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Australian Domestic Gas Outlook Conference

Gas Appraisal in the Taroom Trough - Next to Wallumbilla

26 March 2024

ASX:EXR

1. Gas Market Overview

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Macro Overview

The desired energy transition is very hard

- A wide variety of challenges – physical, economic and political – to the desired energy transition
- Increasingly being recognised by various (but not all) parties
- Gas is not optional – demand will in fact grow

LNG demand forecast to rise

- Multiple industry and Government parties forecast growing LNG demand
- Asian demand particularly strong
- Australian security of supply increasingly valued

East Coast Australia gas supply crisis

- The long recognised supply crunch is nearly upon us
- To date Govt actions and inactions have arguably increased risks
- Current prices of >A$10 expected to be a long term floor

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The Reality of the Energy Transition

The reality of the energy transition is that it is very hard and long dated – gas demand will grow not fall

The Uber-realists

Vaclav Smil:

"Since Kyoto in 2027, there has been no absolute worldwide decarbonization. In fact the very opposite is the case….

In 2022 the world consumed nearly 55% more energy locked in fossil carbon than it did in 1997….

In that quarter century, the world has substantially increased its dependence on fossil carbon….

Responsible analyses must acknowledge existing energy, material, engineering, managerial, economic and political realities".

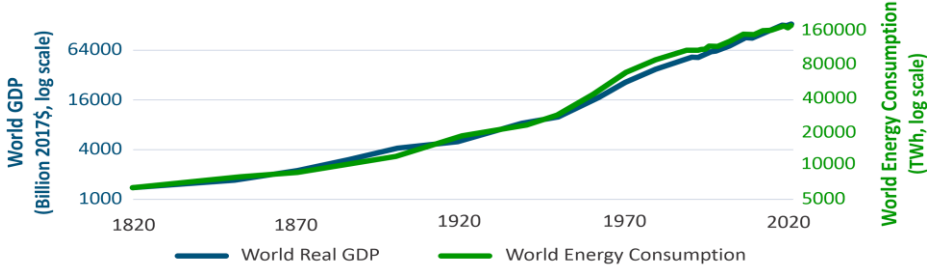
Jeremy Grantham:

"Indeed, the long-term correlation between energy use and GDP growth is over 0.95 (see Exhibit 1).

That is the equivalent of saying that since the industrial revolution – which was really based on the introduction of fossil fuels into our economy – almost all our gains have been dependent on increased resource use.

Without new sources of effective energy, cheap and in vast quantities, there would have been very little science, and very little productivity".

EXHIBIT 1: WORLD REAL GDP and WORLD TOTAL ENERGY CONSUMPTION, 1820 - 2021



As of 2021 | Source: Our World in Data

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Growing Demand for LNG

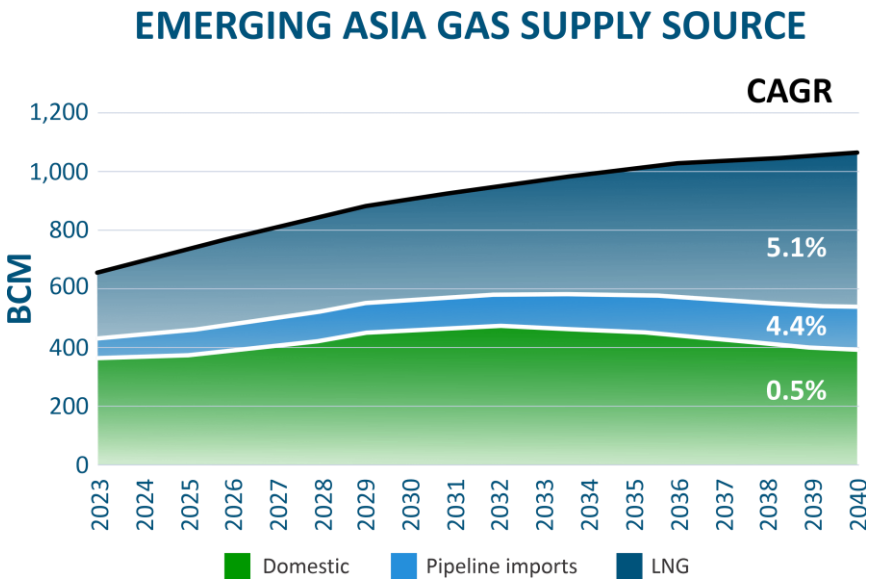
Multi decade growth – with an increasing focus on security of supply

