Aussie Mine 2014

Standing out from the crowd

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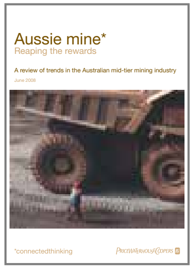
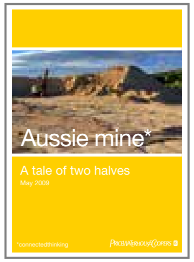
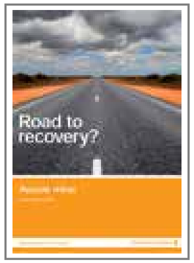


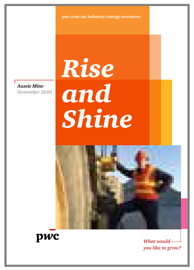
2007
Reaping the rewards



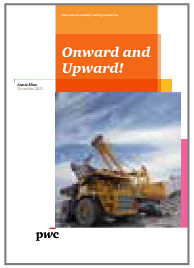
2008
A tale of two halves



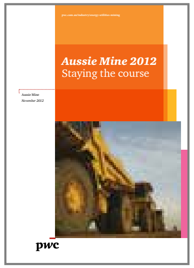
2009
Road to Recovery



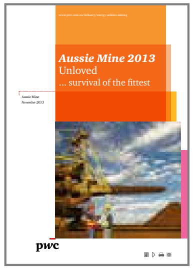
2010
Rise and Shine



2011
Onward and Upward!



2012
Staying the course



2013
Unloved... survival of the fittest

2014
Standing out from the crowd

Foreword

Welcome to the 8th edition of Aussie Mine – Standing out from the crowd. This report provides an industry and financial analysis of the largest 50 mining companies listed on the Australian Securities Exchange (ASX) with a market capitalisation of less than $5 billion at 30 June 2014 (the mid-tier 50).

With commodity prices retreating from record highs that saw them soar well over the cost curve, costs are suddenly important again. No longer is it all about adding incremental tonnes (or pounds or ounces) whatever it takes. The industry has stabilised as the wall of new supply has finally caught up with the ever rising demand for minerals, leading to prices settling at or near the top of the cost curve.

In most commodities and for most producers, pricing is not something that they can control. What the mid-tier 50 can control are costs of production and productivity. The emphasis must shift back to where each mine (or project or target) sits on the cost curve.

In this edition of Aussie Mine, we take a look at what the mid-tier 50 is doing or could be doing to stand out from the crowd.

Snapshot of key findings

Is this the bottom of the cycle?

Inefficiency is destroying value in mining

Picking up quality assets through smart M&A will be rewarded

Investment in new projects by mid-tiers will be the lifeblood of the Australian mining industry

Net operating loss of **$1.6bn**

Impairment charges **$2.5bn**

Investing cash flow down **31%**

58%

58% of mid-tiers are engaged in exploration or mining outside of Australia and New Zealand; local exploration investment down 19%.

19%

Revenues up

10%

on greater volumes despite commodity price headwinds

Top mining technology trends to watch for

1. Automation
2. Simulation
3. IoT
4. Virtualisation
5. Mobile

"New entrants have (on average) ***tripled*** *their market capitalisation over the last year."*

In the last 12 months there were 14 deals worth

$3.5bn

Mid tiers are picking up unloved assets from the majors

Contents

Executive summary

When we look at the lead indicator of market capitalisation of the 50 companies, the analysis shows that 2014 seemed to be a time of treading water after a few years of nasty falls and perhaps this suggests some reason to believe we have bottomed out and brighter skies lie ahead of us. However, that would ignore the fact that one of Australia's most important commodities, iron ore, was in free fall at 30 June and market belief in its future pricing is lower today than it was then. The market value of our 50 companies has subsequently fallen 10% between 30 June and 31 October - not our desired position!

Hope is at hand though – as detailed in a call out box on page 18 on commodity pricing, the most important Australian commodities are now trading in line with their marginal cost of production. This means that the best companies that are continuously improving their operating performance will be able to move down the cost curve. We believe that the best mid-tier companies will be able to navigate through the current choppy waters and prosper. Throughout this publication we identify the strategies that are being adopted to assist in differentiating the best companies and will help them succeed in "standing out from the crowd". We believe these strategies will be helpful for all miners, either for their own use or in understanding what potential suitors are doing.

A word of caution. Financial results are lag indicators and we see another poor performance by the mid tier 50 in this publication. We fear that the worse is yet to come. At 30 June, the market value of the iron ore miners alone was more than $3 billion below the accounting net assets. This gap has widened considerably since then. We expect red ink to be on show in the accounts of some of these companies in the year ahead so do not expect the financial results to turn as quickly as market value.

A blast from the past

Before sitting down to write this summary, we went on a walk down memory lane to revisit our first Aussie Mine publication in 2007. The story of the Australian mining industry between then and today has been a wild ride of commodity price surges, the continuing rise of China, the impact of the global financial crisis, enormous investment in new projects and expansions, industry consolidation, cost challenges, state and federal attempts to take a greater share of profits through to today's lower commodity prices and the mooted end of the super cycle.

Tellingly, only 16 companies remain from that original mid-tier 50 group. Although the reasons for the disappearance of the other 34 are widespread (mergers, takeovers, challenges in business model or operations), those who have survived have been joined by a new group of companies striving to make their mark.

The story of the index has helped shape our thoughts for this publication by showing the different routes to success for mid-tier miners. Those that have identified and developed high class, tier 1 resources in major commodities have been snapped up by the majors. Those less favoured by nature have had to be leaner and nimbler than their bigger brethren, working their assets hard. Those that have been unable to do so have fallen by the wayside.

Financial headlines

Net operating loss of

1.6 billion

Impairment charges of

2.5 billion

Investing cash flows down

31%

Dividends have more than halved

As we forewarned, this year's financial results do not make for happy reading. At the risk of sounding like a broken record, revenue again failed to keep pace with costs, with margins falling in all commodities except iron ore. Miners are talking the talk of cost reductions and productivity improvements, but their results are hardly walking the walk. Coal was hit particularly hard with a plunge to a margin of only 2%. That industry has responded recently with a series of mine closures emphasising the impact of the margin pain.

We may also be seeing the end of the mining boom era splurge on investment, with investing cash flows finally tapering off and miners looking to live within their means. Interestingly, the 2014 figure is still one-and-a-half times the average of the years 2007-2010 so it may be too early to call the demise of the growth phase.

Productivity challenges

The huge capital investment that has seen assets of the mid-tier 50 rise almost four fold in less than a decade is not delivering the returns that the market expects.

The statistics are damning. Dividend yields on our mid-tier were only 2.4%, compared to 4.6% across the ASX 200. While the value of the mid-tier index rose, a 5% capital gain does not compare well to 12% for the ASX 200. Even the ASX 300 Mining & Minerals index managed 11% growth, showing the mid-tier is underperforming even against its mining peers.

What is clear is that miners that can make their assets work harder will stand out from the rest. In this edition of Aussie Mine, we take a look at both productivity in capital projects and operational productivity. Despite the industry's claims, this continues to be an area where only a few companies are truly differentiating with focus and innovation – even though the rewards can be staggering.

Is there any good news out there?

This year saw some good examples of how mid-tier 50 companies can execute on M&A strategy to drive value. We saw mid-tier buyers pick up quality assets as majors (in particular) looked to sharpen their focus on core assets. With the industry in the shape it is globally, no doubt there will be further opportunities out there for those companies with good cash flows and access to funds to pursue assets.

We have also seen companies emerge from the pack through the time honoured route of finding, evaluating and developing high class resources. It goes to show that the market will still reward those doing this well, even in troubled times. What is interesting about this year's group is that their successes were predominantly located outside of Australia.

A final word of caution

An understandable but worrying trend that has come out of our analysis is the continuing decline in exploration activity. If Australia is going to have a future mining industry, continued efforts to find and evaluate resources are needed. Our look back through history showed that our mid-tier has traditionally been a major source of new Australian projects, which makes the cut backs even more worrisome.

We also see a trend towards the exploration activity being focused offshore. This shows the strength of the ASX as a good place to raise mining capital and also that Australian companies are looking to export their expertise and know-how. While these are undoubtedly good things for the industry, it would be preferable if this was happening *as well as* activity in Australia, not instead of.

2015 Outlook

The early months of financial year 2015 have seen a savage decline in the price of iron ore, offset to an extent by the long-awaited decrease value of the Australian dollar against the US dollar. Other commodities have been mixed and volatile, but in general, recent Australian dollar prices for local producers are driving a subdued and cautious optimism.

The continuing uncertainty surrounding the strength of the US and global recovery and the state of the Chinese economy, together with geo-political hot spots such as Ukraine, Iraq and Western Africa seem likely to weigh on the industry for some time to come. Nevertheless, the world continues to need resources for industrialisation and urbanisation, and new discoveries in many commodities are not keeping pace with the continued and, in our view, inevitable growth in demand.

There is reason for optimism for those who are working hard to differentiate themselves. The key to success in 2015 and beyond would seem to be built on some fundamental factors which are within the companies' control – moving down the cost curve, maximising productivity of assets, both at the development and operational stages, investing wisely and in a timely manner in new technology, being alert to M&A opportunities at this point in the cycle and spending exploration dollars sensibly in prospective and favourable jurisdictions.

The winners will be those companies that are ruthless on cost and productivity and therefore position themselves to not only survive through challenging times but then thrive when the cycle inevitably pushes commodity prices up again.

We see this year being painful for mid-tier iron ore and coal miners, with large write-downs likely and some miners at risk of failure, unless they can get their cash costs down. Other commodities will hopefully benefit from the exchange rate dropping but should continue to pursue operational and capital effectiveness ruthlessly to position themselves for whatever the market next throws at them.

CEO Roundtable

The Australian mining industry has lived through a period of declining commodity prices and a stubbornly high Australian dollar through the majority of 2013-14. While all companies have their challenges, we were particularly interested in compiling this edition of Aussie Mine to identify those companies, commodities or sectors that are differentiated in a way that is adding value – Standing out from the crowd.

To help answer this question we sought the views of three highly respected mid-tier 50 CEOs: Mick Wilkes of OceanaGold Corporation, Shane Stephan of New Hope Corporation and Peter Bradford of Independence Group, in a round table discussion. Their companies fill three of the top 12 positions in the survey, and they represent a broad cross-section of commodity and geography. New Hope and Independence are also two of the 16 companies who remain in the mid-tier 50 from our original survey in 2007 (see story on page 39). Key insights from these mining industry veterans are included in each section of the publication where relevant, but we have also summarised below some of the highlights of the discussion:

Shane Stephan

Peter Bradford

Mick Wilkes

PwC: Are you more or less confident about the future now than you were 12 months ago? What is driving this view?

SS: More confident due to the development of a more rational market– in the thermal coal market we are seeing decisions being taken to reduce capacity. Chinese action is also restricting its domestic supply and the recent leadership change in India could spark increased demand. Supply growth from Indonesia has slowed, and many US companies have departed from export markets. Add to that Japan potentially adding coal-fired generation capacity and the Australian exchange rate starting to decline, and there are a number of factors increasing my confidence.

MW: Definitely more confident. Last year we saw the gold price decline severely as quantitative easing in the US was seen to be at least slowing down, and people got nervous and started to get out of gold. But pleasingly the last 18 months seems to have demonstrated a floor at US$1,200, and every time it has dropped below, there has been sustained physical demand for gold from China and India. Longer term, the relative strength of the US economy and fear of inflation will see the markets going back towards gold. The other factor that makes me confident is the diminishing supply of gold – it's getting harder to find. Over the next 10 to 20 years, with less ounces discovered and with the market hopefully having more discipline about not investing in high cost production, we should see a tighter supply together with an increase in demand for gold.

PB: I am feeling more confident for a number of reasons. Firstly, Australian dollar commodity prices are either equal to or better than they have been. This, together with an improved outlook for the US economy and people becoming more and more confident of a soft landing for the Chinese economy are encouraging. For a number of our commodities, the demand and supply landscape is moving in our favour – nickel and copper in particular in the short to medium term. Notwithstanding this, there is a gap between how healthy the business may be and how healthy the stock price might be – North American investors in particular remain pessimistic about and are exiting the Australian mining sector.

PwC: What is your company doing that is differentiating you from others in the industry? What do you see others doing that is truly different?

MW: One of the things that miners are doing better, and I include ourselves in this, is wresting back control of the use of capital. We are building projects ourselves and not delegating the responsibility for the execution to third parties such as an EPCM contractor. We saw a blow out in costs and schedules over the last 10 years because there were so many projects being built, and the model was to go and get someone to build it for you. As a result there was a dearth of construction and engineering professionals to deliver these projects. What we are doing, and what some others are doing is to wherever possible keep that skill and that intellectual property within our own business. This differentiates us because it allows us to be in control of the project in terms of the scope and cost, but even more importantly gives us greater control over the social licence to operate. When you are building in a difficult country like the Philippines you cannot delegate that kind of responsibility through a contract.

SS: I would concur with Mick that the old timers are back, the true operators are back and there is a focus on being in charge of your own operation. From a company point of view we are seeking to differentiate ourselves with respect to rehabilitation practice. The size of our balance sheet also gives us the opportunity to experiment with innovation. Finally, there is a real move towards automation in logistics, and part of our strategy in this area includes the sharing of information with long-term logistics suppliers to share value.

PB: My own company's point of differentiation is the fact that we are diversified – we operate as a business, rather than with a narrow commodity focus. The company's strength is increased through this, and investors we are talking to definitely like it! Thinking more generally, I would suggest the real opportunity to differentiate in the future is to identify and do the right sort of value accretive transactions, that will put you head and shoulders above the companies with a market capitalisation of around the $1 bn mark, differentiating from the point of view of size and scale – there is nothing in the gold and base metals sector of this size outside the majors.

PwC: How important is new technology in your strategic thinking? Which do you think has the potential to deliver value in the future? Is there a 'game changer' out there?

MW: Technology has always had a role to play in the mining sector – allowing us to mine deeper, process lower grades, obtain better recoveries. However, in Australia in the last 20 years there has been a dearth of research activity by the major companies for the benefit of the industry, potentially due to an increasing focus on preserving intellectual property. The most recent innovation would be remote mining practices in trucking and rail. Remote mining is becoming more common in underground for block caving. For the smaller companies it is more likely that there will be processing breakthroughs, but our research tends to be smaller, not on an industry scale.

PB: I see two areas of potential advancement. In the area of exploration, there have been far less discoveries in Australia in recent years – only two or three major ones including Tropicana. There is huge potential to go back over these previously explored areas and drill deeper, to over a hundred metres. In order to do this there has to be advances in deep drilling, in remote sensing and in real time analysis of what is being drilled. The other area I see is in processing, new metallurgical techniques to recover metals at an increasingly lower grade – following on from advances in gold and nickel laterites in the past, to mine deposits which are currently uneconomic. Interestingly, the pace of implementation of new technology in the mining industry is slow. I was shown driverless trucks at a pilot site in Nevada twenty years ago, and they are only now being implemented.

PB: The fact that the Australian dollar is still overvalued is probably the biggest thing. A further devaluation would improve the relative value of our revenue and our cost competitiveness and give us a very strong industry here in Australia. The improvement in the last year has been welcome, but everyone in the industry would say that there is still a way to go.

SS: New and emerging technology evaluation plays an integral part in our strategic decision making. As a thermal coal producer technological advances in the utilisation of coal for power generation such as Carbon Capture and Storage and the use of super critical boiler technology may drive changes in the volume and qualities of coal demanded. An evaluation of alternative fuel sources for power generation and their competitive position into the future is important when considering long term demand. Room remains for further innovation and refinement in mining technologies in particular the work being led by Rio Tinto with machine automation has the potential to improve both safety and production. If there is a game changer over the next 15 years it is likely to be the increased use of automation technology in mobile equipment. I believe that there remains significant efficiency to be extracted from the more effective use of real time information management systems in supporting the operators of equipment directly thus providing time for supervisors to be more effective in their critical roles in our mines.

PwC: Do you think M&A activity in the industry will pick up over the next 12 months? What do you think will drive this?

SS: Now is a good time for transactions. The expectations of sellers are changing, and this will drive transactions – the write-offs have occurred, the thermal coal market will remain soft for 12-18 months, and some companies have large debt loads, so their choices are being made for them. The probability of good purchasing decisions being available is higher today than it has been for quite a while.

PB: With Australian dollar commodities prices not too bad, companies that are making money should have the capacity to invest – and this is the perfect point in the cycle to do so.

PwC: If you had a "magic wand", what is one thing you would change in the mining industry?

MW: I would reduce the influence that non-stakeholders have on the industry – at the moment they have far too much say on things that don't really concern them. Despite leading the world on environment and community relations issues compared to any other sector, our reputation is still going backwards. As a mining professional it's really frustrating. While people have the right to have their say, they shouldn't be able to make allegations without any substance, and not be accountable to anyone for it.

SS: We need to develop new ways of financing our infrastructure. We are in the bulk commodity business, but if we don't find new ways to finance water, rail, power and port infrastructure, it will come to be dominated by the majors. If there is no route for an explorer to become a producer, that has big ramifications for the industry. The next wave of infrastructure will not be developed using the take-or-pay model, even though it is probably some years off.

PB: The fact that the Australian dollar is still overvalued is probably the biggest thing. A further devaluation would improve the relative value of our revenue and our cost competitiveness and give us a very strong industry here in Australia. The improvement in the last year has been welcome, but everyone in the industry would say that there is still a way to go.

Financial Analysis – What do the numbers show?

