

ASX ANNOUNCEMENT (ASX:LCK)

Friday, 12 November 2021



## Investor Presentation

Leigh Creek Energy Ltd (LCK) today advises that it has released the attached investor presentation.

The Leigh Creek Urea Project (LCUP) is a low-cost nitrogen-based fertiliser for local and export agriculture markets. The LCUP will:

- Be the only fully integrated urea production facility in Australia – this allows LCK to control the price of all feedstock and energy inputs (syngas and power) into the urea manufacturing process
- Be carbon neutral from 2022
- Produce an initial 1Mtpa of fertiliser for the domestic Australian market, and for export
- Provide long term economic development and employment opportunities for the communities of the Upper Spencer Gulf region, northern Flinders Ranges and South Australia
- Strengthen supply chains for Australian farmers by reducing risk of imported urea due to supply constraints, exchange rates, commodity prices, etc
- Have on site access to extensive gas resources as well as substantial existing infrastructure

In regards to the economic credentials of the LCUP, the following are pertinent:

- Average nominal operating cost for urea are forecast to be A\$109 per tonne which is within the lowest cost quartile of the global urea production cost curve.
- Pre-tax leveraged Net Present Value (NPV) is A\$3.4 billion, with an Internal Rate of Return (IRR) of 30%.

The Board of Leigh Creek Energy Limited has authorised this announcement to be given to the ASX.

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## About the Leigh Creek Urea Project

The Leigh Creek Urea Project (LCUP) is Leigh Creek Energy's (ASX:LCK) flagship project, developing low-cost nitrogen-based fertiliser for local and export agriculture markets. Located in South Australia, 550 kilometres north of Adelaide, the LCUP will initially produce 1Mtpa (with potential to increase to 2Mtpa) of urea.

LCK has a comprehensive environment, social and governance strategy. It has produced syngas within all approved environmental parameters set by the regulator and will be **carbon neutral from 2022**.

The AUD 2.3 billion LCUP will be one of the biggest infrastructure projects of its type in Australia, providing long term economic development and employment opportunities for the communities of the Upper Spencer Gulf region, northern Flinders Ranges and South Australia.

The LCUP will be the only fully integrated urea production facility in Australia, with all inputs for low carbon urea production on-site. Average nominal operating cost are forecast to be A\$109 per tonne which is within the lowest cost quartile of the global urea production cost curve. Pre-tax leveraged Net Present Value (NPV) is A\$3.4 billion, with an Internal Rate of Return (IRR) of 30%.

The LCUP will be developed in 2 commercial stages:

Stage 1 consists of:

1. Construction of gasification wells to provide energy (syngas) for the project; and
2. 5 MW gas fired power generation.

Stage 2 consists of:

1. Expansion of gasification fields;
2. 100MW gas fired power generation;
3. Ammonia facility;
4. Urea facility; and
5. Logistics, loading and transport.



# Leigh Creek Energy

*A Culture of Carbon Consciousness*



Investor Presentation  
NOVEMBER 2021

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# Important Notice

## 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 and physical risks, legislative, fiscal and regulatory developments, local, regional and international political, regulatory, economic and 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 operating structure and activities, the effect of a decline in any ratings or recommendations for losses due to defaults by counterparties or restructurings, on the value of 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 business activities and results of operations, reliance on our standing among customers, broker-dealers, shareholders, agents, wholesalers and/or other distributors of our products and/or services, changes to brand / reputation, changes in government regulations or tax laws in jurisdictions where we conduct business, the inability to protect 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 and cost estimates amongst other items and 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 communication 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 and 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 were initially reported to the ASX on 27 March 2019. LCK is not aware of any new information or data that materially affects this information and all the material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed.

### Mineral Resource Compliance Statement

The JORC resource estimates stated herein were initially reported to the ASX on 8 December 2015 and were updated on 27 March 2019. LCK is not aware of any new information or data that materially affects this information and all the material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed.

# Cautionary Statement

The Preliminary Feasibility Study (“PFS”) referred to in this announcement has been undertaken to assess the alternative commercialisation pathways for the produced syngas and recommending a path forward. It is a preliminary technical and economic study of the potential viability of the Leigh Creek Urea Project (“LCUP”). Operating and capital costs are based on a Class 5 scoping study prepared by thyssenkrupp in 2018. A Class 5 study allows for an expected accuracy variation range of Low -20 to -50 and High +30 to +100% . Further evaluation work and appropriate studies are required before LCK will be in a position to provide any assurance of an economic development case. The PFS is based on the material assumptions outlined below. These include assumptions about the availability of funding. While LCK considers all of the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the PFS will be achieved. To achieve the range of outcomes indicated in the PFS, total funding of in the order of \$2.6 billion will likely be required. Investors should note that there is no certainty that LCK will be able to raise that amount of funding when needed. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of LCK’s existing shares. It is also possible that LCK could pursue other ‘value realisation’ strategies such as a sale, partial sale or joint venture of the project. If it does, this could materially reduce LCK’s proportionate ownership of the project. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the PFS.

