Oil & Gas: Producer / Explorer

Hartleys

CVN.asx
Speculative Buy

CARNARVON PETROLEUM LTD (CVN)

Phoenix South-3 Spudded - 90 Days to TD

Drilling of the Phoenix South-3 (PS-3) well has commenced, CVN has a 20% interest. The well is testing the gas and condensate discovered with the Phoenix South-2 well and is targeting 143mmboe (gross, Pmean). Phoenix South-2 encountered gas and condensate in the Caley Member (similar to the Roc-2 well discovery which flowed at 55mcf/d and 3,000bbl/d of condensate) but was unable to drill through and evaluate the formation and PS-3 is located just 560m away.

Drilling is expected to take 90 days to reach a target depth of circa 5,500m MD. Key to the economics of this well is the 57mmbbl of condensate expected. If successful this well along with the previous successes at Roc and Phoenix could result in a combined liquids resource of over 100mmbbl (gross), which at current oil prices would more than pay for the overall field development (resulting in the gas being produced for free!). This is obviously a crucial well for CVN and the Bedout Sub-basin generally.

Quarterly - $48m in cash and Dorado-1 to follow

CVN have also recently released their quarterly report for the third quarter of FY18. At the end of the quarter the Company held A$48.1m in cash, having spent just $2.1m on exploration in the 3rd quarter. The Company expects cash outflows of circa A$6.6m in the 4th quarter. Following Phoenix South-3, the Company then expects to spud the Dorado-1 well in May. Dorado-1 will again primarily target the Caley interval although it will also test deeper secondary targets (Crespin and Milne sands) for additional oil and gas. The well is expected to take around 45 days to complete as it drills to a total depth of approximately 4,400 metres. Dorado-1 is targeting 545Bcf and 30mmbbls of condensate in the Caley target alone (gross, Pmean). It is located 15km from Roc (and has the same primary target sands).

Investment View –Speculative Buy Retained

Success at Phoenix South-3 and/or Dorado-1 has the potential to transform CVN. A successful appraisal of Phoenix-South will also likely attract takeover interest, with CVN post appraisal success being one of the largest independent holders of uncontracted gas in Western Australia (post the acquisition of AWE by Mitsui). We rate CVN a Speculative Buy based on this combination of an attractive valuation (low EV/boe), imminent newsflow, (unrecognised) oil price leverage and takeover appeal.

Key Chart: Liquids content Phoenix/South Phoenix and Roc

	Phoenix/ Phoenix South & Roc		
	Low	Mid	High
Natural Gas (mmboe)	74.1	199.2	379.1
Natural Gas (bcf)	*422.0*	*1134.8*	*2159.3*
Oil/Condensate	36.3	118.3	240.5
Total (mmboe)	**110.4**	**317.5**	**619.6**
CVN Share 20%			
Natural Gas (mmboe)	14.8	39.8	75.8
Natural Gas (bcf)	*84.4*	*227.0*	*431.9*
Oil/Condensate	7.3	23.7	48.1
Total (mmboe)	**22.1**	**63.5**	**123.9**

Source: CVN, Hartleys Research

	20 Apr 2018
Share Price:	$0.145
12mth Price Target:	$0.25

Brief Business Description:
Oil and gas explorer with assets in Australia

Hartleys Brief Investment Conclusion
Carnarvon Petroleum (CVN) is a conventional oil & gas explorer with key assets off-shore north-west Australia. The company and its JV partner(s) have drilled 4 out of 4 successful E&A wells in the Greater Phoenix area (CVN 20% interest).

Chairman & CEO:

Adrian Cook	CEO
Peter Leonhardt	Chairman

Substantial Shareholders:
None

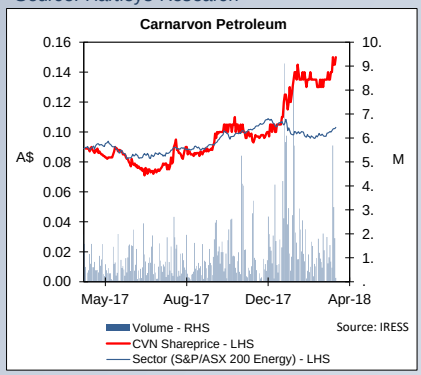
Company Address:
Level 2, 76 Kings Park Road, Perth, WA

