



**carbonenergy**

Carbon Energy Limited | ABN 56 057 552 137

## **ASX / Media Announcement**

May 14, 2013

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Carbon Energy (Operations) Pty Ltd  
ABN 61 105 176 967

## **Carbon Energy ASX Small to Mid Caps Asia 2013 Presentation**

Carbon Energy (ASX:CNX, OTCQX:CNXAY) is pleased to provide a copy of the presentation which will be presented at the ASX Small to Mid Caps Asia 2013 Conference in Hong Kong on 14 May 2013 and Singapore on 16 May 2013.

### **ENDS**

For and on behalf of the Board

Morné Engelbrecht  
Acting Chief Executive Officer

**For more information please contact Andrew Crook on +61 419 788 431  
or refer to our website at [www.carbonenergy.com.au](http://www.carbonenergy.com.au)**

## **About Carbon Energy**

Carbon Energy specialises in underground coal gasification (UCG). Our proprietary keyseam® technology is the key to unlocking new energy sources, transforming stranded, deep or otherwise uneconomic coal resources into high-value fuels with lower carbon emissions.

Carbon Energy delivers end-to-end UCG services from initial project assessment through to commercial project development, operations, site decommissioning and rehabilitation.

Carbon Energy achieved Proof of Concept of its keyseam technology following 10 years of research by Australia's premier scientific research agency, the Commonwealth Scientific and Industrial Research organisation (CSIRO), 5 years of in-field trials and over \$100 million investment in technology development.

By successfully proving our keyseam technology, we have earned a reputation for delivering consistent, high quality product gas which can be used for many purposes including power generation, fertilisers and production of pipeline quality gas. keyseam maximises resource efficiency, whilst minimising surface disturbance and preserving groundwater quality.

Carbon Energy also has previously announced the following assets:

- 2.0 Billion tonnes<sup>1</sup> of coal JORC Inferred Resource in southeast Queensland's Surat Basin;
- 743PJ<sup>2</sup> of Certified 2P syngas reserves in southeast Queensland's Surat Basin; and,
- 910 Million tonnes<sup>3</sup> of coal JORC Inferred Resource at its Bridger, Wyoming USA farm-in area.

The Company is headquartered in Brisbane, Australia, listed on the Australian securities Exchange (ASX) as CNX and is quoted on the OTCQX International Exchange as CNXAY in the United States. Carbon Energy has UCG projects in Australia, China, Chile, Turkey and the United States.

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<sup>1</sup> See CNX ASX/Media Announcement 2 April 2013. CNX is not aware of any new information that would materially affect the Resources stated.

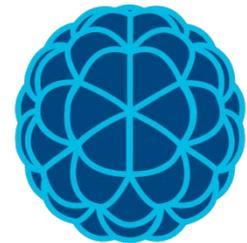
<sup>2</sup> See CNX ASX/Media Announcement 8 December 2009. CNX is not aware of any new information that would materially affect the Reserves stated.

<sup>3</sup> See ASX/Media Announcement 23 January 2013. CNX is not aware of any new information that would materially affect the Resources stated.

# CARBON ENERGY

May 2013

Morné Engelbrecht  
Acting Chief Executive Officer



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# IMPORTANT STATEMENTS

## Disclaimer

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## Competent Persons

The estimates of the Conventional Coal Resources presented in this Report are considered to be a true reflection of the Coal Resources as at 9 September 2012 and have been carried out in accordance with the principles and guidelines of the Australian Code for Reporting of Coal Resources and Coal Reserves published in September 2004 (JORC Code). Where quoted, it should be noted that the Exploration Target tonnages presented herein are considered non-JORC and are conceptual in nature. There has been insufficient exploration to define a Coal Resource and that it is uncertain if further exploration will result in the determination of a Coal Resource. The information in this presentation (where it relates to Conventional Coal Resources) is based on information compiled by Mr Mark Biggs who is an employee of Moultrie Database & Geology and is a member of the Australian Institute of Mining and Metallurgy. Mr Biggs has sufficient experience which is relevant to the style of mineralization and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Biggs consents to the inclusion in the presentation of the matters based on his information in the form and context in which it appears.

The information in the Wyoming JORC Inferred statement that relates to in situ coal resources potential is based on information compiled by GeoConsult Pty Ltd and Adrian Buck and reviewed by Warwick Smyth, who is a member of the Australasian Institute of Mining and Metallurgy (CP) Geology; and the Australian Institute of Geoscientists.

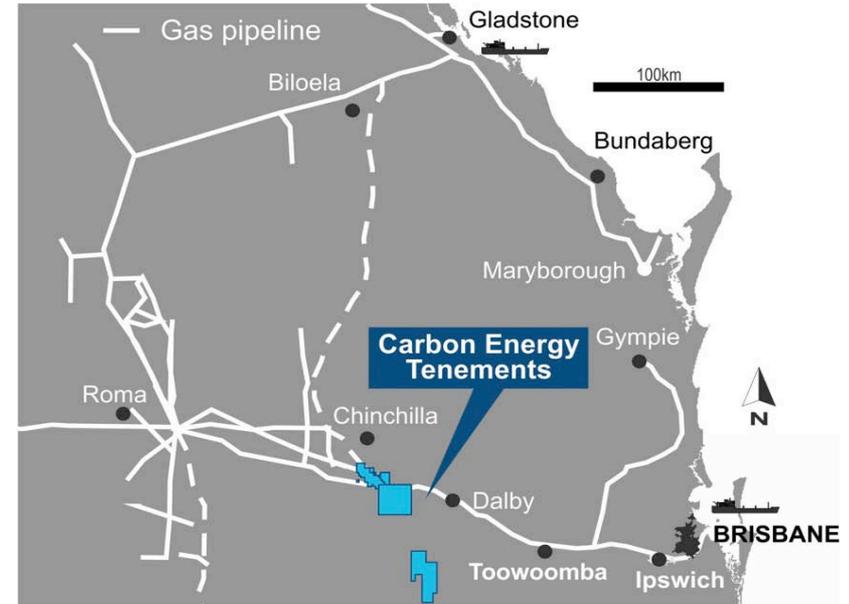
The reserve estimates used in this document (where it relates to the syngas reserves at Bloodwood Creek) were compiled by Mr Timothy Hower of MHA Petroleum Consultants, Colorado, USA, a qualified person under ASX Listing Rule 5.11. Mr Hower has consented to the use of the reserve information contained within this document in the form and context in which it appears.

keyseam<sup>®</sup> is a registered trademark of Carbon Energy.



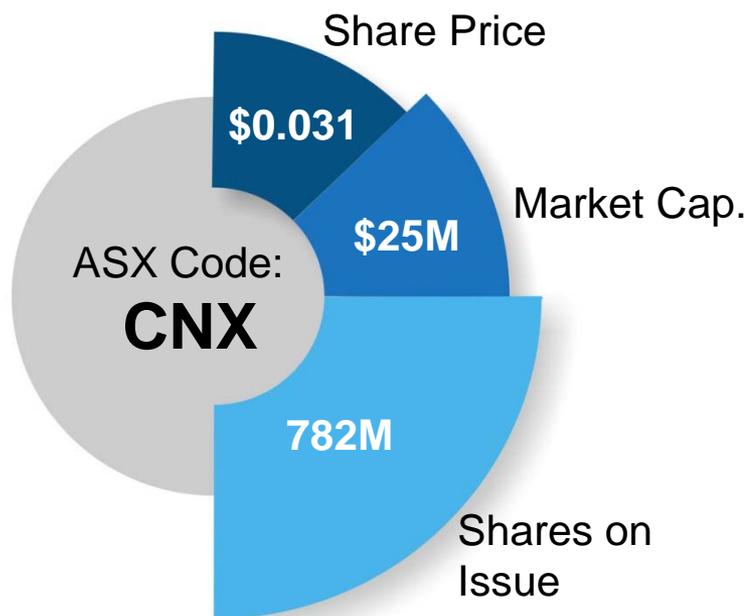
# COMPANY OVERVIEW

- Carbon Energy is **ASX and OTCQX Listed**
- **Underground coal gasification (UCG) technology company**
- Licenses proprietary **keyseam UCG technology** - CSIRO Technology
- Provides **UCG engineering services**
- **100% owner** of substantial coal and gas assets in the Surat Basin, Australia



