



*decisions with confidence*

# Australasia Petroleum Exploration (& Appraisal) Year in Review 2022

SEAPEX Conference 2023

Adam Craig

Principal Advisor - Geoscience



# Disclaimer and Declaration



---

**RISC is an independent advisory firm, providing insightful and impartial advice to a broad range of clients in the energy industries. We provide a more comprehensive, reliable and respected opinion faster than anyone else in the industry, enabling our clients to make their business decisions with confidence.**

The statements and opinions attributable to the author and/or RISC in this presentation are given in good faith and in the belief that such statements are neither false nor misleading.

In preparing this presentation the author has considered and relied solely upon information in the public domain. This information has been considered in the light of RISC's knowledge and experience of the energy industries and, in some instances, our perspectives differ from some of our highly valued clients.

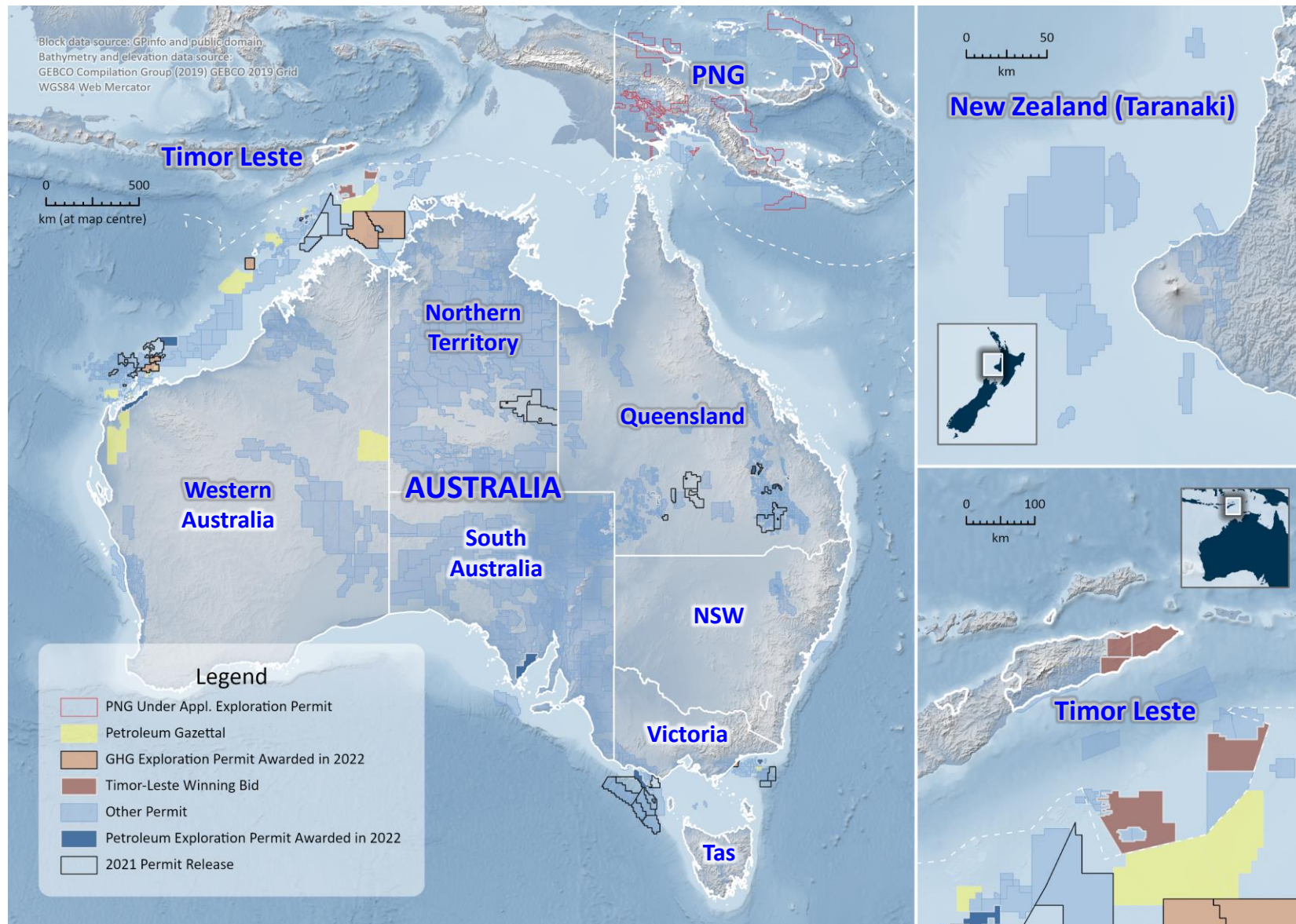
In some cases the views and opinions of the author may differ from those held by others within RISC.

RISC has no pecuniary interest or professional fees receivable for the preparation of this presentation, or any other interest that could reasonably be regarded as affecting our ability to give an unbiased view.

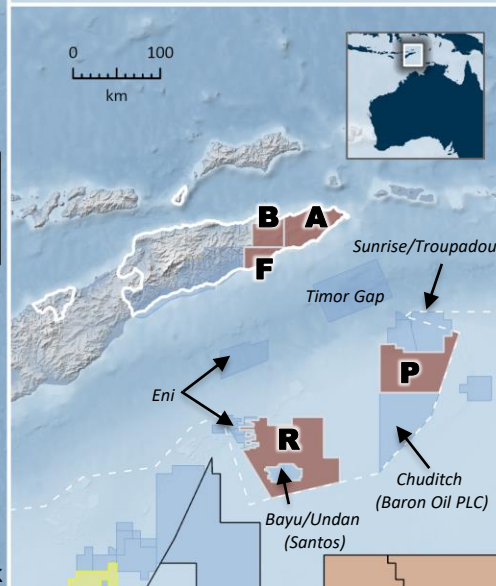
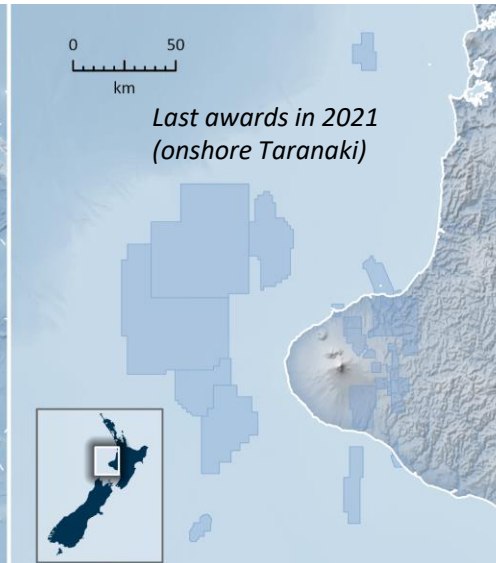
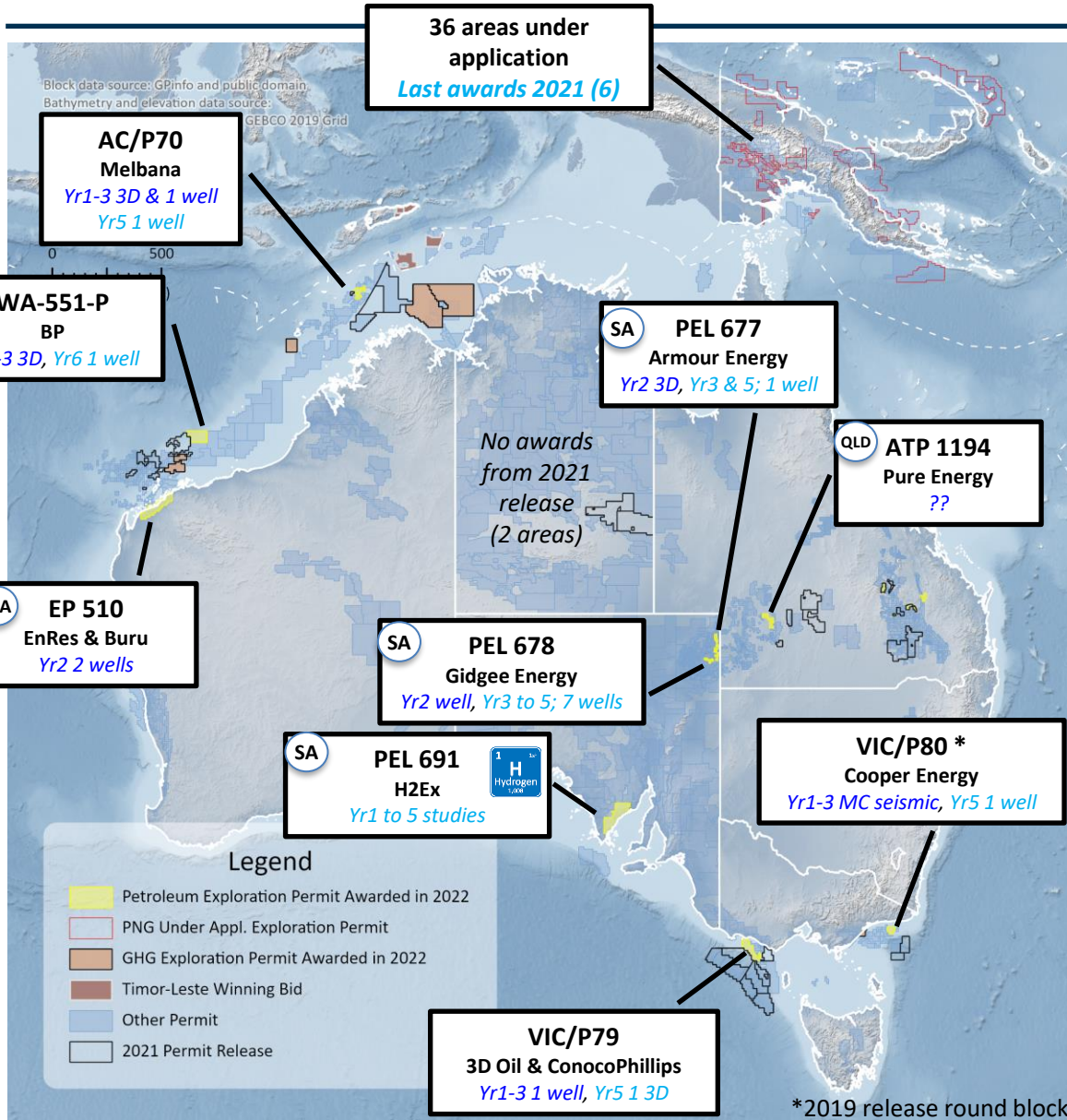
This presentation is the copyright of RISC and may not be reproduced, electronically or in hard copy, without the written permission of RISC.