Valuation:

Issued Capital:	1029.6m
- fully diluted	1030.6m
Market Cap:	$149.3m
- fully diluted	$149.4m
Current Debt	$0.0m
Current Cash	$41.5m
EV	$107.9m

Valuation Summary	**$m**	**$ps**
Discovered	127	0.12
Exploration	88	0.11
Thai Royalty Stream	0	0.00
Cash, less 1-yr spend	11	0.01
Sub total	**226**	**0.25**

Source: Hartleys Research



Authors:
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SUMMARY MODEL

Carnarvon Petroleum CVN

Share Price $0.15

CVN.asx

Speculative Buy

Key Market Information

Share Price	**$0.15**
Market Capitalisation	$149m
Current Cash est. (ex-royalty)	$42m
Issued Capital	1029.6m
ITM options	0.0m
Options	1.0m
Issued Capital (fully diluted ITM options)	1030.6m
Issued Capital (fully diluted all options)	1030.6m
EV	$107.9m
12Mth Price Target	**$0.25**

Projects	Project	Operator	CVN Interest
WA-435-P	Greater Phoenix	Quadrant Energy	20%
WA-437-P	Greater Phoenix	Quadrant Energy	20%
WA-436-P	Greater Phoenix	Quadrant Energy	30%
WA-438-P	Greater Phoenix	Quadrant Energy	30%
WA-521-P	Greater Phoenix	CVN	100%
WA-523-P	Buffalo	CVN	100%
WA-524-P	Maracas	CVN	100%
WA-155-P(1)	Outtrim East	CVN	28.5%
EP-490	Cerberus	CVN	100%
EP-491	Cerberus	CVN	100%
EP-475	Cerberus	CVN	100%
TP/27	Cerberus	CVN	100%
AC/P62	Condor	CVN	100%
EP-497	Santa Cruz	CVN	100%

Valuation Summary

	A$ m	Ac/share
Phoenix/South Phoenix/Roc Liquids	0	0.00
Phoenix/South Phoenix/Roc Gas	122	0.12
Other discovered	5	0.01
Exploration	88	0.11
Farm Outs	*0*	*0.00*
Post Asset Sale Cont. Payments	*0*	*0.00*
Thai Royalty Stream	0	0.00
Cash, less 1-yr spend	11	0.01
Sub-total	**226**	**0.25**

Directors

Peter Leonhardt	Chairman
Adrian Cook	Managing Director
Bill Foster	Non-executive Director
Dr Peter Moore	Non-executive Director

Substantial Shareholders

No substantial shareholders

Investment Summary

Carnarvon Petroleum (CVN) is a conventional oil & gas explorer w ith key assets off-shore north-w est Australia. The company and its JV partner(s) have drilled 4 out of 4 successful E&A w ells in the Greater Phoenix area (CVN 20% interest). The discovered resource now exceeds economic threshold levels (subject to South Phoenix testing). Very large follow up targets such as Dorado-1 could add considerably to scale of the development.

Expected News flow

Apr-18	Phoenix South-3 w ell
May-18	Dorado-1 w ell
1H18	Labyrinth Farm Out commenced February
Mid 2018	Condor Farm Out commencing
2018	Farm Out Outtrim (post Sw ell-1 result)

Quarterly Cash Flow

	FY17	FY18		
	4Q	1Q	2Q	3Q
Cash (Beginning)	**51.1**	**53.0**	**50.0**	**48.5**
A$ m				
Operating Cash flow	0.0	0.0	0.0	0.0
Exploration / Development	-1.1	-1.3	-1.1	-2.1
Corporate overheads	-0.6	-0.9	-0.7	-0.8
Other	3.6	-0.9	0.3	2.4
Cash (End)	**53.0**	**50.0**	**48.5**	**48.1**