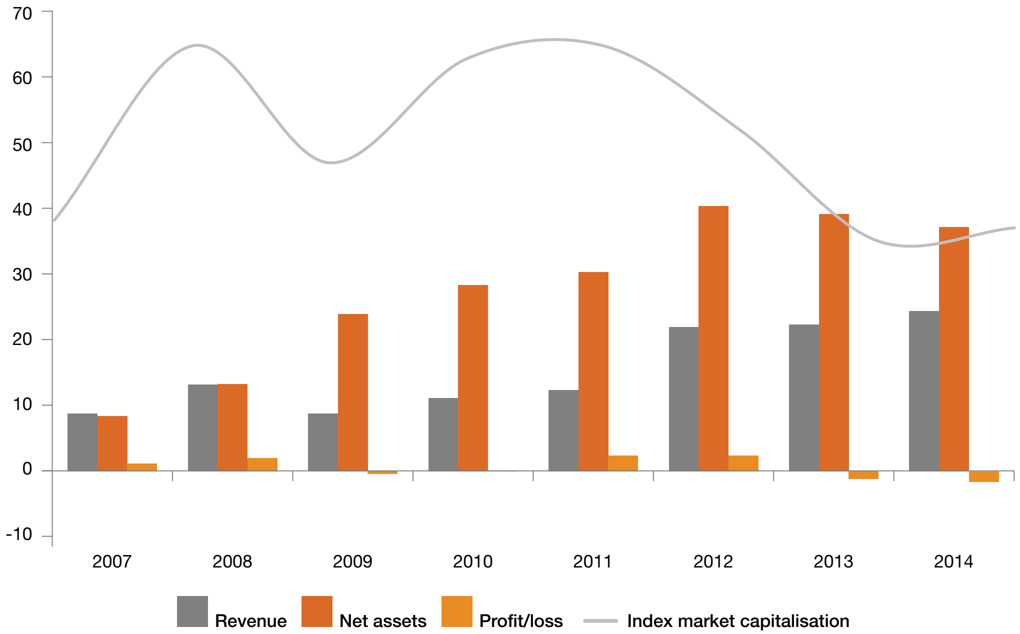
Turning the corner?

For the first time since 2011, the value of our Aussie Mine index[1] has increased, albeit by a fairly modest 5% ($1.9 billion). The index is still below where it was at June 2007 ($38.4 billion), which was the balance date for our first ever Aussie Mine publication. Compared to other indices, the Aussie Mine index has underperformed, with this year's growth less than the ASX 300 (14%) and the Metals & Mining index (11%).

Investors seem unconvinced by mid-tier miners.

Unless the sector can start to deliver capital and productivity improvements and show they are viable through the cycle, we believe there will be little movement in market sentiment – at least in the near term.

Aussie Mine index – historical metrics ($billion)



Source: Capital IQ, Company financial statements, PwC analysis

This year in overview

- The year has seen revenues rise by about 10% to $24.5 billion, almost entirely driven by increased volumes. The years of capital investment are finally bearing fruit, unfortunately right at the stage of the cycle when prices are down.
- Losses have continued to rise, with the index recording an overall loss of $1.6 billion in the last reporting period.

Operating margins have declined slightly from last year (19% vs 20%). The much talked about focus on productivity does not seem to have flowed through into the results of the mid-tier as yet.

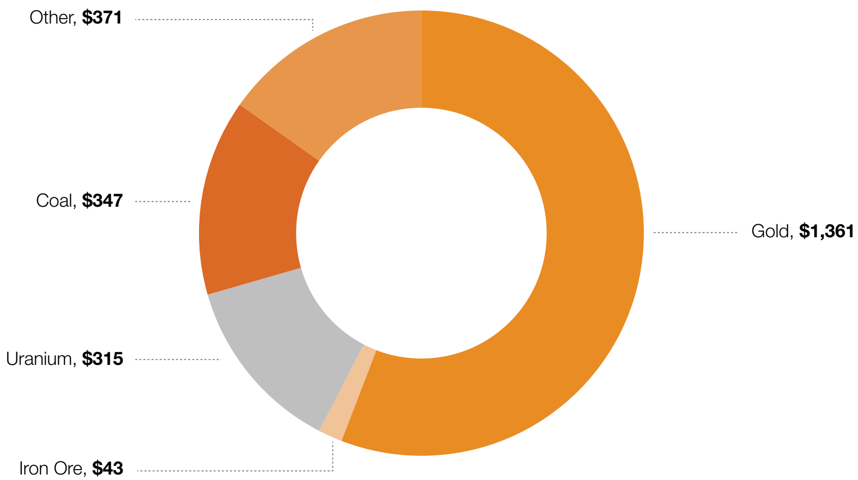
- Impairment charges totalled $2.5 billion, down from $3.5 billion last year.
- Underlying earnings have fallen year on year, driven by a $1.4 billion fall in gross profit.

Changes since 2007

- The combined net assets of the index have grown by nearly 4.5 times, a huge investment ($28.9m), mostly in capital projects.
- Unfortunately revenue has not grown to the same extent (2.8 times, or $15.9 billion).
- Profits have been very volatile, showing in a nutshell why investors, and therefore miners, have been so focused on capital and operating productivity.

[1]References to the Aussie mine index relate to the collation of the market value or financial information of the 50 largest mining companies in the ASX with market capitalisation of less than $5 billion. When we refer to 'our mid-tier miners' it relates to the 50 miners in this year's index, shown in Aggregated financial information.

Impairment charge by commodity – 2014 mid-tier 50 ($million)



Source: PwC analysis

Impairment – more big hits, is this the last of it?

This year's impairment charges were $2.5 billion, with over 50% of these coming in the gold industry. The impairments in gold follow significant write-downs in 2013, with the industry adjusting to much lower gold prices.

Other significant charges hit in the coal sector (principally Yancoal) and uranium (mostly Paladin).The impact of these charges (combined with the modest rise in market capitalisation) has been to reduce the gap between net assets and market capitalisation to $730m. However, the market is pricing our mid-tier miners at their net asset value on average, suggesting little confidence in future growth prospects that are not represented on the balance sheet.

While the overall picture is moving towards balance, our analysis shows that iron ore and coal producers, in particular, still have significantly higher net assets than market capitalisation.

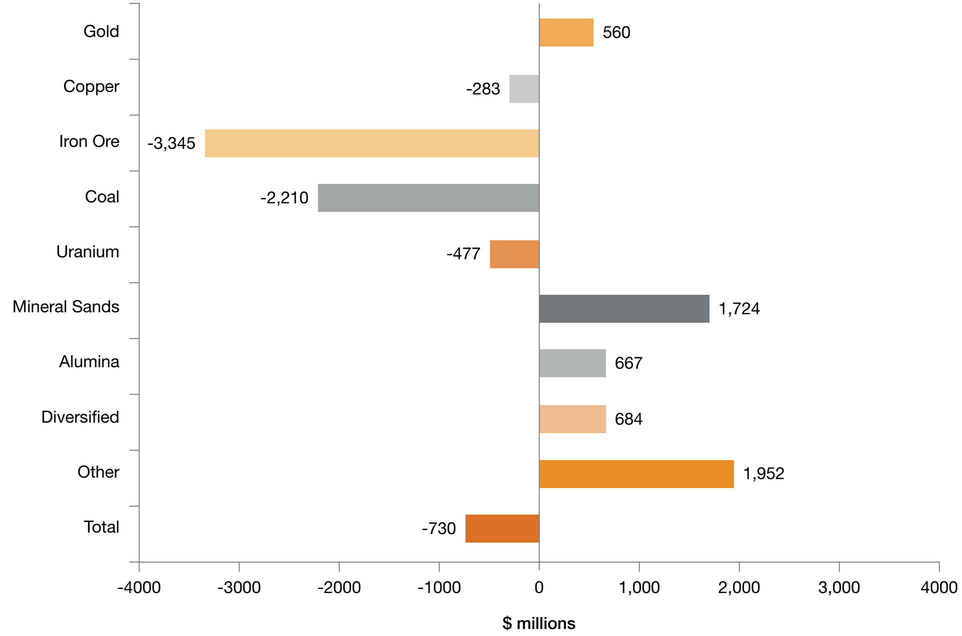
Further review shows the above deficiencies to be heavily driven by five companies. Of these five, only Yancoal recorded a significant impairment in the period, although Atlas recorded a $458m charge last year. This indicates that the market is taking a much more pessimistic view of future earnings than management.

It's interesting that iron ore and coal are so heavily represented, suggesting the market may be pricing based on recent spot prices rather than the consensus long term outlook. This may also reflect the fact noted above that iron ore write-offs, in particular, have been modest to date when compared to other commodities.

Typically, mining companies use a 'fair value' approach to impairment assessments (rather than 'value in use'). These estimate the present value of future earnings by using management or analyst consensus forecasts for long term commodity prices (amongst other estimates), which are currently predicting a rebound in pricing, particularly in coal. Assuming that these calculations are indicating no impairment to the project assets, then our analysis would suggest that either the market does not share these views on pricing or is placing a much higher risk premium on this outcome.

It will be interesting to see what the coming financial year brings in this regard. Iron ore has continued to fall (and so too has the value of the iron ore miners in our index). Consensus is beginning to shift towards this being longer term, as the impact of the huge supply increases of the majors begins to hit. We believe that next year will see another savage round of impairment charges in the bulk commodities – potentially bigger than the last two years.

Market capitalisation less net assets – 2014 mid-tier 50



Source: Capital IQ, Company financial statements, PwC analysis

Top 5 companies with net assets higher than market capitalisation

		Excess of net assets over market cap $m	2013/14 Impairment charges $m
Whitehaven	Coal	(1,735)	-
Oz Minerals	Copper	(1,087)	-
Arrium	Iron Ore	(2,649)	-
Atlas	Iron Ore	(1,030)	(19)
Yancoal	Coal	(729)	(343)
		(7,229)	(362)

Source: Capital IQ, Company financial statements, PwC analysis

Living within their means – the end of the investment boom?

In 2013, our mid-tier miners were spending heavily, using existing cash balances to invest in development, indicating that many projects approved or commenced in better times were still progressing. This year has seen them cut back expenditure to balance the budget. Purchases of PP&E have been hardest hit, falling $1.4 billion to just over $4.2 billion.

Most of what has been spent has been funded by existing operations. Capital that has been raised has principally been from shareholders, with the markets tapped for $1.9 billion in the year (up from $0.8 billion last year). Collectively, the mid-tier repaid $0.5 billion of debt during the year, after raising $0.9 billion last year, suggesting that strengthening balance sheets has been a priority for many as projects are completed or put on hold.

Living within their means has resulted not only in shareholders being asked for additional capital, but also in a reduction in shareholder returns. The dividend yield of our mid-tier 50 dropped to a miserly 2.4% (from 3.4% last year), which compares poorly to the ASX 200 average over the same period (4.6%). The top five on our list have historically paid out the majority of our list's returns but they lowered dividends by $0.5 billion collectively, dropping by 60%.

Summary of cash flows for 2014 mid-tier 50

	2014 $m	2013 $m
Net operating cash flows	4,283	4,727
Net investing cash flows	(4,522)	(6,996)
Net financing cash flows	226	273
Total	**(14)**	**(1,996)**

Source: Company financial statements, PwC analysis

Dividend yields – 2014 mid-tier 50

Commodity	2014	2013
Iron Ore	5.7%	4.5%
Gold	2.6%	1.5%
Coal	3.4%	4.3%
Copper	3.1%	4.8%
Others	0.7%	3.0%
Total	**2.3%**	**3.4%**

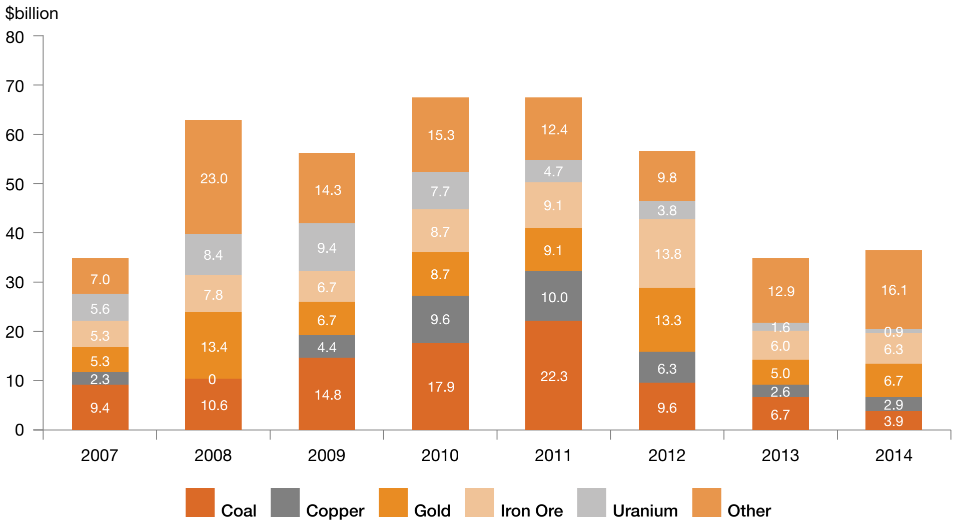
Source: Capital IQ, PwC analysis

Dividends paid – 2014 mid-tier 50

Commodity	2014 $m	2013 $m
Alumina	-	71
Iluka	63	334
New Hope	133	257
Mineral Resources	110	80
Whitehaven Coal	-	29
Total	**306**	**771**

Source: Company financial statements, PwC analysis

Index market capitalisation by commodity



Source: Capital IQ, PwC analysis

Our index by commodity

The small overall movement in the Aussie Mine index hides a much richer story on a commodity basis.

Coal: Not surprisingly, the coal industry's challenges have played out in market value. What is surprising, perhaps, is the sheer size of the fall from grace. Further falls this year leaves coal companies' contribution to the index at less than 18% of what it was in 2011 – a drop of $18.4 billion. Coal now makes up only 11% of the index, down from over 30% in the halcyon days of 2011.

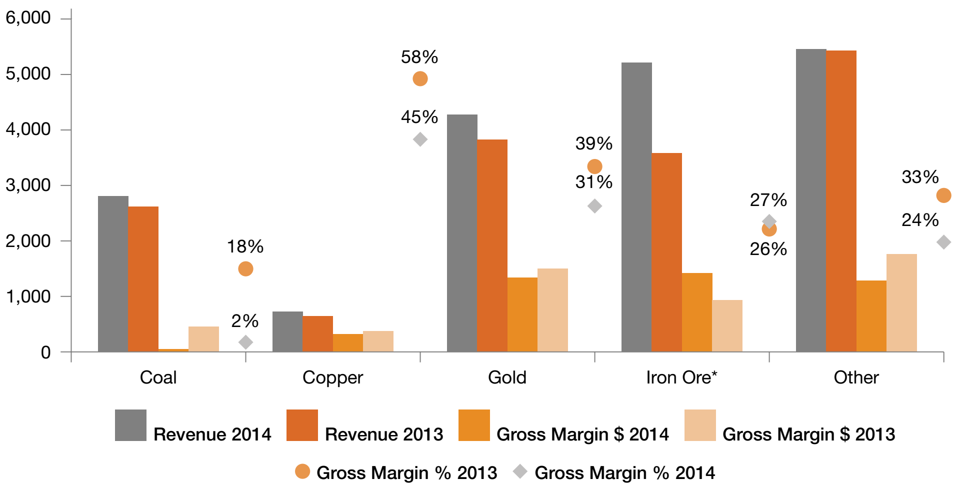
Gold: The gold industry has staged a comeback, lifting 33% year on year. What is interesting is that this has happened without a significant change in commodity prices (the average A$ gold price in FY14 was $1,412, down from $1,557 in FY13). Clearly, however, the industry was in the grip of doubt at the comparative date, as the sudden and precipitous fall in the gold price was in full swing at the time. The mid-tier has seen success in getting more ounces out of the ground (production is up 24%) and as a group have made some canny asset acquisitions from the majors. More on this later.

Iron ore: Steady as she goes this year, with iron ore price volatile but healthy for most of the year. This has all changed since our statistics were run, with falling prices already having one victim and smashing share prices across the board.

Copper: Now a much reduced part of the index from its heyday, but this year has seen some tentative signs of recovery.

Other: In the 'Other' commodities the big move has been in nickel, which would seem to be principally due to encouraging signs for pricing, as a result of recent regulatory changes in Indonesia affecting global supply. Both Sirius Resources and Western Areas more than doubled in value and both topped $1 billion in market capitalisation.

Revenue and margin by commodity – 2014 mid-tier 50 ($million)



**Iron ore reflects only mining related revenue/margin in Arrium and Mineral Resources.*

Source: PwC analysis

Mining revenue and margin[2]

The good news is that, despite some unfavourable headwinds in commodity prices, our mid-tier miners managed to increase revenue across all commodities. The bad news? This has come at the cost of profitability, with margins falling significantly in all commodities except iron ore (and given what has happened since year end, this is not one to bank on for 2015!).

The problems in the ***coal*** sector are most clearly illustrated by the fall in profitability. The coal sector's woes can only partly be explained by price, with revenue per ton falling by about 7% year on year. Increasing costs, including infrastructure charges under take or pay arrangements struck during the good times, have taken their toll. Yancoal is the main driver of this outcome, generating more than 50% of the sector's revenue but doing so at barely break even on a cash basis and losing money at an operating EBIT level. Not surprising, then, that Yancoal's market value has tumbled 65% year on year and it made our list of net asset/market cap deficiency, despite the largest impairment charge of the year.