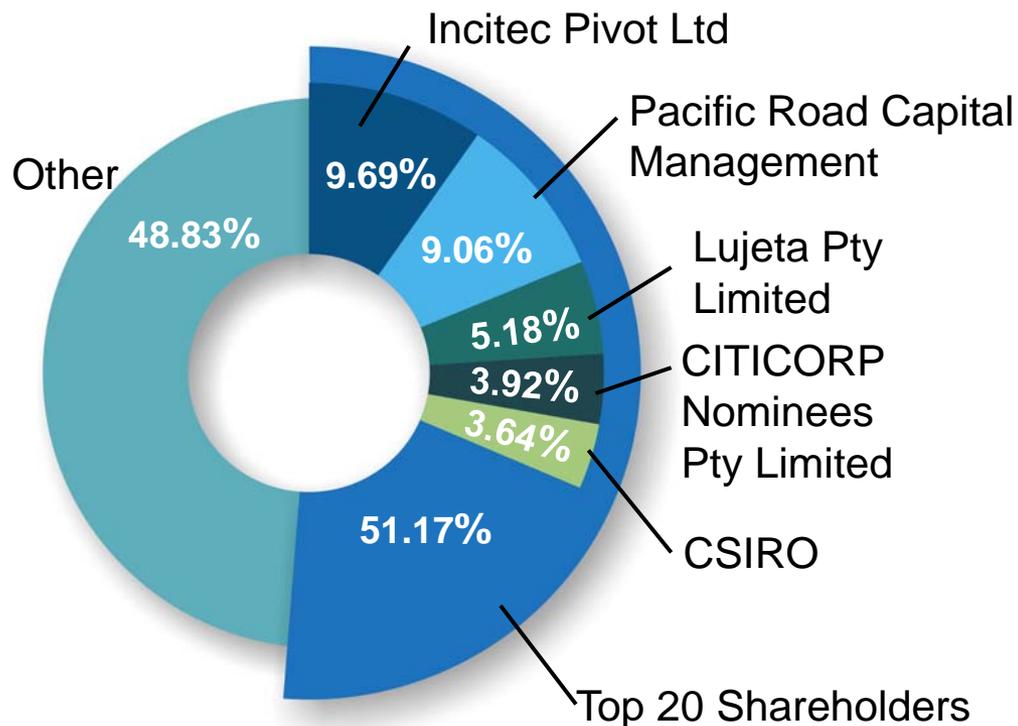
# CORPORATE OVERVIEW

## Capital Structure\*



\*As at 8 May 2013

## Major Shareholders



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# BOARD & MANAGEMENT

## Board

Dr Chris Rawlings	Chairman, Non-Executive Director
Mr Louis Rozman	Non-Executive Director
Mr Max Cozijn	Non-Executive Director
Dr Helen Garnett	Non-Executive Director
Mr Peter Hogan	Non-Executive Director

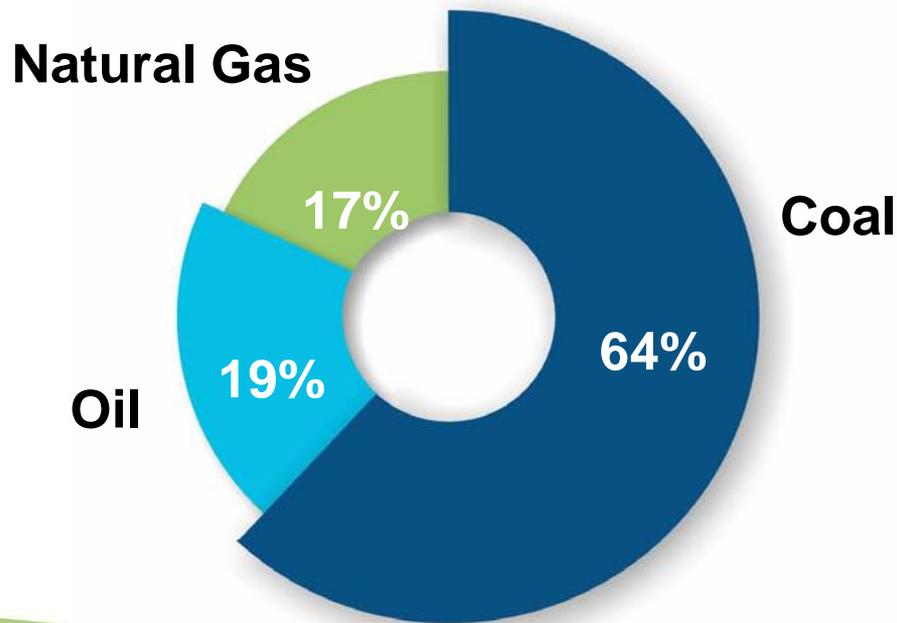
## Executive Management

Mr Morné Engelbrecht	Acting CEO, CFO & Company Secretary
Dr Cliff Mallett	Technical Director
Mr Justin Haines	General Manager Technical Services
Mr Terry Moore	General Manager Operations

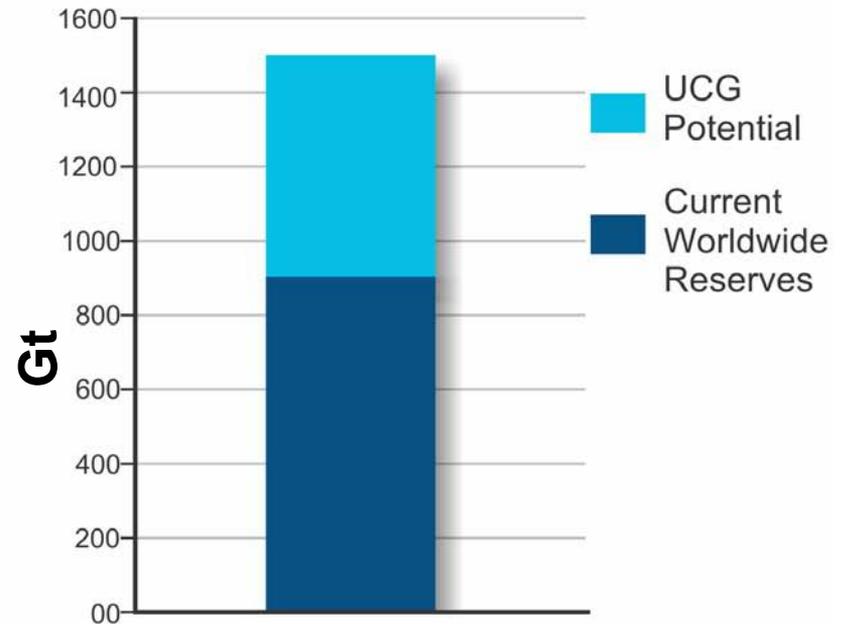
# COAL RESOURCES WORLDWIDE

**International Energy Agency Clean Coal Centre** – “UCG is now being recognised all around the world as a clean, viable, and economic method of accessing and using coal reserves previously considered unrecoverable.”

**Current Worldwide Reserves**  
(economically recoverable)



**UCG Potential**  
(Coal recoverable)



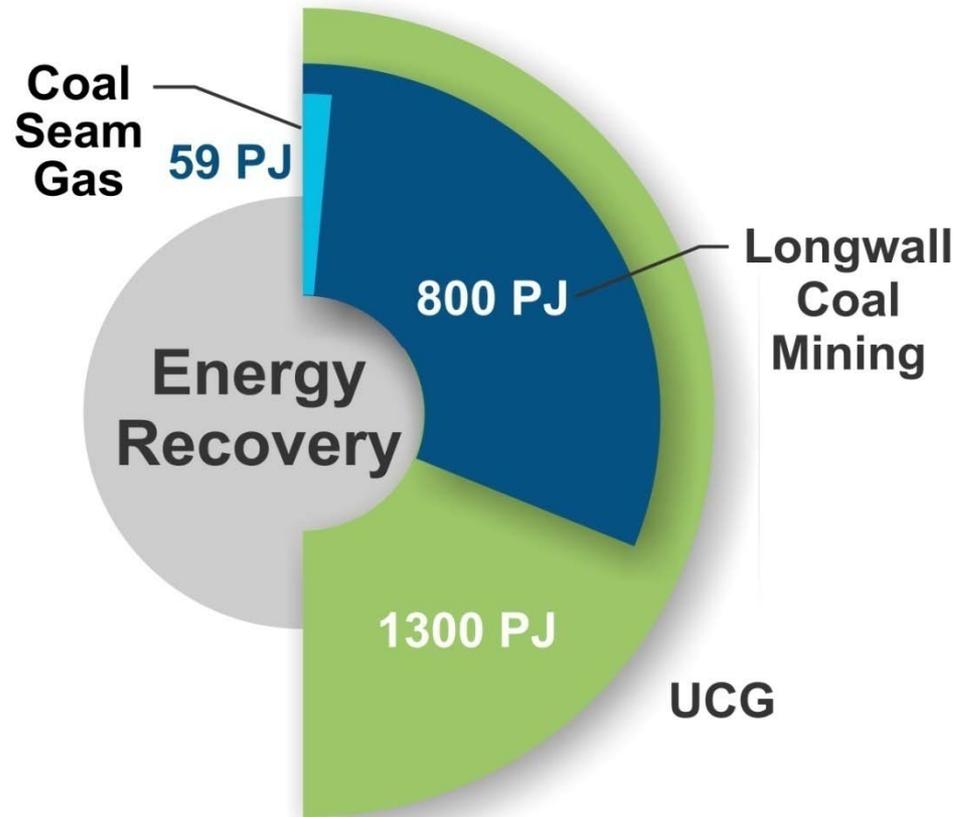
Coal Reserves

Source: “Underground coal gasification” Gordon R Couch July 2009 IEA Clean Coal Centre