Analyst: Aiden Bradley
Phone: 618 9268 2876

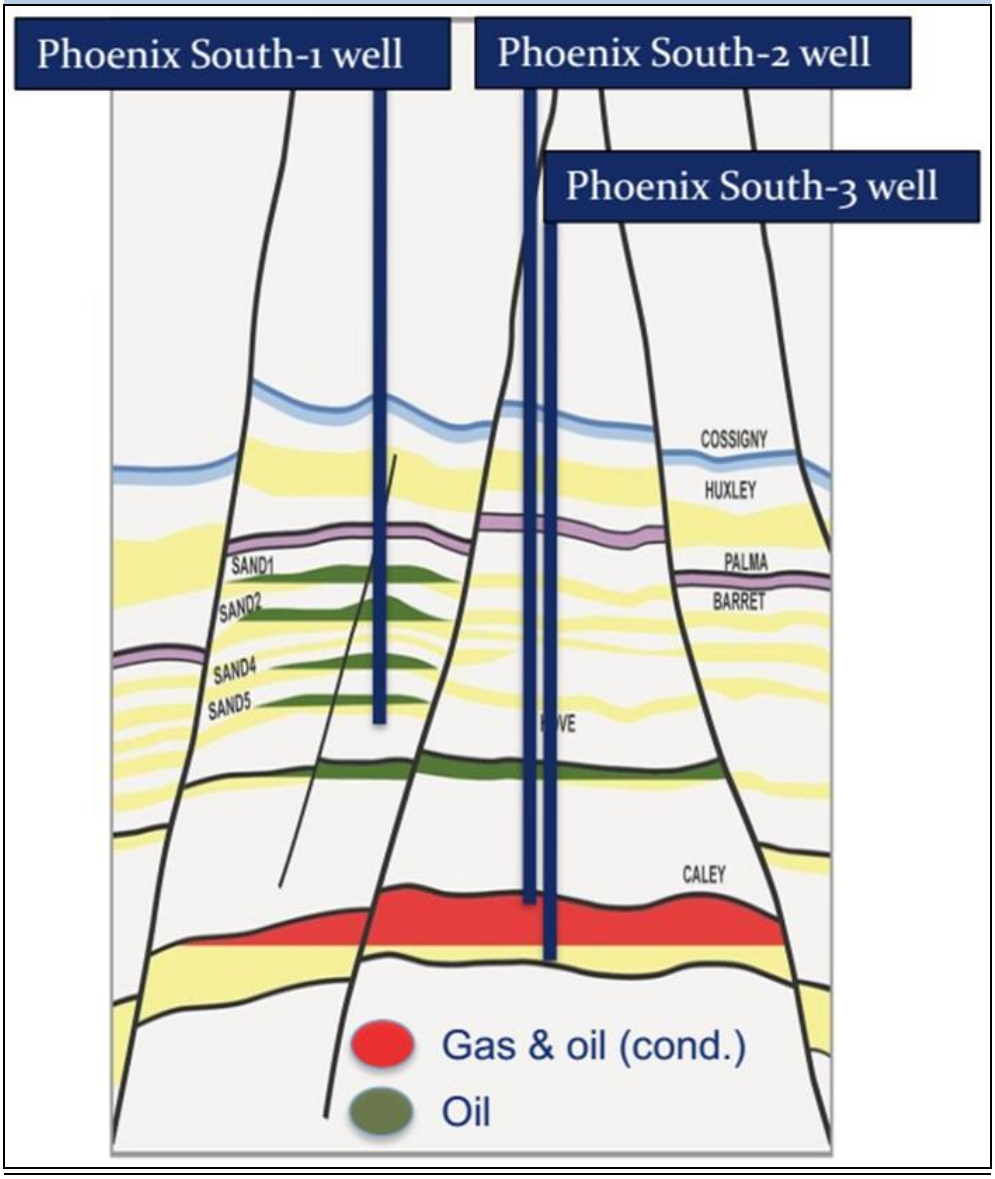
Last Updated: 20/04/2018

Sources: IRESS, Company Information, Hartleys Research

HIGHLIGHTS

Drilling of the Phoenix South-3 (PS-3) well has commenced, CVN has a 20% interest. The well is testing the gas and condensate discovered with the Phoenix South-2 well and is targeting 143mmboe (gross, Pmean). Phoenix South-2 encountered gas and condensate in the Caley Member (similar to the Roc-2 well discovery which flowed at 55mcf/d and 3,000bbl/d of condensate) but was unable to drill through and evaluate the formation and PS-3 is located just 560m away.

