

# Crossing the Chasm

November 2017



# Leigh Creek Energy Disclaimer

---

This presentation has been completed by Leigh Creek Energy Limited. It may contain forward looking statements that are subject to risk factors associated with the energy industry. It's believed that the expectations reflected in these statements are reasonable, but they may be affected by a variety of changes in underlying assumptions which could cause actual results or trends to differ, including but not limited to: price fluctuations, actual demand, currency fluctuations, drilling & production results, reserve estimates, loss of market, industry competition, environmental risks, physical risks, legislative, fiscal & regulatory developments, economic & financial market conditions in various countries & regions, political risks, project delay or advancement, approvals & cost estimates amongst other items, & the cumulative impact of items.

This presentation may also contain non-IFRS measures that are unaudited, but are derived from & reconciled to the audited accounts. All references to dollars, cents or \$ in this presentation are to Australian currency, unless otherwise stated.

## Mineral Resource Compliance Statement

- Estimates of Mineral Resources reported in this announcement were initially reported & released to the ASX on 8 Dec 2015. We are not aware of any new information or data that materially affects the information included in the 8 Dec 2015 announcement & all the material assumptions & technical parameters underpinning the estimates in that announcement continue to apply & have not materially changed.

## Gas Resources Compliance Statement

- Gas Resources reported in this announcement were initially reported & released to the ASX on 8 Jan 2016. We are not aware of any new information or data that materially affects the information included in the 8 Jan 2016 announcement & that all the material assumptions & technical parameters underpinning the estimates in that announcement continue to apply & have not materially changed. All estimates are based on the deterministic method for estimation of petroleum resources.

# Table of contents

---

Section 1	Team
Section 2	Market Opportunity
Section 3	ISG Technology
Section 4	Legal and Political Environment
Section 5	LCK Project Status
Section 6	Corporate and Financial

# A place where people want to work

## Experienced Executive Team

The Team	Experience
<b>Justyn Peters</b> <b>Executive Chairman</b>	Justyn is a qualified lawyer and has many years' experience in the ISG industry and in senior management positions. Justyn's experience includes working in the mining industry, for industry representative bodies and for various state and federal environment departments and authorities.
<b>Phil Staveley</b> <b>CEO</b>	Phil is a qualified Accountant who has 30 years' experience working in the resources and oil & gas sectors. His roles have encompassed various finance, commercial and operational functions. He has spent the last 20 years in CFO/CEO roles in Australia, Asia and Latin America.
<b>Mark Terry</b> <b>CFO</b>	Mark is a CPA with more than twenty years' experience in the management of financial and project matters in the mineral exploration and mining industry. He commenced his career with KPMG before holding a range of senior finance positions with Normandy Mining, Newmont Australia and Xstrata Zinc where he was Finance and Commercial Manager for Australian Operations.
<b>Justin Haines</b> <b>COO</b>	Broad experience across engineering and geological services. Most recently, worked as Technical Manager for Carbon Energy, successfully operating their ISG facility. Justin leads the Operations Team.

