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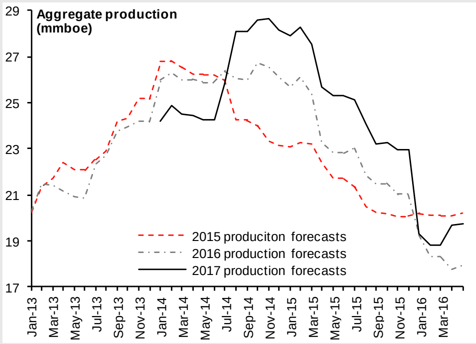
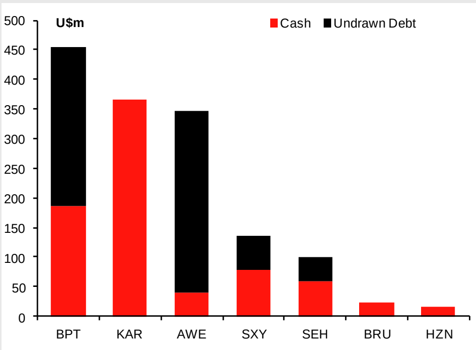
Our aggregate 2016 production forecasts have fallen by 7% since the last reporting season and 21% over the last 12 months



Most of the mid-cap O&G sector has enjoyed sizeable liquidity positions while navigate the downturn



Source: Macquarie Research, May 2016

NAV and TP revisions

Stock	Rec.	New NAV	Old NAV	TP	Chg in TP
BPT	Neutral	0.80	0.80	0.75	0.0%
KAR	Outperform	3.62	3.75	3.00	0.0%
SXY	Outperform	0.42	0.42	0.35	0.0%
AWE	Outperform	1.44	1.44	1.20	0.0%
BRU	Neutral	0.31	0.33	0.25	-16.7%
HZN	Outperform	0.18	0.18	0.12	0.0%
SEH	Outperform	0.47	0.47	0.25	0.0%
CVN	Outperform	0.14	0.14	0.12	0.0%

Source: Macquarie Research, May 2016

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3 May 2016
Macquarie Securities (Australia) Limited

Australian Energy Sector

Solid cost control evident

Event

- A number of small and mid-cap energy stocks have recently reported March 2016 Quarter production, revenue and cash flow results—including BPT, KAR, SXY, AWE, SEH, HZN, BRU and CVN.

Impact

- **Maintaining production in a tough environment:** Mid-cap stocks under coverage, in aggregate, delivered production of 4,457kboe, largely flat q/q and on pcp adjusting for the merger between BPT and DLS. While BPT delivered solid results and SXY results were largely in line, maintenance across major assets hit AWE's production and the ongoing shut-in of Sanjiaobei CGS continues to curtail SEH's production rates. At 17.9mmboe, our aggregate 2016 production forecasts have fallen 7% since the last reporting season and 21% over the last 12 months, largely due to AWE's sale of Sugarloaf, SEH's deferral of gas ramp-up and the previously unanticipated shut-in of Ungani by BRU.
- **Significant capex cuts now delivered:** Total development spend of ~U$50m for the quarter was down 30% qoq and 60% lower on pcp, with companies continuing to scale back capex. Total 2016 aggregate development capex of U$221m is expected to be 44% lower yoy (based on our estimates), after falling 40% in 2015. This reflects a combination of deferral of growth projects/drilling activity, completion of existing developments and underlying cost deflation. After completing the DLS merger. Exploration expenditure of ~U$16m fell 61% qoq with exploration spending representing the lowest quarterly level over the last 8 years. We continue to expect 2016 to be a soft year for exploration as companies look to cut discretionary exploration spend.
- **Rightsizing businesses for a lower oil price:** Many companies have been responsive to lower oil prices and quick to announce initiatives to preserve balance sheets and protect cash flows. Indeed, a number of companies have maintained their intentions surrounding subdued levels of forward capex (particularly exploration activity). With a number of strategic reviews now completed, the focus has shifted to optimising cost structures and further headcount reductions (BPT, SXY, AWE and BRU have all announced material reductions). Meanwhile, assessing / optimising existing portfolios of assets (including the viability of unsanctioned developments) in the current environment could see further project deferrals and/or decisions to monetise non-core assets (AWE has sold Sugarloaf, BPT has divested its Egypt subsidiary). Both BPT and SXY have introduced FY17 hedges to protect margins.

Outlook

- Many mid-cap energy companies have enjoyed a solid share price rebound from January lows against the backdrop of rising Brent oil prices, albeit with select stocks still offering reasonable value. Our preferred exposures remain AWE (AWE AU, A$0.67, Outperform, TP: A$1.20) and Sino Gas & Energy (SEH AU, A$0.095, Outperform, TP: A$0.25). We have also upgraded our recommendation of Carnarvon Petroleum to Outperform, albeit with a A$0.12/sh target maintained, reflecting the recent underperformance and the near-term drilling of Roc-2 (which could confirm commercial volumes at the Roc wet gas discovery).

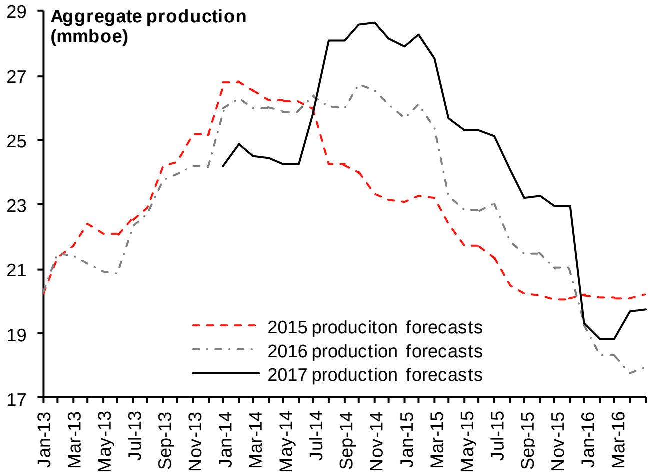
Australian Energy Sector – Mid-Cap March 2016 quarter review

Following the release of March quarter operating results by a number of mid-cap oil and gas companies, we have updated both our forecasts and review our investment cases. With Brent oil prices hitting a low point of U$27/bbl early in the quarter, most companies remain focused on balance sheet preservation through reductions in operating costs and capital programs.

⇒ The macro backdrop in 1Q16 remained challenging, with Brent prices averaging U$35.4/bbl, down 21% qoq. Oil prices fell to U$27/bbl in January, the lowest in over 12 years, before recovering to U$38/bbl at quarter-end (and U$46/bbl currently) predominately due to improving sentiment and capital flows prior to 17 April meeting between OPEC members and other major producers to discuss a potential freeze (albeit subsequently unsuccessful after Saudi Arabia refused to agree to a freeze unless all OPEC participants, including Iran, participated). The IEA estimates that YoY demand growth fell to 1.2mbpd in 1Q16, down from a five-year peak of 2.3mbpd seen in 3Q15, driven by a sharp deterioration in diesel consumption, partly offset by strong Indian demand growth. On the supply side, US E&P quarterly reporting from 16 producers pointed to merely 1kbpd or 5bps of qoq declines, supported EIA monthly data that Lower 48 production has declined by merely 50kbpd over 1Q16 (compared to our 1Q forecasts of ~140kbpd and Dec-15 to Dec-16 expectation of ~700kbpd). Meanwhile, recent surveys have provided early indications that OPEC production rose to 32.6-33.2mb/d in April, supported by solid Iraqi loadings and a ~300kb/d increase in Iranian production.

