



**CARNARVON**  
PETROLEUM LTD



**Shareholder update**  
November 2016



There are numerous uncertainties inherent in estimating reserves and resources, and in projecting future production, development expenditures, operating expenses and cash flows. Oil and gas reserve engineering and resource assessment must be recognised as a subjective process of estimating subsurface accumulations of oil and gas that cannot be measured in an exact way. These prospective resource estimates have an associated risk of discovery and risk of development. Further exploration and appraisal is required to determine the existence of a significant quantity of potentially moveable hydrocarbons.

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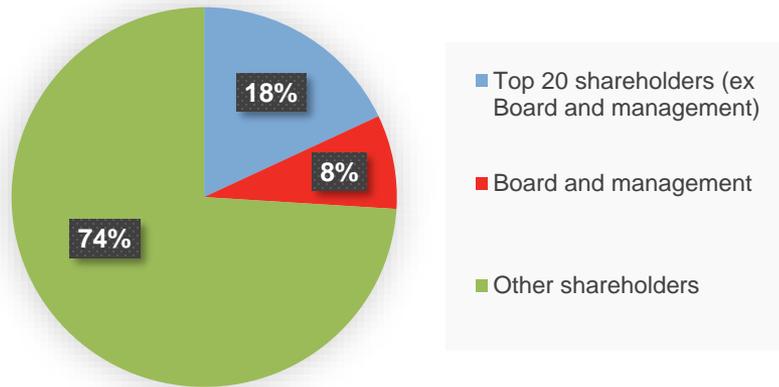
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## Analysis of Carnarvon's shareholders



Market capitalisation	\$137 million
Cash (30 Sept. 2016)	\$65 million
Receivable (up to)	US\$31 million
Shares on issue	1.02 billion
Options on issue	1 million
Share price (24 Oct 2016)	13.5 cents





## Significance of the flow test

- An important de-risking of reservoir
- Proved reservoir flows gas & condensate
- Flows rates at commercial levels:
  - 51 mmscf/day (tubing constrained)
  - 2,943 bbl/day (tubing constrained)

## Meaning for the area

- Opens up large volume tie-back prospects
- Near term opportunities at:
  - Phoenix South
  - Dorado
  - Roc & proximal structures



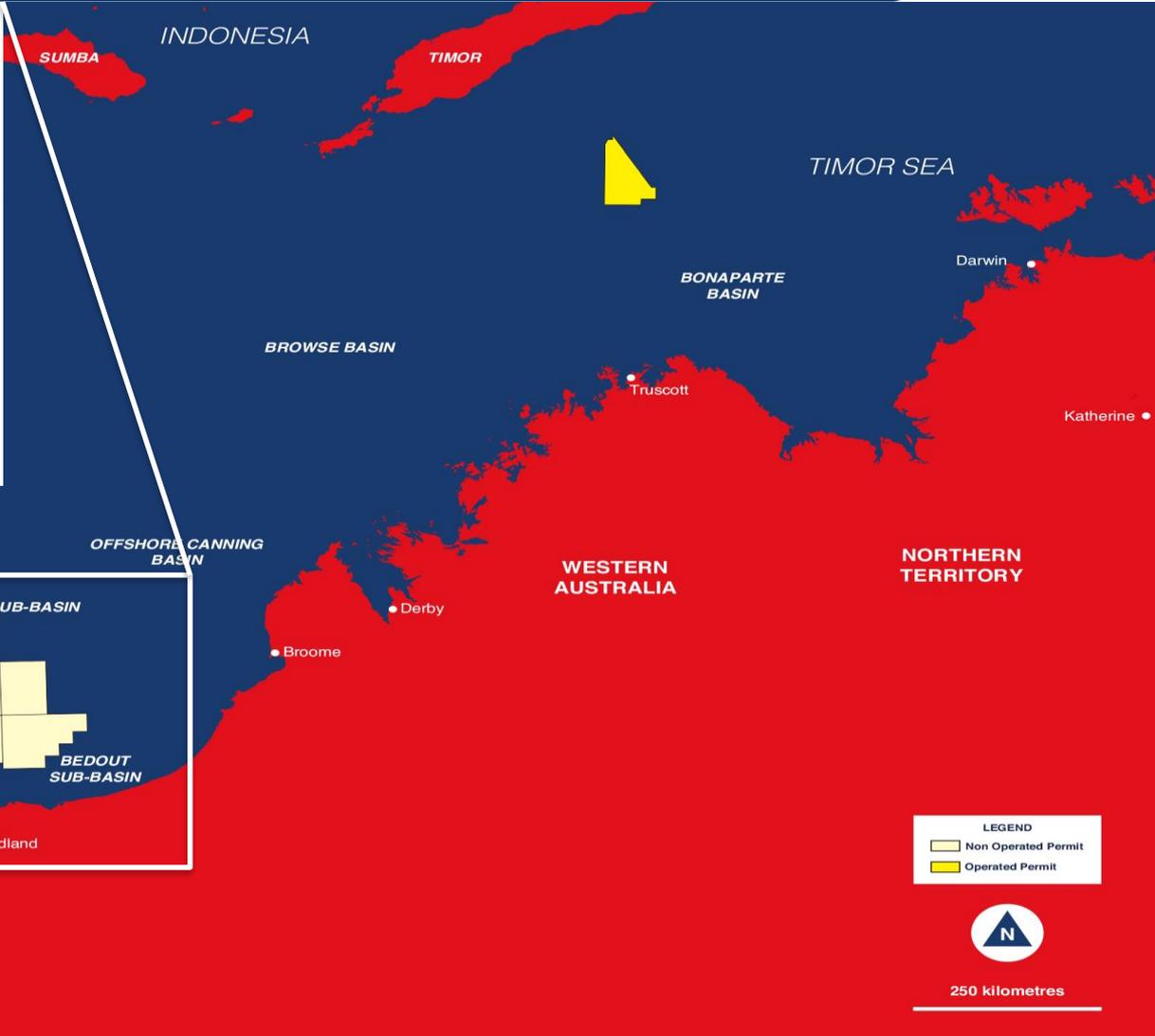
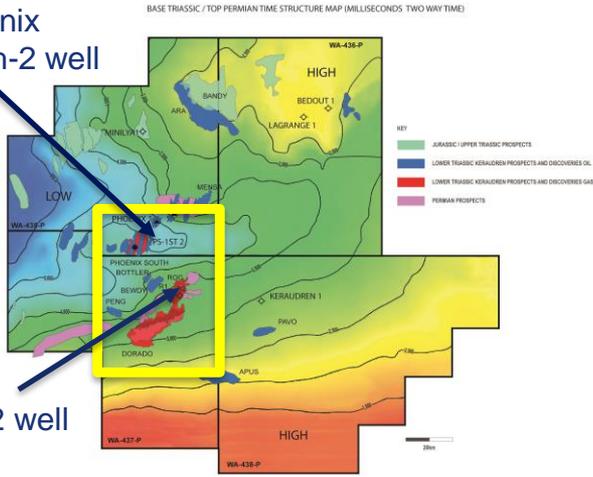