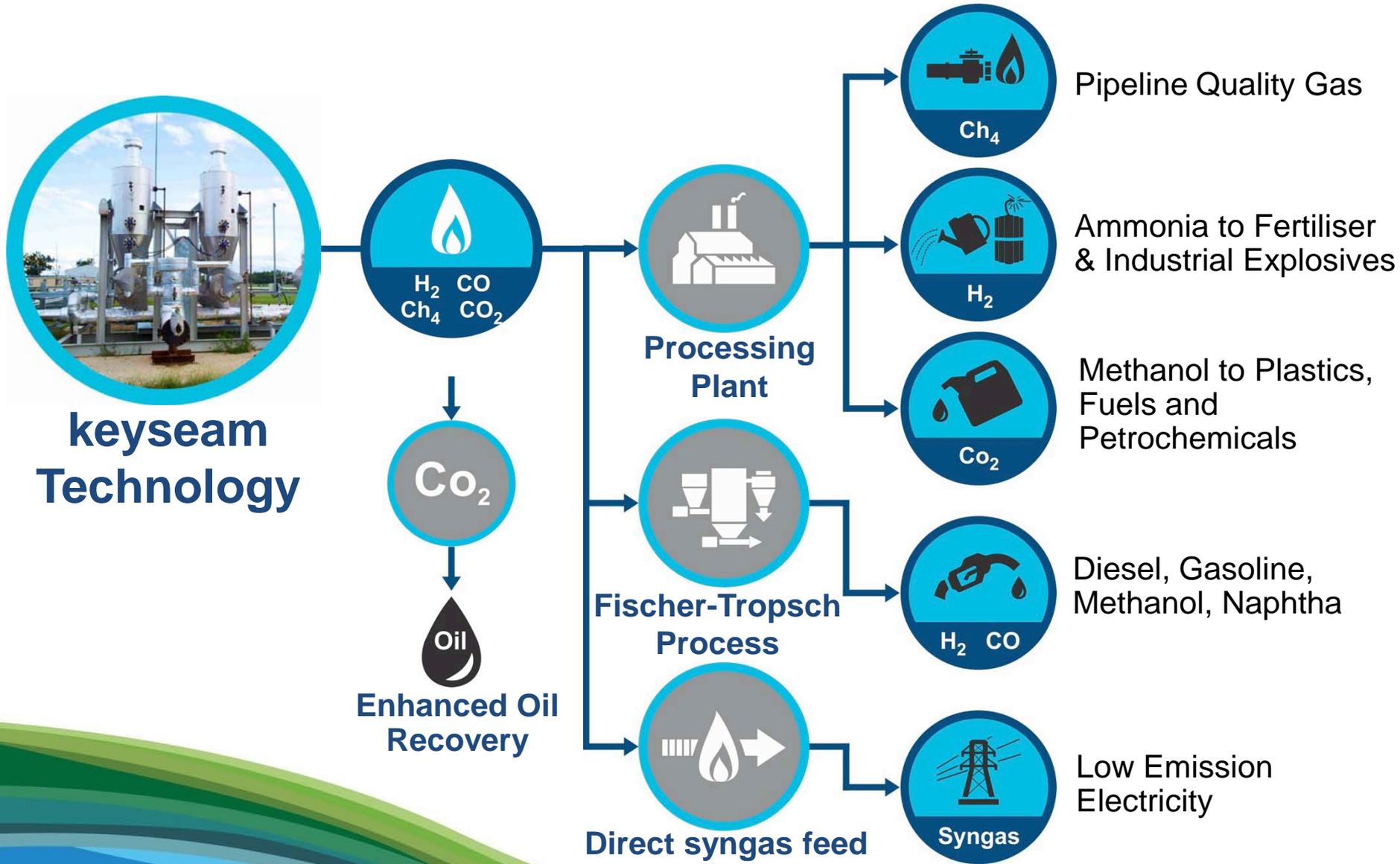
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# ENERGY RECOVERY COMPARISON

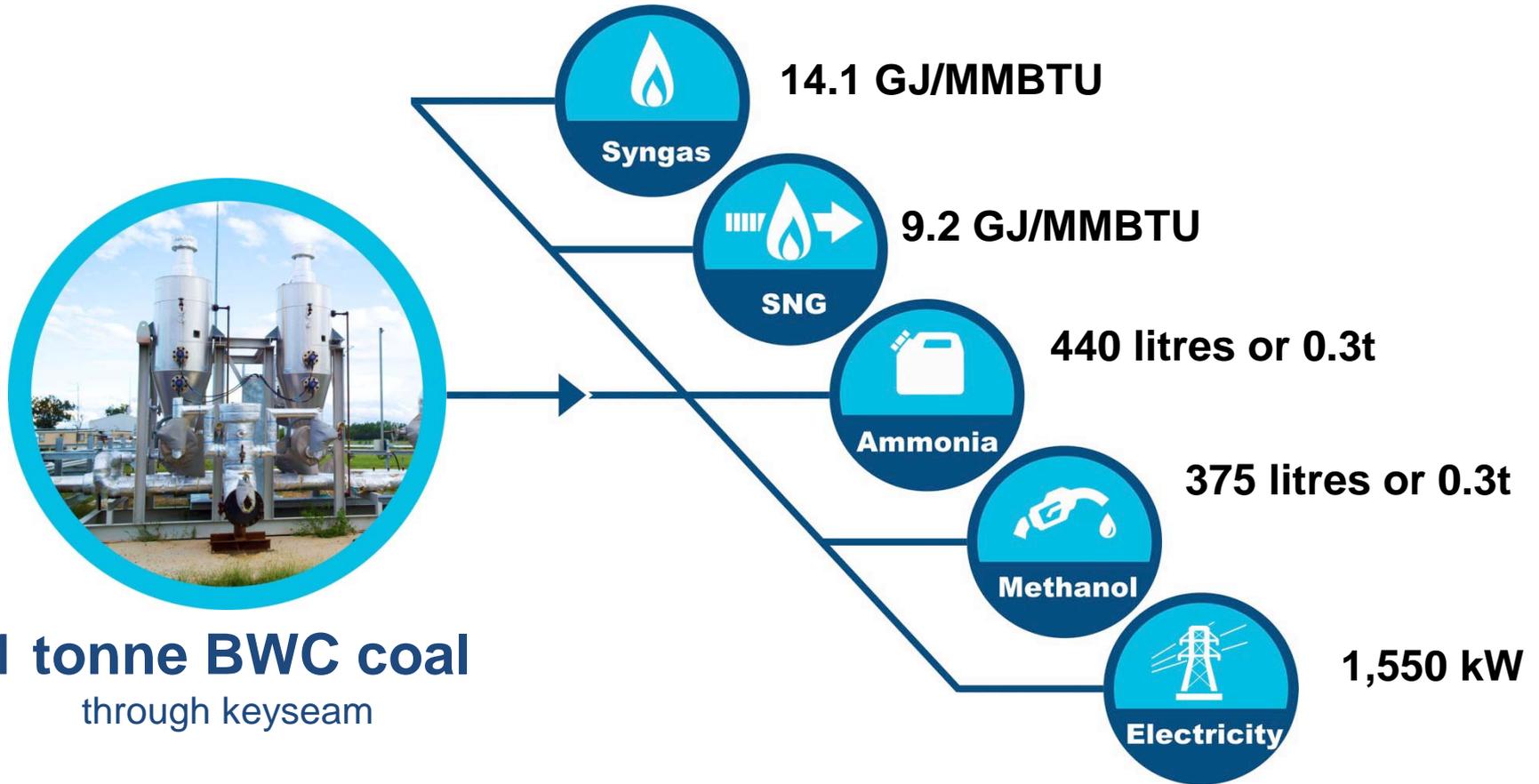


Source: "Underground coal gasification" Gordon R Couch July 2009 IEA Clean Coal Centre Energy extract from a typical 12km<sup>2</sup> deposit)

