

# COMMERCIALISING EAST COAST AUSTRALIA'S LARGEST UNCONTRACTED 2P RESERVE



JULY 2019

# Disclaimer

This presentation has been prepared by, or for Leigh Creek Energy Limited (LCK). It contains, and we may make other written or verbal forward looking statements with respect to certain of LCK's plans, current goals and expectations relating to future financial condition, performance, results, strategic initiatives and objectives. By their nature, all forward-looking statements involve risk and uncertainty and are subject to factors that could cause actual results to differ materially from those indicated in this presentation and/or any statement, including forward-looking statements. Some of the factors that could cause actual results or trends to differ materially, include but are not limited to: price fluctuations; actual demand; currency fluctuations; drilling & production results; reserve estimates; loss of market; industry competition; market developments and government actions; environmental risks, physical risks, legislative, fiscal & regulatory developments; local, regional and international political, regulatory, economic & financial market conditions; political risks; the effect of information and technology and third-party service providers for certain of our operations and systems; legal proceedings and regulatory investigations; the impact of operational risks, including inadequate or failed internal and external processes, systems and human error or from external events (including cyber attack); risks associated with arrangements with third parties, including joint ventures; the failure to attract or retain the necessary key personnel; systems errors or regulatory changes; the effect of fluctuations in share price as a result of general market conditions or otherwise; the effect of simplifying our operating structure and activities; the effect of a decline in any ratings or recommendations or losses due to defaults by counterparties or restructurings, on the value of our investments; changes in interest rates or inflation; changes in equity and/or prices on our investment portfolio; the impact of natural and man-made catastrophic events on our business activities and results of operations; our reliance on our standing among customers, broker-dealers, shareholders, agents, wholesalers and/or other distributors of our products and/or services; changes to our brand / reputation; changes in government regulations or tax laws in jurisdictions where we conduct business; the inability to protect our intellectual property; the effect of undisclosed liabilities; the timing of any regulatory approvals, integration risk, and other uncertainties, such as non-realisation of expected benefits or diversion of management attention and other resources, relating to future acquisitions and/or pending disposals; project delays or advancement; approvals & cost estimates amongst other items & the cumulative impact of items.

While we try to ensure that the information we provide is accurate and complete, LCK advises you to verify the accuracy of any information and/or statement, including a forward-looking statement before relying on it. LCK has no obligation to update the forward-looking statements in this presentation or any other forward-looking statements we may make. Forward-looking statements in this presentation are current only as of the date on which such statements are made.

This presentation may also contain non-IFRS measures that are unaudited, but are derived from & reconciled to the audited accounts. These should only be considered in addition to, and not as a substitute for, or superior to, our IFRS financial measures. All references to dollars, cents or \$ in this presentation are to Australian currency, unless otherwise stated.

## **Gas Resources Compliance Statement**

The PRMS resources estimates stated herein are based on, and fairly represent, information and supporting documentation prepared by Timothy Hower of MHA Petroleum Consulting, Denver USA. Mr Hower is a member of the Society of Petroleum Engineers and has consented to the use of the Resource estimates and supporting information contained herein in the form and context in which it appears. All estimates are based on the deterministic method for estimation of petroleum resources.

## **Mineral Resource Compliance Statement**

Estimates of Mineral Resources reported in this announcement are based on the latest information and data available. The recently updated Geological Model and JORC Resource Estimation report, prepared by Warwick Smyth & Lynne Banwell of GeoConsult Pty Ltd during March 2019 was used in this latest PRMS estimation. A copy of the GeoConsult report on the updated Geological Model and JORC Resource Estimation is available to view at [www.lcke.com.au](http://www.lcke.com.au).

LCK is not aware of any new information or data that materially affects this information & all the material assumptions & technical parameters underpinning the estimates continue to apply & have not materially changed.



# Leigh Creek Energy

ASX: LCK

ENERGY DEVELOPMENT COMPANY

Adelaide, South Australia

100% OWNER AND OPERATOR

Leigh Creek Energy Project (LCEP)

ISG: IN-SITU GASIFICATION PROCESS

The LCEP utilizes ISG process on the Leigh Creek Coalfield to develop the deep coal resources that are unable to be accessed through open-pit mining

RESERVE STATUS

PRMS Reserve 2P 1,153PJ

***LCEP is Australia's largest  
uncontracted 2P gas reserve serving  
the East Coast market***



**Leigh Creek Energy (ASX: LCK)**

### **Reserves (PJ)**

2P	3P
1,153	1,608

### **Resources (PJ)**

2C	3C
1,469	2,127

## **ISG PROCESS**

Converts underground coal to Syngas, containing; hydrogen, methane, and carbon monoxide

## **SHAREHOLDERS**

Australia, US institutions as well as Chinese strategic partners

## **INFRASTRUCTURE**

Power, road, rail, airport, suitable geology, and fair and diligent regulatory process

## **SYNGAS**

Can be processed for conversion into natural gas, petrochemical products, or agricultural products, like Urea

## **RESERVES**

The Company holds a larger 2P reserve than the Otway, Bass, Gunnedah, Clarence-Moreton, Sydney and Galilee Basins **COMBINED<sup>(1)</sup>**

(1) Australian Competition & Consumer Commission analysis of data obtained from gas producers



## Milestones Achieved

- April 2018 - South Australian Environmental approval received
- October 2018 - LCEP Operations achieved "First Gas"
- February 2019 - PCD successfully met its design parameters
- March 2019 - 2P reserve certified

**The LCEP has received a PRMS certification of 1,153 PJ 2P and is now Australia's largest uncontracted 2P gas reserve serving the East Coast market!**

## Next Milestones



Completion of PCD Operations



Decommissioning of PCD



Commercial agreements



Approvals



Full Feasibility Study



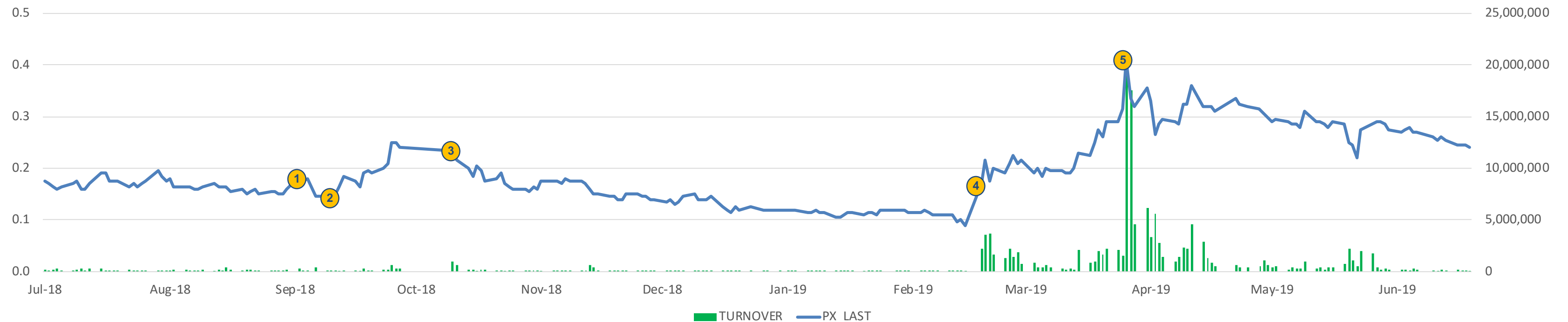
# Capital Structure

Key Stats	
ASX: Ticker	LCK
Share Price <sup>2</sup>	A\$0.24 per share
Shares Outstanding <sup>2</sup>	548.1 million shares
Market Cap <sup>2</sup>	A\$131.6 million
Debt <sup>3</sup>	A\$3.7 million <sup>4</sup>
Cash	A\$6.6 million <sup>5</sup>
Enterprise Value	A\$128.7 million

Top Shareholders <sup>1</sup>	# of Shares	% of Total
China New Energy Group	136.3m	24.9
Crown Ascent Development	45.8m	8.4
CITIC	17.2m	3.2
HSBC Custody Nominees	14.5m	2.7
Rubi Holdings	13.5m	2.5
<b>Total</b>	<b>548.1m</b>	<b>100</b>

No.	Date	Event
①	Sep 18	Final Approval for PCD Operations
②	Sep 18	CCCC Ltd visit
③	Oct 18	First Syngas
④	Feb 19	Pre-Commercial Demonstration Success
⑤	Mar 19	2P Reserve Status attained