Shell LNG Outlook 2024:

- The global LNG market will continue growing into the 2040s
- Rising demand for LNG expected to keep pace with new supply
- Renewables, supported by gas, erode coal's role in Asia

Security of Supply in Cold War 2.0

- Choke-point anxiety growing
- Qatar concentration concerns growing given Iran adjacency
- Impact of US politics on US (and Mexican) LNG
- Australia is the only Western LNG supply source with liquefaction ullage



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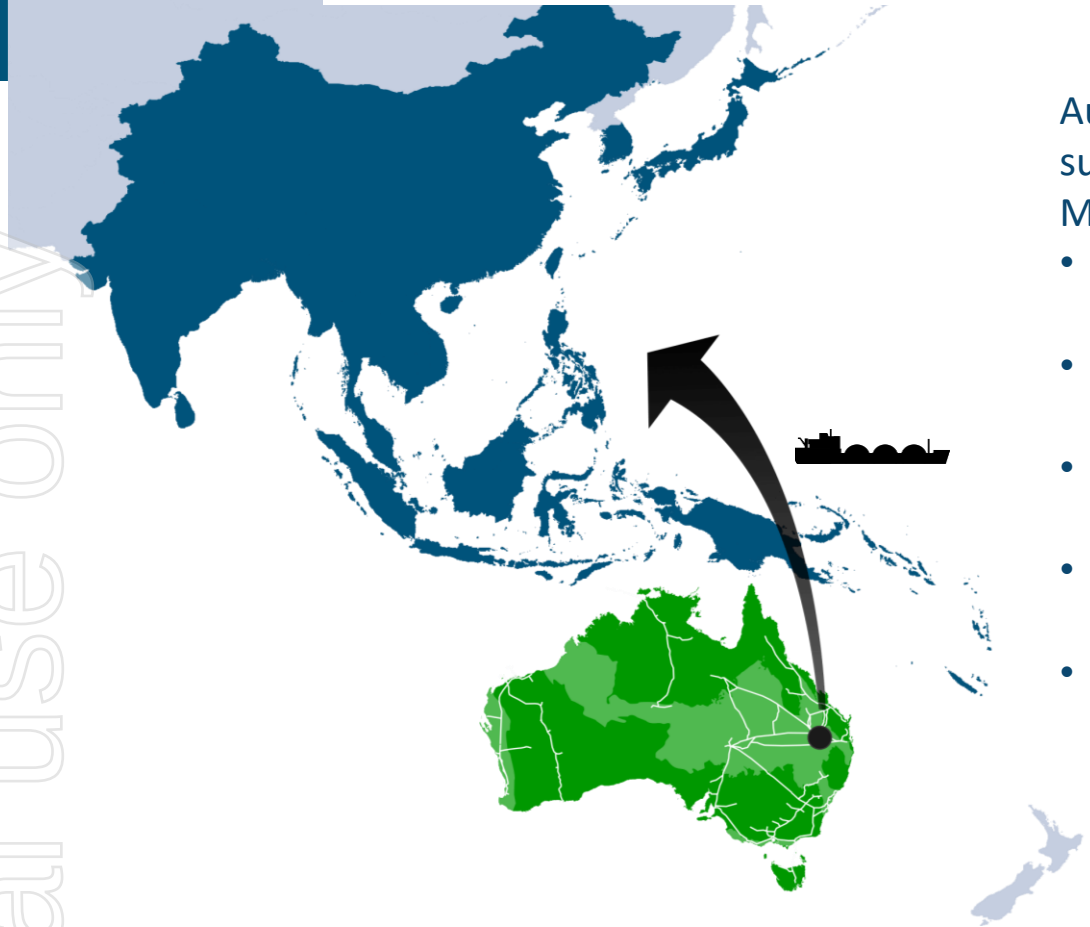
Current East Asian LNG Market Dynamics



Australia still the best located supplier to East Asian LNG Markets:

- Lower transportation costs than USA or Qatar
- No choke points like Panama Canal, Red Sea, Malacca Straits
- Geo-political ally of traditional buyers Japan and South Korea
- Still largest supplier of LNG to the PRC
- Strong history of reliability over many decades