# UCG SYNGAS MARKETS



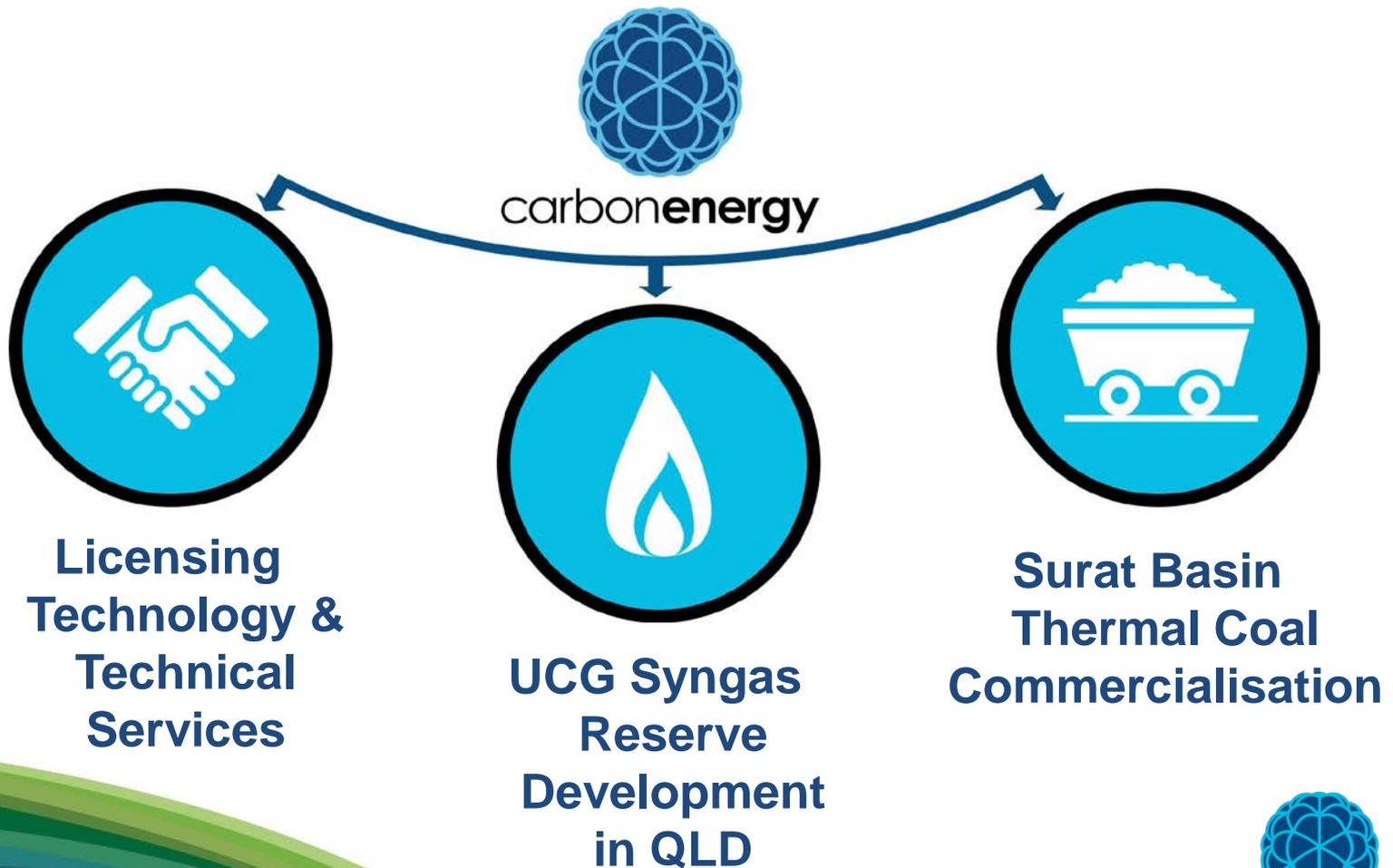
# KEYSEAM PRODUCT



\*accessed through keyseam UCG and processed onsite in a standalone industrial complex (i.e. self contained, parasitic load power production), the above saleable products



# STRATEGIC VALUE DRIVERS



# PROGRESS – MOMENTUM BUILDING

## keyseam Technology Development



- Low cost source of gas
- “Proof of Concept” for keyseam - Independently verified
- 1<sup>st</sup> Australian company to export power to grid from UCG syngas

## Queensland Gas Reserve



- 1.1 tcf 3P Reserves of syngas
- Process of completing Scoping Study
- QLD Legislation decision outstanding

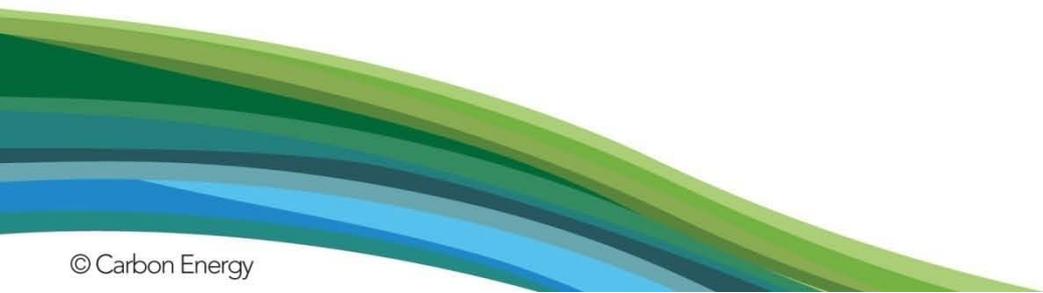
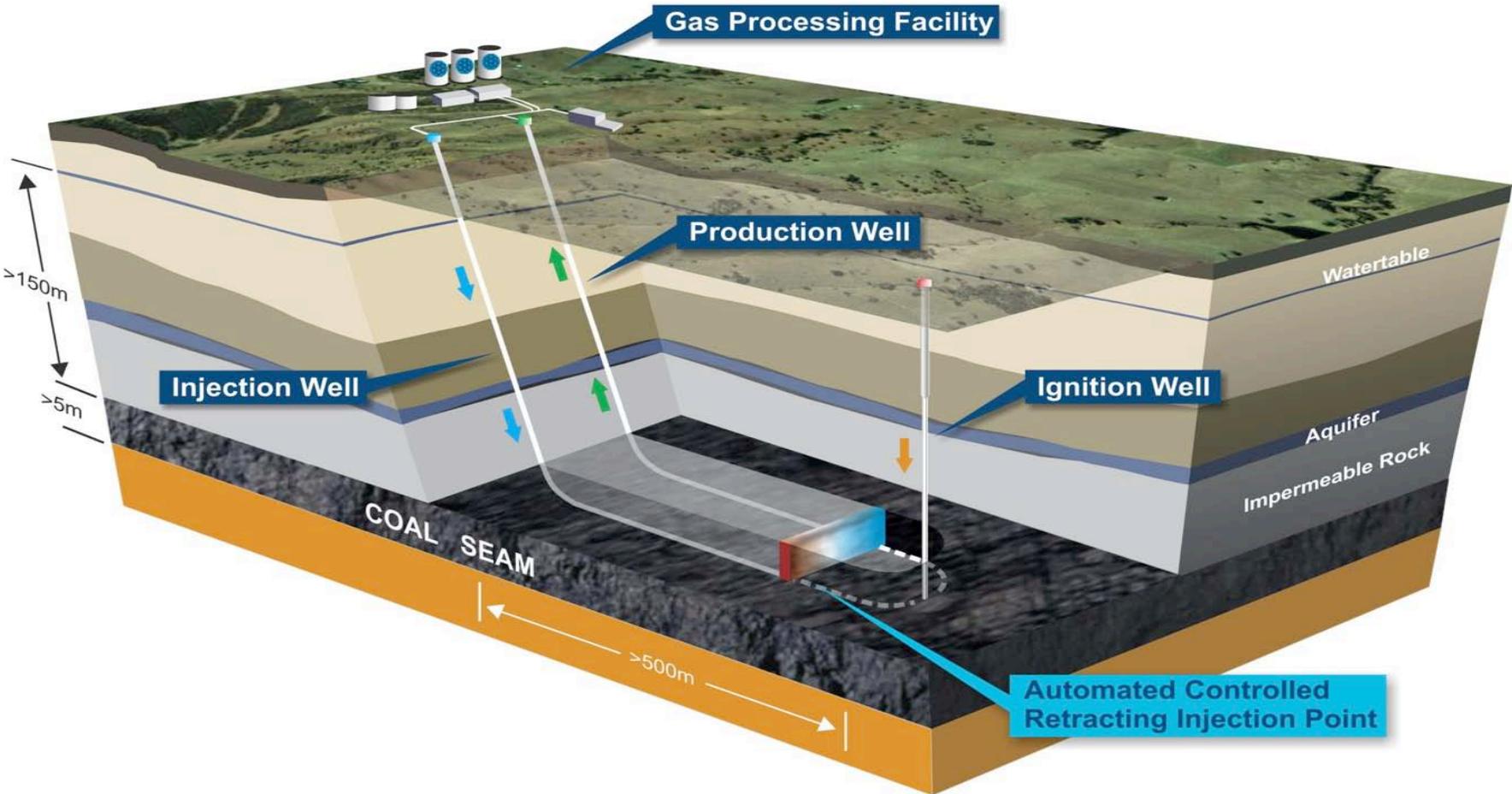
## Surat Basin Coal Resource Commercialisation



- 2.0 billion tonne JORC Inferred Coal Resource
- Exploration Target of 21 billion tonne
- 100% owned leases
- Concept Study identified 3 longwall mine areas – potential for 2 more
- 15 million product tonnes p.a. of thermal coal