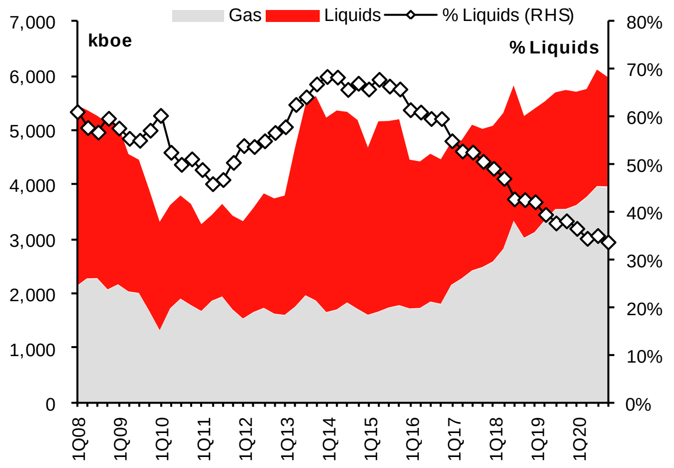
⇒ Mid-cap stocks under coverage, in aggregate, delivered production of 4,457kboe, largely flat q/q and on pcp adjusting for the merger between BPT and DLS. In the Cooper, BPT & DLS were successful in maintained production across ex PEL 91 with the connection of a further two Bauer development wells and the benefit of artificial lift across three wells. SXY reported largely in-line production with natural field decline offset by contributions from Spitfire-7 (connected last October) & Martlet-2 (connected in late January). For SEH, production rates during the quarter remained low, with Sanjiaobei CGS remaining shut-in and Linxing CGS producing at an average uptime rate of 6.3mmcf/d with 10 days of downtime. Finally, AWE's production was heavily impacted by planned maintenance across Tui, BassGas and Casino, representing its three remaining key producing assets post the sale of Sugarloaf earlier this year. At 17.9mmboe, our aggregate 2016 production forecasts have fallen by 7% since the last reporting season and 21% over the last 12 months, largely due to AWE's sale of Sugarloaf, SEH's deferral of gas ramp-up and the previously unanticipated shut-in of Ungani.

Fig 1 Our aggregate 2016 production forecasts have fallen by 7% since the last reporting season and 21% over the last 12 months (largely due to removal of Sugarloaf for AWE)



Source: Company data, Macquarie Research, May 2016

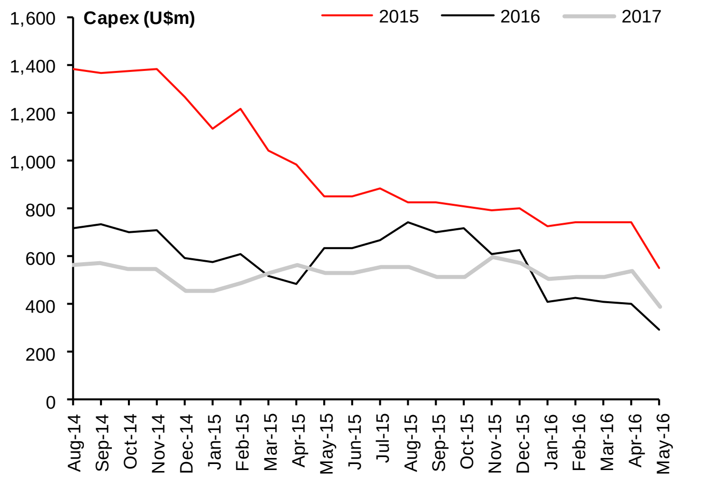
Fig 2 With a number of mid-cap energy companies targeting gas developments rather than oil in the current environment, gas is likely to represent an increasing proportion of production



Source: Company data, Macquarie Research, May 2016

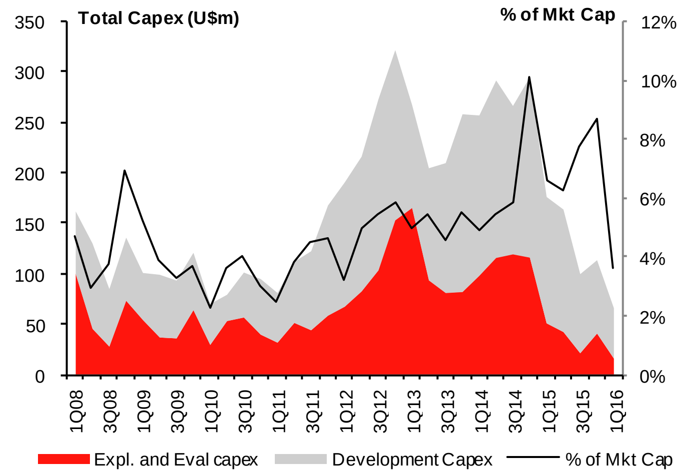
⇒ Total development spend of ~U$50m for the quarter was down 30% qoq and 60% lower on pcp, with companies continuing to scale back capex. Total 2016 aggregate development capex of U$221m is expected to be 44% lower yoy after falling 40% in 2015. This reflects a combination of deferral of growth projects/drilling activity, completion of existing developments and underlying cost deflation. After completing the DLS merger, BPT kept its FY16 capital program unchanged at A$180-210m. This following a cut earlier this year by ~26% to reflect cost savings of ~A$20m already delivered in 1H, a deferral of well connections, a reduction in the operated drilling program by 10 wells, deferral of the Bauer facilities upgrade and a reduction in the capital program across the SACB and SWQ JVs. Following its divestment of Sugarloaf, AWE's FY16 development program was revised down to 24% at the interim results with a further A$35m needed to be spent in the June quarter to meet the bottom end of this guidance range. SEH released a U$45m 2016 capital program, with activity limited to 21 wells, largely focused on development drilling (seismic and exploration drilling to support CRR has now been met).

Fig 3 Capex curtailment has seen our forecasts for aggregate CY2015 and CY2016 spend fall 53% and 26%, respectively over the last 12 months



Source: Company data, Macquarie Research, May 2016

Fig 4 Given the capex cuts delivered and rally in shares prices, the portion of spending relative to market capitalisations fell below 4% in 1Q16



Source: Company data, FactSet, Macquarie Research, May 2016

Companies responding to the lower oil price environment

- Many companies have been responsive to lower oil prices and quick to announce initiatives to preserve balance sheets and protect cash flows. Indeed, a number of companies have maintained their intentions surrounding subdued levels of forward capex (particularly exploration activity). With a number of strategic reviews now completed, the focus has shifted to optimising cost structures and further headcount reductions. Meanwhile, assessing / optimising the existing portfolio of assets (including the viability of unsanctioned developments) in the current environment could see further project deferrals and/or decisions to monetise non-core assets. Both BPT and SXY have introduced FY17 hedges to protect margins.

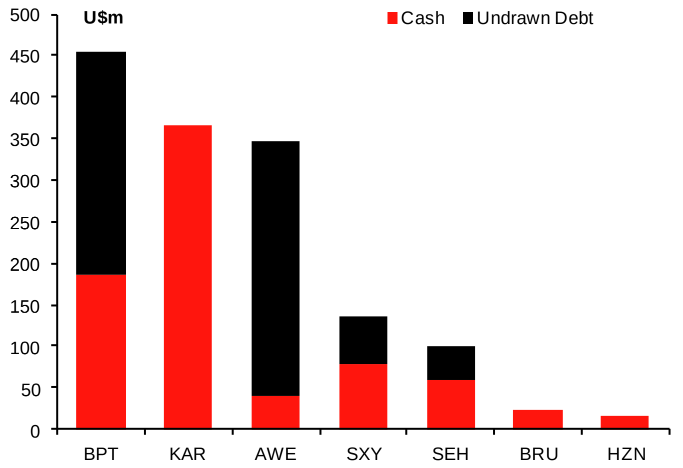
⇒ With capex savings now delivered, the focus is shifting to optimised cost structures. Indeed, BPT has increased targeting synergies to A$40m pre-tax in addition to DLS' previously target of A$10-15m of potential annualised cost savings. AWE recorded a 21% reduction in field opex, is reducing staff levels across Sydney and NZ and plans to convert the Jakarta project office into a representative office. Following the sale of Sugarloaf and given no Tui lifting (where field opex is higher), AWE's reported March quarter field opex fell to A$16.3/boe from A$24.3/boe last quarter. While we expect this to normalise higher with Tui liftings, AWE estimates that operating and admin costs have been reduced 20% year-to-date.

⇒ Companies continue to benefit from hedged put in place over the last 18 months. However, while the flat contango in the futures curve has meant that producers have been reluctant to introduce hedges in FY17 (as this would merely lock in marginal profit and potentially cap the exposure to a recovering oil price), a number of companies have taken advantage of recent strength at the short end to put in place some additional hedging.

⇒ With many companies already sitting on large liquidity positions, this should ensure that most (but perhaps not all) have strong enough balance sheets to weather lower oil prices for longer. We highlight HZN and BRU as perhaps the companies with weaker liquidity positions compared to peers (and higher debt/payables balances).