## Material Financial Model Assumptions

Dollar figures are in AUD unless otherwise stated

Debt Raised	50% of capital costs to be debt funded
Loan Repayments	Rolling 7 year facility extending over the project life
Interest expense	Borrowing rate 6%
Income Tax Payable	Financials included in this report are before income tax
Urea pricing	Available CRU forecast to 2030, escalated thereafter
Royalties	Average 9% of gas revenue, comprising SA Government (subject to negotiation) and overriding royalties
Urea plant operating costs	Per thyssenkrupp 2018 scoping study, ex-plant only
Gasifier operating costs	Management assumed gasifier operating costs based on demonstration plant experience
Gasifier replacement	Management assumed gasifier replacement costs based on demonstration plant experience
Capital costs	Per thyssenkrupp 2018 scoping study



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SECTION 1

COMPANY OVERVIEW

# Company Highlights

1

## Commitment to Sustainability

The world's only fully integrated, **carbon neutral** fertiliser project

2

## Significant Infrastructure

Site has access to existing infrastructure for transport to domestic and export markets

3

## Quality Project Partners

Daelim appointed as the EPCC contractor and is a world class development partner - reduces technical and construction risk

4

## Project Funding

70% project funding (Stage 2) secured\* from major South Korean Bank

5

## Disruptive Business Model

Project supported by low gas prices from a reliable supply of syngas from 100% owned 2P reserves

6

## Permits Secured

Upstream permits secured for production to commence Q1 2025

7

## Offtake Optionality

- Optionality to deliver low cost products (urea, ammonia or hydrogen)
- Offtake discussions progressing in a deliberate and structured manner

8

## Strong Project Economics

- NPV A\$3.4 billion
- IRR 30%
- Capex A\$2.3 billion



# Experienced Board & Management



**Justyn Peters**  
Executive  
Chairman

- Over a decade of experience with investing entities based offshore, and in particular in China, investing directly into Australian mining, energy and infrastructure projects
- Qualified Lawyer and has many years' experience in the ISG industry and in senior management positions
- Experience includes working in the mining industry, for industry representative bodies and for various state and federal environment departments and authorities.



**Zheng Xiaojiang**  
Non-Executive  
Director

- Senior finance executive and brings wide experience in the finance sector in both Australia and China
- Experience includes having been a senior official for The People's Bank of China in Australia and New Zealand
- Responsible for facilitating the investment in LCK by China New Energy, LCK's largest shareholder.



**Zhe Wang**  
Non-Executive  
Director

- Over 8 years executive management experience
- Chinese based Energy and Thermal Physics Engineer, who was appointed to the Board as a nominee of China New Energy Group
- Key areas of expertise include; Coal Combustion; Renewable Energy Applications and Steel Sinter



**Murray Chatfield**  
Independent Non-  
Executive Director

- Brings a wide area of expertise covering the financial sector, entrepreneurial, commodity, technology and service facing sectors
- Diverse skill set covering finance, treasury, accounting, operational efficiency, risk management (business, market, tax and regulatory), legal and regulatory compliance and direct financial market interaction



**Phil Staveley**  
Managing Director

- Qualified Accountant who has 30 years' experience working in the resources sector.
- Started his career in the oil and gas sector working for Schlumberger in London, followed by a number of years with SAGASCO and SAOG (South Australian Oil and Gas Company)
- Spent almost ten years with Normandy Mining, fulfilling a number of planning, finance, M&A and commercial roles



**Noreen Byrne**  
Executive General  
Manager People and  
Sustainability

- Over 20 years' experience across several industries including mining, defence, health, media and IT
- Worked across established organisations and ventures advising them through the stages of creation, growth, and stabilisation
- Her breadth of experience across diverse industry groups has provided an exceptional platform to link people and sustainability strategies to business success.



**Cristian Bolda**  
Executive General  
Manager Operations

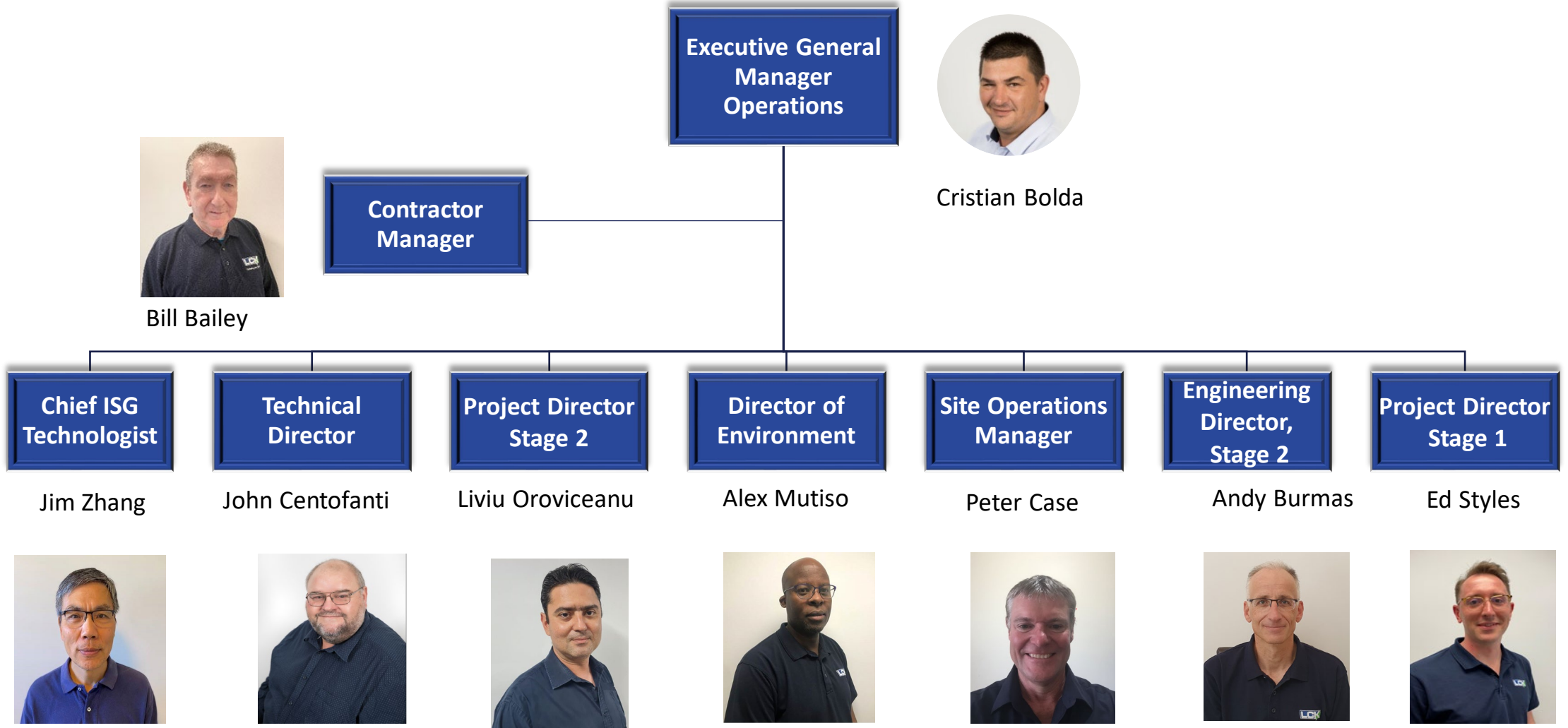
- 20+ years' experience in the resources, energy and power sectors
- Successfully led business lines and cross-functional teams across multiple geographic locations both in Australia and internationally
- During his career worked with Chevron, Origin/ConocoPhillips, Petrofac/ZADCO(Exxon/ADNOC), OMV/Petrom, Rompetrol/KazMunayGas, Ramboll