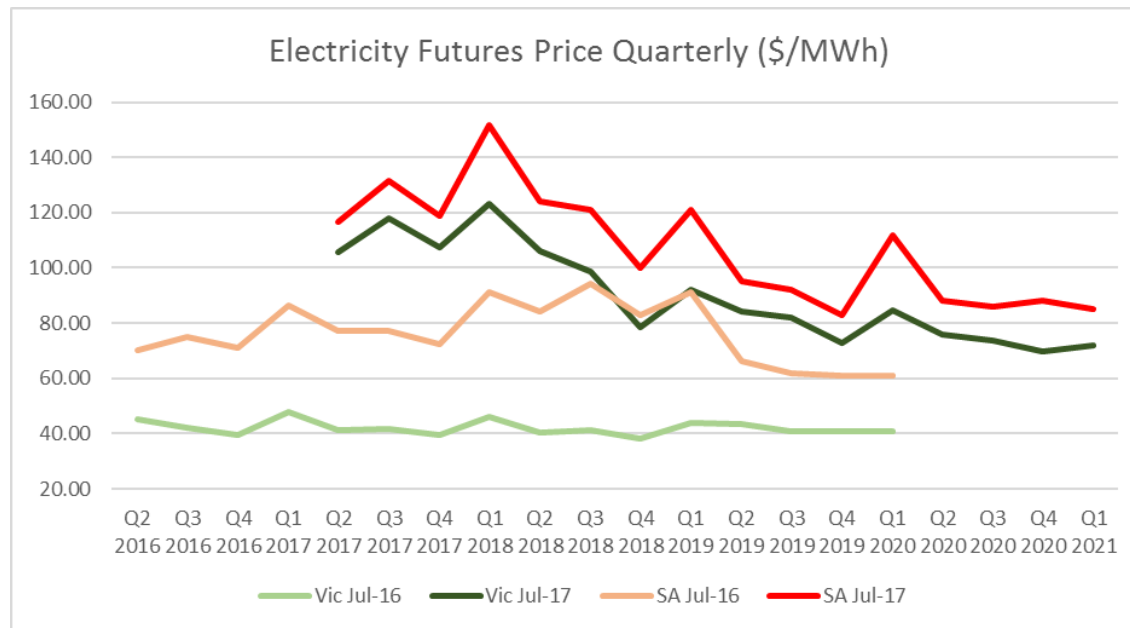
---

# Market Opportunity

## Section 2

# Expensive and unreliable power in SA

- The Australian National Electricity Market (NEM) is in turmoil, with South Australia at the epicentre. Prices have risen despite falling demand, averaging A\$123/MWh in FY2017.



Grid stability is an important concern due to:

- Intermittent power
- Renewable mandates and certificates
- Withdrawal of both base-load and peak-load fossil supply



*The National Electricity Market on the day of the South Australian Blackout, 28 September 2016*

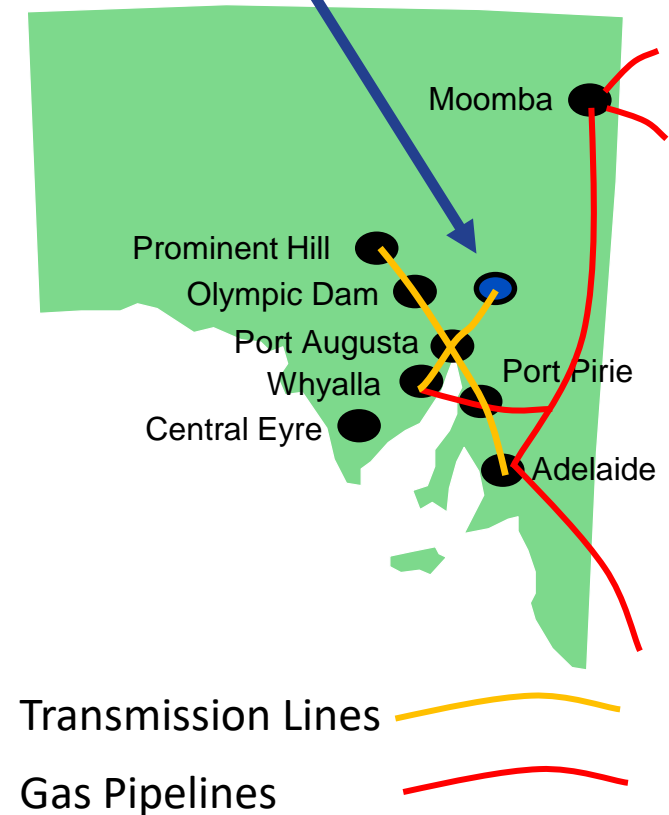
# Regional demand for 500-900MW

LCEP is near major energy consumers:

- Olympic Dam (Cu/U)
- Prominent Hill (Cu)
- Carrapateena (Cu)
- Whyalla (Steel)
- Port Pirie (Pb)
- Central Eyre (Iron Ore)