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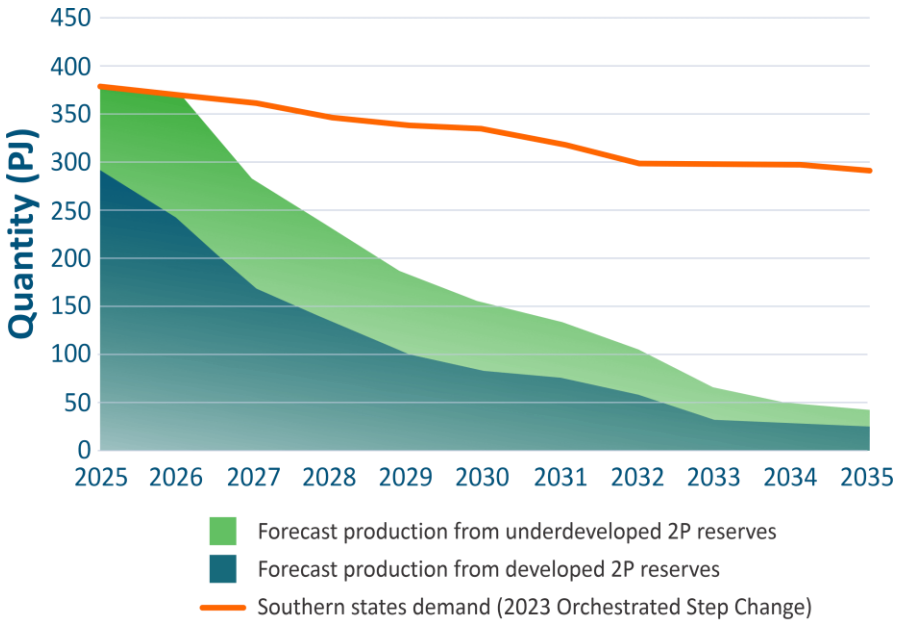
Upcoming East Coast Gas Supply Crunch

Is it even worse than feared?

- The now imminent East Coast gas supply crunch has been forecast for some time
- It is almost upon us – a cold winter and falling Gippsland supplies could hit this year
- Demand destruction has happened but cannot keep pace with falling supply
- Only one FSRU project FID'ed (but with an unpredictable owner) – the others face material political and financing challenges
- Any new gas material gas supplies from NSW and Victoria seem highly unlikely
- Although multiple constraints on more supply from Queensland – physical capacity, State politics, geo-politics, sovereign risk, etc - there are very few alternatives



Source: ACCC

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2. The Grandis Gas Project in the Taroom Trough

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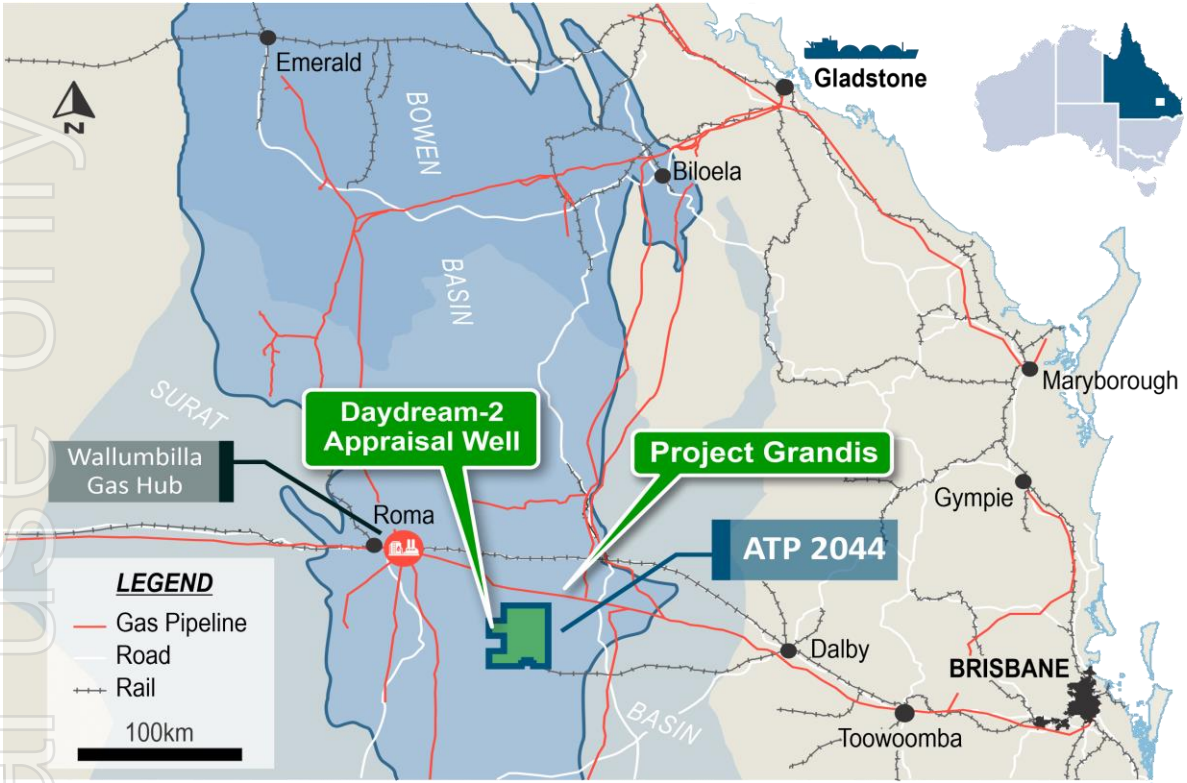
The Taroom Trough – An Advantaged Location

