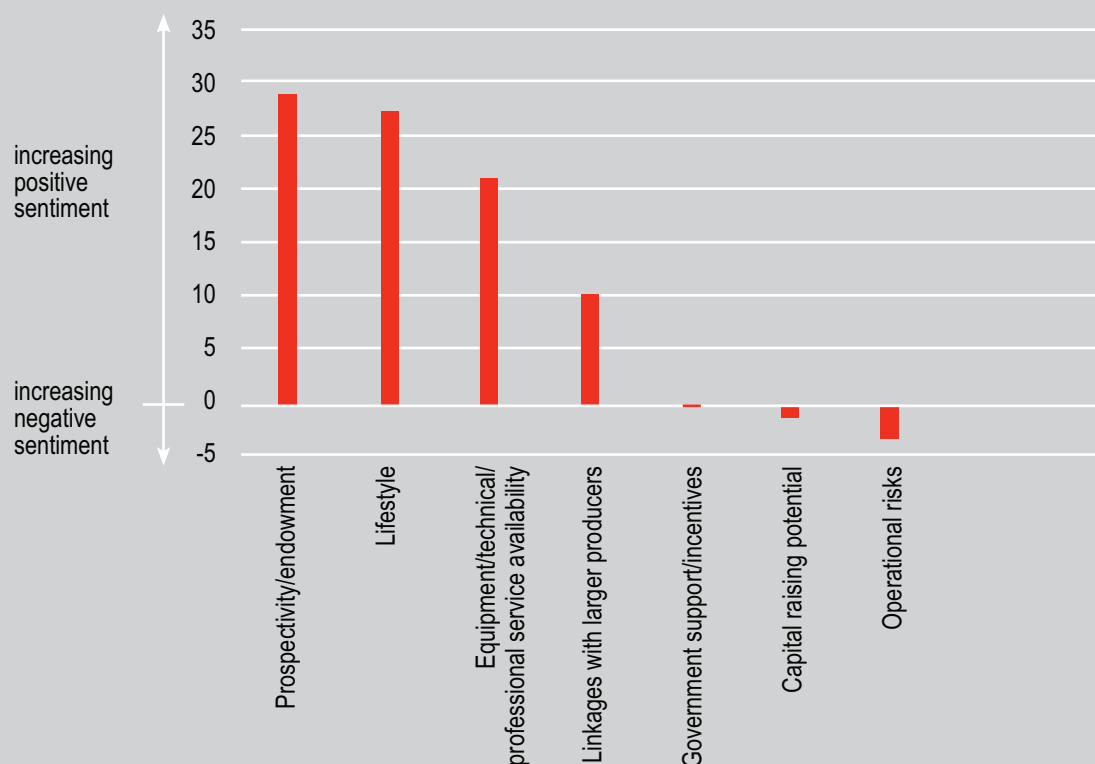
## KEY FINDINGS

- In comparison with other Australian jurisdictions, Queensland rates stronger in terms of resources prospectivity and equally on pre-competitive geoscientific data.
- In comparison with other Australian jurisdictions, Queensland rates weaker on the remaining 11 factors.
- The three most negative factors impacting on the 'day-to-day' operations of companies exploring in Queensland are policy uncertainty, conduct/compensation agreements and environmental regulations.

# 3.3.2 INVESTMENT SENTIMENT

Applying the same methodology, companies were asked to indicate to what degree did seven individual factors positively or negatively impact upon their company's decision to headquarter their exploration activities in Queensland. These factors are more macro than the operational factors chosen in 3.3.1.

**CHART 17: RESULTS OF SURVEY, SENTIMENT TOWARDS CERTAIN INVESTMENT FACTORS 2010-11 (QUEENSLAND ONLY)**



\* The number of responses to this section of the survey was 64.

## KEY FINDINGS

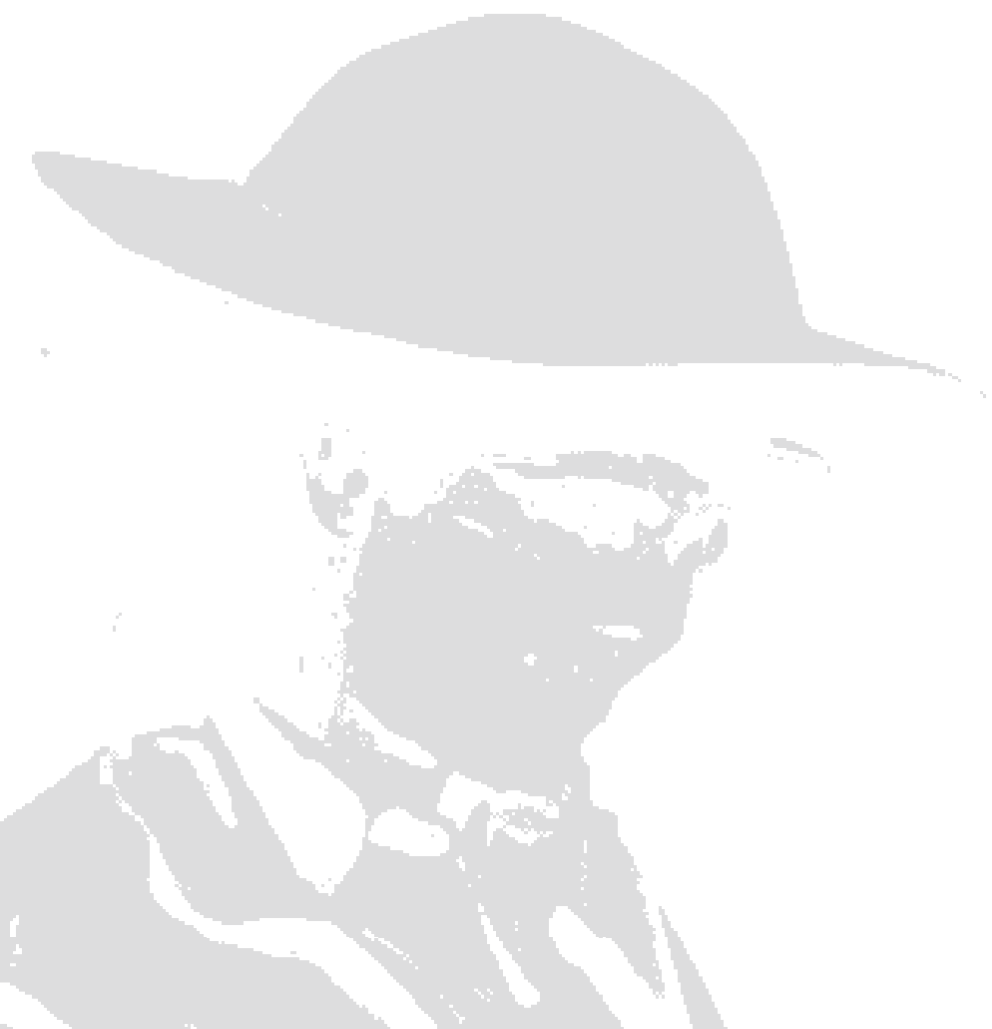
- Prospectivity/endowment followed by lifestyle are the two most important factors that would influence an exploration company's decision to headquarter in Queensland.
- Equipment/technical/professional service capability and linkages with larger producers were also considered important positive factors.
- On balance, respondents did not believe that government support/incentives, operational risks and capital raising potential were overly important factors.