Copper had a mixed year, with significantly lower grade ore available from OZ Minerals' Prominent Hill mine and increased costs at Sandfire combining with generally lower copper prices and stubbornly high FX rates. This was only marginally offset by Tiger Resources beginning cathode production from their DRC mine. Nevertheless, copper continues to have comfortably the highest margins in the mid-tier 50.

The ***gold*** sector has seen revenues increase, driven by a 24% uptick in ounces produced. Prices dipped a little (4% on average) and margins were also impacted by some of those new ounces coming at the higher end of the cost curve.

In ***iron ore*** the story is all about shipping more tons. Production was up by more than 35% across the sector, with big increases from Mineral Resources, Arrium and Atlas. Prices were volatile but evened out through the year meaning margins remained consistent. Further significant falls in prices after 30 June 2014 have only made matters worse for mid-tier miners of this commodity, and the race by the majors to produce more volume is pushing the market towards surplus for the first time in many years. Mid-tier miners will be praying that the Aussie dollar keeps falling if iron ore prices remain low, as our analysis suggests their average breakeven price for FY14 was around A$75/ton.

In the ***other*** commodities the common themes are rising unit costs and not much good news from commodity prices. Productivity improvements are certainly not hitting the bottom line as yet.

[2] For further analysis on a commodity basis, see Aggregated financial information

Commodity pricing

Until 2003, we were quite familiar with the concept that commodity price equated to the top of the cost curve. Shortly thereafter, the sustained growth from China together with a dearth of near term new projects meant that commodity pricing left the cost curve in its wake as demand outweighed supply.

Pricing became determined from the price the marginal commodity buyer was willing to pay for the product leading to a golden period for the global mining industry of which much has been written. Over recent times, China's economy is transitioning and adjusting and, while it is still growing nicely, its commodity demand growth is slower than what we have become accustomed to, and at the same time growth from other emerging and developed markets has been anaemic. Of course, the mining industry has also had ten years to get its supply act together and it has done that in spades with new projects and expansions occurring in most of the commodities in recent times.

Miners have watched on as prices have readjusted back to the pre 2003 world and once again they are being driven by marginal cost of production. This is unlikely to change until supply dries up or demand spikes. From an Australian perspective, the most important commodities are iron ore, coal and gold. Gold felt this change to its pricing in March 2013 and got one hell of a shock to which it is still adjusting. Coal was a less rapid fall from grace, but it is at marginal costing as well. Iron ore is the most recent one to go and really only found its base in October 2014. The good news is that the main pain has definitely occurred.

Where to from here – that will be determined for at least the short term by marginal cost of production and the necessity to be at the lower end of the cost curve is with us again. We can see that miners are all reducing their costs as they have to cut the cloth to current times. If everyone does this, the cost curve will flatten and can lead to lower prices and those who stand still will be running a big risk.

So the cycle reinvents itself and the quick movers will prosper.

Changes to the index

New to the list – there are still some winners out there!

Even in tough times, you can still find some good news in the mining mid-tier. New entrants to our list have on average tripled their market capitalisation over the last year – a remarkable result. This picture isn't quite as rosy once adjusted for capital raised, but there are still some incredible growth stories in the mix.

A quick glance at the list suggests these businesses have little in common, with a broad mix of commodities and geographic locations amongst the new entrants. Delving a little deeper, however, identifies two common threads for their success.

The first route to success is the old fashioned way; ***progressing projects*** through to development (Orocobre, Tiger, Wolf Minerals, Troy), finding ***additional resources*** (Tiger, Kingsrose) or ***completing exploration and evaluation*** (Iron Road). This shows the market is still interested in successful exploration and development. In general, these projects have been for relatively low cost developments and have been outside of Australia. Interestingly, the developments have often been in non-traditional destinations including the UK (Wolf), Argentina (Orocobre), DRC (Tiger), Guyana (Troy) and Indonesia (Kingsrose).

The exception to this is Iron Road's completion of the DFS for its Central Eyre Magnetite project, with a forecast capital cost of US$4 billion. The DFS has cost $100m and they are now looking for partners to help fund the project. While the raw data looks impressive, the increase in market capitalisation has been principally driven by a $50m capital raising and the closing position is only $25m higher than the book value of the capital invested to date. The other route to success is to generate value out of the downturn by ***acquiring unloved assets*** and making them work. Metals X, Saracen, Orocobre and Panoramic have all made acquisitions over the last 2 - 3 years that have generated significant increases in share price. In general the deal value has been in the $10 - $20m range and has been for already producing assets.

New entrants to 2014 mid-tier 50

Name	2013 Market Cap $m	Capital Raised $m	Share Price movement $m	2014 Market Cap $m	Commodity
Metals X Limited	165.0	-	265.4	430.4	Tin/Gold
Saracen Mineral Holdings Limited	71.0	61.0	193.0	325.0	Gold
Orocobre Limited	164.0	-	134.4	298.4	Lithium/ Borax
Tiger Resources Limited	115.0	41.0	131.6	287.6	Copper
Panoramic Resources Limited	52.0	16.0	199.5	267.5	Nickel
Wolf Minerals Limited	44.0	183.0	(0.8)	226.2	Tungsten
Troy Resources Limited	140.0	32.0	35.7	207.7	Gold
Kingsrose Mining Limited	102.0	23.0	75.8	200.8	Gold
Mineral Deposits Limited	171.0	23.0	(6.1)	187.9	Mineral Sands
Iron Road Limited	49.5	52.0	73.1	174.6	Iron Ore
	1,073.5	**431.0**	**1,101.6**	**2,606.1**	

Source: Capital IQ, PwC analysis

Movers and shakers

Looking at the big movers in the index, we see that top of the list in dollar terms is this year's number one – Alumina. Its share price has begun to move north after a few challenging years on the back of its underlying operations achieving productivity improvements and shedding (or shutting) underperforming assets, such as the Point Henry smelter.

We've mentioned that the uptick in sentiment in nickel has pushed up the value of Sirius and Western Areas, but the Sirius story of course is mainly about outstanding exploration success. It has achieved significant uplift in value despite not yet producing, coming in as the highest value explorer on the index.

Joining Sirius on our movers and shakers list are fellow explorers Syrah. The valuation shown was prior to market M &A speculation sending the share price rocketing, with the 30 June share price in line with where it is now. The growth in market capitalisation through our survey period is due to having identified a world class resource, albeit in a niche commodity.

Our movers and shakers are rounded out by two gold miners, both of whom have been able to bring extra production on line. Oceana Gold brought their Didipio gold/copper mine into production on-time and on-budget, sufficiently rare an occurrence to see a positive market reaction. Northern Star picked up producing assets from majors Newmont and Barrick, acting as a springboard up our index.

Unfortunately, there have been some losers too…

The biggest falls in market value have principally come in coal, with price pressure continuing and many mid-tier miners being at vulnerable positions on the cost curve.

Iluka has fallen from top spot on our list last year as mineral sands prices have remained stubbornly low after the highs of 2011 and early 2012. Iluka has a strong balance sheet and should be positioned well when prices come back, but the market has pushed its price even lower (to $3.0 billion on 8 October) since our survey cut-off date.

Regis Resources has had a tough year, with grade challenges followed by feeling the brunt of Mother Nature with both of their producing pits flooding, one of which filled with more water than 2000 Olympic swimming pools. Certainly enough to dampen one's year….

Paladin also had a difficult year. Uranium prices forced them to put one mine on care and maintenance and to sell part of their remaining operating mine to bolster their balance sheet.

Lynas has fallen due to challenges in completing their project that required further capital raisings and has led to a high debt burden, all during a time when rare earths pricing is falling.

Selected companies moving up the mid-tier 50 index in 2014

Name	2013 Market capitalisation $m	Capital Raised $m	Share Price movement $m	2014 Market Capitalisation $m	2013 Rank	2014 Rank
Alumina Limited	2,764	481	543	3,788	3	1
Sirius Resources NL	418	82	578	1,078	23	9
Western Areas Limited	457	106	510	1,073	22	10
OceanaGold Corporation	348	-	641	989	29	12
Northern Star Resources Limited	248	129	353	730	37	18
Syrah Resources Limited	301	36	336	673	32	19

Source: Capital IQ, PwC analysis

Selected companies falling down the mid-tier 50 index in 2014

Name	2014 Market capitalisation $m	2014 Rank	2013 Market capitalisation $m	2013 Rank	Industry	$ Change in value	%
Whitehaven Coal Limited	1,472	5	2,359	4	Coal	(887)	-38%
Iluka Resources Limited	3,396	2	4,183	1	Mineral sands	(787)	-19%
New Hope Corp Limited	2,227	3	2,965	2	Coal	(738)	-25%
Regis Resources Limited	820	15	1,375	6	Gold	(555)	-40%
Yancoal Australia Limited	249	42	716	15	Coal	(467)	-65%
Paladin Energy Limited	285	38	733	14	Uranium	(448)	-61%
Lynas Corporation Limited	303	34	735	12	Rare earths	(432)	-59%

Source: Capital IQ, PwC analysis

Off the list

Those dropping off the index have some commonality with those falling in value, with the cycle a major factor. The coal sector is well represented, with current pricing really beginning to bite. Summit has been impacted as much as Paladin by the low uranium price.

St Barbara is still struggling to deal with its acquisition of Allied Gold, showing that M&A activity can be a risk as well as an opportunity.

Western Desert's fall from grace ended with voluntary administration on 5 September due to low iron ore prices and a weak balance sheet. It's a lesson for all that getting your mine built does not guarantee success, with production starting in December 2013 and lasting less than a year.

Companies that exited the mid-tier 50 index in 2014

Name	2014 Market capitalisation $m	2014 Rank	2013 Market capitalisation $m	2013 Rank	Industry	$ Change in value	%
Summit Resources Limited	50	62	277	34	Uranium	(227)	-82%
St Barbara Limited	59	61	220	41	Gold	(161)	-73%
Wollongong Coal Limited	78	59	234	38	Coal	(156)	-67%
Western Desert Resources Limited	101	58	249	36	Iron ore	(148)	-59%
Coalspur Mines Limited	38	63	182	49	Coal	(144)	-79%
Bougainville Copper limited	122	52	172	50	Copper	(50)	-29%

Source: Capital IQ, PwC analysis

In Summary

- *The cycle is still the biggest driver in value, with nickel seeming to be on the up cycle and now iron ore, coal, uranium and mineral sands on the down cycle.*
- *There are still great successes in the mid-tier miners, despite the doom and gloom.*
- *Picking up quality assets through smart M&A will be rewarded.*
- *Exploration and development success is still rewarded – even more so if you can get funding.*

Deals – The market is heating up

In Summary

- *Dramatic increase in mid-market deal activity in 2014.*
- *Well positioned buyers are capitalising on lower valuations by acquiring vulnerable targets.*
- *Mid-tiers buying unloved and bolt on assets.*
- *New buyers emerging from both financial investors and infrastructure and service providers.*

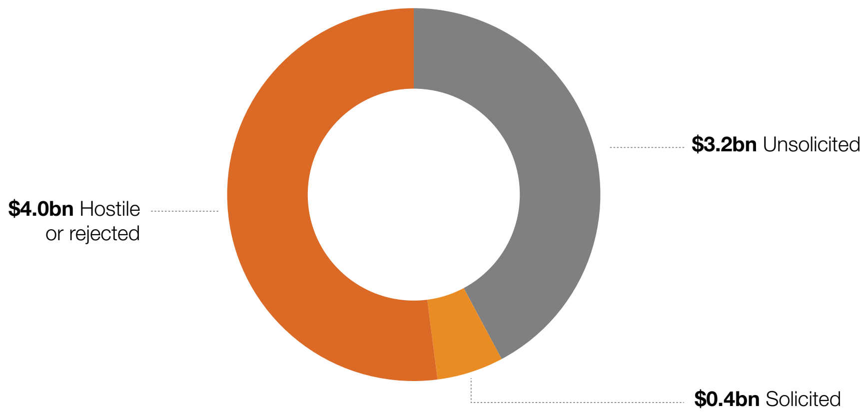
In the 12 months to 30 September 2014[3], the mid-tier 50 were involved in 14 completed or announced transactions worth $3.5bn[4], compared with $0.9bn[5] in the prior period.

Ours is a cyclical industry and there are indications that we have reached the bottom of it in many commodities. For those with the wherewithal, the bottom of the cycle can be a good time to buy.

Given this, we expect that opportunistic deal activity will continue to increase. This is supported by 2014 transaction activity, which was witness to a number of promising signs of a recovery:

- Mid-tier miners participating equally in acquisitions and divestments, with 10 buyers and 8 sellers.
- The re-emergence of large deals ($1bn+) not seen since the coal deals of 2012, with Aquila Resources acquired and a takeover offer made for PanAust.
- Control transactions, with over 75% of deals securing control of the target asset or company.
- Counterbidding, with Mineral Resources initiating a competitive bidding process for Aquila.
- Opportunistic buyer approaches, largely on an unsolicited, and in some instances, hostile basis including Iluka's initial approach for Kenmare, GRAM bidding for PanAust and both the Baosteel and Mineral Resources offers for Aquila.

Transactions involving the 2014 mid-tier 50



Source: Capital IQ, PwC analysis

We witnessed:

- Consolidation in the bulk commodities sector with the 'haves' using their position of relative strength to acquire the 'have nots' as seen in the merger implementation agreement between BC Iron and Iron Ore Holdings.
- Mid-tiers picking up unloved assets from the majors. Leading from the front was Northern Star which acquired three assets over the last couple of years but it was joined by Saracen and PanAust.

Are you an able buyer or a vulnerable target?

[3] *Deals to 30 September 2014 were updated as at 31 October 2014 for completions or cancelled deals.*
[4] *Completed deals to 30 September 2014 are exclusive of any deals that were pending at 30 September 2013 and subsequently completed.*
[5] *Of pending deals as at 30 September 2013, 4 completed for $607m, 1 remains pending for $550m and 2 cancelled for $2,079m.*

Mid-tier 50 deals by commodity: 30 Sept 2013 to 30 Sept 2014*

	Completed		Pending		Cancelled or Rejected		Total	
	Deal Value $m	Deal Numbers	Deal Value $m	Deal Numbers	Deal Value $m	Deal Numbers	Deal Value $m	Deal Numbers
Iron Ore	1,698	3	-	-	1,357	1	3,056	4
Gold	788	5	289	1	-	-	1,077	6
Mineral Sands	-	-	-	-	1,205	1	1,205	1
Copper	198	2	-	-	1,398	1	1,596	3
Nickel	188	1	-	-	-	-	188	1
Uranium	216	1	-	-	-	-	216	1
Platinum	-	-	-	-	42	1	42	1
Coal	-	-	107	1	-	-	107	1
Total	**3,089**	**12**	**396**	**2**	**4,002**	**4**	**7,487**	**18**
Total (2013)	327	7	2,255	7	3,662	1	6,244	15

**Deals to 30 September 2014 were updated as at 31 October 2014 for completions or cancelled deals.*
Source: CapitalIQ, PwC Analysis. A full listing of transactions is provided in Deals transaction history (page 50)

Why were mid-tiers selling in 2014?

They commonly had one or more of the following characteristics:

- Held large scale development projects without a clear path to financing and development (Aquila, Iron Ore Holdings, Papillon, PanAust).
- Had impending debt obligations (Aquarius, Paladin).
- Had a lower level of investor support; trading on a historically low share price.
- Sold in order to protect and/or strengthen their core business (in the case of mergers, minority or asset level transactions). (Paladin, Papillon, Aquarius).
- Had a pre-existing relationship with the acquirer, continuing the trend seen in Aussie Mine 2013 (Aquila, Paladin, Whitehaven, PanAust).

Who were buyers in the mid-tier?

Consistently buyers from the mid-tier 50 had strong financial capability and were not overly reliant on equity markets or debt to finance acquisitions.

Approaches were undertaken on an unsolicited, and in some circumstances, hostile basis as buyers leveraged their relative financial strength.

While strategic rationale differed between mid-tiers buyers, broadly deals were undertaken in order to:

- Supplement their existing business – Tiger and Sirius both acquired the remaining interests in their core assets, reflecting an underlying confidence in the future of their assets and markets.
- Provide future platforms for growth – PanAust's acquisition of Frieda River, BC Iron ore merger with Iron Ore Holdings.

A number of 2014 mid-tier 50 companies remain vulnerable by these measures and we expect this will continue to drive opportunistic deal activity… Are you a target?

Outlook for the year ahead

After a period of sustained challenging market conditions a number of miners have emerged with enough financial strength to opportunistically acquire the vulnerable, subject to their asset potential. Along with large end users of commodities, they are joined by investor groups who have not typically invested in the mid-tier. In the near term, this should result in more deal activity and competition for good projects.

1. We expect financially strong mid-tiers to have a greater appetite to acquire assets or other mid-tier miners

This group of mid-tiers will leverage their financial strength to target those that have not adapted or responded well to a period of sustained lower prices.

As the benefits associated with productivity improvement and capital discipline initiatives flow, this group will look for opportunities to expand their project pipeline or apply what they have learned to other, less well run operations.

2. We will see other buyers of mid-tiers assets emerge; both the usual suspects and a few newcomers

We believe that participation from end users will continue, particularly in commodities where supply is concentrated among the major miners and where projects are capital intensive in commodities such as iron ore, platinum, mineral sands, potash and uranium.

This has been a consistent theme over the past few years, particularly for Asian based users. Investment from Asian sources was targeted in 2014 with representation in only 4 deals (Aquarius, Aquila, PanAust and Paladin) but over 50% of the total deal value.