# keyseam UCG 101:



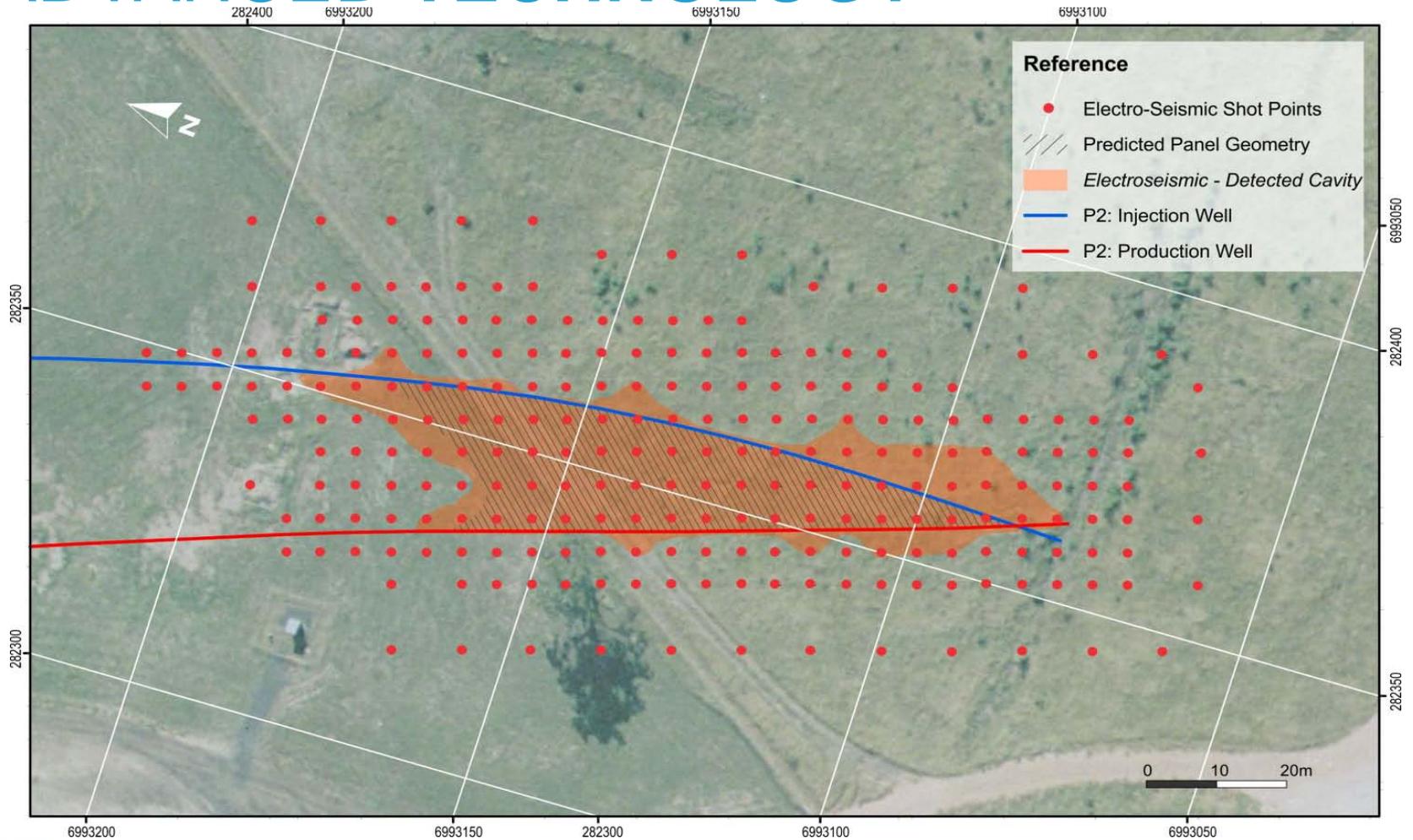
# PROOF OF CONCEPT KEYSEAM



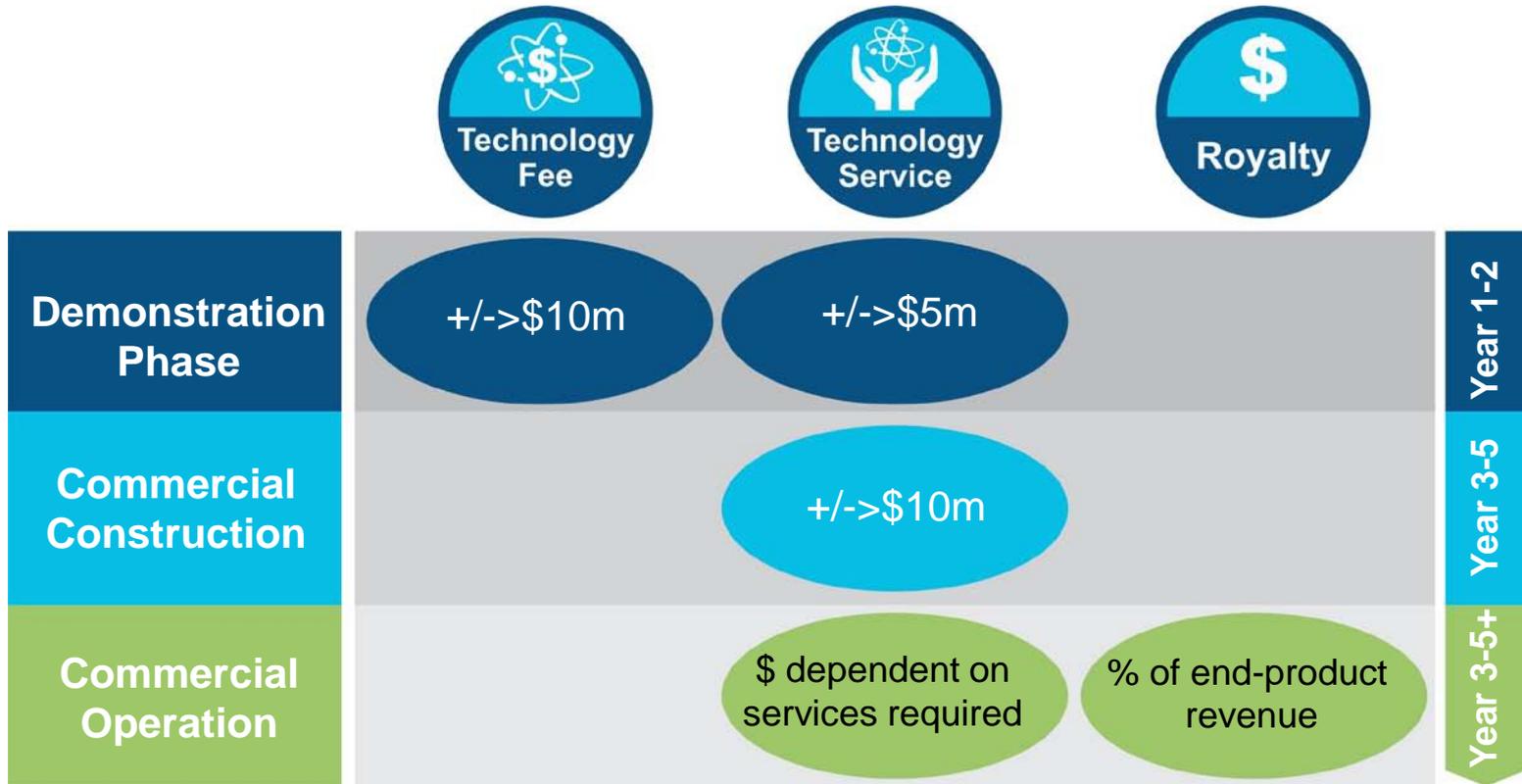
**Carbon Energy has achieved Proof of Concept and has demonstrated:**

- Drilling and construction
- Ignition and commissioning
- **Over 5 years of in-field trials**
- **20 months continuous** production
- **Consistent production of high quality syngas**
- Operation of 1.5 MW Power Station
- Connected, synchronised to the local grid
- **Validation of gasification prediction**
- **Environmental management**
- **Independently verified**

# ADVANCED TECHNOLOGY



# KEYSEAM LICENSING MODEL



# LICENSING TECHNOLOGY

## SHANXI COAL TRANSPORTATION & SALES GROUP

### New Approach – Shanxi Sanyuan Coal

- Definitive Agreement signed 17 October 2012
- CNX does not provide development capital

### The Project - Stage 1

- Demonstration UCG Panel adjacent to Changzhi city
- Recommendation for Carbon Energy's keyseam technology provided by Peking University

### The Project - Stage 2

- Development of major commercial projects with a minimum production rate of 30 PJ p.a of syngas.

