EDISON

Leigh Creek Energy

First gas

First gas at LCEP pre-commercial demonstration

Oil & gas

Leigh Creek Energy (LCK) has announced first syngas at the Leigh Creek Energy Project (LCEP) pre-commercial demonstration (PCD). Successful gas flows provide initial validation of LCK's in-situ coal gasification (ISG) process and the ability to operate in a safe manner while abiding by local environmental legislation. We expect to further de-risk our A$0.34/share valuation (down from A$0.38 after incorporating recent equity placings) on delivery of sustained flow rates over the 60- to 90-day operational period. The PCD phase has potential open sources of funding for full field development. We continue to use a 30% commercial chance of success for LCEP at this stage based on the company's 2C ISG resource base (2,964PJ) via a combination of small-scale power generation, large-scale local power generation and piped methane sales.

Year end	Revenue (A$m)	Operating cash flow (A$m)	Net cash* (A$m)	Capex* (A$m)
06/17	0.0	(4.6)	7.2	(5.7)
06/18	0.0	(3.1)	5.5	(15.5)
06/19e	2.8	3.9	9.4	(3.0)
06/20e	5.8	(0.6)	8.8	0.0

Note: *Assumes farm-out of upstream post-successful PCD.

First gas flows from PCD

LCK has successfully initiated the gasifier with the production of first syngas from its PCD on 10 October 2018. Key aims of the PCD include verification of gas composition, measurement of sustainable flow rates, provision of information for the development of a full-scale commercial project, and validation that the ISG gasifier can be operated safely and in an environmentally responsible manner.

LCEP de-risking and funding

Risking in our valuation remains subjective and we intend to review our chance of success applied to the full-scale commercial LCEP once the PCD phase is complete. We provide a sensitivity to this key assumption in our note. Clearly, if LCEP is technically de-risked and, importantly, all elements of the project including upstream, mid-stream and power generation are funded, it could be valued at substantially more than our A$0.34/share valuation.

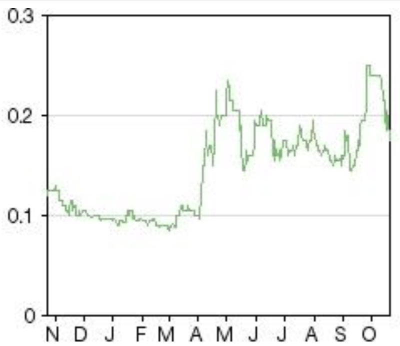
Valuation: Base case now A$0.34/share at 30% CoS

Our base case assumes that a third-party utility installs gas power generation capacity close to site, and that a mid-stream company builds and operates a 230km pipeline to the Moomba-Adelaide Pipeline System. We assume that LCK farms out the upstream element of LCEP for a development carry delivering first gas in 2021 (farminee 17.5% IRR). We note that LCK is fully funded for the PCD phase of development. Our A$0.34/share (from A$0.38/share) valuation incorporates the dilutive impact of recently completed share placings and a small-scale initial power project at 30MW.

22 October 2018

Price	**A$0.20**
Market cap	**A$94m**
	US$/A$1.30
Net cash (A$m) at 30 June 2018	5.5
Shares in issue	472m
Free float	63%
Code	LCK
Primary exchange	ASX
Secondary exchange	N/A

Share price performance



%	1m	3m	12m
Abs	(7.9)	(2.8)	40.0
Rel (local)	(4.0)	2.2	38.1
52-week high/low		A$0.2	A$0.1

Business description

Leigh Creek Energy (LCK) has a certified PRMS gas resource of 2,964PJ (2C) at the Leigh Creek Energy Project (LCEP) in South Australia. Monetisation of the gas through ISG is expected to be de-risked by a demonstration programme in late 2018.