- Summary of exploration acreage releases and permits awarded
- Summary of exploration transactions & farmins
- Summary of exploration & appraisal activity
- Key exploration and appraisal well summaries
- Exploration wells planned 2023+
- Summary, key take-aways & acknowledgements

# Australasia 2022 Exploration Year in Review



# Australasia 2022 Petroleum Exploration Permit Awards



## Australian Federal Offshore Petroleum Exploration Permits

- 4 awards
- 3 from 2020 round & 1 from 2019 round
- No awards for 2021 round (closed 3 March 2022)

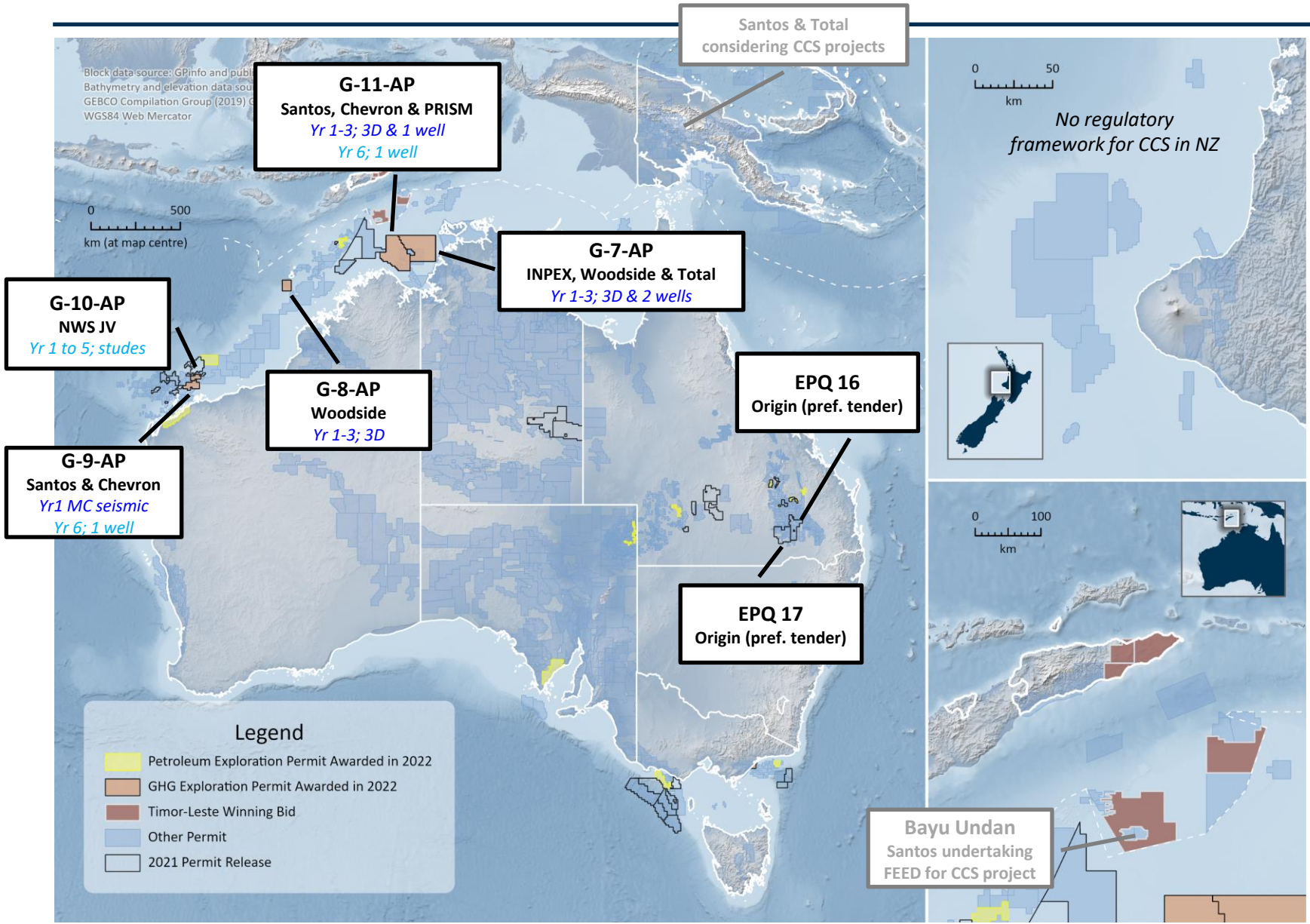
## State Jurisdiction Petroleum Exploration Permits

- WA 1 permit
- SA 3 permits
- QLD 5 permits (4 being CSG permits)

## Timor Leste

- ANPM announced winning block bids for 2019-2022 licensing round in April 2022
- Subject to negotiation of PSC
- Expected that contracts to be finalised in Feb 2023
- Block A – Timor Gap E. P.
- Block B – Esperanca Timor Oan Lda
- Block F – HTS Exploration
- Block P – Eni Aust.
- Block R - Santos

# Australasia 2022 GHG Assessment Permit Awards



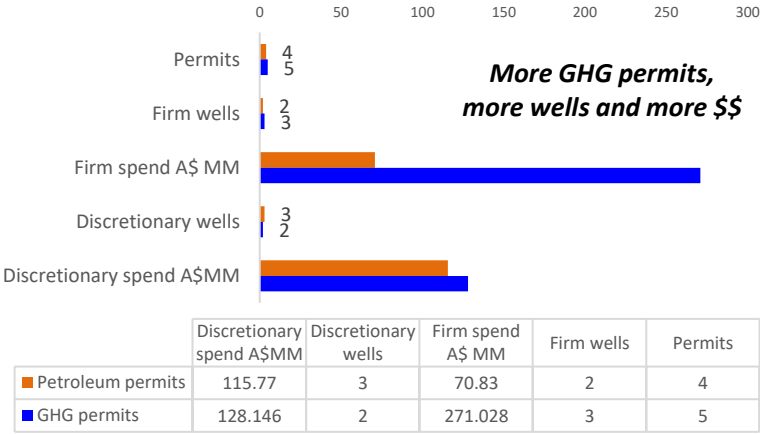
## Australian Federal Offshore Greenhouse Gas Storage Acreage Awards

- 5 permit awards (from 5 release areas)

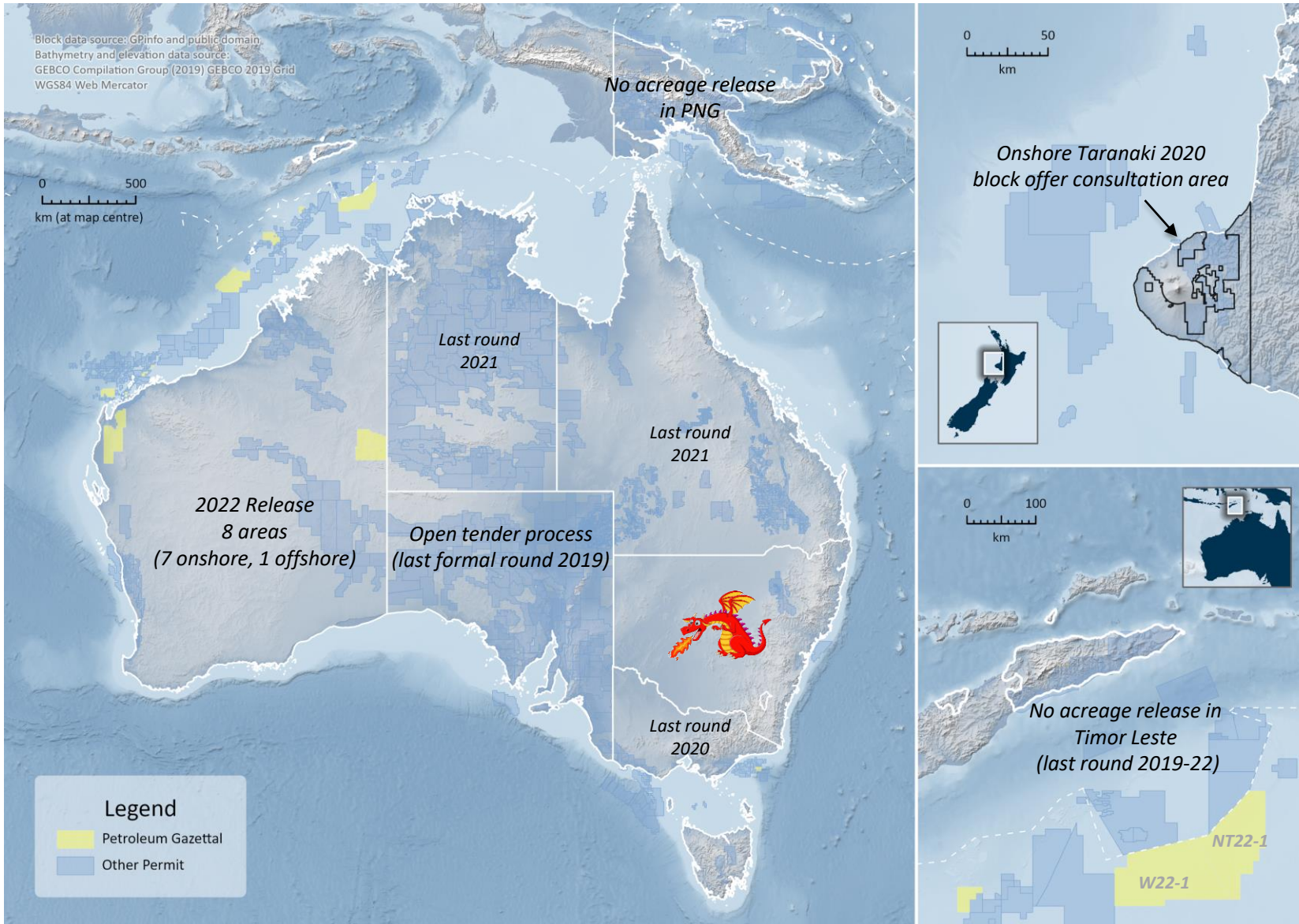
## State Jurisdiction GHG Exploration Permits

- SA; 1 permit awarded, GSEL 759 (3D Oil, over Caroline-1 well)
- SA; 13 areas with ‘preferred tender’ status under consideration, and subject to native title negotiation
- QLD; 2 permits ‘preferred tender’ status from 2021 release round, and subject to native title negotiation

Aust. Federal Offshore GHG vs Petroleum Exp Awards



# Australasia 2022 Acreage Releases



## Australian Federal Offshore Petroleum Release Round

- 10 areas (21 in 2021 & 42 in 2020)
- Release delayed to due to Federal election (August instead of June)
- Bids due 2 March 2023

## Western Australia Petroleum Release Round

- 7 onshore areas, 1 offshore area (territorial waters)
- Released March and closed June 2022
- 7 bids received
- 'Preferred bidder' announced on 4 areas (subject to native title negotiation)

