

## **2H Resources – Natural Hydrogen and Helium Business Update**

Buru Energy Limited (Buru, Company) (ASX: BRU), is pleased to provide the attached presentation made by its wholly owned hydrogen and helium (H/He) focused subsidiary, 2H Resources at the Australian Natural Hydrogen Conference 2024 held today in Adelaide.

### **Buru's CEO Thomas Nador commented:**

*"2H Resources is leveraging at low cost Buru's extensive geological and operational expertise for the emerging field of natural hydrogen and helium exploration.*

*With a robust portfolio of prospective areas in Australia, increased regulatory support for Australian H/He exploration, and 2H Resources' leading technical capabilities, the Company continues to progress its commercialisation options for 2H Resources to ensure Buru shareholders benefit from this new energy business which continues to attract global attention and investment.*

*Buru's priority project and primary focus is developing a compelling foundation gas and condensate (diesel replacement) business in the Kimberley region of Western Australia, underpinned by the 100% owned Rafael conventional wet gas discovery – the Rafael Project."*

### **Authorisation**

This ASX announcement has been authorised for release by the Chair of Buru Energy.

For further information, visit [www.buruenergy.com](http://www.buruenergy.com) or contact:

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**Resources**

## Natural Hydrogen Exploration in Australia

### What have we learnt so far?

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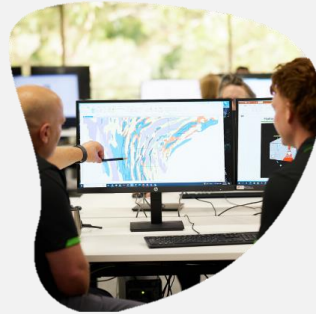
**Grant McMurtrie**  
Exploration Manager



**Hugo Beldame**  
Geoscientist

Presentation at the Australian Natural Hydrogen Conference 2024  
South Australia

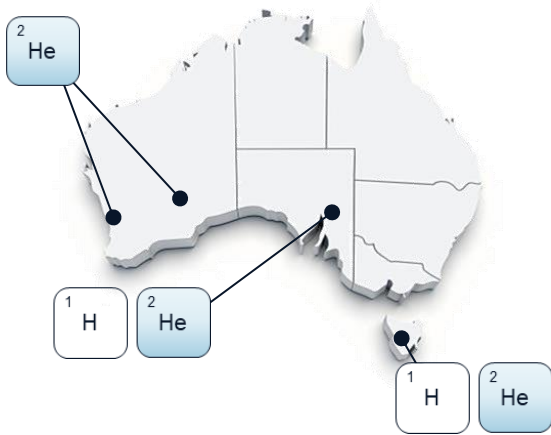
# 2H Resources overview



## Our Vision

Become a leader in the world initiative to net zero through the supply of **Natural Hydrogen** energy and locally-sourced **Helium**

### Diverse portfolio



### Parent Co. capability



>40 wells



>20 seismic surveys



Field development

### Robust science



Durham University



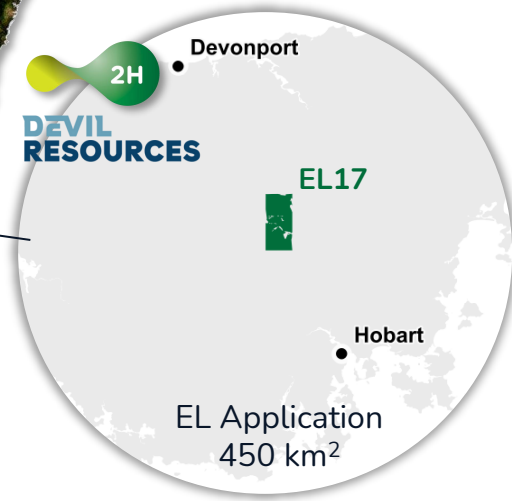
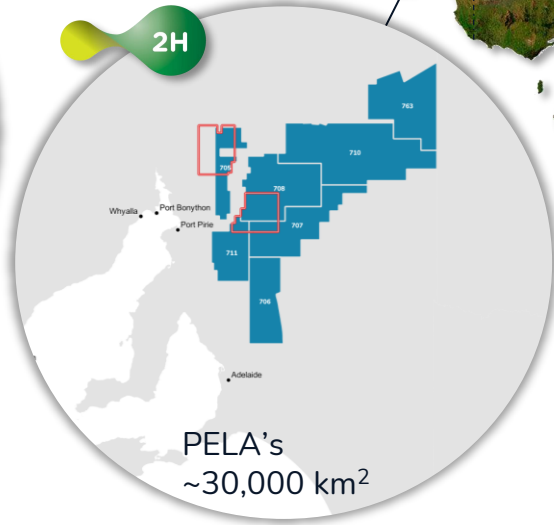
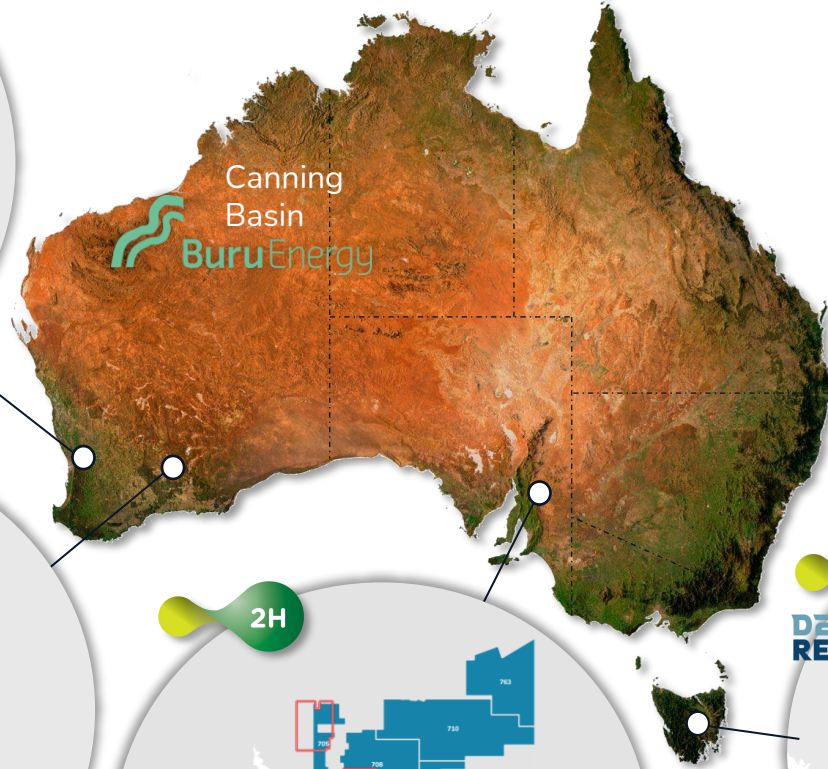
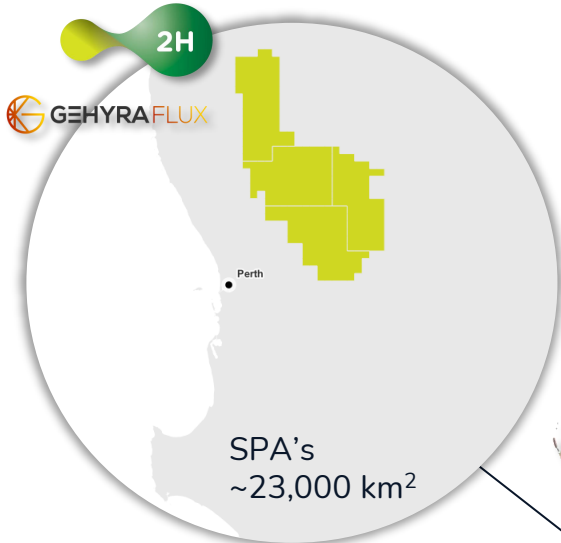
Australian National University

