

Leigh Creek Energy

Environmental approvals de-risk LCEP

Company update

Oil & gas

Leigh Creek Energy (LCK) has received statement of environmental objectives (SEO) approval for the pre-commercial demonstration (PCD) phase of the Leigh Creek Energy Project (LCEP) and important de-risking milestone ahead of commencing process well drilling, plant construction and operation. LCK will now submit activity notifications (ANs) to advise the regulator of specific activities to be carried out under the SEO. Accordingly, we de-risk our valuation for LCEP from a 20% commercial chance of success (COS) to 30%. Our base case valuation rises from A\$0.26/share to A\$0.38/share (+46%). A successful PCD, permitting and funding for full-field development would significantly de-risk LCEP.

Year end	Revenue (A\$m)	Operating cash flow (A\$m)	Cash (A\$m)	Net cash (A\$m)	Capex* (A\$m)
06/16	0.0	(4.0)	8.7	8.7	(1.8)
06/17	0.0	(4.6)	8.8	7.2	(5.7)
06/18e	0.0	(6.1)	2.5	1.0	(16.0)
06/19e	0.0	1.0	2.5	2.0	0.0

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

South Australian gas prices remain robust

Domestic wholesale gas prices have risen significantly across Australia over the past two years, currently averaging c A\$7-8/GJ and more in line with spot Asian LNG. The closure of coal-fired electricity generation in South Australia and Victoria has driven increased demand for gas, in support of hydro, solar and wind, whilst contracted LNG volumes have limited the availability of gas for the domestic market.

LCEP de-risking and funding

LCK intends to operate its first in-situ coal gasification (ISG) well pair for a 60- 90-day period in Q318, optimising ISG operational parameters, reducing technical uncertainty and demonstrating that operations can be conducted safely and in an environmentally responsible manner. The PCD phase of development has potential to further de-risk LCEP and also open up sources of funding for the full-field development.

Valuation: Base case A\$0.38/share at 30% COS

We value LCEP on the basis of monetisation of 2C ISG gas resource via a combination of local power generation (450MW) and piped methane sales. This assumes that a 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 after China New Energy's (CNE) equity investment in the company in 2017.

10 May 2018

Price **A\$0.21**

Market cap **A\$85m**

US\$0.80/A\$

Cash (A\$m) at 31 December 2017 13.4

Shares in issue 415.9m

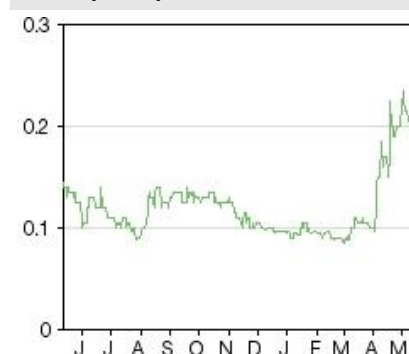
Free float 63%

Code LCKX

Primary exchange ASX

Secondary exchange N/A

Share price performance



% 1m 3m 12m

Abs 10.8 115.8 36.7

Rel (local) 5.5 106.5 29.4

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 2017.

Next events

LCEP PCD Mid-2018

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PCD progress and next steps

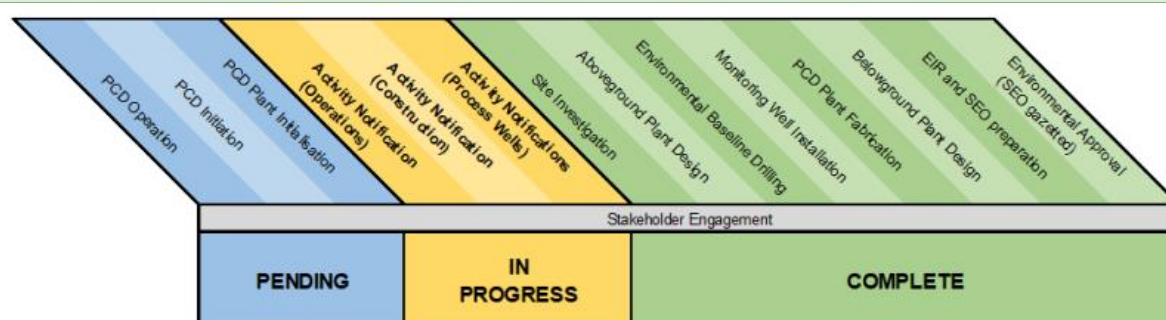
The SEO for the PCD was completed and gazetted on Thursday 19 April after extensive consultation with the South Australian government. LCK sees this as a material de-risking event, as the environmental impact report and SEO were subjected to detailed review processes by the regulator, the Energy Resources Division of the Department of the Premier and Cabinet (ERD:DPC). This included public consultation on the project, the ISG technology, its environmental status and proposed environmental objectives. The SEO is effectively an agreement with the state on what environmental objectives are to be met during the development and operation of the PCD in order to ensure that is conducted in an environmentally responsible manner and ultimately for the benefit of the population of South Australia.

