PETROQUEST AUSTRALIA

# Potential for multi-billion barrel discovery in the Officer Basin, West Australia

## Australia Onshore Exploration Blocks
## EPA - 0116, 0118, 0067, 0071 & 0076

**June 2026**

Western Australia ranks among the best regions in the world for new oil and gas ventures, and is one of the few places where potential remains for larger oil and gas discoveries.

# Farm-in Opportunity: 20 Million Acres in the Heart of the Officer Basin

## Introduction

Western Australia ranks among the best regions in the world for finding and developing oil and gas ventures, and is one of the few places where potential remains for large hydrocarbon discoveries in the Billion-barrel oil equivalent (Bboe) scale. The Officer Basin extends 1,500 km from the southeastern flank of the Pilbara Craton to the central-western part of South Australia and, within Western Australia, occupies an area of about 310,000 km$^2$.

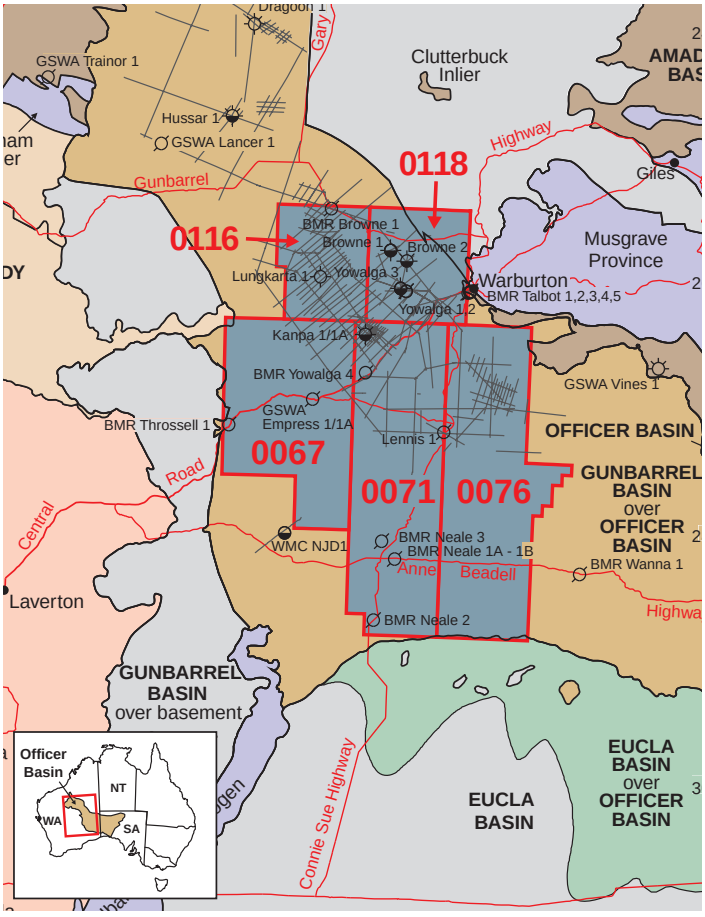
The basin contains five major westerly- and northwesterly-trending depocentres. The basin is predominantly Neoproterozoic, overlying older Proterozoic to Archean sedimentary, igneous and metamorphic rocks. The Gunbarrel Basin, an overlying succession of Cretaceous and younger strata, influences the maturity of source rocks in Officer Basin petroleum systems. The Officer Basin is the southern most component of the Centralian Basin system that includes the Amadeus and Georgina Basins to the north, where some oil discoveries of Neoproterozoic age have been made.

The Officer Basin is under explored, with only about 15,000 line-kilometers of 2D seismic coverage and only about 20+ exploration wells have been drilled. The majority of these wells are mineral boreholes and not oil and gas type exploration wells and have been drilled off-structure and therefore are not valid tests. Numerous hydrocarbon shows from four distinct oil families are recorded from Neoproterozoic and infra-Cambrian sediments, but there have been no commercial discoveries to-date. Possible traps range from simple anticlinal closures, diapirs and fault-induced rollovers as well as stratigraphic traps.