### Partnerships



# 2H Resources Portfolio

- 16 SPA/PELA/EL applications across 3 states
- Early stage of exploration program(s)



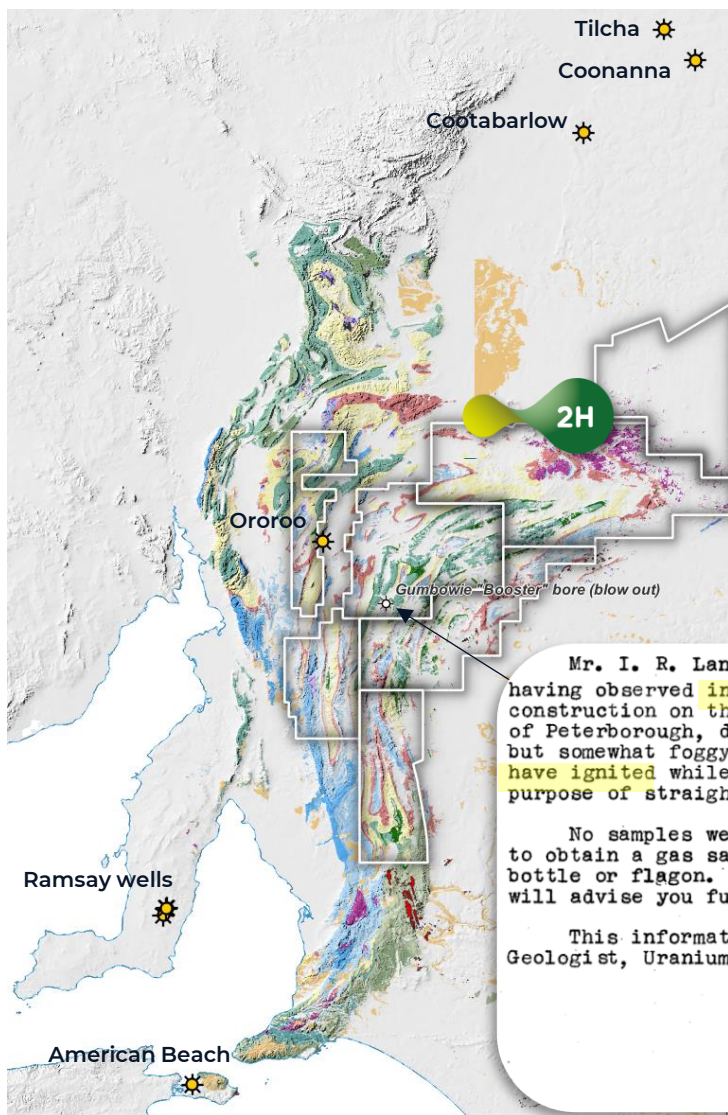
So...What have we learned so far?





# Dig deep for historical information

H<sub>2</sub> and He occurrences around 2H Resources SA's position



## South Australia

Gas exsolving during water sampling.  
Zak Milner 2023 field trip



Mr. I. R. Lang, of Peterborough, called to report having observed inflammable gas in a water bore under construction on the above section, about 8 miles N.E. of Peterborough, depth about 50 ft. Gas was odourless, but somewhat foggy while in bore. It was reported to have ignited while placing quartz in the hole for the purpose of straightening.

No samples were produced. Mr. Lang was advised how to obtain a gas sample, by displacement of water in a clean bottle or flagon. Should such a sample be submitted, I will advise you further.

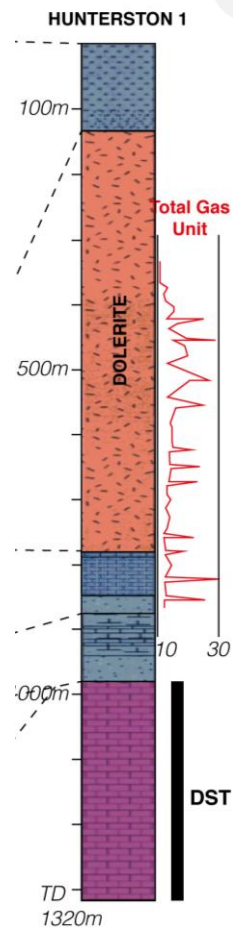
This information may be of interest to the Senior Geologist, Uranium and Fuel.