# Area of focus for tie-backs

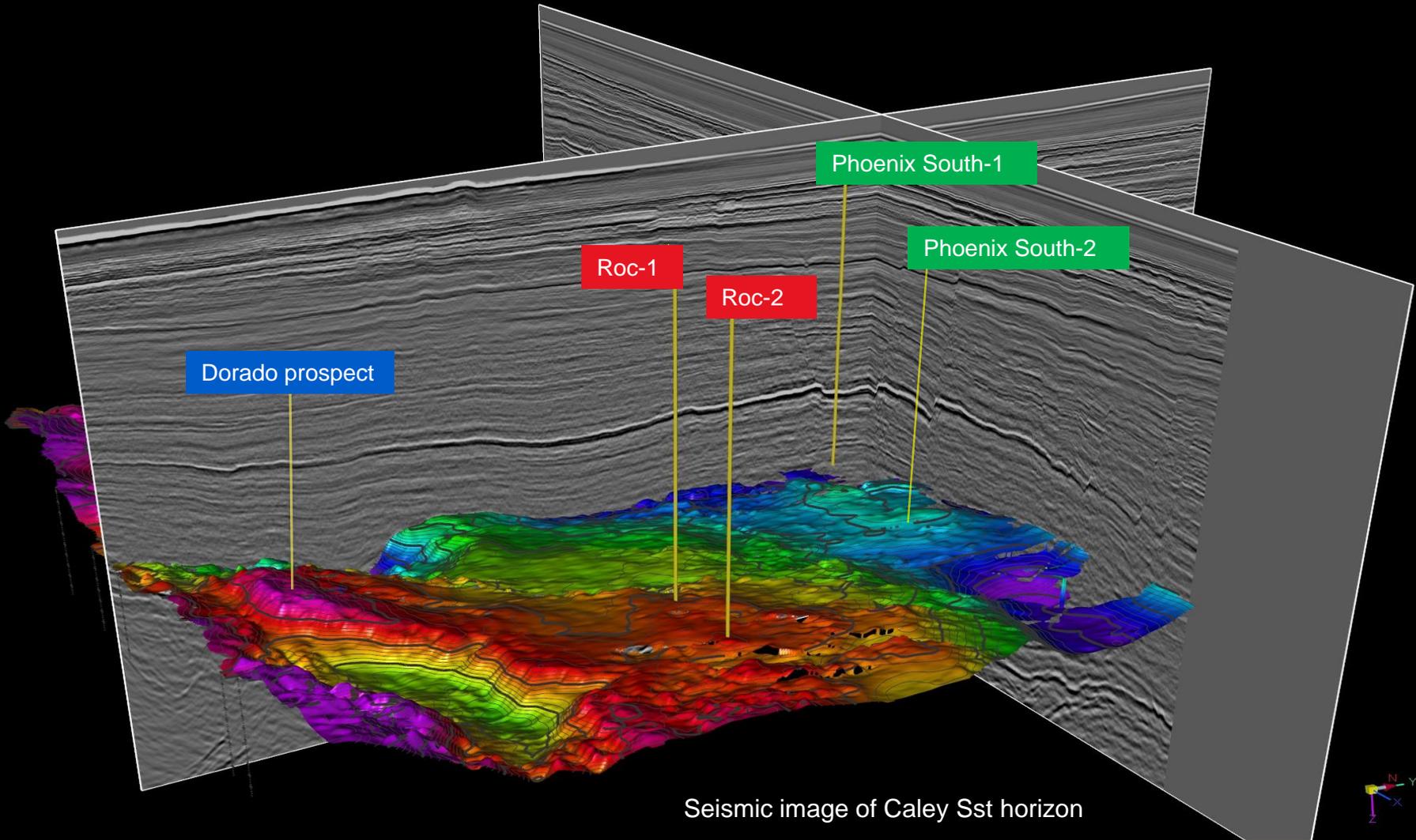


Phoenix South-2 well

Roc-2 well



# Key tie-back targets



Seismic image of Caley Sst horizon

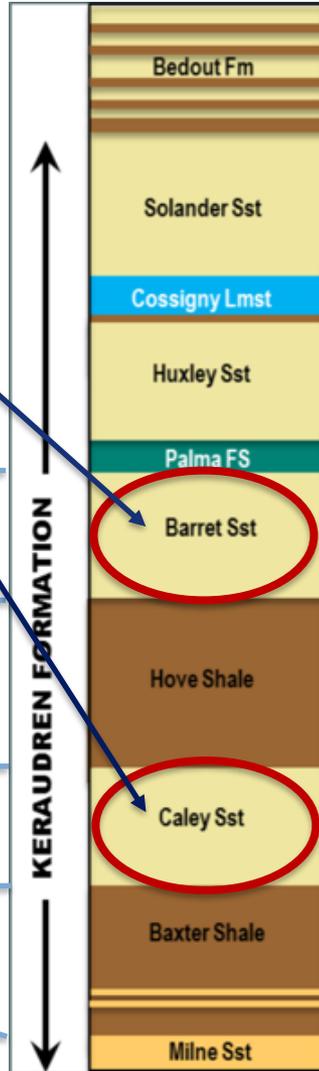


**Phoenix South-2  
primary drilling objectives**

Roc-1 residual oil

**Roc-1 gas & condensate discovery**  
**Roc-2 gas & condensate discovery**

Roc-1 oil shows  
Roc-2 oil shows



**Phoenix South-1 oil discovery**  
**Phoenix South-2 will log Barret Sst**

Phoenix South-1 did not reach Caley  
**Phoenix South-2 will log Caley Sst**

Bedout Sub-basin Keraudren  
Formation Stratigraphic Zonation



**Risk**  
diminishing  
through  
successful  
drilling  
results

Phoenix-1 well in 1980 proved hydrocarbons existed in the basin

Phoenix South-1 well in 2014 proved that those hydrocarbons were high quality oil in the Barret Sst

Roc-1 well in 2016 proved high quality gas and condensate also existed in the Caley Sst

Roc-2 well in 2016 also confirmed gas and condensate and importantly that it flows at commercial rates

3D seismic exists over a significant area and all of the current area of focus

Hydrocarbon volumes (being updated now)