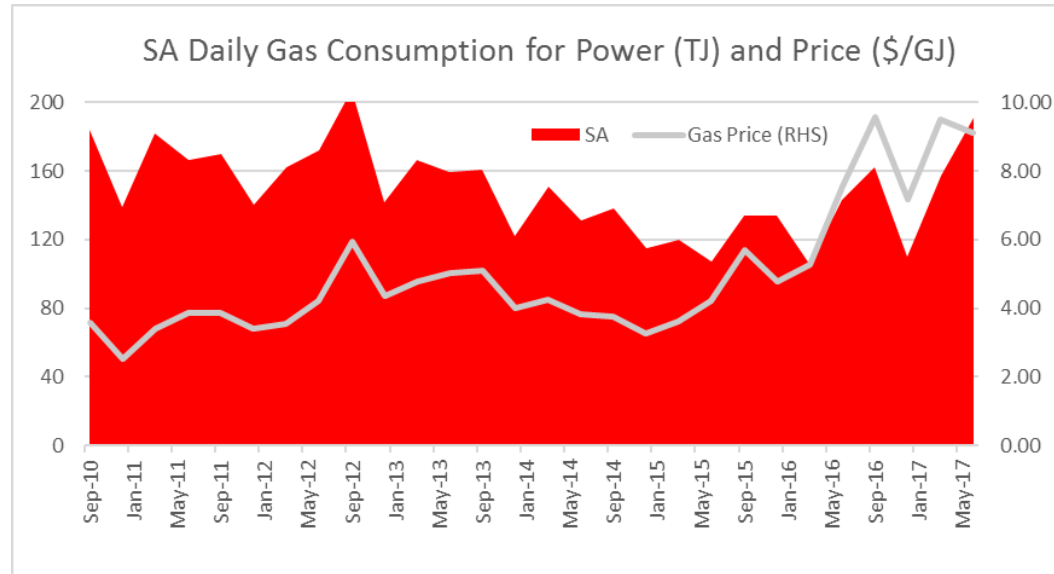
As well as the metropolitan demand centre  
in Adelaide

## Leigh Creek Energy Project (LCEP)



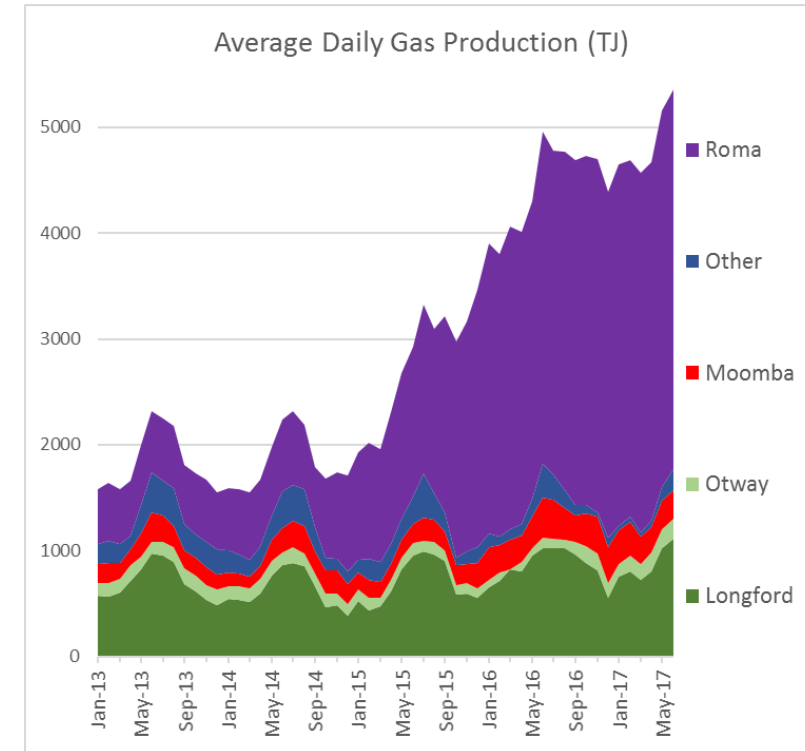


# Gas prices rising, LNG exports driving demand



Gas demand for electricity generation has fallen (until recently), but prices have more than doubled since 2014 to A\$9/GJ in Adelaide.