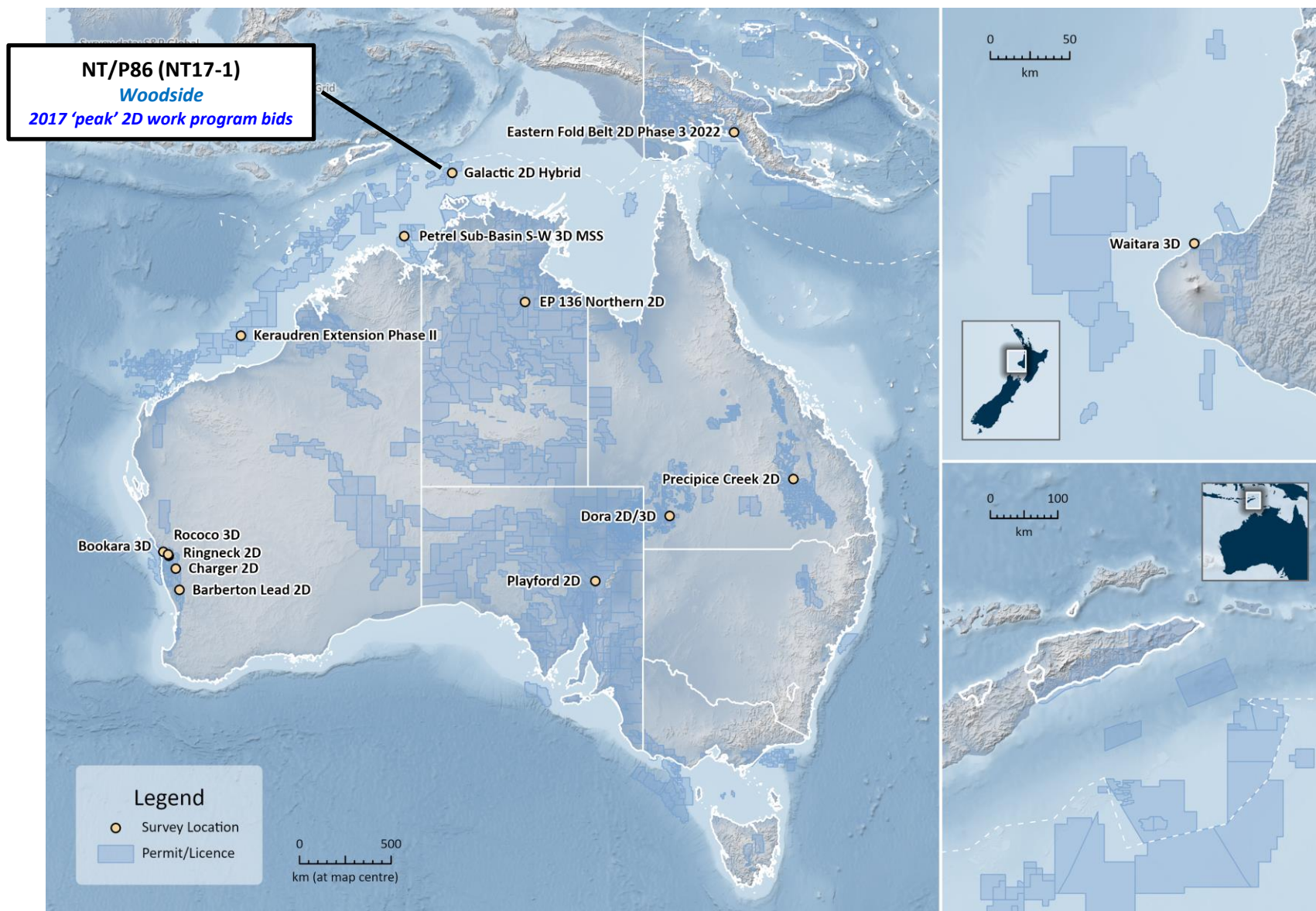
## New Zealand

- 2020 block offer area remains open for iwi and hapu consultation.
- Govt deferred decision to offer blocks in Dec 2022
- Ban on new offshore exploration permits since 2018
- Last onshore Taranaki round in 2019

## Australian Federal Offshore Greenhouse Gas Storage Acreage Release

- Nominations for areas closed July 2022 but.....
- Release round was not announced in December as expected

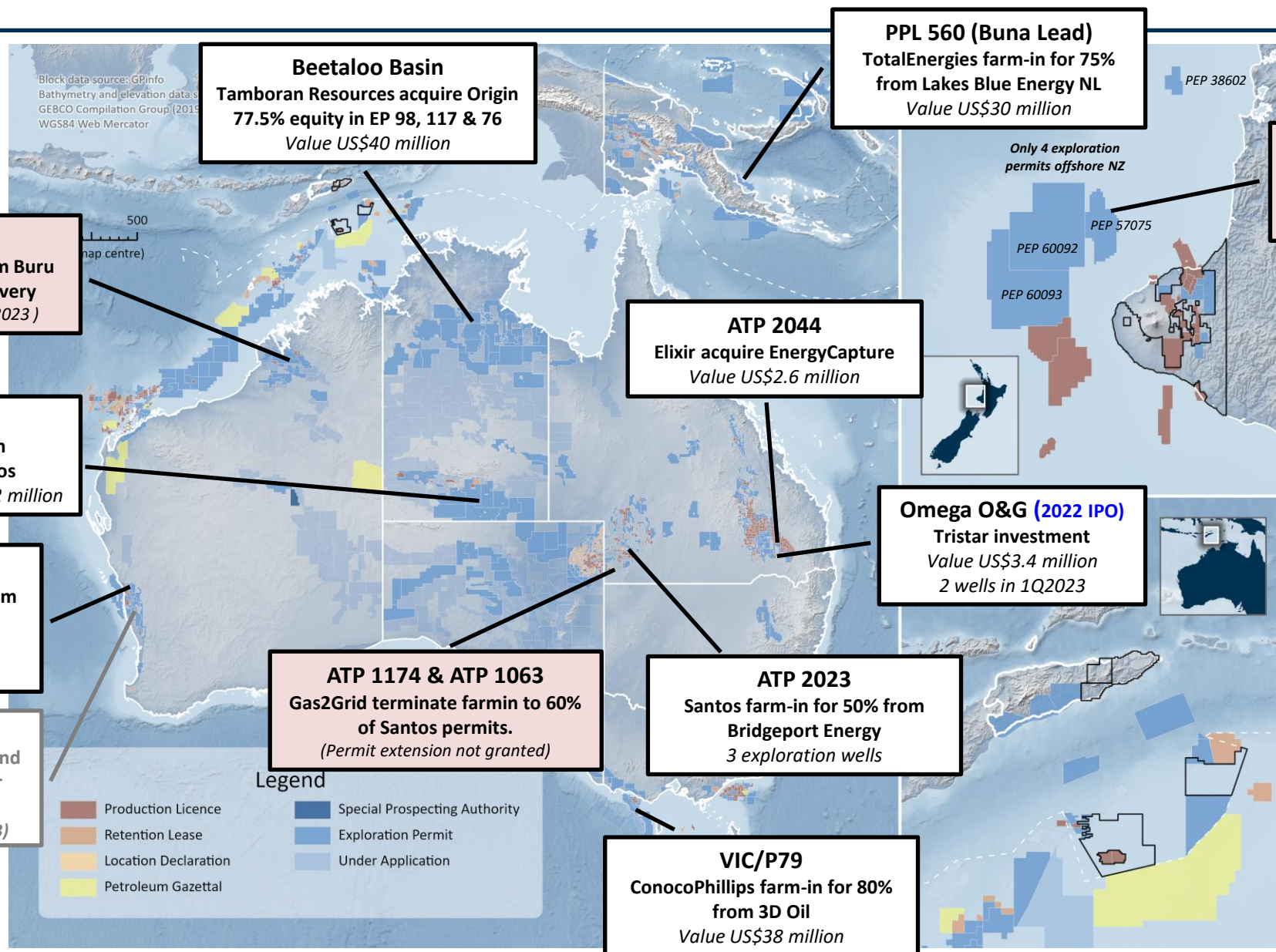
# Seismic Surveys Acquired 2022



Australian Seismic	2022	2021	% Change
<b>Total 2D (km)</b>	<b>4,819</b>	<b>1,460</b>	
2D onshore	707	1,460	48% ↓
2D offshore	4,112	0	100% ↑
<b>Total 3D (km2)</b>	<b>2,384</b>	<b>7,060</b>	
3D onshore	727	280	260% ↑
3D offshore	1,657	6,780	24% ↓

- Only offshore 2D acquired in the Woodside operated NT/P86 exploration permit (2017 release, 2019 award), Timor Sea.
- Santos acquired Keraudren 3D extension Phase II in Bedout Sub-basin (Dorado hub area)
- Significant 2D & 3D acquisition in the Perth Basin**
- Transition zone Waitara 3D acquisition in NZ by Greymouth Petroleum
- Eastern fold belt Phase 3 in PNG (?? Km)

# Exploration Deals 2022



**Beetaloo Basin**  
Tamboran Resources acquire Origin  
77.5% equity in EP 98, 117 & 76  
Value US\$40 million

**PPL 560 (Buna Lead)**  
TotalEnergies farm-in for 75%  
from Lakes Blue Energy NL  
Value US\$30 million

**PEP 60093, 60092 & 57075**  
Advent terminate farm-in to 30% of  
OMV permits offshore Taranaki  
(failure to gain regulatory approval)

**Canning Basin**  
Origin announce their exit from Buru  
JV including Rafael gas discovery  
(JV interest acquired by Buru in 2023)

**EP 82, 112 & 125**  
Peak Helium farm-in with  
Central Petroleum & Santos  
2 exploration wells, Value US\$22 million

**EP 437 & L7**  
Talon Energy acquire 25% from  
Triangle Energy  
2:1 on 2 wells  
Value US\$6.2 million

**Warrego Energy**  
Strike Energy, Beach Energy and  
Hancock Prospecting vie for  
takeover  
(Hancock acquired control 2023)

**ATP 2044**  
Elixir acquire EnergyCapture  
Value US\$2.6 million

**Omega O&G (2022 IPO)**  
Tristar investment  
Value US\$3.4 million  
2 wells in 1Q2023

**ATP 1174 & ATP 1063**  
Gas2Grid terminate farm-in to 60%  
of Santos permits.  
(Permit extension not granted)

**ATP 2023**  
Santos farm-in for 50% from  
Bridgeport Energy  
3 exploration wells

**VIC/P79**  
ConocoPhillips farm-in for 80%  
from 3D Oil  
Value US\$38 million

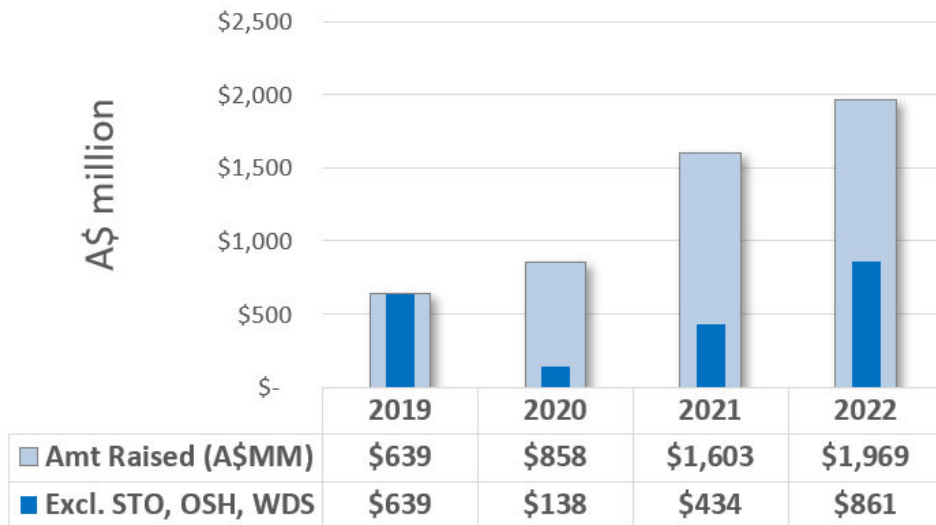
**Other deals with  
exploration components**  
  
**Merger of Woodside and  
BHP Petroleum to create  
US\$47 Billion E&P company**  
Completion 1 June 2022

**Acquisition of Origin by  
Brookfield & MidOcean  
Energy announced**  
Announced November 2022  
Value US\$11.9 Billion