**Michael Waite**  
Financial Advisor

- Qualified accountant; 20+ years experience
- Global corporate executive in North America (institutional investment to the Family Office of William H Gates)
- Former professional Tennis Player

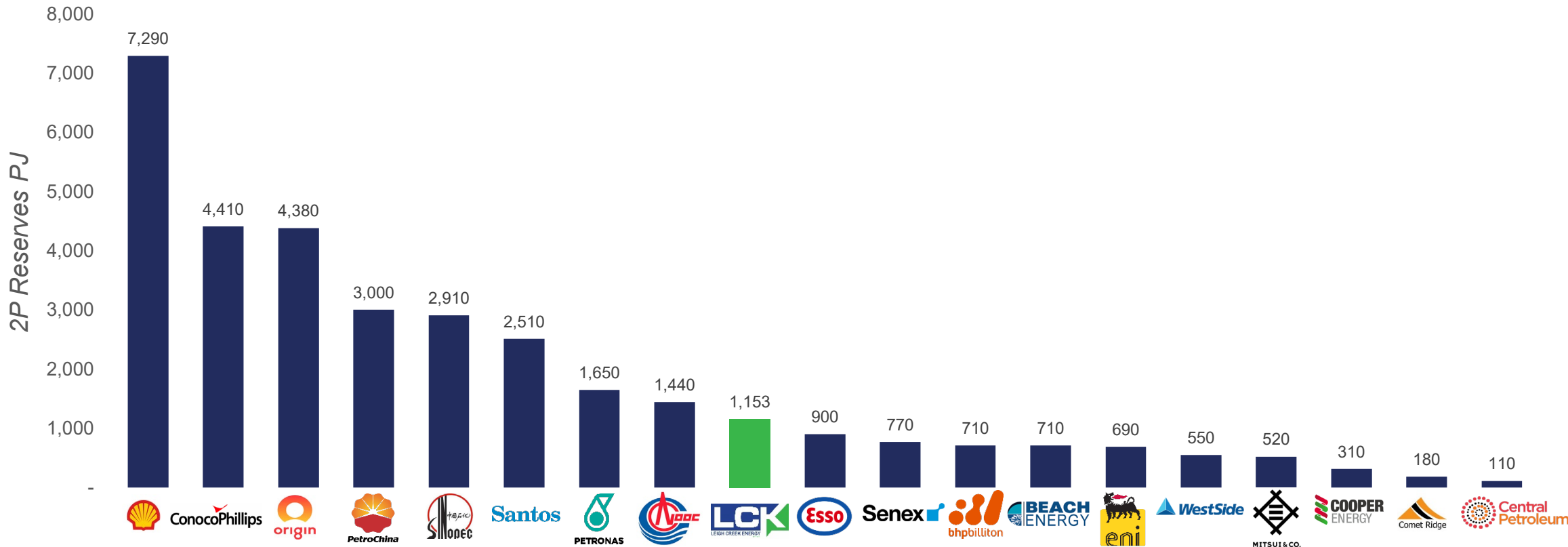
# Operations Senior Management Structure



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# Australian East Coast Reserve Comparables

Australia East Coast Gas 2P Reserves



**Sources:**

<https://www.aer.gov.au/>  
<https://www.aemo.com.au/>  
<https://www.accc.gov.au/regulated-infrastructure/energy/gas-inquiry-2017-2025>