LCK now intends to submit three separate ANs to the regulator to advise on specific activities to be undertaken under the framework of the SEO. The ANs are for:

- process well drilling;
- above-ground plant construction; and
- operation of the PCD, decommissioning and monitoring.

LCK's intention is to operate the PCD for 60–90 days with the aim of producing first gas from the ISG process, demonstrating that operations can be conducted in an environmentally responsible and safe manner.

Exhibit 1: Current and expected progress at LCEP



Source: LCK

The PCD will also de-risk the project from a technical perspective and LCK expects a successful demonstration to enable it to allow partial conversion of 2C 2,964PJ to reserves.

We expect drilling and plant construction to be complete by mid-2018 followed by a 60–90-day operational period. In the following section we discuss our valuation of LCEP, and the key steps that we believe would further de-risk the project and our valuation. As it stands, we believe the market is ascribing an 16% commercial chance of success for the project based on our base case gas and electricity prices, development costs and funding inputs. Please see our [initiation report](#) published on 2 February 2017 for a detailed discussion of our base case input.

Valuation: A\$0.38/share

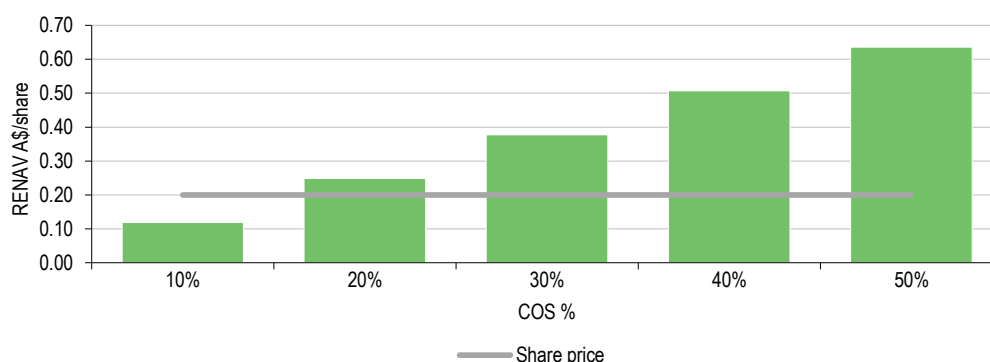
Our valuation of LCEP increases as a result of de-risking our modelled commercial success from 20% to 30%. We flag that this is a subjective view on risk and includes the value dilution from an assumed farm-out of the upstream full-field development. Further details of gross project economics and our farm-out assumptions can be found in our initiation note.

Exhibit 2: LCK valuation – farm-out of upstream (base case)

Asset	Country	Diluted WI	CoS	Recoverable reserves		NPV/GJ	Net risk value	Value per share risk	Discount rate	
				Gross	Net				10%	15%
		%	%	PJ	PJ	A\$/GJ	A\$m	A\$/share	A\$/share	A\$/share
Net cash at end 2018 after demonstration spend		100%	100%				3	0.01	0.01	0.01
SG&A – NPV _{12.5} of three years		100%	100%				(12)	(0.03)	(0.03)	(0.03)
Tax rebate		100%	100%				7	0.02	0.02	0.02
Development										
LCEP	Australia	31%	30%	2,955.3	916.1	0.59*	161	0.39	0.53	0.29
RENAV							159	0.38	0.53	0.28

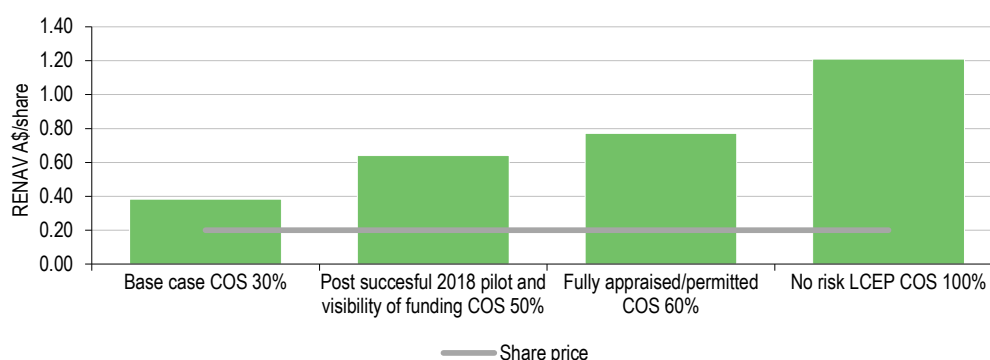
Source: Edison Investment Research. Note: *Derived from LCEP DCF valuation, including the positive value impact of cost carry.