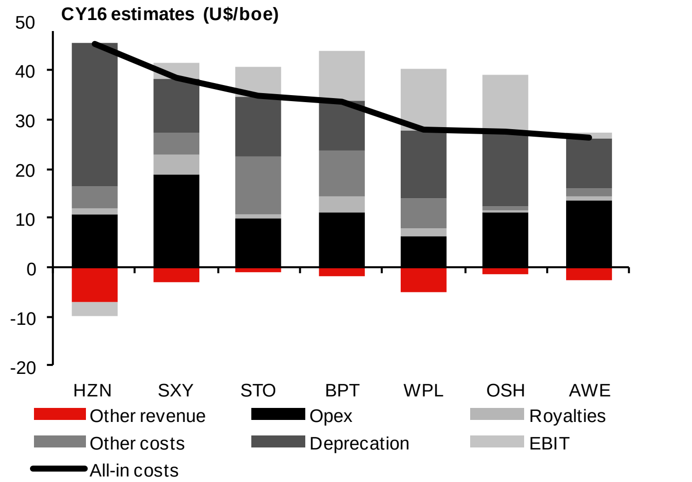
⇒ Based on current forecasts all-in cash costs (including lifting costs, royalties & overheads) for mid-cap energy companies ranges between U$26-45/boe in CY16, excluding BRU and SEH where production is only ramping up.

Fig 5 Most of the mid-cap O&G sector continue to enjoy sizeable liquidity positions while navigate the downturn (BRU and HZN's liquidity positions have remained challenged)



Source: Company data, Macquarie Research, May 2016

Fig 6 We estimate the all-in costs of mid-cap oil & gas companies ranges from ~U$26-45/boe (ex BRU and SEH where production is only ramping up)

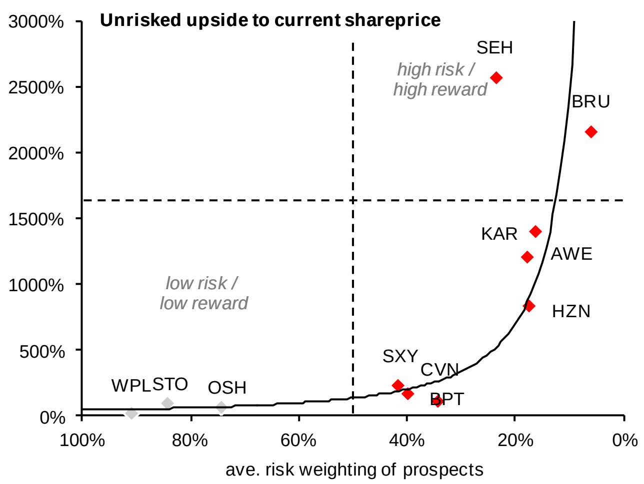


Source: Company data, Macquarie Research, May 2016

Exploration programs continue to be curtailed

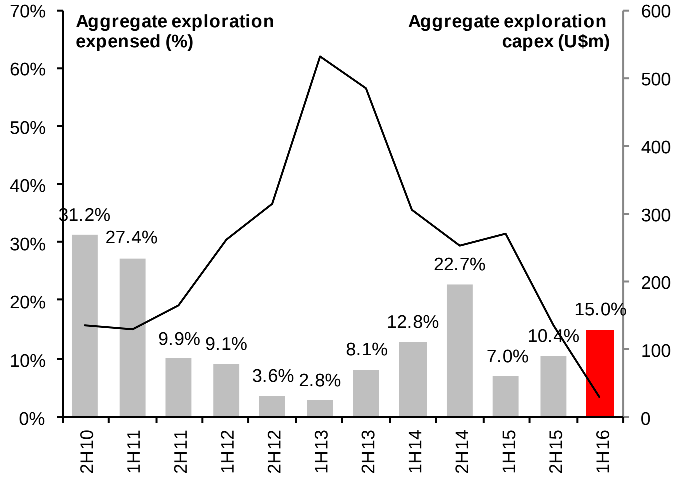
Exploration expenditure of ~U$16m fell 61% qoq representing the lowest quarterly level over the last 8 years. We continue to expect a benign year of exploration in 2016 as companies look to cut discretionary exploration spend. Therefore, apart from select instances, exploration will unlikely prove a material contributor to the investment case for mid-cap stocks. That said CVN's appraisal of the Roc-1 wet gas discovery (planned for 2Q/3Q) and KAR's appraisal of the Echidna light oil discovery (planned for 3Q) could provide greater confidence in resource sizes and deliverability to underpin further conceptual studies ultimately supporting development. Perhaps the only noteworthy exploration activity was BPT's wet gas program, including a two-well program targeting wet gas in ex PEL 2016 (where the Middleton East-1 well encountered net pay of ~9m across six zones, but the Depps-1 well encountered no commercial gas), a four-well STO-operated program in ex PEL 513, (where the Berylium-1 well intersected low-side gas pay and Sphalerite-1 was unsuccessful) and a two-well program in ex PEL 101 (where the second well, Jute-1 intersected 22m of net conventional pay).

Fig 7 The risk/rewards spectrum across mid-cap energy stocks remains large



Source: Macquarie Research, May 2016

Fig 8 Following an active period of exploration over the last two years spending levels will be paired to preserve cash balances



Source: Macquarie Research, May 2016

Some of the future wells to watch include:

- **Echidna updip (ATP 924P, KAR-65%, spud in 3Q16):** KAR submitting its appraisal plan to the ANP in August 2015, agreeing to two firm wells within the Echidna/Emu area and up to four contingent wells. We expect that the firm wells will focus on appraisal of existing discoveries at Echidna. After contracting the Olinda Star rig in late 2015, KAR has committed to a two firm/two contingent well program commencing in 3Q16, with the main focus to appraisal the Echidna discovery. KAR could potentially include an exploration well. Indeed the low-risk Emu updip prospect bears some resemblance to the unsuccessful Kangaroo-West-1, hence we expect this to be high-graded if the JV do elect to drill an exploration well in the next phase of drilling.

⇒ **G-sands appraisal (Ande Ande Lumut, AWE-50%, spud in 2Q16):** Operator, STO is preparing to drill the deeper G-sands appraisal well, which will test 289mbof gross oil in place and 36mb of recoverable oil. Success here and subsequently preparation of the 'Plan of Development' could see the G-sands developed in conjunction with the approved K-sands development and total gross resource size grow to 137mb. Under a success case this would add an incremental 9Acps to our AWE NAV (driven by a de-risking of the G-sands from 15% to the 60% we currently ascribe to the base K-sands development).

- **Linxing East exploration (SEH, 31.7%, 2016 program):** In the 2016 budget SEH is proposing to drill five exploration and appraisal wells over the Linxing East area, after an initial discovered area of 40km^2 was booked in the March 2016 reserves report with a further 294km^2 still classified as prospective. After commencing the program in March, the first well (LXDG-08) recorded a record single zone flow rate of 2.7mmcf/d. During the March 2016 quarter a further four wells were spudded and two have completed drilling (hitting 63m and 39m of net pay) with these wells likely to be tested in the current June quarter.

⇒ **Roc-2 appraisal well (CVN, 20%, June-September 2016):** Plans for an appraisal well, Roc-2, are well-advanced, with drilling set to commence between June-September and A$8m of net CVN costs carried by the operator under the original farm-in deal. The well will target the interpreted crest of the shallower structure intersected at Roc-1 (testing up to 100m of gross updip potential), help de-risked 193bcf of low-risk prospective resources and will also be production-tested, providing greater confidence in deliverability. CVN estimates that the minimum economic field size for Roc is 325bcf of gas and 17mb of liquids. Assuming the 2C case is confirmed, this would require near-field exploration success of ~ 30%, which appears achievable.

Valuation of mid-caps still compelling, despite recent rally

The mid-cap sector rose by an average of 14% (albeit with diverging performance across the board) vs a 4% fall in the broader ASX200 index. The Cooper Basin companies, BPT (+34%), SXY (+118%) and DLS (+12%, prior to delisting), and conventional producer, AWE (+35%), outperformed. Despite solid cash balances, explorers that have little exposure to rising spot oil prices (namely KAR, CVN, BRU) fell by average 21% over the quarter. At current levels, the Australian mid-cap sector still offers compelling valuations vs international peers. We estimate that mid-cap stocks are trading at an average 50% discount to risked NAV (a steeper discount than the more challenged US, Canadian and European mid-cap peers which have enjoyed a significant rally over recent months) and a 23% discount to core NAV. We estimate stocks with oil exposure where we are not restricted are discounting an oil price of U$45/bbl, which compares to spot Brent prices of ~U$46/bbl and our long-run forecast of ~U$74/bbl (nominal). The sector is also trading at an EV/2P multiple of U$7.8/boe, which compares to the large-cap sector at U$14.7/boe.