# IPO's and Capital Raisings (ASX listed)

## Litmus tests for the health of the O&G exploration industry .....

IPO's, Capital Raises and Rights Issues



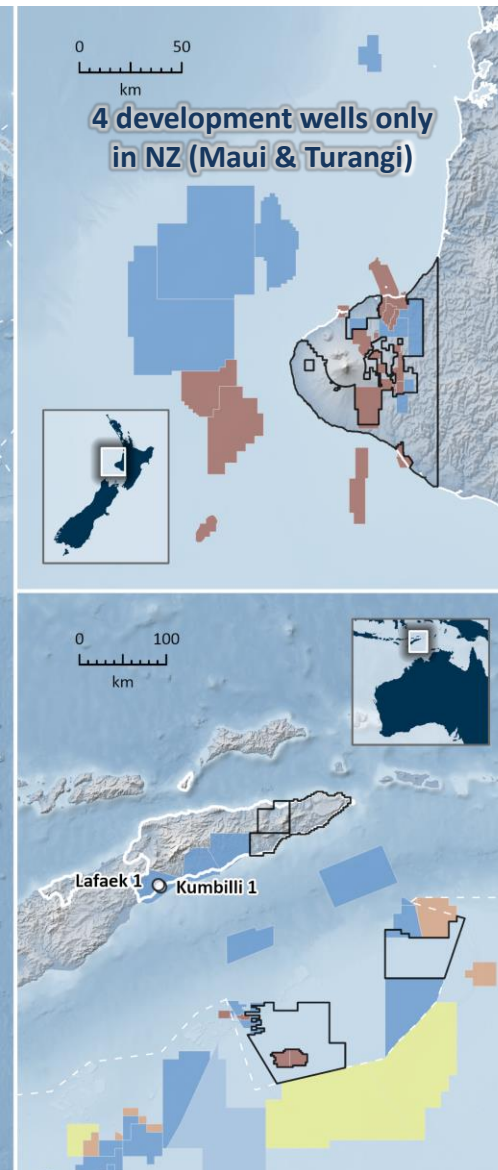
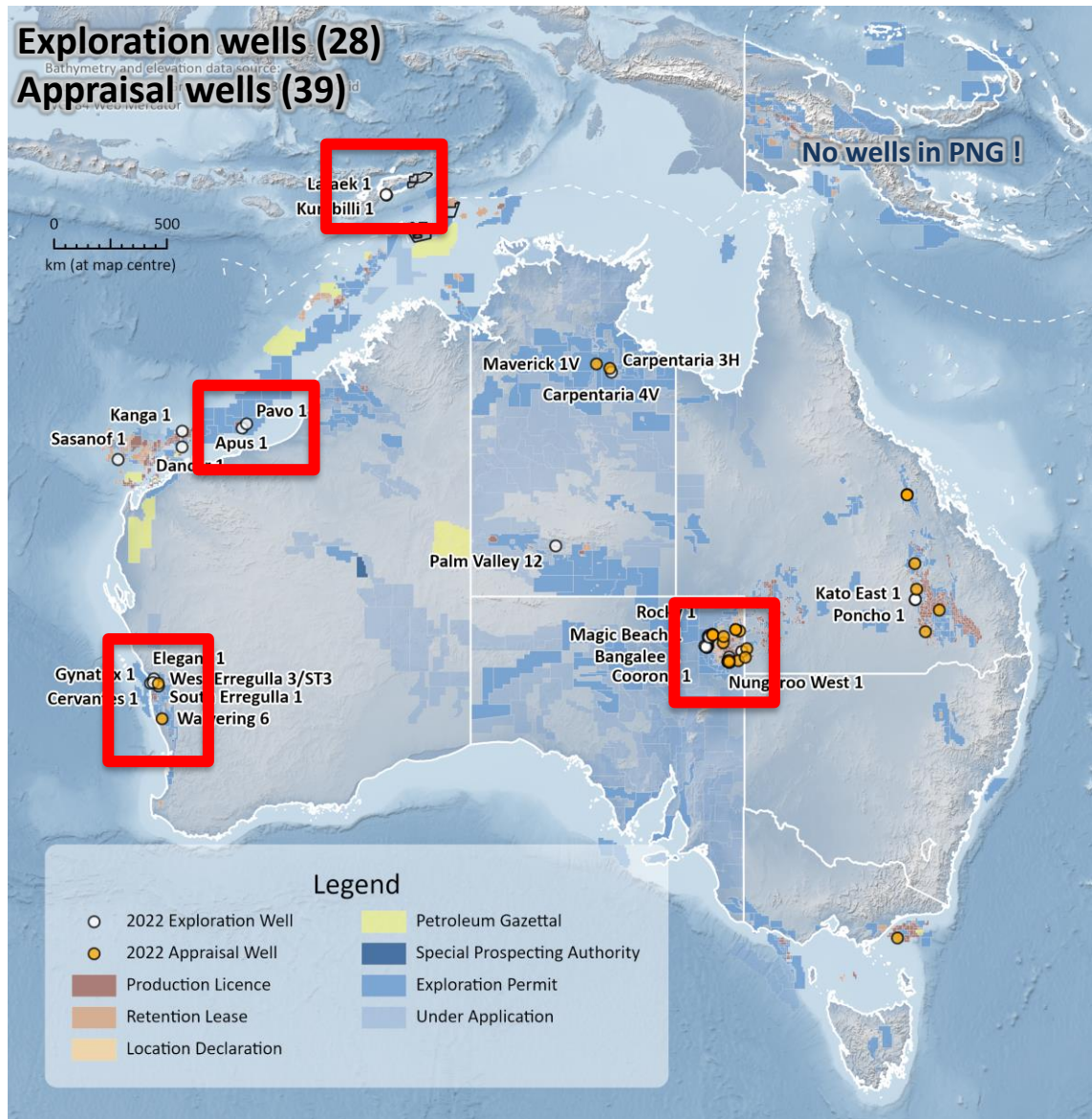
- Oil & gas companies on the Australian stock exchange ("ASX")
- Excluding large caps (Woodside, Santos, Oil Search, Origin) the ASX is dominated by exploration companies with assets and activities worldwide
- Capital raised on equities market is increasing since 2019/20**

IPO's

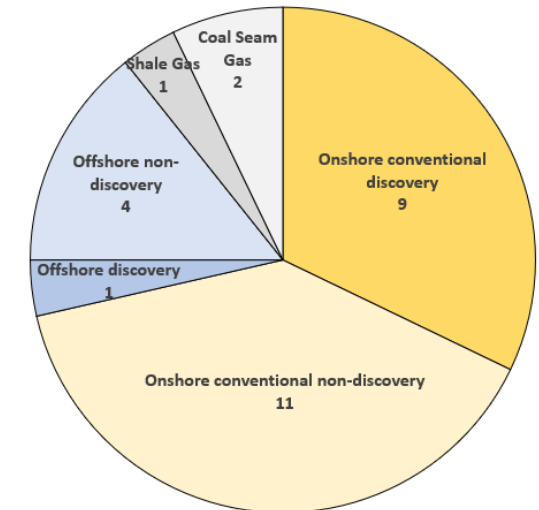


- Oil & gas company initial public offerings ("IPO") on the ASX have increased
- IPO's typically exploration focussed companies
- In 2022 Finder Energy, Noble Helium, Top End Energy, Omega O&G and Conrad Asia Energy floated on the ASX
- IPO's are an indicator of the investment health and investor appetite for oil & gas equities (and their returns)**

# Exploration & Appraisal Wells 2022

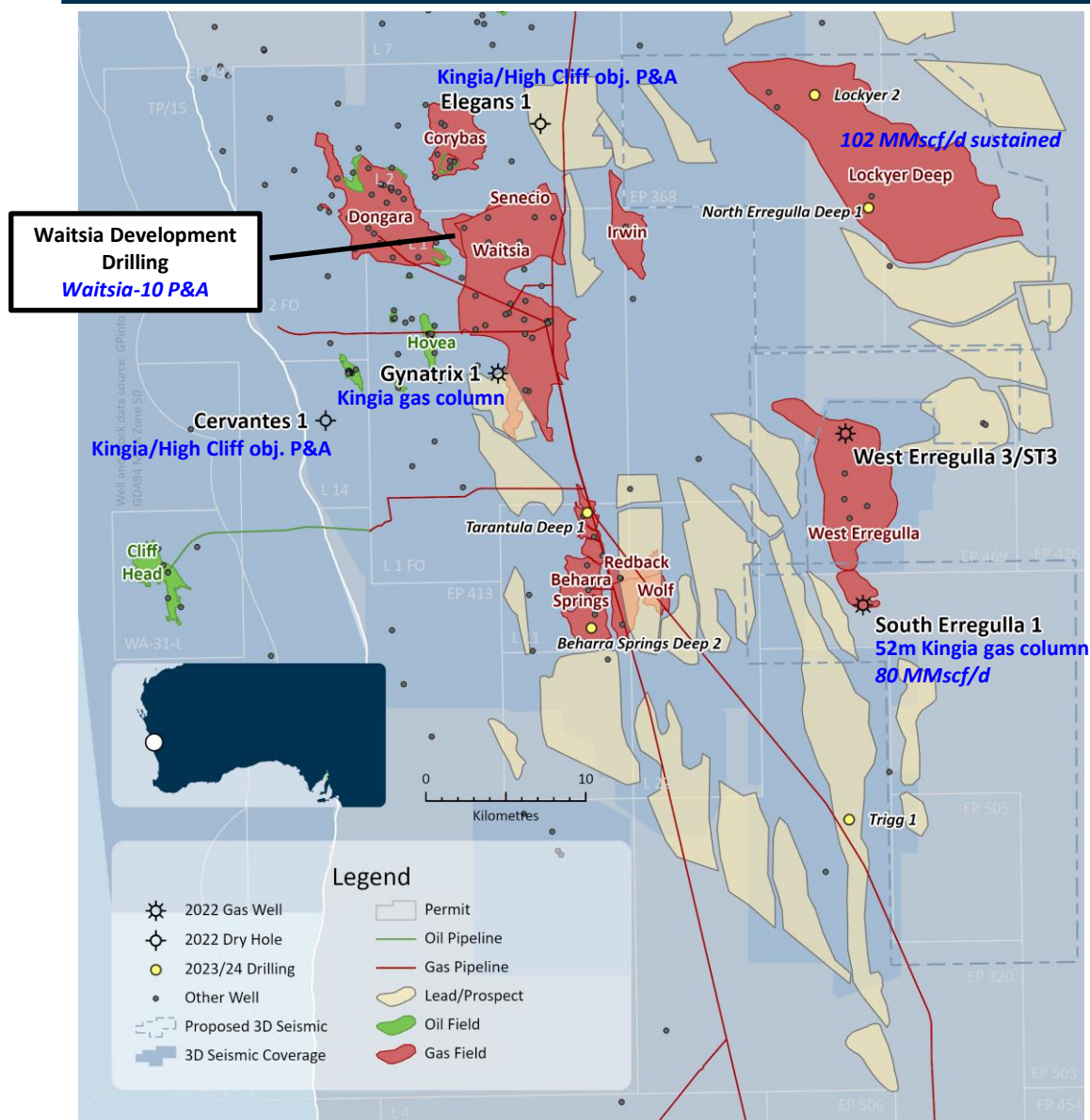


## Exploration wells (n= 28)



- No exploration or appraisal wells in PNG or NZ
- Offshore exploration wells = 5
- Offshore discoveries = 1 (Pavo-1)
- Onshore exploration wells = 23
- Onshore conventional discoveries = 9
  - Australia = 8
  - Timor Lestè = 1 (Kumbilli-1)

# Exploration Hotspot – North Perth Basin



## Exploration Drilling:

- RCMA, Vintage & Metgasco drilled the **Cervantes-1** well which was P&A'd as a dry-hole.
- Strike Energy drilled the **South Erregulla-1** exploration well in EP 503 (gas discovery).
  - Wagina sandstone 16m net. Ave porosity 14%
  - Kingia Sandstone 52m gross gas column, 14m net. Ave porosity 13% 80 MMscf/d on test.
- Mitsui / Beach Energy Joint Venture drilled the **Elegans-1** and **Gynatrix-1** wells as part of the Waitsia development drilling campaign<sup>1</sup>.
  - Elegans-1 was P&A'd as a dry-hole (17% gPOS pre-drill)
  - Gynatrix-1 intersected 6m net gas pay in Kingia Sst objective (24% gPOS pre-drill)

## Appraisal Drilling:

- Strike Energy operated EP 469 JV completed drilling the **West Erregulla-3ST3** well. 60 m gross gas column in Kingia. Tested at 90 MMscf/d