## Our Exploration Blocks

The initial term for Onshore Exploration Permits is 6 years and can be renewed for further two 5 year terms. The initial term for Retention Leases is 5 years. PetroQuest Australia's (PQA's) license holdings EPA - 0116, 0118, 0067, 0071 & 0076 covering 80,892 km$^2$ (~20 million acres) are highlighted in Map 1.

*Map 1 - Officer Basin Permit Map*




## Highlights

The Officer Basin represents one of the last remaining onshore frontier exploration areas where large conventional petroleum discoveries may still be made.

- PQA's permit areas (74,000 km$^2$) lie in the Western Australian part of the Officer Basin offering both conventional and unconventional hydrocarbon potential as well as Helium and even Gold Hydrogen (naturally occurring Hydrogen).
- PQA's licensed areas lie in one of the more explored parts of the Basin with road access and old wells with hydrocarbon shows.

- All elements of a petroleum system are present and there are direct Billion-barrel analogues i.e. Yurubcheno (5.0 Bboe), present in the global Neoproterozoic Petroleum System to which the Officer Basin is strongly linked.
- Previous wells and seismic; 1960-1997 by Shell, JNOC and others all had oil and gas shows.
- Recent deep crustal seismic acquired by Geoscience Australia (GA) indicates multiple structural domains are present within PQA's license blocks with major horst blocks and salt tectonic swells being present as well as basin margin pinch-out plays.
- Bituminous Shales, penetrated in legacy wells within the Hussar and Kanpa Formations are considered to offer the best source rock potential within the PQA's Licenses.
- The Neoproterozoic of the western Officer Basin shows similarities to Neoproterozoic basins in both Oman and Russia where conventional billion-barrel oil-fields are commercially exploited. However, it shares the most commonality with the Baykit High area of Eastern Siberia.
- A significant play fair-way, enclosing an area in excess of 8,000 km$^2$ within PQA's acreage is replete with over 45 individually mapped leads and prospects and these are co-located with geophysical (radiometric) anomalies that are suggestive of present-day hydrocarbon fill.
- None of the legacy wells have these same radiometric anomalies so there are no false positives.
- At least three super structures can be mapped, Narwal, Orca and Moby Dick and each of these could host risked resources in excess of a billion barrels.

## Officer Basin Analogues

Well-founded technical analogies can be drawn with the prolific petroleum-bearing basins of the same age located in Siberia, China and Oman.

Analogues for natural hydrogen and helium can be drawn with the Amadeus Basin, located in the Northern Territory, Australia. The Officer Basin is similar in age and geology to the Amadeus Basin and both basins have the presence of salt to act as a trap for the light molecule hydrogen and helium gases. Well analogues can be made with the Mt. Kitty-1 (11% hydrogen, 9% helium) and Magee-1 (6.23% helium) wells which were drilled to depths of 2,295m and 2,696m respectively.

## Geological Setting

The Officer Basin is a Neoproterozoic intra-cratonic basin with a total sedimentary thickness of up to 8 km. The basin infill is a characterized by a mix of; carbonate, siliciclastic, and evaporitic successions dominated by lacustrine, (Playa lakes) shallow marine to coastal deposits.

The Officer Basin sedimentary succession preserves three of the four super-sequences common to central Australian Neoproterozoic basins. Only the second super-sequence (recording "Snow-Ball" earth deposits (e.g., diamictites) appears to be absent in Western Australia, except near the South Australian border. The structural configuration of the basin is largely determined by major salt deposits, which have mobilized during each of the major tectonic episodes.

## Exploration History

The Officer Basin is vast and under-explored by any measure. It has been subjected to minimal petroleum exploration including only a few limited 2D seismic programs and approximately one well per each 10,000 km$^2$ of the Basin.

Most of the petroleum exploration is concentrated into two areas, one centrally located in the Officer Basin near Warburton, within the core of PQA's licenses and the other in South Australia, located within the eastern part of the Officer Basin. There has been limited conventional on-structure exploration within the Western Australian portion of the Officer Basin.