# 4.0 ACCESS TO THE FACTORS OF PRODUCTION

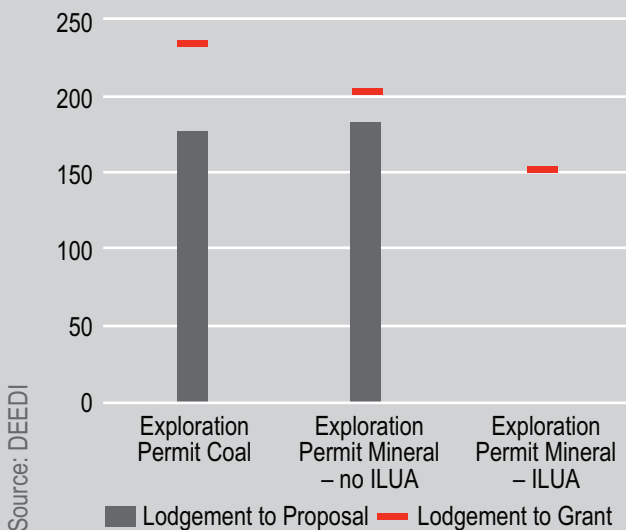
## 4.1 ACCESS TO LAND

A significant factor influencing exploration success is how quickly exploration companies can access the land.

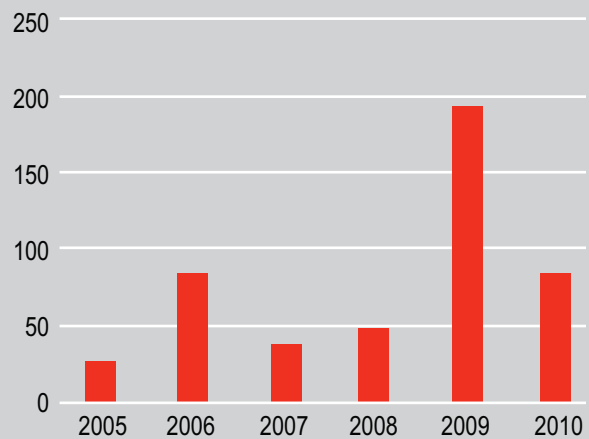
The average time taken to grant coal and mineral exploration permits as at 30 June 2011 and approvals times for petroleum land releases since the start of the tender process is provided.



**CHART 18: AVERAGE DAYS TAKEN TO APPROVE COAL AND MINERAL EXPLORATION PERMITS, 30 JUNE 2009 TO 30 JUNE 2011**



**CHART 19: DAYS TAKEN TO APPOINT PREFERRED TENDERERS FOR PETROLEUM LAND RELEASES, 2005 TO 2010**



## KEY FINDINGS

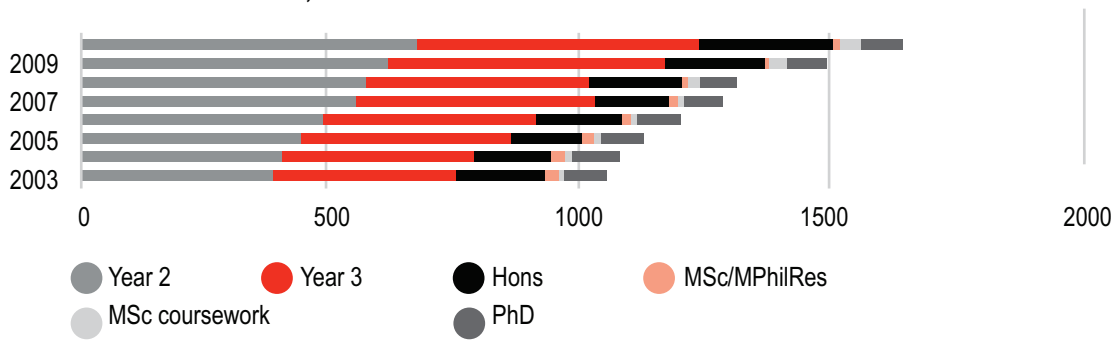
- From 30 June 2009 to 30 June 2011, it took an average 238 calendar days to grant coal exploration permits (EPCs) from the date of lodgement, consisting:
  - 177 days from lodgement to proposal being the time taken for the application to be assessed by DEEDI (administrative, technical and native title assessments) and by DERM for environmental assessment including four months for the Native Title notification period.
  - An additional 61 days on average for applicants to pay rent, meet DERM's financial assurance provisions and accept the terms and conditions of the permit.
- Over the past two years, it took an average 151 days to approve mineral exploration permits (EPMs) when proponents opted into existing Indigenous Land Use Agreements covering parts of Queensland. All other EPMs took an average 203 days to grant.
- In 2010, the time taken from the close of tender for petroleum land release to appointment of preferred tenderer decreased by 15 weeks compared with 2009. The Queensland Government significantly increased the number of tenure officers assessing petroleum tenures during this time.
- The Queensland Government is currently undertaking a major streamlining project to reduce the time taken to approve mining and petroleum tenures. This project involves: upgrading information communication technology systems to do more business online (Mines Online); legislative changes to standardise and minimise the steps in the tenure approval process; and increased funding for tenure administration.

# 4.2 ACCESS TO HUMAN AND INTELLECTUAL CAPITAL

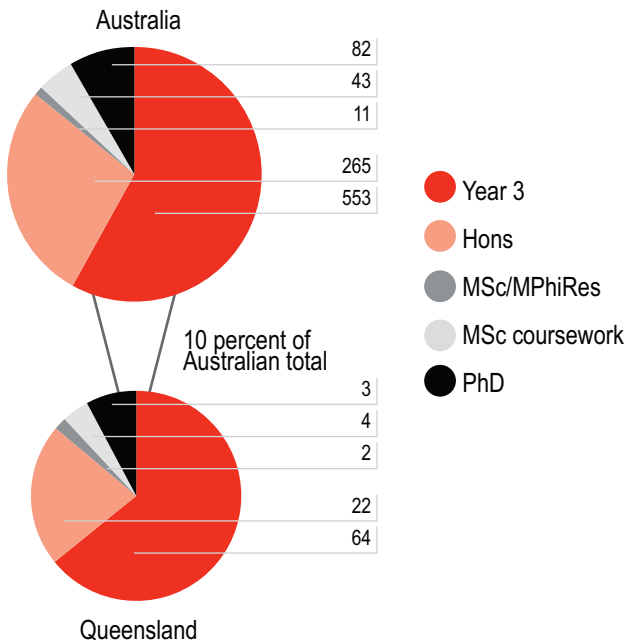
The attraction and retention of geoscientists and drillers is a significant growth enabler. These charts plot the number of geoscience students (expressed in full-time equivalent load terms) currently undertaking tertiary study at the Australian universities. Internet employment vacancies for geologists and geophysicists are also illustrated below.

## 4.2.1 SUPPLY OF WORKERS

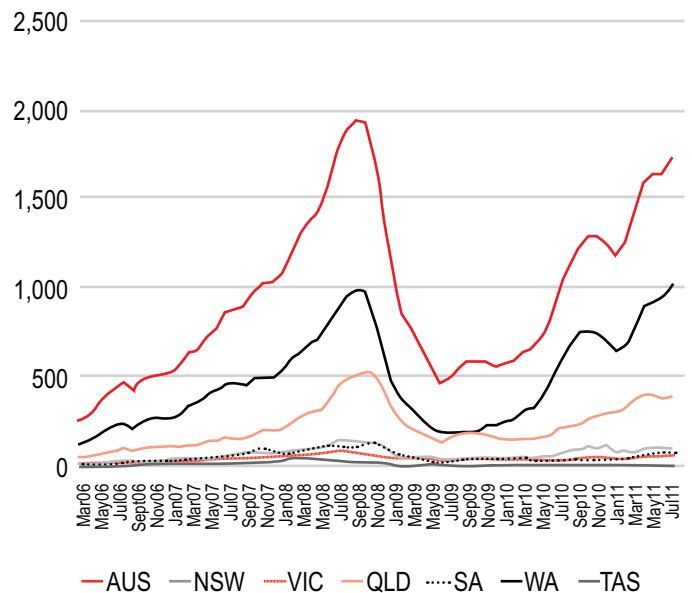
**CHART 20: GEOSCIENCE FULL-TIME FTE STUDENT LOAD, ALL AUSTRALIAN UNIVERSITIES, 2003- 2010**