LCK AU Equity - Share Price & Turnover



Note 1: Data taken from Bloomberg on 5/13/19

Note 2: Data taken from Bloomberg on 6/20/19

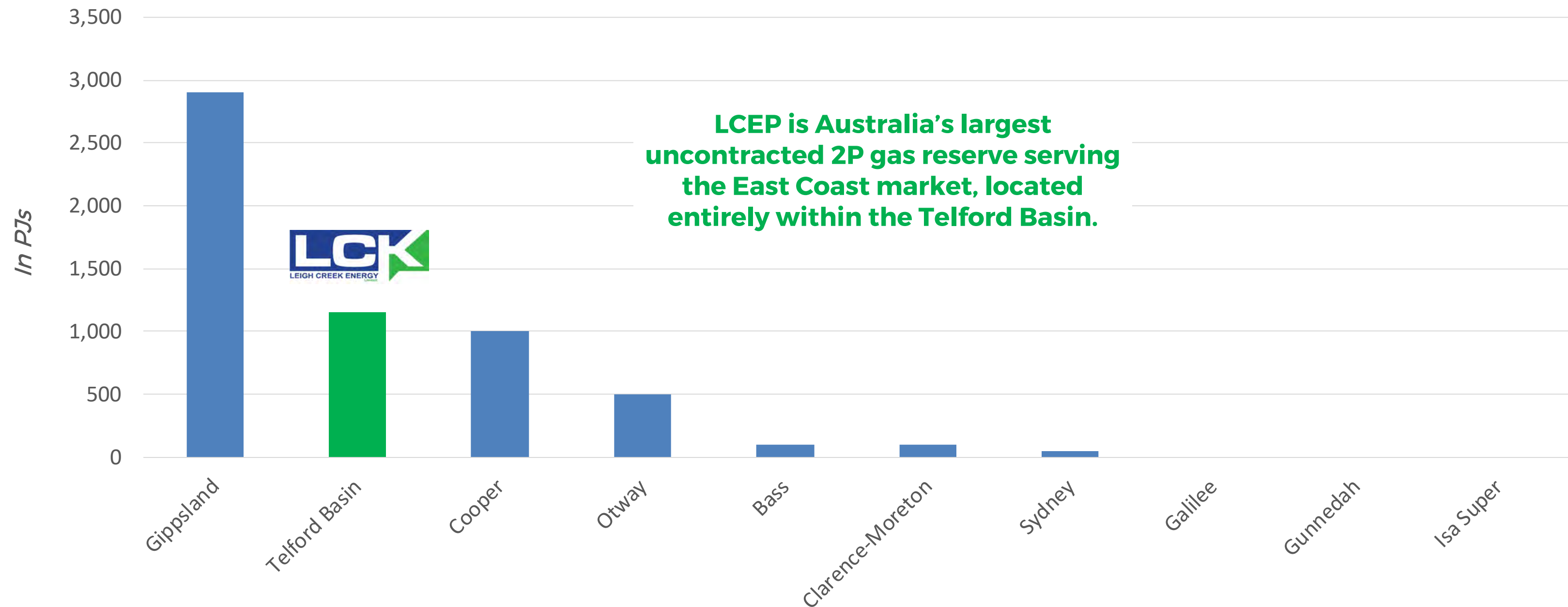
Note 3: LCK has a \$10.5 million lending facility with the CBA supported by R&D Tax incentives through AusIndustry and a rebate receivable of \$9 million as of June 2018

Note 4: Data taken from Bloomberg on 6/20/19, but reflects data from 12/31/2018

Note 5: Data taken from April 30<sup>th</sup> Quarterly – Reflecting March 31, 2019 information

# Reserve Comparables by Basin

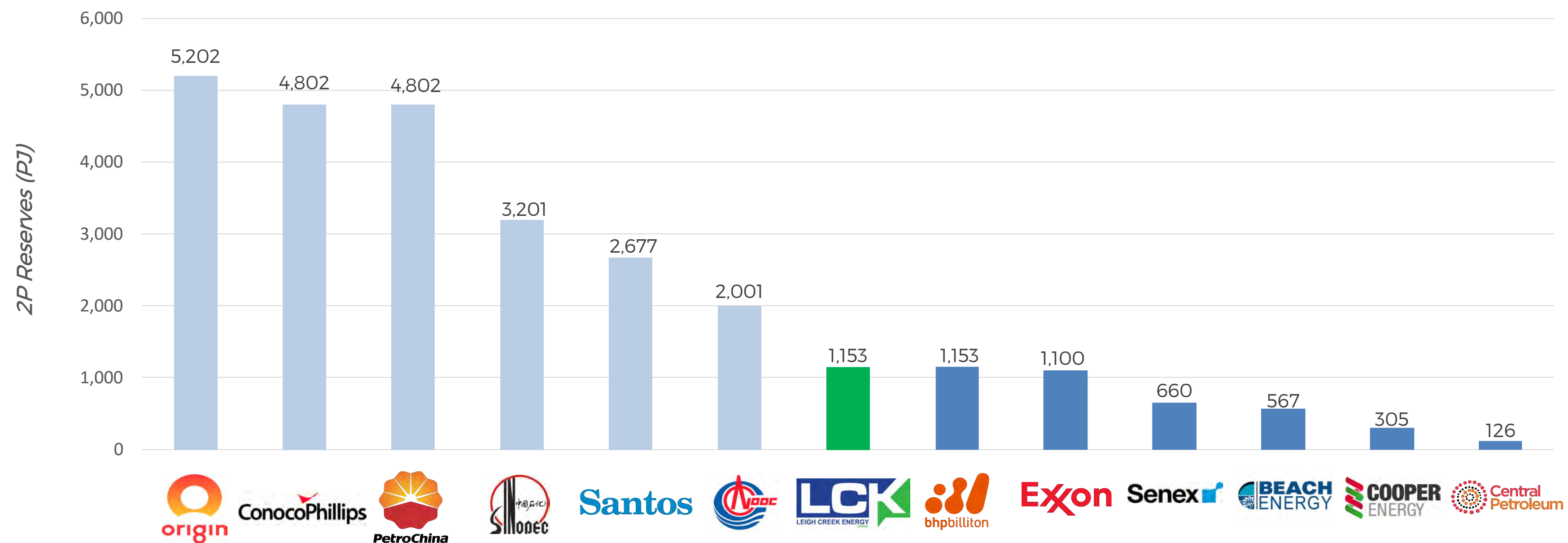
East Coast Gas 2P Reserve & Resources by Basin



Excludes Surat/Bowen Basin.  
Quantity of reserves and resources in the East Coast Gas Market as of June 2018 (PJ).  
Source: Australian Competition & Consumer Commission analysis of data obtained from gas producers

# Australian East Coast Reserve Comparables

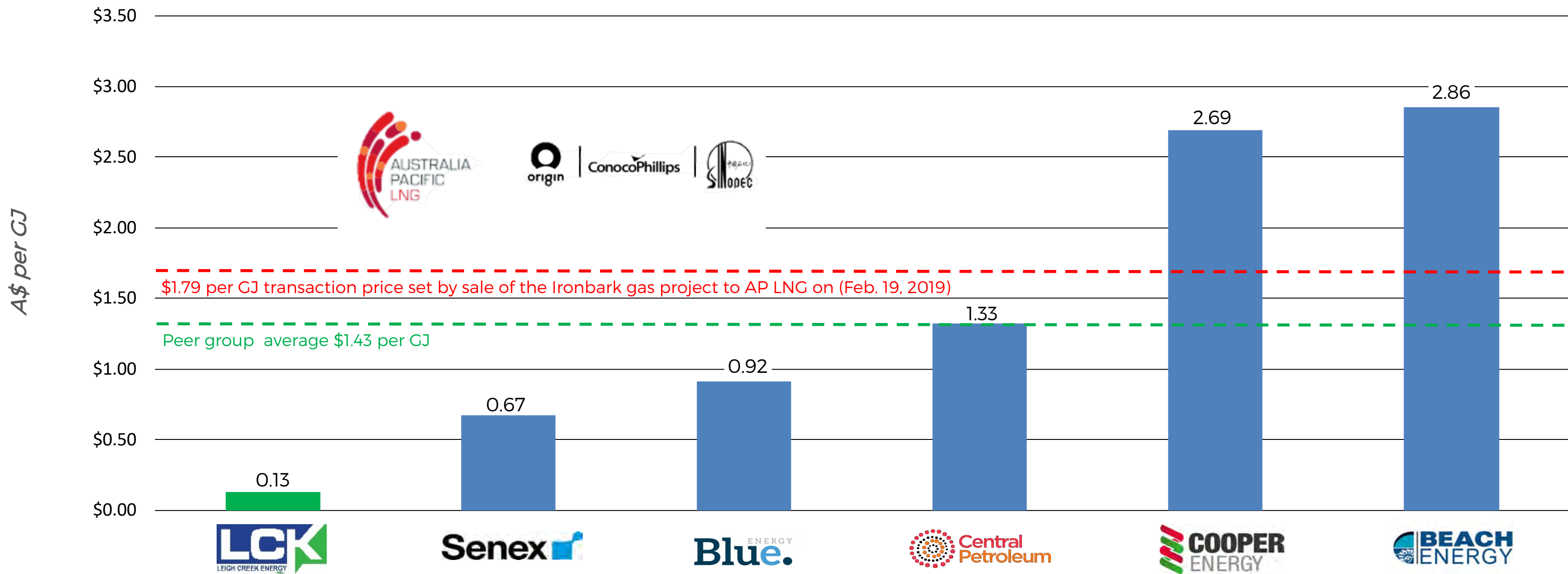
Australian East Coast Gas 2P Reserves



Source: Leigh Creek Energy Limited  
Note: Light blue color denotes that gas reserves are contracted to LNG Export projects