Development concepts and cost

Oil and gas supply / demand factors

**Value** increasing as successful drilling results add hydrocarbon volumes, diminish risk and market dynamics improve

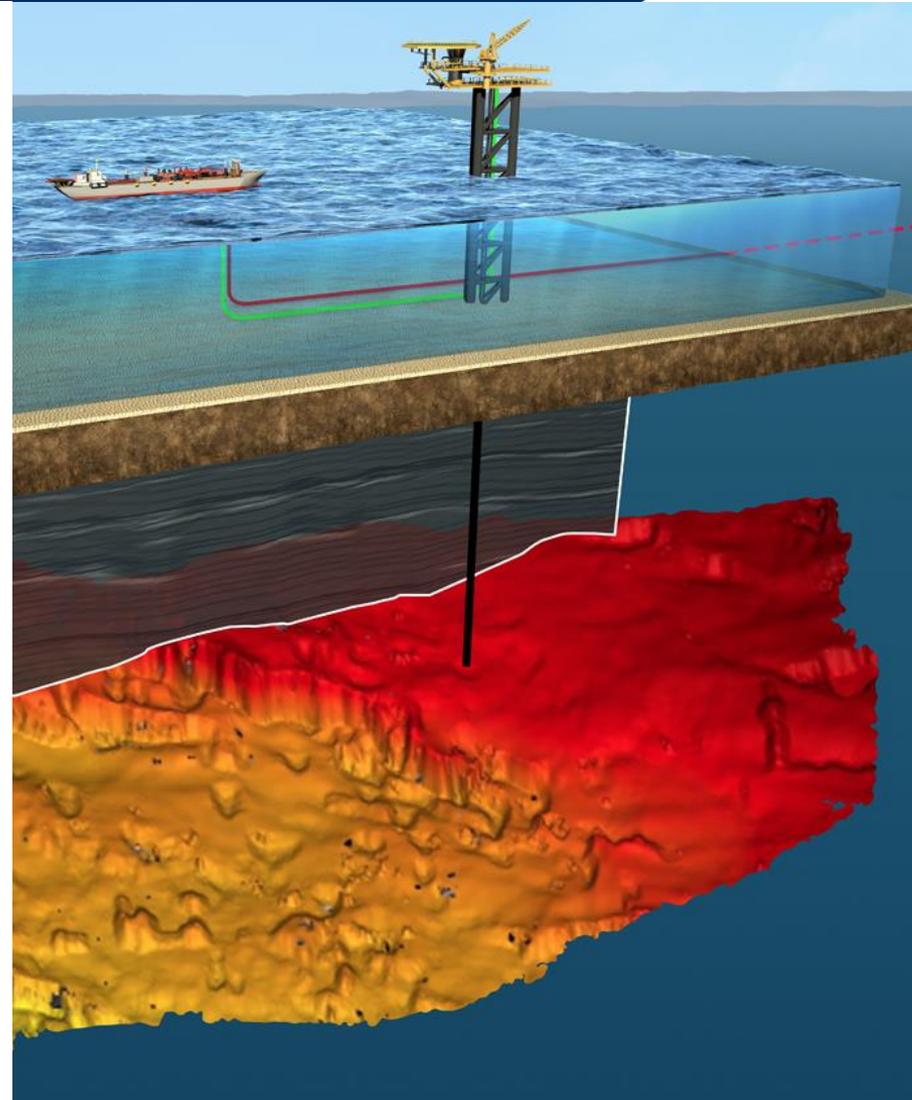


- Volume estimates for oil, gas and condensate within the area of focus are currently being updated for public release shortly
- Roc-1 and Roc-2 to determine whether minimum economic field size achieved (“MEFS”)
- Phoenix South-2 well to test two primary zones in the Barret Sst (oil) and in the Caley Sst (gas and condensate)
- Under consideration for future drilling operations, potentially in 2017, include:
  - Dorado – vey large multi horizon prospect
  - Roc East and Roc South East prospects in the Caley Sst
  - Bewdy prospect in the Barret Sst and Caley Sst

# Development concepts and costs



- Preliminary development concept includes a well head platform, FSO for liquids and sales gas pipeline to shore near Port Hedland
- Important to understand location of tie-back volumes for refining development plans
- High quality liquids (oil and condensate) have ~46° to 50° API and almost no inerts
- Shallow water depth at Roc of ~100 metres beneficial for development
- Indicative capital expenditure range between \$1bn and \$2bn depending on factors such as resource size, water depths and distance to shore
- Operator has Government approval for multiple appraisal and exploration wells over next five years
- Resources well located ~160 kilometres from Port Hedland being in the vicinity of WA's Pilbara mining operations
- Currently industry costs trending downward

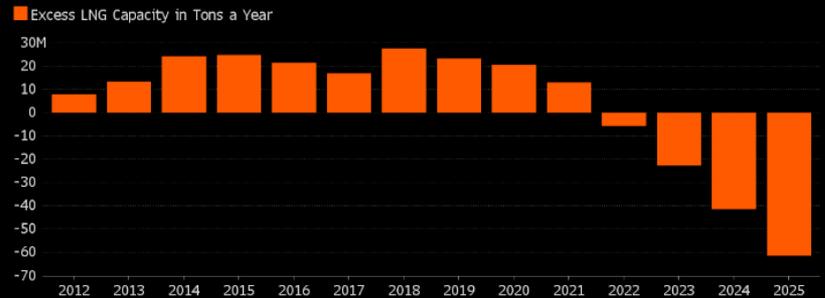




- There are a number of factors that support improving WA domestic gas pricing from 2020, including:
  - LNG supply demand balance expected to be in undersupply from 2021-2023, meaning NWS LNG producers will have strong international markets for their LNG (versus domestic gas supply)
  - Gorgon Phase 1 domestic obligations and Wheatstone domestic obligations are insufficient to replace NWSJV and domestic field (John Brookes & Reindeer) decline
  - Forecast US economy recovery increases LNG netback in AUD terms, incentivizing Australian LNG producers to supply additional NWS LNG into international markets

## LNG Over-supply ... For Now

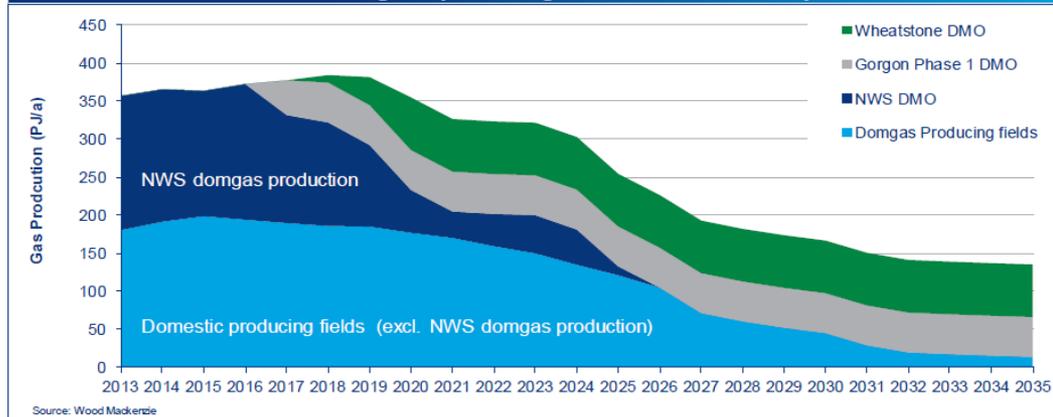
A glut could turn into a drought if low prices stall new developments