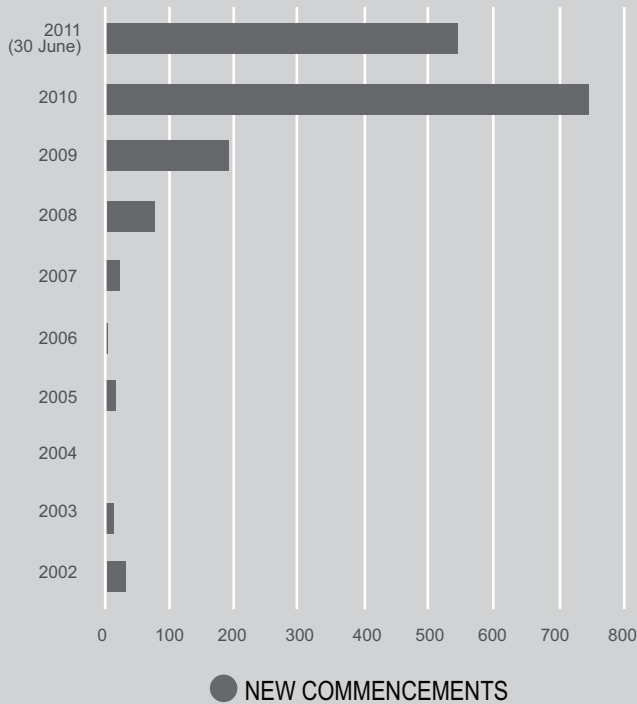
**CHART 21: POTENTIAL GEOSCIENCE GRADUATES IN FTE STUDENT LOAD EQUIVALENT TERMS, QUEENSLAND AS A PROPORTION OF NATIONAL, 2010**



**CHART 22: INTERNET VACANCIES FOR GEOLOGISTS AND GEOPHYSICISTS, BY JURISDICTION, MARCH 2006 TO JUNE 2011**



**CHART 23: CERTIFICATES IN DRILLING,  
COMMENCEMENTS, AUSTRALIA, 2002 TO 2011 (30 JUNE)**



## KEY FINDINGS

- Combining year 2 and 3, honours, masters and doctorate students, there has been a gradual increase in geoscience FTE loads through the Australian tertiary system since 2003 with the equivalent of 1,638 full time students currently progressing through Australia's tertiary institutions (chart 20).
- As at 31 December 2010 there was a national graduate pool of approximately 954 persons (year 3, honours, masters and doctorate students) (chart 21). This is well below the current number of Australia-wide internet vacancies for geologists and geophysicists that stood at 1,746 at June 2011 (of which Western Australia represents 1,030 or 59 percent) (chart 22). Online vacancies include newly lodged advertisements on SEEK, MyCareer, CareerOne and Australian JobSearch.
- Queensland via James Cook University, the University of Queensland and Queensland University of Technology has increased its geoscience FTE loads since 2003. However, this is off a low base, with Queensland representing only 10 percent (100 out of 954) of the national pool of potential graduates (chart 21). This compares with the current 413 internet vacancies for geologists and geophysicists in Queensland at present (chart 22).
- There have been strong increases in drilling certificate commencements in Queensland since 2007 (chart 23). The strength in the number of new commencements in recent years is positive and could be considered a proxy for increasing interest in resource employment opportunities.

# 4.2.2 LIVABILITY OF QUEENSLAND

Survey results contained in this report demonstrate that a key factor in attracting and retaining skilled employees is the livability of host communities and the larger city hubs that typically service resource regions.

To assess the comparable livability of the cities and regions where geoscience professionals currently reside (i.e. Cairns, Townsville, Brisbane, Perth, and Kalgoorlie-Boulder), Synergies Economic Consulting applied a Livability Index using the latest available public data (see glossary for full explanation).

## KEY FINDINGS

- Relatively, Brisbane, Perth and Townsville are perceived as the three most livable communities among those cities and regions most commonly chosen by geoscience professionals to reside (chart 24).
- Relatively, Brisbane rates very highly on the economy and health and wellness dimensions, Townsville rates highly on economy and health and wellness and very highly on leadership, and Cairns rates highly on the equity dimension (chart 25).

CHART 24: LIVABILITY INDEX, OVERALL SCORES

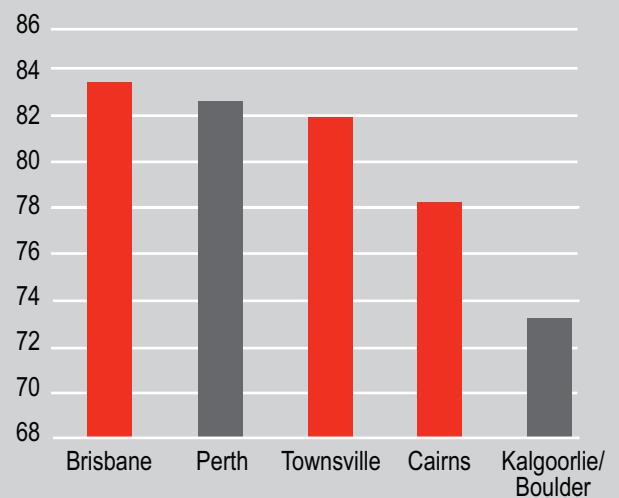
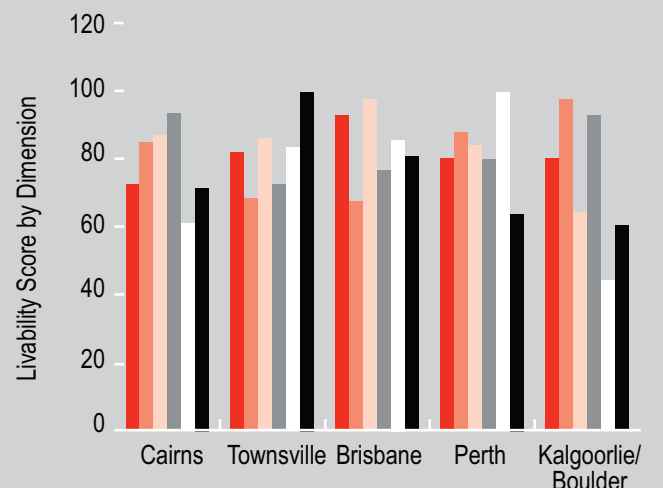


CHART 25: LIVABILITY SCORE BY DIMENSION



- Economy
- Environmental Sustainability
- Health and Wellness
- Equity
- Education and Learning
- Leadership

Sources: AusIMM (residency data) and Synergies Economic Consulting



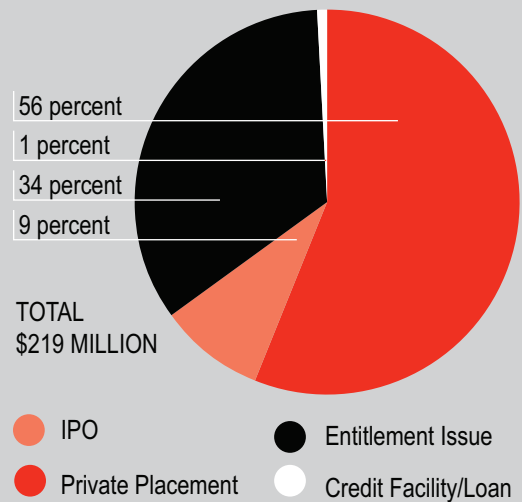
# 4.3 ACCESS TO EQUITY CAPITAL

As many exploration companies have no regular source of revenue, access to equity capital to fund exploration activities is essential. The combined 2010-11 domestic and global equity capital raisings of companies conducting exploration activity in Queensland by type of raisings and as a percentage of Australian raisings is shown.

