

## GROWING POTENTIAL TO ADDRESS FUTURE GAS SHORTAGES

### Investment Highlights

- Carbon Energy (CNX)** is a global leader in Underground Coal Gasification (UCG). It has gone through a direction change over the last 6 – 12 months where development of a full-scale commercial facility in Queensland has gathered pace and the development of another commercial plant at the Haoqin Coal Field in Inner Mongolia has stalled. For both projects to advance further, developments out of CNX's control need to occur. In Queensland, the State Government needs to allow CNX to commence the approvals process and in China, a PCM company needs to be appointed by its Chinese partner. We believe that achieving the next milestone will be a significant catalyst for the Company. **We are maintaining our Speculative Buy recommendation with an indicative price target of \$0.10 - \$0.12/share.**
- Lodgement of plans with the Queensland Government** - CNX has now submitted a decommissioning report and a rehabilitation plan with the Queensland Government. These reports demonstrate that CNX can operate its Keyseam UCG technology with minimal impact on the environment and also decommission and rehabilitate the completed panels. This means that CNX has now proven that it can produce gas, decommission and rehabilitate in an environmentally responsible manner. We believe that CNX's Blue Gum Project can provide a new affordable, quality gas resource at a time when gas supplies on the East Coast of Australia are going to be extremely tight.
- Opportunistic SPP** – CNX raised \$2.5m in a recent Share Purchase Plan (SPP). The SPP was well supported by existing shareholders and the funds raised will be applied to the completing the Government's UCG review process and progressing the Blue Gum Gas Project, business development, general working capital, and costs of the issue. It will also place the Company in a better position to pursue off-take and/or investment partners in the Project.
- Recent doubling of gas reserves** - A large range of technical data was obtained by an independent party which routinely certifies coal seam gas assets throughout Australia and worldwide. This was used to evaluate the commercial nature of the resource. Other factors including the current policy regime and the proximity to existing infrastructure were also considered. This culminated in a significant increase in its Proved and Probable (2P) Surat Basin gas Reserves to 1,128 petajoule (PJ) or 1 trillion cubic feet (Tcf) of natural gas equivalent or 188 million barrels of oil equivalent (mmbobe). This is the fifth largest 2P gas Reserve in Queensland.

### Summary of the upgraded Reserve Statement

Area	Reserve and Resource Classification	Gross (100%) Syngas Energy (PJ)	Gross (100%) SNG Energy (PJ)
MDL374	1P Reserves	11.0	7.1
	2P Reserves	1,737.9	1,128.5
	3P Reserves	2,512.4	1,631.5
EPC867	3P Reserves	5,650.0	3,668.9
	2C Contingent Res	7,734.3	5,022.3
EPC869	2C Contingent Res	4,150.3	2,695.0
EPC1132	2C Contingent Res	1,220.1	792.3

31 October 2014

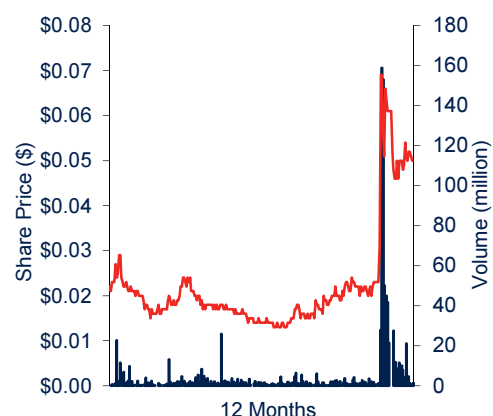
12mth Rating	SPECULATIVE BUY	
Price	A\$	0.05
Target Price	A\$	0.10 – 0.12

RIC: CNX.AX	BBG: CNX AU	
Shares o/s	m	1,271.6
Free Float	%	65.3
Market Cap.	A\$m	
Net Debt (Cash)	A\$m	-3.4
Net Debt/Equity	%	
3m Av. D. T'over	A\$m	0.010.03
52wk High/Low	A\$	0.07/0.01

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**Disclosure: Patersons Securities acted as Lead Manager and Underwriter to a Share Purchase Plan that raised \$2.5 million at \$0.05/sh in October 2014 and as Lead Manager to a Rights Issue in July 2013. It was paid fees for these services.**

### 12 Month Share Price Performance



CNX has proven its Keyseam technology with over 20 months continuous production of consistent quality syngas, the reliable generation of electricity and the export of this electricity into the local grid, from its Bloodwood Creek project site near Dalby in south west Queensland. In 2012, the Queensland Government appointed an Independent Scientific Panel (ISP) to assess the pilot trials in Queensland. The ISP recommended that decommissioning be demonstrated prior to commencement of commercial operations.