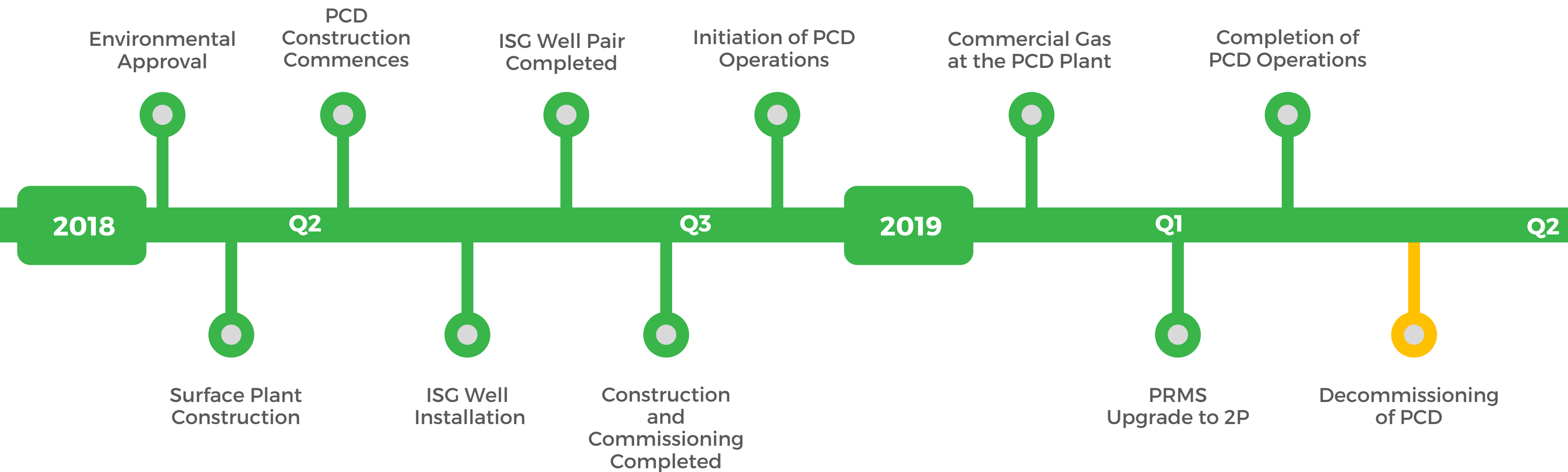
# Enterprise Value to Reserve Comparables

Enterprise Value per 2P Resource (GJ)



Source: Leigh Creek Energy, Bloomberg as of March 25th, 2019

# Operational Milestones



CHARACTERISATION PHASE

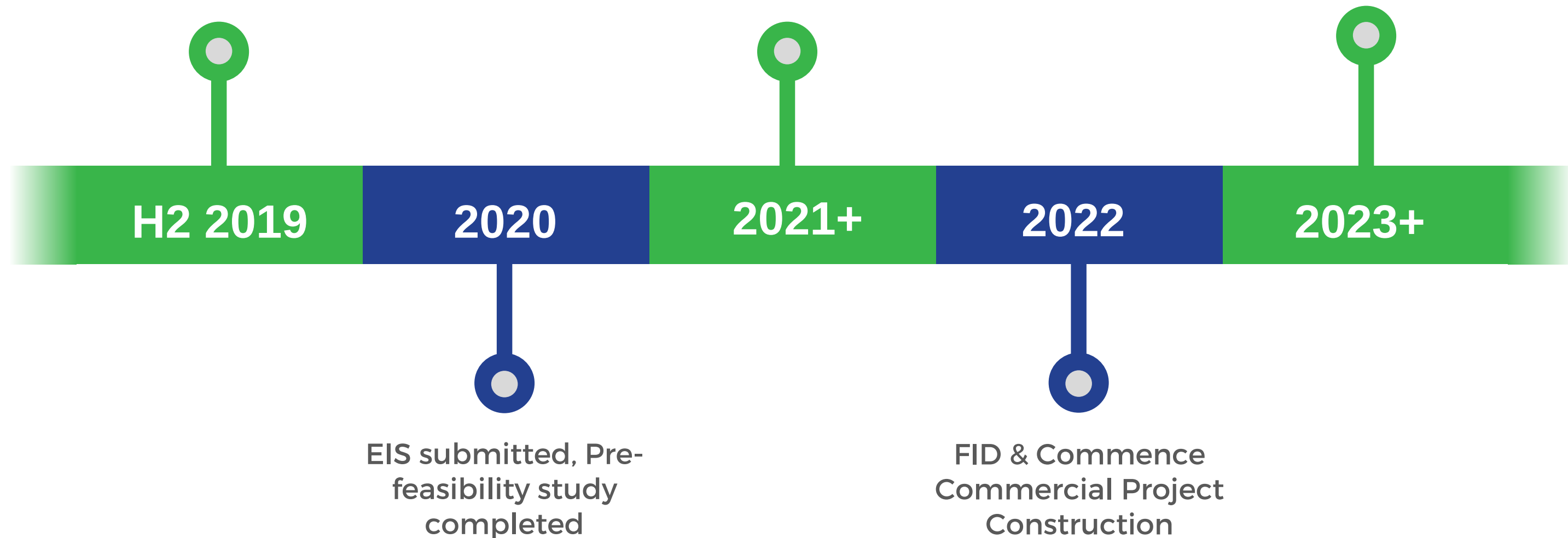
DEMONSTRATION PHASE

# Pathway to Commercial

Complete options analysis,  
Geotechnical investigation,  
Commercial arrangements settled

EIS approval, FEED,  
Feasibility completed

Commercial Project  
Operation



PCD Operations

2P Reserve

Fertiliser Production  
and/or Gas Sales

# Target market: Fertiliser vs Natural Gas

LCEP's gas resource has multiple commercialization options in Australia.

Urea price is recovering from a cyclical low and prices are forecast to fundamentally improve vs. domestic gas prices in Australia, which are a function of public policy, existing supply constraints and new demand from LNG export terminals.



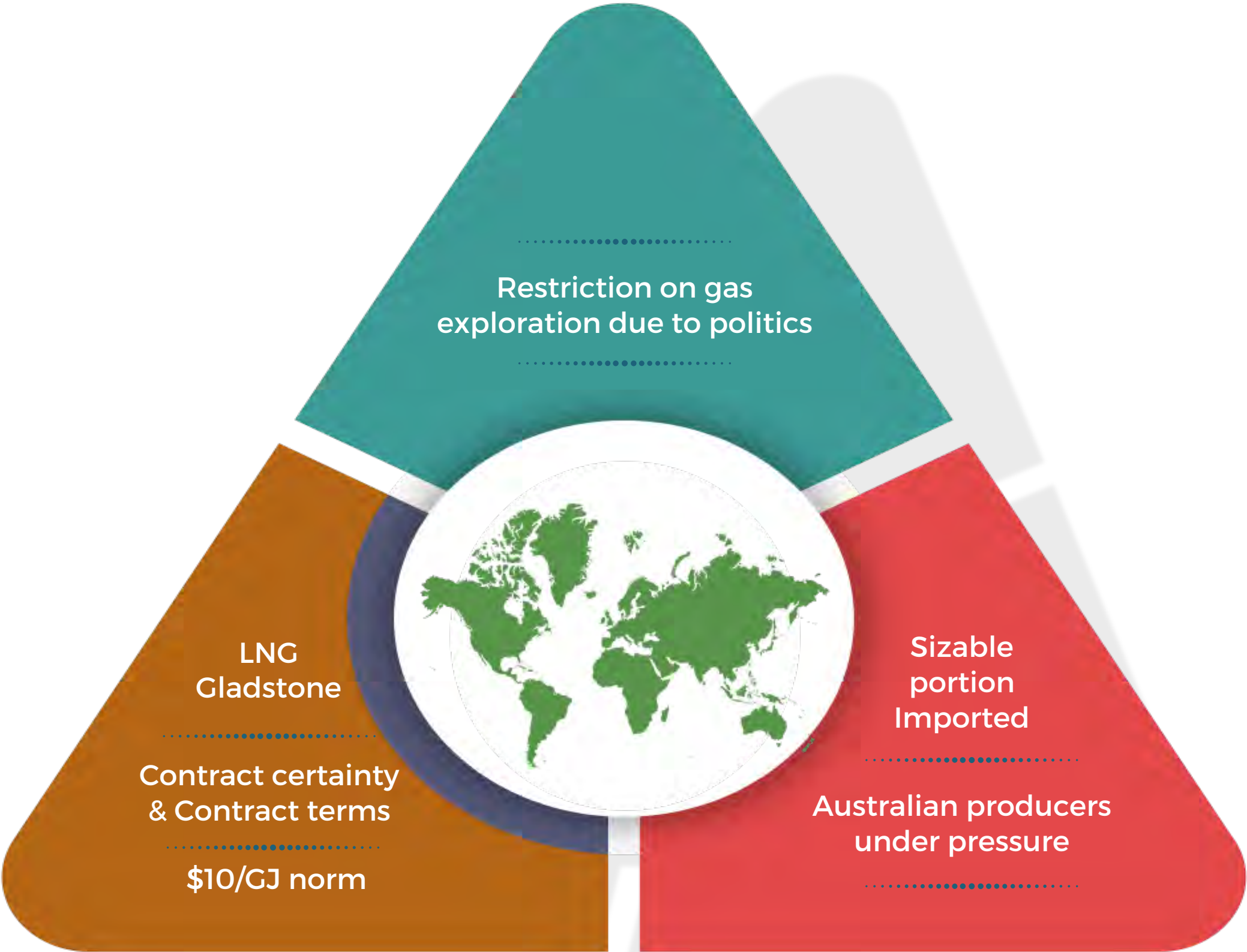
**Fertiliser  
(highest value  
long term)**