The prolific Bowen Basin is now set to deliver another energy source



- The Grandis Gas Project is very well located in the Taroom Trough in the Southern Bowen Basin
- Australia's premier physical and commercial gas hub – Wallumbilla – is immediately adjacent
- Market factors are now driving new rounds of drilling in the Taroom Trough - including by Majors
- Pipeline costs minimal – material savings per GJ – as well as avoidance of financing concerns over new transmission pipelines
- Long term community acceptance of oil and gas in the region
- Australia's onshore oilfield service sector is centred in the region

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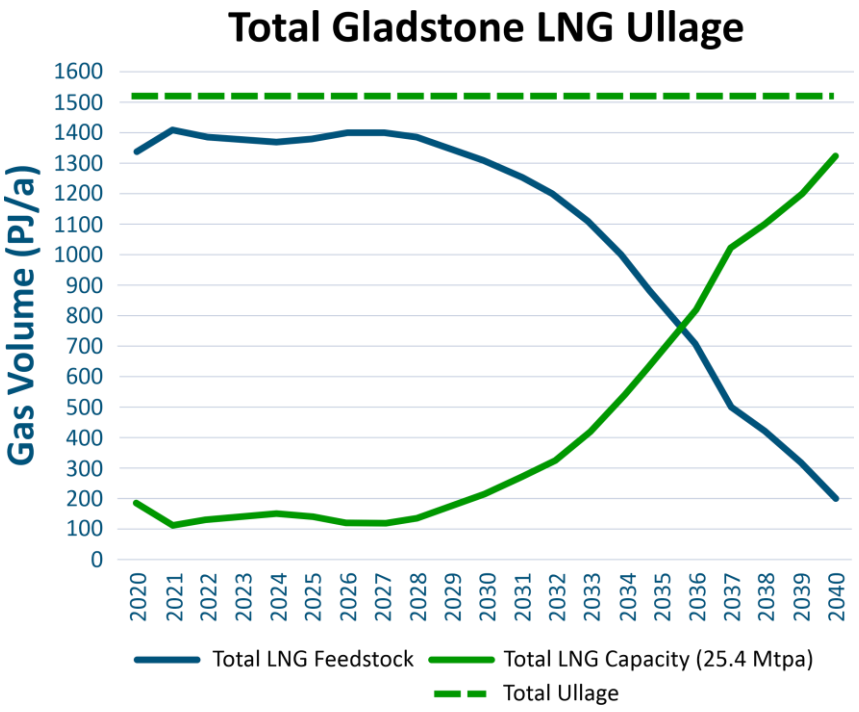
Gladstone LNG Plants Have Growing Ullage

The 3 LNG Plants at Gladstone need more gas

- The three LNG plants (6 trains in total) at Gladstone have never operated at full capacity (and well constructed LNG plants should generally operate above nameplate capacity)
- Current supplies – primarily gas feedstock from Queensland CSG have arguably irreversibly peaked
- Brownfield economics therefore should favour decisions to develop gas for these existing plants versus pursuing global greenfields options
- Tight gas (possibly enhanced with recently discovered deep conventional gas) from the Taroom Trough is very well placed to fill this gap