## KEY FINDINGS

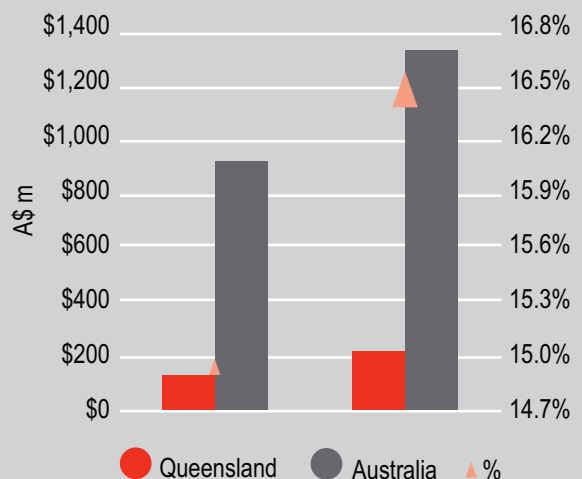
- In 2010-11, companies announced approximately \$219 million in capital raisings (domestic and globally sourced via various stock exchanges) for minerals exploration projects in Queensland (excluding petroleum) (chart 26). This is up from \$137 million in 2009-10 (chart 27). The main capital raisings in 2010-11 were:
  1. private placements (56 percent of total raisings)
  2. entitlement issue (34 percent of total raisings)
  3. initial public offerings (9 percent of total raisings)
  4. credit facility/loan (1 percent) (chart 26)
- \$219 million when compared with the \$1,331 million (16.5 percent) (chart 27) in capital raisings for minerals exploration projects Australia wide in 2010-11 could be considered low when considering that Queensland accounts for approximately 24 percent of Australia's minerals value of production (see table 5).

**CHART 26: EQUITY CAPITAL RAISINGS OF COMPANIES ACTIVELY EXPLORING IN QUEENSLAND, BY TYPE, ALL DOMESTIC AND INTERNATIONAL SOURCES OF CAPITAL, 2010-11**



Source: Interra

**CHART 27: COMPARISON OF EQUITY CAPITAL RAISINGS OF COMPANIES ACTIVELY EXPLORING IN QUEENSLAND AND AUSTRALIA, ALL DOMESTIC AND INTERNATIONAL SOURCES OF CAPITAL, 2009-10 AND 2010-11**



Source: Interra

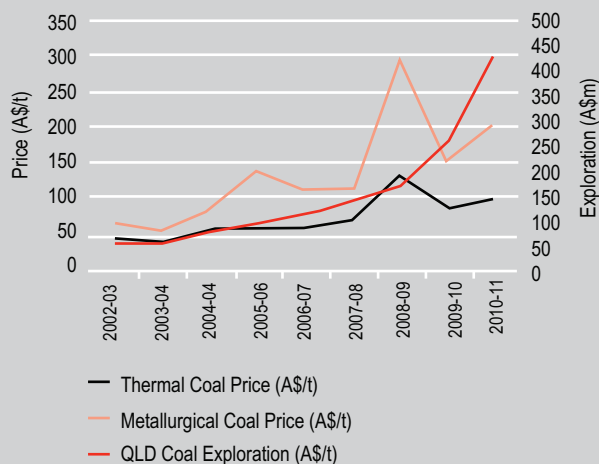
# 5.0 RESOURCE PRICES

Resource prices are a significant driver of exploration activity in Queensland. While expected to moderate from current record or near-record highs, resource prices may remain buoyant on account of strong global demand – especially from Asia – and global supply constraints. The correlation between Queensland exploration expenditure and average global benchmark prices for coal, gold, copper, and liquefied natural gas (LNG) is shown.

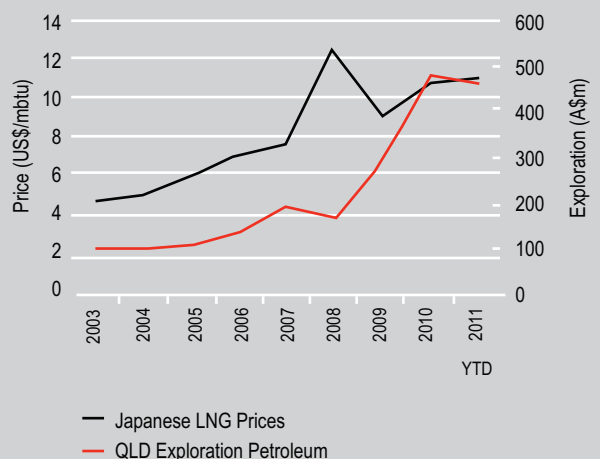
## KEY FINDINGS

- Exploration activity in Queensland is proven to strongly correlate with prevailing resource prices (charts 28-31).
- Prices for most of Queensland's main resources are at, or close to all-time highs and this is driving high levels of exploration in Australia and Queensland at present.
- The challenge is to ensure that the exploration spend remains high when resource prices begin to moderate.

**CHART 28: GLOBAL AVERAGE BENCHMARK COAL PRICES AND QUEENSLAND EXPLORATION SPEND, 2002-03 TO 2010-11**

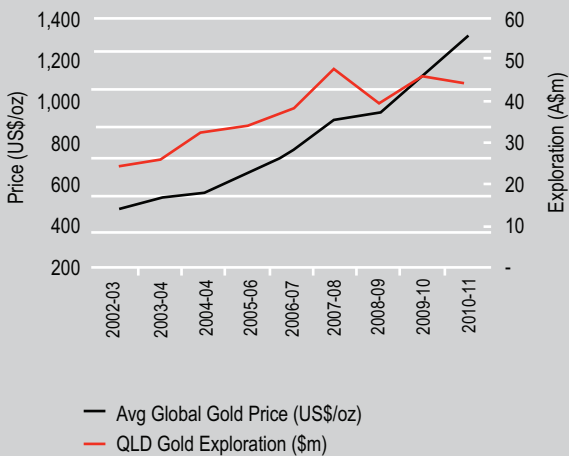


**CHART 29: GLOBAL AVERAGE BENCHMARK LNG PRICES AND QUEENSLAND PETROLEUM EXPLORATION SPEND, 2002-03 TO 2011 (YTD)**

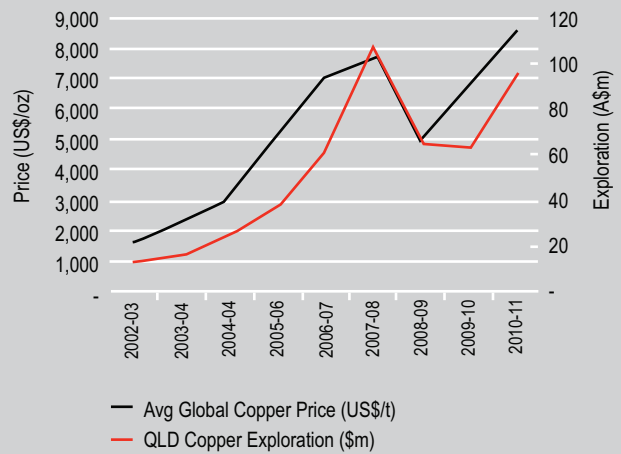




**CHART 30: GLOBAL AVERAGE BENCHMARK GOLD PRICES AND QUEENSLAND EXPLORATION SPEND, 2002-03 TO 2010-11**



**CHART 31: GLOBAL AVERAGE BENCHMARK COPPER PRICES AND QUEENSLAND EXPLORATION SPEND, 2002-03 TO 2010-11**



# LAG INDICATORS – EXPLORATION SUCCESS

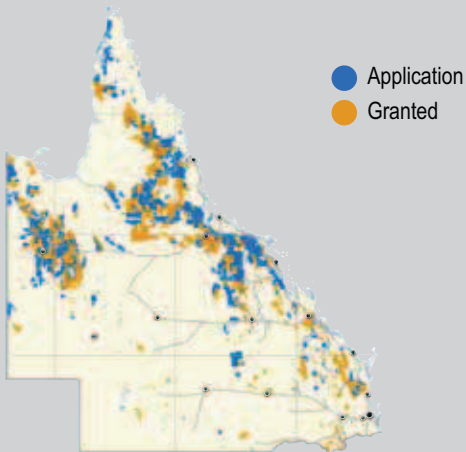
## 6.0 NUMBER OF LODGED AND CURRENT EXPLORATION PERMITS AND AREAS GRANTED

A measure of exploration interest is whether the number of lodgements and current permits to explore and develop resources is increasing. Another useful measure is the amount of land granted for those activities.