**Domestic natural  
gas sales**

Strong Market Dynamics

Supply  
Factors



Gas  
Demand

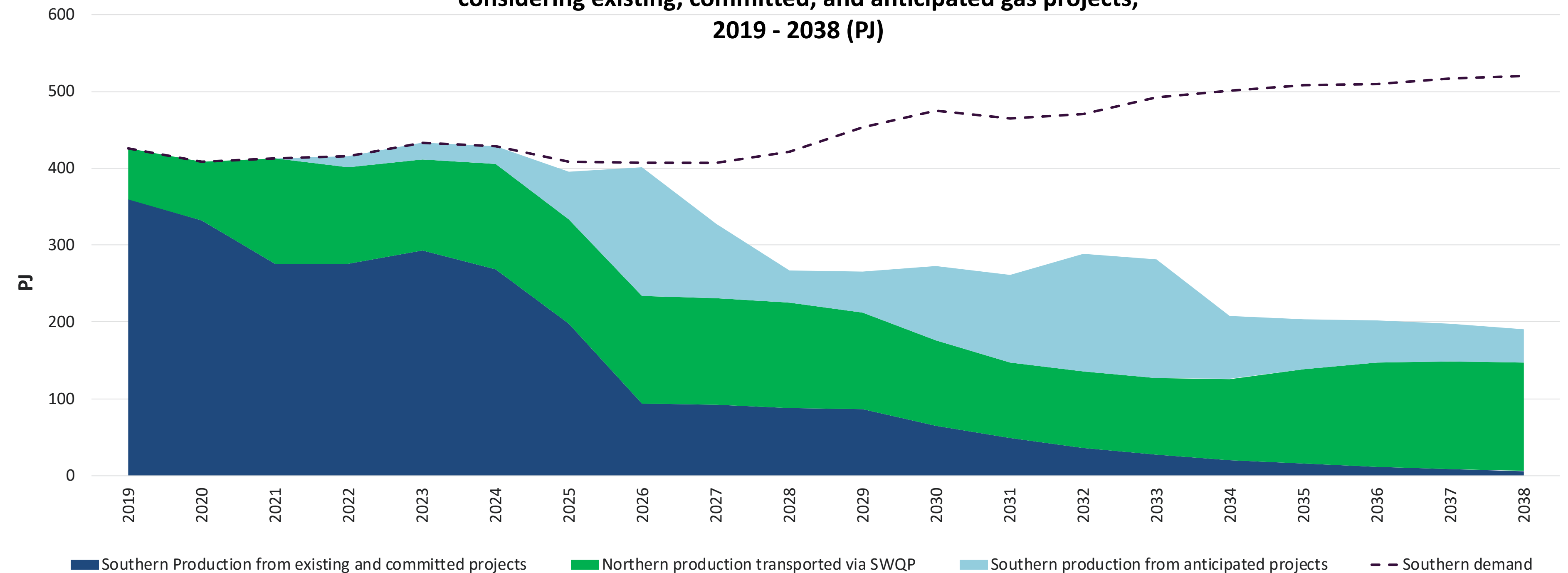
Fertilizer  
Demand

# Supply Response Constrained



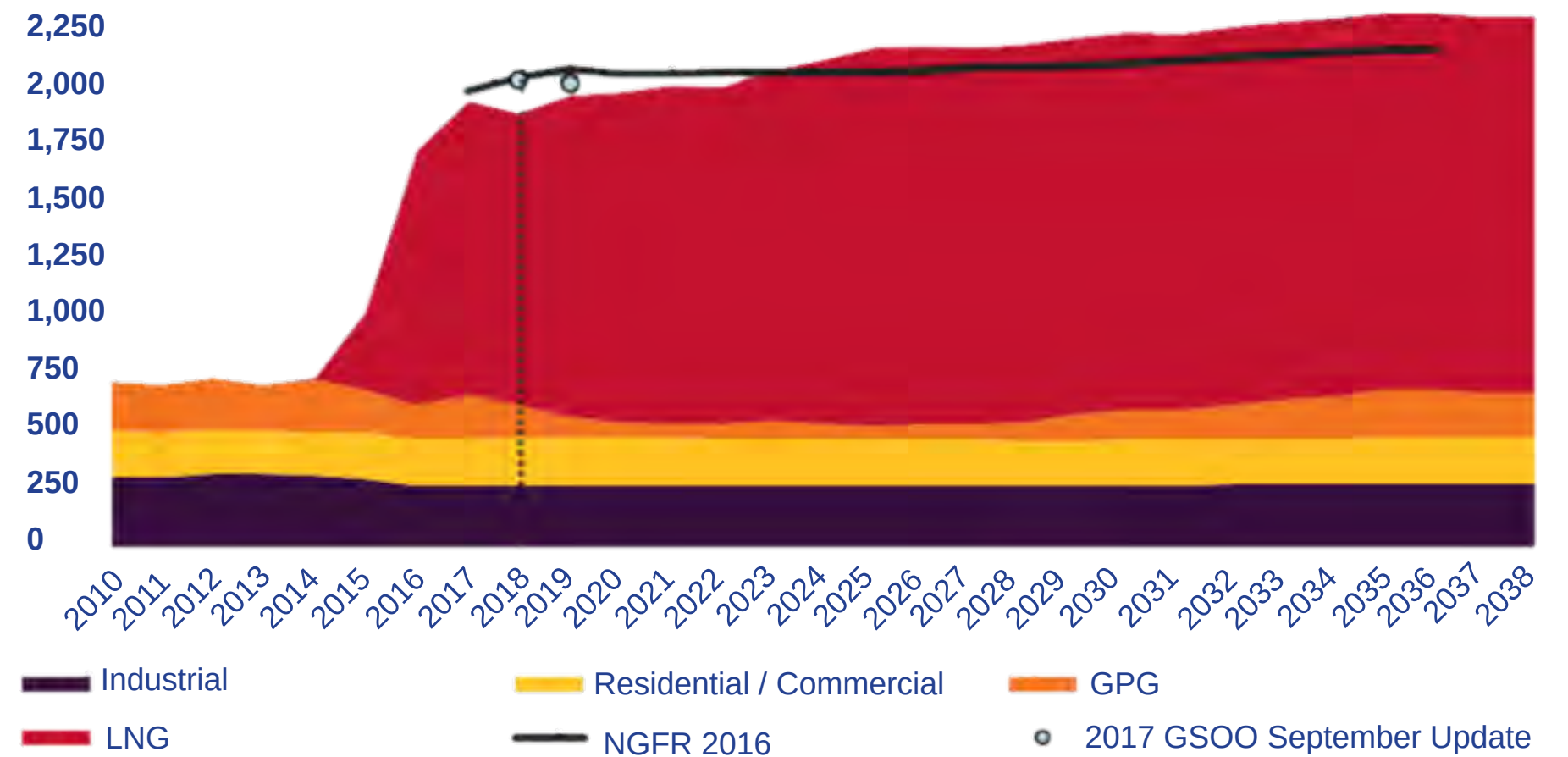
# Gas Shortfall Forecast

Projected supply to meet demand in the southern states,  
considering existing, committed, and anticipated gas projects,  
2019 - 2038 (PJ)