Fig 9 Australian energy sector valuations

Company	Rec.	Share price	Target Price	Upside	Core NAV	Risked NAV	Discount to core NAV	Discount to risked NAV	Oil price discount	2016 PE	2016 P/CFPS	EV/2P	EV/2P +2C
Beach	Neutral	$0.78	$0.75	-3.2%	$0.68	$0.80	+14.5%	-3.3%	U$64.2	6.5 x	3.7 x	U$9.0	U$0.9
Karoon	Outperform	$1.41	$3.00	112.8%	$2.02	$4.36	-30.3%	-67.6%		nmf	nmf		-U$1.3
Buru	Neutral	$0.19	$0.25	31.6%	$0.16	$0.31	+21.5%	-38.5%		nmf	44.7 x	U$14.4	U$14.4
AWE	Outperform	$0.71	$1.20	70.2%	$0.69	$1.44	+1.7%	-51.0%	U$19.9	14.4 x	5.7 x	U$6.4	U$2.6
Senex	Outperform	$0.28	$0.35	27.3%	$0.28	$0.48	-3.3%	-42.5%	U$55.9	7.4 x	4.8 x	U$1.8	U$0.4
Horizon	Outperform	$0.07	$0.12	73.9%	$0.21	$0.31	-66.7%	-77.5%	U$38.9	nmf	1.9 x	U$14.0	U$1.9
Carnarvon	Outperform	$0.08	$0.12	42.9%	$0.15	$0.14	-42.6%	-41.0%		231.8 x	27.5 x		
Sino Gas	Outperform	$0.10	$0.25	163.2%	$0.39	$0.47	-75.4%	-80.0%		1.9 x	1.9 x	U$1.0	U$0.4
Mid Cap Average				*64.8%*			*-22.6%*	*-50.2%*	*U$44.7*	*52.4 x*	*12.9 x*	*U$7.8*	*U$2.8*

Numbers annualised to December year end. Closing prices on 2 May.

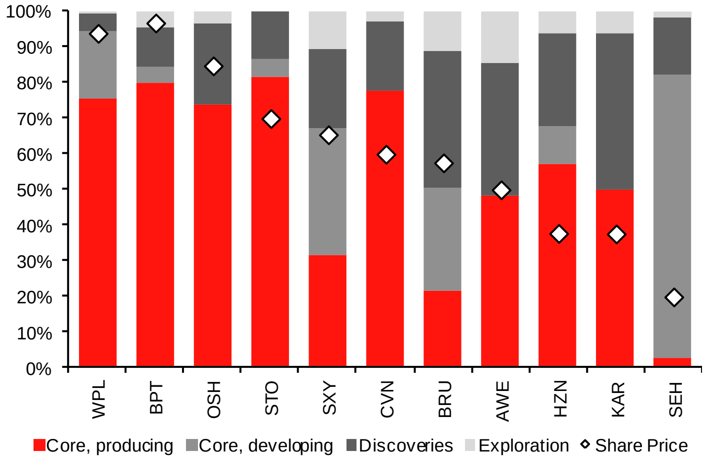
Source: FactSet, Macquarie Research, May 2016

While we have high conviction that oil markets will rebalance in 4Q16, fundamentally supporting a recovery in oil prices, much of the recent rally has predominately been driven by capital/ETF flows. Consequently, while we remain constructive on the sector in the medium term, we believe there could be a more attractive entry point in coming months. In the current environment, our preference in the mid-cap energy sector still remains those companies with high operating margins supported by low sustaining capex, solid balance sheets (with low levels of gearing, surplus available liquidity and/or compressible capex programs), a high proportion of developed reserves (with low capital intensity to bring residual undeveloped reserves into production) and compelling valuations (with oil prices discounted well below large-cap peers, the spot price and forward curve). However, with most Australian E&P companies successfully navigating the downturn, stocks that have operating and/or financial leverage to rising oil prices could potentially outperform from late 2016/early 2017.

⇒ **AWE (AWE AU, A$0.67, Outperform, TP: A$1.20):** The completion of the Sugarloaf divestment has completely deleveraged the business, leaving AWE more exposed to non-oil linked gas (with Tui and Cliff Head production hedged over the next 6 months) with some oil price optionality preserved with its 50% interest in AAL retained (where it will still enjoy a U$88m development carry from STO). Indeed, recontracting of gas production across the Casino/Henry/Netherby and BassGas over the next 12-14 months could also see higher gas realisations (albeit already in our forecasts and the recent BassGas reserves downgrade reducing the gas volume exposed to higher pricing).

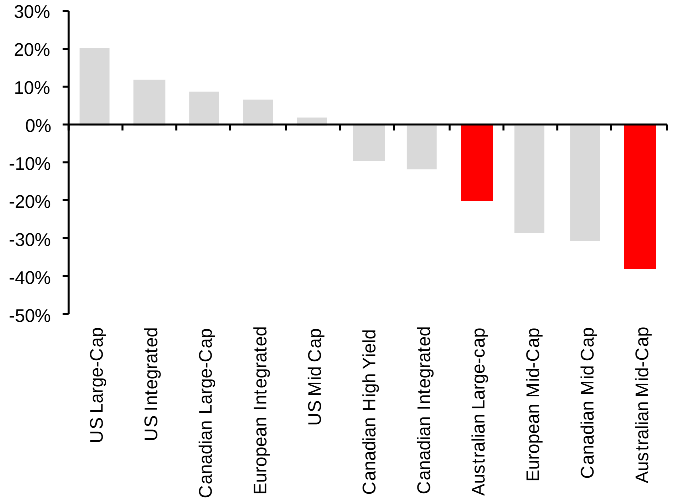
⇒ **Sino Gas & Energy (SEH AU, A$0.095, Outperform, TP: A$0.25):** At this stage, little is known regarding SEH's new operating partner and therefore it remains difficult to fully comprehend the implications of the transition in JV partner. Notwithstanding this, the implied valuation appears supportive relative to SEH's current share price and the upfront cash consideration of the deal would suggest that CNEML is well funded. Meanwhile, while on 15% of total gas receipts, a conclusion to discussions surrounding Sanjiaobei payments should provide confidence that SEH can move forward with activity across this PSC. This year is shaping up as a crucial year for both Sanjiaobei and Linxing with CRR approval in mid-year and late 2016 respectively, like to foreshadow ODP approval next year.

Fig 10 A number of mid-cap energy stocks are now trading above core NAV with only cash-backed stocks, such as KAR and CVN, discounting core NAV...



Source: IRESS, Macquarie Research, May 2016

Fig 11 ...that said, despite most Australian mid-cap companies having net cash balances and little gearing, the sector is trading at a substantial discount to NAV vs international peers



Source: FactSet, Macquarie Research, May 2016

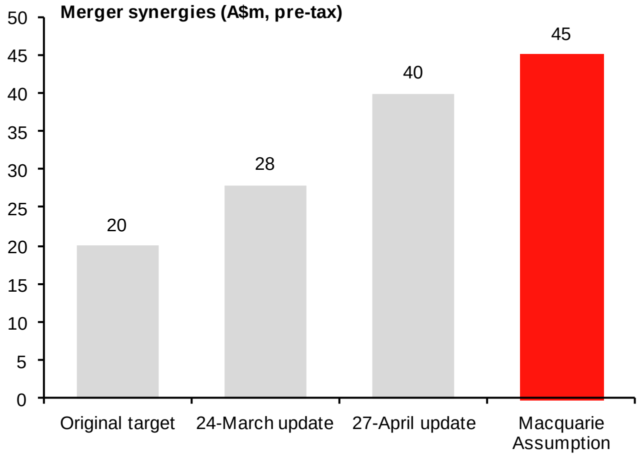
Summary of the results by company

We provide a summary of the March 2016 quarterly results by company below:

Beach Energy (Neutral, A$0.75/sh target)