Source: Sanford C. Bernstein & Co.  
Note: Assumes 90% capacity utilization

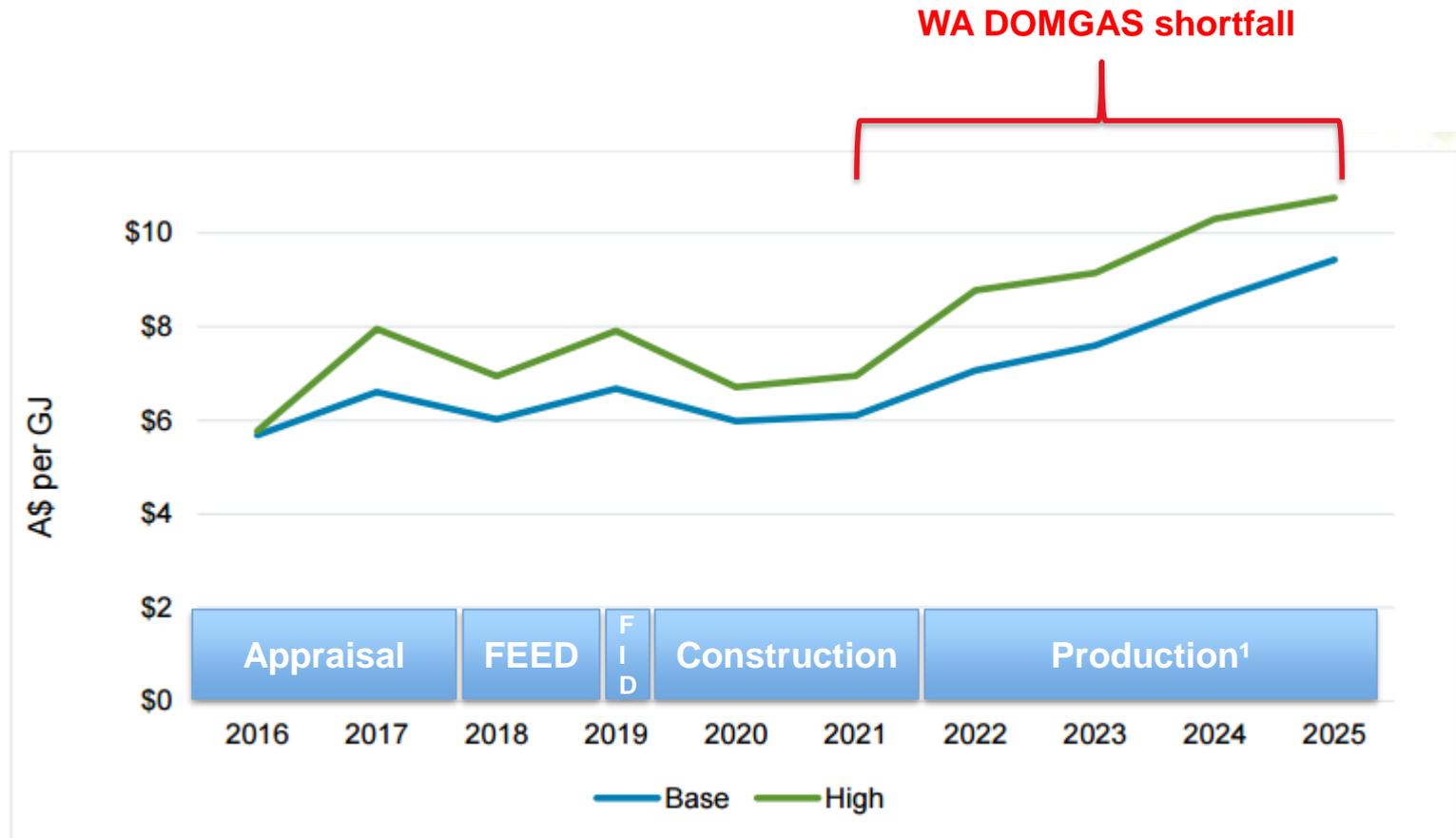
Bloomberg

## WA domestic gas – producing and committed developments



Source: Wood Mackenzie

# WA domestic gas price forecasts



Source: IMO forecasts 2016 to 2025

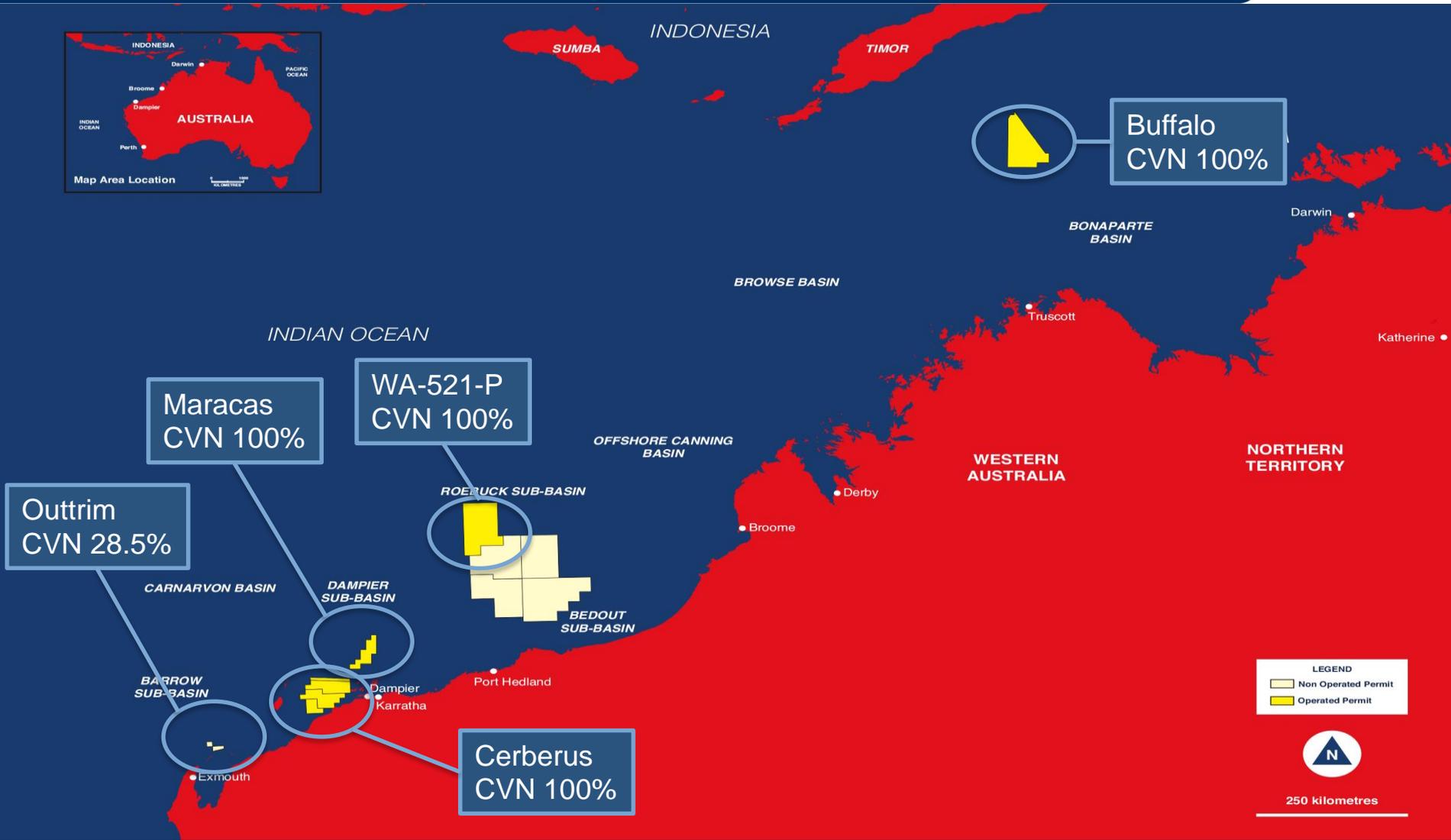
<sup>1</sup> Indicative Roc / Phoenix area project schedule