PQA believes only one petroleum focused well, the Yowlaga-1 well was drilled within depth structural closure. However, the available information strongly indicates the presence of valid petroleum systems with good quality source rocks lying within the petroleum generative window across all of PQA's blocks at this time.

There have been several periods of stratigraphic and exploration drilling in the Officer Basin since 1965. A consortium including Hunt Oil drilled five wells in 1965–1966, encountering minor oil and gas shows within the Browne Formation in Browne-1 and -2. Shell Development Australia drilled three wells in the period 1980–1984, and found an algal-sourced oil show in Kanpa-1 with all three wells displaying oil and gas shows at multiple levels. Eagle Corporation Limited and others drilled two stratigraphic

wells in 1982 in the northwest of the basin.

Subsequent exploration drilling in the Amadeus Basin and in the Officer Basin in South Australia led to several oil and gas shows, and the discovery of the Dingo gas field in the Northern Territory. Recently Dukas-1 (2019) recorded a gas in-flow to the borehole in an uncontrolled manner and 9,000 psi over-pressure whilst drilling Browne Fm (equivalent) evaporites in the adjacent Amadeus Basin further underscoring the hydrocarbon potential of the Centralian Basin System.

Approximately 6,500 km of good-quality seismic data was acquired between 1980 and 1984. The Japanese National Oil Company (JNOC) reprocessed most of the modern seismic data in the Yowalga area in 1996. Geoscience Australia gravity data cover the basin on an 11 km grid, and GSWA acquired semi-detailed gravity surveys on 2–3 km grids over parts of the Savory and Waigen areas in 1995 and 1998, respectively.

From 1995 until 2003, GSWA performed a program of stratigraphic drilling with Trainor-1, Empress-1 and -1A, Vines-1 and Lancer-1. Amadeus Petroleum drilled three exploration wells in 1997 (Akubra-1, Mundadjini-1, and Boondawari-1). In 2011, Geoscience Australia and GSWA acquired a deep crustal seismic line over the western Officer Basin.

There is a myriad of emerging opportunities in petroleum resources for both conventional and unconventional (shale gas), and small independent explorers are leading the way.

The Hussar-2 deepening program in the Officer Basin has become one of the more closely watched frontier wells in Australia because it is targeting a much deeper section than the original Hussar well and is specifically focused on helium, hydrogen, and natural gas in sub-salt reservoirs.

## Key Technical Elements

Key technical elements of the Neoproterozoic Era Officer Basin petroleum (system) prospectivity include the following:

Source rocks; Reservoir rocks; Seal rocks, including evaporites (Halite) shales & siltstones; Thermal maturity ranging from immature-to-mature with a significant stratigraphic section in the oil window; and Petroleum shows with multiple oil generative periods including, the latest Neoproterozoic, the Cambrian and the Permo-Triassic Periods.

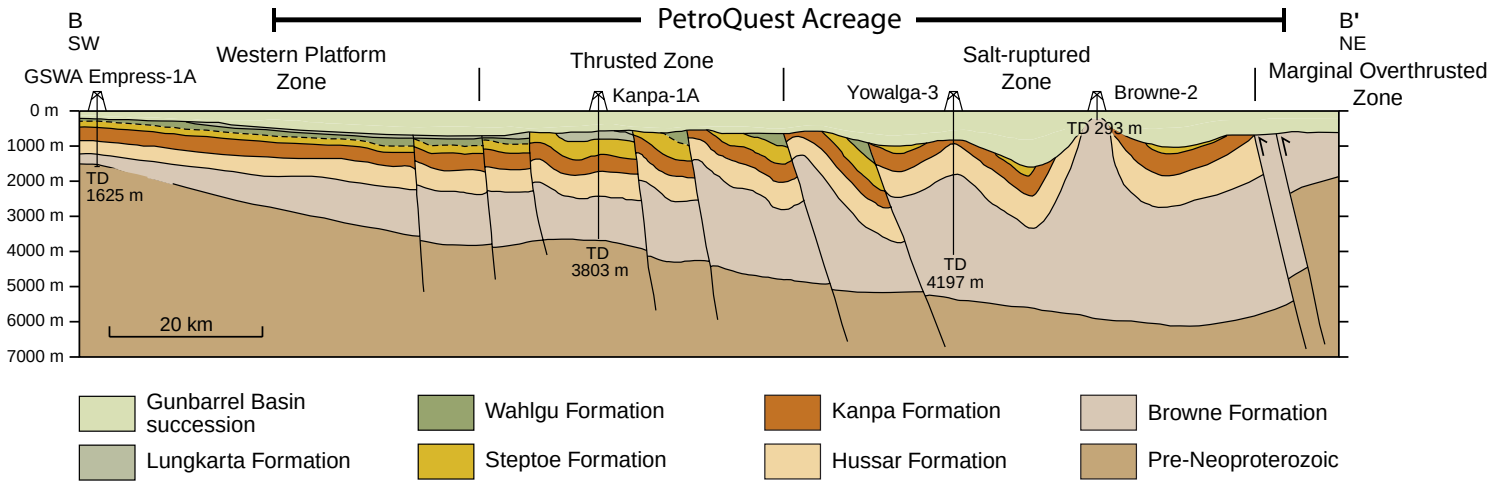
The Officer Basin also exhibits the key elements for the generation and trapping of natural hydrogen and helium.