Fig. 1: Location Phoenix South-3



Source: CVN

Drilling is expected to take 90 days to reach a target depth of circa 5,500m MD. Key to the economics of this well is the 57mmbbl of condensate expected. If successful this well along with the previous successes at Roc and Phoenix could result in a combined liquids resource of over 100mmbbl (gross), which at current oil prices would more than pay for the overall field development (resulting in the gas being produced for free!). This is obviously a crucial well for CVN and the Bedout Sub-basin generally.

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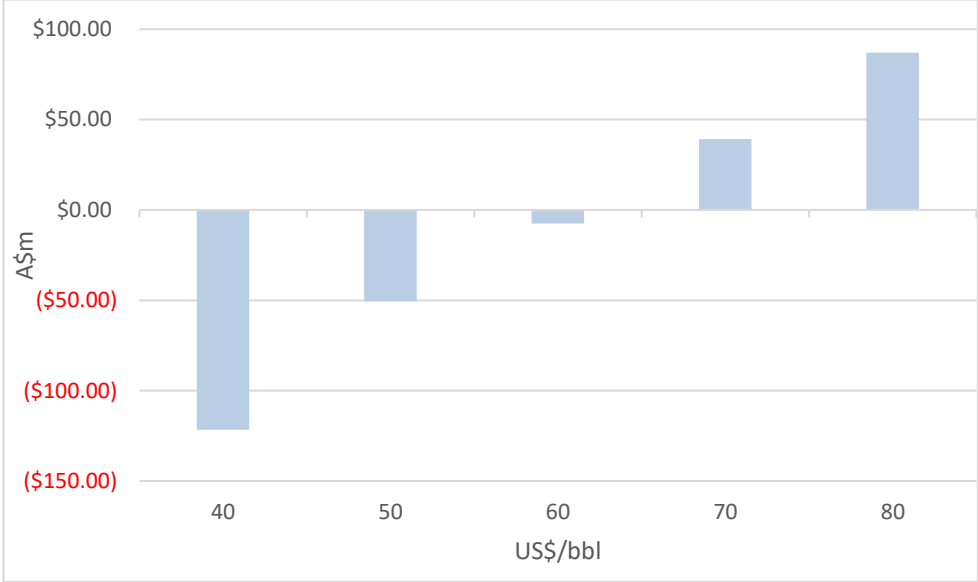
Oil/Condensate	7.3	23.7	48.1
Total (mmboe)	**22.1**	**63.5**	**123.9**

Source: CVN, Hartleys Research

Fig. 3: NPV10 of Liquids only at various oil prices (P/PS/Roc development)