## Carnarvon portfolio

(ex Phoenix & Roc permits)

# Portfolio snapshot

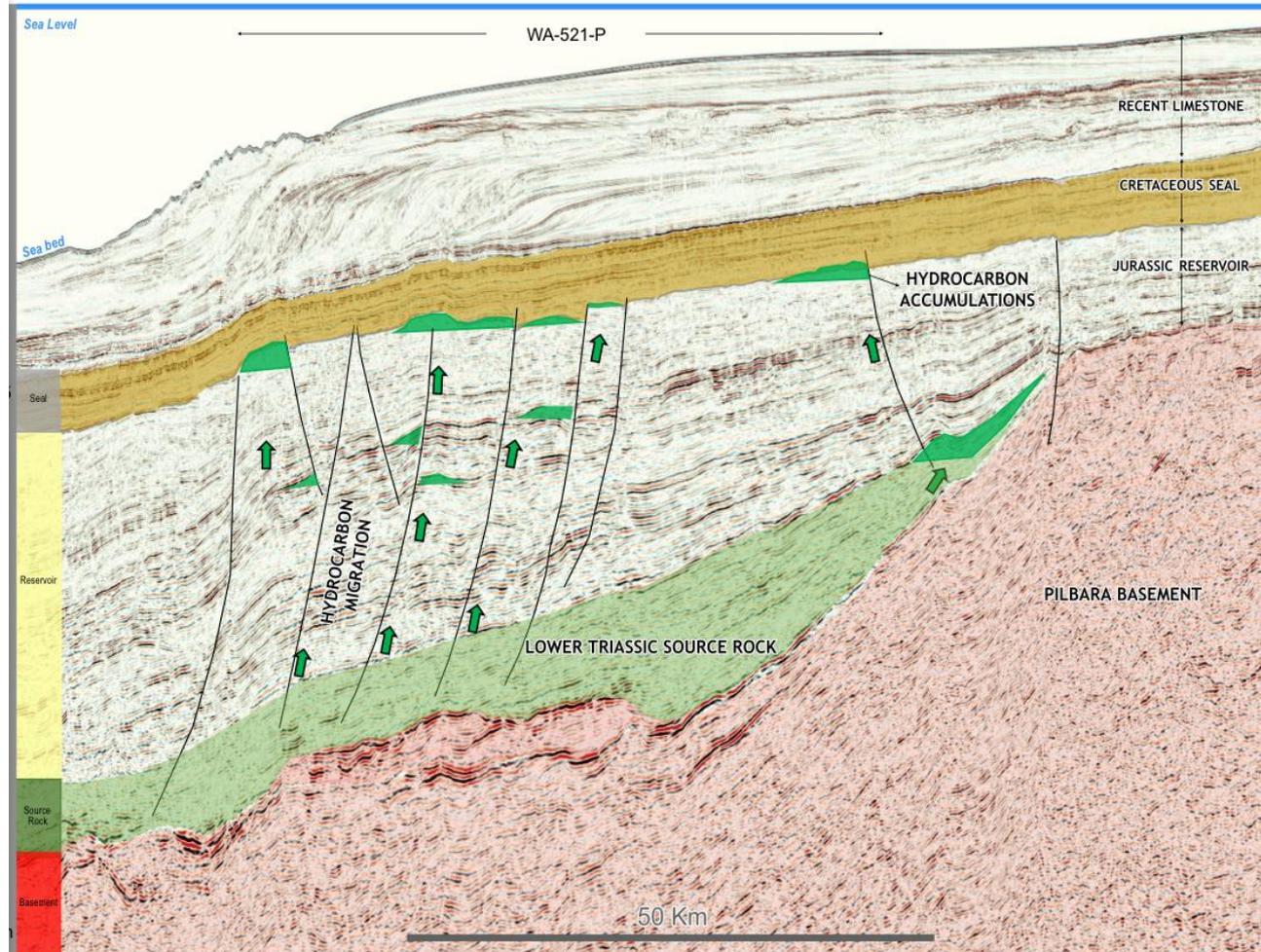


- Block acquired in May 2016
- WA-523-P contains the Buffalo oil field with unproduced oil remaining in this field
- There are also two undeveloped oil discoveries in the permit
- This is a technology play opener
- Opportunity for CVN to use new processing technology to better image multiple oil filled structures in the permit
- CVN trialed this technology on Phoenix and so our team know its potential
- There are also stacked resource plays in the permit that provide multiple targets to test in a well



Nexan Buffalo FPSO on station in the Buffalo oil field between 1999 and 2004

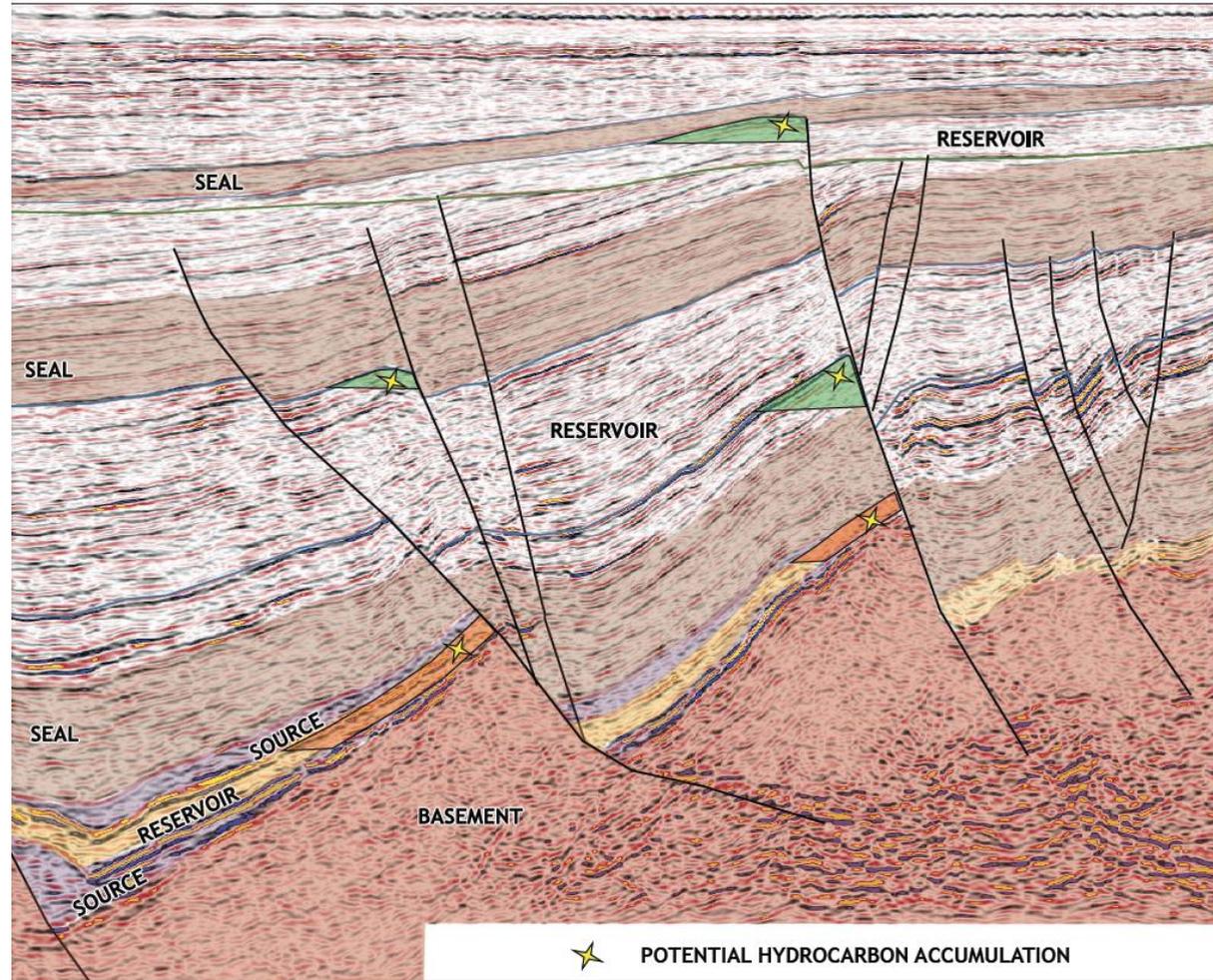
- Block acquired in April 2016
- Carnarvon's technical team are analyzing the data to identify where the Cretaceous sealing rock traps oil and gas in Jurassic reservoir that has migrated from Lower Triassic source rock
- This permit has the potential to contain significant quantities of hydrocarbons in enormous structures identifiable on existing seismic data
- This block is an early phase of its technical assessment