*I. R. Lang*  
TECHNICAL INFORMATION OFFICER

Gumbowie bore historical report (1957)

## Tasmania

Hunterston-1 DST gas composition in 2H Resources EL17 licence



DWERTER ASSEMBLY  
DST-3

-Air Corrected Composition

GAS	MOL %
Nitrogen	98.67
Helium	1.03
Hydrogen	0.30
Carbon Dioxide	0.00
Methane	0.00
Ethane	0.00
Propane	0.00
I-Butane	0.00
N-Butane	0.00
I-Pentane	0.00
N-Pentane	0.00
Hexanes	0.00
Heptanes	0.00
Octanes and higher h'cs	0.00
Total	100.00



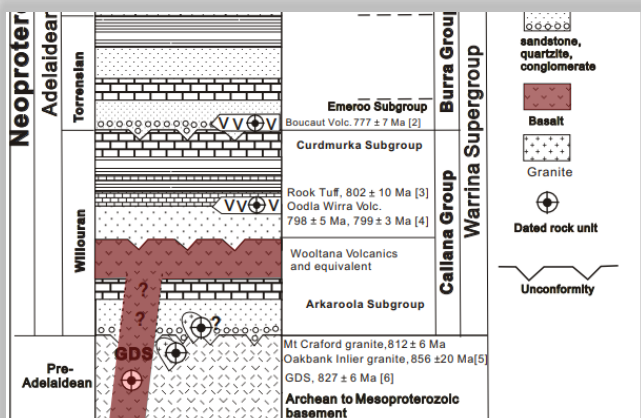
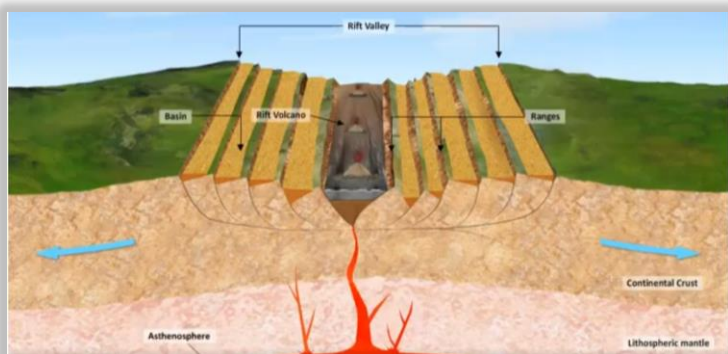


# Explore where a diversity of potential sources exist

## Serpentinisation

<sup>1</sup> H

- Basal rift mafics
- Iron formations
- Intermediate basement

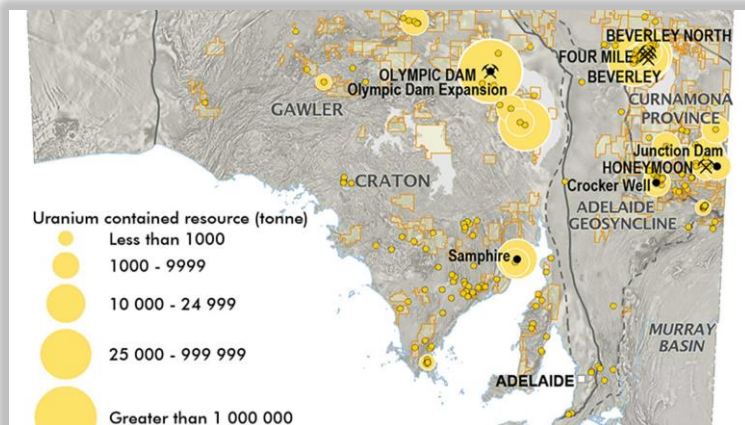
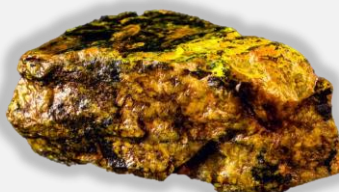


Adelaide Superbasin lithostratigraphy after (Wang et al., 2010)

## Radiolysis

<sup>1</sup> H <sup>2</sup> He

- U & Th-rich Granitic Cratons and eroded sediments

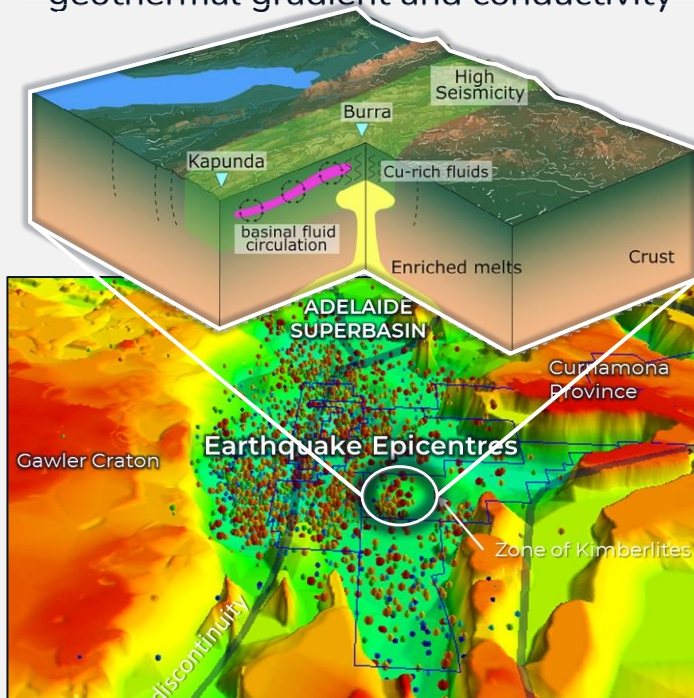


South Australian uranium occurrences

## Deep source and enhanced migration

<sup>1</sup> H <sup>2</sup> He

- Dense and active seismicity highlighting deep migration of fluids
- Kimberlite intrusions
- Crustal discontinuities linked to high geothermal gradient and conductivity



Seismic cluster within the middle crust of the basin and 3D in South Australia (Kay et al., 2024).



## Adapt to explore

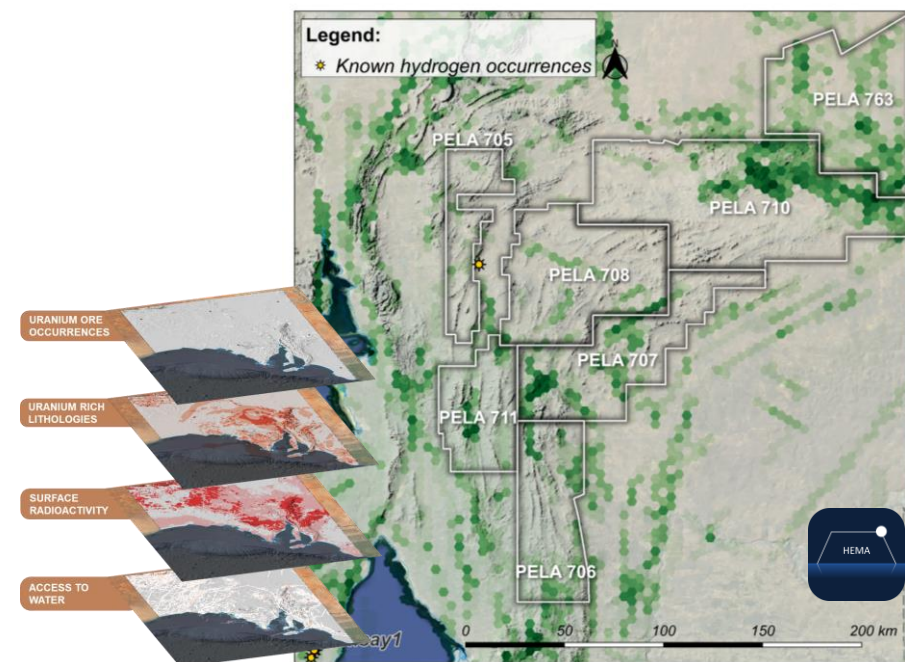
Flexible modelling to weight uncertainty of complex datasets