Next events

LCEP PCD	H218

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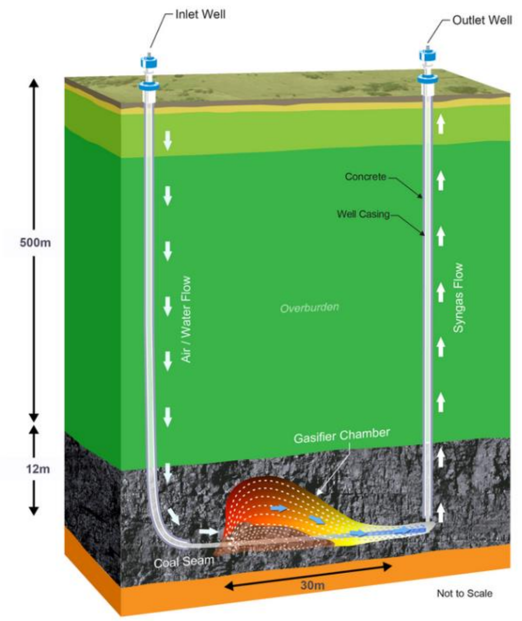
PCD first gas delivered

On 10 October 2018, after completing onsite construction and drilling activities and the receipt of all three activity notifications (ANs) for operation, LCK initiated PCD for the production of syngas. We expect further details on the operation of the PCD ISG gasifier to be released over the 60- to 90-day operational period. LCK believes that successful operation of the PCD will enable it to upgrade a portion of its 2,964PJ 2C resource to 2P reserves. Management believes that 2P reserves may be booked by end 2018.

Exhibit 1: Demonstration ISG project schematic



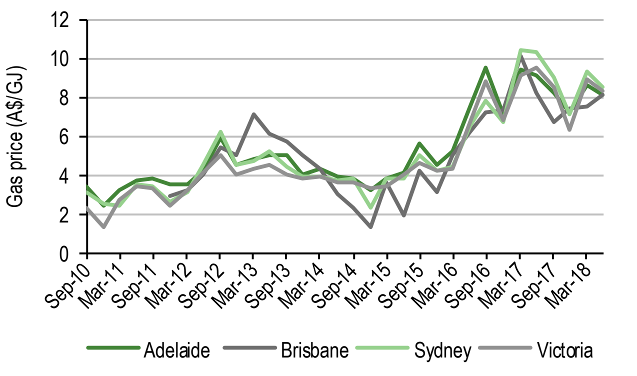
Source: Leigh Creek Energy

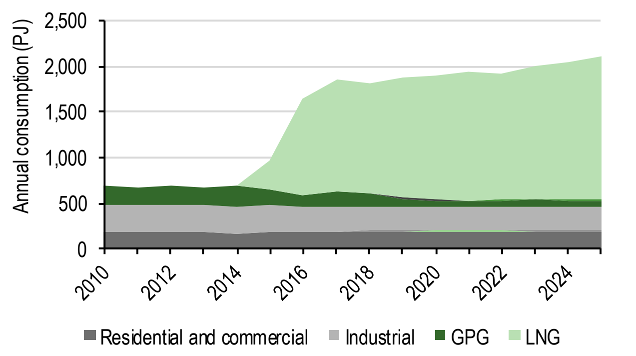
South Australia gas and power market

Gas markets and pricing

As can be seen in Exhibit 2 below, wholesale east coast gas prices have increased materially over the course of the last 24 months averaging c A$8/GJ as of today, driven by demand from LNG regasification projects, where producers choose to sell to more lucrative export markets rather than meeting domestic demand. This has had a marked impact on gas prices at the Moomba gas hub, which in turn are passed on to consumers in South Australia, where wholesale prices are now among the highest in Australia. Gas prices continue to show weather-related seasonality and demand-driven price volatility as east coast LNG plants go through phases of planned maintenance. However, the futures market points to prices remaining at the current level. In our valuation of LCEP, we assume a base case gas price assumption of A$8/GJ and provide valuation sensitivities around this key value driver.