Other States are limiting supply of new gas. South Australia is the exception.



Further gas shortfalls are anticipated as the 3 LNG plants in QLD ramp up.

5,300TJpd is approx. 2,000PJpa – the Gladstone LNG terminals need that much on their own.



# Gas Economics and Federal Policy – positive for LCK

---

- Gas prices historically \$3-4/GJ
- Supply constraints and LNG demand = gas shortage
- Prices now \$12-\$15/GJ plus (anecdotally)
- Federal Government intervention “Australian Domestic Gas Security Mechanism”
- ADGSM allows federal government to intervene in the market by restricting gas exports and driving down prices



**Josh Frydenberg, Federal Energy Minister, 20 July 2017**

The Australian/Melbourne Institute’s Economic and Social Outlook Conference

“the **goal** (of the ADGSM) was to get contract prices **close to** “LNG netback” ... (to) **about** \$8 to \$10.”

# The Leigh Creek Energy solution

---

Plentiful energy from in-situ gasification (ISG) of coal will permit, in a staged development, low cost domestic supply of:

- Electricity – reliable baseload for SA
- Natural Gas – into the East Coast system
- Further development – fertilisers and explosives



(1) Refer ASX release dated January 8, 2016

- Resources will likely convert from 2C to 2P Reserves once gas demonstration is completed in early 2018.

# Right market, right time, right place

---

The right market, the right time:

- Stability of energy supplies in crisis
- Dramatically rising power and gas prices
- Long term supply constraints

The right place:

- Ideal project location for ISG
- Strong local demand from major customers
- Legal and regulatory certainty in South Australia
- Supportive government