### Adapt traditional workflows

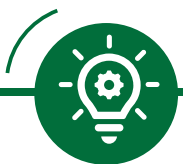


### Adapt Software

A step in the 2H Resources exploration workflow







## Adapt to explore

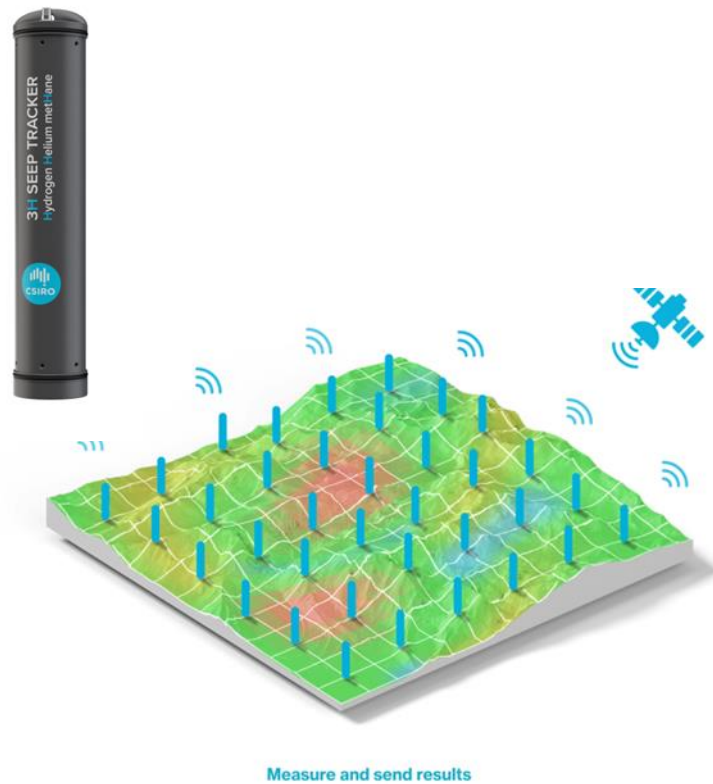
Developing exploration tools and adapt existing technologies

### Develop spot gas sampling



Spot soil gas sampling equipment

### Develop long-term sensors



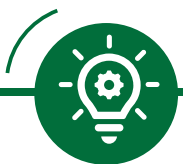
2H Resources collaboration with CSIRO

### Adapt seismic acquisition



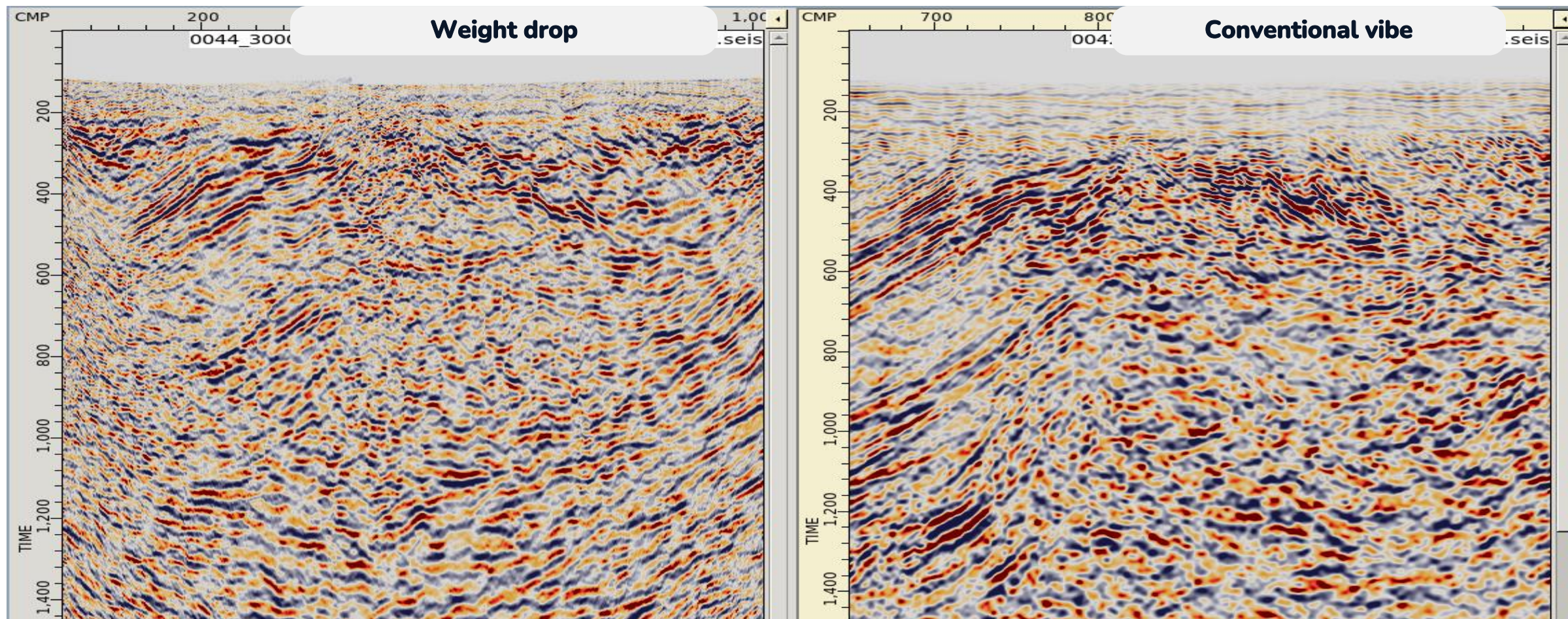
Efficient | Affordable | Sound science | Low environmental footprint





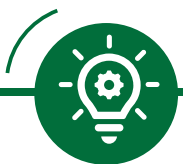
## Adapt to explore

Comparative testing on the same seismic line



Low-impact weight drop sourced seismic showing positive results in a test area of complex geology.