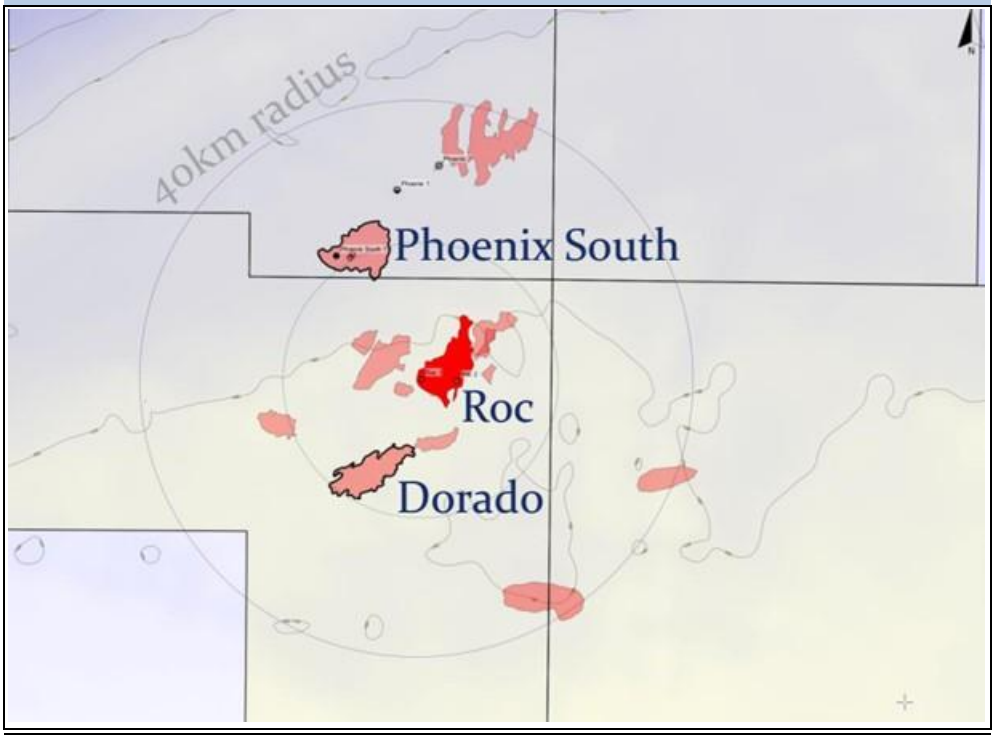


Source: Hartleys Research

CVN have also recently released their quarterly report for the third quarter of FY18. At the end of the quarter the Company held A$48.1m in cash, having spent just $2.1m on exploration in the 3rd quarter. The Company expects cash outflows of circa A$6.6m in the 4th quarter. Following Phoenix South-3, the Company then expects to spud the Dorado-1 well in May. Dorado-1 will again primarily target the Caley interval although it will also test deeper secondary targets (Crespin and Milne sands) for additional oil and gas. The well is expected to take around 45 days to complete as it drills to a total depth of approximately 4,400 metres.

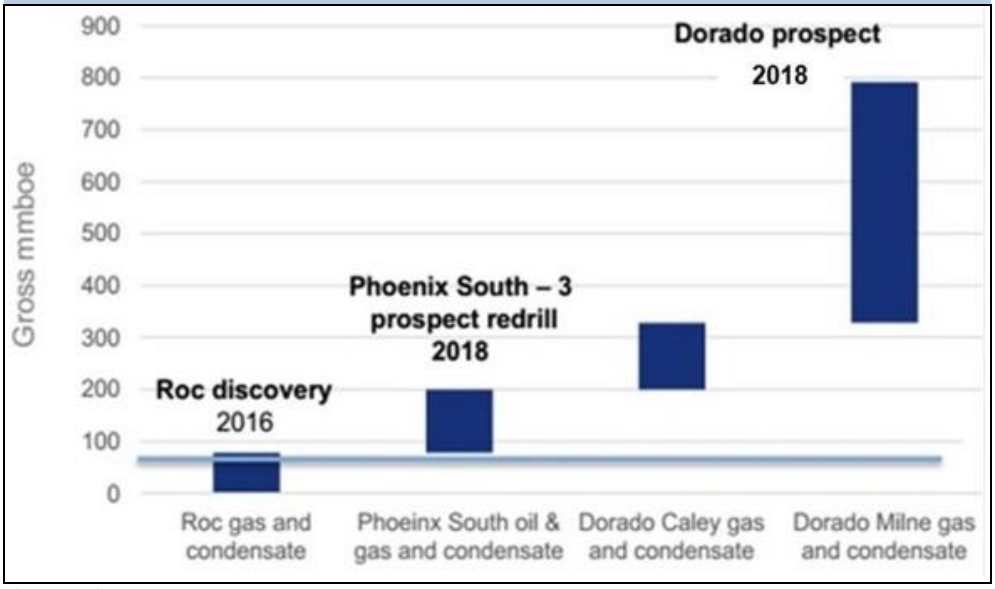
Dorado-1 is targeting 545Bcf and 30mmbbls of condensate in the Caley target alone (gross, Pmean). It is located 15km from Roc (and has the same primary target sands).

Fig. 4: Location Dorado-1



Source: CVN

Fig. 5: PS-3 and Dorado potential resource



Source: CVN

INVESTMENT VIEW – A TOP PICK

The delay in drilling the Dorado-1 well (from 2H17 to 1H18) impacted the price performance of CVN in 2017. However, the appraisal of Phoenix South and confirmed drilling of Dorado-1 should result in CVN being one of the better performers in the oil sector in 2018.

CVN's potential exposure to a recovering oil price is also possibly underappreciated. Phoenix South looks likely to have a very high liquids content.

Discoveries to date in the Bedout Sub-Basin (especially Phoenix South Caley) have contained a very high liquids content and is a potential game changer in terms of the economics of any potential development in the sub-basin and a huge differentiator in comparison to the investment returns from a dry gas field such as the developed (similarly sized) Reindeer Field.