# Maracas project (WA-524-P)



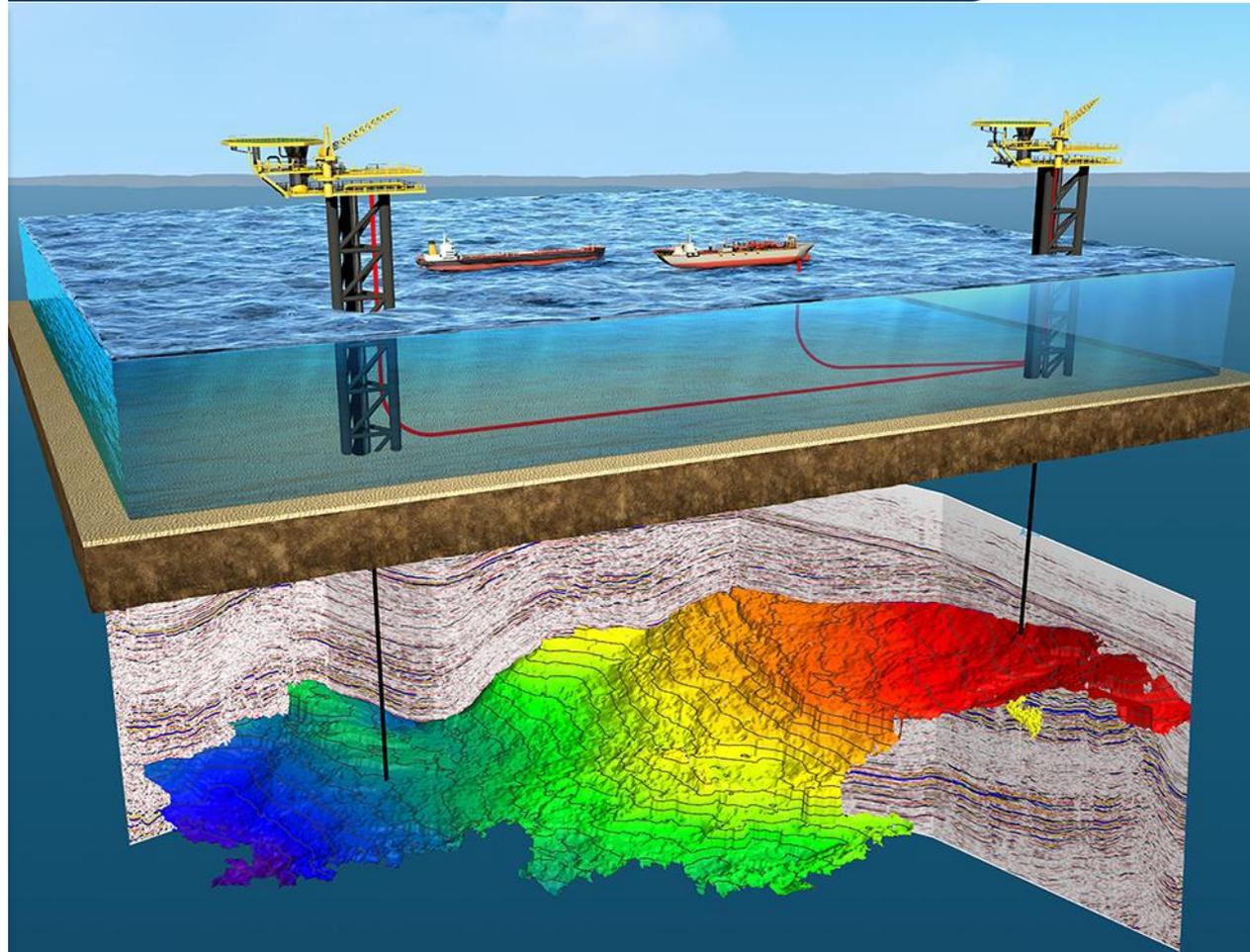
- Block acquired in September 2016
- The permit is covered in 3D seismic
- Two primary play types exist in the permit, being the conventional Stag reservoir level and a deeper Permian play type untested in the Carnarvon Basin
- The Permian play has worked in other hydrocarbon basins in Western Australia
- This block is also in an early phase of its technical assessment