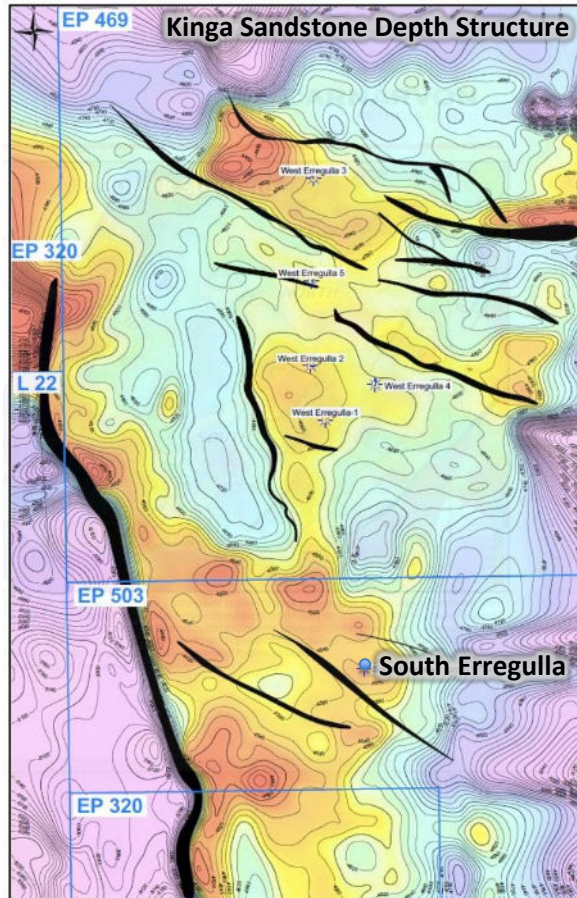
## Future Drilling:

- Beach to drill Trigg-1 exploration well
- Beach to drill Beharra Springs Deep-2 appraisal well and Tarantula Deep-1 exploration well
- Energy Resources (MinRes) & Norwest Energy JV to drill 2 exploration/appraisal wells on the 2021 Lockyer Deep gas discovery

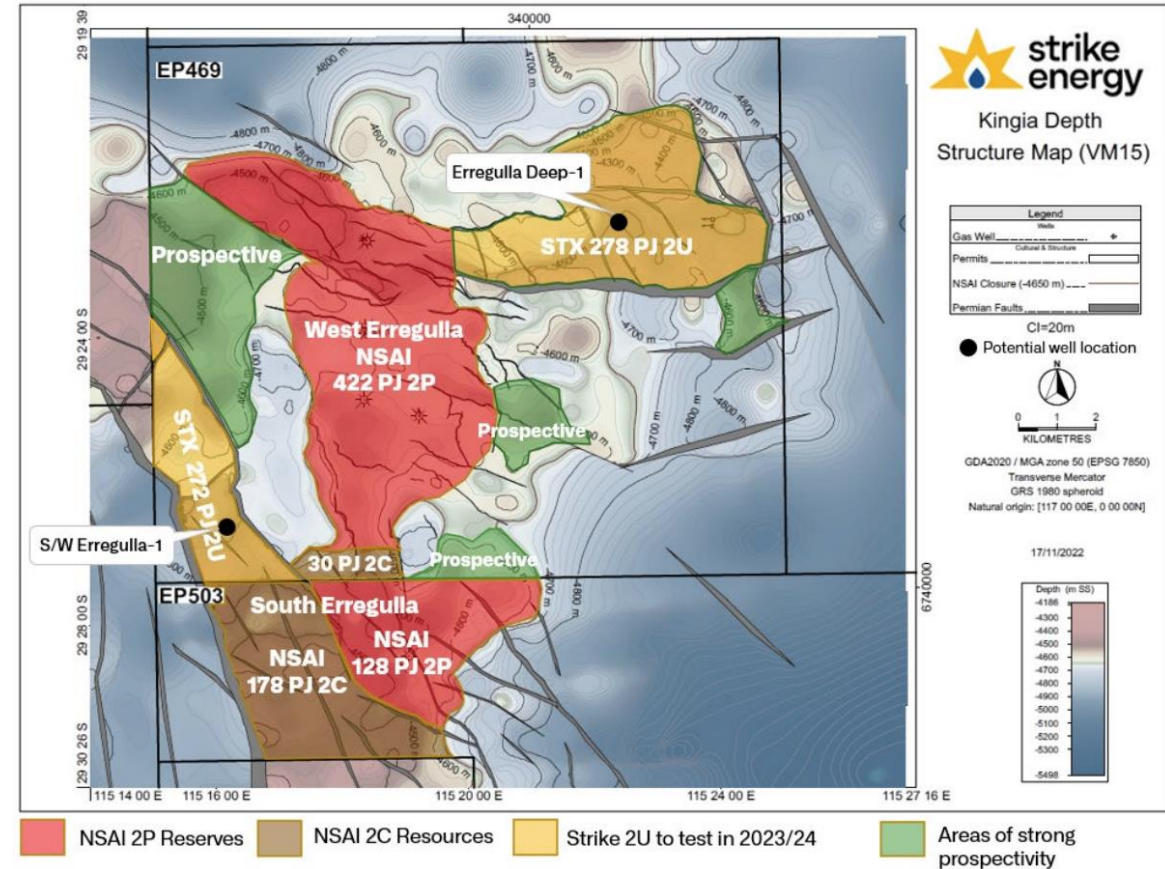
For more details on the Permian exploration play, check out Ian Cockerill's and Andrew Farley's Session 11 presentations Thursday.

<sup>1</sup> Beach Energy FY23 2<sup>nd</sup> Qtr report released 31 Jan 2023

# South Erregulla-1



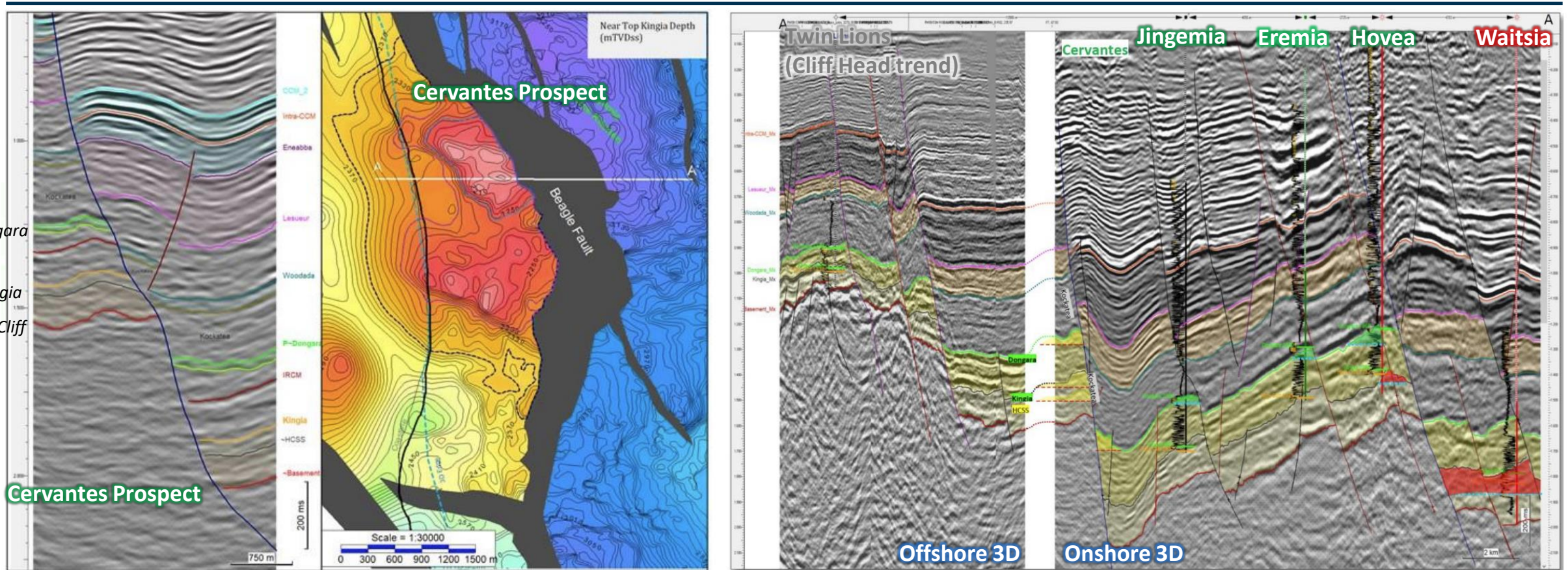
Source: Strike ASX announcement 10 January 2022



Source: Strike ASX announcement 16 Dec 2022

- South Erregulla-1 drilled January – March in EP503 by Strike Energy 100%
- 16 m net gas pay in Wagina Sandstone with porosity up to 14% (average 9%)
- 52 m gross and 14 m net gas pay in Kingia Sandstone with porosity up to 20% (average 13%) – tested at 80 MMscf/d

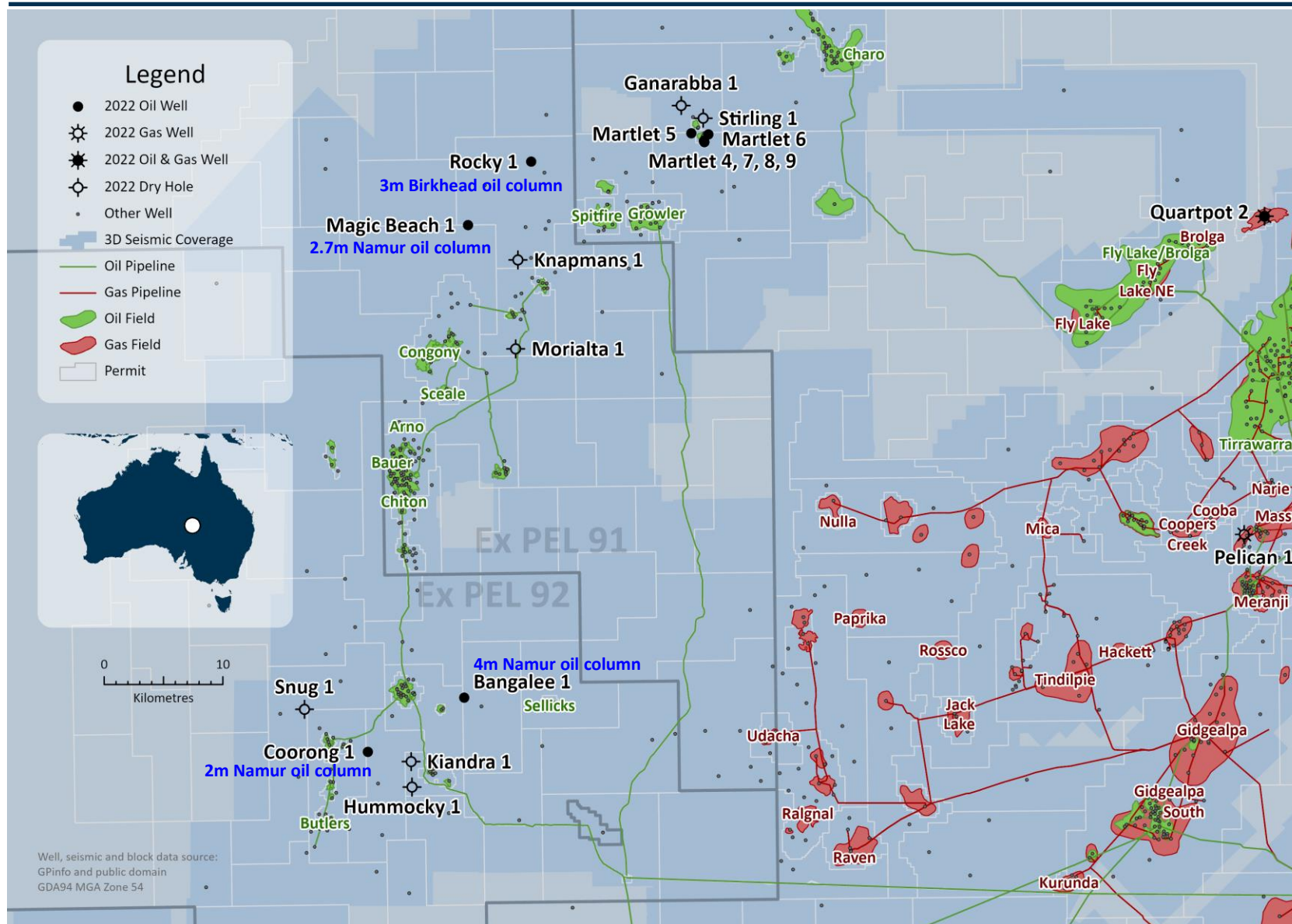
# Cervantes-1



Source: Vintage Energy ASX announcements

- **Pre-drill estimate of 15.3 MMbbl Prospective Resources (2U) and 28% gPOS**
- Target Permian Kingia and High Cliff sandstones in a faulted 3-way structural trap
- Cervantes-1 drilled March – April in L14 (Jingemina production license) by RCMA - Vintage Energy & Metgasco farming in
- TD of 2,520 m
- **Well failure attributed to poor access to oil charge**