**Source:** major crustal boundaries, iron rich basement, iron rich mafic/ultra-mafic rocks.

**Seal:** abundance of sedimentary salt and diapiric salt, both ideal to create excellent potential hydrogen and helium traps and seals.

**Trap:** multiple sub-salt traps identified, with trapping mechanisms including four-way dip closures, stratigraphic traps and salt intrusions.

***Figure 1 - Officer Basin Cross Section***




*Source: Onshore Basin Inventory Volume 2 (after Simeonova and Iasky, 2005).*

## Petroleum System

Multiple reservoir / seal and source rock intervals are present (Figure 2). Four source rock intervals (TOCs up to 12% largely Type-II kerogen). Maturity modelling suggests multiple oil generation phases with hydrocarbon shows in 12 wells and mature source rocks within the oil window likely present over most of PQA's acreage.

The prime reservoir is the Hussar Formation; 150-300m net sand with 12-23% porosity (Average 15%) and permeabilities over 1 Darcy – these sands are predominantly marginal marine, with aeolian, locally fluvial-deltaic and marine shelf environments of deposition (EOD's).

The secondary reservoir is the Kanpa Formation; 25-250m net sand and porosity ranges 10-23% (15% Average) deposited in predominantly shallow marine to tidal flat settings. Seals are largely intraformational shales which were deposited as Maximum Flooding Surfaces (MFS's) with MCIP data showing these shales can hold hydrocarbon columns in excess of 800 meters. The majority of structures are large four- and three-way closures largely associated with salt diapirs and turtle structures or areas where some inversion is present. Seismic amplitudes are also present.

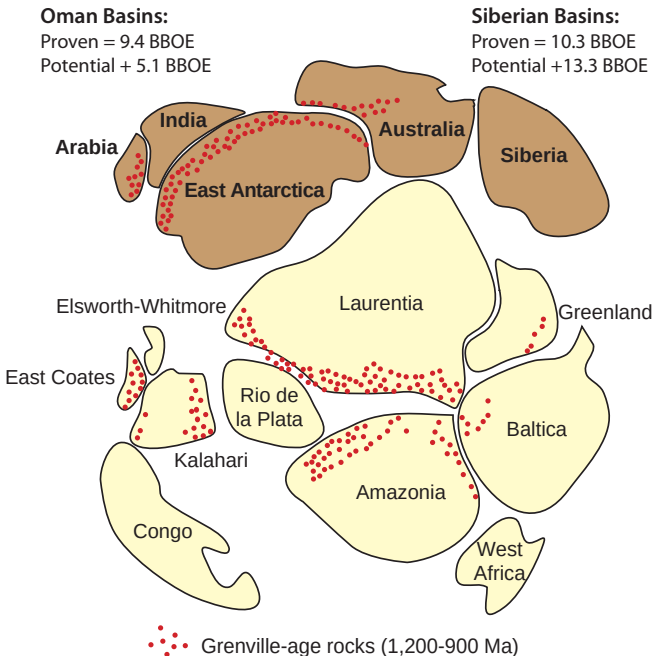
## Global Neoproterozoic Petroleum System (Rodinia)

PetroQuest Australia's acreage within the Western Officer Basin is part of the greater 'global' Neoproterozoic Petroleum System which contains multi-billion barrel oil-fields both in Oman 13 billion boe and Eastern Siberia 23 billion boe (USGS).