CNX is the only company to fully respond to the ISP requirements by submitting both a decommissioning and a rehabilitation plan to the Queensland Government. A decision now needs to be made by the Queensland Government on allowing CNX to commence the approvals process for its first commercial scale project in Queensland, the Blue Gum Gas Project. Key findings from the Bloodwood Creek Pilot Plant and subsequent studies include:

- 1. Safe and effective operation** – the pilot plant has demonstrated the safe and effective operation of the CSIRO-developed technology;
- 2. Gasification ceased within 48 hours** – All gasification was shown to have ceased within 48 hours of stopping air injection. This was demonstrated through the change in gas composition, confirming the successful decommissioning of the UCG gasifiers in line with expectations;
- 3. No impact on regional use of groundwater** – Site investigations have proven that the Keyseam technology could be operated without impact on the regional use of groundwater;
- 4. Cavity water resembling stock water** – The self-cleaning principle of the Company's keyseam design was proven, and steam cleaning during decommissioning has resulted in the water remaining in the cavity resembling stock water.

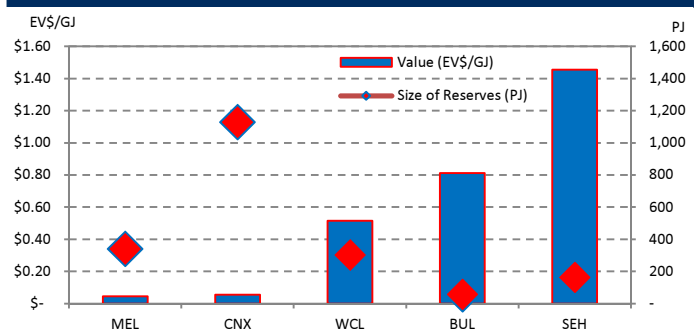
## Valuation

CNX and the Blue Gum Gas Project is difficult to value considering the current policy regime and the size of the company in comparison to the size of the capital required to construct a Synthetic Natural Gas Plant. However, it appears that these reserves will have a relatively benign environmental impact if exploited and there is far more in demand for additional resources with the Queensland LNG export facilities about to be commissioned and the looming gas shortage expected in 2016/17. That is driving the value currently, which are the only 1P and 2P UCG syngas reserves independently certified by a third party under the SPE guidelines anywhere in the world. And this drives our belief that these gas reserves are currently undervalued.

We have used two metric to value CNX but in both cases we have assumed approximately two billion shares are on issue with approximately \$40m in unpaid capital from in-the-money options. In Figure 2 the first case is a basic NPV of a SNG Plant producing 25PJ per annum with an operating margin of \$4/PJ and an initial capital requirement of \$650m. The second case values the 1,129PJ of defined resources on Bloodwood Creek at a 75% discount to the last traded 2P CSG reserves which were Westside Corporations 300PJ currently acquired at \$0.51/GJ. Both cases are very conservative and do not take into consideration any technology fees generated by the Company from any of the other projects currently progressing.

In addition CNX has received an independent expert valuation of its Surat Basin gas assets. The valuation was conducted by Xstract Mining Consultants, an internationally recognised resource and asset evaluator who have valued the Company's in situ gas assets between \$91m and \$600m, with a preferred valuation of \$205m. This equates to \$0.11/share assuming the same dilution as our two valuations.

Figure 1: CNX Peer Comparison



Source: Patersons Research and IRESS

Figure 2: CNX Valuation

PV of first 25GJ plant	\$183.05
Unpaid Capital	\$40.26
<b>Price Target (fully diluted for outstanding options)</b>	<b>\$0.12</b>
2P Reserves valued at \$0.25/PJ	145.27
Unpaid Capital	\$40.26
<b>Price Target (fully diluted for outstanding options)</b>	<b>\$0.10</b>

Source: Patersons Research

## Recommendation History



Date	Type	Target Price	Share Price	Recommendation	Return
08 Nov 13	Event Impact Email	na	0.03	SB	
12 Nov 13	Event Impact Email	na	0.03	SB	-7.4%
16 Apr 14	Research Note	na	0.02	SB	-40.0%
29 Aug 14	Hot off the Press	na	0.02	SB	33.3%
22 Sep 14	Hot off the Press	na	0.02	SB	15.0%
	Current Share Price		0.29		150.0%

**Stock recommendations:** Investment ratings are a function of Patersons expectation of total return (forecast price appreciation plus dividend yield) within the next 12 months. The investment ratings are Buy (expected total return of 10% or more), Hold (-10% to +10% total return) and Sell (> 10% negative total return). In addition we have a Speculative Buy rating covering higher risk stocks that may not be of investment grade due to low market capitalisation, high debt levels, or significant risks in the business model. Investment ratings are determined at the time of initiation of coverage, or a change in target price. At other times the expected total return may fall outside of these ranges because of price movements and/or volatility. Such interim deviations from specified ranges will be permitted but will become subject to review by Research Management. This Document is not to be passed on to any third party without our prior written consent.

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