### Commercial Structure

- Upfront technology fee
- Ongoing technical & engineering service fees
- Royalties

# LICENSING TECHNOLOGY

## ZHENGMEI GROUP

### New Approach – Zhengmei Group

- **MOU and TSA** signed 07 May 13
- **Zhengmei Group** among **China's top 500 Enterprises**
- **Government approved** project

### The Project - Stage 1

- **Demonstration UCG Panel**
- **Technology fee payable in full** on success of **Demonstration project**

### The Project - Stage 2

- **Development of commercial scale project**

### Commercial Structure

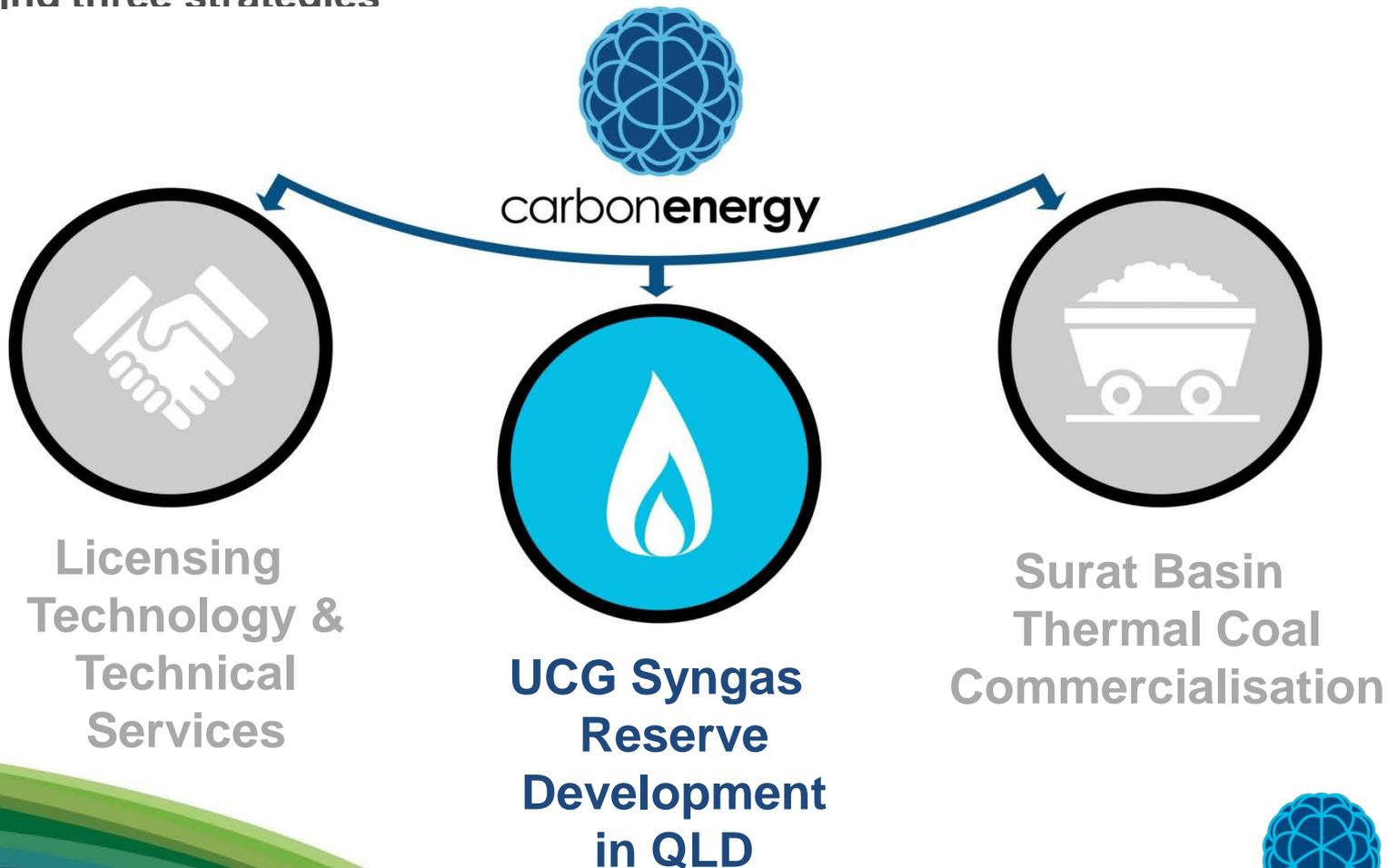
- **CNX does not provide development capital**
- **Technology fee** of \$10 million (partly paid in advance in escrow, 100% release on success of **Demonstration project**)
- **Ongoing technical & engineering service fees**
- **Ongoing royalties**

# CHINA LOCATION MAP



# STRATEGIC VALUE DRIVERS

Carbon Energy is moving toward the next phase of development through the following three strategies



# WORLD'S ONLY CERTIFIED SYNGAS RESERVE

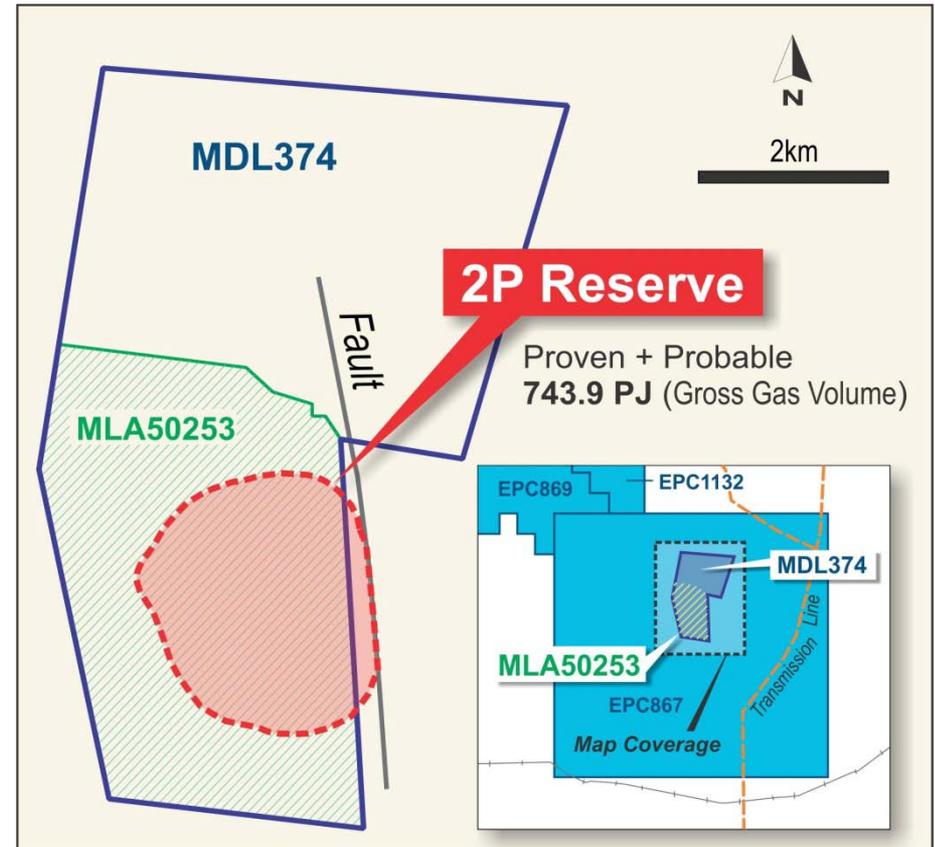
## Snapshot

**Location** Surat Basin, Queensland

**Asset** 743PJ 2P (784Bcf) & 1,042PJ 3P (1.1 Tcf) syngas Reserves

**Downstream Markets** SE Queensland gas markets: ammonia, power generation, methanol, LNG export markets

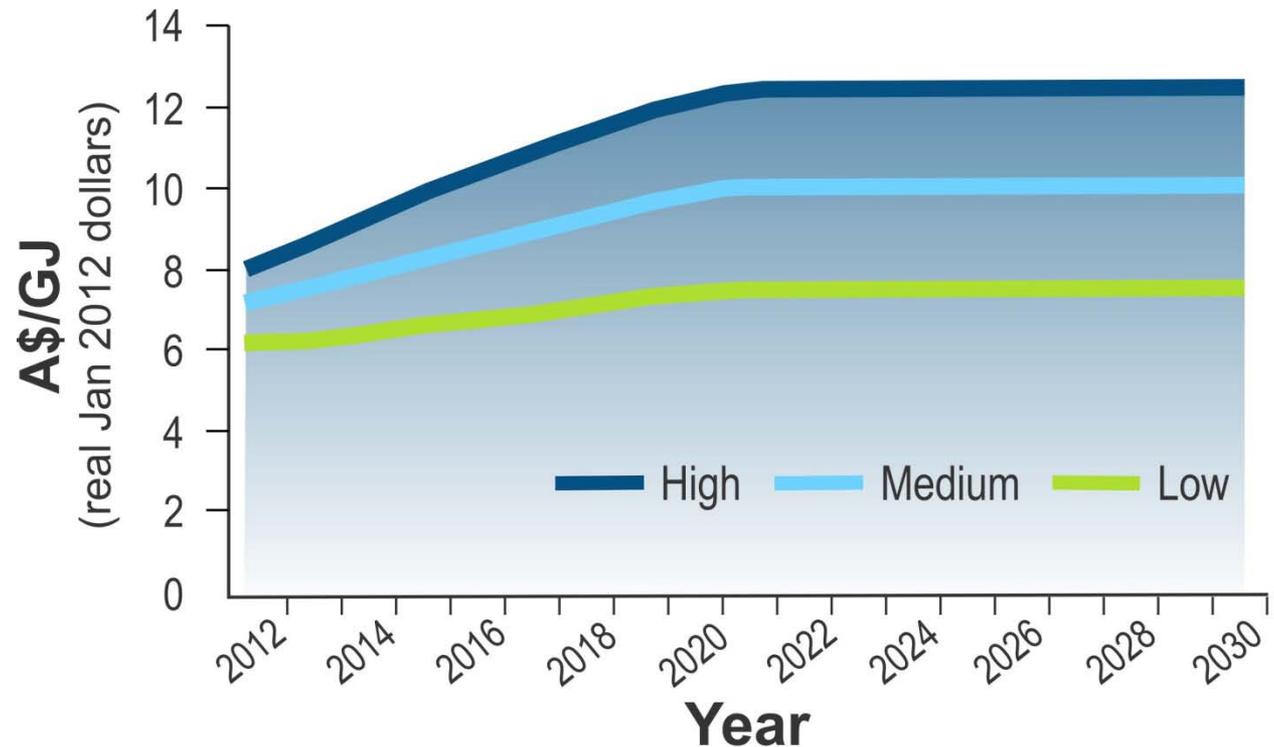
**Infrastructure** Access to major infrastructure