A sensitivity to our chance of success assumption (30% base case) is provided below. The market implied chance of success, post equity dilution, currently stands at 16%.

Exhibit 3: RENAV sensitivity to commercial chance of success % (post farm-down)


Source: Edison Investment Research

In addition, we recognise that there will be several phases of de-risking as the LCEP project progresses through successful demonstration, full appraisal, environmental permitting, full-field development funding and partner alignment. We demonstrate this de-risking and the potential impact on valuation in Exhibit 4 below.

Exhibit 4: Potential de-risking impacts on RENAV (post farm-down)


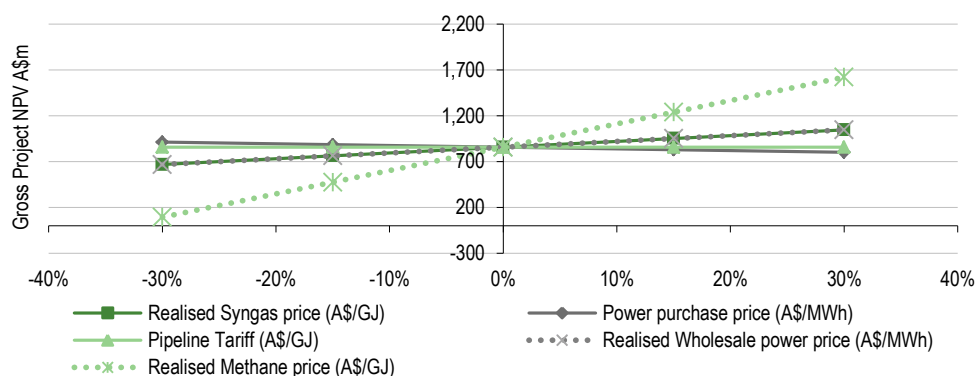
Source: Edison Investment Research

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, 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 key valuation risks and uncertainties. A key driver of valuation is the realised methane price achievable once LCEP is fully developed.

Exhibit 5: LCK gross project NPV sensitivity*



Source: Edison Investment Research. Note: *unfunded gross project NPV of A\$858.

Our analysis suggests that LCEP is NPV_{12.5} positive if power prices are above A\$50/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 6: Gross project NPV sensitivity to SA power prices and realised methane price

Power A\$/MWh	Methane price A\$/GJ					
	5.0	6.0	7.0	8.0	9.0	10.0
60	(256)	64	382	700	1,018	1,336
70	(176)	143	461	779	1,097	1,415
80	(97)	222	540	858	1,176	1,494
90	(18)	300	618	936	1,254	1,572
100	61	379	697	1,015	1,333	1,651
110	139	458	776	1,094	1,412	1,730

Source: Edison Investment Research

Gross project sensitivity to assumed LCK WACC and realised methane price is provided in the table below.

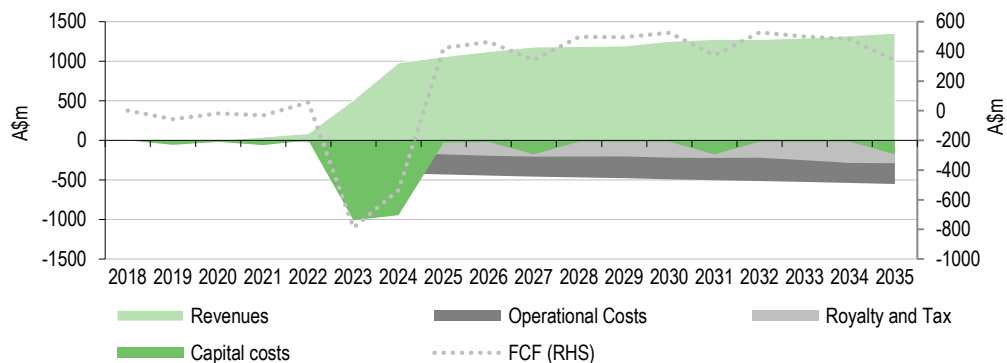
Exhibit 7: Gross project NPV sensitivity to WACC % and realised methane price A\$/GJ

WACC (%)	Methane price A\$/GJ					
	5.0	6.0	7.0	8.0	9.0	10.0
10	73	509	946	1,382	1,818	2,255
11	(8)	376	759	1,143	1,526	1,909
12	(71)	268	606	944	1,282	1,620
13	(120)	180	479	779	1,078	1,378
14	(158)	108	375	641	907	1,173
15	(188)	50	288	525	763	1,000

Source: Edison Investment Research

Looking at projected cash flows over the project life, we see positive FCF from first syngas in 2021 rising to a peak of c A\$515m pa once methane is being exported at full capacity in 2030.