Exhibit 2: Domestic gas prices A$/GJ	Exhibit 3: Gas annual consumption (PJ)





Source: AER, Edison Investment Research

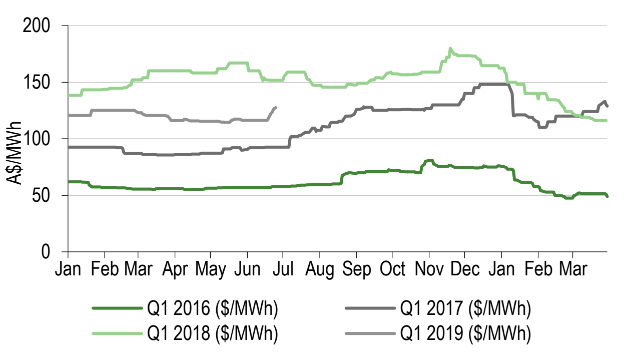
Source: AEMO, Edison Investment Research

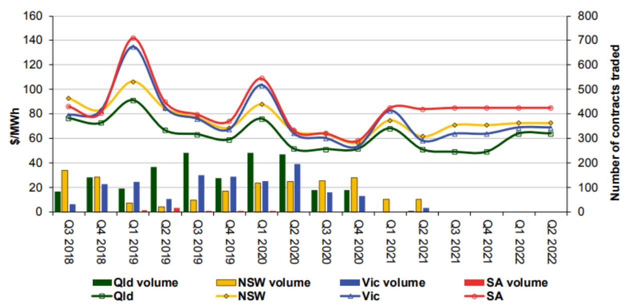
Power markets and pricing

Wholesale power prices in South Australia are among the highest in the world, despite the region's abundance of fuel sources and recent renewable energy expansion. Price inflation appears to be driving the recent closures of longstanding, coal-fired power generation capacity, leading to the loss of state baseload capacity, plus input cost increases for gas and coal. Increased energy storage is being commissioned to support baseload capacity in support of intermittent renewables – this includes Tesla's 100MW battery at the Hornsdale wind farm power reserve, which has received positive media reaction. Leigh Creek believes that additional gas-powered generation will also be a key component of the energy mix required for the national energy guarantee (NEG), the energy policy proposed by the Turnbull government in 2017, albeit likely to be modified by his successor Scott Morrison.

South Australian wholesale electricity contract prices in Q119 (peak demand) were above A$100/MWh, but lower than levels seen in Q118, while prices for the state remain the highest on the east coast. Electricity futures for the state indicate that the market is priced at A$80-110/MWh for 2019. In our base case valuation of LCEP, we assume a long-term power price of A$80/MWh and run sensitivities around this figure.

Exhibit 4: South Australia Q1 daily contract prices*	Exhibit 5: Electricity future prices Q318 to Q222





Source: Edison Investment Research, AER (Commonwealth of Australia). Note: *Shows the closing daily base contract price for Q116, Q117, Q118 and Q119 (futures).

Source: ASX Energy

Valuation: Base case A$0.34/share

First gas provides initial validation of LCK's ISG process and early confirmation that operations can be carried out in a safe and environmentally conscious manner. Our view of commercial risk remains subjective at a 30% chance of success and we provide a sensitivity to this key assumption below.