Financial investors, especially private equity, will play an increasing longer term role in the mining mid-market, particularly for quality development assets that require large amounts of capital. This may be good news for capital starved miners with quality prospects.

We expect service and infrastructure providers to increasingly participate in transactions due to increased competition in their traditional markets. Most likely to acquire are those with a strong balance sheet and a willingness to take on some development and commodity risk. Most likely targets will be bulk commodities with significant infrastructure needs.

Interestingly, 2014 has seen this start to happen, with Aurizon joining Baosteel to acquire Aquila and Mineral Resources making a failed counter offer. Aurizon in particular has been active in looking at infrastructure options for development projects, with the Aquila deal following on from interest shown in 2013 in assets in the Galilee basin.

Major projects – Unlocking greater value

In Summary

We believe the greatest benefits for projects will come from three key areas:

- *leading feasibility and project development with a capital productivity lens;*
- *working up from an under-designed project; and*
- *selecting a project delivery model that captures the greatest value for the organisation.*

Investment in new projects by mid-tier miners will be the lifeblood of the Australian mining industry in the medium-term. Applying these recommendations will help to increase both the success rate of major projects and the health of the mining sector more broadly.

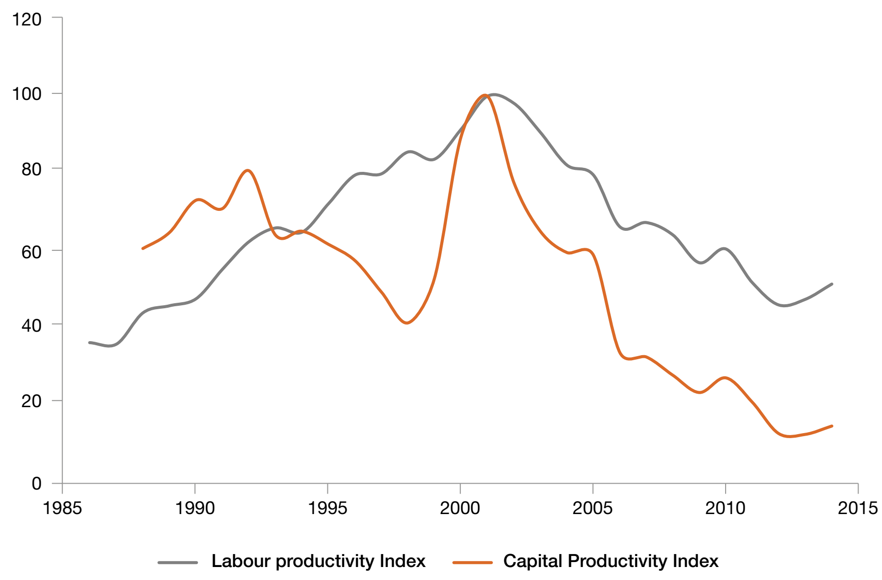
Unlocking greater value from major projects – are you ready to "bet the farm?"

A significant proportion of our mid-tier 50 have development or exploration projects that represent a significant pillar of their long term strategy. As our article "*Exploration – reward for the brave*" shows, while there has been some success in securing funding during the year, this has been for smaller projects. Getting funding for larger projects is becoming ever more challenging and there will be even greater scrutiny on project feasibility.

Major projects are a higher risk venture for mid-tier miners as compared to the large-caps as due to the relative size of a major project, approval can amount to "betting the farm" on a successful outcome. With so much at risk, there is no room for error. Are your projects ready for this?

PwC's Capital Projects team is comprised of individuals with engineering, project and construction management experience gained in the delivery of large and complex multi-sector projects. We have seen how numerous mid-tier miners are evaluating their major projects, which has led us to identify a number of common themes that, when done well, can unlock greater value for major projects.

Index of Labour and Capital Productivity in the Australian Mining Sector (2001 = 100)



Source: ABS

Make capital productivity an input to feasibility, not an outcome

Feasibility studies are conceived as a way to investigate the technical, operational and environmental feasibility of developing an ore body. However our experience has shown that these studies can be overly focused on the technical feasibility of a project while treating the commercial feasibility as an outcome, rather than an input. The risk for mid-tier miners lies in the cost of delivering a "solution" that may be technically feasible but commercially marginal.

The Australian mining industry has experienced a decline in capital productivity since 2001, as seen in the productivity chart on the previous page. Although the index has been trending ever so slightly upwards since 2012, it remains well below its peak, highlighting the need for improvement. We believe by applying a capital productivity "lens" from the outset, major projects will have a much greater chance of progressing to a final investment decision (FID) and receiving approval from the Board.

A capital productivity lens seeks to establish, at the outset, the commercial performance required of a major project, and then assesses the cost/value trade-off for each component of the value chain. When applied retrospectively, this process highlights waste and overcapacity, however a far more valuable approach is to apply this lens at the commencement of a feasibility study. This allows feasibility study teams to progress with established capital productivity requirements in place.

Aim to under-design

Mid-tier miners need to be the leaner, more agile siblings of the large-caps. The resources they are working with tend to be lower quality and higher cost than the majors and their cost of capital is generally higher, when they can access it. Despite this need to be cost conscious from the outset, we have seen mid-tier miners reduce their project budget estimates by up to 30% by revisiting them with a capital productivity lens. The quantum of the possible savings may come as a surprise to some however we believe it is another symptom of overly focusing on the technical feasibility of a project while seeing commercial feasibility as an output.

Perhaps a greater surprise is that significant project budget savings were possible despite most major projects having already undergone a value engineering assessment. The root cause of such ineffective value engineering assessments appears to be, again, a focus on the technical performance of the project as opposed to a more balanced, commercial focus. Additionally engineering assessors may lack an incentive to simplify a design for which they hope to win subsequent contracts.

When revisiting project budget estimates with a capital productivity lens, the most significant savings are often found in rail infrastructure and processing facilities. Optimising rail corridor alignments and ballast design specifications can yield significant savings, while rationalising the performance envelope of processing facilities and minimising component duplication can offer further savings opportunities for some projects.

Using an independent third party to conduct a value engineering review under a commercial mandate is a logical recommendation however we further suggest miners should aim to under-design major projects and work up to an adequate scope, rather than pursue the typical approach of designing for "technical excellence" before stripping back the "gold plating".

Make an informed decision when deciding to outsource or self-develop a project

The final observation we make is the challenge faced by mid-tier miners to achieve continuity from project development through to project delivery. A critical transition point for any major project is the transition from planning to delivery, and more often than not, it occurs gradually over a number of months.

If the transition occurs across an interface, with one team "passing the baton" to another, the process is much more likely to lose value through inefficiencies and potentially a lack of understanding of the reasons for the final design. Given cost constraints, mid-tiers may not have the luxury of employing experienced project staff from the project concept phase through to delivery. Any decisions in this regard should be made knowing that continuity in project staffing is far more likely to retain project knowledge and value.

An added dilemma for mid-tiers is the pivot point when deciding to outsource or self-develop a major project, with each having its challenges. Outsourcing poses two key challenges; understanding the cost to transfer risk to a contractor and assessing if this represents value for the project; and using contracting effectively to transfer this risk in tangible terms.

In contrast self-developing a project can be just as challenging for a mid-tier miner as it is potentially faced with building its own project team and developing robust governance and control systems to effectively manage a major project.

Regardless of the project delivery model a mid-tier miner may take, oversight must always be maintained by the project owner to ensure value is being captured. This requires fit-for-purpose internal governance and control systems.

We encourage mid-tier miners to fully understand their situation and the options available to them when selecting a project delivery model. This understanding will allow mid-tiers to weigh the cost of developing an internal delivery capability against the cost of outsourcing project delivery and the extent to which delivery risk can be effectively transferred.

"What miners are doing better is wresting back control of the use of capital... and keeping that skill and intellectual property within our own business... it allows us to be in control of the project."

Mick Wilkes, CEO OceanaGold

Productivity issues and opportunities – Is bigger really better?

In Summary

- *Productivity is the foundation for a mine. It generates the value by supporting income and dictating costs. Our financial analysis indicates that productivity improvements are not evident from the results of the mid-tier 50.*
- *Inefficiency is destroying value in some mining companies and is causing some to die. Some majors and mid-tiers have started on this productivity path and being up with the productivity leaders will distinguish the survivors from the rest in the mid-tier.*
- *Productivity remains a major challenge and opportunity for the industry. Mid-tier miners have many of the same issues as the majors but have some specific issues and opportunities mostly related to the size of the mines they are operating.*
- *Making the most of fleet size and equipment through application and agility combined with strategy, using data and getting the most out of your people and contractors will be the keys to success in productivity improvement.*

Introduction

There are significant productivity challenges facing the mining industry in Australia. Equipment output has fallen 20% since 2007 despite (or maybe because of) significant investment over this period. In addition, Australian mines are not best in class for any mining equipment and output is below most other countries/regions. These major trends are covered in detail in PwC's Mining for Efficiency Report of August 2014[6]. In this article we focus on what this means for mid-tier miners.

The mid-tier miners operating in Australia face many of the same opportunities and challenges as the majors in getting the most out of their investment and their people in challenging economic circumstances. They also have a range of issues and opportunities which are specific to them, with the potential to be nimbler and quicker to change than the majors. What's more, mid-tier miners generally don't have tier one resources and so every cent counts. The relative bang for buck for smaller miners can therefore be more spectacular.

The inevitable response to a price boom is an overinvestment in capital goods, capacity and labour; and that is what many mining companies are facing now. These three overinvestments are the underlying causes of the reductions in productivity during and post the mining boom. How well these overinvestments are dealt with will determine whether some mid-tier mining companies survive.

Our financial analysis shows that productivity improvements are not evident in the results of the mid-tier 50, with margins down across most commodities as costs continue to rise. The speed at which companies can change this will enable some to stand out from the crowd.

[6] *Mining for Efficiency: How a focus on equipment performance promises to unlock billions of dollars in productivity returns for miners", August 2014* www.pwc.com.au/mfe

How are mid-tier miners' operations different and what does it mean?

Smaller can be beautiful: Total fleet numbers

The mines being run by the mid-tier miners on average are smaller than those being run by the major mining houses. This can present challenges in terms of fleet flexibility amongst other things. The upshot however is that it is easier to optimise a small fleet than a large fleet. Mid-tier miners should look to make the most of this advantage by ensuring they have a well-communicated operating strategy in place and sufficient processes and people to deliver exceptional performance.

Smaller can be beautiful: Size of equipment

The mines being run by mid-tier miners are, on average, using smaller equipment than those of the majors. For example, the average capacity of loaders on all mines in Australia in 2013 was 21 CuM, while on those mines operated by mid-tier miners the average capacity was 14 CuM. In Australian mines, these smaller loader models are predominantly performing well below average (see figure below left).

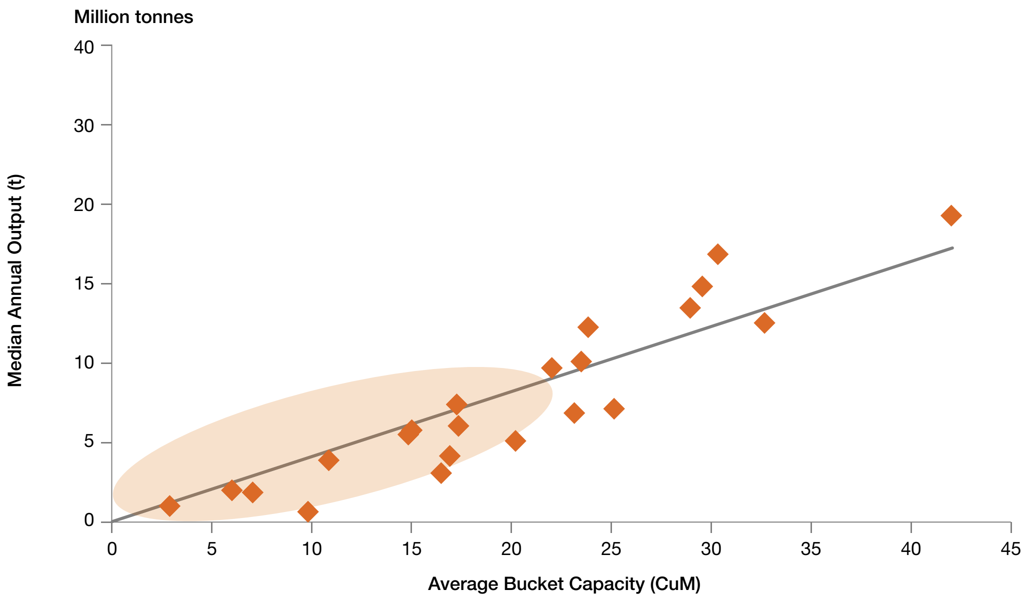
The plots in the Appendix of Mining for Efficiency demonstrate that this is consistent across rope shovels, excavators, front end loaders and mining trucks. However, this is only showing what mines collectively achieve with smaller equipment; not what the smaller equipment is capable of.

As a startling example, the potential (best practice) of different loader models is shown below right. It demonstrates that smaller equipment is equally capable of achieving exceptional performance.

In fact, the highest performing excavator model is one with an operating weight of 125 tonnes and a six cubic metre bucket. It moves 9 Million tonnes per annum.

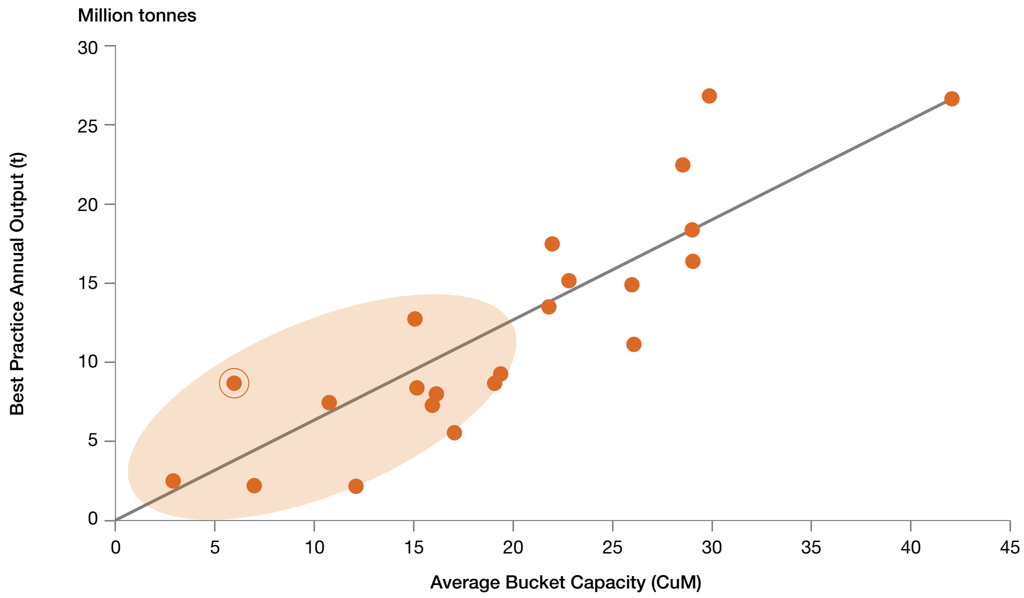
Mid-tier miners should look to identify underperforming equipment within their fleets and aim to unlock its real potential. The size of this prize is huge.

Median loader performance vs capacity by make and model



Source: PwC's Equipment Productivity and Reliability database

Best practice annual output vs capacity by make and model



Source: PwC's Equipment Productivity and Reliability database

How can mid-tier miners improve the productivity of their equipment?

Fleet flexibility

There is an inherent conflict between a productivity plan based on increasing volumes and one based on cost reduction. The ability of a mine or company to change strategy in response to the prevailing economic circumstances is very important for value creation. Smaller mines have a disadvantage in this area due to less flexibility inherent in smaller numbers of equipment. They often can't ramp up production or employ more contractors when they want more output, nor can they easily switch off output when times become difficult. The best mid-tier producers will build what flexibility they can into their fleet operations. Cost reduction will be a high priority over the next couple of years, but the best operators will be flexible enough that they can take advantage if commodity prices begin to rise.

Make use of data

It is of concern that relatively few small miners have systems to acquire productivity and reliability data and even less actually use the data to drive efficient operation. We've seen that the use of productivity data is a proven distinguishing feature of mines that achieve outstanding equipment performance. Much of this analysis is now readily available to mid-tier producers and there is no longer any excuse for not having systems in place to collect and use operational data. The investment required in this area is modest compared to the potential gains.

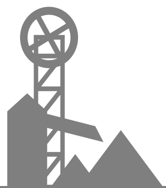
Get the best out of your people

People cause efficient (or inefficient) operation. Selecting the right people, training them properly and then supporting them is a proven path to exceptional performance. The smaller mine has an inherent advantage in extracting the best from individuals, but conversely can suffer from a "seat-of-the-pants" approach to how people work within the mine environment. This often results in less-than-optimal performance. Those mid-tier miners that can combine the esprit-de-corps of a small organisation with the right recruitment and training programs will benefit from a distinct advantage over not just their peers, but also the majors.

Make the most of your mining contractors

While the use of mining contractors is not confined to smaller miners they do tend to use more than large miners. On average mining contractors achieve 4% higher output than owner operated. However, best practice performance is dominated (>80%) by owner-operated equipment.

Both contractors and owner-operated equipment can operate efficiently if they are incentivised properly. In the case of mining contractors the keys are the contract document and how the owner manages the contract. High fixed payments, a fixed bonus target, too much equipment, poor company management, poor mine planning and high demobilisation costs are disincentives to productive contractor performance. Current market conditions provide mid-tier miners with a great opportunity to reset contractual terms to encourage productivity improvements, not just reduce costs.