# Gas consumption actual and forecast 2010-2038

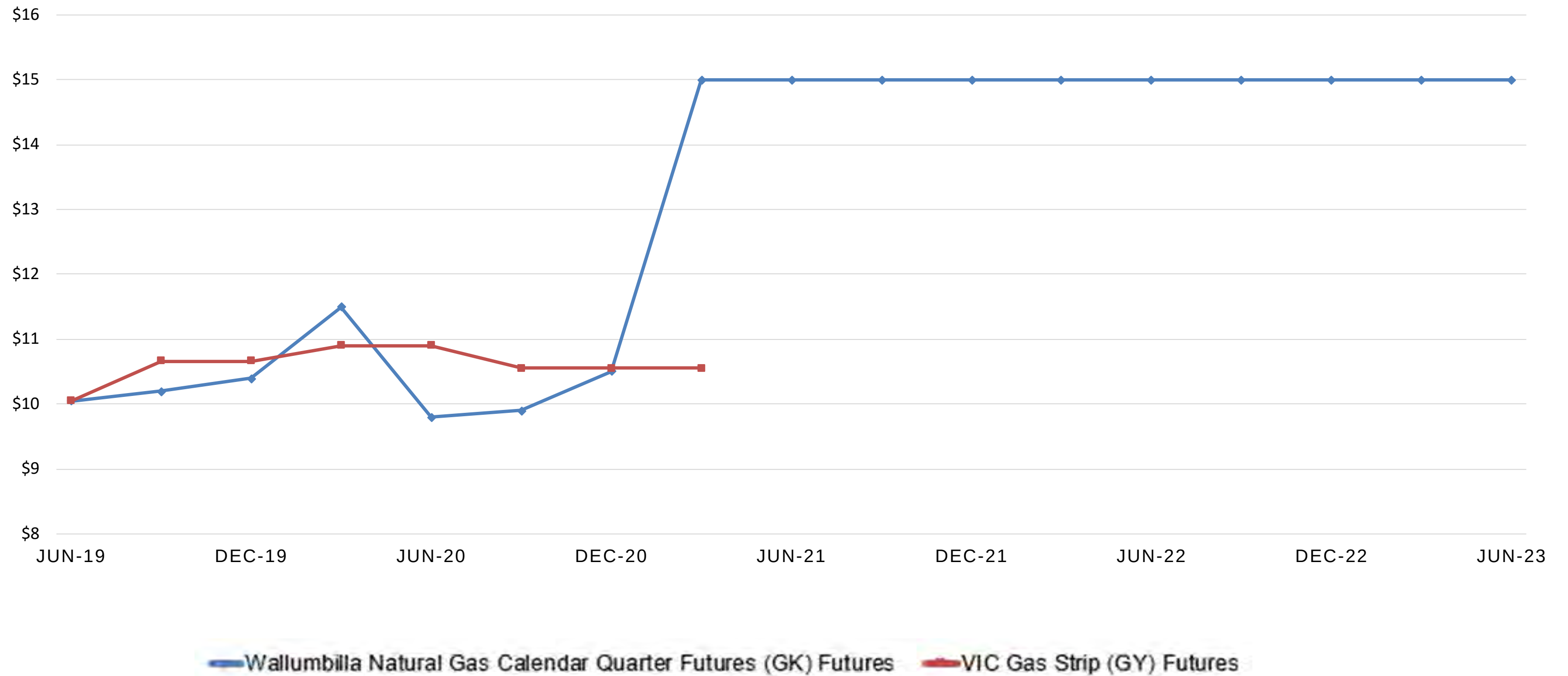
**LNG exports have increased demand  
3x since 2014**



Source: "2018 Gas Statement of Opportunities", AEMO, June 2018

# Gas Market

## Gas Futures - Quarterly



# Ammonia and Urea

**High Value Products**

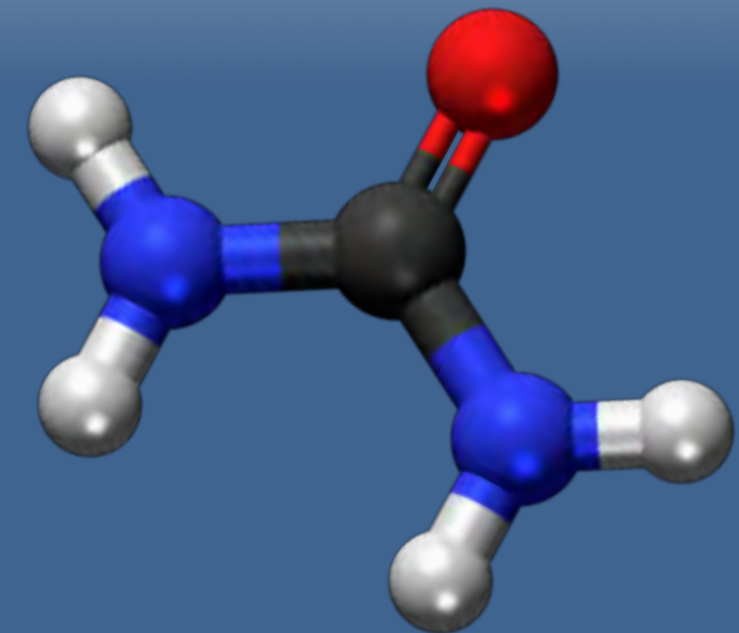
**Value added products with diverse range of downstream products**

## AMMONIA



Primarily used in chemical/industrial, minerals processing, explosives, etc

## UREA

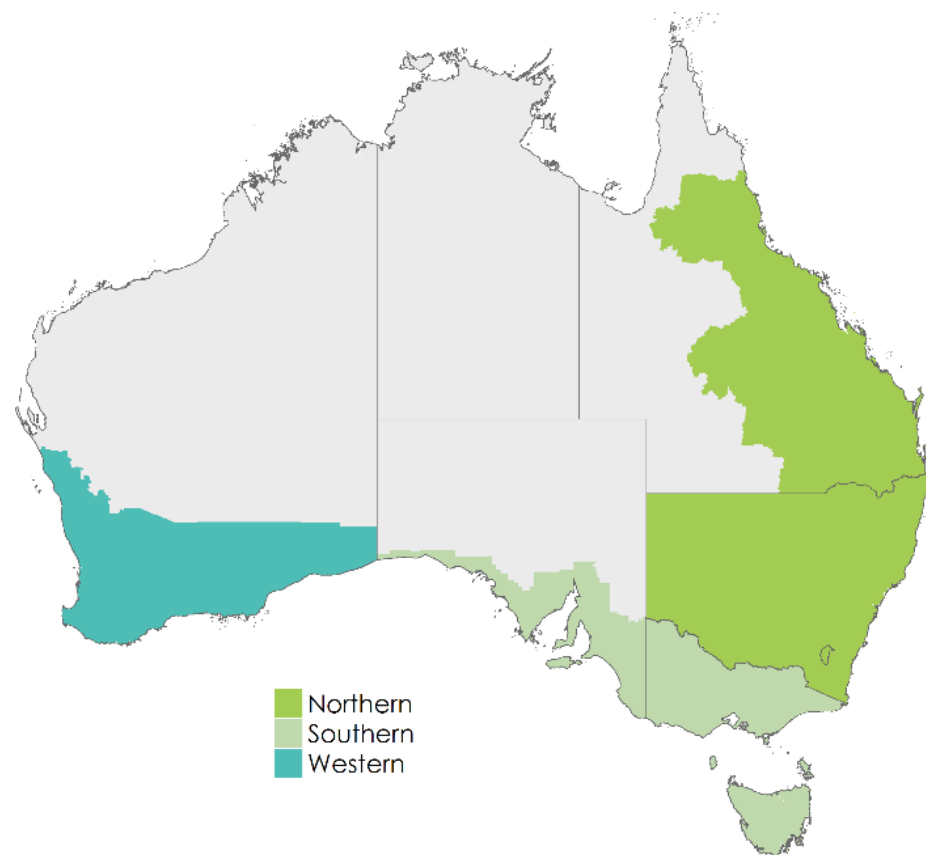


Primarily used for fertiliser (primary production)