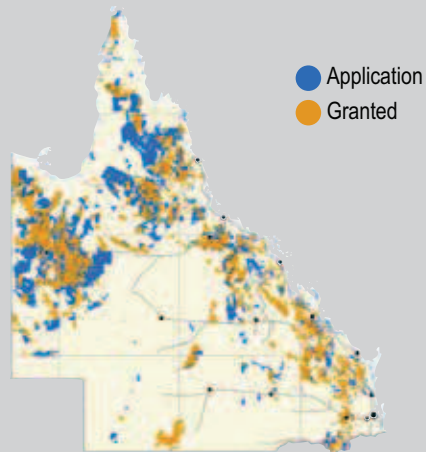
**TABLE 4: NUMBER OF QUEENSLAND LODGED AND CURRENT EXPLORATION PERMITS  
AND AREAS GRANTED, 1 JULY 2009 TO 1 JULY 2011**

	As at 1 July 2009			As at 1 July 2010			As at 1 July 2011		
	Lodgement	Current	Grant (Ha)	Lodgement	Current	Grant (Ha)	Lodgement	Current	Grant (Ha)
Exploration Permit Coal	365	408	12,172,083	335	586	17,851,878	497	586	25,826,878
Exploration Permit Mineral	473	1,523	20,995,623	574	1,394	17,464,612	526	1,394	20,685,236
Authority to Prospect for Petroleum	83	111	36,418,316	10	117	38,429,930	37	117	42,709,315
Exploration Permit Geothermal	3	1	39,237	36	43	862,257	3	43	2,741,486

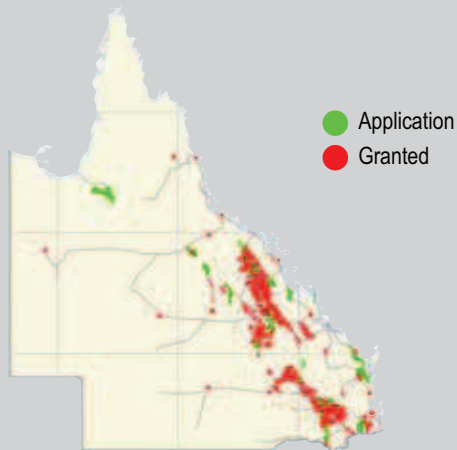
**CHART 32: EXPLORATION PERMIT  
MINERAL COVERAGE, JULY 2005**



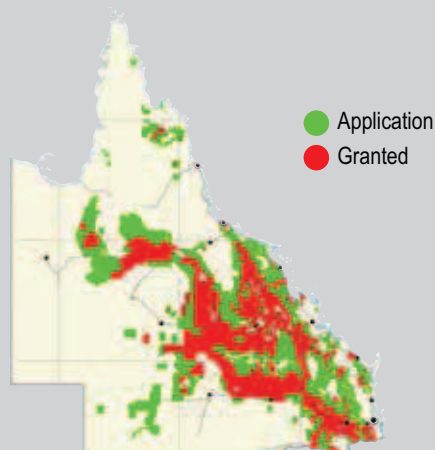
**CHART 33: EXPLORATION PERMIT  
MINERAL COVERAGE, JULY 2011**



**CHART 34: EXPLORATION PERMIT  
COAL COVERAGE, JULY 2005**



**CHART 35: EXPLORATION PERMIT  
COAL COVERAGE, JULY 2011**



Source: DEEDI

## KEY FINDINGS

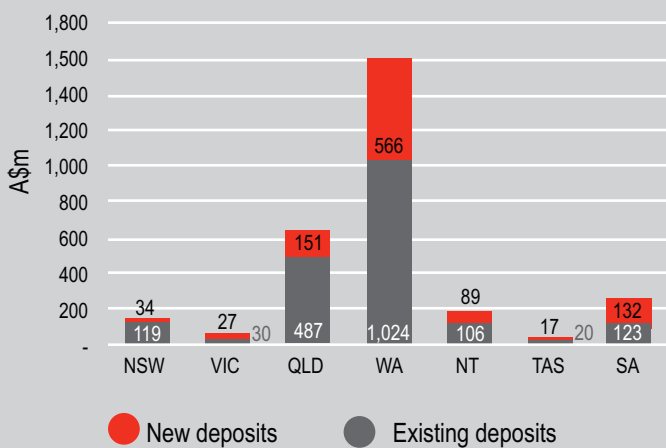
- There has been a strong increase in recent years in the number of coal exploration permits that have been lodged and remain current (table 4). The amount of land granted for coal exploration has also increased strongly – doubling between 2009 and 2011 from 12 to 25.8 million hectares (table 4). From 2005 to 2011, the increase in land under coal exploration permits has also been marked (charts 34 and 35).
- Between 2009 and 2011 steady growth has been recorded in the number of mineral exploration permits that have been lodged and that remain current. The amount of land granted for exploration has plateaued at around 21 million hectares (table 4). This may reflect a number of small companies having to relinquish tenure during the global financial crisis as they were unable to access finance. From 2005 to 2011, the increase in land under mineral exploration permits has also been marked (charts 32 and 33).
- While care must be taken in analysing trends in exploration data for petroleum and geothermal resources as they are periodically released by the Queensland government for competitive tender, the following has occurred:
  - authorities to prospect for petroleum have slowed in recent years but the number of current authorities continues to increase; and
  - very strong increase in geothermal exploration activity in recent years reflects the growing potential of this renewable technology and complementary government policies such as the Renewable Energy Target and carbon pricing.

# 7.0 MINERALS AND PETROLEUM EXPLORATION

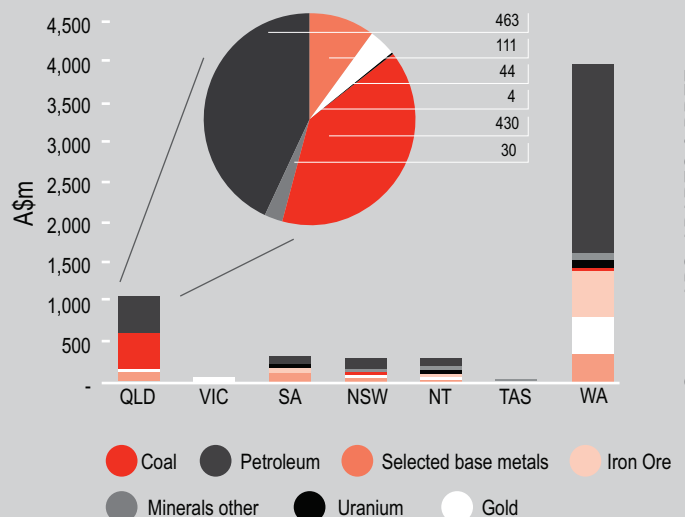
It is commonly accepted that Australia and Queensland have become too dependent on past investments and more greenfield exploration applying new techniques to generate new information and discoveries is needed to find the next generation of resources. Applying a variety of measures, Queensland's exploration performance against other Australian jurisdictions is provided.