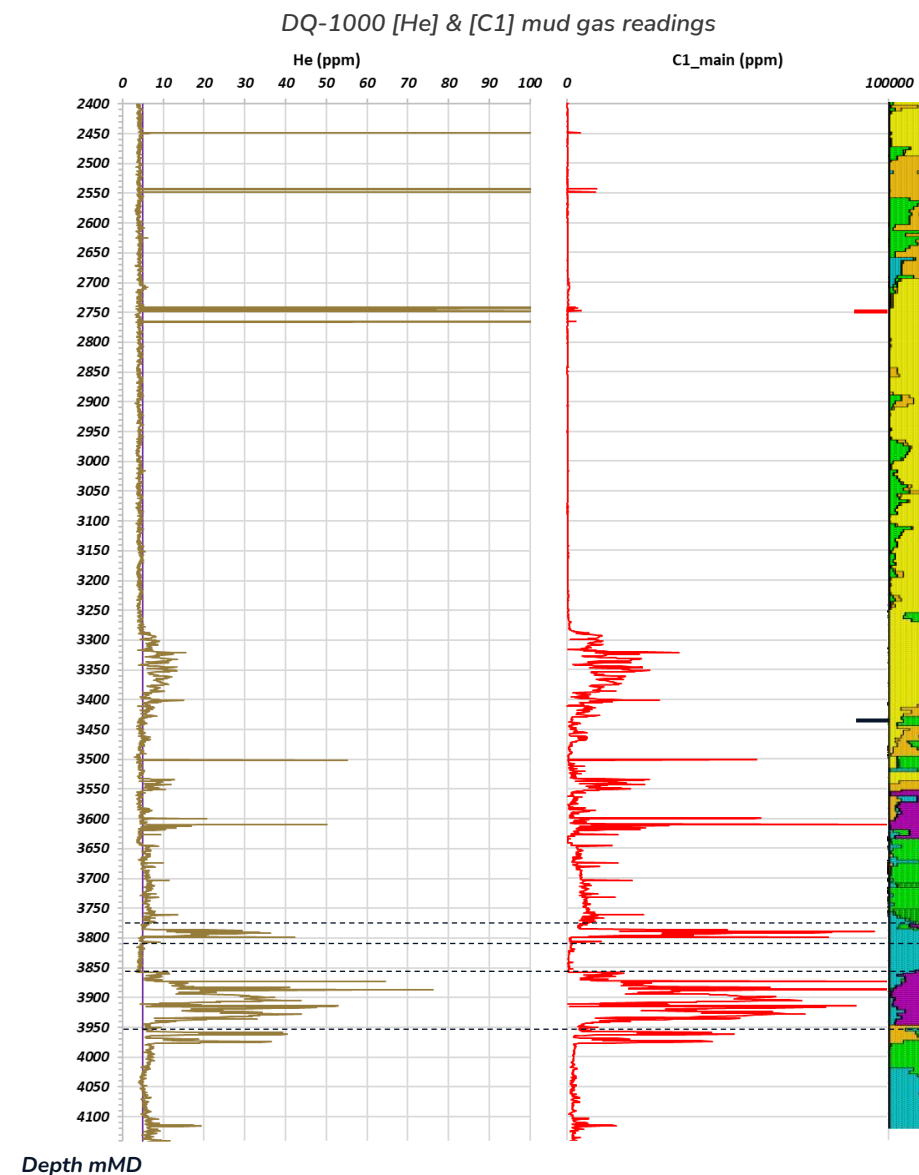


## Adapt to explore

### Combining technology to learn



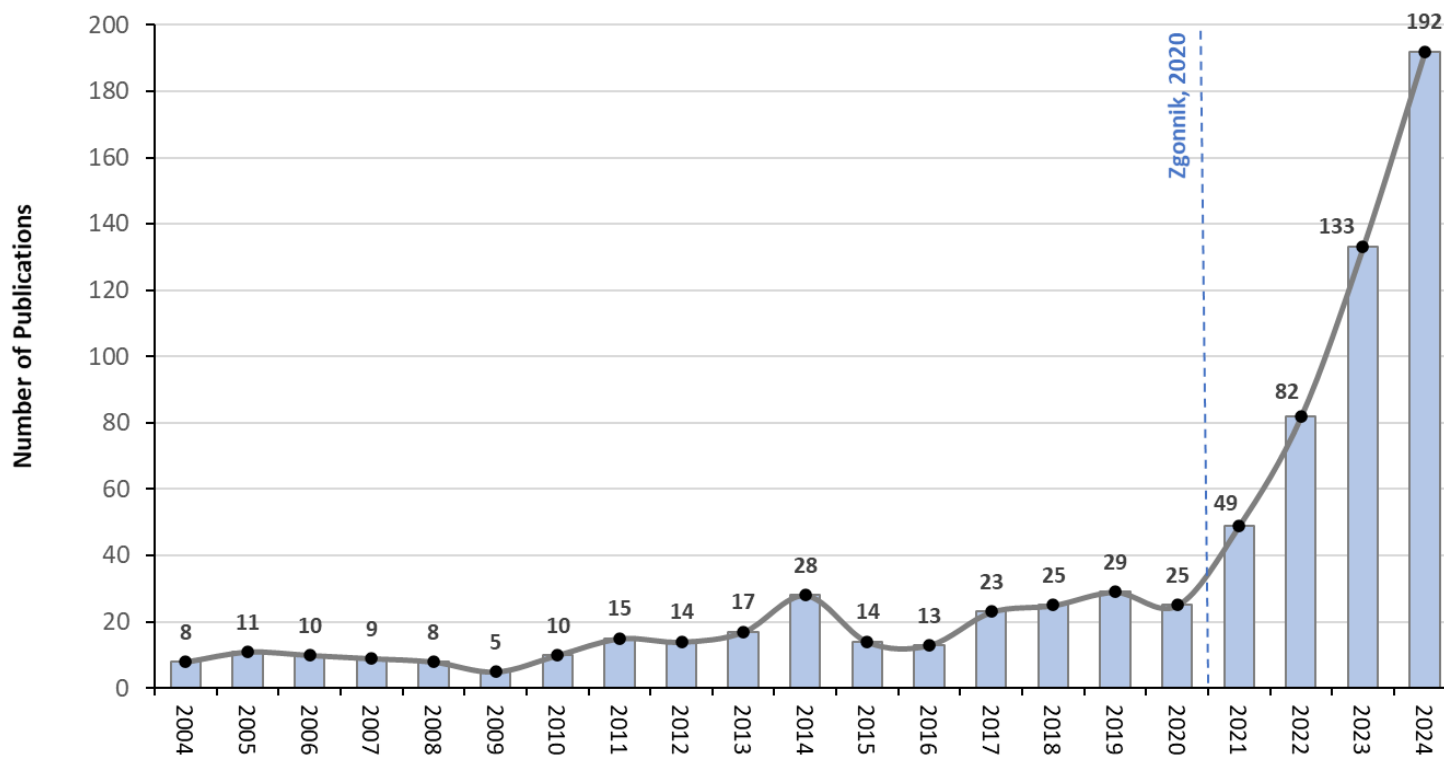
- Helium readings in mud gas using DQ1000 in the Canning Basin
- Strong correlation between helium and methane content
- Interpretation of hydrogen anomalies requires detailed monitoring of drilling parameters to identify false anomalies from “bit burn”