**Sources (cont'd):**

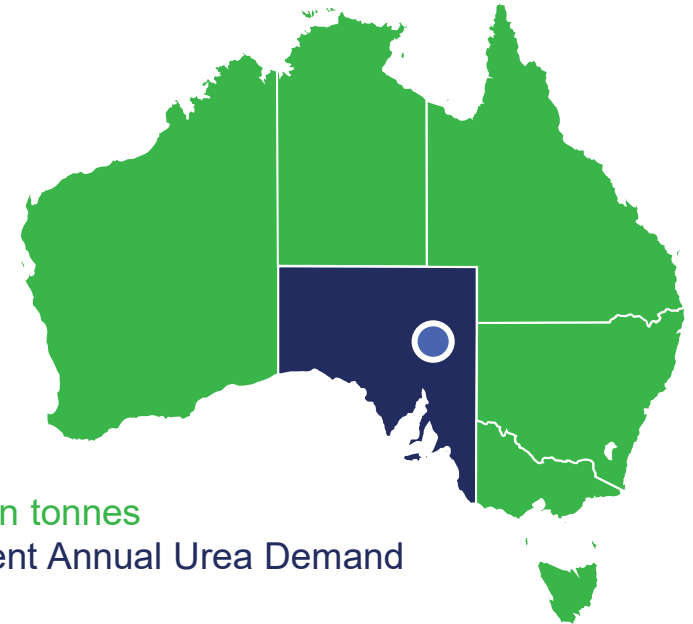
<http://www.ga.gov.au/scientific-topics/energy/resources/petroleum-resources>

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# Leigh Creek Energy (ASX:LCK)

## Carbon Neutral from 2022 and embedded ESG credentials

	ASX listed company focussed on developing its Leigh Creek Urea Project (LCUP), located 500km north of Adelaide, SA
	LCUP is targeting the production of syngas by in-situ gasification of coal, which it will then convert to urea and sell as fertiliser
	The LCUP will initially produce 1Mtpa of urea from a dedicated facility at a cash cost of \$109/t, using syngas sourced from its wholly owned resources
	The LCUP is expected to be the only fully-integrated urea production facility in Australia, with all inputs located on-site
	Existing dedicated infrastructure allowing easy and cheap distribution of urea to domestic and international markets
	Australian produced urea will avoid the risks and costs associated with transport, commodity prices, import logistics and exchange rates
	Urea operations are vertically integrated as gas and electricity will be produced on site. Eliminates commodity and supply risks associated with buying gas and power



**2** Million tonnes  
Current Annual Urea Demand

**95%**  
of domestic urea demand  
is imported<sup>1</sup>

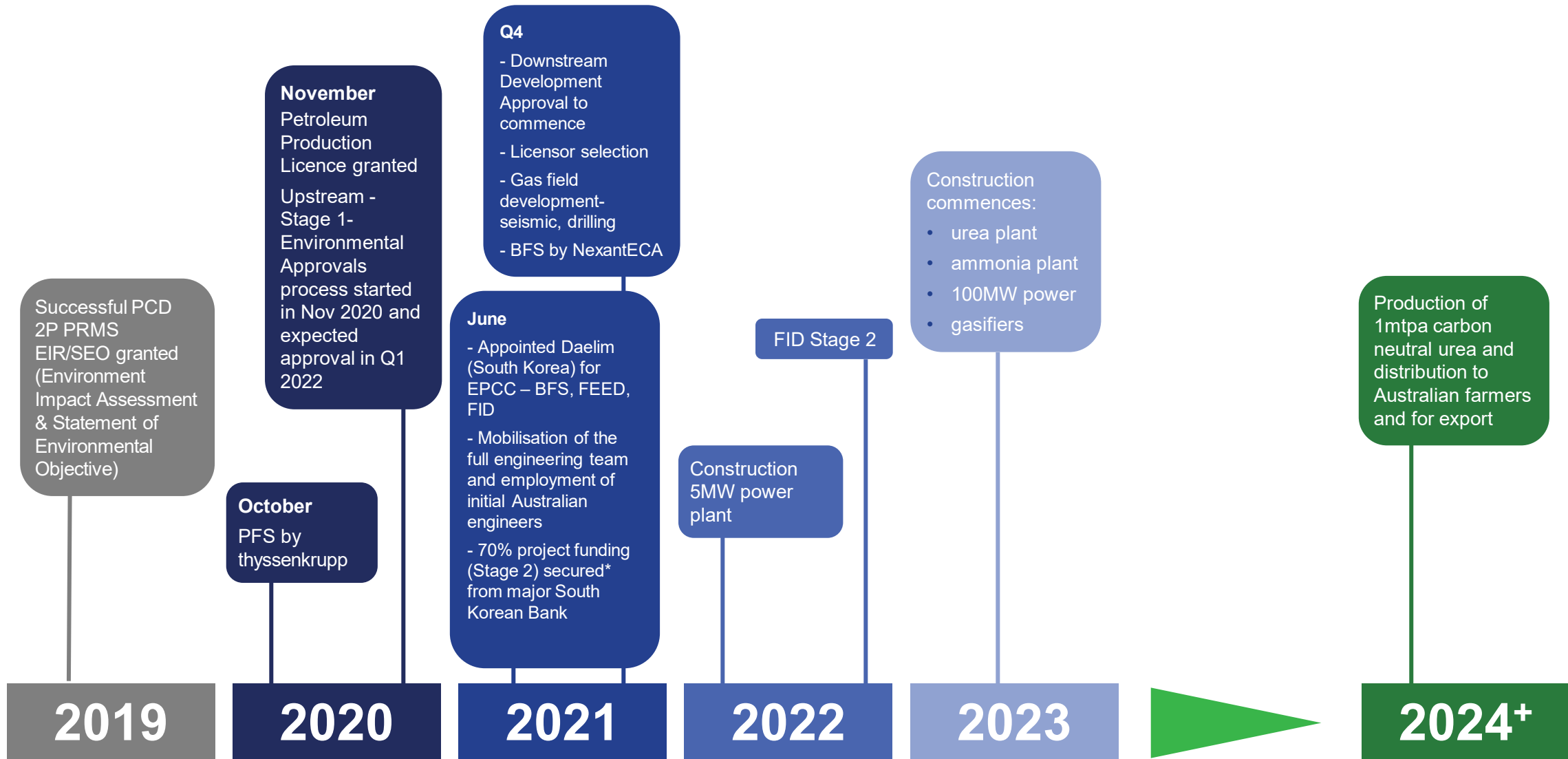
### Benefits

- ✓ Carbon Neutral
- ✓ Domestic production
- ✓ Competitive price
- ✓ Australian jobs