Source: EnergyQuest report for Elixir Energy

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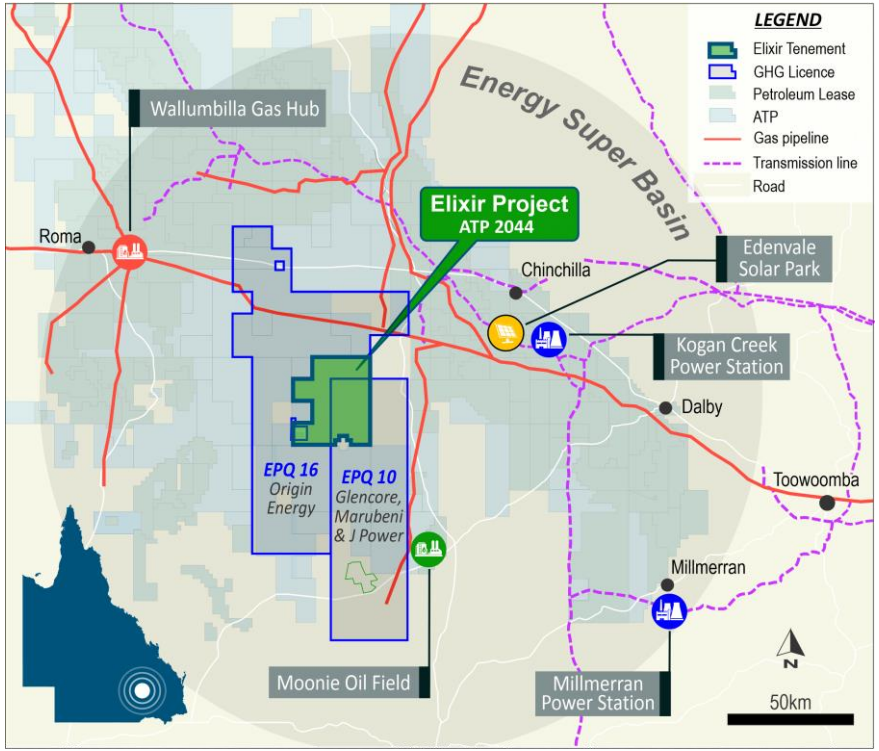
An Emerging **Energy Super Basin**

The Taroom can be seen as an emerging Energy Super Basin

- Wood Mackenzie's **Energy Super Basin** concept:
  - *"The future is upstream co-located with low carbon"*
  - *"These are basins with the co-location of upstream hydrocarbons, clean electricity, standalone and/or hub scale CCS"*
- The Taroom Trough is emerging as such an **Energy Super Basin**:
  - Tcfs of contingent and prospective gas resources (with low CO2 and strong liquids potential)
  - Overlapping GHG (CCS) licences
  - Major electricity infrastructure – with solar projects adding to thermal power stations
  - Elixir's 2023 deal with Origin Energy supports the thesis



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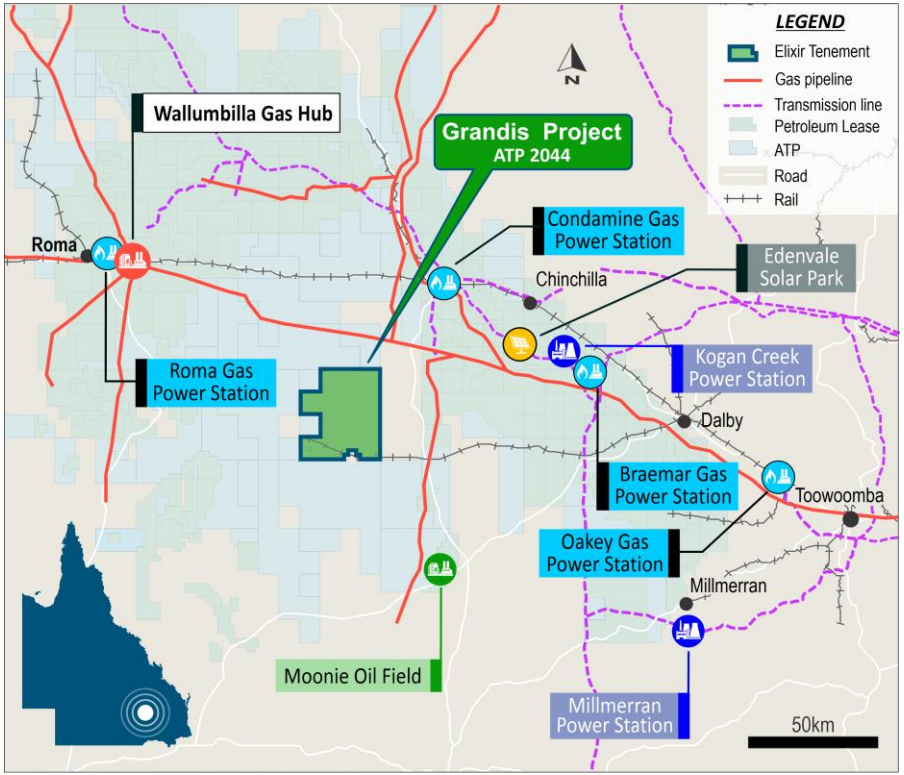
Material and Growing Energy Infrastructure