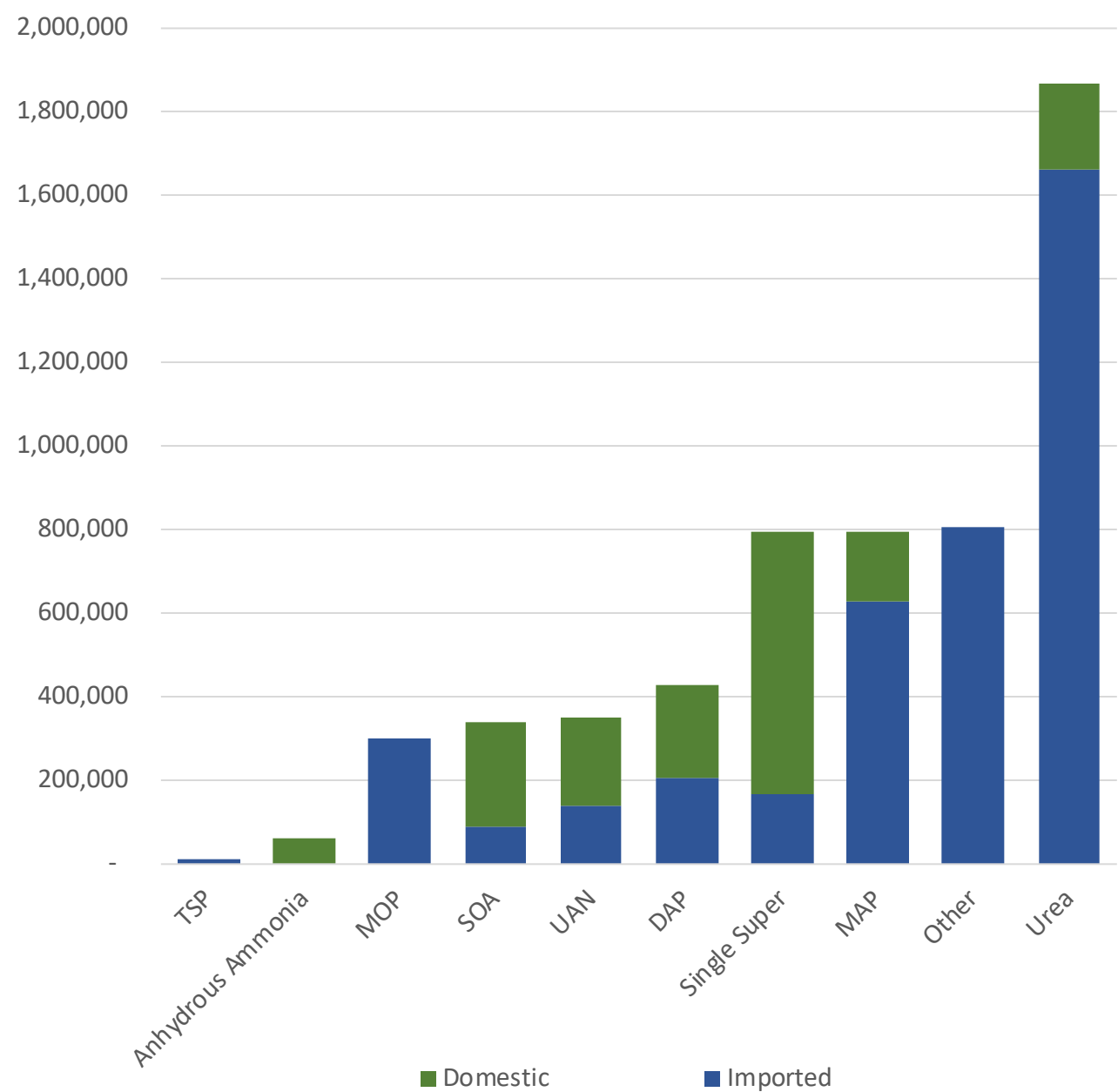
# Urea & Ammonia Market

## Australian Fertilizer Market

- Australia is a considerable importer of fertilizer products, especially urea
- The Middle East remains a major supplier of urea and ammonia globally, however shipping these fertilizers takes ~24 days to reach Australia
- Foreign exchange fluctuations impact the profits of domestic suppliers of fertilizer
- Main countries of origin for urea imported to Australia:
  - Saudi Arabia
  - Bangladesh
  - China
  - Kuwait
  - Malaysia
  - Qatar
  - USA



Australian Fertilizer - Average Annual Sales (t) 2012-2017



Source: Fertilizer Australia & Department of Agriculture and Water Resources;  
Note: Domestic Single Super is manufactured from high-cross phosphate rock that is imported

# Geographic Advantages

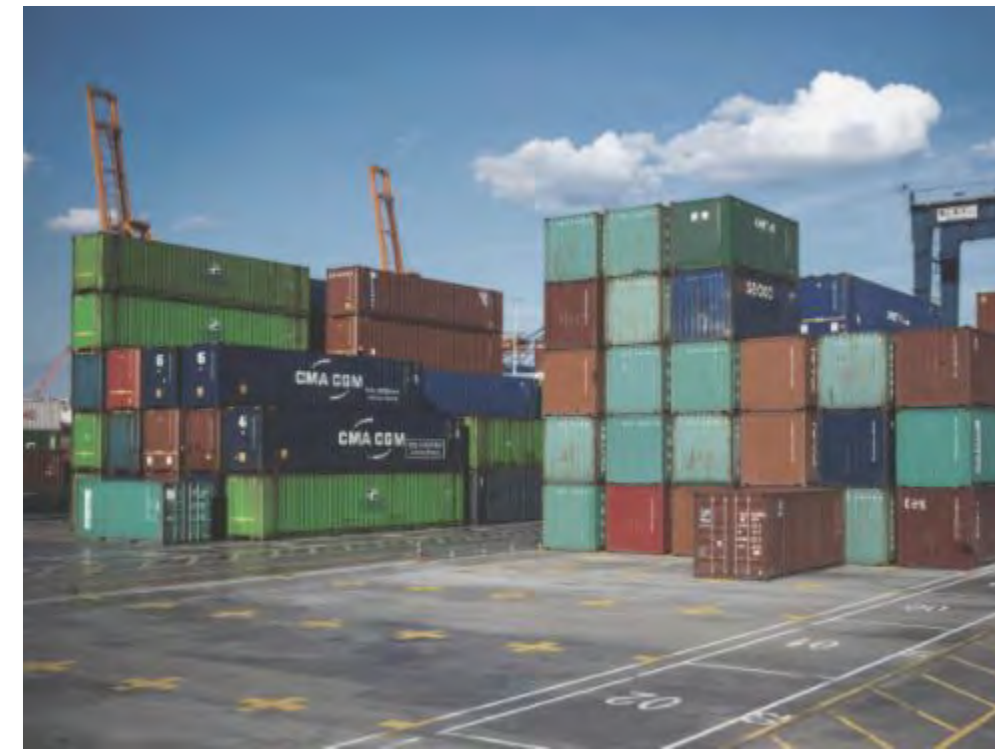
- Urea and Ammonia can be produced on site
- No need for expensive methane feedstock
- LCEP is located near a large agricultural demand centre in South Australia, and can be delivered anywhere domestically by existing rail infrastructure
- LCK feedstock price at significant advantage



# Global Fertiliser Demand Drivers



Historical prices and forecasts are correlated to energy prices.  
2016 world demand estimated 175Mt/a.