## Information sharing is critical



Google Scholar search returns by year for "natural hydrogen" and "energy source"

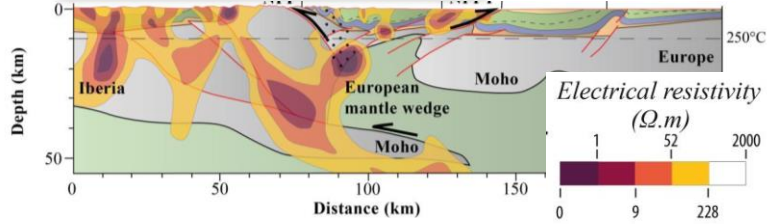
The exponential raise in scientific publications relating to natural hydrogen has been critical for establishing analogues in this nascent industry.



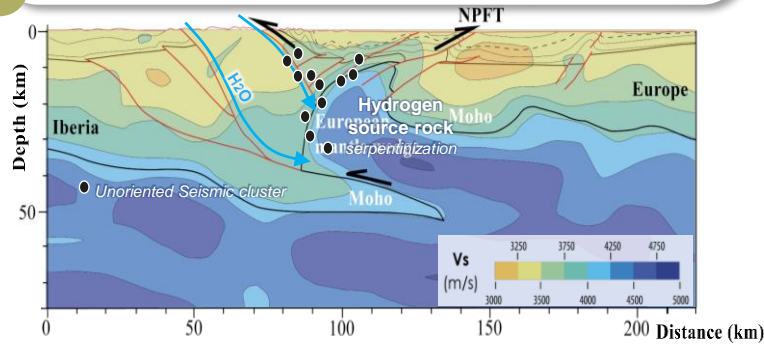
# Information sharing for exploration analogues

## Analogue: Pyrenean H<sub>2</sub> play, France

### 1 Conductive anomaly



### 2 Anomalous seismicity and velocity

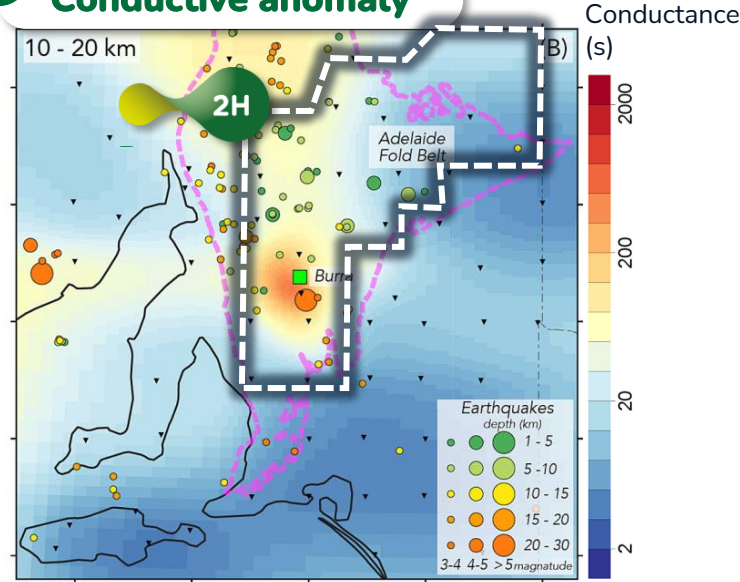


1,2,3: Pyrenean h<sub>2</sub> play, France, modified after (Lefevre et al., 2022)

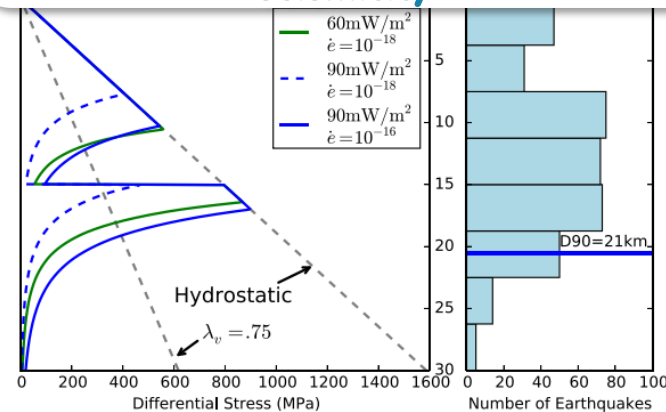
Geophysical data highlights the presence of deep fluids linked to high heat flow = an environment for the generation and migration of helium and hydrogen.

## Application: Adelaide Superbasin

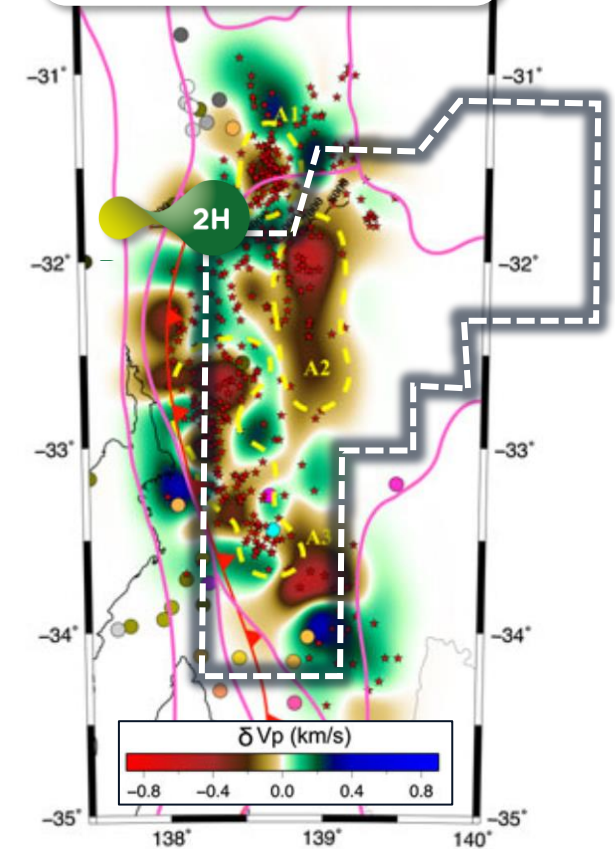
### 1 Conductive anomaly



### 2 Anomalous strength profile and seismicity



### 3 Velocity anomaly



1: 10-20km conductance anomaly from MT data from (Kay et al., 2024)