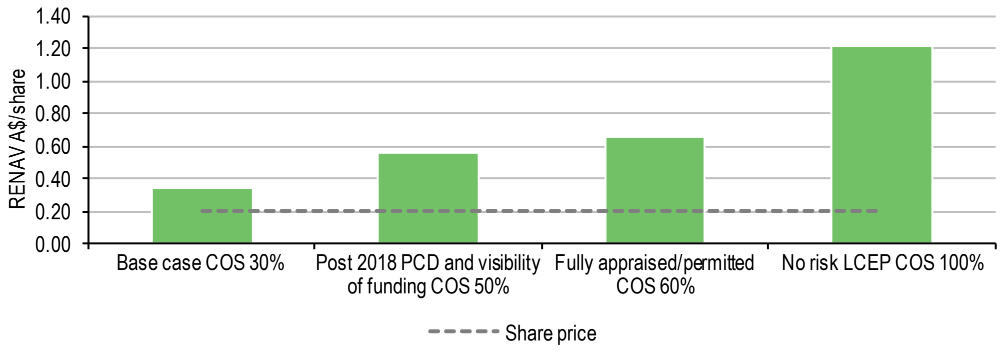
Exhibit 6: Leigh Creek valuation

Share count: 472m				Recoverable reserves			Net risked	Value per share	Discount rate	
Asset	**Country**	**Diluted WI**	**CoS**	**Gross**	**Net**	**NPV/GJ**	**value**	**Risked**	**10%**	**15%**
		%	**%**	**PJ**	**PJ**	**A$/GJ**	**A$m**	**A$/share**		
Net (debt)/cash – end June 2018							5.5	0.01	0.01	0.01
SG&A - NPV12.5 of three years							(12.4)	(0.03)	(0.03)	(0.03)
Tax rebate and post-period end equity raised							12.0	0.03	0.03	0.03
Development										
LCEP	Australia	31%*	30%	2,956.1	915.9	0.56	153.6	0.34	0.46	0.26
RENAV							**158.7**	**0.34**	**0.46**	**0.26**

Source: Edison Investment Research. Note: *Assumes farm-out of upstream for cost carry with implied farminee IRR of 17.5%.

We recognise that there will be several phases of de-risking as the LCEP project progresses through successful PCD, full field development funding and partner alignment. We attempt to demonstrate this de-risking and the potential impact on valuation in the exhibit below.

Exhibit 7: Potential de-risking impacts on RENAV (post farm-down)



Source: Edison Investment Research

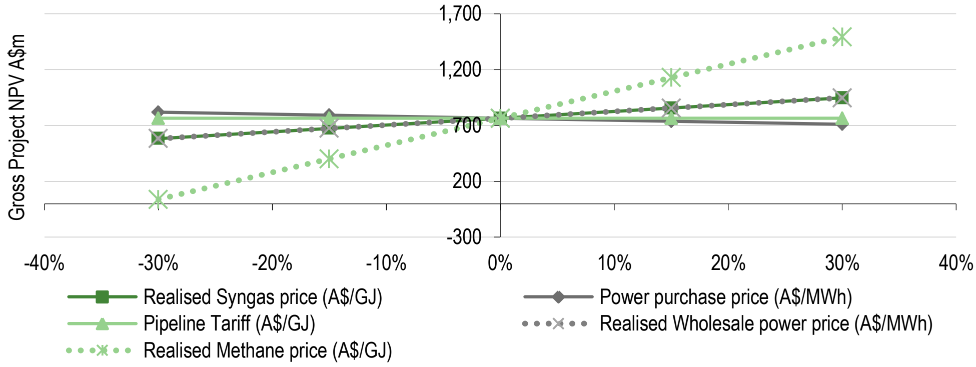
Please see our initiation note for the key assumptions that underpin our project economics.

At the current share price, LCK offers investors an option on realising value from ISG in South Australia. LCEP has what appears to be an optimal site for an ISG project in a state with a need for additional baseload power capacity. The project does not come without technical and commercial risks. However, we expect technical and environmental factors to be de-risked through the upcoming PCD. Funding availability and cost uncertainty will also be reduced once ISG well-pair economics can be better defined.

Key risks and sensitivities

Below we look at the key valuation risks and uncertainties. A key driver of valuation is the realised methane price achievable once LCEP is fully developed. We currently assume a base case A$8/GJ.

Exhibit 8: LCK gross project NPV sensitivity*



Source: Edison Investment Research. Note *Unfunded gross project NPV of A$771m.

Our analysis suggests that LCEP is $NPV_{12.5}$ positive if power prices are above A$60/MWh and methane prices above A$6/GJ. As can be seen by the gross project NPVs in the table below, LCEP is highly levered to realised power and methane prices. In our base case, we assume a methane price of A$8/GJ and power A$80/MWh.