# Exploration Hotspot – Cooper Basin Western Flank



## Exploration Drilling:

- Beach Energy drilled 13 exploration wells in the Cooper-Eromanga basin (12 Operated wells)
- 11 exploration wells on the 'Western Flank'
- 4 successes (Bangalee-1, Coorong-1, Magic Beach-1 & Rocky-1)
- No material exploration on the Western Flank for 5-years
- Exploration success attributed to PSDM (re)processing of 3D seismic
- 'Western Flank' Namur and Birkhead plays have been extended north-west

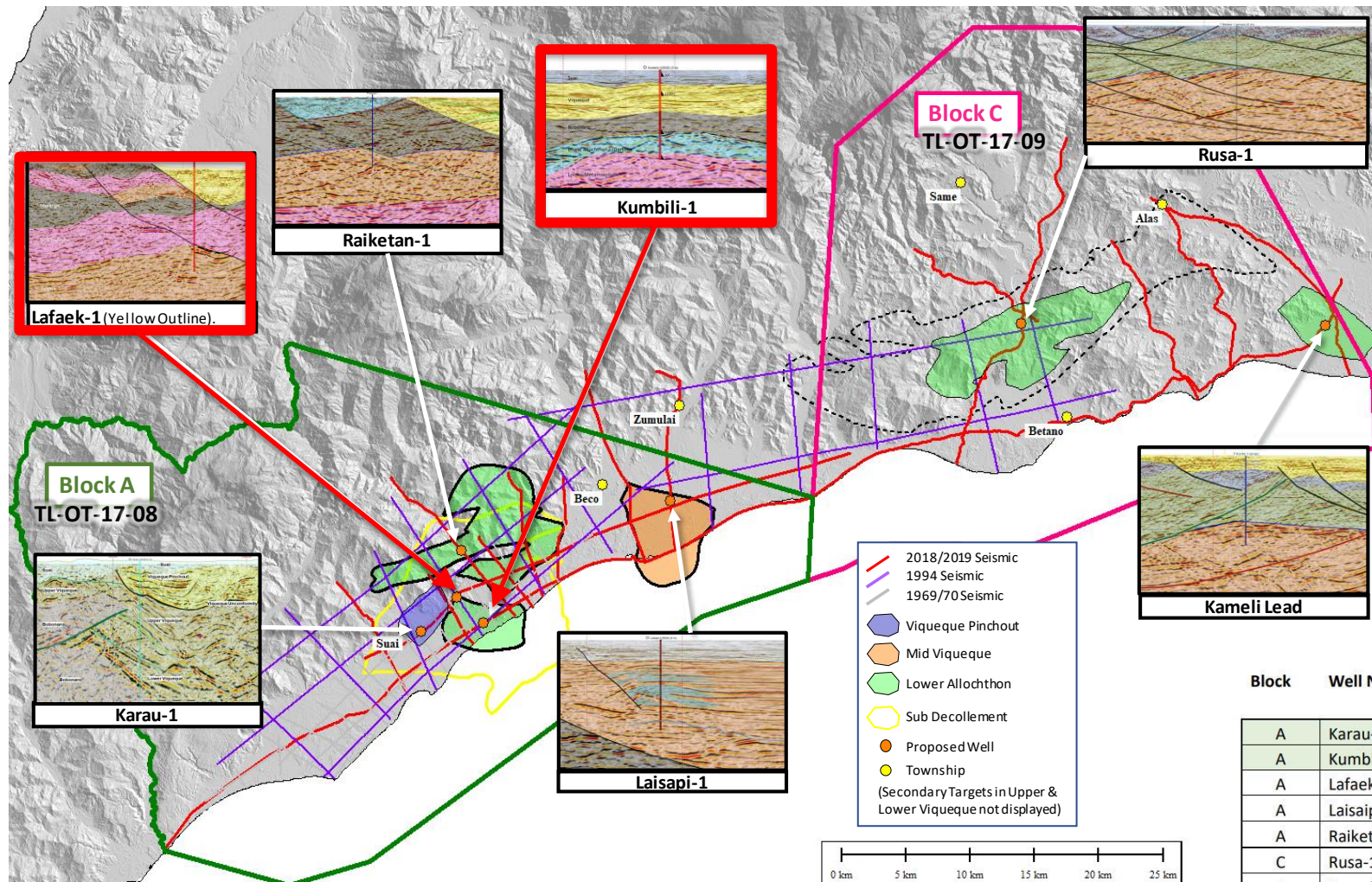
## Appraisal Drilling:

- Beach Energy drilled Martlet-3 to 9 during 2022
- All wells successful

## Future Drilling:

- 2023/24 exploration drilling planned

# Exploration Hotspot - Timor Leste (Kumbilli-1 & Lafaek-1)

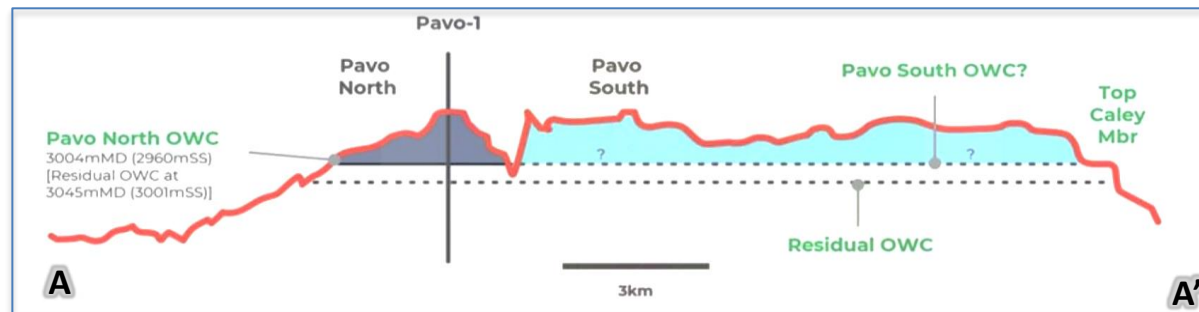
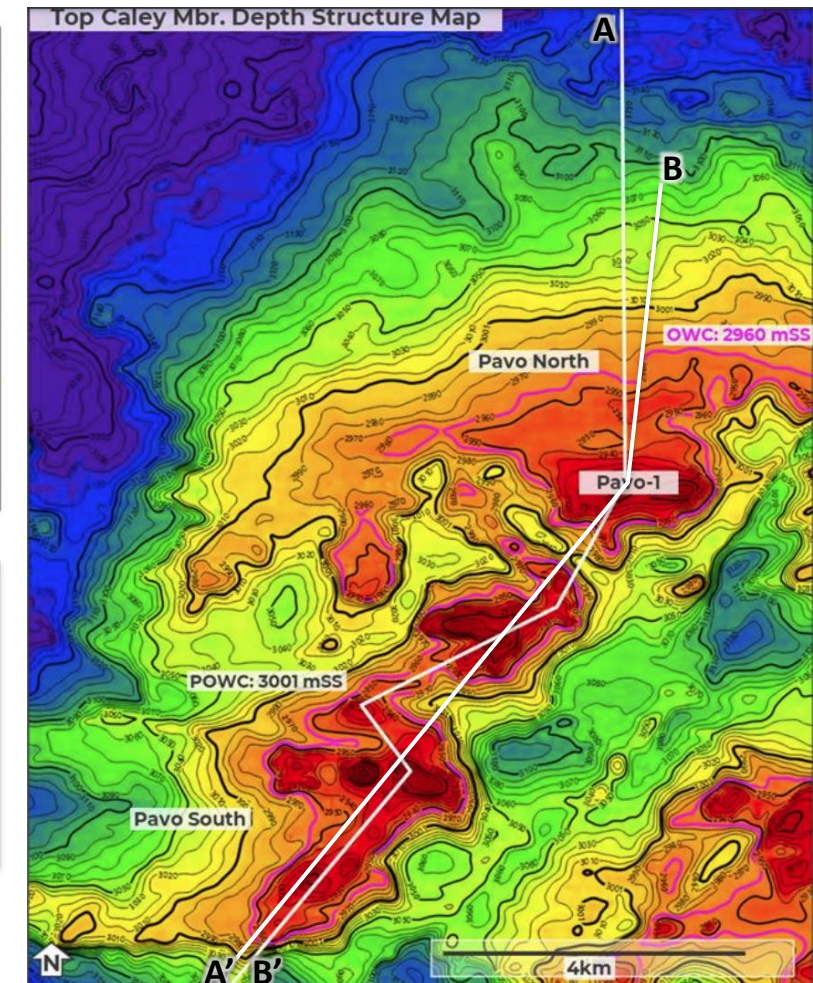
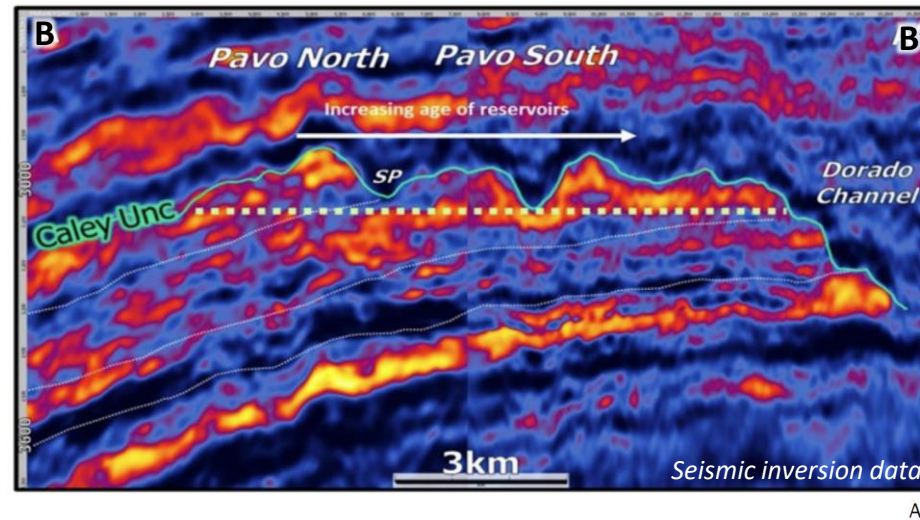
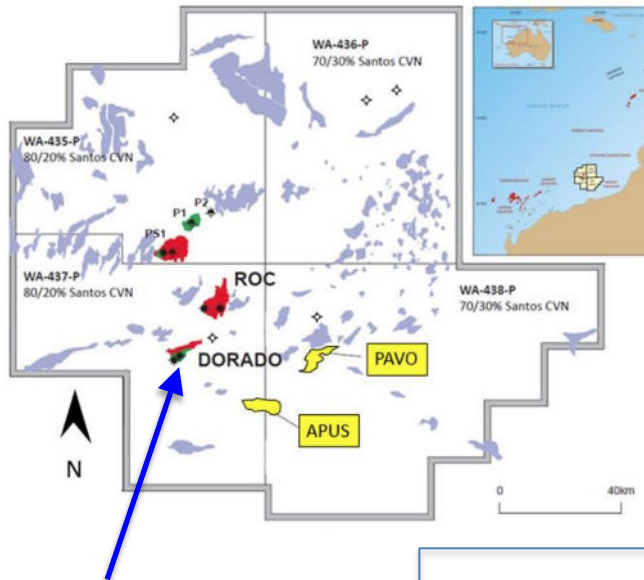