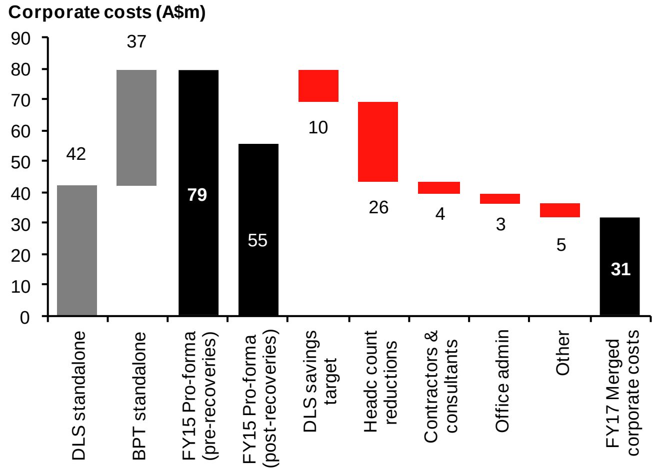
- **Solid production result:** Production of 2,440kboe increased by 8% qoq, supported by crude solid lifting from ex PEL 91 of 12,180bopd (where artificial lift from three wells delivered ~440bopd and two Bauer development wells were tied in) and addition wet gas production from ex PEL 106 and PEL 513 following completion of the DLS merger. Following the merger BPT also released revised FY16 production guidance of 9.5-9.8mmboe, which should surprise few in light of DLS' previous guidance (our revised forecast sites towards the high end of this range). Revenue of A$120m fell 5% qoq with supportive gas realisations of A$5.95/GJ and 13% higher gas/ethane sales offset by lower third-party crude sales (following the recognition of DLS ex PEL 91 volumes as own product).
- **DLS merger delivers solid production and reserve additions:** As BPT's standalone production outlook has remained challenged (with Western Flank past plateau and the lack of investment across the SACB) and reserves replacement had stagnated over recent years, the merger delivers much-needed production and reserves growth, a key objective from the strategic review. Production is expected to grow to 12mmboe in FY17 (with guidance for FY16 increased to 9.5-9.8mmboe) and reserves replacement of ~180% in FY16 is expected to see Dec-15 pro-forma 2P reserves grow 24% to 86mmboe.
- **Targeted synergies continue to grow:** Given limited asset level benefits, head-office synergies have been presented as one of the key benefits of the merger. Furthermore, a large part of management's subsequent integration effort has been focused on crystallising head-office synergies, including elimination of duplicated roles, cessation of DLS board fees, termination of contractors and consultants, and elimination of Sydney office administration costs. While the original target was A$20m of pre-tax savings within two years, total pre-tax savings of A$40m are now expected to be fully realised in FY17, highlighting both an acceleration and expansion of original targets.
- **Maintain a Neutral rating and a A$0.75/sh:** BPT enjoys a comparably supportive production outlook (with production expected to average ~30kboped over the next 5 years) and solid balance sheet (cash balances of A$242m and undrawn debt of A$350m). Furthermore, we expect the new CEO will stick to many of the strategic outcomes presented last year. Nonetheless, BPT's valuation appears full at this point in time.

Fig 12 The targeted pre-tax synergies have doubled from initial estimates of A$20m – we expect a further A$5m could be crystallised through additional savings



Source: Company data, Macquarie Research, April 2016

Fig 13 We estimate the corporate costs (pre-allocation to JV's) could fall from ~A$80m in FY15 (pro-forma) to merely A$30m in FY17



Source: Macquarie Research, April 2016

AWE (Outperform, A$1.20/sh target)

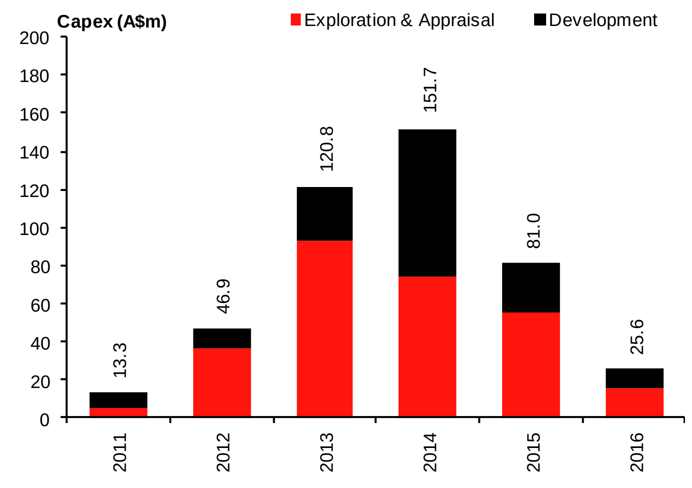
- **Maintenance and lumpy Tui liftings drives the revenue miss:** Production of 1,291kboe was significantly below forecast due to the impact of planned maintenance across Tui, BassGas and Casino, AWE's remaining core producing assets post the sale of Sugarloaf. The completion of the sale late in the period (17 March) also had a minor impact as we adopted a fall quarter of production from Sugarloaf in our forecasts. Nonetheless, production across all assets has returned to normal levels, which should support production in the June quarter. Revenue of A$40.9m was impacted by the lower production result and no crude liftings undertaken at Tui, which resulted in inventories rising to 246kb.
- **Balance sheet restored with further sales less pressing, in our view:** Following receipt of proceeds from the Sugarloaf sales and payment of applicable tax (estimated at U$33m), we forecast AWE will move into a marginal A$10m net cash position by mid-year, with our current FY16 capex forecast of ~A$180m at the bottom end of the revised U$180-210m range. With the balance largely restored (particularly if a capital light plan is adopted for the wider development of Waitsia), a refocus on Australian gas assets has seen AWE exit from a number of overseas exploration blocks and explore the potential sale of its full 43.5% interest in Lengo (albeit with an offer on the table coming ahead of FID and below book value).
- **Cost reductions remain a focus:** Following the sale of Sugarloaf and given no Tui lifting (where field opex is higher), opex fell to A$16.3/boe from A$24.3/boe last quarter. Year-to-date reductions operating and admin costs reductions of A$18m or 20% have been achieved in the first 9 months of FY16 compared to pcp. While future opex could be skewed by the high fixed FPSO costs at Tui, AWE delivered a 23% unit cost reductions across BassGas and the Otway gas assets in 1HFY16. Furthermore G&A costs fell to merely ~A$1.5m from ~A$7.7m, with management suggesting this run-rate could be sustained on an ongoing basis (following >20% reduction in head and closure of the Jakarta office).
- **Delays at Ande Ande Lumut not surprising:** STO has advised that timing of the WHP and FPSO procurement is likely to slip due to requests from contractors to confirm recent regulatory changes (previously AWE suggested the tender process would be completed over 1HCY16). The JV was previously targeting FID in 2HCY16 (which appears ambitious in the current oil price environment) and is currently considering the impact on timelines. We conservatively assume FID by mid-2017. With the G-sands appraisal well due to spud in the current quarter and ahead of preparation of a POD in the event of success, the delays could help better facilitate and joint development of K & G sands.

- **Maintain an Outperform and a A$1.20/sh target:** The completion of the Sugarloaf divestment has completely deleverage the business, leaving AWE more exposed to non-oil linked gas (with Tui and Cliff Head production hedged over the next 6 months) with some oil price optionality preserved with its 50% interest in AAL retained (where it will still enjoy a U$88m development carry from STO). Indeed recontracting of gas production across the Casino/Henry/Netherby and BassGas over the next 12-14 months could also see higher gas realisations (albeit already in our forecasts and the recent BassGas reserves downgrade reducing the gas volume exposed to higher pricing).