## 7.1 BROWN AND GREENFIELD MINERALS AND PETROLEUM EXPLORATION EXPENDITURE: VARIOUS COMPARISONS

**CHART 36: AUSTRALIAN MINERALS EXPLORATION, EXISTING AND NEW DEPOSITS, 2010-11**



**CHART 37: MINERALS AND PETROLEUM EXPLORATION, BY COMMODITY AND JURISDICTION, 2010-11**

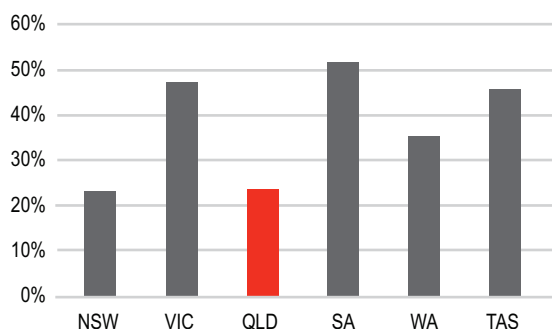


Sources: ABS, ABARES & BREE

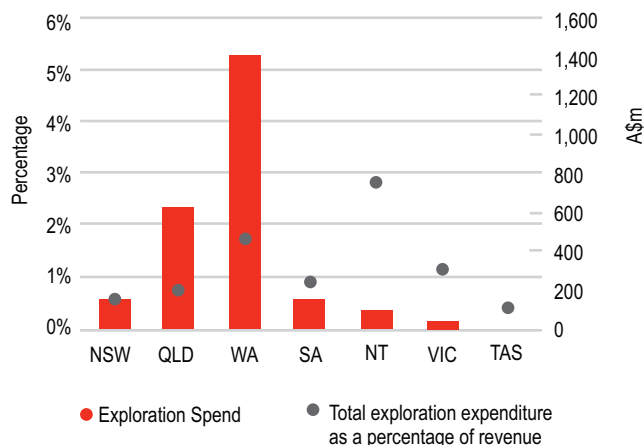
### KEY FINDINGS

- Queensland recorded \$487 million of existing and \$151 million in new mineral deposit exploration in 2010-11. By comparison, Western Australian recorded \$1,024 and \$556 million in existing and new mineral deposit exploration (chart 36).
- In 2010-11, 24 percent of Queensland's minerals exploration was new in nature. Only New South Wales recorded a lower greenfield performance (22 percent) (chart 38). This reflects in part the large increase in coal exploration that occurs in areas where resources have been identified previously or deemed 'existing' in nature.
- Queensland has seen a very large increase in petroleum (i.e coal-seam gas) exploration in recent years and this has become the state's largest exploration target in dollar terms (chart 37).
- In 2010-11 Queensland spent 0.6 percent of its minerals revenues on exploration. The Northern Territory alternatively spent the most with 2.8 percent (chart 39).

**CHART 38: PERCENTAGE OF TOTAL MINERALS EXPLORATION THAT IS NEW DEPOSITS (GREENFIELDS), BY JURISDICTION, 2010-11**



**CHART 39: MINERALS EXPLORATION SPEND AS A PERCENT OF REVENUE, BY JURISDICTION, 2010-11 (COAL, SELECTED BASE AND PRECIOUS METALS AND IRON ORE ONLY)**



# 7.2

## MINERALS EXPLORATION AND MINERALS REVENUES AS A PERCENTAGE OF NATIONAL TOTALS: STATE COMPARISONS

**TABLE 5: PERCENTAGE OF COAL, SELECTED BASE METALS, GOLD AND IRON ORE SALES REVENUES AND EXPLORATION SPEND, BY JURISDICTION, 2004-05 AND 2010-11**

	2004-05		2010-11	
	Revenues	Exploration Spend	Revenues	Exploration Spend
NSW	20%	8%	18%	6%
QLD	34%	18%	24%	24%
WA	33%	62%	48%	58%
SA	2%	4%	3%	7%
NT	1%	4%	1%	4%
VIC	9%	4%	5%	2%
TAS	1%	0.2%	0%	0.3%
	100%	100%	100%	100%

Coal, selected base metals (copper, nickel, cobalt, silver, lead and zinc), gold, and iron ore only  
Sources: ABS, ABARES & BREE

### KEY FINDINGS

- In 2004-05, of the minerals selected, Queensland accounted for 34 percent of Australian revenues (value of production) yet achieved only 18 percent of Australia's national exploration. In comparison, Western Australia accounted for 33 percent of Australian revenues but gained a significant 62 percent of the national exploration spend.
- In 2010-11 Queensland's share of Australian revenues fell to 24 percent on account of very large increases in iron ore exports from Western Australia and high iron ore prices. However, Queensland increased its share of national exploration to 24 percent. Western Australia has retained its dominance nationally, accounting for 58 percent of the national exploration spend in 2010-11.

# 8.0 PRODUCTION, LEVELS OF RESERVES AND DRILLING SUCCESS BY RESOURCE

Key measures of a successful exploration sector are consistent high quality discoveries (greenfield in particular), increasing levels of resources and reserves (reserves in particular – grade and tonnage), and 'healthy' reserve/production ratios (years of available reserves at current production rates).

**TABLE 6: QUEENSLAND YEARS OF RESERVES, BY COMMODITY, 2010-11**

Commodity	QLD Production	QLD Proved & Probable Reserves	QLD Years of Reserves (Proved & Probable/Yearly Production)
Bauxite ('000t)	18,000	1,794,000	99
Copper (t)	306,000	4,031,000	13
Gold (oz)	564,000	6,786,000	12
Lead (t)	470,000	6,400,000	14
Silver (oz)	52,310,000	563,555,000	11
Zinc (t)	1,009,000	12,515,000	12
Coal (Mt)	158	10,600	67
Coal Seam Gas (PJ)	250	32,600	130