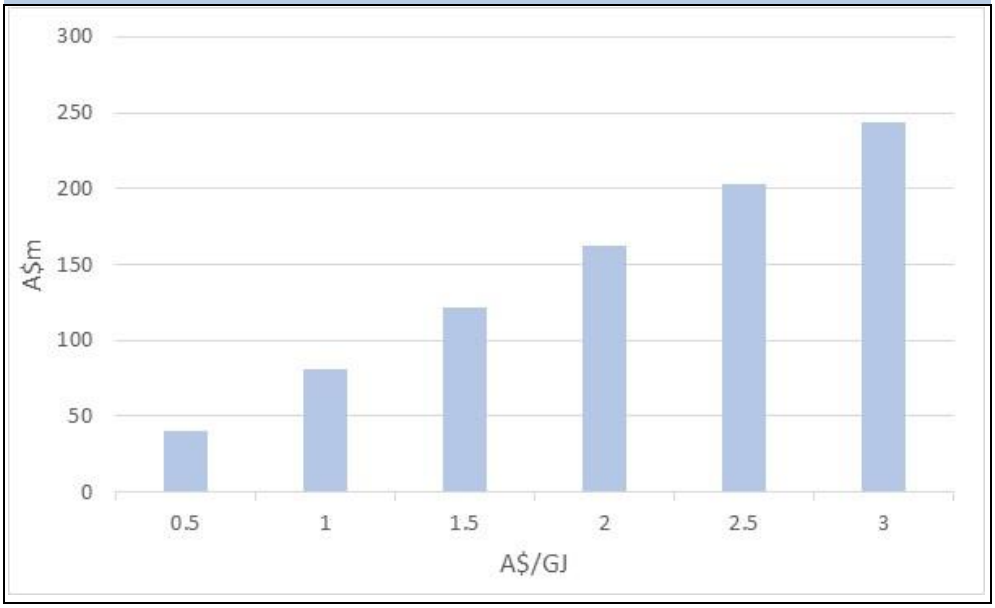
In fact, the liquids component could be so high that the liquids cash flow would come close to paying for the whole development (the gas gets produced for free!).

We continue to believe as outlined before that the market has applied a discount to CVN due to the perception it is a dry gas play and that any commercialisation will likely be hostage to Quadrant's broader portfolio requirements. We believe the risk from the latter is also overstated and these misconceptions make for an appealing investment opportunity.

Quadrant requires the gas to be developed: CVN is indeed a smallish minority partner (20%) in a JV with the dominant (non-LNG) gas producer in WA, Quadrant Energy. There may be concerns that CVN will become hostage to Quadrant's broader development plans and the Bedout Sub-basin discoveries are pushed down the development queue. However, a number of key projects underpinning Quadrant's existing reserves and supply contracts are set to deplete middle of next decade and its recent exploration efforts have had mixed success. In fact, the Bedout Sub-basin has the potential to be the foundation asset* for Quadrant's ongoing supply efforts next decade (*requires proving up of Caley resource in South Phoenix and/or Dorado discovery to place it top of the development queue).

Liquids component is the game changer: In the following chart, we highlight the implied acquisition gas price to a potential acquirer at various cash payments to CVN for its stake in Roc/Phoenix and South Phoenix only (assumes liquids content as before covers cost of development – i.e. NPV10 close to zero at a US$60/bbl long run oil price). The implied price of the gas would obviously fall or rise if oil prices are above or below US$60/bbl respectively, and/or the actual cost of funding the development is below or above the standardised 10% we used in our modelling.