<sup>1</sup>. Source: Fertiliser Australia <https://www.fertilizer.org.au/Fertilizer-Industry/Australian-Fertilizer-Market>

# Project History & Status

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\* Subject to FID



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SECTION 2

INDUSTRY OVERVIEW

# The Urea Opportunity for LCK



The world's population is expected to increase by 2 billion people in the next 30 years, from 7.7 billion to 9.7 billion



With a growing population and increasing wealth comes an increase in demand for agricultural produce



Farmers are needing to produce more, using less land and less water



Commercial fertilisers increase yields by 30 to 50% in crops such as wheat, barley and rice



Urea is one of the most popular fertilisers as it has a high nitrogen content, is easy to transport and apply and is quickly absorbed by plants



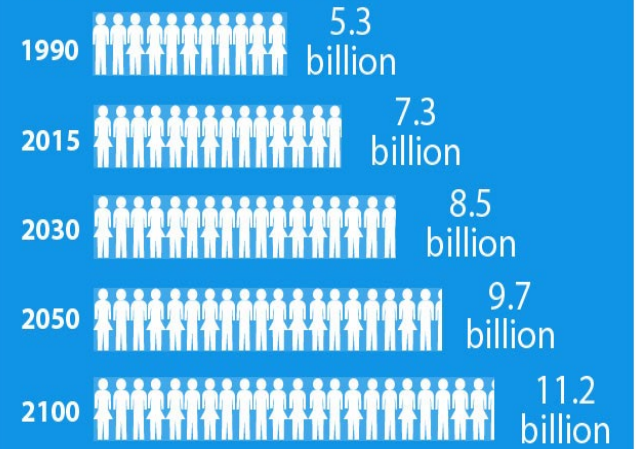
In Australia 20,000 farmers apply urea to more than 11 million hectares of land annually



Urea fertiliser sales in Australia are ~2Mtpa, representing less than 1% of global sales, 95% of Australia's urea is imported

## World Population

Projected world population until 2100



Source: United Nations Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2015 Revision*  
Produced by: United Nations Department of Public Information



# Urea Market

Target markets for LCUP urea are domestic users, plus international fertiliser traders and distributors

LCUP urea will be globally competitive because:



It's cheaper, faster and less risky for distributors to buy LCK urea for sale to Australian farmers than to ship it from the Middle East or Asia



Ports accessible from Leigh Creek are central to the main Australian urea markets

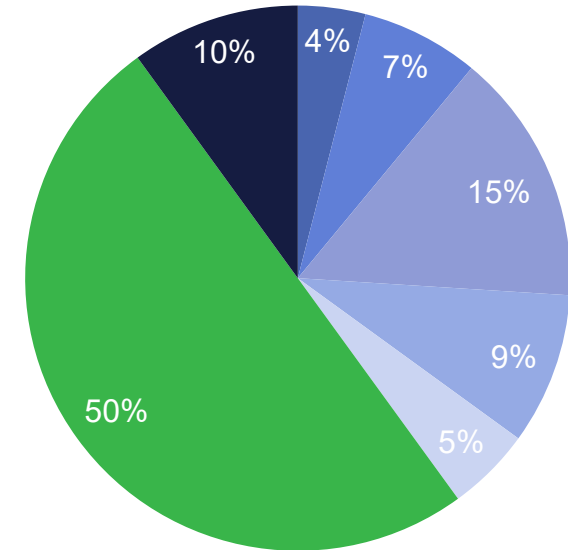


LCUP operating costs will be very competitive as it can produce syngas on site for as little as \$1 per gigajoule – converts through to production cost of \$109/tonne. LCUP will produce 1Mtpa with 0.5Mtpa allocated to Australia and 0.5Mtpa exported overseas.



Australian season and the spring-summer Asian market. LCUP plans to export a proportion of its urea to take advantage of both the autumn-winter

Urea represents half of all nitrogen fertiliser products



■ Ammonia ■ DAP/MAP ■ NPK  
■ AN/CAN ■ UAN ■ Urea

1. Urea Granular Bulk FOB Middle East (all netbacks) Spot USD/t per CRU
2. Brent oil spot price per the US Energy Information Administration