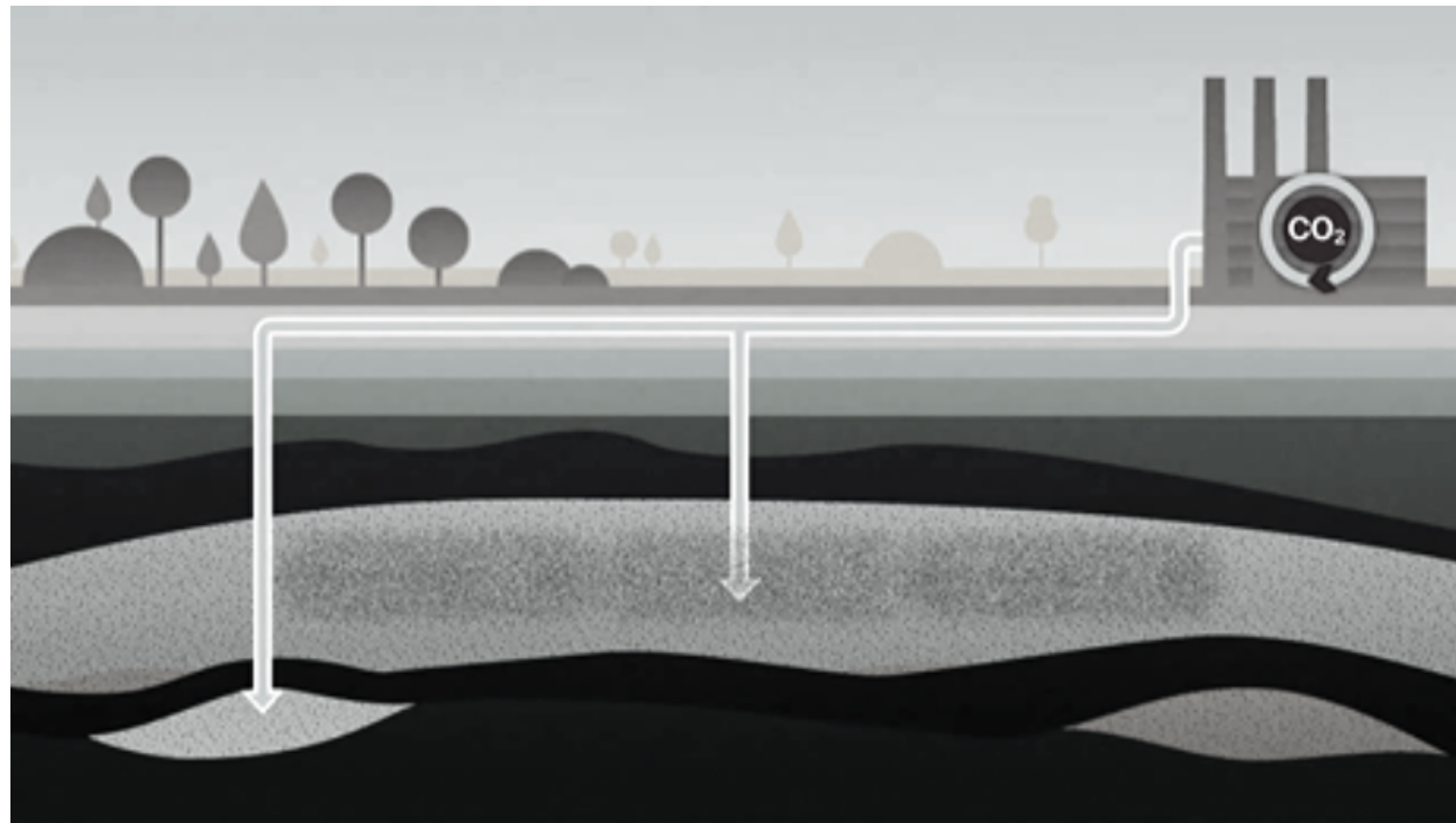
Urea and Ammonia require considerable energy to produce



Australian Urea demand is stable at 2.5Mt/a with ~89%\* being imported

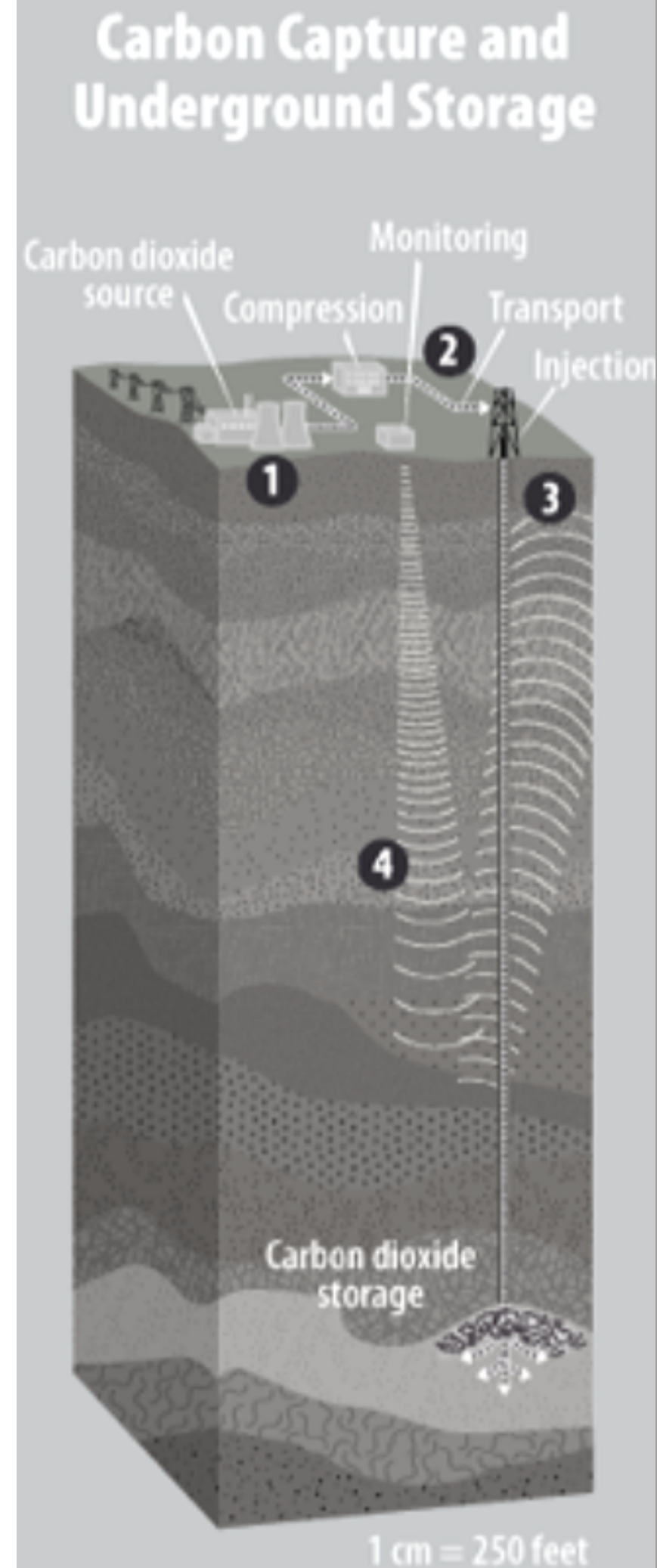
# Carbon Budget

**Excess CO<sub>2</sub> can be sequestered in underground chamber**



**Urea production requires (consumes) CO<sub>2</sub>**

**Ammonia is made by a series of chemical reactions**





**JUSTYN PETERS**

Executive Chairman



**PHIL STAVELEY**

Managing Director



**CRISTIAN BOLDA**

General Manager Operations



**NOEL WHITCHER**

Chief Financial Officer

# The Leigh Creek Energy Team



*The Leigh Creek Energy Team*

# Right Place

# Right Time

# Right Market

**Resource + Approval + Execution = Results**

## Recent de-risking events

- Environmental Approval
- PCD operations
- PRMS upgrade
- PCD Completion and Decommissioning
- Improving market and strong macroeconomic trends



# CONTACT US



## LEIGH CREEK ENERGY

Level 11 - 19 Grenfell Street  
Adelaide SA 5000 - Australia  
Phone +61 (8) 8132 9100  
Facsimile +61 (8) 8231 7574



## EMAIL

[contactus@lcke.com.au](mailto:contactus@lcke.com.au)  
[gassales@lcke.com.au](mailto:gassales@lcke.com.au)