The lack of engagement by the mid-tier miners in benchmarking their performance against external operations demonstrates a lost opportunity for companies in this space. We understand that very few of the 50 companies in the group have conducted external benchmarking of their equipment performance.

If you would like to know how you stack up against best practice, contact your PwC representative and we can discuss a benchmark of your equipment performance.

Why it's time to take a new look at technology

The world outside the mining industry is full of talk about disruption, big data, smart devices and the internet of things. There have been huge changes in almost every industry; both technology driven changes in the competitive landscape and in the application of technology to deliver productivity improvements behind the scenes. If anything, the pace of change is increasing.

In contrast, the mining industry is seemingly less interested and aware of the threats and opportunities posed by what is happening. There have been few "game-changing" advances in mining process or technology in the last decade and the take up of some of the incremental improvements has been slow. There don't seem to be many significant advances in exploration, mine development or processing technologies in the pipeline, but there are many incremental efficiency opportunities available, mostly with already developed technology.

In the current environment of low commodity prices, increasing margin pressure and declining productivity, the question is: *can mid-tier players afford to invest in new technology and innovation?*

PwC Partner Mike Sum recently chaired a roundtable of experts on the development and application of mining technology to explore this question. The message could not have been clearer – *they can't afford not to.*

To summarise

Our panel was unanimous – while the implementation of new technology is not completely without risk, mid-tier miners can now benefit from the wave of increasingly accessible, low cost technology available to them. An integrated and strategic approach is required for them to successfully embed technology into their core operations with minimal cost and risk.

As John MacKinnon puts it, "miners need to ask – have we got an innovation budget – and if not, can we afford **not** to have one?"


L-R: Dr Yao Wu, John MacKinnon, Colin Farrelly

Our panel

John MacKinnon is an Investment Director at Melbourne-based Jolimont Global, a company that makes investments in high growth mining equipment, technology and services (METS) companies. He has over 20 years of experience in equity research and corporate finance in the global Mining and commodities industries.

Colin Farrelly is the founder and head of Indago Partners, a niche advisory firm focused on technology-enabled change for energy and natural resources clients. He is an experienced researcher, strategist and innovator in the Mining and Energy industries with a particular focus on technology.

Dr Yao Wu is the founder and head of Mining & Economic Evaluation Pty Ltd, which offers a range of economic evaluation services to the Mining industry. Dr Wu has a PhD in Mining and over 20 years of global experience with companies such as Newcrest and BHP Billiton.

Top 5 new mining technology trends to watch – a look into the future.

Automation:

We expect to see growing use of automation in the mid-tier, especially automated drills and increasing use of automated trucks.

Software:

New software platforms are enabling mining companies to deploy dynamic simulation and enterprise optimisation to operations without the need for costly, in-house, operations research departments.

IoT (The Internet of Things):

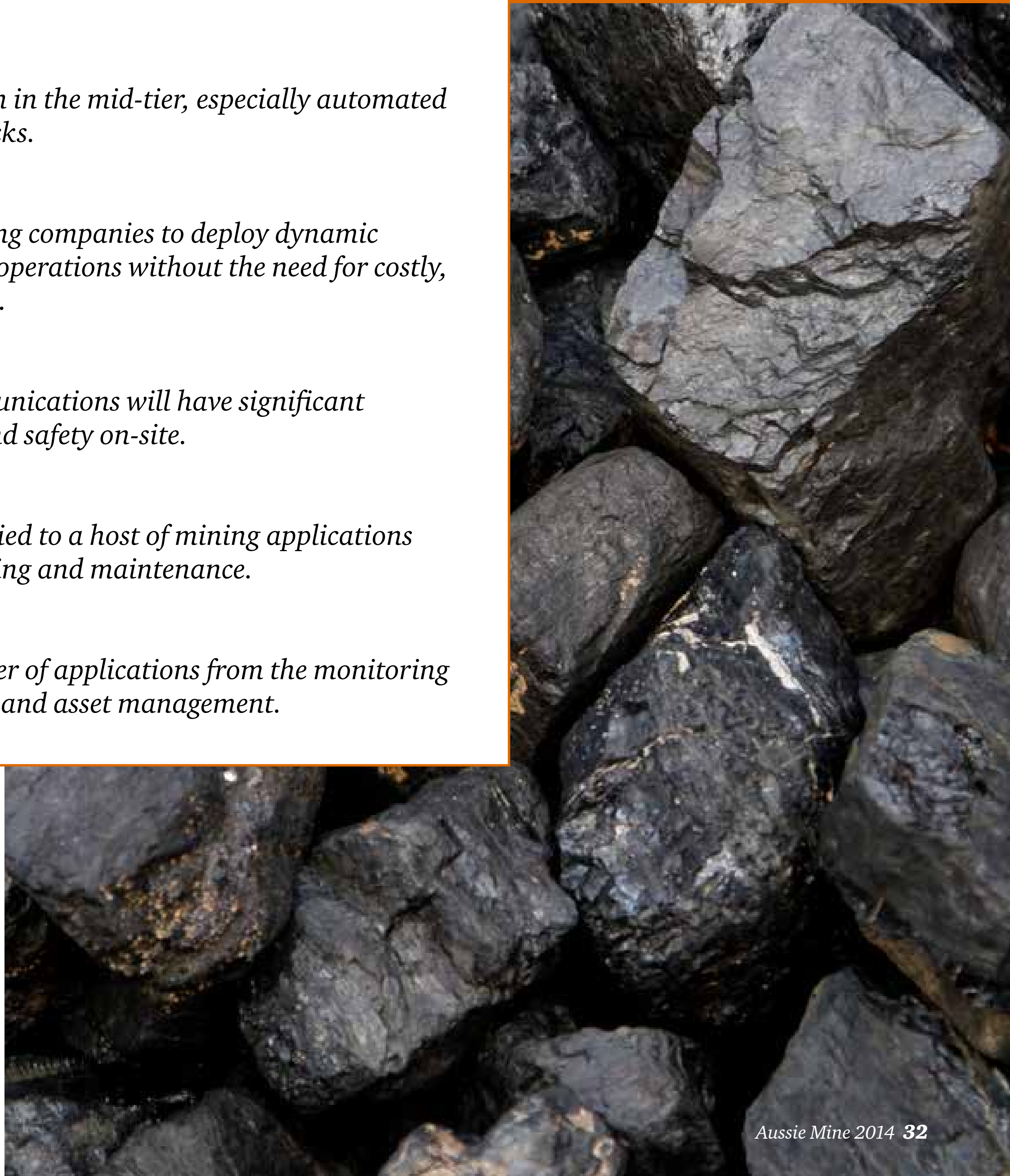
Growing use of machine to machine communications will have significant implications for efficiency, maintenance and safety on-site.

Virtualisation:

New technologies from gaming can be applied to a host of mining applications from operator training to shutdown planning and maintenance.

Mobile:

Mobile technologies can be used in a number of applications from the monitoring of employee mental health to maintenance and asset management.



New technology – affordable, and available

The embedding of technology into the core of our society has transformed the economics of innovation. Gone are the days when technological innovation was the domain of the big players with big budgets. Mid-tier miners can now take advantage of new technologies that are cheaper to implement and have the potential to significantly improve mining efficiency, mine development and mine site safety.

As PwC's Chris Stevens observes, "equipment sensors and data analytics are unlocking the keys to mobile and fixed plant productivity. For example, GPS and RFID technology installed on mining fleet can help reduce dilution and mining loss and improve safety in vehicle interactions.

Furthermore, new software technologies are making it possible for smaller miners to tap into advanced operations research and simulation modelling. For example, Enterprise Optimizer® software developed by the new PwC/River Logic alliance links dynamic simulation, value chain optimisation and benchmarking data in a way that would have been accessible only to the majors just a few years ago. This type of technology is now affordable and should be in use across the industry".

Shifting the technology paradigm

There are lots of useful technologies already out there and proven in other industries. It is a lot simpler (and cheaper) to adapt these technologies than to develop new ones. As Colin Farrelly explained "Mid-tier miners can benefit by adopting an open mindset to development. The mining industry has traditionally been poor at adopting technologies from other industries. But miners can benefit by leveraging expertise developed outside of the mining sector. For example, the defence sector is well advanced in remote communications which could have broad application in the mining sector. Agile, nimble companies, by forming clever alliances and partnerships, have the opportunity to lead the way in this area."

The second-mover advantage

The wheel does not need to be re-invented, and neither do unsuccessful technologies. Mid-tier miners can learn from the successes and the mistakes of the majors by avoiding some of the unsuccessful, low-return investments made in the past.

Dr Yao Wu agrees. "Just as the technology developed in Formula 1 filters through to other classes of motorsport, so will technologies developed by the majors filter down to the mid-tier. For example, I can see the smaller end of town adopting certain remote operations technologies – but fit-for-purpose at a lower cost ", he says.

In the boom years, mid-tier mining companies found it difficult to access experts with hands-on operational experience in using the latest mining technologies. Dr Wu sees a massive opportunity for the mid-tier arising from tougher times. "Headcount reduction in the major miners means that there are a greater number of experienced people in the market place who are able to apply technologies to the mid-tier sector previously used by bigger miners", says Dr Wu. "These include remote operations, optimisation and simulation software and data analytics to better understand mining operations".

Integrated thinking

One area that mining companies should look to improve on is having the right capability to manage technology within the organisation, as mistakes can be costly.

As John MacKinnon notes, "with technological innovation comes complexity and this can have significant cost implications for miners who are less able to afford technology mistakes. In the past, many miners have bolted on a series of unrelated technologies in a piecemeal approach".

However it is still the case that very few miners know enough about their assets. Although the industry has become very good at simulating and optimising parts of operations, the ability to understand operations holistically still evades most mining companies."

Dr Wu agrees. "Miners have implemented continuous improvement well in operations but have not done so well in applying new technologies". Colin Farrelly observed, "unlike Technology companies, very few miners have a Chief Technology Officer to drive innovation. That's a different role to the one which keeps the email and computers running. Businesses need a clearly thought out technology strategy which aligns to their vision for where they want their business to go".

Enterprise Optimizer®

PwC and River Logic's Enterprise Optimizer® provides a graphical interface for complex optimisation problems and enables the user to identify opportunities, evaluate risks and conduct what-if analyses to determine the optimal path forward.

This revolutionary implementation of an optimisation technique, long proven and accepted in the mining industry, allows the analyst to concentrate on the input data whilst the software does the complex mathematics in the background to move the solution from "what if ?" to "what's best."

Exploration – Reward for the brave

This year's success stories

Despite all the doom and gloom accompanying current market conditions and many prophesising the 'end of the boom', a number of our mid-tier miners have backed themselves and had considerable success in exploration and project evaluation. We have picked out some of these success stories below, with the sample notable for the fact that all of them saw an uplift in their share price year on year. For the brave, the reward for success is still clearly there, even in challenging markets.

These success stories come in a range of shapes and sizes. The projects on the list that have successfully secured funding during the year would appear to be small to mid-size projects with the biggest the Orocobre lithium project at less than $250m and the largest completed development was Oceana Gold's Dipidio project at around $350m.

A litmus test for the appetite for higher value projects will be the ability of Sundance, Syrah, Iron Road and Sirius to achieve financial close on projects with budgets of up to several billion dollars. Recent financing on this scale has been limited to major, tier one resources and companies such as the confirmed major projects in the Pilbara. It will be interesting to see how Iron Road and Sundance, in particular, progress given the falling iron ore price.

This outcome goes to show the old adage remains true for exploration – who dares wins. Exploration is, by its very nature, a high risk enterprise and as such demanding of high rewards, so for those willing to step out and find a new deposit or open up a new region, with any success comes the necessary recognition and financial rewards. For example, the plaudits rightly given to Sirius Resources reflect the great reward of following a concept and then a high quality management team successfully finding a great new mining region.

One trend that is noticeable is the relative lack of Australian projects, as Australian companies focus more and more offshore. This is somewhat surprising given 23 of our top 50 have existing projects in Australia – demonstrating that historically the ASX has been an exchange for Australian assets. This suggests that the press hype surrounding unfavourable costs and regulatory settings impacting local mining projects is supported by the facts. Times have changed however as Australian's look to export their expertise in exploration and project development to newer frontiers, such as Africa, where costs are lower and projects come with the promise of highly prospective ground which is underexplored. As noted by AMEC on the following page, it is up to the Australian government to continue to make the Australian landscape competitive for project funding which is increasingly global and mobile.

Exploration & Evaluation progress		Development success	
Company	**Project**	**Company**	**Project**
Wolf Minerals	Hemerdon Tin and Tungsten project (UK) was financed and will begin construction in 2015	Tiger Resources	Completed SXEW plant for cathode production at Kipoi, DRC
Troy Resources	Completed financing of Karouni gold project in Guyana, construction commencing late 2014	OceanaGold	Dipidio gold/copper mine commenced production in Philippines
Sirius Resources	Completed DFS on Nova nickel project and continued exploration at Polar Bear	Independence Group	Tropicana gold mine (non-operator interest) commenced production in WA
Iron Road	Completed DFS on Central Eyre magnetite project	Orocobre	Lithium project in Olaroz, Argentina commenced construction
Sundance	Completed feasibility, government approvals and signed EPC contract on Mbalam-Nabeba iron ore mine in Cameroon & Republic of Congo	Kingsrose Mining	Completion of development on Talang Santo gold mine in Indonesia
Syrah Resources	Continued evaluation of the Balama graphite and vanadium project in Mozambique, with DFS expected in late 2014		

Source: PwC Analysis

A worry for the future?

The table shows the financial information reported on exploration by our peer group during the year. While accounting treatments may vary, the theme coming from the table is quite clear. In tough times, our mid-tier is pulling back expenditure on exploration.

There could be a very reasonable explanation for this – that exploration projects are reaching the development stage. We believe that exploration continues to be seen as an item of discretionary spend and is therefore being deferred or cancelled to help miners make ends meet, or, as many have found, the market is simply not interested in allocating funds for exploration unless the story is compelling. For the brave, who are willing to go against this trend, our mid-tier 50 have proven that the reward is there for exploration success.

Reported financial information – Exploration

	2014 $m	2013 $m	% Change
Disclosed exploration expenditure in the income statement	(265)	(378)	(30%)
Disclosed investing cash flows on exploration	(540)	(669)	(19%)
Disclosed exploration assets on balance sheet	3,964	4,523	(12%)

Source: PwC analysis

Exploration: the foundation of a successful mining industry

Point of view from Simon Bennison, Chief Executive Officer, Association of Mining and Exploration Companies

There has been a downward trend in greenfields mineral exploration over the past couple of decades. The analysis shown above for the mid-tier 50 highlights this for the last financial year. Exploration expenditure and metres drilled are now at record lows.

The latest results from the Australian Bureau of Statistics (ABS) for the Mineral Exploration June 2014 quarter show a slight increase in exploration expenditure and metres drilled. Although this is dominated by investment in existing deposits, this is hopefully a positive sign for increased investor appetite. We must now de-risk investment in Australian greenfields exploration to inject capital into this sector.

Investment in mineral exploration – particularly greenfields exploration – is essential for emerging companies to discover the mines of tomorrow. The Australian mining sector is still heavily dependent on past discoveries and the rate of discovery of new mines has not kept pace with the depletion of existing mines. About half of Australia's non-bulk commodities mines could be exhausted in around seven to 18 years according to research from the University of Western Australia.

The research also showed that it takes on average seven years to convert a discovery into an operating mine – consuming the remaining life of the non-bulk commodity mines. This long 'discovery to mine' lead time means that action must be taken now to prepare for the future and extend the life of the mining industry and associated Government revenue streams over the next decade and beyond.

The high cost of production in Australia has meant that companies have directed their investment offshore to more competitive jurisdictions, such as Africa. Australia's share of global exploration expenditure has decreased from **21% in 2002 to 12% in 2012**. Access to capital is extremely difficult for emerging miners and explorers.

To reverse this trend, AMEC has successfully advocated for policy changes that will make Australia a more desirable place to invest. This includes an Exploration Development Incentive (EDI) announced by the Federal Coalition in its Resources and Energy Policy paper. The EDI will allow investors to deduct the expense of eligible mineral exploration expenditure against their taxable income and should provide a much needed boost to investor confidence.

The 2014/15 Federal Budget provides an allocation of $100 million over the next three years which represents approximately $350 million in eligible exploration expenditure and is forecast to create about $1 billion in subsequent economic activity. A 'no taxable income' test has been included so that the program is only available to junior mineral explorers – which will benefit the mid-tier 50 and the 50 of the future. These will be able to pass a tax credit to their resident investors based on eligible exploration expenditure in Australia.

AMEC continues to work with the Federal Government to see the EDI implemented as soon as possible. AMEC has also been working with government and industry stakeholders to improve business conditions in order to de-risk investment in the sector – as noted above a development which Australia needs. The focus has been on restoring Australia's international competitiveness by reducing costs and regulatory burdens.

The mining and mineral exploration industry has been a major contributor to the Australian economy through the creation of jobs, investment in regional communities, and numerous taxes and royalties which have contributed to Government revenue streams. We look forward to this continuing, and expanding in the future.

AMEC
ASSOCIATION OF MINING AND EXPLORATION COMPANIES

Distant shores – Mining in South East Asia

Our Aussie Mine mid-tier 50 has long been home to a broad range of locations for mining or exploration focus. This year is no different, with 29 of our top 50 engaged in locations outside of Australia and New Zealand and 20 with no Australian operations.