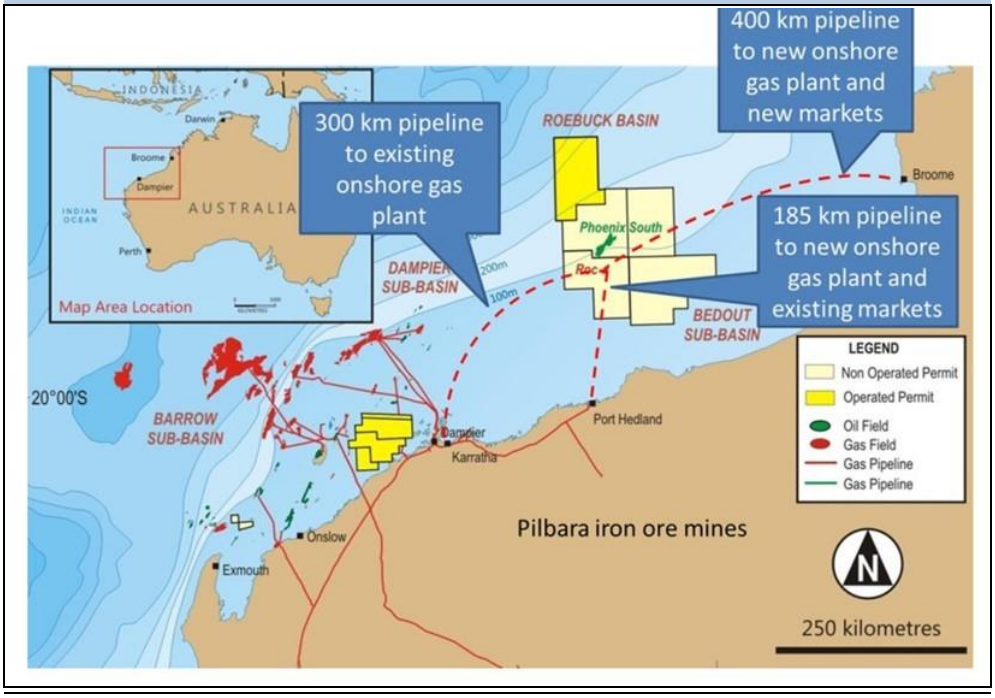
Fig. 6: NPV10 of CVN's 'free gas' at various transaction prices



Source: Hartleys Research

Most mid to large gas users (or potential users as gas has not been easily accessible) in WA would jump over backwards to secure potentially 200bcf of gas at a price sub $3/GJ. However, that is exactly what you get in CVN if you pay <$250m or less (subject to PS-3 success). In our valuation of CVN we assume acquisition interest at the attractive implied price of $1.50/GJ level, this would likely rise post a successful appraisal with South Phoenix-3. CVN's gas is also ideally located to supply this low-cost gas to existing customers at Karratha or Port Headland or supply new customers as far north as Broome.

Fig. 7: Commercialization options



Source: CVN

This valuation alone excludes other exploration potential in the Bedout Sub-basin (including the large Dorado prospect) and play fairway extension into the Rowley Sub-basin (which we remain more sceptical on). Beyond the Roebuck Basin, CVN has used its experience here to build a portfolio of interesting potential farm out opportunities. While a gas consumer may not be interested in the exploration portfolio, it is potential additional value we believe is also not captured in the current CVN share price.

Fig. 8: CVN Valuation

Valuation Summary

Asset	Type	W.I.	Gross mmboe	Net mmboe	NPV/boe US$/bbl	Net Risked Value A$m	A$/share
Phoenix South / Phoenix / Roc	Liquids	20%	118	24	0.0	0	0.00
Phoenix South / Phoenix / Roc	Gas	20%	199	40	2.4	122	0.12
Other discovered						5	0.01
Exploration			818	164	0.4	88	0.11
Farm outs (Maracas, Buffalo, Cerberus, WA-521-P (all 100%))						*0*	*0.00*
Post Asset Sale Contingency Payments						*0*	*0.00*
Thai Royalty Stream						0	0.00
Cash, less 1-yr spend						11	0.01
						226	0.25

Source: Hartleys Research

Conclusion

To date we believe the market continues to value CVN as a dry gas play, with commercialisation hostage to Quadrant's broader portfolio requirements. This is incorrect and makes for an appealing investment opportunity.

In our valuation of 25c per share for CVN we make the following assumption;

- Successful appraisal of Phoenix South with the PS-3 well.
- Larger gas users recognise the obvious potential in the Roc/Phoenix/Phoenix South discovery through CVN retaining the marketing rights to the gas and the high liquids content subsidising the full field development (at circa US$60/bbl oil).
- Gas user acquires CVN's 20% stake in these discoveries for an implied gas price (to them) of A$1.50/GJ. Implies a cash payment to CVN of $122m.
- We additionally include very little value for the large identified prospective resource beyond the Roc/Phoenix and Phoenix South discoveries. We value this net 164mmboe in the Bedout Sub-basin (now a proven oil and gas play with prospects such as Dorado on trend and in close proximity to a large discovered resource) at just $88m.
- Finally, we also include no value for potential farm outs of Maraca, Buffalo, Cerberus and WA-521-P, all have some merit and are currently 100% leased by CVN.