## LINKEDIN

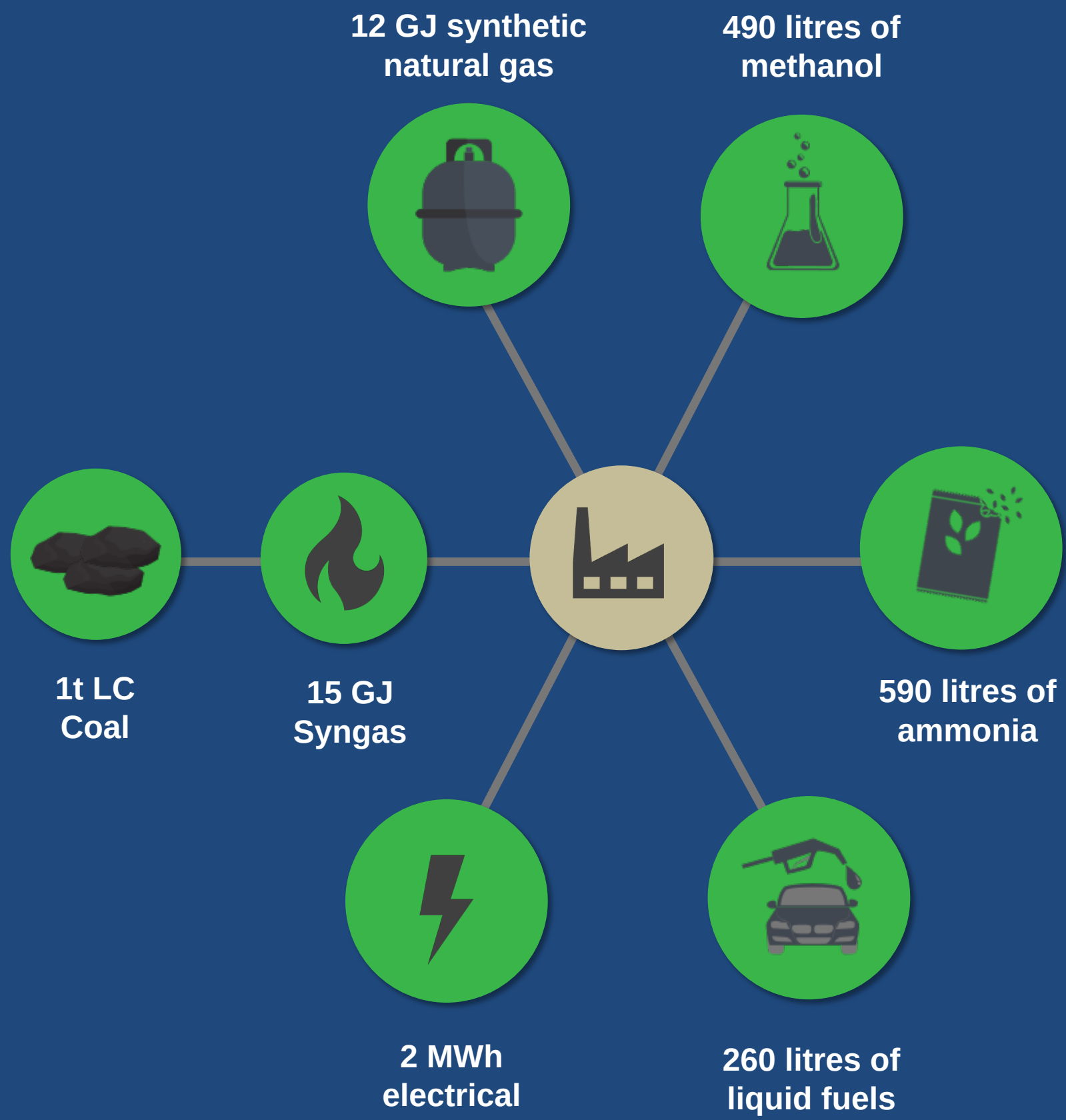
@Leigh Creek Energy Limited



[lcke.com.au](http://lcke.com.au)



# APPENDICES

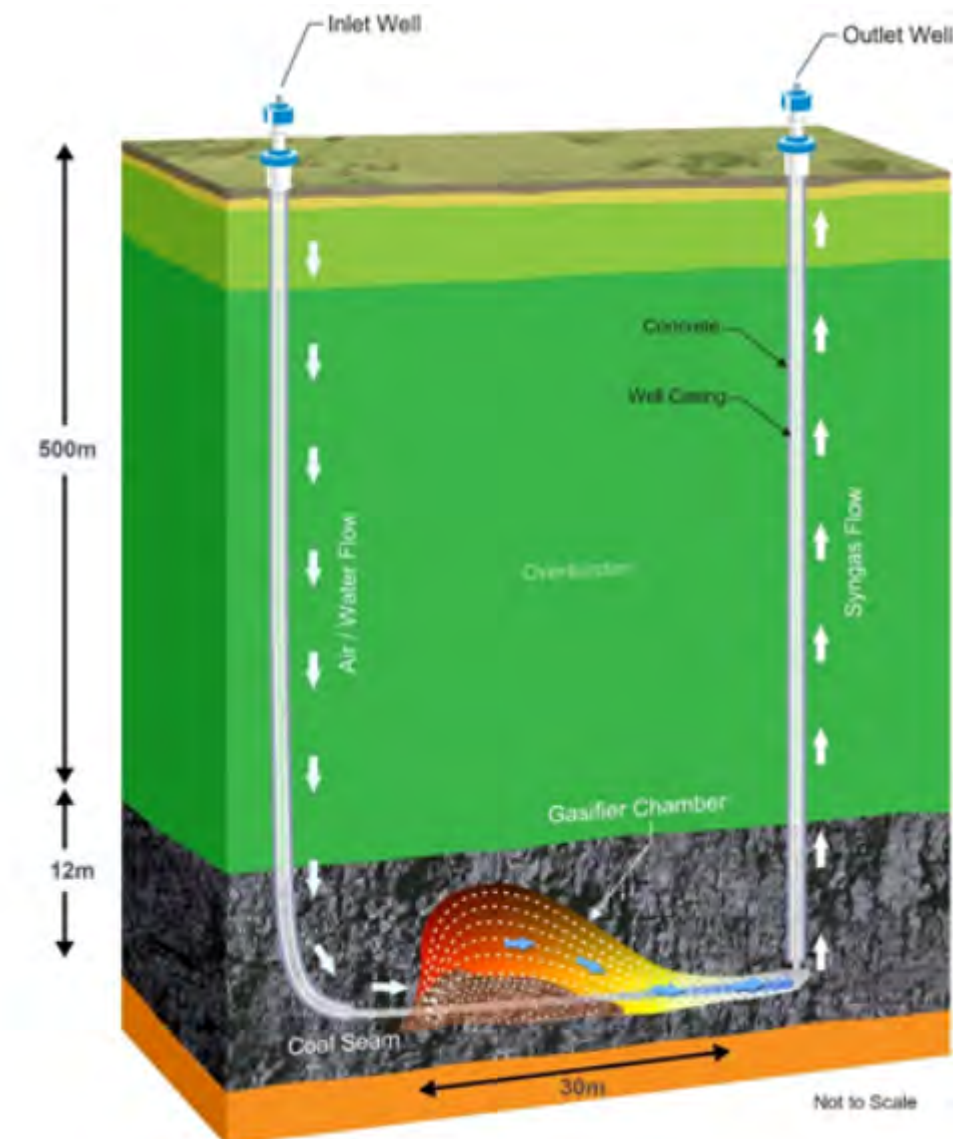


## TECHNOLOGY

- The LCEP utilizes In-Situ Gasification (“ISG”) process on the Leigh Creek Coalfield to develop the deep coal resources that are unable to be accessed through open-pit mining
- The ISG process converts solid-state underground coal to Syngas, which contains hydrogen (high concentrations), methane, and carbon monoxide
- Standard oilfield equipment is used

### Syngas can be processed for conversion into:

- Natural Gas
- Petrochemical products
- Agricultural products



# WORLDWIDE EXPERIENCE OF ISG



## Uzbekistan



Angren, Uzbekistan - 60 years

## South Africa



Eskom, Majuba, South Africa co-firing power station with Syngas since 2010

## North America



40 years of trials/demonstration  
Multiple sites, techniques, outcomes

## Australia



Linc Energy operated for 11 years  
Carbon Energy operated for 5 years

# Leigh Creek Coalfield

## “Best site in the world ...”

- Remote location; heavily impacted by previous mining operations
- Leigh Creek coal ideal for ISC
- Open-cut coal mine supplied Port Augusta power station (250km away) for 60 years until 2016
- Established accommodation and town services in Leigh Creek and Copley
- Infrastructure already in place
- Minimal and manageable land use conflict
- Manageable groundwater resources
- Minimal environmental receptors and impact

Suitable geology creates low-risk of subsidence, fugitive gas, groundwater contamination - no useful water resource or aquifer

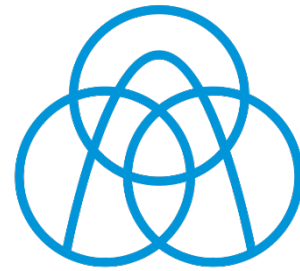


# MAJOR PARTNERS & CONSULTANTS



## CHINA COMMUNICATIONS CONSTRUCTION COMPANY

- Total assets RMB268 million
- Major international infrastructure constructor and operator
- Listed on Hong Kong Stock Exchange
- Over 110,000 employees
- Wholly owns John Holland Australia



thyssenkrupp

## THYSSENKRUPP

- ThyssenKrupp is a leading global engineering conglomerate
- Ticker: TKA GY | AU\$23 billion enterprise value
- 2016/2017 Sales: €51.5B
- Rating: Moody's (Ba2) | S&P (BB)
- 155,000+ employees and present in 80 countries



## SHANGHAI ELECTRIC

- Total assets RMB199 million
- Large scale comprehensive equipment manufacturing group
- Listed on Shanghai and Hong Kong Stock Exchanges
- Produces a wide spectrum of products including: thermal power generators, nuclear power generators, wind power generators, heavy-duty machinery, power transmission and distribution equipment



## SHANXI MEIJIN ENERGY

- China based
- Principally engaged in the production and sales of Coke and related by-products
- The Company mainly provides coke products to large iron and steel enterprises in North China, East China and Central China.

# Ammonia and Urea

**2016 - 2017 was the bottom of cycle in terms of pricing**



Population growth is expected to increase



China production is decreasing its capacity due to environmental controls and feedstock costs



Demand in India is increasing due to population growth and increased standard of living expectations