Sources: Intierra, DEEDI, ABARES & BREE



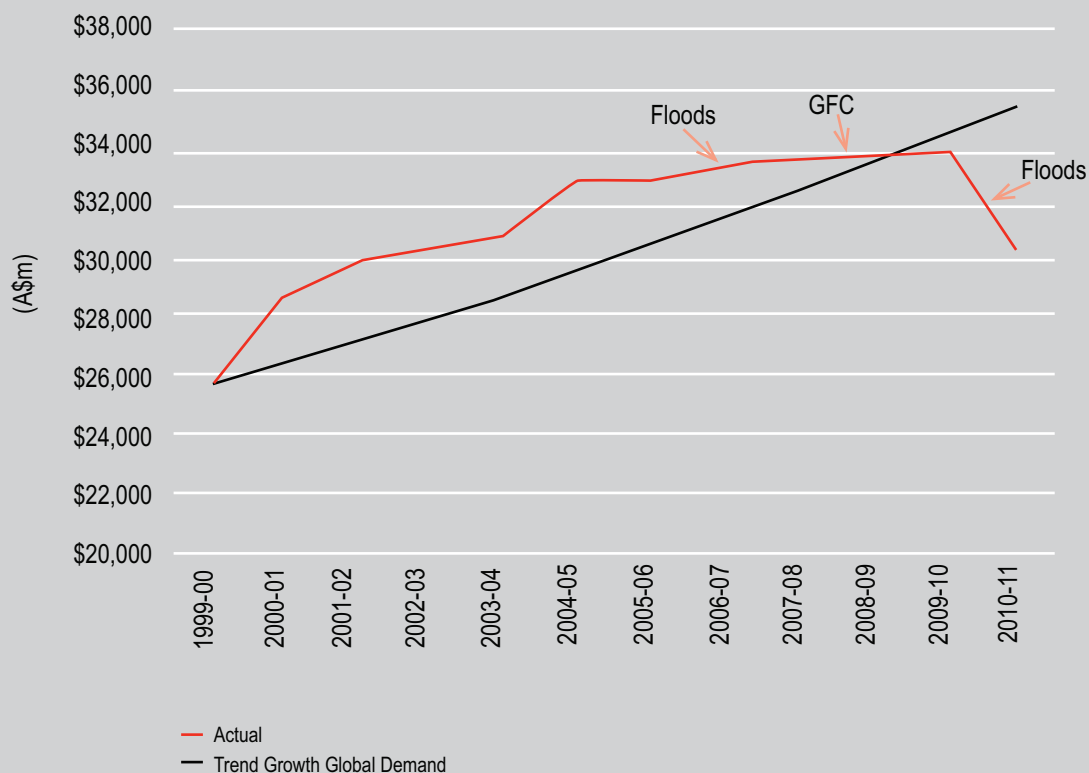
## KEY FINDINGS

- The 2010-11 reserve/production level (i.e current Queensland JORC reserves/current Queensland production levels) for Queensland bauxite is a healthy 99 years. The feedstock to produce alumina and aluminium, Queensland's Weipa deposits are among the highest grade deposits globally. Cape Alumina and Rio Tinto Limited are two of the companies actively pursuing new discoveries.
- The current reserve/production level for Queensland copper is a low 13 years – despite higher prices and some technological improvements in production processes which have lowered cut-off grades and increased reserve levels. Xstrata PLC, Aussie Q Resources Limited, CST Mining Group Ltd, and Ivanhoe Australia Limited delineated significant copper resources in 2010-11. Thirteen years is considered low given the lead times to discovery, resource definition, and the finalisation of reserves, satisfaction of the appropriate regulatory conditions, financing, construction, commissioning and ramp-up to full production.
- Queensland reserve/production levels for gold are at 12 years. Of note is that levels of gold reserves have remained flat for a number of years despite very high prices. Citigold Corporation Limited, Ivanhoe Australia Limited, Xstrata PLC and Conquest Mining Limited delineated a significant increase in gold resources in 2010-11.
- Queensland reserve/production levels for lead are currently estimated at 14 years. Now effectively a co-product with zinc, lead production and levels of reserves have been consistent for 10-plus years. Xstrata PLC, Breakaway Resources Limited and Copper Strike Limited delineated significant lead resources in 2010-11.
- Queensland reserve/production levels for silver are currently estimated to be 11 years. Silver production and levels of reserves have also remained consistent for 10-plus years. Xstrata PLC, Breakaway Resources Limited, Copper Strike Limited and Mungana Goldmines Limited reported significant increases in silver resources in 2010-11.
- Queensland reserve/production levels for zinc are currently estimated to be 12 years – down from a high of 26 a decade ago. Zinc production has increased steadily over the past 10 years and levels of reserves have steadily decreased. Xstrata PLC, Copper Strike Limited and Aston Resources reported significant increases in zinc resources in 2010-11.
- Queensland reserve/production levels of black coal currently stand at 67 years (metallurgical, thermal and PCI predominantly). This is up from approximately 34 years, 10 years ago. During this time Queensland levels of coal reserves have grown almost 125 percent whilst coal production has increased by around 40 percent.
- Queensland reserves of coal seam gas have increased from 4,900 PJ in 2006 to an estimated 32,600 PJ in 2010. This gas will be used to supply domestic requirements as well as proposed liquefied natural gas (LNG) operations.

# 9.0 MINERALS PRODUCTION AND COMPARISONS WITH GLOBAL DEMAND

A useful measure of success is how strongly Queensland's resources production is increasing, and whether these increases are keeping pace with increases in global resources demand (long term average percentage increases). Not increasing production at the same rate as global demand may mean that Queensland is losing market share in increasingly competitive global markets.

**CHART 40: QUEENSLAND RESOURCES PRODUCTION, ACTUAL AND COMPARISON WITH LONG TERM PERCENTAGE INCREASES IN GLOBAL DEMAND, 1999-00 TO 2010-11 (CONSTANT 2009-10 PRICES USED)**



Sources: Various ABARES Australian Mineral Statistics and BREE Resources and Energy Statistics publications

## KEY FINDINGS

- Between 1999-00 and 2008-09 the collective value of production of Queensland's resources (defined as alumina, aluminium, coal [all types], copper, gold, lead, silver, zinc, and nickel) exceeded global demand (long term average percentage increases) for these resources.
- From approximately 2004-05 to today, the collective production of these resources started to slow. As coal represents approximately 60 percent of Queensland's resource value of production, results are heavily influenced by events such as flooding in early 2008, the Global Financial Crisis (GFC) in early 2009 and more recently the very heavy flooding in 2010-11, which significantly curtailed production.
- Queensland's production is expected to increase strongly over the next 10 years on account of significant investments in expanded Queensland mine, rail and port capacity.
- Given that Queensland is largely reliant on existing minerals deposits, producers are generally extracting lower grade resources. This has an impact on productivity, efficiency and ultimately rates of production. The challenge is to offset lower productivity with higher grade and larger deposits.

# 10.0 SHARE PRICE MOVEMENTS

The market's estimates of future profitability, as measured by share price movements, is a useful measure of anticipated strength in a sector. The share price movements of those companies actively exploring for resources in Queensland during 2010-11 is provided.

**TABLE 7: SHARE PRICE MOVEMENTS OF COMPANIES ACTIVELY EXPLORING IN QUEENSLAND, 30 JUNE 2010 TO 30 JUNE 2011**

<b>Companies with Exploration Activity in Queensland</b>	<b>No. of Companies</b>	<b>Annual Performance</b>
Mega cap (\$100 billion or greater)	4	14%
Large cap ((\$10 billion to \$100 billion)	11	19%
Mid cap (\$2 billion to \$10 billion)	5	23%
Small cap (\$300 million to \$2 billion)	26	34%
Micro cap (\$50 million to \$300 million)	54	30%
Nano Cap (\$50 million or less)	153	-17%
<b>Average all exploration companies</b>		<b>11%</b>
<b>S&amp;P/ASX 200</b>		<b>7%</b>
<b>S&amp;P ASX 300 Metals and Mining</b>		<b>19%</b>

## KEY FINDINGS

- Companies with exploration activities in Queensland recorded 11 percent average growth in their market capitalisation between 30 June 2010 and 30 June 2011. This compares with the S&P/ASX 200 and the S&P/ASX 300 metals and mining group of companies that recorded seven and 19 percent growth respectively.
- The strongest performing sector was the small caps, with 34 percent growth. This growth is much stronger than that recorded by the grouping of S&P/ASX 200 companies.
- The poorest performing sector was the nano caps (under \$50 million capitalisation), with -17 percent growth. There may be a number of reasons for this including:
  - Investors showing a preference for the risk-reward curve of the blue chips given the current volatility in global share markets;
  - As exploration activity is currently high, many of the nanos are in a cash-burn phase. They must however ensure that they have enough money for auditing purposes. Because cash is hard to get at present share prices diminish as risk profiles increase; and
  - Unexpected changes to mining access, Minerals Resources Rent Tax (MRRT), the proposed carbon tax, changing government policy, international uncertainties and the Fukushima incident appear to be making investors nervous about the nano companies in particular.

## NOTE

Annual performance is calculated through a weighted-market capitalisation methodology. Specifically, the market capitalisation of each company relative to the total size of the particular category is its' weight. The company's market capitalisation is then multiplied by its weight, and the total sum of all companies weighted market capitalisation then makes up an accurate basket portfolio. For example, a company with 60 percent of the total market capitalisation of a given category would contribute 60 percent of the total movement between FY10 and FY11. Where a company was not listed at the conclusion of FY10, and was listed at the conclusion of FY11, the weighted index has been rebased to reflect this.

# GLOSSARY

The **AusIMM** represents over 10,500 individuals working in the global minerals industry. It focuses on promoting excellence across all professional disciplines through advocacy and provision of continuing professional development opportunities.

The **Carbon Geostorage Initiative** is a program to provide geoscientific data for the assessment of geological storage sites for the safe long-term storage of greenhouse gases. It is a collaborative project funded by the Queensland Government (\$10m), the Australian Government (\$20m), and the Australian Coal Association for Low Emission Technologies (\$20m).