---

# ISG Technology

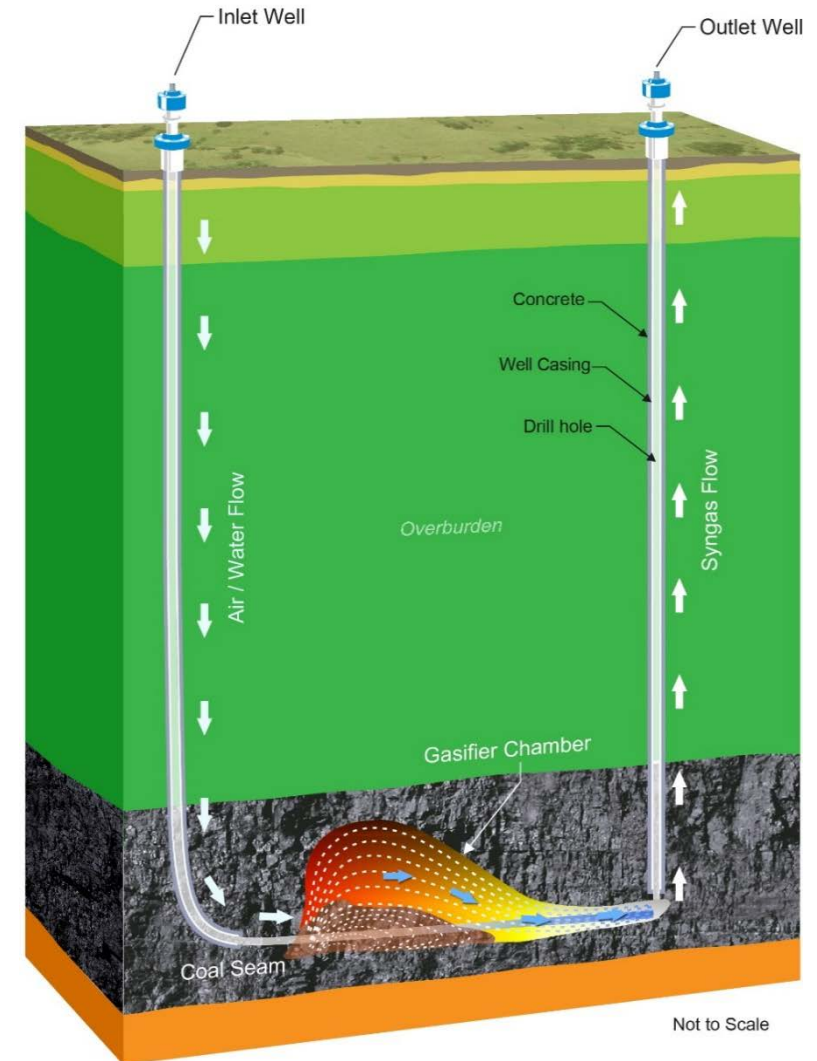
## Section 3

# In-Situ Gasification (ISG)

The ISG process converts coal to syngas underground and then brought to the surface. The syngas is processed and can be used in a number of ways:

- Power
- Pipeline gas
- Ammonia products
- Other

Standard oilfield equipment is used in the process.



# Worldwide experience of ISG

## Commercial Operations:

- Angren, Uzbekistan: 60 years of operation
- Eskom, Majuba, South Africa – co-firing power station with syngas

## North American Experience:

- 40 years of trials & demonstration
- Multiple sites, techniques, outcomes
- Utilised standard oil-field

## Australian Experience:

- Linc Energy – demonstration facility operated for 11 years
- Carbon Energy – demonstration facility operated for 5 years

## Carbon Energy Bloodwood Creek Project

*Queensland Government's Chief Scientist, **Dr. Geoff Garrett AO**, confirmed that Carbon Energy:*

- *Met the key recommendations of the government appointed Independent Scientific Panel (ISP).*
- *"It is clear that Carbon Energy has contributed to the collective understanding of UCG and the conditions under which the operation is likely to be both safe and successful."*
- *Demonstrated safe and effective decommissioning and completing of a plan for rehabilitation which were independently reviewed by experts appointed by the DEHP.*



# Leigh Creek Coalfield – ideal for ISG



Leigh Creek is an existing mine site. It produced coal for 60 years. Coal was supplied to the Port Augusta power station, 250km away.

Ideal Location with existing infrastructure:

- Remote from major populations
- Self-contained groundwater system
- Power transmission lines
- Sealed road, airport, rail, water
- Major gas pipeline 125km away
- Township of Leigh Creek





---

# Legal and Political Environment

## Section 4

# South Australia is an excellent jurisdiction

- Clear title and development pathway
- ISG is included in existing legislation
- Government support for Unconventional Gas
- Native Title process well understood
- Highly skilled labour in need of employment
- Identified as the state which supported natural resource development the most.

## Leigh Creek Energy Project (LCEP)



**SA has a roadmap for unconventional gas, has encouraged a migration of gas companies into the state, and has established grants to assist in the proving of new resources.**

# South Australian Government support



**Jay Weatherill**  
Premier

## **SA Premier visit to Shanghai, China, April 11, 2016:**

Achievements highlighted by Weatherill included a heads of agreement signed by the Shanghai Electric Power Generation Group and Leigh Creek Energy Ltd to explore the joint development of a gas-fired power station in South Australia.

*"The agreement is positive for the Upper Spencer Gulf, providing hope for towns such as Port Augusta, Whyalla and the northern regional town of Leigh Creek," Weatherill said.*

## **29 April 2016:**

"... the Leigh Creek project remained subject to rigorous environmental impact assessments before it could progress further".

"We have a very effective regulatory framework in SA and the merits of the LCK project will be assessed against that framework, not a political decision ..."



**Tom Koutsantonis**  
Treasurer and  
Minister for Mineral  
Resources and Energy

## **30 Aug 2016:**

Treasurer Tom Koutsantonis

"I strongly believe that the approval or otherwise of gas exploration and extraction projects should be left to independent experts, rather than to politicians. We have the best regulatory systems in the world in this country and those systems should be trusted to protect the environment, the agriculture industry and communities. This decision is bad news for the National Electricity Market because new sources of supply of gas will continue to be constrained." He used the Victorian ban to once again position SA as "open for business" for the controversial extraction method. "I encourage any exploration companies affected by this decision to consider coming to South Australia, where the assessment and approval of projects is left to expert regulators".