Senex Energy (Outperform, A$0.35/sh target)

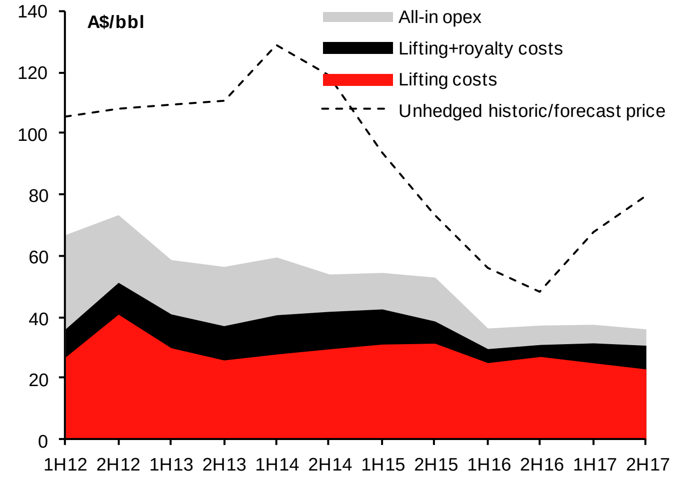
- **Resilient oil production:** Production of 250kboe was only marginally below forecast, with natural field decline offset by contributions from Spitfire-7 (connected last October) & Martlet-2 (connected in late January), the impact of a 3-month shut-in at Growler-6 (which improved recovery across other producing wells) and initial contributions from the Mirage-6 and Ventura-2 Murta tight oil pilot wells (which where stimulated in January). Production guidance was narrowed to 1.0-1.05mmboe from 1.0-1.2mmboe reflecting delays connecting Vanessa gas to SACB JV infrastructure (previously expected in the March quarter).
- **Hedging program continues to protect revenue...**: Revenue of A$16.7m was 3% ahead of expectations with lower sales volumes offset by higher crude realisations of ~A$70/bbl (benefiting from the FY16 hedging program). In March, SXY hedged a further 400kb over 1HFY17 with put options and a strike price of U$45/bbl, helping preserve operating margins over the next 9 months (with current operating break-evens at ~U$30/bbl) without necessarily removing SXY's exposure to higher oil prices.
- **...with cost control also protecting margin:** SXY has already delivered impressive cost savings with an A$11/bbl reduction in operating costs and an A$5m fall in corporate costs (with a further 15% head count reduction taken in March) since January 2015. With capex only totalling A$5.5m during the quarter (down 26% qoq) and in light of deferral of initial Western Surat Gas Project capex, the FY16 budget has been cut to A$25m-30m from A$35m-45m.
- **Western Surat Gas Project progressing:** Following completion of the transaction with GLNG and an ongoing review of a comprehensive data set from 250 GLNG wells, SXY has further refine the pilot phase for the Western Surat Gas Project with the Phase 1 drilling program to incorporate 10 and 5 wells across the Eos and Glenora area respectively in 1HFY17. Furthermore, with negotiations ongoing to utilise GLNG's gathering and network and processing facilities for the Glenora wells, this could limit associated infrastructure capex to A$15m. While the GSA with GLNG provides for up to 50TJ/d of sales gas, SXY is considering a progressive development of the resource from 2018 to manage geological uncertainties (with drilling phases progressively moving further north-west from initial pilot wells) and project funding requirements.
- Maintain an Outperform and an A$0.35/sh target price.

Fig 14 SXY has cut its FY16 capex guidance to merely A$25-30m



Source: Company data, Macquarie Research, May 2016

Fig 15 We expect a combination of hedging and cost reduction will ensure that SXY preserves an operating margin

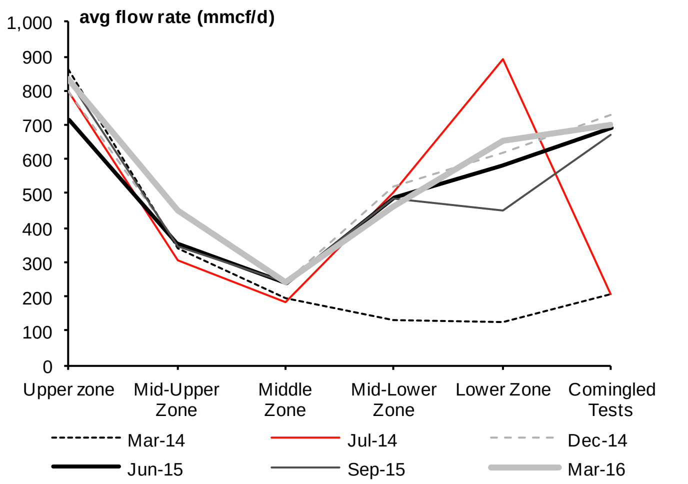


Source: Company data, Macquarie Research, May 2016

Sino Gas & Energy (Outperform, A$0.25/sh target)

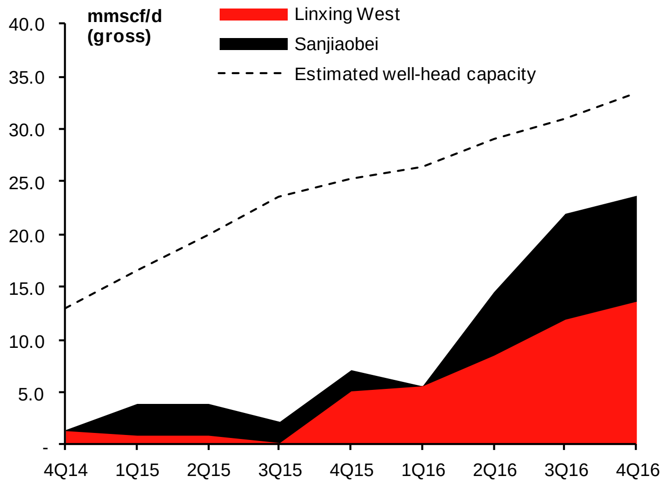
- **Production rates remain subdued:** Production rates during the quarter remained low, with Sanjiaobei CGS having remained shut-in and Linxing CGS producing at an average uptime rate of 6.3mmcf/d with utilisation at 99.7%, excluding 10 days of downtime. Gross revenue of U$3.8m implied average pricing of U$7.4/mcf, which is consistent with recently revised contractual pricing of U$7.04-7.10/mcf. Gas receipts covering 85% of total gas sales until the end of February have now been received. While the 15% of receipt relating to Sanjiaobei remains outstanding as discussions continue with the PSC partner, PetroChina, proceeds for Linxing are now being received for SOE partners on a monthly basis.
- **More detail on the 2016 work program:** Management confirmed a U$45m (gross), 21 well, four rig capital program in 2016. Most of the activity is focused on further development drilling across Linxing East with only 3 further wells planned in the Sanjiaobei PSC as the SGE JV awaits gas receipts from its PSC partner. Drilling will help support Linxing East CGS ramp up to the 17mmcf/d capacity. Testing of the 3rd and 4th horizontal wells is also expected during 2Q/3Q16. SEH expects that CRR will be granted at Sanjiaobei and Linxing by mid-year and late 2016 respectively.
- **New operating partner and solid valuation read-through:** The operating partner, MIE Holding (not rated, 1555 HK) has announced that it has sold its 51% interest in the SGE operating company to China New Energy Mining Ltd (CNEML), a private entity, for U$220m. While SEH possesses pre-emptive rights at the asset level, given the transaction was structured at the corporate level (with MIE selling a 100% interest in the Asia Gas & Energy Ltd holding company), management do not anticipate that it is in a position to exercise these pre-emptive rights. The transaction implies a read-through EV of U$211m reflecting a 16% risking placed on RISC's unrisked EMV/NPV10 2P valuation of ~U$1,285m. Nonetheless, this compares favourably to the average ~6.5% risking that the market has placed on RISC's valuation over the past five years. Furthermore, adjusting for SEH's solid net cash balance of U$49m at 31 March and the spot currency, the read-through valuation of 16Acps represents a significant >100% premium to the current SEH share price. Based on the latest RISC reserves report, the transaction price implies an EV/2P and EV/2P+2C multiple of ~U$1.20/boe and U$0.54/boe, respectively.
- **Focus shifting away from resource growth:** SEH released an updated independent reserves estimate by RISC for its Linxing and Sanjiaobei PSCs. Given CRR is expected to be concluded this year, understandably activity is quickly moving away from growing reserves/resources to further development activity. Discovered resource (i.e., 2P+2C) has risen by 7% to 4,793bcf with 26% and 41% of this now residing within the 1P and 2P categories, respectively. While this remains largely unchanged from last year on a 2P basis (39%) and we would have expected further 2P-to-1P conversions as SEH gains greater confidence in the resource, this more so reflects the addition of Linxing West resource. Given 2P reserves are artificially constrained by PSC cut-off (2028 for Linxing and 2033 for Sanjiaobei) we continue to believe that a better indication of EUR/well is gained from 2P+2C estimates, which point to a recovery of ~3.5bcf/well, up 20% higher compared to last year's estimate.
- **Maintain an Outperform and a A$0.25/sh target:** At this stage, little is known regarding SEH's new operating partner and therefore it remains difficult to fully comprehend the implications of the transition in JV partner. Notwithstanding this, the implied valuation appears supportive relative to SEH's current share price and the upfront cash consideration of the deal would suggest that CNEML is well funded. Meanwhile, while on 15% of total gas receipts, a conclusion to discussions surrounding Sanjiaobei payments should provide confidence that SEH can move forward with activity across this PSC. This year is shaping up as crucial year for both Sanjiaobei and Linxing with CRR approval in mid-year and late 2016 respectively, like to foreshadow ODP approval next year.