The system appears to be linked by geographical position with respect to geographic latitude (reconstructed) across the Tonian aged Super continent Rodinia. The Direct analogue to the Officer Basin System is the Tonian aged super-giant ***Yurubcheno oil and gas field*** of the Baykit High Eastern Siberia which has Proven Resources of 5 billion boe.

Historically the Global Neoproterozoic Petroleum System has been largely over-looked. In 2019, the first gas, under a 30 year gas export contract (38 billion cubic meters/annually) and estimated at US$400 billion was piped through the Power of Siberia-1 Pipeline to China from the giant 'Vendian' and 'Tonian' aged oil and gas fields of Eastern Siberia.

***Figure 3 - Reconstructed Rodinia Drift***




*Source: USGS-Rodinia reconstruction of Weil and others (1998)*

These sort of export gas volumes from the Neoproterozoic were a surprise to many explorers but not to PetroQuest who had identified and captured the sweet-spot of the same play type within the Officer Basin onshore Western Australia. The key characteristics are as follows;

- Multi-billion barrel Neoproterozoic oil and gas reserves are produced in both Eastern Siberia and Oman and are related spatially on the Supercontinent Rodinia.
- Two Neoproterozoic petroleum systems are known;

  (1) Vendian (Ediacaran); and

  (2) Riphean (Tonian) systems.
- Oils extracted from cores cut in Neoproterozoic sediments in the Officer Basin have been geochemically typed by GCMS to local (coeval) source rocks.
- The Tonian aged petroleum system is proven in Australia's Centralian Basin by gas flows (uncontrolled) in Dukas-1 (2019) from deposits of the Browne Formation (equivalents).

## Officer Basin Neoproterozoic Source Rocks

PetroQuest Australia's acreage within the Western Officer Basin boasts abundant source rocks, explaining why all

the legacy wells drilled within the company's licenses (including those drilled by Shell in the 1980's) have abundant oil and gas shows.

Neoproterozoic sedimentary rocks are known to have sourced commercial accumulations of oil and gas in Russia, Oman, and in the Amadeus Basin in west-central Australia. The key source rock is Neoproterozoic Bituminous Shale that typically plots as a Type II Kerogen and as such can generate both oil and gas.

Bituminous shales are thought to be distributed widely throughout the Officer Basin, with the Bituminous shale cored in the NJD-1 borehole (1981) delivered total hydrocarbon of 24.4 mg of hydrocarbon/g of rock which is considered a rich source rock.

Importantly, to emphasize the global linkage to the super-giant oil and gas fields of Oman and Eastern Siberian of similar age, the sterane distribution of Western Officer Basin oils overprint those of the Amadeus Basin and oils from both Oman and Eastern Siberia, suggesting a common source for the organic material.

Geochemical modelling indicates that most potential source rocks in the Officer Basin first entered the oil-maturation window after formation of substantial structural traps, and much of the section remains in that window today.