Exhibit 9: Gross project NPV sensitivity to SA power prices and realised methane price

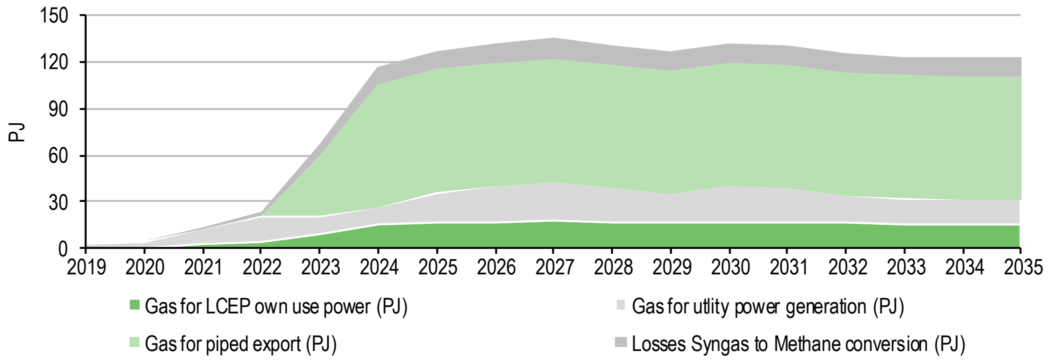
	Methane price A$/GJ				
Power A$/MWh	**5.0**	**6.0**	**7.0**	**8.0**	**9.0**
60	(297)	12	314	617	920
70	(215)	88	391	694	997
80	(138)	165	468	771	1074
90	(61)	242	545	848	1150
100	16	319	622	925	1227

Source: Edison Investment Research

We assume that LCEP is monetised through a combination of small-scale power (30MW) at the outset, followed by large-scale power (450MW) and piped methane sales. We assume power and pipeline projects are third-party funded and generate utility-type IRRs of 8% in our analysis. We note that LCK has a Heads of Agreement (HOA) with Shanghai Electric Power Generation Group (SEC) to discuss the formation of a JV to build, own and operate a gas-fired power station in South Australi a. A non-binding HOA is also in place with APT Pipelines, a subsidiary of APA Group. This allows the development of conceptual plans for the interconnection of the LCEP via a new pipeline with the east coast gas markets.

In addition, other offtake solutions are being considered, including an HOA with Archer Exploration (AXE) looking at establishing a magnesia plant adjacent to the LCEP, which could use gas, electricity and waste heat from the site. Gas storage is also an offtake solution, while third-party infrastructure is under construction. Here LCK has a five-year gas storage exploration licence (overlapping Leigh Creek PEL 650).

Exhibit 10: Production expectations (unrisked)



Source: Edison Investment Research

Key investment risks

We highlight the key investment risks below:

- Valuation is contingent on third parties investing in power and/or pipeline infrastructure.
- LCK requires funding for the completion of a pilot project in 2018 and for full-field development (we assume a cost carry for full field development in our base case, but this cannot be guaranteed).
- Commodity prices for both gas and electricity could vary materially from our base case forecasts. Please see sensitivities in the Valuation section of this note.
- ISG remains a relatively unproven commercial technology, and the only global commercial-scale ISG operation is in Uzbekistan. Little in the way of data is available on the economics of this operation.
- Environmental risks will have to be mitigated through technology and meeting the regulatory requirements set by the state of South Australia.
- Fiscal terms may vary from our base case forecasts. However, material changes to petroleum sector fiscal terms in South Australia are rare.

Financials

The net cost of LCK's ISG PCD project, including operational spend, is estimated at c A$16m, financed through the company's 2017 funding round, which raised gross proceeds of A$21.85m. Cash at 30 June 2018 amounted to A$9.3m and covers the outstanding anticipated PCD costs. Post-period end, LCK has raised an additional c A$3m.

Our LCK financial forecasts do not reflect LCEP first gas until our modelled start-up date of early 2021. However, we see potential for this to slip as the first gas from demonstration is six months later than originally forecast. In our base case forecasts below, we assume LCK is cost-carried for its portion of LCEP capex costs prior to first gas. Consequently, there is minimal capex beyond 2018 in our financial forecasts. The availability and cost of farm-out funding is an investment risk, further details of which are provided in our initiation note.