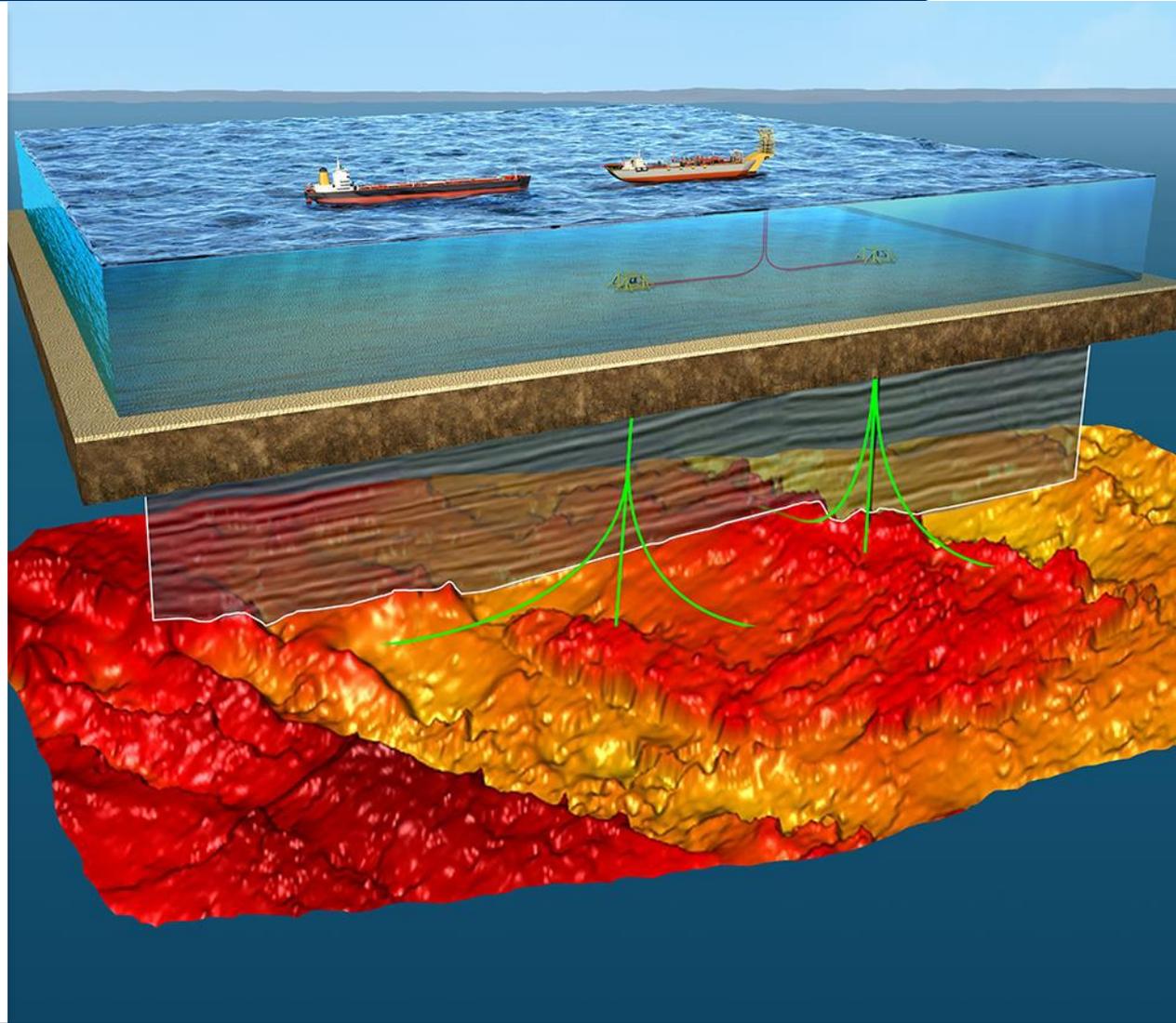
# Cerberus project (EP-490, EP-491, EP-475, TP/27)



- The four permits that make up the Cerberus project contain a number of large structures capable of holding significant volumes of oil
- In addition there are numerous satellite prospects that would add value through tie-back to a production hub
- The larger prospects comprise untested stratigraphy on the NWS that are similar in geological concept to the successful Phoenix South and Roc permits
- The Cerberus prospects are in shallow water with shallow targets, meaning relatively low drilling costs



- This permit contains the Outtrim-1 oil discovery
- In 2016 Carnarvon participated in the Outtrim East-1 well that was also declared an oil discovery
- Currently the core acquired from the Outtrim East-1 well is with the laboratories for analysis
- The core results will be used, amongst other things, for determining the likely volume of recoverable oil
- The Outtrim oil discoveries are also near a number of other oil discoveries all capable of contributing to an aggregated field development





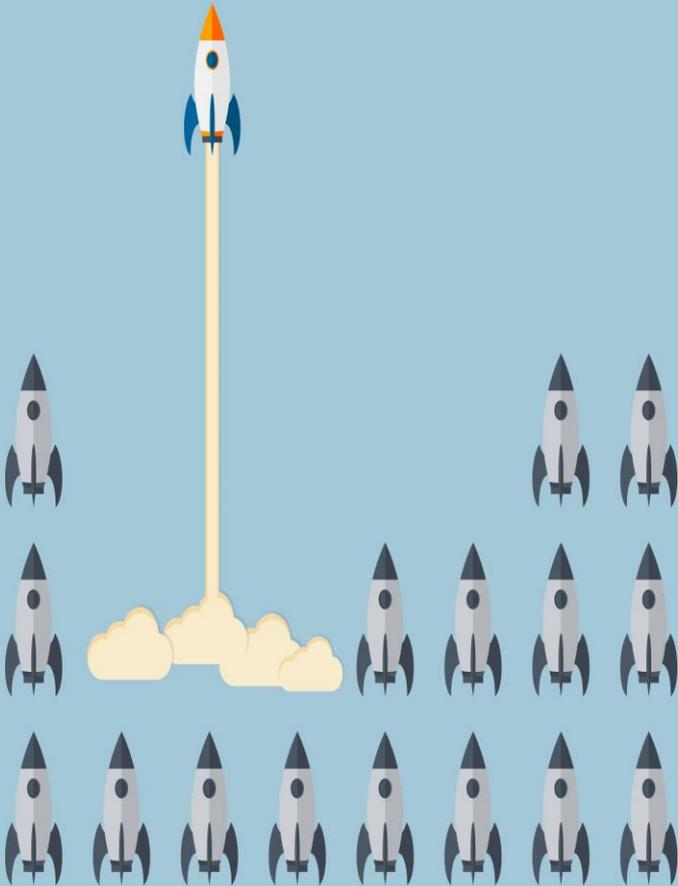
PERMIT	BASIN/COUNTRY	JOINT VENTURE PARTNERS	EQUITY %	OPERATOR
WA-435-P, WA-437-P	Roebuck / Australia	Carnarvon Quadrant Energy	20% 80%	Quadrant Energy
WA-436-P, WA-438-P	Roebuck / Australia	Carnarvon Quadrant Energy	30% 70%	Quadrant Energy
WA-155-P(1)	Barrow / Australia	Carnarvon Quadrant Energy	28.5% 71.5%	Quadrant Energy
EP-490, EP-491, EP-475, TP/27	Barrow / Australia	Carnarvon	100%	Carnarvon
WA-521-P	Roebuck / Australia	Carnarvon	100%	Carnarvon
WA-523-P	Bonaparte / Australia	Carnarvon	100%	Carnarvon
WA-524-P	Dampier / Australia	Carnarvon	100%	Carnarvon
EP321	Perth / Australia	Carnarvon	2.5% of 38.25%	Transerv Energy
EP407	Perth / Australia	Carnarvon	2.5% of 42.5%	Transerv Energy



## Carnarvon business

NWS capability

## THINK DIFFERENTLY



### Geological concepts

- Identify opportunities based on detailed regional technical work

### Technical value add

- Acquire new data and or apply new technology

### Commercial rigor

- Volume, market, risks, cost, value

### Collaborative partnerships

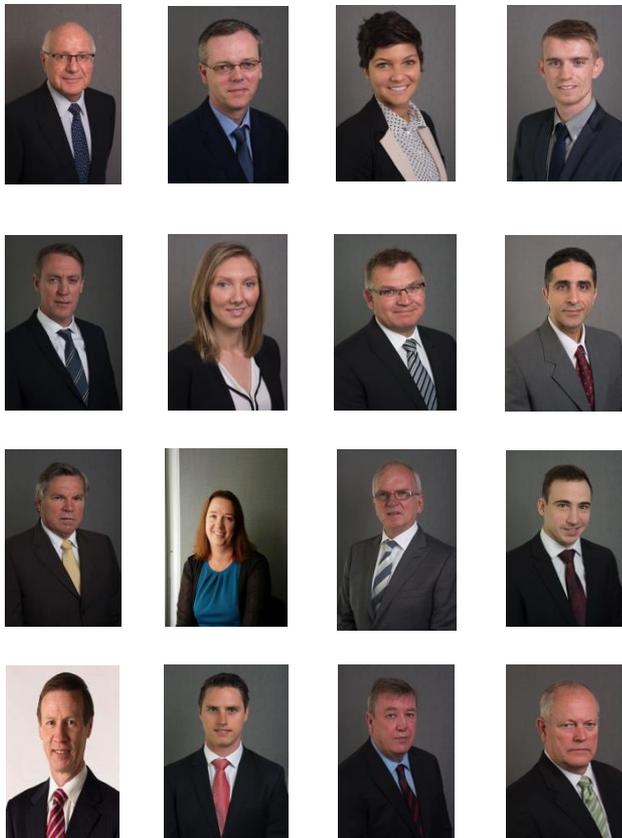
- Partners with operating skills and financial capability