The Taroom Trough is adjacent to substantial and growing energy infrastructure

- New energy sources always benefit from adjacency to existing energy infrastructure – brownfields economics apply
- The region has a substantial existing gas fired generation fleet – and plans for more (and potentially much more as Queensland's energy mix evolves)
- Complementary gas storage assets are already in the area - with an arguable need for much more – cheaper and less politically challenged than greenfields pumped storage hydro
- The existing gas transmission network, centred around the Wallumbilla Hub, provides ready market access to both LNG and domestic gas markets
- Greenfields gas transmission developments are likely challenged by ESG concerns from investors (and lawfare) – not relevant in brownfields location



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Attractive to Large Sources of Capital

Securing material capital for gas development needs to pass through multiple gates

- The best source of capital for new gas developments is arguably existing large oil and gas companies – they provide not only money, but multiple technical, commercial and political skill sets

- The **Taroom Trough** is a favourable location for such large companies:

01 **Brownfields** – many majors, large LNG buyers, etc, are already in Queensland – and even for those who are not, the existence of the incumbents reduces risk perceptions

02 **Low emissions profile** – the Taroom is low in CO2 (pipeline spec) and has a long term pathway to eliminating scope 1 & 2 emissions from electrification, CCS, etc

03 **Materiality** – the resource size is multi-Tcf (with possibly 100Ms of bbls of liquids) and will could accept billions of dollars of investment

04 **Low sovereign risk** – Queensland is a favourable location within Australia for resource investments – and for all its sins, Australia itself is still relatively benign

05 **Investments** in the future can be varied in response to market conditions – a key feature of an onshore unconventional play close to existing infrastructure

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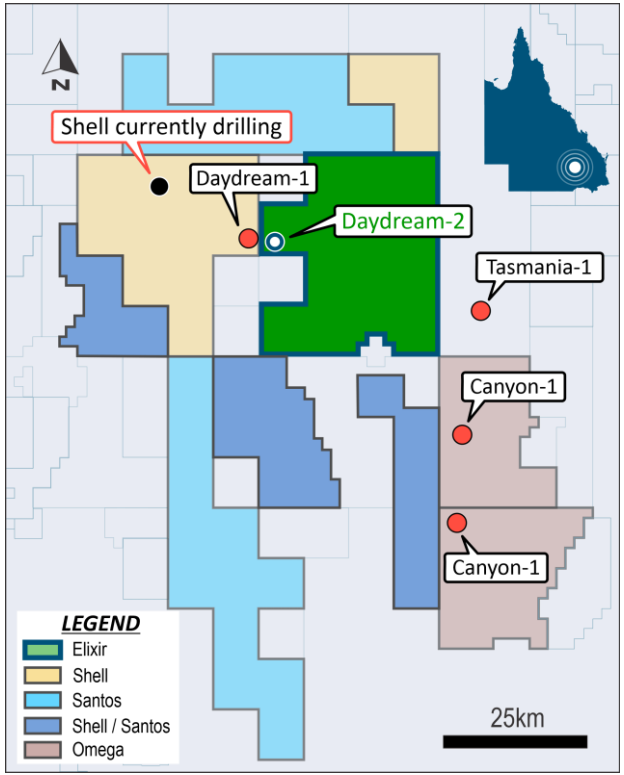
Multiple Operator Activity

Home to several majors, the Taroom Trough hosts material discovered and potential gas resources