Carbon Energy 2P Resource area Bloodwood Creek

# STRONG EAST COAST DEMAND – DOMESTIC & EXPORT

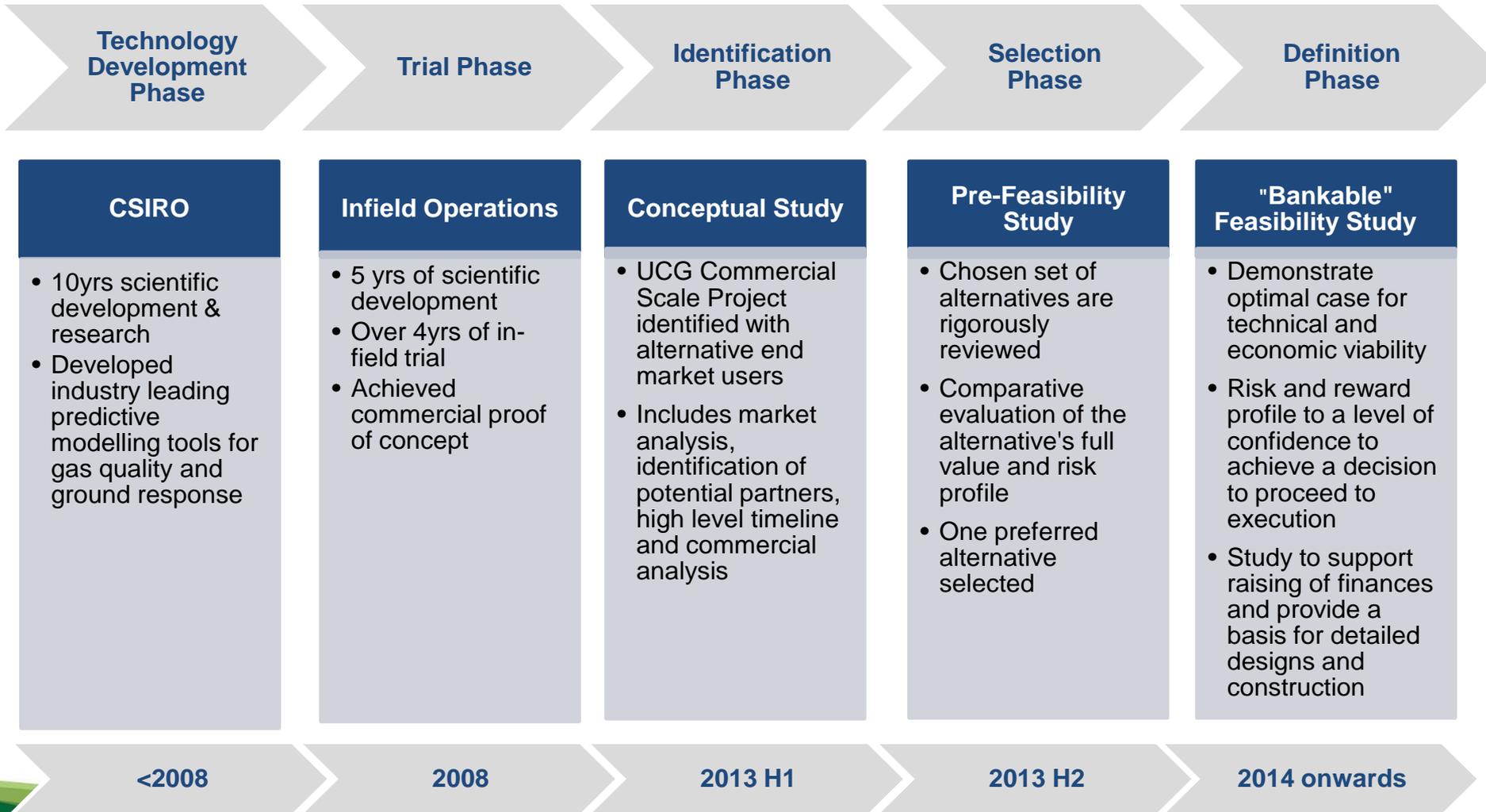
- Large scale LNG Developments – 2014/15
- Declining production from east coast conventional gas
- Domestic industrial gas users **unable to renew long term contracts**



*“The Queensland Market lacks liquidity, with gas in short supply for new contracts both pre and post 2015”*

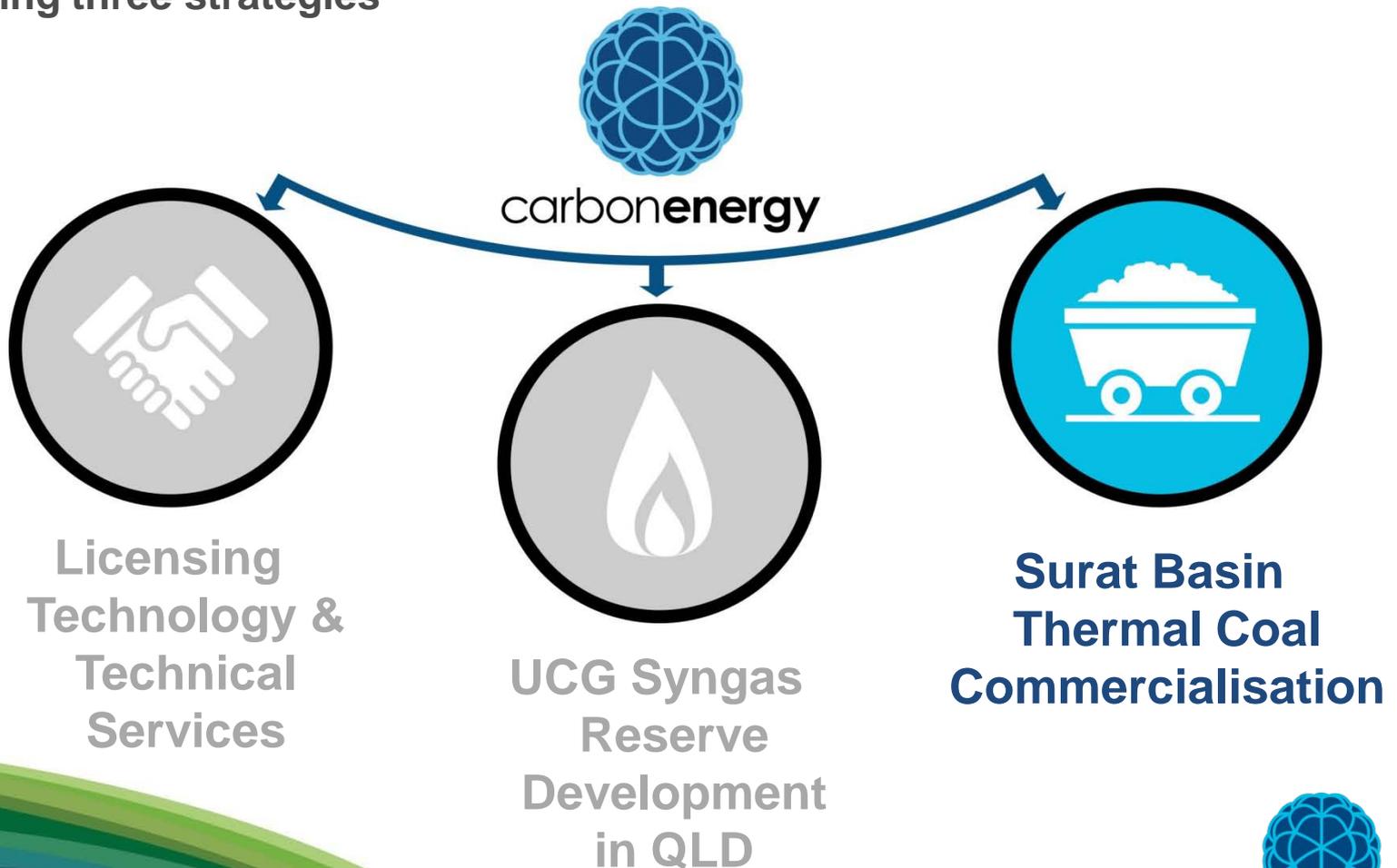


# PROJECT DEVELOPMENT PHASES



# STRATEGIC VALUE DRIVERS

Carbon Energy is moving toward the next phase of development through the following three strategies