- **Phoenix South-1 well** - oil discovery reported August 2014
- ~10,000km<sup>2</sup> of 3D and ~12,000km<sup>2</sup> of 2D seismic acquired 2015
- **Roc-1 well** - gas and condensate discovery reported January 2016
- **Outtrim East-1 well** - oil discovery reported in July 2016
- **Roc-2 well** - gas and condensate discovery reported September 2016
- **Phoenix South-2 well** - commencing late October / early November 2016

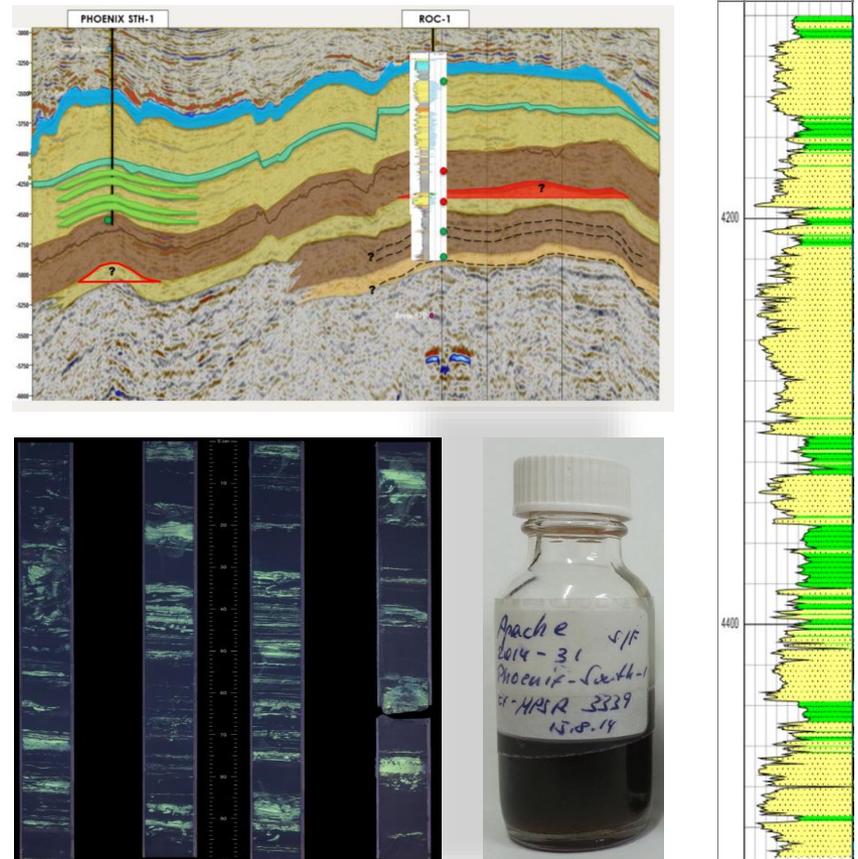
## People

Knowledge, experience, wisdom,  
multi-discipline, energy and focus.



## Data

Arrangement of proprietary and public information  
in a form that improves project selection.





## **Peter Leonhardt – Chairman**

Peter is an independent company director and adviser with extensive business, financial and corporate experience. He is a Chartered Accountant, former Senior Partner with PricewaterhouseCoopers and Managing Partner of Coopers & Lybrand in Western Australia. His professional career with the firm spanned 35 years in Australia and overseas.



## **Adrian Cook – Managing Director & Chief Executive Officer**

Adrian's executive experience is in commercial and financial management. Immediately prior to joining Carnarvon, Adrian was the Managing Director of Buru Energy Limited and held senior executive positions within Clough Limited's oil and gas construction business and with ARC Energy Limited, a former ASX listed oil and gas exploration and production company that he was involved in merging with AWE Limited.



## **Ted Jacobson – Non-Executive Director**

Ted is a petroleum geophysicist with extensive experience in petroleum exploration in Australia. Ted's entrepreneurial initiatives include co-founding Discovery Petroleum and Tap Oil Ltd, the later growing to a market capitalization of over \$400 million under his technical leadership. Ted has a strong technical understanding of the North West Shelf of Western Australian.



## **Bill Foster – Non-Executive Director**

Bill is an engineer with extensive technical, commercial and managerial experience in the energy industry, covering particularly M&A, project financing and marketing. Bill has held several independent director positions in public listed companies and was a senior advisor to a major Japanese trading company in the development of their global E&P and LNG activities.



## **Dr Peter Moore – Non-Executive Director**

Peter has extensive experience in exploration and production in Australia and internationally gained through senior roles with a number of globally recognised companies. Peter led Woodside's worldwide exploration efforts as the Executive Vice President Exploration reporting to the CEO and was the Head of the Geoscience function (Exploration, Development, Production, M&A).



## **Philip Huizenga – Chief Operating Officer**

Philip is a petroleum Engineer with over 25 years in the oil and gas industry encompassing drilling, logging and production on offshore and remote locations throughout Australian, Asia and the Americas. Phil was previously with Tap Oil during an active period exploring and producing in the North West Shelf.



## **Dr Stephen Molyneux – Exploration Manager**

Stephen has significant experience in exploration seismic interpretation and development geology. He has had a successful career discovering oil and gas in senior roles with Origin Energy, Premier Oil Norway, Oilexco North Sea, PanCanadian and Enterprise Oil North Sea.



## **Dr Jeff Goodall – Chief Geologist**

Jeff has over 30 years experience in exploration and development geology throughout Australia, South East Asia and the North Sea. He was a Senior Staff Geologist for 14 years with Santos experiencing significant exploration success during that time in Australia and South East Asia.



## **Andrew Padman – Chief Geophysicist**

Andrew has nearly 40 years experience in the upstream petroleum exploration & production industry, working on new venture, exploration and exploitation projects in the sedimentary basins of S.E. Asia for companies including Exxon, Woodside Petroleum, Premier Oil, Newfield and ARC Energy.



## **Thomson Naude – Chief Financial Officer and Company Secretary**

Thomson is a finance executive responsible for the overall financial management of the Carnarvon business. Thomson is a Chartered Accountant with experience in auditing, financial reporting and commercial transactions including the divestment of Carnarvon's Thailand production assets.



**Think Different**

**Act Different**