- **Shell:** Currently drilling. *"The estimate of recoverable hydrocarbons in this reservoir across ATP 645 in the area covered by PCA 1 (305), on an unrisked P50 basis, is 3.0 Tcf sales gas and 252 mmboe NGLs and condensate"* [1]
- **Santos:** Recently executed Data Sharing Agreement with Elixir. *"If the play works then we believe there is multi-Tcf potential"* (Kevin Gallagher - Santos CEO - Australian Financial Review on 15 November 2018
- **Elixir:** 2C contingent resources of 395 Bcf and 2U prospective resources of 3,603 Bcf
- **Omega:** 2C contingent resources of 1.73 Tcf. Stimulated horizontal well to follow in 2024

With multiple operators investing substantially and experimenting with different approaches – the greater the chance the "code" is cracked for the benefit of all



1 - https://www.daf.qld.gov.au/__data/assets/pdf_file/0010/1672921/21-296-File-G.pdf

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Daydream-2 – Multiple Objectives

Daydream-2's multiple objectives centred around de-risking and value creation

1. Target of >500 metres of gross vertical interval of prospective reservoirs
2. Stimulation program to cover primary targets:
   1. Permeable Sandstones
   2. Tight Sandstones
   3. Fractured Coals
3. Plan is for 6 stages of stimulation - isolating both coals and sandstones
4. Confirm CO2 and liquids content
5. DFITs to fully evaluate stress, pore-pressure and permeability
6. Expand Contingent Resources from both coals and sandstones
7. Execute R&D elements
8. Gather data for scalable ~500 well development

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Daydream-2 Delivers a Welcome Surprise

Daydream-2 discovered a first in the Taroom Trough – a free flowing deep permeable formation

- Drilled to total depth of 4,300 metres (14,108 feet)
- Well drilled safely and under budget
- Gross interval of 607 metres intersected with peak gas shows of up to 800 units
- Logged 180 metres of net pay in the Permian sandstones
- Measured an additional 65 metres of gaseous coals in the primary objective interval as a new target for stimulation and flow testing
- ***Encountered an unexpected free-flowing gas zone at 4,200 metres – gas flowed to surface without stimulation***
- ***Analogues with deep Perth Basin?***

Flare at Daydream-2

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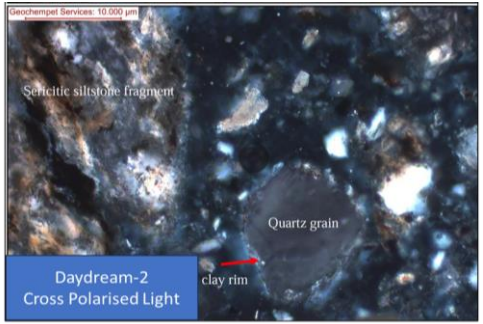
Recent Lab Results Deliver More Upside

Lab results reported in recent results suggest Perth & Cooper Basin analogues

- Significant over-pressure confirmed – 9,400 psia in deep permeable zone
- Analysis of cuttings samples from the deep permeable sand interval has identified clay coatings (rims) around individual quartz grains. It is interpreted that these clay rims assist in the preservation of primary porosity at these depths
- These are also recognised in the relatively recently discovered highly productive deep Permian sections of the Perth Basin
- Also unexpected were very higher gas contents in the deep coals (similar to the Cooper Basin) – 34 cubic metres/tonne (dry ash free) – significant gas in cleats as well as fractures
- CO2 in gas measured from coals a negligible 1%



Sample 5; 4212 – 4215m; Res Pressure: 9400 psia

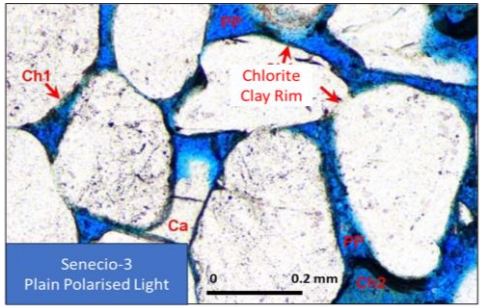


Plate 64; 3176.5m; Res Pressure: 5032 psia. Source: AWE Limited

Daydream-2 (Taroom Trough) and Senecio-3 (Perth Basin) Clay Rims Comparison

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Grandis Gas Project Timeline