**Strong market dynamics**



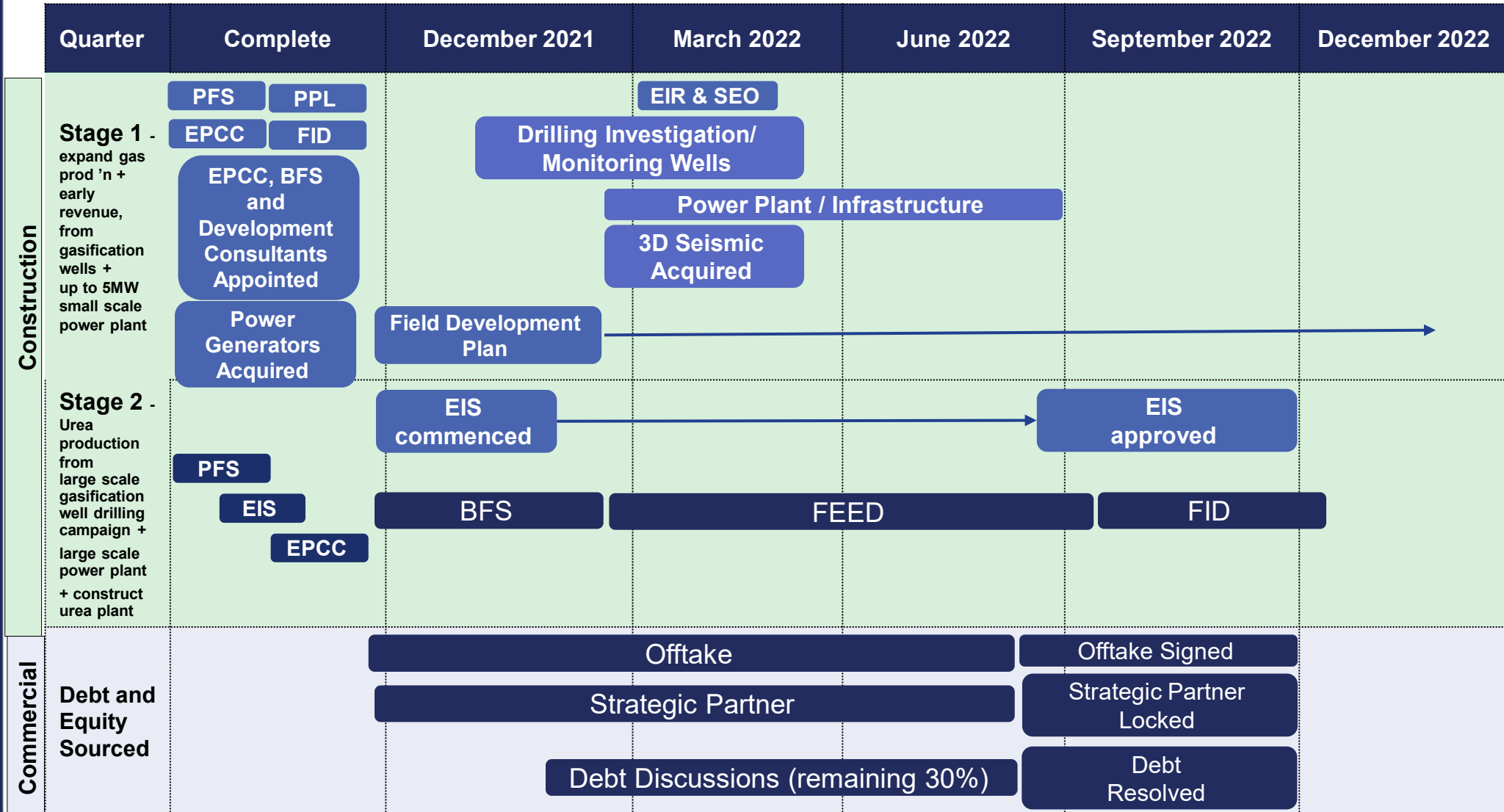


SECTION 3

DEVELOPMENT PATHWAY

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# Pre-Construction Activity



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Commercial activity commenced

# Advancing Key Workstreams



Regulatory



Petroleum licencing approval for upstream development obtained



Technology



Technical capability proven with successful operation of the pre commercial demonstration plant and faultless post operation environmental monitoring. Engineering, Procurement, Construction and Commissioning (EPCC) to be managed by Korean based DL E&C, an experienced partner



Financing



Combination of debt, equity and strategic partner injection is expected. Discussions with proposed strategic partners have commenced  
AUD 1.5Bn (70%) downstream project funding (Stage 2) secured\* from major South Korean Bank



Construction



Small scale, up to 5MW, power plant to be acquired and installed to enable commissioning of future gasifiers. Large power plant and urea plant construction to be managed, per EPCC, under turnkey, fixed price contract with Daelim (Global Partner)



Market



Strong and sustainable demand for urea – domestic and international  
Offtake discussions progressing in a deliberate and structured manner



Execution



LCK key project personnel and Daelim – strong track record in delivering large infrastructure projects. Strong risk based approach gives comfort on delivery

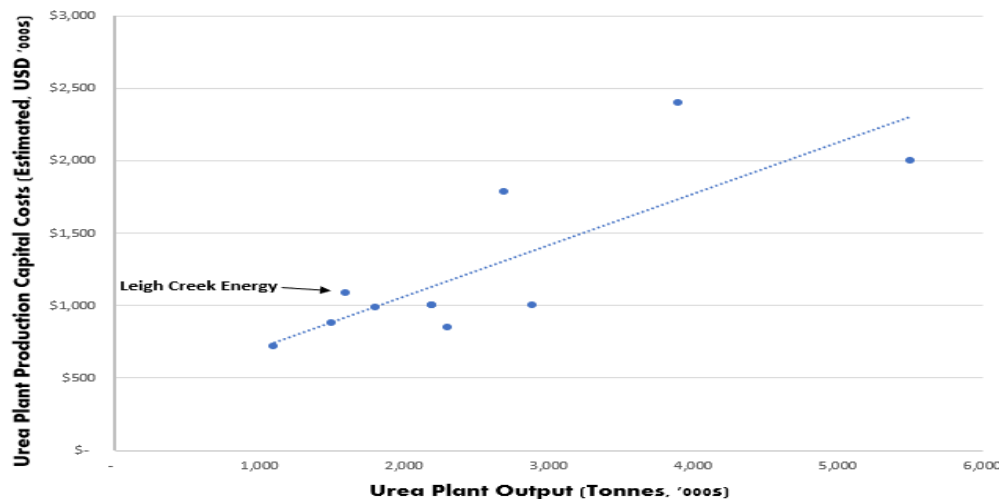
\* Subject to FID and to be agreed commercial terms