- TL-OT-17-08 Timor Resources (Op) and Timor GAP Joint Venture
- Karau-1 drilled late 2021
  - Oil recovered on MDT
- **Kumbilli-1** drilled December 2021 – March 2022
  - TD of 1,670 m in Triassic
  - Oil recovered on MDT in fractured Triassic limestones primary objective
- **Lafaek-1** currently drilling

Block	Well Name	Prospects	Recoverable Oil mmbbls			
			P90	P50	P10	Pmean
A	Karau-1	Viqueque	15	39	50	97
A	Kumbilli-1	Lower Allochthon	10	35	121	55
A	Lafaek-1	Sub Decollement	32	195	504	244
A	Laisapi-1	Viqueque Carbonate	11	42	98	50
A	Raiketan-1	Lower Allochthon	7	27	110	48
C	Rusa-1	Lower Allochthon	25	113	512	217
C	Kameli-1	Lower Allochthon	13	69	379	154
Recoverable Oil (MMstb)			<b>113</b>	<b>520</b>	<b>1774</b>	<b>802</b>

\* Jan Hulse from Timor Resources to present later in this session

# Exploration Hotspot - Bedout Sub-basin (Apus-1 & Pavo-1)

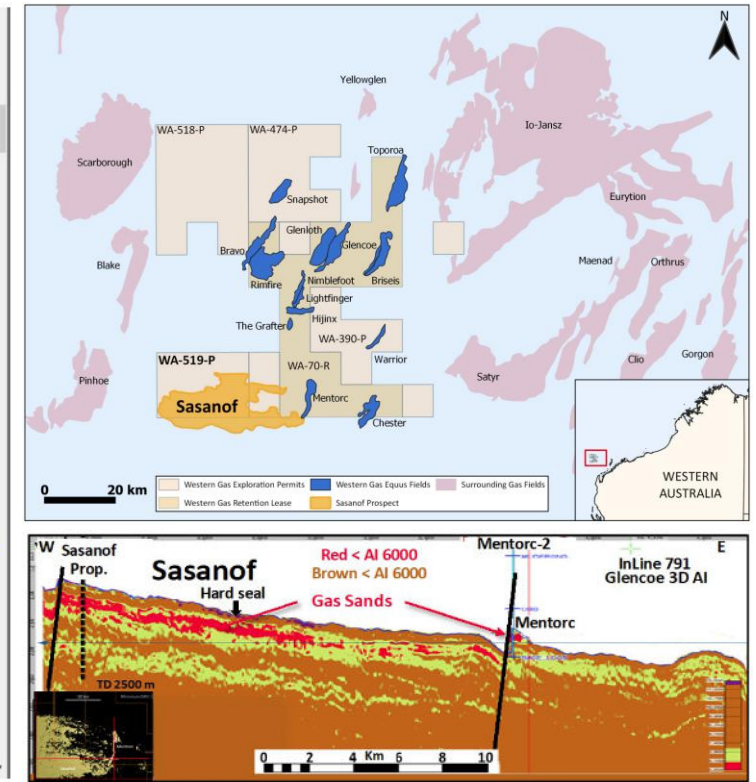
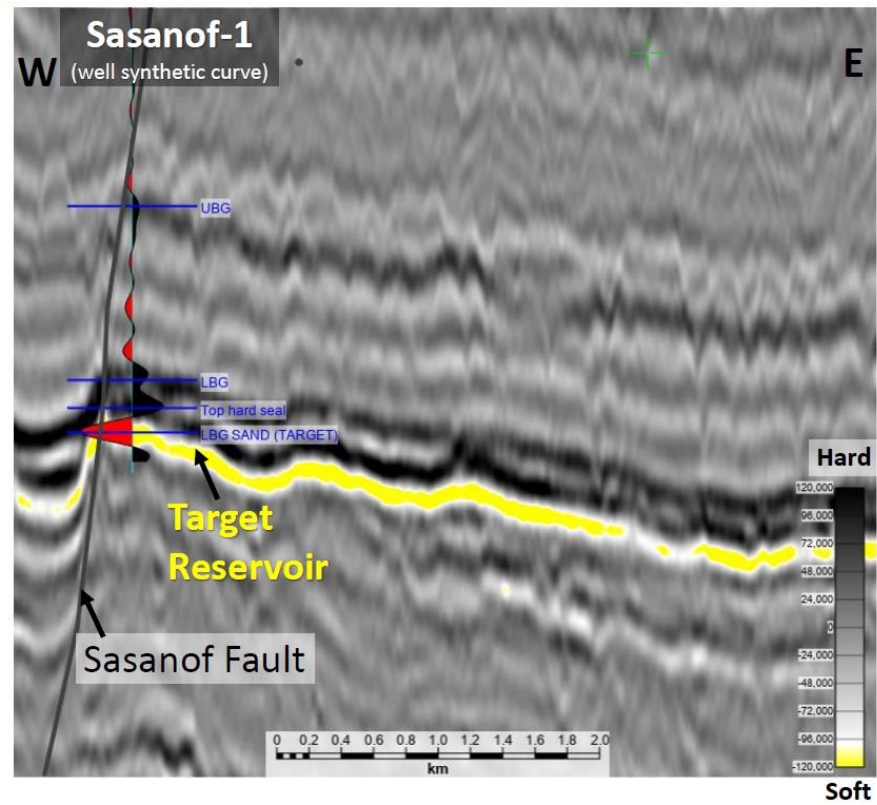
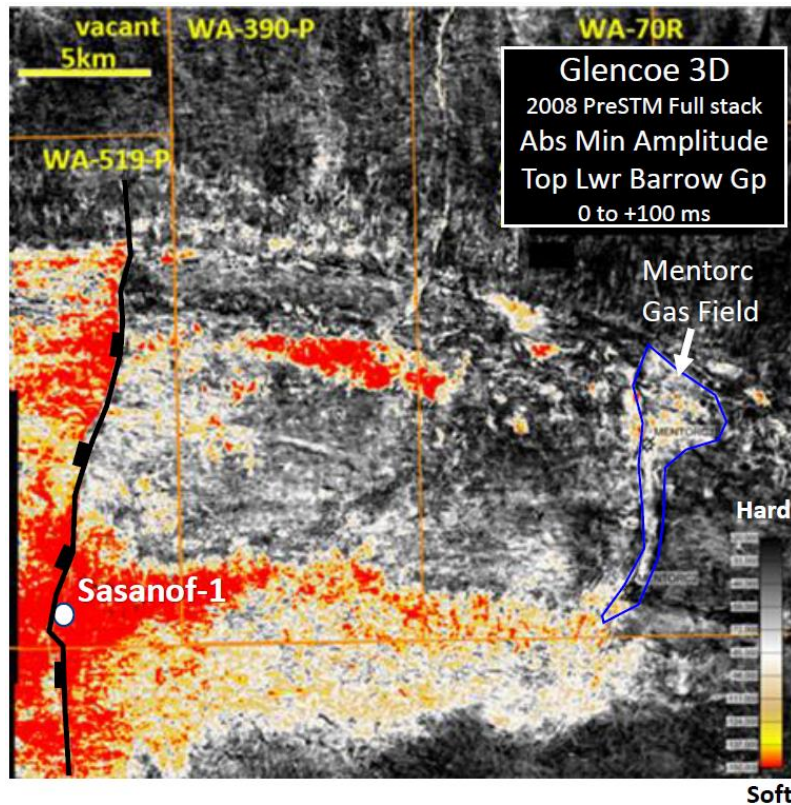


Sources: Carnarvon Energy ASX releases

2018 Dorado-1 oil discovery  
(~150 MMbbls)

- **Pavo-1** drilled February – April in WA-438-P in 88 m water depth by Santos and Carnarvon Energy JV to a TD of 4,235 m by the jackup Noble Tom Prosser
- **60 m gross oil column** in Triassic Caley Formation sandstones, **net pay of 46 m**
- 52° API oil with low GOR
- **2C Resources of 43 MMbbl**
- Pavo South Prospective Resource estimate 66 MMbbl (mean) and 51% gPOS
- **Apus-1** drilled during April (WA-437-P) in 80 m water depth to a TD of 2,900 m – P&A as dry-hole (access to charge main reason for failure)

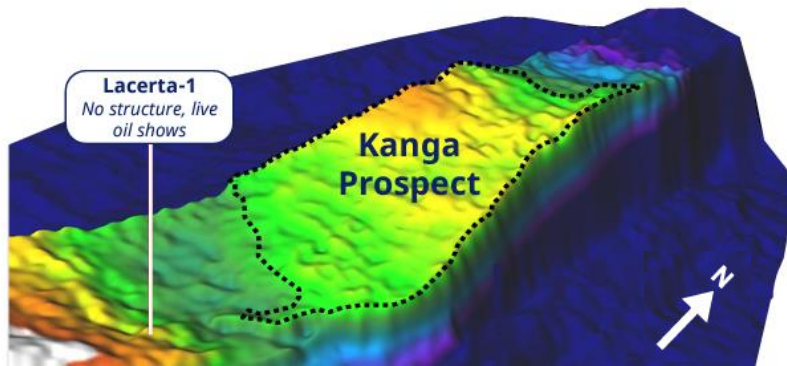
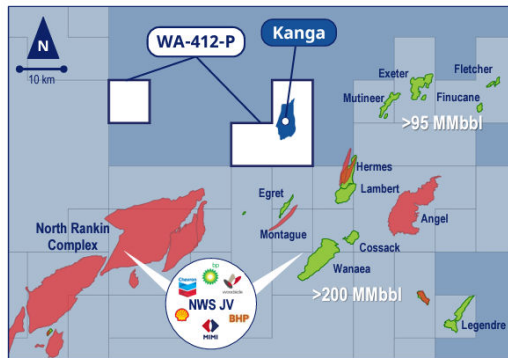
# Sasanof-1