The **Coastal Geothermal Energy Initiative** is a joint project between the Geological Survey of Queensland and the Office of Clean Energy to investigate potential sources of hot rocks for geothermal energy close to existing transmission lines.

An **entitlement issue** is where shareholders are given the right to subscribe for the new fully-paid share.

**Existing** deposits as defined by the ABS is 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.

**Exploration expenditure** 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 reserves/resources, 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.

**Exploration licence/permit** 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.

A **full-time equivalent (FTE)** measure attempts to standardise a student's actual course load against the normal course load. Calculating the full-time/part-time status requires information on the time periods for actual and normal course loads.

The **Greenfields 2020 program** is an \$18 million program over four years to focus exploration in greenfield and under-explored areas of the state. It is also designed to revitalise interest in what are perceived to be 'mature' provinces, through the application of new ideas, models and technologies. There are seven initiatives in the program with the New Frontiers Initiative concentrating efforts in the Northern Economic Region, Southern Thomson, and Galilee areas. A number of new geoscientific information products will be released over the next few years including new airborne magnetic, radiometric and gravity survey. The Greenfields 2020 program also includes \$3 million for the continuation of the popular and successful Collaborative Drilling Initiative.

The **Geological Survey of Queensland (GSQ)**, as part of the Department of Employment, Economic Development and Innovation, provides geoscience and resource information to improve the understanding of the geology and minerals and energy resource potential of Queensland, and promotes the geoscientific data and exploration potential to attract investment

An **Indicated Mineral Resource** is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a reasonable level of confidence. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological and/or grade continuity but are spaced closely enough for continuity to be assumed.

An **Inferred Mineral Resource** is that part of a Mineral Resource for which tonnage, grade and mineral content can be estimated with a low level of confidence. It is inferred from geological evidence and assumed but not verified geological and/or grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes which may be limited or of uncertain quality and reliability.

An **Initial Public Offering (IPO)** or float is the initial raising of capital by public subscription to an offering of securities.

The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves 2004 Edition (the '**JORC Code**' or 'the Code') sets out minimum standards, recommendations and guidelines for Public Reporting in Australasia of Exploration Results, Mineral Resources and Ore Reserves. The Joint Ore Reserves Committee ('JORC') was established in 1971 and published several reports containing recommendations on the classification and Public Reporting of Ore Reserves prior to the release of the first edition of the JORC Code in 1989.

**Lag indicators** are the measures that measure actual exploration success.

**Lead indicators** are the factors that drive exploration activity and performance.

**Livability Index** uses 16 indicators of livability grouped in six dimensions:

1. economy (median individual income; unemployment rate; SEIFA; availability and frequency of direct flights to key cities, Index of retail prices)
2. environmental sustainability (air quality; water usage per person per year)
3. health and wellness (GP services per capita; percentage of overweight persons; alcohol consumption at levels considered to be a high risk to health)
4. equity (residential rental house vacancy rates; proportion of rented house; percentage of female councillors)
5. education and learning (proportion of people whose highest year of school attended is year 12 or equivalent)
6. leadership (percentage of population volunteering in organisations).

Each of the indicators is benchmarked against the top-performing city, which is assigned a base score of 100. The other cities' scores are derived from ratios that compare their respective performance to the performance achieved by the top-performing city.

A simple average is worked out for each of the six dimensions, after which the average score for each dimension is further aggregated into an equal weighting system.

**Market capitalisation** represents the public consensus on the value of a company's equity. An entirely public corporation, including all of its assets, may be freely bought and sold through purchases and sales of stock, which will determine the price of the company's shares. Its market capitalization is the share price multiplied by the number of shares in issue, providing a total value for the company's shares and thus for the company as a whole.

A **Measured Mineral Resource** is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a high level of confidence. It is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are spaced closely enough to confirm geological and grade continuity.

A **Mineral Resource** is a concentration or occurrence of material of intrinsic economic interest in or on the earth's crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge. Mineral Resources are sub-divided, in order of increasing geological confidence, into inferred, indicated and measured categories.

**National Parks** category includes national and state-run parks and nature conservation areas. No mining activity is permitted on an area declared a national park. As part of the government's Q2 ambition, they have legislated for a current operating mining site to be converted to national park within the next 15 years.

**Nature Refuges** as defined by the Department of Environment and Resource Management, is area of land voluntarily agreed between a landholder and the government to dedicate and protect for conservation purposes while allowing compatible and sustainable land uses to continue. There are different classifications of nature refuges, some that allow mining activity and some that prohibit altogether (similar to the Strategic Cropping Land triggers, however for environmental benefit).

**New deposits** as defined by the ABS - Exploration on previously unknown mineralisations or known mineralisations yet to be classified as an Inferred Mineral Resource or higher. They include:

- exploration resulting in finding mineralisation that was previously unknown
- exploration on previously known mineralisation that has not been subjected to modern exploration
- 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.

An **Ore Reserve** is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction could reasonably be justified. Ore Reserves are sub-divided in order of increasing confidence into Probable Ore Reserves and Proved Ore Reserves.

**Potential commercial areas** are effectively a variation on a production lease but the usual requirement to commence production within two years is waived. It might be a field with high-quality reserves, but which requires pipeline and other services to make the recovery of the gas economical.



**Pre-competitive geoscience data** acquisition in Australia refers to the collection, collation and integration of basic geoscientific data by government agencies, essentially Geoscience Australia and the states' geological surveys. These strategic regional geoscientific research programs are generally aimed at upgrading historic data sets and filling data gaps by acquiring, efficiently and economically, modern geoscientific data at geologic province scale 2. Generally the government agencies assigned priority to upgrading datasets over areas considered to be prospective but under-explored.

A **private placement** is the sale of securities to a relatively small number of select investors as a way of raising capital. Investors involved in private placements are usually large banks, mutual funds, insurance companies and pension funds.

A **Probable Ore Reserve** is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction could reasonably be justified.

**Prospectivity** refers to the likelihood of finding more significant reserves in an area.

A **Proved Ore Reserve** is the economically mineable part of a Measured Mineral Resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction could reasonably be justified.

The **Queensland Resource Industry Ambassadors** is a selection of high-profile people associated with the resource industry. The QRIA provide their time freely to promote resource exploration in the state and provide feedback on best practice measures to attract and secure investment to the minister, DEEDI, and GSQ.

**Recreational areas** have features such as trails, ranging from urban cycle and walking paths to river trails and rugged bush tracks. These trails cover 300,000 hectares or less than half a percent of the state. These areas are generally not mining/exploration prohibitive.

**Retention licence** 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.

**State Forests** are forest reserves set by the Governor-in-Council. A mining/exploration tenure can be granted over a state forest area, however conditions are prescribed by the *Forestry Act 1959* to apply to the tenure holder under the resources legislation (for example the *Mineral Resources Act 1989*).

**Selected base metals** are made up of the following minerals: copper, silver, lead-zinc, nickel and cobalt.

**Smart Mining** - Future Prosperity was a package of initiatives designed to double the 2004-05 mineral and petroleum exploration expenditure of \$270 million by 2008-09. This target was easily achieved with expenditure of \$751.4 million in 2008-09, and annual exploration expenditure has continued to rise.

## ACRONYMS

- ABS** Australian Bureau of Statistics
- ASX** Australian Stock Exchange
- DEEDI** Department of Employment, Economic Development and Innovation
- DERM** Department of Environment and Resource Management
- EPC** Coal exploration permits
- EPM** Mining exploration permits
- FTE** Full time equivalent
- GSQ** Geological Survey of Queensland
- GADDS** Australian government's geophysical archive data delivery system
- ILUA** Indigenous land use agreement
- IRTM** The Queensland government's interactive resource and tenure map
- JORC** The Joint Ore Reserves Committee
- QEC** Queensland Exploration Council
- QRC** Queensland Resources Council
- QDEX** Queensland digital exploration reports database

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