Fig 16 Average flow rates across wells tested have improved by 4% since last quarter but have fallen 4% over the last 12 months



Source: Company data, Macquarie Research, May 2016

Fig 17 The gas receipts issues at Sanjiaobei has impacted the production ramp-up, with the 2016 exit rate expected to be only 25mmcf/d



Source: Macquarie Research, May 2016

Karoon Gas (Outperform, A$3.00/sh target)

- **Committing to the next phase of appraisal:** In late December KAR contracted the Olinda Star for a two firm/two contingent well program commencing in 3Q16. The two firm wells appraisal will hinge on the Echidna discovery meeting the commitments under the revised Discovery Appraisal Plan. While the day rate was not disclosed, we assumed a significant reduction compared to previous wells drilled (~U$40m for vertical well assuming production testing is undertaken).
- **Lower, but conservative, resource estimates...:** Based on internal estimates aggregate net contingent resources across Kangaroo and Echidna have fallen by 54% to 84mb (or 129mb net).While this a significant reduction compared to previous expectations it would appear that KAR has been fairly conservative regarding its definition of 1C and 2C resource estimates ahead of an independent certification by D&M planned after the proposed appraisal program next year. Resource estimates largely relate to the Paleocene reservoirs encountered, with lower recovery assumed across the deeper Maastrichtian intervals. With the commerciality threshold now standing at 30-50mb (based on our current price deck we estimate a break-even NPV of ~40mb), the next phase of evaluation and appraisal will need to ensure that the 1C estimate moves above this range, in our view.
- **...With a smaller, more nimble development plan proposed:** Management presented a detailed plan for development for the Echidna and Kangaroo resources in July last year incorporating an Early Production System (EPS) and full field development utilisation an FPSO and subsea completions. Given the cost deflation witness regarding subsea components, falling rig rates and narrowing FPSO lease rates (further benefited from unutilised facility's in the region) this has seem project economics improve dramatically despite the falling resource estimate. KAR expect to be in a position to take FID on an early production system following the next phase of appraisal with first oil in 1HCY19. During the quarter KAR continued conceptual work surrounding Echidna with significant cost savings identified. KAR expects to provide an update during the current quarter.
- **Maintain an Outperform and a A$3.00/sh target:** The share price continues to discount KAR's healthy cash balances (at A$477m at Mar-16) and discovered resources in the Santos Basin, Brazil. We have rolled forward our model to reflect the lower cash balances at quarter-end, which sees our NAV fall 4% to A$3.62/sh. Medium-term NPAT upgrades of 4-5% reflect lower overhead costs.

Horizon Oil (Outperform, A$0.12/sh target)

- **Mixed production across Maari and Beibu Gulf:** Production of 358kboe was ~5% below forecast, with Maari production falling to ~12,000kbpd (gross) following completion of the Maari Growth Project in mid-2015. In mid-March the JV commenced the upgrade to the FPSO Raroa's mooring system with the second element surrounding repair work to coincide with a 10-day planned maintenance period in early May. At Beibu Gulf, gross production rose 24% to ~10,100bopd (gross) following the connection of the A6H development well last period and with all 16 wells on artificial lift. With current rates at 10,300bopd it would appear these strong rates have been maintained. With U$110.5m of cost recovery and given the preferential recovery of exploration credits (by non-SOE partners), this will see HZN's entitlement increase from 26.95% to >35% imminently. Revenue (ex U$5.4m of hedge gains) of U$10.7m fell 32% QoQ reflecting a small 5kb crude underlift and lower Beibu crude realisations of U$28.6/bbl representing a steep 19% discount to Brent.
- **Debt restructure on the horizon:** Following a further U$31m of debt reductions, HZN has reduced debt by U$52m thus far in FY16, leaving its net debt balance at U$130m. While HZN only estimates U$4m of remaining capex in the June quarter, with all the Maari insurance proceeds of U$10m now received at favourable U$95/bbl hedging rolling off in the June quarter, this leaves HZN with reduced balance-sheet flexibility. With ~U$37m of the U$120m senior facility moved to current liabilities at the recent financial results it, would appear that the amortisation profile has come under pressure from revised oil price assumptions adopted by lenders ANZ and Westpac. Furthermore, while HZN previously highlighted a U$50m accordion facility, it now appears there is limited scope to draw down on this. HZN will be required to repay the outstanding U$59m of convertible notes in mid-2016, leaving little funding flexibility in the short term. That said, HZN has stated that it has now settled on a solution and is currently in advanced discussion with relevant parties. While unknown at this point in the time, the solution could range from asset sales to refinancing. We conservatively value HZN on a post-money basis with ~U$65m of additional equity required over the next 3 years to cover the CB redemption and senior facility amortisation under Macquarie oil price assumptions.
- **Maintain an Outperform rating and a A$0.12/sh target:** Post repayment of the CBs and with hedges rolling off in Jun-16, HZN's surplus liquidity under a 'lower for longer' oil price environment appears challenged. Nonetheless, even assuming a dilutive equity raising, HZN seemingly offers value. Furthermore a more digestible solution to HZN's balance sheet could prove an upside case – indeed it would appear management is closing in on such a solution.

Buru Energy (Neutral, A$0.25/sh target)

- **Limited Laurel Tight Gas Pilot results:** After fracture stimulating the Valhalla North-1 and Asgard-1 in early September, both wells continued to flow back frac fluids (with 73% and 35% of fluid unloaded at Valhalla North-1 and Asgard-1 respectively). While stabilised rates are yet to be achieved, individual zones have flared at unstabilised rates of between 0.5-2.0mmcf/d. Due to the onset of the wet season, testing operations were suspended in January. In mid-April, BRU released revised resources estimates, independently certified by D&M, focusing on the contingent surrounding the two stimulated wells. Mean gross prospective resources across the Valhalla area has fallen to 13tcf of gas and 232mb of liquids gross. This compares to McDaniel's May 2012 estimate of ~15ctf of gas and 432mb of liquids net to BRU with the difference partly reflecting relinquishment of L10-7, L10-8 and L11-1 and D&M's estimate being based upon EP 371. At this early stage D&M has certified 1,533bcf/32mb of 2C contingent resource (albeit with a wide 1C-3C range of 455-2,981bcf) surrounding the Valhalla North-1, Valhalla 1&2 and Asgard 1 wells.
- **Ending the Ungani Trend exploration program on a high note:** BRU's 2015 exploration program includes three Ungani trends wells (plus one appraisal) which in the event of success could add incremental low development cost barrels to the core Ungani field. Nonetheless, after encouraging early indications at Praslin-1 (where the pre-drill target was 6.1mb), the program has largely proven successful, with both Praslin-1 and Senagi-1 encountering no moveable hydrocarbons (albeit with good quality reservoir). Meanwhile, logs could not be interpreted for hydrocarbons at Victory-1 due to difficult downhole conditions. Nonetheless, while targeting the Ungani dolomite reservoir, the Ungani Far West 1 well encountered 5m of net pay in the shallow Anderson Formation with the reservoir exhibiting good permeability and oil recovered to surface. Core samples have indicated more dolomitisation compared to previous expectations.

- **Maintain Neutral rating and a 17% lower A$0.25/sh target**: We have removed unsuccessful wells from our valuation and also continue to assume that Ungani production remains shut-in over the wet season and recommences in 2H16. Our NAV falls by 6% to A$0.31/sh. Following limited exploration success, with Ungani shut-in to assess alternative export solutions, and a further A$25m of Alcoa liabilities to be paid over 2017/18 the investment case for BRU appears challenging in the current environment.