# Project Economics

## PFS released in November 2020 highlighted robust economics for urea

1. Initial annual urea plant capacity of 1.0 million tonnes per annum
2. Initial capital cost \$2.3 billion
3. Commercial life of over 30 years
4. Nominal operating cost of A\$109 per tonne of urea compared with the spot price of A\$489<sup>1</sup> per tonne (May 2021)
5. Pre-tax leveraged Net Present Value (NPV) \$3.4 billion
6. Internal Rate of Return (IRR) 30%

Urea Plant Capital Costs versus Urea Production Output Comparison Chart



## Project Value Metrics

Discount Rate	%	9%
Leveraged Pre-Tax NPV	\$m	3,431
Leveraged Pre Tax IRR		30%
Leveraged Pre Tax Payback Period	Years	4

## Project Metrics

Syngas produced per year	PJ	35
Cost of syngas	GJ	1.0
Urea produced per year	Mt	1.0
Discount Rate	%	9%
Net Revenue/tonne <sup>2</sup>	\$/tonne	410
Pre-Tax Opex/tonne <sup>3, 4</sup>	\$/tonne	109
Sustaining Capex	\$m	347
Construction Capex	\$m	2,285

1. Source: CRU MEGU FOB
2. CRU 2024 forecast pricing.
3. Operating costs represent cost of production to the factory gate.
4. Average life of project, nominal figures.

(1) Updated October 2021; data sources are from years 2013 to 2021.

(2) Eleven locations in eight countries analysed, capital construction amounts converted into USD for comparison.

(3) Information sourced from publicly available reports, direct information requests and, where applicable, estimates to enable approximate relative comparison.

(4) Not all sites analyzed were intended to produce Urea & Ammonia, estimates were used to enable comparison.



SECTION 4

ESG

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# Our Commitment to Sustainability



LCK's ESG processes were established in 2018 and these have continued to evolve as we grow



## Environmental

- Commitment to be Carbon Neutral from 2022
- Carbon capture and underground storage plan
- Zero emissions (water and chemical)
- Macro and micro Going Green initiatives



## Social

- Continue outstanding safety record
- Maintain positive, enduring stakeholder relationships
- Community education and sponsorship programmes
- Staff mental health initiatives
- Develop ethical supply chains

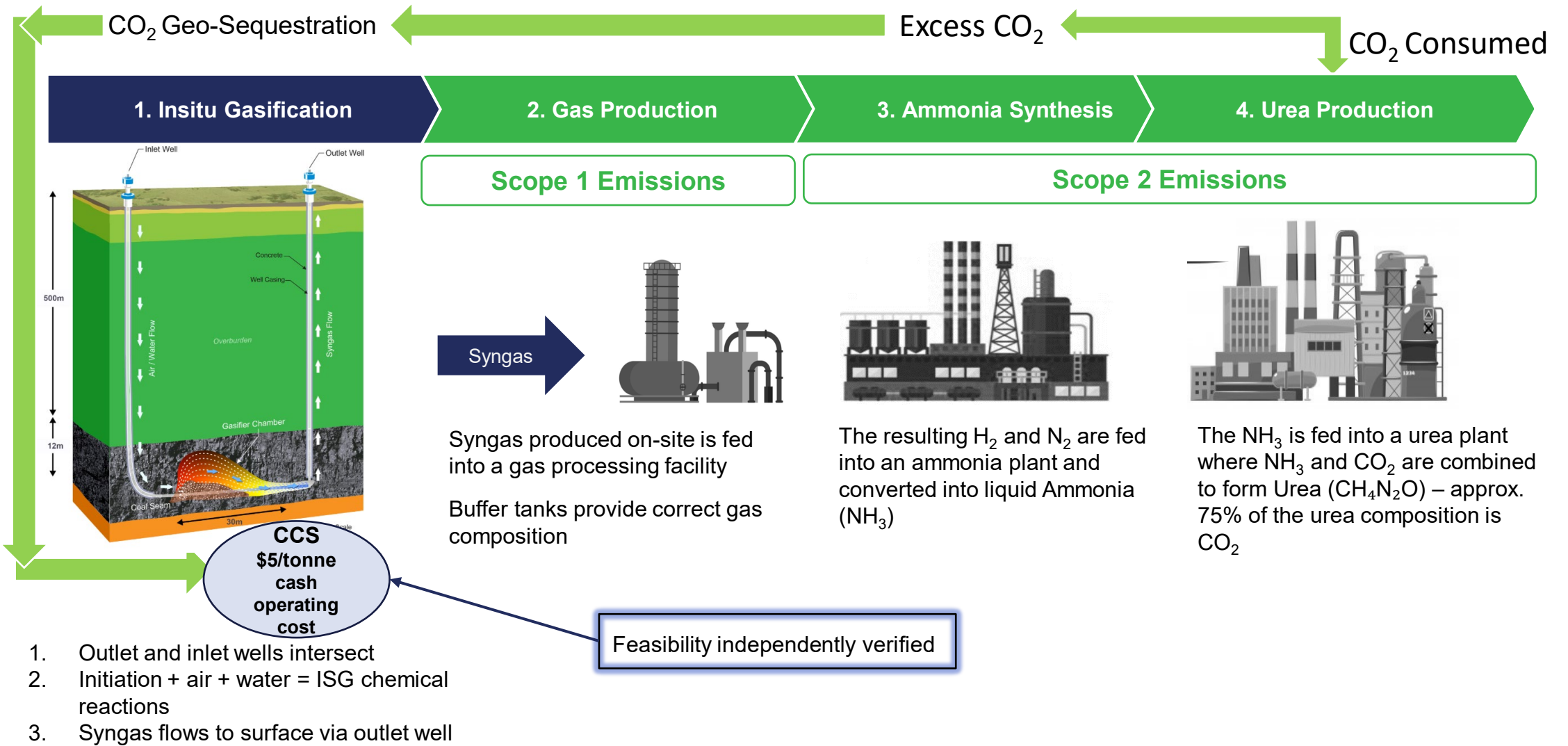


## Governance

- Commitment to task force for climate related financial disclosures (TCFD)
- Abide by United Nations Global Compact standards
- Adhere to strategic framework
- Continue strict regulatory compliance
- Develop sustainability reporting