1. Compilation of post well analysis (final pay information and initial production testing plans)
2. Additional Laboratory Analysis
3. Review of Resource Certification
4. Diagnostic Fracture Injectivity Testing (DFIT) to directly measure formation stress, pore pressure and permeability
5. Pre-stimulation optimisation and testing activity (to guide formal stimulation plans)
6. Working with Halliburton Global Technology Centre for optimal strategy on stimulation of Daydream 2 reservoirs
7. Long Lead Items including micro-proppant
8. Execution of stimulation program for sandstone and coal reservoirs
9. Completion and production testing (initial flow rates from specific isolated intervals in coals and sandstones)

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4. Summary, Disclaimer and Appendix

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Summary

The World needs more gas for longer – LNG markets are growing

The East Coast has strong pricing, a growing supply gap – and LNG ullage

The Taroom Trough is exceptionally well located on multiple fronts

Growing **need for energy security** and key role for gas in the medium term

The Taroom Trough is currently hosting a multiple operator appraisal program

Elixir's current program aims to further de-risk the play within only a few months

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Very Material Resources

Contingent Resources – Sandstones only

ATP – 2044 – GRANDIS GAS PROJECT				
Contingent Resources (100%)				
	Units	1C	2C	3C
Gas Initially In Place	Bcf	2,128	7,007	22,699
Recoverable Gas	Bcf	93	395	1,493
Recoverable Condensate	MMbbl	0.7	3.6	17.3

Note – tight sandstone reservoirs only

- In October 2022 ERC Equipoise Pte Ltd (ERCE) prepared a Competent Person's Report (CPR)
- ERCE has attributed Contingent Resources to the ATP 2044 permit as shown
- Only the sandstone reservoirs' hydrocarbon volumes were attributed as Contingent Resources

Prospective Resources - Coals

ATP – 2044 – GRANDIS GAS PROJECT				
Prospective Resources (100%)				
	Units	1U	2U	3U
Recoverable Gas	Bcf	1,156	3,603	12,632

Note – updated as per ASX announcement of 21 February 2024

- In addition to the Contingent Resources calculated by ERCE in the Tight Sandstone Play, the Fractured, Thermally Mature Coals Play provides an additional primary target
- Flowing gas from the coals in Daydream-2 should start to convert prospective into contingent resources

Notes

1. Prospective Resources are those estimated quantities of petroleum that may potentially be recovered by the application of a future development project(s) related to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further explorations appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbons. 2 At least a 90% probability that the quantities actually recovered will equal or exceed the estimate. 3.At least a 50% probability that the quantities actually recovered will equal or exceed the estimate. 4.The arithmetic average of the probability distribution. 5. At least a 10% probability that the quantities actually recovered will equal or exceed the estimate. 6. Prospective Resources have been assessed on the basis that they are unconventional in nature. 7. Bcf means billion standard cubic feet of gas. 8. MMbbl means million barrels of oil or condensate. 9. The resource calculations are probabilistic but each reservoir was added arithmetically. See appendix for further information.

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Appendix

Methodology:

The estimate of Prospective Resource was compiled by Elixir's Chief Geoscientist, Mr Greg Channon, who has completed a detailed and formal report on the prospective resources in ATP 2044. The work was undertaken in accordance with the Society of Petroleum Engineers internationally recognised Petroleum Resources Management System 2018 (PRMS). Mr Channon's methodology was to compile and review all available data and make interpretations of (amongst other things) the wireline logs, seismic data and historical well records relevant to the permit area. An estimate of the gross and net rock volume was determined, and from that, a probabilistic distribution of the prospective resource was compiled. A site visit to the area was conducted.

Competent Person:

Elixir's Competent Person is Mr Greg Channon. Mr Channon is a qualified geoscientist with over 35 years of oil and gas industry experience and is a member of the American Association of Petroleum Geologists and the South East Asian Exploration Society and is a graduate of the Australian Institute of Company Directors. He is qualified as a competent person in accordance with ASX listing rule 5.41. Mr Channon consents to the inclusion of the information in this report in the form and context in which it appears.

Reporting Standards:

Reserves and resources are reported in accordance with the definitions of reserves, contingent resources and prospective resources and guidelines set out in the Petroleum Resources Management System (PRMS) prepared by the Oil and Gas Reserves Committee of the Society of Petroleum Engineers (SPE) and reviewed and jointly sponsored by the American Association of Petroleum Geologists (AAPG), World Petroleum Council (WPC), Society of Petroleum Evaluation Engineers (SPEE), Society of Exploration Geophysicists (SEG), Society of Petrophysicists and Well Log Analysts (SPWLA) and European Association of Geoscientists and Engineers (EAGE), revised June 2018.

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