## Petroleum Prospectivity

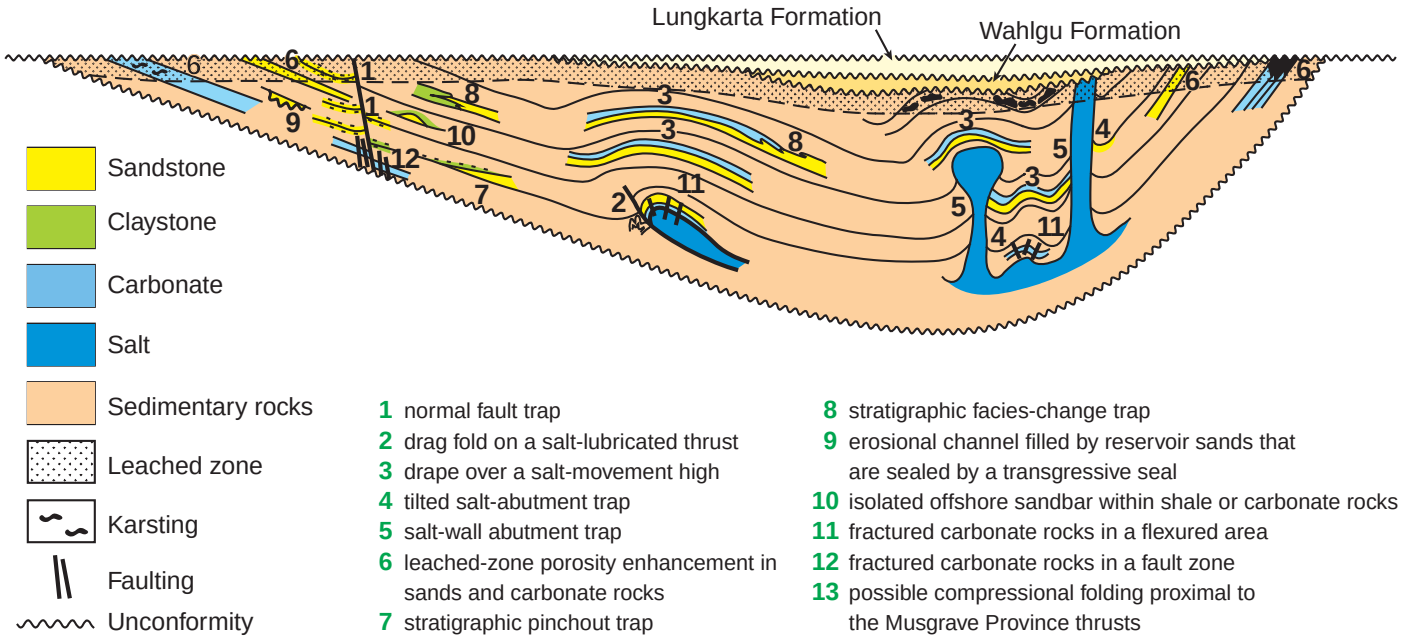
Hydrocarbon shows (in the form of minor oil staining and bitumen in intergranular pores, fractures and vugs) are recorded in the northwest Officer Basin in Mundadjini-1, Boondawari-1, and LDDH-1, and in the adjoining Paleoproterozoic Scorpion Group in OD 23. Elsewhere in the western Officer Basin, hydrocarbon shows are recorded in NJD-1, Kanpa-1A, Browne-1, Browne-2, Dragoon-1, Hussar-1, and Vines-1.

Rock Evaluation Pyrolysis indicates there are good oil source rocks in the Kanpa-1, Yowlaga-3 and LDDH-1 wells, with TOC's as high as 7%. Results from these wells indicate reservoirs with porosity greater than 20%, and permeabilities of hundreds of millidarcies. Halite beds more than 10 meters thick in the Browne Formation, and shales more than 10 meters thick in the Browne, Hussar, Kanpa, and Lupton Formations, provide potentially effective top, base and lateral seals. Thin, but potentially effective, source rocks are found in the Browne, Kanpa, and Hussar Formations.

Play types in the Officer Basin vary geographically and stratigraphically there are five main structural domains (Figure 4). These are; 1) Over-thrust, 2) Salt Piercement, 3) Anticlinal, 4) Regional Arch and 5) Monoclinal.