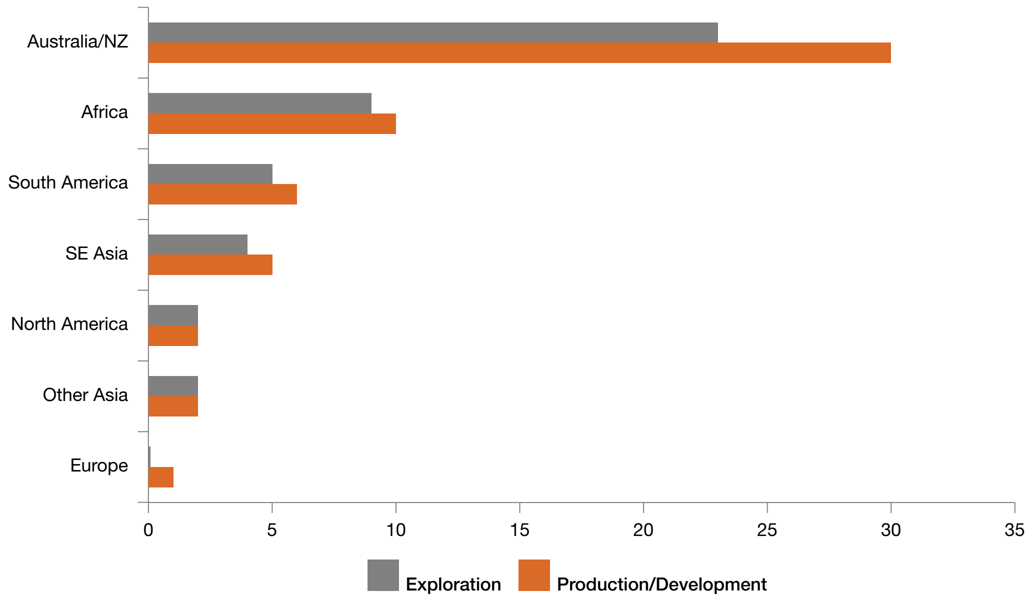
So far so good. There is a great opportunity to apply experience and know-how developed in Australian mining to similar conditions elsewhere in the world.

What jumps out of the analysis is how little interest there is in our nearest neighbours. This is striking not only because of geographical proximity to Australia but also because of geographical proximity to the growth engines of the world economy. Despite this region consuming large proportions of the world's production, only China, and to a lesser extent Indonesia, has much in the way of a mining industry at present.

Despite this great opportunity, only six of our miners have any operations in S.E. Asia and two more in the rest of Asia. Our financial analysis showed that some of these (OceanaGold, Kingsrose, PanAust) have worked hard to build real value in these locations. Why aren't more interested?

As a prime example of this disparity, only Kingsrose has any activity in Indonesia, despite its significance to the global mining industry. It is the world's largest exporter of thermal coal and has an abundance of nickel, copper, tin and gold reserves thanks to its location in the Pacific's "Ring of Fire". Five of the top 10 global mining companies have ongoing projects there. Mineral prospectivity remains high with some parts of the country relatively unexplored or undeveloped. Despite all of this, only Kingsrose of our 50 has been prepared to give it a go. Why?

Activity of Aussie Miners by region (number of sites)



Source: PwC analysis

Locations of operations

Why not South East Asia?

While each country in the region has its own specific circumstances, it seems that the unfavorable assessment of mining laws and the foreign investment climate across the region has caused Australian mid-tier investors to hesitate.

Governments have struggled for years to balance the interest of investors with their goals for retaining mining wealth for their citizens. They have been sceptical of the benefits of foreign investment and have taken advantage of this for domestic political purposes. Nevertheless, the region needs foreign investment and know how to meet its growth goals.

Shifting laws and regulations – such as export bans requiring processing in-country, foreign divestment requirements and changes to royalty and concession fees – have impacted the long-term fundamentals of investing and created uncertainty for investors. Prolonged negotiations with large global players in the region are also a cautionary tale for mid-cap miners, as they re-write terms and conditions underpinning long term investments in mining projects. This lack of regulatory certainty ultimately makes more marginal projects difficult to get off the ground.

An additional challenge for the mid-cap miners is that they are less able to spread project risk due to their limited number of assets and lesser access to finance, particularly with higher risk hurdles for investing in the developing economies across the region.

Is it worth it?

- Investment into South East Asia is not an easy path to riches. Patience is needed when doing deals, working through the lengthy permitting and licensing process and overcoming road blocks as they appear.
- In planning projects in the region infrastructure, supply chain, supplier selection and electricity supply limitations will likely take greater focus than Australian projects.
- The mineral wealth of the region and its proximity to the growth engines of the world economy bring a wealth of opportunities.
- Australian mid-tier mining companies are under-represented in the market and they could see real benefit from remedying this with the right risk management in place, bringing their practical experience of working in remote locations to bear.
- Development in the region can bring real benefit to communities. If done right, mining projects can be 'win-win', for all parties.

How to make investing in South East Asia a success

Find the right investment partner or relationship guide

Fundamental to the success stories of foreign investors in the region is deep local knowledge and long-term relationships are critical to success. Culturally, maintaining personal relationships is key to doing business.

Build and maintain relationships with the community

Regulators, national, regional and local governments and local communities in particular can help, as having extensive and reliable local networks can mitigate some of the risks of entry and operations. Local communities need to feel like they are true partners in your project.

Head office oversight

While this can be a challenge for Aussie Miners as geographical proximity is only relative, and transport links can be challenging, close involvement and monitoring cannot be emphasized enough.

Do your due diligence carefully

Markets across the region are challenging, with regulations amongst the most complex in the world. These often vary not only country to country but within countries as well. Projects therefore require significantly greater due diligence effort than those, say, in Australia.

Indonesia's election

There is a palpable sense of optimism in Indonesia following the election of Joko Widodo (known as Jokowi). Jokowi is seen as a new broom, aiming to streamline bureaucracy, stamp out endemic corruption and implement broad social reform. Jokowi has moved away from the economic nationalist rhetoric that was popular during the presidential campaign, but we have not yet seen any plans to significantly amend mining regulations.

Jokowi's policy focus is on the four key pillars of universal health care, education reform, building much needed infrastructure and phasing out the fuel subsidy which has long crippled state finances and terms of trade. If successfully implemented, Jokowi's policy platform has the potential to provide an overall better investment dynamic in the medium to long term. His minority position in the Parliament means there are a lot of ifs, buts and maybes here and his task is generational.

It is too early to judge Jokowi. He certainly brings new energy, optimism and a refreshingly straightforward management style; however he will face significant head winds in getting his policy agenda though a complex and particularly partisan political environment. Likely benefits to foreign investment in mining will be indirect with no material changes in legacy policy settings anticipated. There could be significant upside for mining investors if Jokowi can get government regulations right, so it is well worth keeping an eye on Indonesia.

What's happening in PNG?

The PNG Government is currently undertaking a review of PNG's fiscal and regulatory regimes as they apply to the mining sector, and this is expected to be completed by the first quarter of 2015.

Some of the proposed changes to both regimes have been opposed by industry on the grounds they will have a negative impact on the country's attractiveness as a destination for mining investment. The major proposed changes to PNG's fiscal regime include removing a number of tax incentives and proposing a resource rent tax, which suggests the removal of the state equity participation regime. However, this is in conflict with the current Mining Act review which has proposed increasing the government's level of state equity participation (from the already high 30%).

PNG has always maintained a very pro-mining political environment, which has led to an outstanding record of developing world-class projects. In geological terms, PNG is one of the most competitive countries in the world, however the challenge currently facing PNG is to ensure its fiscal and regulatory regimes are aligned with this geological potential to ensure a consistent flow of investment. Recent years have seen this slow, with the majors cancelling a number of projects. Our mid-tier index has no current projects in PNG.

The story in the Philippines

Investment continues to be dampened by uncertainties surrounding the industry with the current administration pushing for reforms that seek to further raise government's share in mining production.

A temporary moratorium has been imposed on the issuance of new mining agreements until a revised fiscal regime has been enacted. An initial proposal prepared by the Mining Industry Coordinating Council (MICC) was met with opposition from the industry, which estimated that the average effective tax rate would increase to 79.3% and IRR would fall to 13.2%.

In addition, a draft bill seeking to halt the export of unprocessed mineral ores including nickel and copper is likewise undergoing deliberation at both the upper and lower chambers of Congress. In the recent National Mining Summit held in September 2014, however, analysts were of the view that said initiatives will not be finalised and enacted before the next elections in 2016, if at all.

The next two to three years will be a key defining period as to how the industry will progress and move forward specifically in the determination of equitable tax contribution and sufficient support from the government through infrastructure (e.g. port areas, energy facilities) and incentives (e.g. tax holiday for large scale projects), as deemed necessary.

A trip down memory lane – Mid-tier 50 comparisons 2007-2014

We released the first edition of Aussie Mine, entitled 'Reaping the Rewards' based on the results of the largest 50 mining companies listed on the Australian Stock Exchange with a market capitalisation of less than $5 billion at 31 December 2007.

The table below shows the 16 companies that were represented in that survey, and are still included today, along with their respective positions. Later in the article, we also show the 34 companies who are no longer with us, either physically or as members of this group. Both lists provide a fascinating insight into the evolution of the Australian mining industry through what has been a tumultuous period.

List of 16 companies that made it to our mid-tier 50 in both 2007 (first year) and 2014 (current)

Rank 2007	ASX code	Company
1	PDN	Paladin Energy Ltd
2	ERA	Energy Resources Of Australia Limited
3	AQP	Aquarius Platinum Limited
6	MGX	Mount Gibson Iron Limited
8	NHC	New Hope Corporation Limited
14	ZIM	Zimplats Holdings Limited
17	PNA	Panaust Limited
21	ILU	Iluka Resources Limited
23	IGO	Independence Group Nl
25	SMY*	Sally Malay Mining Limited
27	WSA	Western Areas Limited
32	SDL	Sundance Resources Limited
38	MDL	Mineral Deposits Limited
40	LYC	Lynas Corporation Limited
46	AGO	Atlas Iron Limited
49	RSG	Resolute Mining Limited

Rank 2014	ASX code	Company
2	ILU	Iluka Resources Limited
3	NHC	New Hope Corporation Limited
6	PNA	Panaust Limited
10	WSA	Western Areas Limited
11	IGO	Independence Group Nl
14	ZIM	Zimplats Holdings Limited
17	MGX	Mount Gibson Iron Limited
21	ERA	Energy Resources Of Australia Limited
22	AQP	Aquarius Platinum Limited
23	AGO	Atlas Iron Limited
30	RSG	Resolute Mining Limited
33	LYC	Lynas Corporation Limited
37	PDN	Paladin Energy Ltd
38	PAN (SMY)	Panoramic Resources limited
39	SDL	Sundance Resources Limited
49	MDL	Mineral Deposits Limited

**SMY has changed its name and ASX code to PAN during 2008*

Source: PwC analysis

Uranium ruled!

The most obvious place to start our trip is with the two companies at the top of the tree in 2007, Paladin and ERA. With uranium spot prices at peak of US$136.22 per pound back in those days (June 2007), these two were the market darlings. Subsequent declines in price, compounded by the impact of the Japanese earthquake and tsunami have taken their toll, and see the two falling a fair way down the ladder in 2014.

Other than the uranium companies, the biggest fall from grace is Aquarius Platinum, which was at position 3 in 2007 with a market cap of $3.3bn, compared to a mere $600m today and position 22, a reflection of the challenges facing the South African mining industry generally and the platinum sector in particular.

The predecessor companies of a member of our top 10 in 2014, Oz Minerals, Oxiana Resources and Zinifex, were not in our top 50 in 2007 as both were capitalised in excess of our $5bn cut-off at the time.

Steady as she goes?

A special mention for consistency must go to Zimplats Holdings, which holds the same position (14) in 2014 as it did in 2007! However, even in holding its position it illustrates one of the trends evident in the industry and highlighted in this publication, as its market cap has nearly halved in that time, from $1.5bn in 2007 to $872m in 2014.

Middle of the road to (almost) top of the tree

The Iluka story is worth pausing to reflect on. In 2007, it was at position 21, with a market capitalisation of $1.1bn. In 2014 it sits at number 2, with a corresponding cap of $3.4bn, even this a significant reduction from the height of its trajectory, when it exited the mid-tier 50 in an upwards direction, having passed our cap of $5bn in 2011 (market cap of $ 6.5 bn as at 31 December 2011). Mineral sands have gone through the cycle in that period, but Iluka has emerged from the far side in a better position than it went in – which should be the goal for all mining companies.

Others to show a steady upwards trajectory and sit in the top 10 are a diverse group including New Hope (coal), PanAust (copper) and Western Areas (Nickel), with Independence Group (diversified) sitting just outside in position 11.

Exiting the mid-tier 50

Reason for exiting mid-tier 50	Number
Acquired by majors	6
Acquired by Australian investor	5
Acquired by foreign investor (Asia)	8
Acquired by foreign investor (Other)	5
Dropped off list	7
Ceased activities	3

Source: PwC analysis

The dear departed

The list of those companies no longer with us reflects the frenetic nature of corporate activity of Australian mining over a relatively short period of time, as well as the reality of fluctuations in commodity prices and operational challenges.

A number of companies were swallowed by those who inhabit the upper realms of the major global mining houses, including Jubilee and Resource Pacific Holdings (Xstrata), Minara (Glencore), Riversdale (Rio), Macarthur (Peabody), Andean (Goldcorp).

Those who have been swallowed up by new investors into Australia outside of the majors include Felix Resources and Gloucester (Yanzhou), Sino Gold (Eldorado) and Centennial Coal (Banpu). This trend shows the impact of the global shift to the Asian century is impacting the Australian mining industry significantly as investors from this region have moved to take positions in the Australian mining industry.

Others have been taken out by their peers in the Australian mining industry, including Equigold by Lihir Gold (itself since taken over by Newcrest), Allegiance by Zinifex, Dominion by Kingsgate, Jabiru by Independence Group and Avoca by Alacer.

Finally, there are those for whom a combination of falling commodity prices, unsuccessful acquisitions or other factors have seen drop out of the top 50 or disappear from corporate Australia altogether. The highest placed company in 2007 to depart in this way was Mirabela Nickel Limited (ranked 28 back in 2007). Others include Summit Resources and Bannerman Resources, which were also riding the uranium wave (ranked 35 and 50 respectively) back in 2007, and St Barbara (2007 ranking 34), whose well documented issues since its merger with Allied Gold have led to its departure.

For those who might have been looking for Fortescue Metals Group in the list in 2007, it is interesting to recall that even before the first commercial shipment (this happened in May 2008), the market cap of FMG in 2007 was already $9 bn.

Noticeably, there is not a single one of the 2007 list that has exited due to exceeding the $5 bn market cap threshold. This is perhaps not surprising given the stage of the cycle, but it is a cause for concern that so few of Australia's mid-tier have managed to push through that barrier and become major players themselves. It raises the question whether there is something holding back Australian mid-tiers from such success. Or perhaps it's just a matter of timing and there are some in the mid-tier 50 that can go on to do this and truly stand out from the crowd.