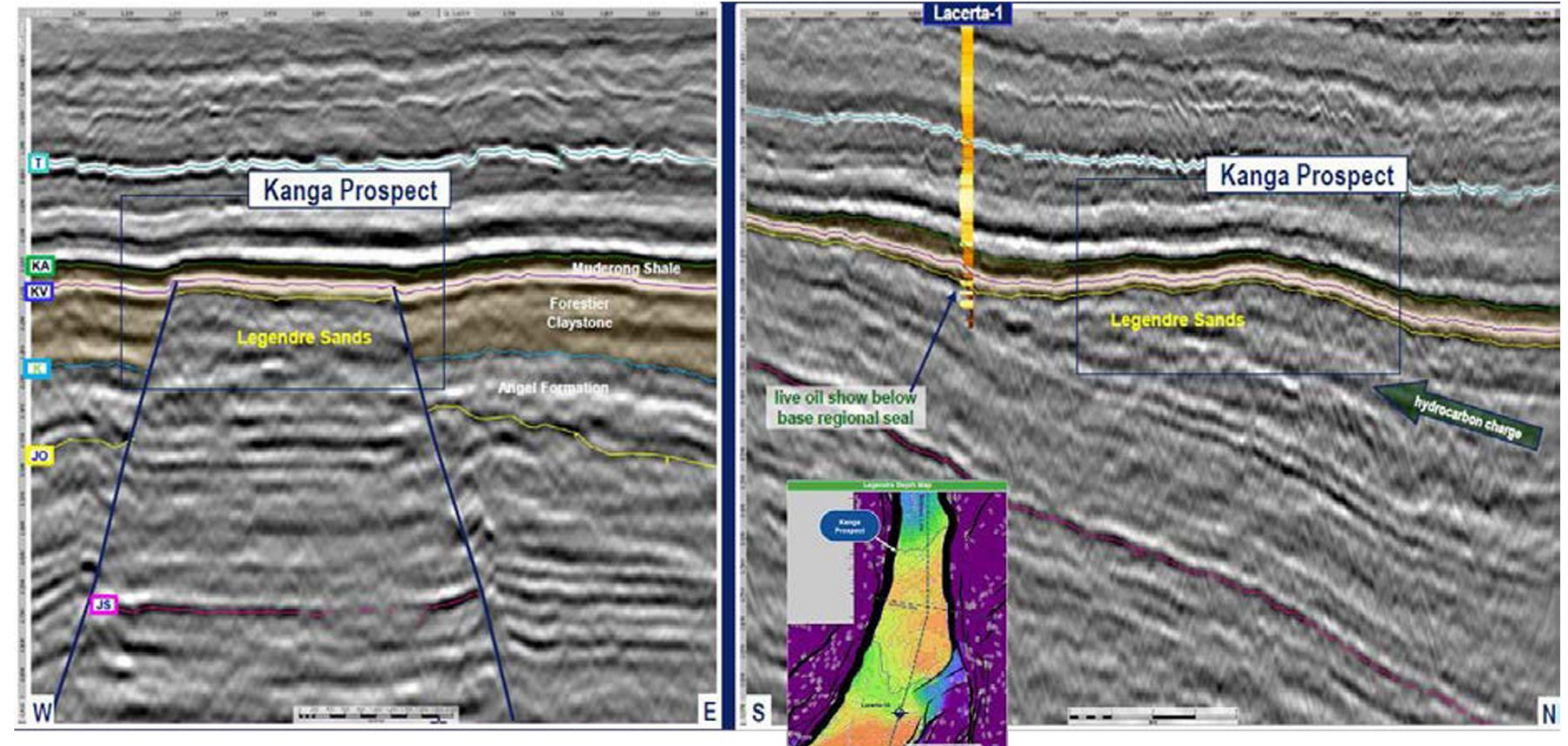
Source: Western Gas

- **Sasanof Prospect pre-drill estimate of 7.2 Tcf Prospective Resources (2U) and 32% gPOS**
- Target Upper Barrow Group sandstones in a combination (structural/stratigraphic) trap
- Sasanof-1 drilled May – June in WA-519-P by Western Gas (Prominence Energy & Global Oil & Gas farming in)
- 1,070 m water depth and to a TD of 2,390 m
- Well failure attributed to lateral seal failure and/or limited gas charge

# Kanga-1



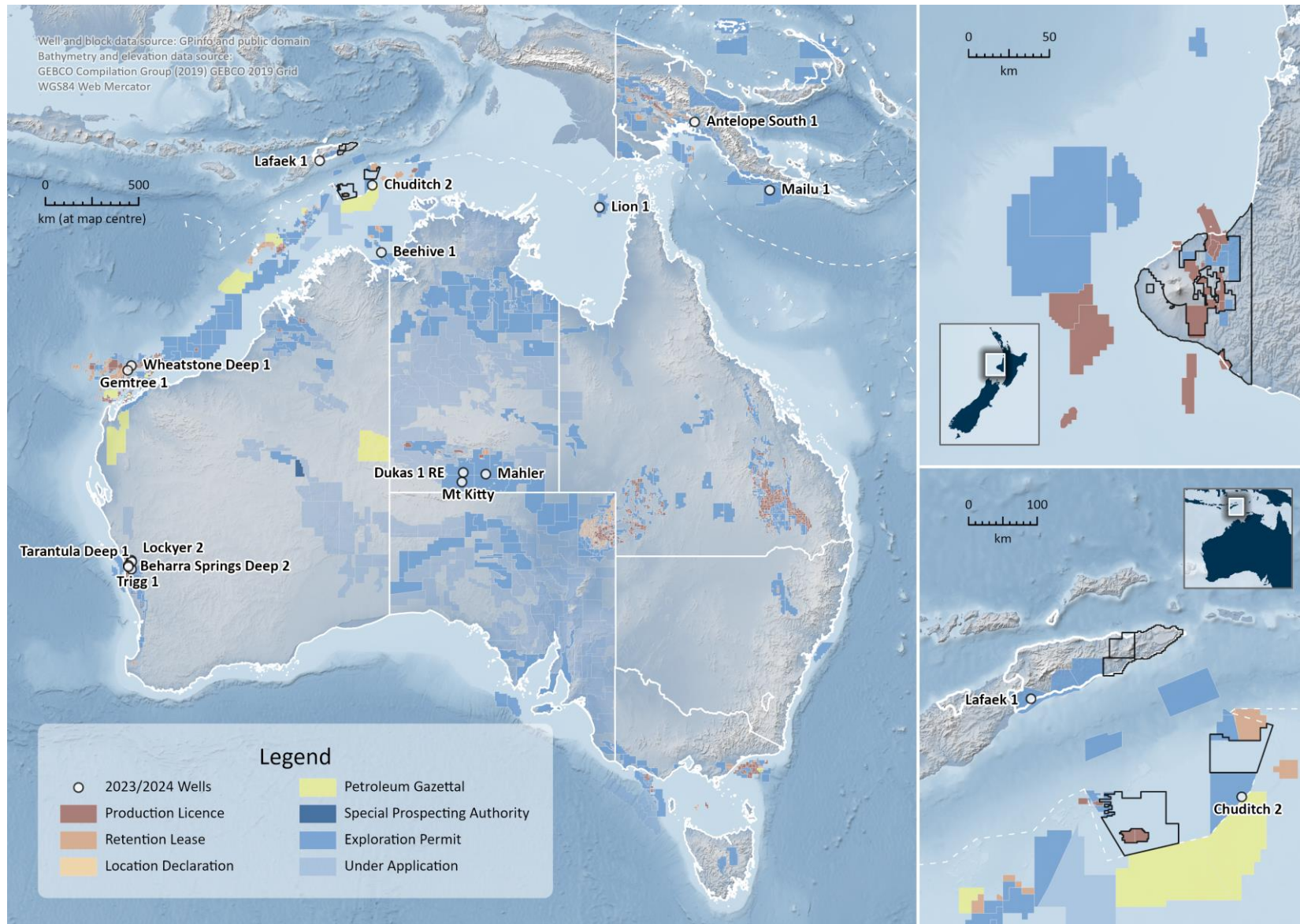
Source: Finder Energy Investor Presentation



Source: Finder Energy Prospectus

- **Kanga Prospect pre-drill estimate of 170 MMbbl Prospective Resources (2U) and 36% gPOS**
- Target Jurassic Legendre Formation sandstones in a combination (structural/stratigraphic) trap - depth conversion play
- Kanga-1 drilled May – June in WA-412-P by Finder Energy (SapuraOMV farming in)
- *“Kanga-1 was drilled to test the hydrocarbon potential of Middle to Upper Jurassic sandstones within a horst block, fault-dependent closure below the ‘Valanginian Unconformity’ at the northern extension of the Rankin Trend. The well was drilled to a total depth of 3,400 metres however did not intersect any hydrocarbons. **Well failure has been attributed to no trap being present due to an increase in thickness of the Forestier Claystone shales than was interpreted pre-drill.**” (SapuraOMV)*

# Exploration & Appraisal Wells planned for 2023+



- **Lafaek-1** currently drilling
- **Wheatstone Deep-1** (Chevron Op) and **Gemtree-1** (Woodside Op) exploration tiebacks to Wheatstone LNG project
- **Trigg-1, Tarantula Deep-1 & Beharra Springs Deep-2** (Beach Energy) in the North Perth Basin
- **Beehive-1** (EOG Resources) in WA-488-P, Bonaparte Gulf targeting 416 MMboe 2U Prospective Resources
- Total to drill the long-delayed wells **Antelope South-1** (~1-2 Tcf Prospective Resources) and ultra deep water **Mailu-1** oil prospect.
- Re-entry of the suspended **Dukas-1** and **Mt Kitty-2 & Mahler-1** are planned to test sub-salt prospects with multi-TCF potential (hydrocarbons, He and H<sub>2</sub>)
- **Lion-1** is a well commitment in Q/23P in the Gulf of Carpentaria. Subject to farmout and likely to be delayed.
- **Chuditch** appraisal drilling (SundaGas)

- 28 exploration wells across the region, with 5 offshore Australia.
- 1 offshore discovery and 8 onshore conventional petroleum discoveries (Aust.) and 1 onshore discovery Timor Leste.
- No exploration wells in NZ or PNG.

## Key take-aways

- Exploration activity in Australia decreased from 2021.
- Little or no petroleum exploration in NZ and PNG
- 36 areas under application in PNG awaiting ratification
- Bedout Sub-basin yields another sizeable oil discovery (Pavo)
- Exploration 'hot-spots' are Onshore North Perth Basin, Cooper – Eromanga Basin and onshore Timor Leste.
- The Cooper – Eromanga continues to yield exploration discoveries.
- GHG assessment permits are attracting larger work program commitment than petroleum exploration titles.
- Petroleum exploration is very much focussed on the onshore basins.
- Capital raisings and IPO's are increasing – an indicator of exploration health
- The return of the 2:1 farmin promote ?
- 2023+ should witness an increase in exploration activity with a number of planned wells, firm wells in new permit awards and companies having access to capital

- Simon Barber (RISC)
- Craig Gumley (Consultant)
- Will Barker & Phil Woods (Western Gas)
- Sam Algar & Carrie Trembath (Beach Energy)
- Matthew Quinn (IHS)
- Rhys Simpson (EurozHartleys)
- Peter Cameron (Australian Oil & Gas Research)
  
- Data compiled from Gpinfo, GlobalData and public sources



[www.riscadvisory.com](http://www.riscadvisory.com)

## Perth

Level 2  
1138 Hay Street  
WEST PERTH WA 6005  
P. +61 8 9420 6660  
E. [admin@riscadvisory.com](mailto:admin@riscadvisory.com)

## Brisbane

Level 10  
95 North Quay  
BRISBANE QLD 4000  
P. +61 7 3025 3397  
E. [admin@riscadvisory.com](mailto:admin@riscadvisory.com)

## London

Office 204  
20 St Dunstan's Hill  
LONDON UK EC3R 8HL  
P. +44 (0)203 795 2900  
E. [admin@riscadvisory.com](mailto:admin@riscadvisory.com)

## South East Asia

Jakarta  
Indonesia  
P. +61 8 9420 6660  
E. [admin@riscadvisory.com](mailto:admin@riscadvisory.com)