Supra-salt plays include folded four-way dip closures (drape) resulting from low- amplitude, broad, open folds,

***Figure 4 - Officer Basin Schematic Cross Section***




*Source: Onshore Basin Inventory Volume 2 (after Simeonova and Iasky, 2005).*

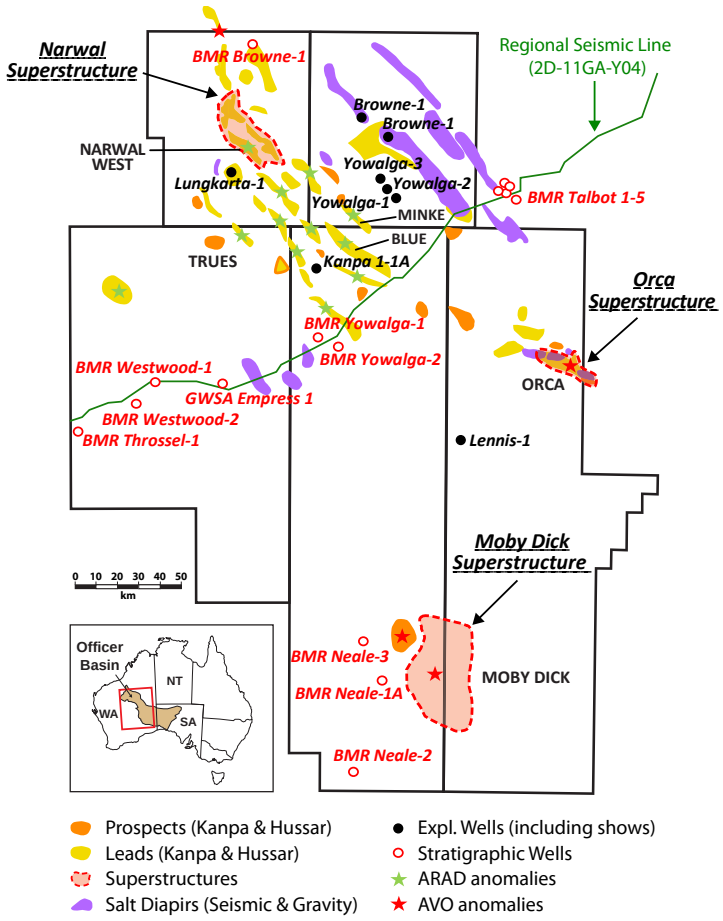
and isoclinal to overturned thrust folds. Many of the larger folds are cored by salt diapirs, but opportunities for flanking traps or lateral truncation traps remain unexplored. Stratigraphic traps in the subsalt and supra-salt section remain untested as do basin margin pinch-out plays along the southern monocline basin edge.

## License Prospectivity

49 Prospects and Leads have been mapped off the existing seismic data. Volumes of the combined portfolio exceed 42 Bboe (un-risked) with an average pre-drill volume greater than 500 MMbbls.

Two superstructures, Narwal and Orca *(Figure 5)* can be mapped with a common shared closing contour, some structures even have a supporting AVO anomaly.

***Figure 5 - Leads Map***




*Source: Geological Survey of Western Australia (after Apak et al., 2002*

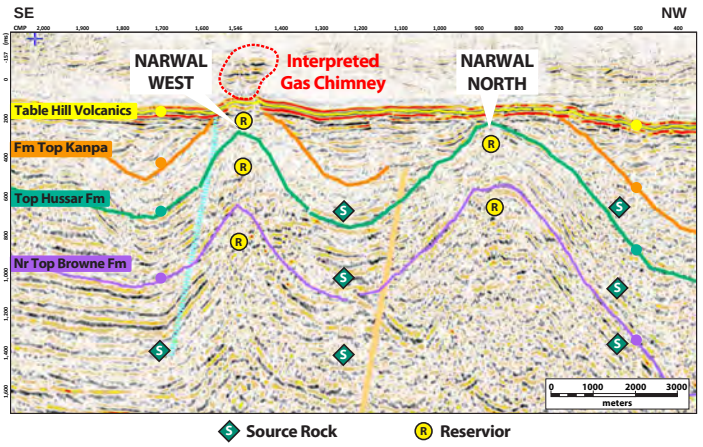
The Moby Dick lead covers an area over 1,970 km$^2$ with a 4.9 billion barrel risked potential using the ARAD technique alone. The extraordinary estimate large volumes of oil and gas in the Officer Basin are consistent with discovered volumes in other Neoproterozoic basins elsewhere, for example Oman and Eastern Siberia.