2: Strength profiles and earthquakes distribution in the Adelaide Basin from (Balfour et al., 2015)

3: Vp anomaly at 18km depth from (Pilia et al., 2013)

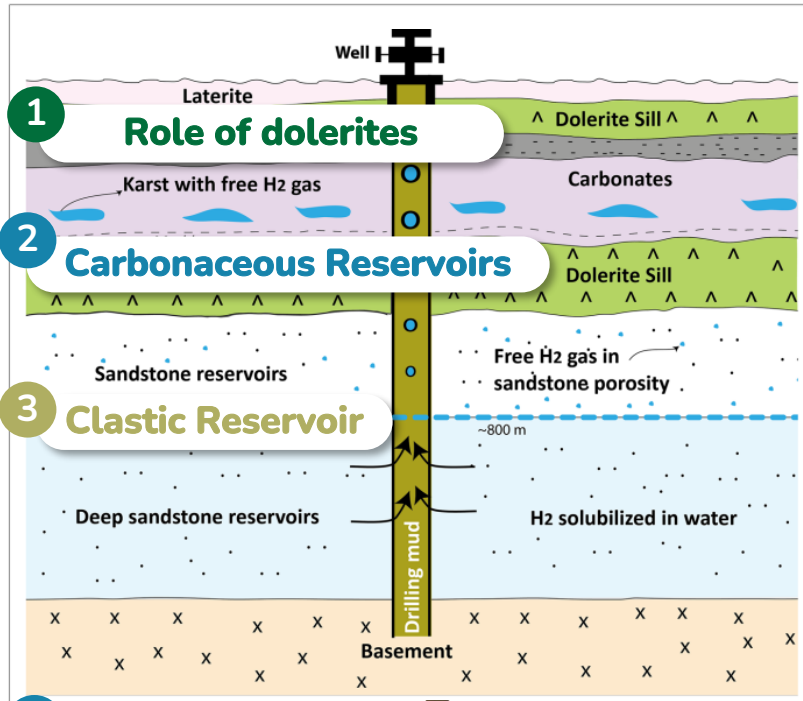




# Information sharing for exploration analogues - Tasmania

## Application: Hunterston-1, Tasmania

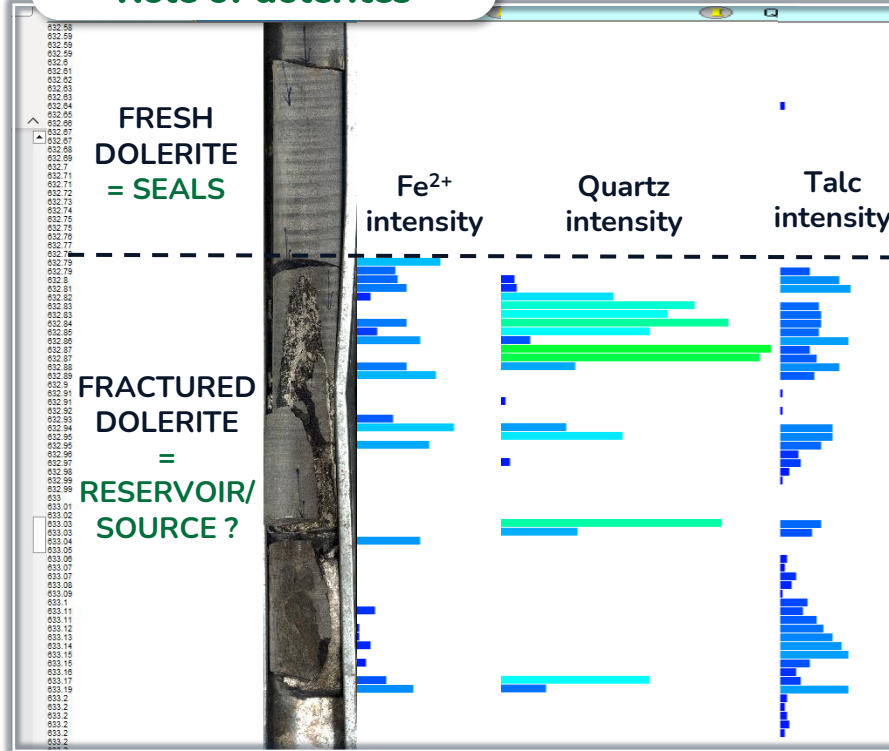
### Analogue: Bourakebougou H<sub>2</sub> field, Mali



Analogue reservoir and seals.

**1**

### Role of dolerites



**2**

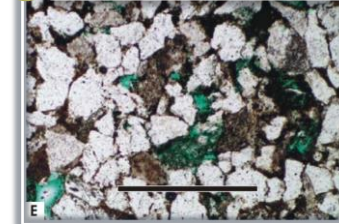
### Carbonaceous reservoir



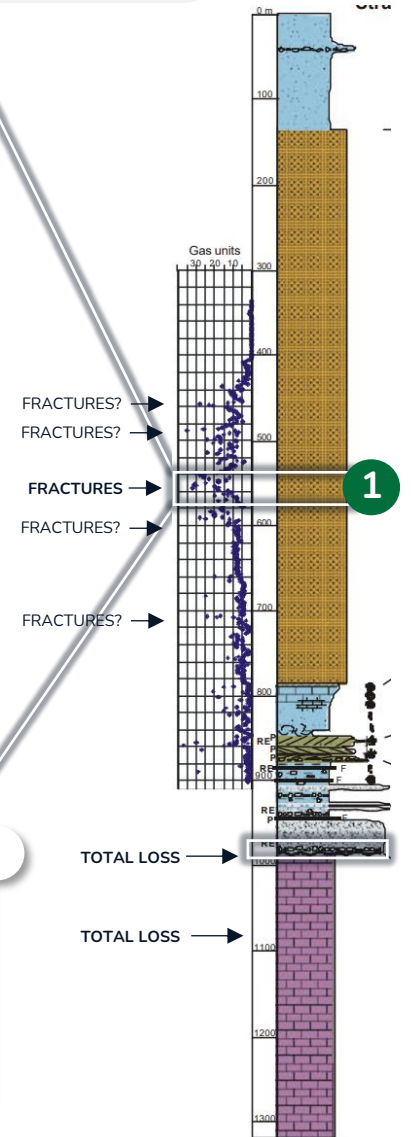
Mudstone core of the Bundella Correlate section @957.5m displaying vuggy porosity