List of 34 companies from 2007 (first year) who are not in 2014 mid-tier 50

Rank	ASX code	Company
4	JBM	Jubilee Mines Nl
5	MRE	Minara Resources Pty Ltd
7	AQA	Aquila Resources Limited
9	PMM	Portman Mining Limited
10	MCC	Macarthur Coal Limited
11	RIV	Riversdale Mining Limited
12	FLX	Felix Resources Limited
13	SGX	Sino Gold Mining Limited
15	CEY	Centennial Coal Company Limited
16	SRL	Straits Resources Limited
18	MMX	Murchison Metals Ltd
19	KZL	Kagara Ltd
20	CSM	Consolidated Minerals Limited
22	CNT	Centamin Egypt Limited
24	MIS	Midwest Corporation Limited
26	RSP	Resource Pacific Holdings Limited
28	MBN	Mirabela Nickel Limited

Rank	ASX code	Company
29	EQI	Equigold Nl
30	MCR	Mincor Resources Nl
31	AND	Andean Resources Limited
33	AGM	Allegiance Mining Nl
34	SBM	St Barbara Limited
35	SMM	Summit Resources Limited
36	GBG	Gindalbie Metals Ltd
37	DOM	Dominion Mining Limited
39	JML	Jabiru Metals Limited
41	CZA	Coal Of Africa Limited
42	GCL	Gloucester Coal Ltd
43	PLA	Platinum Australia Limited
44	AVO	Avoca Resources Limited
45	PEM	Perilya Limited
47	SLV	Sylvania Resources Limited
48	ALB	Albidon Limited
50	BMN	Bannerman Resources Limited

Source: PwC analysis

This year's mid-tier 50

ASX Symbol	Entity name	Market capitalisation as at 0/6/2014 $million	Rank by market capitalisation
AQG	Alacer Gold Corp	817	16
AWC	Alumina Limited	3,788	1
AQP	Aquarius Platinum Limited	609	22
ARI	Arrium Limited	1,082	8
AGO	Atlas Iron Limited	577	23
BSE	Base Resources Limited	191	48
BCI	BC Iron Limited	397	29
BDR	Beadell Resources Limited	487	26
BCK	Brockman Mining Limited	562	24
CDU	CuDeco Limited	402	28
ERA	Energy Resources of Australia Limited	632	21
EVN	Evolution Mining Limited	497	25
GRR	Grange Resources Limited	185	50
ILU	Iluka Resources Limited	3,396	2
IGO	Independence Group NL	1,015	11
IRN	Indophil Resources NL	193	46
KCN	Kingsgate Consolidated Ltd	192	47

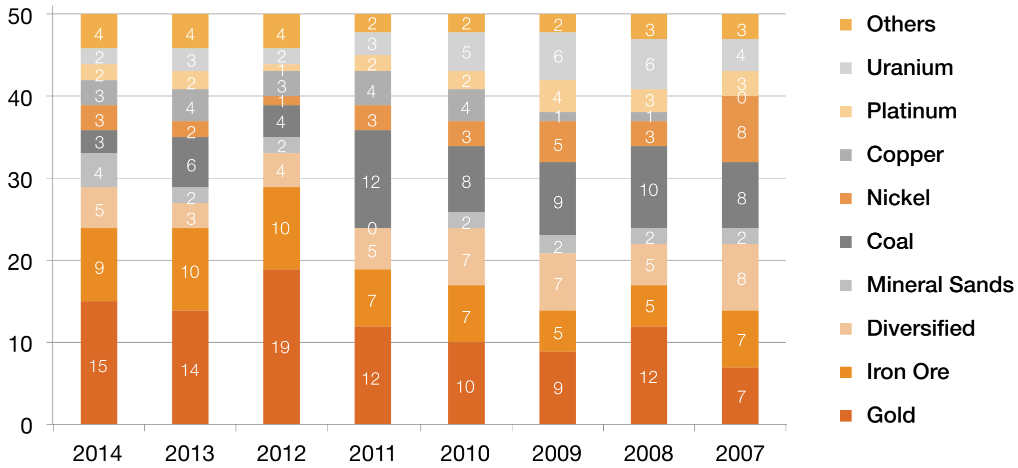
ASX Symbol	Entity name	Market capitalisation as at 0/6/2014 $million	Rank by market capitalisation
KRM	Kingsrose Mining Limited	201	45
LYC	Lynas Corporation Limited	303	33
MML	Medusa Mining Limited	383	31
MLX	Metals X Limited	430	27
MDL	Mineral Deposits Limited	188	49
MIN	Mineral Resources Limited	1,789	4
MGX	Mount Gibson Iron Limited	753	17
NHC	New Hope Corp Limited	2,227	3
NST	Northern Star Resources Limited	730	18
OGC	OceanaGold Corporation	989	12
OMH	OM Holdings Limited	289	35
ORE	Orocobre Limited	298	34
OZL	OZ Minerals Limited	1,241	7
PDN	Paladin Energy Limited	285	37
PNA	PanAust Limited	1,377	6
PAN	Panoramic Resources Limited	268	38
PRU	Perseus Mining Limited	219	43

This year's mid-tier 50 cont.

ASX Symbol	Entity name	Market capitalisation as at 0/6/2014 $million	Rank by market capitalisation
RRL	Regis Resources Limited	820	15
RSG	Resolute Mining Limited	394	30
SFR	Sandfire Resources Limited	968	13
SAR	Saracen Mineral Holdings Limited	325	32
SLR	Silver Lake Resources Limited	257	40
SIR	Sirius Resources NL	1,078	9
SPH	Sphere Minerals Limited	655	20
SDL	Sundance Resources Limited	259	39
SYR	Syrah Resources Limited	673	19
TGS	Tiger Resources Limited	288	36
TRY	Troy Resources Limited	208	44
WSA	Western Areas Limited	1,073	10
WHC	Whitehaven Coal Limited	1,472	5
WLF	Wolf Minerals Limited	226	42
YAL	Yancoal Australia Limited	249	41
ZIM	Zimplats Holdings Limited	872	14

Source: Capital IQ, PwC analysis

Composition of the mid-tier 50 by commodity over the years (number of companies)



Source: PwC analysis

Aggregated financial information

Losses were again north of $1 billion after reaching that mark for the first time in 2013, but the mid-tier 50 continues to show strong production results with a 12% increase in revenue.

However, this growth was largely offset by increasing operating expenses and the overall net loss of $1.6 billion was also driven down by ongoing impairments of $2.5 billion as commodity prices continued to fall.

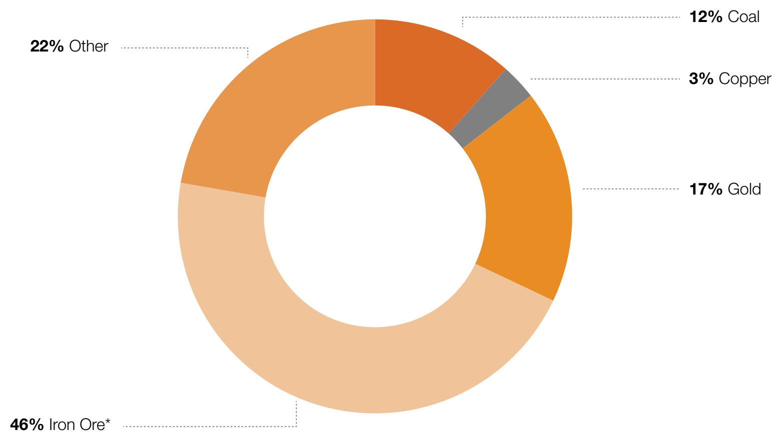
Aggregated income statement

	2014 $m	2013 $m	Change %
Revenue from ordinary activities			
- Operating revenue	24,532	21,978	12%
- Non-operating revenue	435	475	-8%
Total revenue	**24,967**	**22,454**	**11%**
Less expenses from ordinary activities	(19,948)	(17,646)	13%
Gross profit	**5,019**	**4,808**	**4%**
Exploration expenses	(265)	(378)	-30%
Other income/(expenses)	(814)	(1,053)	-23%
EBITDAI*	**3,940**	**3,376**	**17%**
Gain/(loss) on sale of investments	117	32	268%
Impairment	(2,437)	(2,436)	0%
EBITDA	**1,620**	**972**	**67%**
Depreciation and amortisation	(2,794)	(2,302)	21%
EBIT	**(1,174)**	**(1,331)**	**-12%**
Net interest income/(expense)	(542)	(367)	48%
Loss from ordinary activities before tax	**(1,716)**	**(1,698)**	**1%**
Income tax expense/(benefit)	126	93	35%
Net profit/(loss) from continuing operations	**(1,590)**	**(1,605)**	**-1%**
Gross margin	**20.5%**	**21.9%**	
Adjusted EBITDAI margin	**16.1%**	**15.4%**	
Net profit margin	**(6.5)%**	**(7.3)%**	

**EBITDAI = Earnings before interest, tax, depreciation, amortisation, impairments and investments*

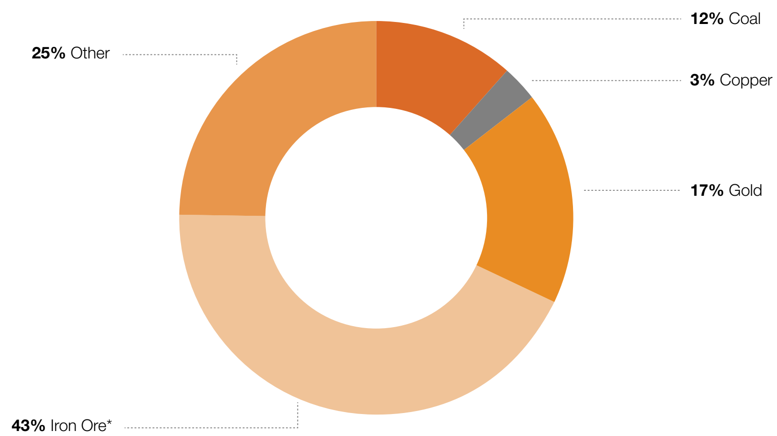
Source: PwC analysis of Company Financial Statements

2014 Revenue by commodity



Source: PwC analysis

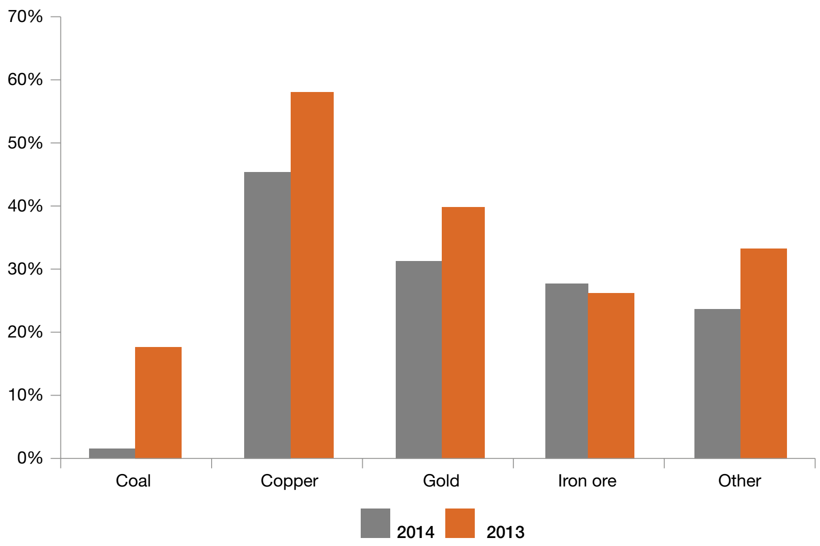
2013 Revenue by commodity



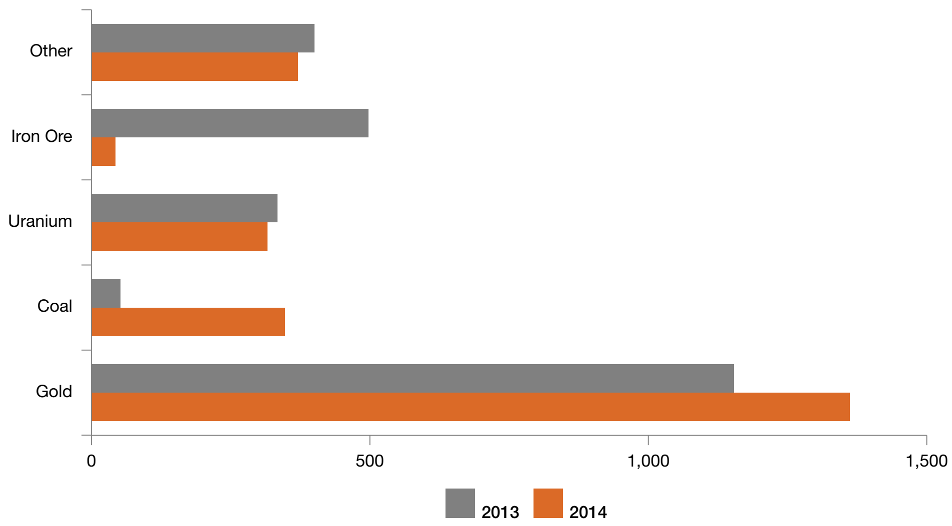
Source: PwC analysis

**Note: Iron ore revenue includes non mining revenue from Arrium and Mineral Resources*

Gross margin of mid-tier 50 producers



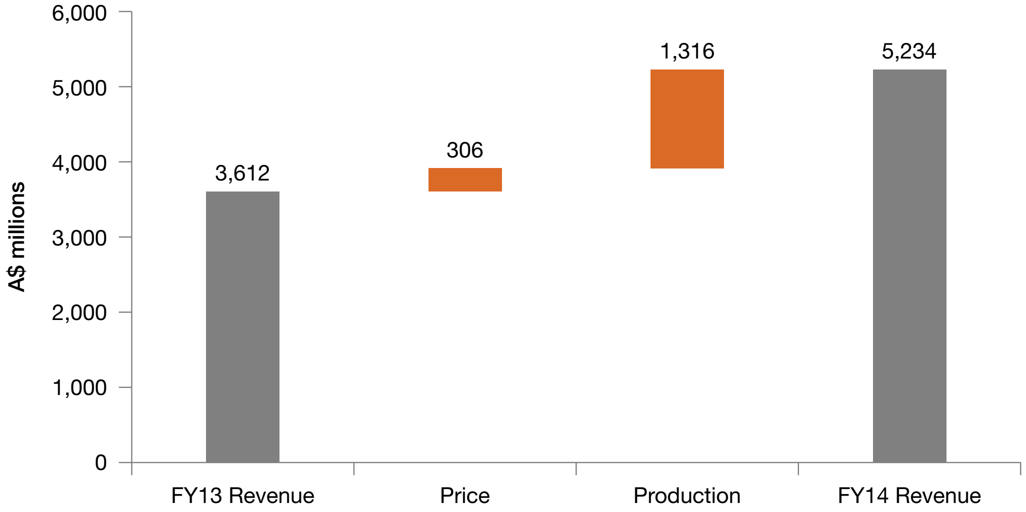
Impairment charge by commodity ($million)



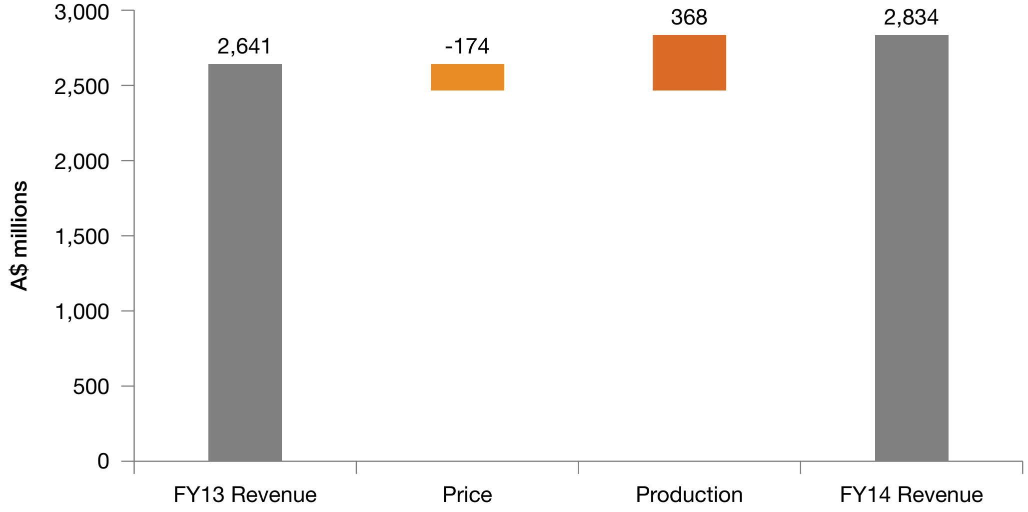
5 largest impairments in 2014	
Alacer Gold Corp	$500 million
Yancoal Australia Limited	$343 million
Paladin Energy Limited	$315 million
Regis Resources Limited	$290 million
OceanaGold Corporation	$200 million

Source: PwC analysis of Company Financial Statements

Price Volume analysis – Iron Ore*

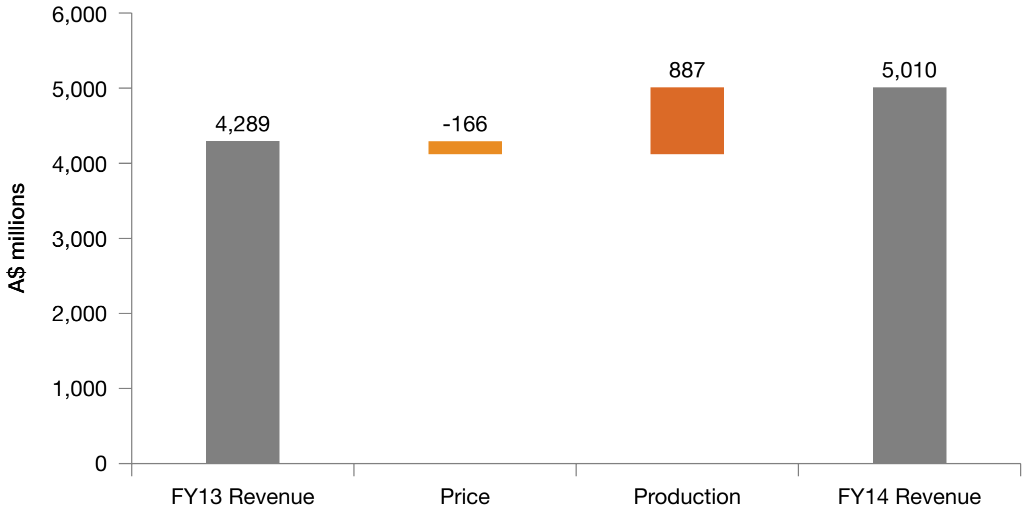


Price Volume analysis – Coal

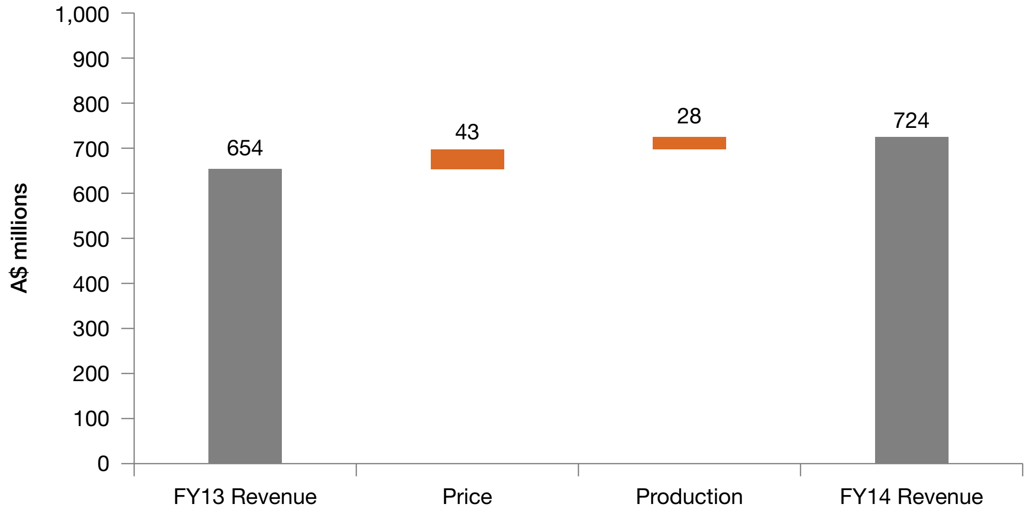


**Iron ore revenue in this analysis excludes non-mining revenue within Arrium and Mineral Resources*

Price Volume analysis – Gold



Price Volume analysis – Copper



Source: PwC analysis of Company Financial Statements

Aggregated balance sheet

	2014 $m	2013 $m	Change%
CURRENT ASSETS			
Cash and cash equivalents	5,036	4,939	2%
Inventories	4,147	4,229	-2%
Receivables	2,985	2,499	19%
Other current assets	2,368	2,386	-1%
Total Current Assets	**14,536**	**14,053**	**3%**
NON-CURRENT ASSETS			
Investments in associates and joint ventures	4,506	4,768	-6%
Property, plant and equipment	22,508	22,333	1%
Capitalised development expenditure	7,653	5,551	38%
Capitalised exploration expenditure	4,694	7,297	-36%
Goodwill	1,790	1,810	-1%
Other non-current assets	3,563	3,559	0%
Total Non-current Assets	**44,713**	**45,319**	**-1%**
TOTAL ASSETS	**59,249**	**59,373**	**0%**