Exhibit 8: Gross project cash flows (absolute values) and FCF over time (A\$m)



Source: Edison Investment Research

Key investment risks are highlighted 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 of 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 regulatory requirements set by the state of SA.
- Fiscal terms may vary from our base case forecasts. However, material changes to petroleum sector fiscal terms in SA are rare.

Financials

The net cost of LCK's ISG demonstration project including operational spend is estimated at c A\$16m and is expected to be funded through the company's 2017 funding round, which raised gross proceeds of A\$21.85m. Cash at December 2017 amounted to A\$13.4m and covers the outstanding anticipated PCD costs.

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; hence, 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 recent initiation [note](#).

Exhibit 9: Financial summary

A\$m	2016	2017	2018e	2019e	2020e	2021e	2022e
June	IFRS	IFRS	IFRS	IFRS	IFRS	IFRS	IFRS
PROFIT & LOSS							
Revenue	0.0	0.0	0.0	0.0	0.0	12.3	25.2
Cost of Sales	0.0	0.0	0.0	0.0	0.0	(1.1)	(2.2)
Gross Profit	0.0	0.0	0.0	0.0	0.0	11.2	22.9
EBITDA	(5.4)	(6.2)	(6.2)	(6.2)	(6.2)	5.0	16.7
Operating Profit (before amort. and except.)	(5.4)	(6.2)	(6.2)	(6.2)	(6.2)	5.0	16.7
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)	(6.2)	(6.2)	(6.2)	(6.2)	5.0	16.7
Net Interest	(0.0)	0.1	(0.0)	(0.1)	(0.0)	(0.3)	(0.1)
Profit Before Tax (norm)	(5.4)	(6.2)	(6.2)	(6.3)	(6.2)	4.7	16.6
Profit Before Tax (FRS 3)	(5.4)	(6.2)	(6.2)	(6.3)	(6.2)	4.7	16.6
Tax	0.0	0.0	0.0	7.2	0.0	(2.1)	(5.6)
Profit After Tax (norm)	(5.4)	(6.2)	(6.2)	0.9	(6.2)	2.6	11.0
Profit After Tax (FRS 3)	(5.4)	(6.2)	(6.2)	0.9	(6.2)	2.6	11.0
Average Number of Shares Outstanding (m)	266.0	332.4	415.9	415.9	415.9	415.9	415.9
EPS - (IFRS) (A\$c)	(2.0)	(1.9)	(1.5)	0.2	(1.5)	0.6	2.6
BALANCE SHEET							
Fixed Assets	2.6	6.2	22.2	22.2	22.2	22.2	22.2
Intangible Assets	2.5	6.0	6.0	6.0	6.0	6.0	6.0
Tangible Assets	0.1	0.2	16.2	16.2	16.2	16.2	16.2
Investments	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Current Assets	9.0	11.1	4.9	4.9	2.4	2.4	12.0
Stocks	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Debtors	0.3	2.4	2.4	2.4	2.4	2.4	2.4
Cash	8.7	8.8	2.5	2.5	0.0	0.0	9.7
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Current Liabilities	(0.8)	(3.5)	(3.5)	(2.5)	(6.1)	(3.4)	(2.0)
Creditors	(0.8)	(2.0)	(2.0)	(2.0)	(2.0)	(2.0)	(2.0)
Short term borrowings	0.0	(1.5)	(1.5)	(0.5)	(4.1)	(1.4)	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	23.6	24.6	18.5	21.2	32.3
CASH FLOW							
Operating Cash Flow	(4.0)	(4.6)	(6.1)	1.0	(6.1)	2.7	11.1
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)	(16.0)	0.0*	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	15.9	0.0	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)	(6.2)	1.0	(6.1)	2.7	11.1
Opening net debt/(cash)	(1.4)	(8.7)	(7.2)	(1.0)	(2.0)	4.1	1.4
HP finance leases initiated	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.0	(0.2)	0.0	0.0	0.0	0.0	0.0
Closing net debt/(cash)	(8.7)	(7.2)	(1.0)	(2.0)	4.1	1.4	(9.7)

Source: Company accounts, Edison Investment Research. Note: *Assumed farm-out of upstream for cost-carry. Dilution included in LCEP working interest.

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