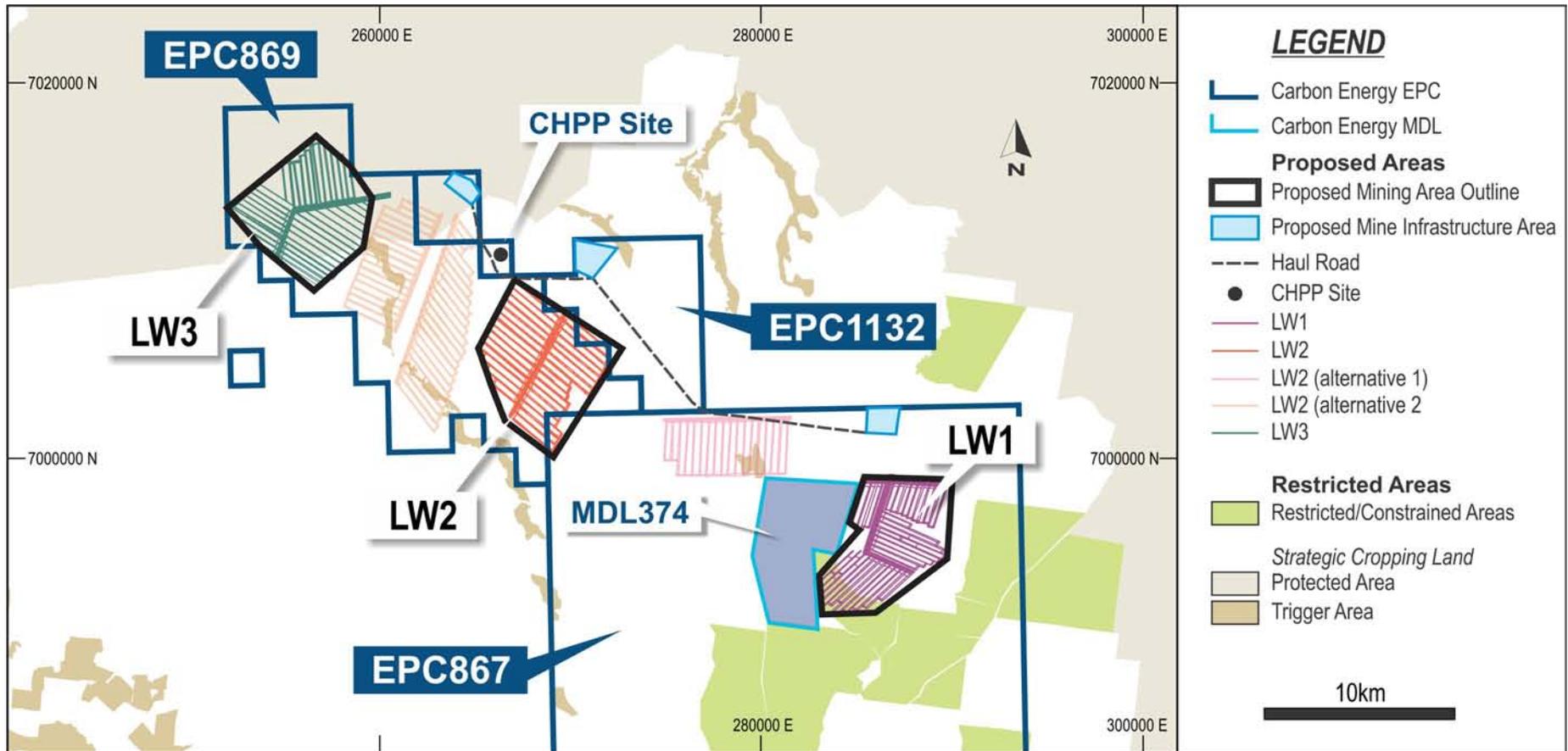
# SURAT BASIN COAL COMMERCIALISATION



## Snapshot

Resource	<ul style="list-style-type: none"> <li>• 2.0Bt JORC Inferred</li> <li>• 21Bt Exploration Target</li> </ul>
Product	<p>Export thermal coal</p> <ul style="list-style-type: none"> <li>~ Gross CV 6,200 kCal/kg</li> <li>~ 11% ash</li> </ul>
Potential output from 3 Longwall Mining areas	<ul style="list-style-type: none"> <li>• 15 million product tonnes p.a.</li> <li>• 4.5m mining height</li> </ul>
FEL 1 Concept Study Total Production Cost	<ul style="list-style-type: none"> <li>• A\$81 per tonne FOB</li> <li>• A\$23.45 per tonne at the pit head</li> </ul>
Distance to port	<ul style="list-style-type: none"> <li>• +400km to Gladstone</li> <li>• +250km via Port of Brisbane</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>• Access to major infrastructure</li> </ul>

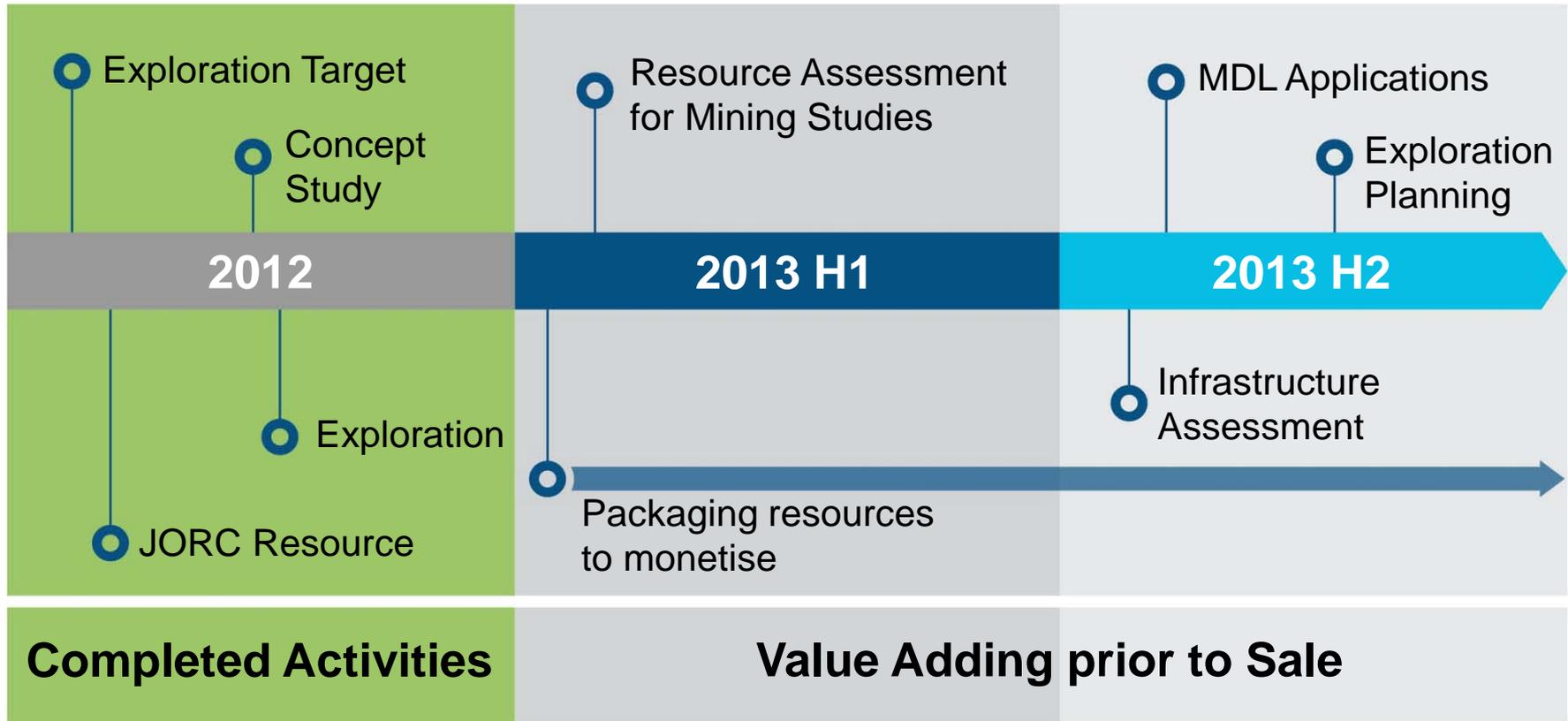
# CONCEPTUAL MINE PLAN LAYOUTS



Eastern Surat Coal Project – LONGWALL DESIGNS FOR PROPOSED MINE AREA

# COAL STRATEGY TIMELINE

Seeking Commercial Partners for potential sale or partnership opportunities



# KEY MESSAGES

- **Positioned to capitalise** on investment in technology development
- **Successful trial** completed and further confirmed through recent survey
- **Strong international interest especially from Asia** in keyseam UCG technology
- **World recognition** that UCG is clean, viable, and economic
- **Large uncommitted UCG syngas Reserve** in Queensland
- **Large thermal coal JORC Inferred Resource** in Surat Basin, QLD with plans to value-add and monetise



# CONTACT DETAILS

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