	2014 $m	2013 $m	Change%
CURRENT LIABILITIES			
Accounts payable & accrued liabilities	3,909	3,756	4%
Interest bearing liabilities (short term borrowings)	1,292	1,148	13%
Provisions	743	766	-3%
Other current liabilities	941	1,454	-35%
Total Current Liabilities	**6,885**	**7,123**	**-3%**
NON-CURRENT LIABILITIES			
Interest bearing liabilities (long term borrowings)	11,410	10,600	8%
Provisions	2,548	2,293	11%
Other current liabilities	870	1,698	-49%
Total Non-Current Liabilities	**14,828**	**14,591**	**2%**
TOTAL LIABILITIES	**21,713**	**21,714**	**0%**
NET ASSETS	**37,536**	**37,659**	**0%**

Source: PwC analysis of Company Financial Statements

2014 total asset value of the mid-tier 50 by location and commodity ($million)

	Gold	Platinum	Copper	Iron Ore	Uranium	Coal	Other	TOTAL
Africa	1,197	1,461	1,020	565	704	0	565	5,511
Asia	1,874	0	0	0	0	0	2,470	4,343
North America	0	0	0	0	0	0	170	170
South America	644	0	0	0	0	0	1,914	2,557
Europe	707	0	0	0	0	0	634	1,341
Other foreign	452	0	0	0	734	0	1,651	2,837
Australia	2,865	0	963	13,627	1,558	14,122	8,375	41,510
Unallocated	535	0	0	48	294	0	1,614	2,491

Source: PwC analysis of Company Financial Statements

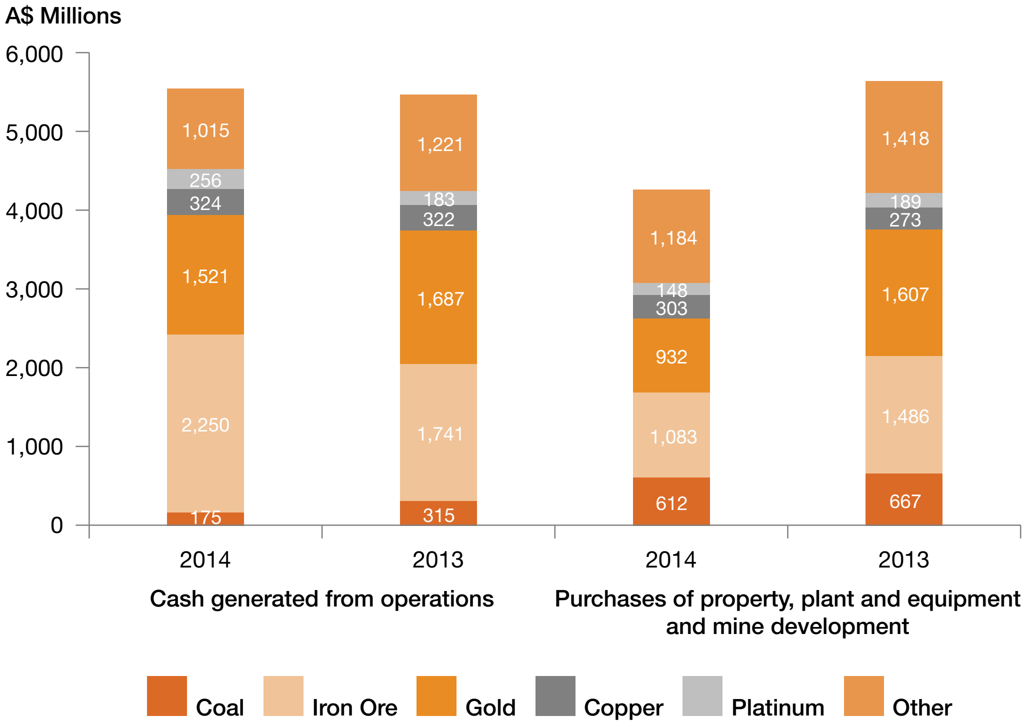
Aggregated cash flow

	2014 $m	2013 $m	Change%
CASH FLOWS GENERATED FROM OPERATIONS			
Cash generated from operations	5,540	5,469	1%
Net borrowing costs	(342)	(268)	27%
Other	(464)	(32)	1335%
Income taxes (paid)/refunded	(452)	(442)	2%
Net operating cash flows	4,283	4,727	-9%
CASH FLOWS RELATED TO INVESTING ACTIVITIES			
Purchases of property, plant and equipment	(4,262)	(5,640)	-24%
Exploration expenditure	(540)	(669)	-19%
Purchases of investments and intangibles	(377)	(752)	-50%
Other	(371)	(709)	-48%

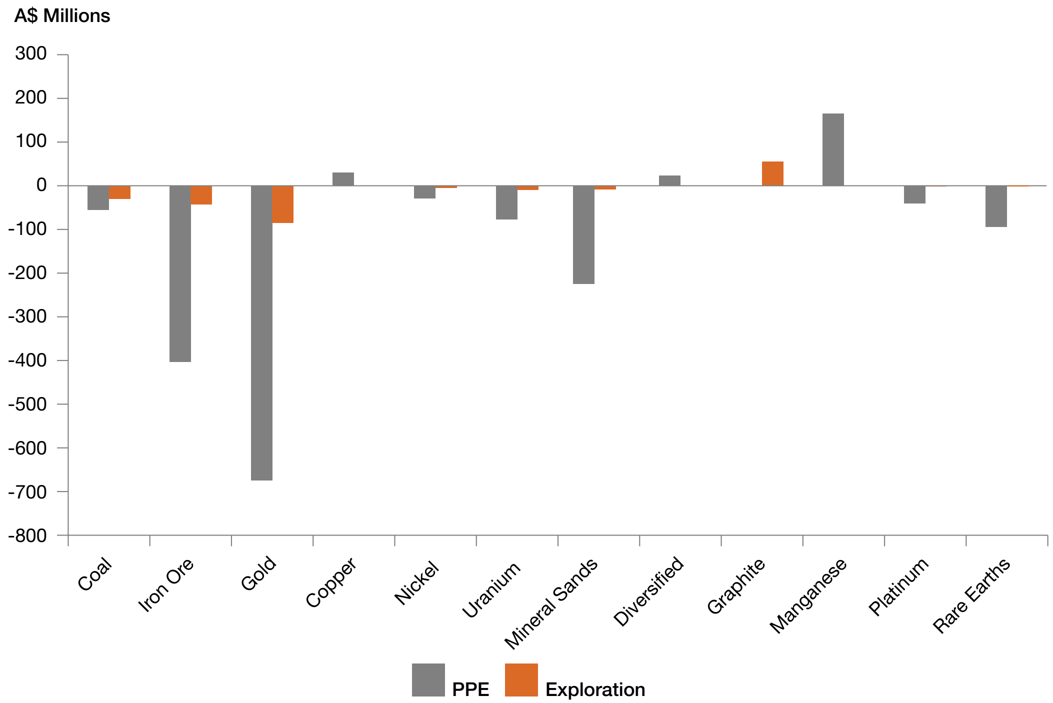
	2014 $m	2013 $m	Change%
Proceeds from sale of property, plant and equipment	477	76	526%
Proceeds from sale of investments	550	699	-21%
Net investing cash flows	(4,522)	(6,996)	-35%
CASH FLOWS RELATED TO FINANCING ACTIVITIES			
Proceeds from ordinary share issues	1,931	816	137%
Net borrowings	(519)	961	-154%
Distribution to shareholders	(851)	(1,324)	-36%
Other	(335)	(181)	85%
Net financing cash flows	226	273	-17%
Net increase/(decrease) in cash and cash equivalents	(14)	(1,996)	-99%

Source: PwC analysis of Company Financial Statements

Cash flow analysis by commodity



Year on Year change in investment cashflows by commodity



Across the industry, there has been a decrease in capital expenditure with the only significant increases being in OM Holdings Limited (Manganese) investment in the construction of its ferroalloy plant and Syrah Resources Limited (Graphite) investment on its Balama project.

5 largest debt repayments from 2014 mid-tier 50	
Alumina Limited	$528 million
Mineral Resources Limited	$242 million
Arrium Limited	$160 million
Sandfire Resources Limited	$139 million
OceanaGold Corporation	$74 million

5 largest capital raisings from 2014 mid-tier 50	
Alumina Limited	$481 million
Wester Areas Limited	$106 million
Northern Star Resources Limited	$129 milion
Aquarius Platinum Limited	$218 million
Wolf Minerals Limited	$183 million

Explanatory notes

We have analysed the largest 50 mining companies listed on the ASX with a market capitalisation of less than $5 billion at 30 June 2014. The results aggregated in this report have been sourced from publicly available information, primarily annual reports and financial reports available to shareholders. Companies have different year-ends and report under different accounting regimes.

Information has been aggregated for the financial years of individual companies and no adjustments have been made to take into account different reporting requirements and year-ends. As such, the financial information shown for 2014 covers periods between and 1 January 2013 and 30 June 2014, with each company's results included for the 12-month financial reporting period that falls into this timeframe.

All figures in this publication are reported in Australian dollars, except where specifically stated. The results of companies that report in currencies other than the Australian dollar have been translated at the average Australian dollar exchange rate for the financial year, with balance sheet items translated at the closing Australian dollar exchange rate.

Some diversified companies undertake part of their activities outside of the mining industry. Unless specifically stated, no adjustments have been made to exclude such non-mining activities from the aggregated financial information.

Deals transaction history

Completed M&A Transactions in the mid-tier 50: Deals greater than $15 million (September 2013 to September 2014)

Target	Acquirer	Sector	Target country	Ownership interest (%)	Approximate deal value $m	Announcement date	Status
Newmont Yandal Operations Pty Ltd., Jundee Underground Gold Mine in Australia	Northern Star Resources Limited	Gold	Australia	100	82	12-May-14	Closed
Aquila Resources Limited	Baosteel Resources Australia Pty Ltd.; Aurizon Operations Limited	Coal	Australia	80	1,144	5-May-14	Closed
EL 28/1724 Including Area Subject to MLA 28/376	Sirius Resources.	Nickel	Australia	30	188	14-Feb-14	Closed
Barrick Gold Corporation, Kanowna Belle And Kundana Mine Operations	Northern Star Resources Limited	Gold	Australia	100	75	22-Jan-14	Closed
Norilsk Nickel Australia Pty Ltd, Thunderbox and Bannockburn Gold Mines and Operations	Saracen Mineral Holdings Limited	Gold	Australia	100	23	21-Jan-14	Closed
Langer Heinrich Uranium Pty Ltd.	CNNC Overseas Uranium Holding Ltd.	Uranium	Namibia	25	216	20-Jan-14	Closed
Mineral Resources, Crushing Services International Pty Ltd, Two Christmas Creek Ore Processing Facilities	Fortescue Metals Group Limited	Steel	Australia	100	300	13-Jan-14	Closed
Barrick Gold Corporation, Plutonic Gold Mine	Northern Star Resources Limited	Gold	Australia	100	25	22-Dec-13	Closed
Xstrata Frieda River Limited	PanAust Limited	Copper	PNG	80	79	1-Nov-13	Closed
Papillon Resources Limited	B2Gold Corp.	Gold	Australia	100	583	3-Jun-14	Closed
Iron Ore Holdings Limited	BC Iron Limited	Iron Ore	Australia	100	254	11-Aug-14	Closed
Société d'Exploitation de Kipoi SA, Kipoi mine	Tiger Resources Ltd.	Copper	DRC	40	119	28-Aug-14	Closed
Total					**3,089**		

Pending M&A Transactions in the mid-tier 50: Deals greater than $15 million (September 2013 to September 2014)

Target	Acquirer	Sector	Target country	Ownership interest (%)	Approximate deal value $m	Announcement date	Status
Whitehaven Coal Limited	AMCI Euro-Holdings BV	Coal	Australia	6	107	26-Aug-14	Announced
Indophil Resources NL	Alsons Prime Investment Corporation	Gold	Philippines	80	289	23-Sep-14	Announced
Total					**396**		

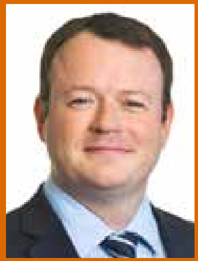
Cancelled or Rejected M&A Transactions in the mid-tier 50: Deals greater than $15 million (September 2013 to September 2014)

Target	Acquirer	Sector	Target country	Ownership interest (%)	Approximate deal value $m	Announcement date	Status
Kenmare Resources plc	Iluka Resources Ltd.	Mineral Sands	Ireland	100	1,205	26-Jun-14	Rejected
Aquila Resources Limited	Mineral Resources Limited	Iron Ore	Australia	87	1,357	18-Jun-14	Rejected
PanAust Limited	Guangdong Rising Assets Management Co. Ltd.	Copper	Australia	77	1,398	13-May-14	Rejected
Aquarius Platinum Limited, Interests in Blue Ridge Platinum (Pty) Ltd. and Shebas Ridge Platinum (Pty) Ltd	China National Arts & Crafts (Group) Corp	Platinum	South Africa	100	42	30-Jan-14	Rejected
Total					**4,002**		

Source: S&P CapitalIQ, Company ASX announcements

Aussie Mine team

John O'Donoghue
Project Leader



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Mining excellence at PwC

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The mining sector is facing a range of competing trends and a rapidly changing global business environment. Against the backdrop of commodity price fluctuations, miners need to balance shareholder dividend expectations whilst maintaining an investment pipeline in the midst of increasing operating costs. Safety, environmental and community principles also continue to shape the industry as miners look to achieve their licence to operate and deliver on corporate responsibilities.

Mining Excellence at PwC has been designed to mobilise and leverage PwC's collective global knowledge and connections to deliver an exceptional and tailored client experience, helping our clients navigate the complex industry landscape and meet their growth aspirations. Our team of specialists is exclusively focused on the sector and brings an industry-based approach to deliver value for you and your organisation.

> ***"The positive story for miners is that the long-term growth fundamentals remain intact. But, mining companies are facing significant downward pressure. As an industry, we need to fully address the confidence crisis, before we are able to move on to the next phase of the cycle."***
>
> John Gravelle, PwC Global Mining Leader

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With significant investment in the research behind our mining publications and a comprehensive industry learning and development program, our professionals can share both industry and technical insight with our clients, such as:

- A library of industry publications designed to help challenge "conventional" thinking and delve into topical industry issues. This includes:
  - flagship publications including *Mine* and *Mining Deals*
  - The *Insight Series* focuses on specific issues most important to miners

- An extensive industry development program for our people and clients. This features our annual university-style courses:
  - *Hard Hat: The Mining Experience* (Australia)
  - *Americas School of Mines* (North America)
  - *London School of Mines* (United Kingdom)
  - *Asia School of Mines*

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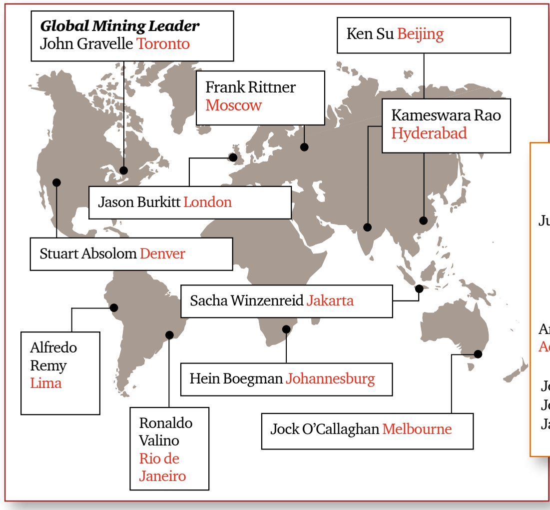

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With mining experts working around Australia our award winning teams are helping clients deliver on specific projects and organisational productivity and growth aspirations. We offer operational consulting, deals, tax and audit services to global corporations and locally listed companies.

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- a comprehensive client feedback program to ensure we are always improving and delivering on individual client needs.

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