Exhibit 11: Financial summary

A$m	2016	2017	2018	2019e	2020e	2021e	2022e
June	IFRS	IFRS	IFRS	IFRS	IFRS	IFRS	IFRS
PROFIT & LOSS							
Revenue	0.0	0.0	0.0	2.8	5.8	17.0	28.7
Cost of Sales	0.0	0.0	0.0	0.0	(0.5)	(1.6)	(2.7)
Gross Profit	0.0	0.0	0.0	2.8	5.2	15.4	26.0
EBITDA	(5.3)	(5.7)	(5.9)	(3.1)	(0.7)	9.5	20.1
Operating Profit (before amort. and except.)	(5.4)	(5.8)	(5.9)	(3.1)	(0.7)	9.5	20.1
Intangible Amortisation	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exceptionals	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Operating Profit	(5.4)	(5.8)	(5.9)	(3.1)	(0.7)	9.5	20.1
Net Interest	(0.0)	(0.0)	(0.1)	(0.3)	0.0	0.0	0.0
Profit Before Tax (norm)	(5.4)	(5.8)	(6.0)	(3.4)	(0.7)	9.5	20.1
Profit Before Tax (FRS 3)	(5.4)	(5.8)	(6.0)	(3.4)	(0.7)	9.5	20.1
Tax	0.0	0.0	0.0	7.2	0.0	(3.2)	(6.4)
Profit After Tax (norm)	(5.4)	(5.8)	(6.0)	3.8	(0.7)	6.3	13.7
Profit After Tax (FRS 3)	(5.4)	(5.8)	(6.0)	3.8	(0.7)	6.3	13.7
Average Number of Shares Outstanding (m)	229.2	279.9	392.5	471.5	471.5	471.5	471.5
EPS - normalised (c)	(2.3)	(2.1)	(1.5)	0.8	(0.1)	1.3	2.9
EPS - normalised and fully diluted (c)	(2.3)	(2.1)	(1.5)	0.8	(0.1)	1.3	2.9
EPS - (IFRS) (c)	(2.3)	(2.1)	(1.5)	0.8	(0.1)	1.3	2.9
Dividend per share (c)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BALANCE SHEET							
Fixed Assets	2.6	6.2	16.7	19.7	19.7	19.7	19.7
Intangible Assets	2.5	6.0	16.4	19.4	19.4	19.4	19.4
Tangible Assets	0.1	0.2	0.3	0.3	0.3	0.3	0.3
Investments	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Current Assets	9.0	11.1	18.8	18.9	18.3	24.6	38.4
Stocks	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Debtors	0.3	2.4	9.4	9.4	9.4	9.4	9.4
Cash	8.7	8.8	9.3	9.4	8.8	15.1	28.9
Other	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Current Liabilities	(0.8)	(3.5)	(10.1)	(6.3)	(6.3)	(6.3)	(6.3)
Creditors	(0.8)	(2.0)	(6.3)	(6.3)	(6.3)	(6.3)	(6.3)
Short term borrowings	0.0	(1.5)	(3.8)	0.0	0.0	0.0	0.0
Long Term Liabilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Long term borrowings	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other long term liabilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Assets	10.8	13.8	25.4	32.3	31.6	38.0	51.8
CASH FLOW							
Operating Cash Flow	(4.0)	(4.6)	(3.1)	3.9	(0.6)	6.3	13.8
Net Interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tax	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capex	(1.8)	(5.7)	(15.5)	(3.0)	0.0*	0.0	0.0
Acquisitions/disposals	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Financing	13.1	8.6	17.0	3.0	0.0	0.0	0.0
Dividends	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Cash Flow	7.3	(1.6)	(1.7)	3.9	(0.6)	6.3	13.8
Opening net debt/(cash)	(1.4)	(8.7)	(7.2)	(5.5)	(9.4)	(8.8)	(15.1)
HP finance leases initiated	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.2	(0.1)	0.0	(0.0)	0.0	0.0
Closing net debt/(cash)	(8.7)	(7.2)	(5.5)	(9.4)	(8.8)	(15.1)	(28.9)

Source: Company accounts, Edison Investment Research. Note: *Assumes upstream farm-out and cost carried.

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