---

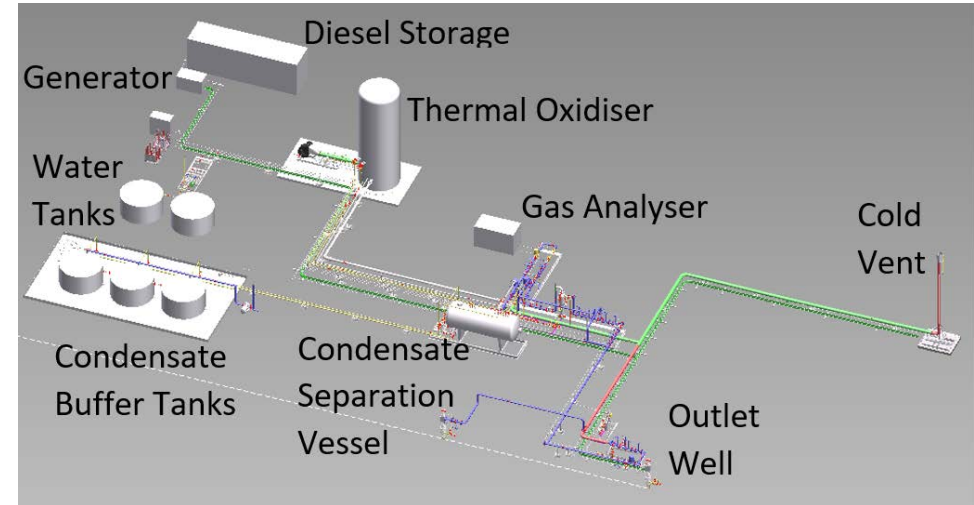
# LCK Project Status

## Section 5

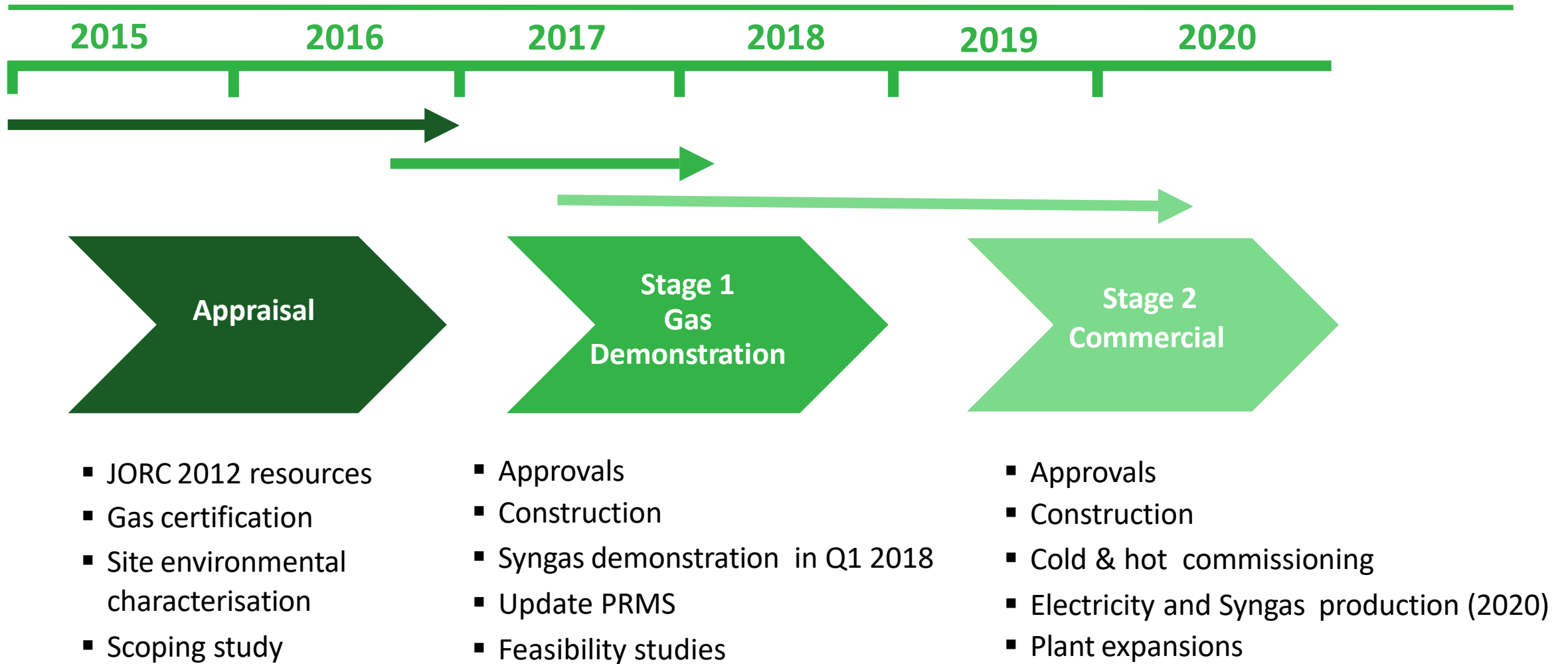
# Key PCD engineering contracts awarded – Capital applied