Carnarvon Petroleum (Upgrade to Outperform, A$0.12/sh target)

- **More encouraging results at Roc-1:** After reaching target depth CVN announced a wet gas discovery in deeper intervals over a 40m gross/10m net section. The Phoenix South-1 oil sands were not oil prone at the Roc-1 location. Furthermore, given the well's primary target was the Phoenix South sands, its location was off structure for the deeper intervals. The JV estimates gross discovered 2C resources 270bcf of gas and 13mb of liquids, pointing to a favourable 48bbls/mcf liquids yield. Plans for an appraisal well, Roc-2, are well advanced with drilling set to continue between June-September and A$8m of net CVN costs covered by the operator under the original farm-in deal. The well will target the interpreted crest the structure (testing up to 100m of gross updip potential), help de-risked part of the 193bcf carried as low risk prospective resources and will also be production tested to help confirm reservoir deliverability. CVN estimates that the minimum economic field size for Roc is 325bcf of gas and 17mb of liquids. Assuming the 2C case is confirmed this would require near-field exploration success of ~ 30% (based on best case prospective resource), which appears achievable.
- **Adding to its it's acreage position in the Carnarvon:** In late January CVN announced that it had secured a 35% interest in TR/3, WA-155-P and WA-486-P licences containing the Outtrim and Blencathra oil discoveries for a nominal upfront payments. Furthermore, CVN will participate in the upcoming Outtrim East-1 well which is expected to spud in June 2016 and will target new sands to the north and east of the original discovery well drilled in 1984. The additional acreage adds to its 20% interest in the four "Greater Phoenix Area" blocks and the "Cerberus" blocks (where CVN high-graded two prospects on the basis of deeper oil shows at Roc-1). In early April, CVN was awarded a 100% interest in the WA-521-P exploration permit directly north of the Phoenix South and Roc discoveries, with a relatively conservative work program consisting of purchase of 4,000km of reprocessed 2D seismic during the first three year term and acquiring an optional 300km^2 of 3D seismic in year 5 of the following discretionary three year term
- **Healthy cash balance retained:** At the end of the period CVN had A$95m of cash balances (including U$66m in USD-denominated balances), U$31.3m in future revenue royalty payments from Loyz (relating to its previous onshore Thai assets) and retains A$8m of drilling carry across WA-437-P (which will be utilised for future drilling and testing activity across Roc-2). With a market capitalisation of merely A$85m, CVN remains one the few Australian E&P companies that are cash backed.
- **Upgrade to Outperform with a A$0.12/sh target retained:** While the appetite for exploration companies appears limited, Roc-2 appears a low risk appraisal well that will be partly carried by the operator. If successful this could push the Roc resource beyond the commerciality threshold. Furthermore, CVN continues to maintain a healthy cash balance with the market ascribing no value to the recent discoveries at both Phoenix South-1 and Roc-1.

Fig 18 The required exploration success for Roc-1 to reach minimum economic field size appears achievable

Contingent resource	1C	2C	3C
Gas (bcf)	41.8	269.7	371.9
Condensate (mmbbl)	2.0	13.0	18.2
Total (mmboe)	**9.0**	**58.0**	**80.2**
Prospective Resource	**Low**	**Best**	**High**
Gas (bcf)	86.6	192.6	327.6
Condensate (mmbbl)	4.1	9.2	16.2
Total (mmboe)	**18.5**	**41.3**	**70.8**
Additional resource required (bcf)	283.2	55.3	0.0
Required exploration success (%)	*147%*	*29%*	*-%*

Source: CVN, Macquarie Research, May 2016

Fig 19 Earnings revisions across Macquarie's mid-cap energy sector coverage following 1Q16 results

Updated numbers	CY16 Adj. Profit	CY17Adj. Profit	CY18Adj. Profit	Valuation	CY16 CFO change
BPT (A$m) – Jun YE					
Previous	126	246	222	0.80	290
Updated	**126**	**246**	**222**	**0.80**	**290**
% change	*0%*	*0%*	*0%*	*0.0%*	*0%*
KAR (A$m) – Jun YE					
Previous	-19	-28	-26	3.75	-27
Updated	**-19**	**-27**	**-25**	**3.62**	**-27**
% change	*0%*	*4%*	*5%*	*-3.5%*	*0%*
AWE (A$m) – Jun YE					
Previous	-12	24	19	1.44	46
Updated	**-5**	**26**	**30**	**1.44**	**48**
% change	*61%*	*9%*	*59%*	*0.0%*	*5%*
SXY (A$m) – Jun YE					
Previous	4	30	43	0.42	41
Updated	**4**	**30**	**43**	**0.42**	**41**
% change	*0%*	*0%*	*0%*	*0.0%*	*0%*
HZN (A$m) – Jun YE					
Previous	-6	0	15	0.18	37
Updated	**-7**	**0**	**14**	**0.18**	**31**
% change	*-13%*	*147%*	*-5%*	*0.0%*	*-16%*
BRU (A$m) – Dec YE					
Previous	-14	4	9	0.33	-9
Updated	**-15**	**4**	**9**	**0.31**	**-4**
% change	*-6%*	*1%*	*0%*	*-6.1%*	*57%*
SEH (US$m) – Jun YE					
Previous	-1	17	69	0.47	-8
Updated	**-1**	**17**	**69**	**0.47**	**-8**
% change	*0%*	*0%*	*0%*	*0.0%*	*0%*
CVN (A$m) – Jun YE					
Previous	0	0	1	0.14	2
Updated	**0**	**0**	**1**	**0.14**	**2**
% change	*0%*	*0%*	*0%*	*0.0%*	*0%*

* Earnings annualised to December year end.

Source: Macquarie Research, May 2016

Important disclosures:

Recommendation definitions

Macquarie - Australia/New Zealand
Outperform – return >3% in excess of benchmark return
Neutral – return within 3% of benchmark return
Underperform – return >3% below benchmark return

Benchmark return is determined by long term nominal GDP growth plus 12 month forward market dividend yield

Macquarie – Asia/Europe
Outperform – expected return >+10%
Neutral – expected return from -10% to +10%
Underperform – expected return <-10%

Macquarie – South Africa
Outperform – expected return >+10%
Neutral – expected return from -10% to +10%
Underperform – expected return <-10%

Macquarie - Canada
Outperform – return >5% in excess of benchmark return
Neutral – return within 5% of benchmark return
Underperform – return >5% below benchmark return

Macquarie - USA
Outperform (Buy) – return >5% in excess of Russell 3000 index return
Neutral (Hold) – return within 5% of Russell 3000 index return
Underperform (Sell)– return >5% below Russell 3000 index return

Volatility index definition*

This is calculated from the volatility of historical price movements.

Very high–highest risk – Stock should be expected to move up or down 60–100% in a year – investors should be aware this stock is highly speculative.

High – stock should be expected to move up or down at least 40–60% in a year – investors should be aware this stock could be speculative.

Medium – stock should be expected to move up or down at least 30–40% in a year.

Low–medium – stock should be expected to move up or down at least 25–30% in a year.

Low – stock should be expected to move up or down at least 15–25% in a year.
* Applicable to Asia/Australian/NZ/Canada stocks only

Recommendations – 12 months
Note: Quant recommendations may differ from Fundamental Analyst recommendations

Financial definitions

All "Adjusted" data items have had the following adjustments made:
Added back: goodwill amortisation, provision for catastrophe reserves, IFRS derivatives & hedging, IFRS impairments & IFRS interest expense
Excluded: non recurring items, asset revals, property revals, appraisal value uplift, preference dividends & minority interests

EPS = adjusted net profit / efpowa*
ROA = adjusted ebit / average total assets
ROA Banks/Insurance = adjusted net profit /average total assets
ROE = adjusted net profit / average shareholders funds
Gross cashflow = adjusted net profit + depreciation
*equivalent fully paid ordinary weighted average number of shares

All Reported numbers for Australian/NZ listed stocks are modelled under IFRS (International Financial Reporting Standards).

Recommendation proportions – For quarter ending 31 March 2016

	AU/NZ	Asia	RSA	USA	CA	EUR	
Outperform	50.34%	59.09%	46.67%	44.76%	60.66%	46.12%	(for global coverage by Macquarie, 3.72% of stocks followed are investment banking clients)
Neutral	34.14%	25.66%	32.00%	49.90%	30.33%	35.10%	(for global coverage by Macquarie, 4.79% of stocks followed are investment banking clients)
Underperform	15.52%	15.26%	21.33%	5.33%	9.02%	18.78%	(for global coverage by Macquarie, 2.31% of stocks followed are investment banking clients)

Company-specific disclosures:

Important disclosure information regarding the subject companies covered in this report is available at www.macquarie.com/research/disclosures.

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