**3**

### Clastic Reservoir

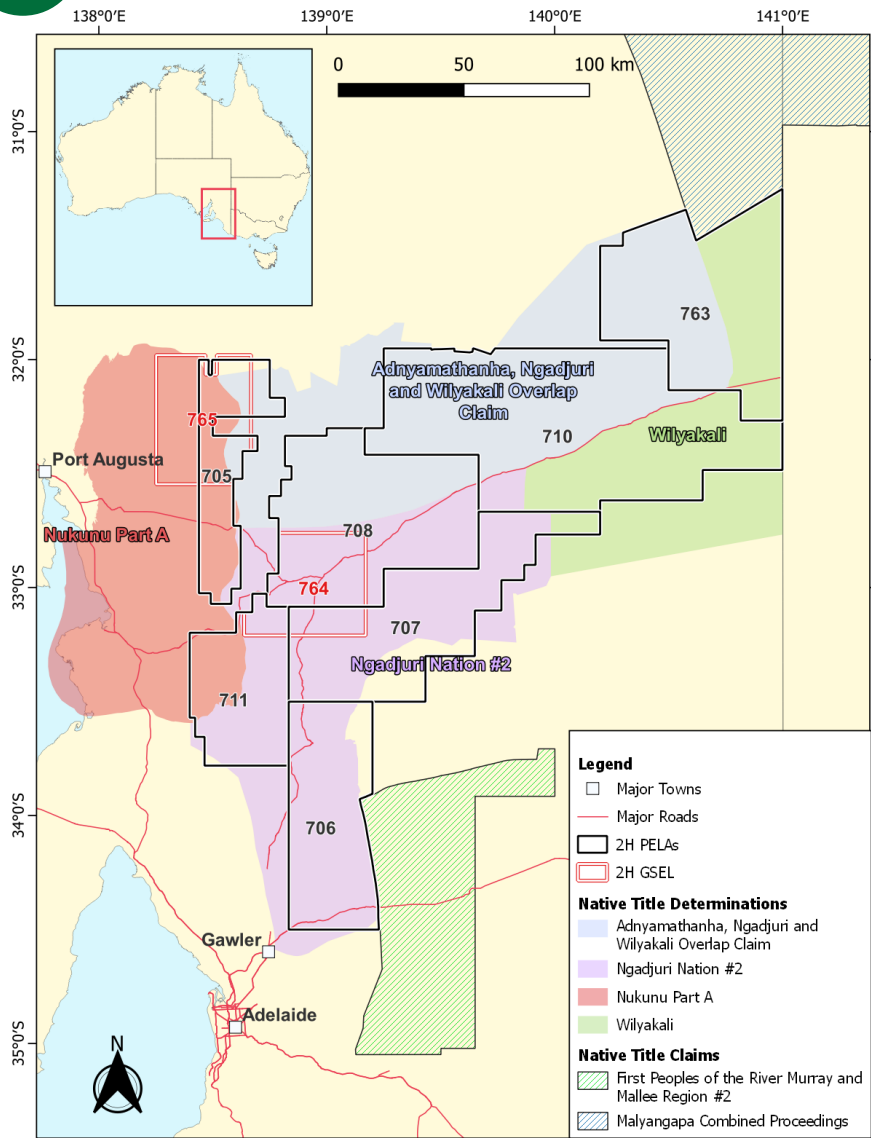


Liffey Group  $\phi$

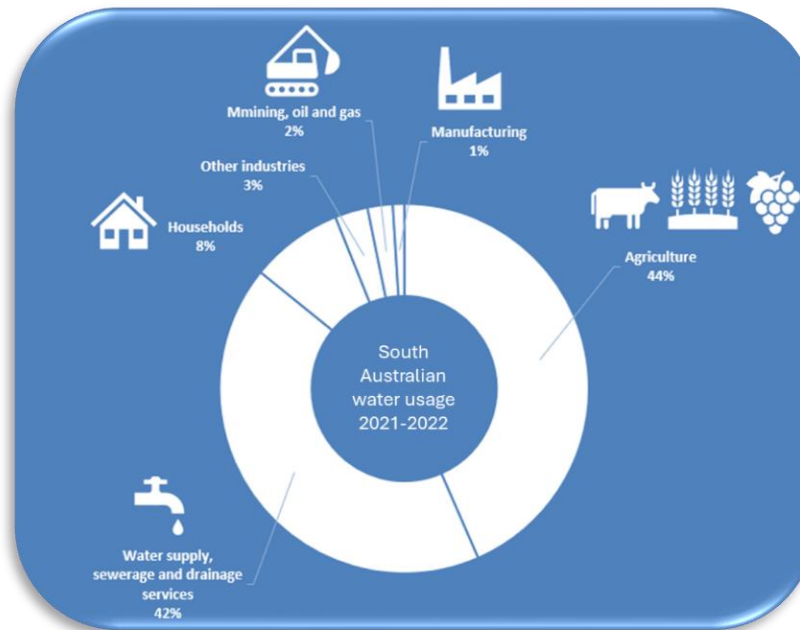




# The first step is to obtain the social licence to explore



2H Resources PELA & GSELA with underlying Native Titles



Diverse stakeholders in areas previous unexplored for subsurface gasses.



## What have we learned so far?



**Dig deep for historic records**



**Diversity of potential sources**



**Adapt to Explore**



**Information sharing is critical**



**A social licence to explore is a critical first step**

Applying these insights across **16** permit areas in **3** States as we **secure tenure** and position to **commence field activities** in **2025**.

# Come and visit our booth



**Grant**



**Harvey**



**Hugo**



Exploration of Natural Hydrogen  
and Helium



# Resources

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Contact us to learn more about our mission and work.

[hello@2HResources.com](mailto:hello@2HResources.com)

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