Fig. 9: Key assumptions and risks for valuation

Assumption	Risk of not realising assumption	Downside risk to valuation if assumption is incorrect	Comment
Commercial development in the Bedout Sub-basin	Low	High	Post the success of Roc and initial results from Phoenix South we now view a commercial gas development in the Bedout Sub-basin as highly likely. As a result, we expect there to be significant interest in CVN's potential 20% stake in the project from a range of large gas users. In our valuation, we currently assume a conservative $122m valuation based on the likely transaction price a gas user would be willing to pay.
Successful appraisal of Phoenix South	Low	Moderate	CVN failed to fully test the Phoenix South Caley reservoir with Phoenix South-2. As a result, a further well (PS-3) will be required to firm up the resource. While there is some risk associated with every well, the key risk here is that the prospective resource is not as large as currently predicted by the company. It could in fact turn out to be larger, so there is upside risk as well.
Upside beyond Roc and Phoenix South	Medium	Low	We have included very little value for upside beyond what we see as the core Roc / Phoenix / Phoenix South development hub. So, large targets such as Dorado if they fail would individually have limited impact on our valuation, while offering significant upside in a success case. We have included zero value for potential farm outs of acreage beyond the Bedout Sub-basin, although we view these positions as each having merit.
Cash funding adequate	Medium	Moderate	Offshore exploration remains an expensive business even in this currently deflated oil environment. Wells in the Roebuck Basin for CVN and its JV partner can cost between US$50-80m gross. CVN had $48.1m in cash at the end of the last quarter, however this could fall to circa $10m by year end (depending on the drilling programme and insurance payment). Securing sufficient capital to continue to participate in the JV is a risk but given the attractiveness of the acreage it is the cost of this capital and not whether CVN can access it that is the key risk.
Conclusion	*We believe that post the drilling results at Roc and Phoenix South, there is likely to be a commercial development in the Bedout Sub-basin. Future testing at Phoenix South and exploration at Dorado will determine the size, timing and value of the development. CVN remains to a certain degree hostage to Quadrants plans for the gas, but we believe it is towards the top of Quadrants queue to develop. Given the continued gas shortage in WA, we expect a major gas user to be interested in acquiring CVN's equity interest in the development (when it is adequately de-risked). This will remove any concerns about how CVN can fund a development.*		

Source: Hartleys Research

The key risks for CVN (like most junior oil & gas companies) is a combination of exploration success and performance of the production assets (if any). Although some disappointments can be short term and are only a timing issue, other disappointments can be materially value destructive and can sometimes overhang stocks for a long period of time. Such disappointments can be very difficult to predict and share price reactions can be severe and immediate upon disclosure by the company. High financial leverage would add to the problem. Investing in explorers is very risky given the value of the company (exploration value) in essence assumes that the market will recognise a portion of potential value before the results of an exploration program are known, conscious that the ultimate chance of success is low.

HARTLEYS CORPORATE DIRECTORY

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Note: personal email addresses of company employees are structured in the following manner: firstname.lastname@hartleys.com.au

Hartleys Recommendation Categories

Buy	Share price appreciation anticipated.
Accumulate	Share price appreciation anticipated but the risk/reward is not as attractive as a "Buy". Alternatively, for the share price to rise it may be contingent on the outcome of an uncertain or distant event. Analyst will often indicate a price level at which it may become a "Buy".
Neutral	Take no action. Upside & downside risk/reward is evenly balanced.
Reduce / Take profits	It is anticipated to be unlikely that there will be gains over the investment time horizon but there is a possibility of some price weakness over that period.
Sell	Significant price depreciation anticipated.
No Rating	No recommendation.
Speculative Buy	Share price could be volatile. While it is anticipated that, on a risk/reward basis, an investment is attractive, there is at least one identifiable risk that has a meaningful possibility of occurring, which, if it did occur, could lead to significant share price reduction. Consequently, the investment is considered high risk.

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