With Funding Secured, PCD fabrication is underway:

- ✓ Outlet Well
  - ✓ Gas Analyser
  - ✓ Condensate Vessel
  - ✓ Thermal Oxidiser
  - ✓ Condensate Buffer Tanks
  - ✓ Cold Vent
  - ✓ Electrical & Data
  - ✓ Diesel Storage
  - Generator
- Ottoway
  - ABB
  - Ottoway
  - Gasco
  - Ottoway
  - Gasco
  - ATSys
  - Petro Diamond Australia
  - Various
  - TBA



# Next steps for LCK



---

# Corporate & Financial

## Section 6



# Capital funding through PCD

---

## Successfully Raised \$21.85m in Equity (before fees) in March 2017

- Sufficient funding to complete the PCD, which has budget of \$20m
- Funds were received in four tranches – all early
- Average price = \$0.147/share
- Independent Expert's Report by Grant Thornton valuation range of 24-42cps.

## Federal R&D tax offset on PCD Expenditure:

- Estimated expenditure on eligible activities totals A\$21m (including spending in past years) – implied cash rebate totalling \$9m
- \$6.5m R&D working capital finance facility

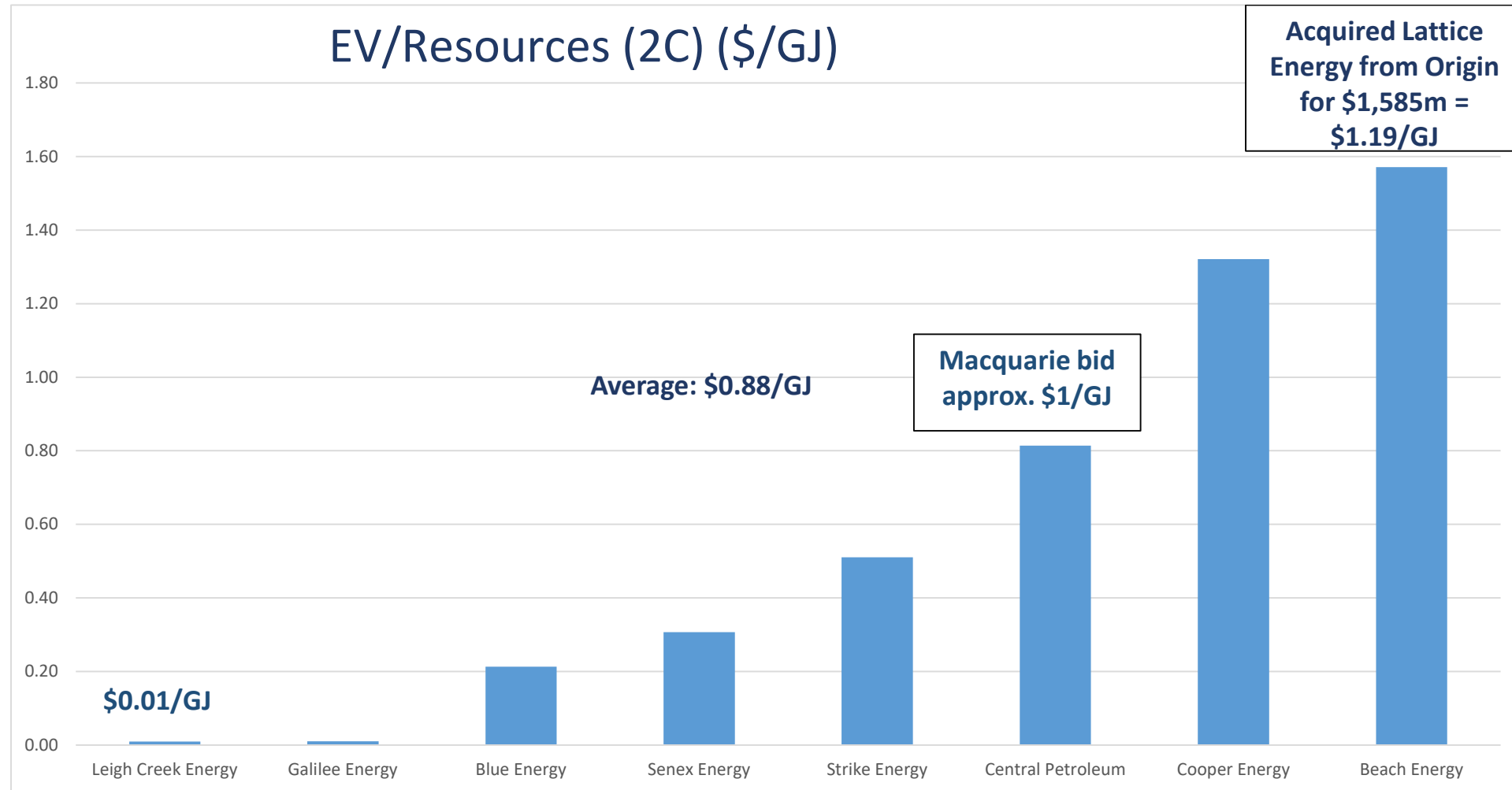
## Available tax losses of \$55m

# LCK corporate summary

LCK Capital Structure		
Shares		415.9m
Options		42.4m
<b>Market Cap @ A\$0.14</b>	<b>A\$</b>	<b>45.7m</b>
Cash (Oct 31)	A\$	15.1m