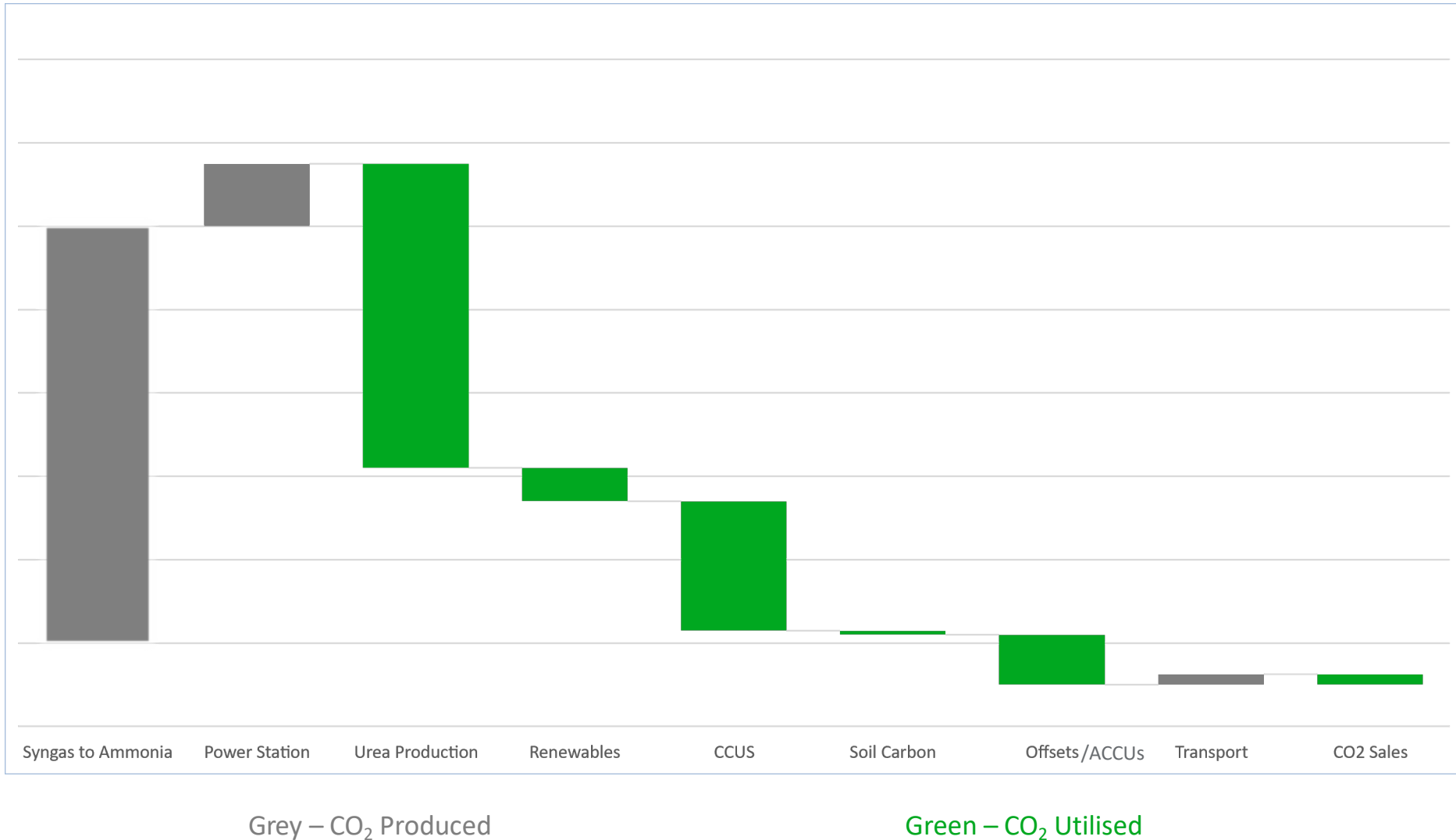
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# LCUP CCS “by design” - Urea Manufacturing Process



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# Carbon Generation and Mitigation



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SECTION 5

CONCLUSION

# Conclusion



LCUP will help Australia become self-sufficient in urea providing local farmers with quality, cost competitive fertiliser



LCK committed to be Carbon Neutral from 2022



Manageable technical risk, large resource base and globally low cost of production  
World class partner in Daelim



LCUP has strong project economics with an NPV of \$3.4 billion and an IRR of 30%  
AUD 1.5Bn (70%) project funding (Stage 2) secured\* from major South Korean Bank



Strong structural demand for fertiliser provides positive tailwinds for the project



\* Subject to FID and to be agreed commercial terms

# The Need for Urea

## The Need for Urea

FOOD



The world's population is expected to increase by 2 billion people in the next 30 years, from 8 billion to 10 billion



Commercial fertilisers increase yields by 30 to 50% in crops such as wheat, barley and rice



**Feeding these people needs fertiliser**

However...

CARBON



All urea is made from gas feedstock



**Traditional urea production is heavily carbon intensive**

## LCK's solution



Producing 1Mtpa of urea



**LCUP is Carbon Neutral – by design**