Debt drawn (\$6.5m facility) (Oct 31)	A\$	0.0m
<b>Enterprise Value</b>	<b>A\$</b>	<b>32.6m</b>
<b>EV/Resource (2C)</b>	<b>A\$/GJ</b>	<b>0.01</b>

Top Shareholders	# of Shares	%
China New Energy Group	136.3m	32.8
Allied Resource Partners	103.7m	24.95
CITIC Australia	17.2m	4.1
HSBC Custody	7.9m	1.9
One Design Skiff & Sails	5.2m	1.2
<b>Top 20</b>	<b>302.4m</b>	<b>72.7</b>

# The Chasm



# Crossing the Chasm

---

It's all about the risk

- Funding
- Government (environmental) approvals
- Project execution



***Perceived risk issue – resolved by demonstrated progress***

# Conclusion: Right market, right time, right place

---

LCK is ideally placed close to major South Australian (SA) energy consumers and infrastructure.

LCK can provide a cost effective solution to an energy market in turmoil.

LCK will provide:

- Cost effective Electricity
  - Reliability of supply
  - Supply to a natural gas market in shortage
  - Supply of ammonia products – import substitution
- Key Points:
  - Spending ~A\$20m to convert a major portion of 2,964 PJ (3tcf) of 2C Syngas into 2P Syngas
  - Funding secured
  - Major de-risking events in short term

***LCK: CROSSING THE CHASM***

---

# Thank you for your time

Questions?