The majority of the leads and prospects are mapped at the level of the Hussar and Kanpa Formations and together they occupy a play fair-way of some 8,000 km$^2$, which is larger than Exxon's Stabroek block (offshore Guyana) in size. Moreover, play based mapping suggests that most of the running room lies within the oil window at the depth of the mapped leads and prospects, so we can expect oil discoveries.

## Narwal West Prospect

PetroQuest Australia maps the Narwal West Prospect at the level of both the Hussar and overlying Kanpa Formations. The seismic data suggests that it is a faulted anticline with a potential gas chimney overlying the closure. The structure has over 600 m of vertical relief across an area of 57 km$^2$ for Narwal West. Narwal west is part of a larger super-structure which can be mapped over 100's of km$^2$ and could contain up-to 4.3 Billion bbls of oil *(Figure 6)*.

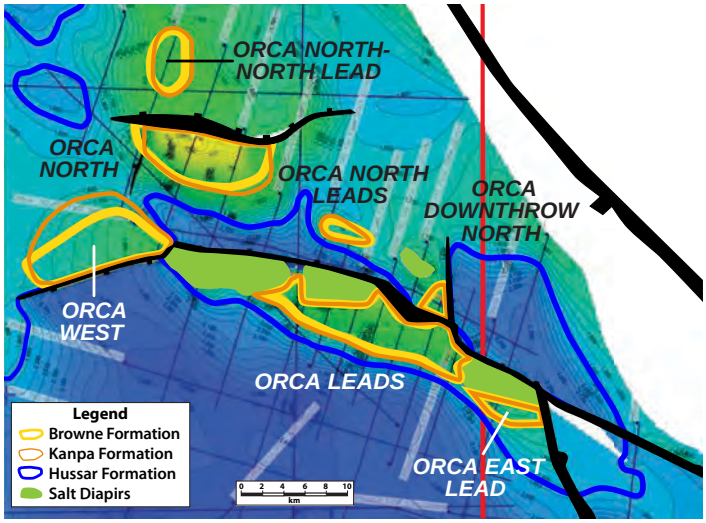
***Figure 6 - Narwal West & North Prospects***




## The Orca Prospect

PetroQuest Australia maps the Orca Prospect at the level of both the Hussar and overlying Kanpa Formations. The seismic data suggests it is a faulted anticline with some component of salt tectonics defining the trap. It has been previously mapped by SDA in the early 1980's as a thrust faulted anticline. Around the culmination of the structure there is evidence for AVO anomalies of the Fluid Factor type, alluding to the presence of hydrocarbons. The Orca Prospect can also be mapped as part of a larger super-structure that could contain up to 2.4 Bbls of oil *(Figure 7 on page 8)*.

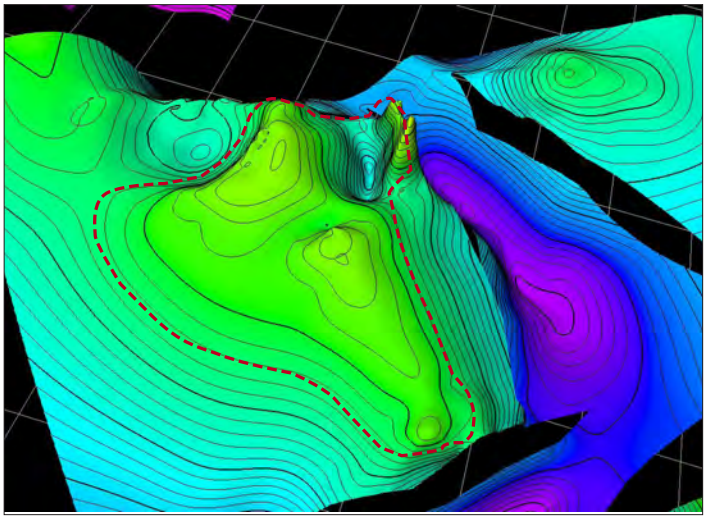
*Figure 7 - Orca Prospect*




## The Moby Dick Prospect

PetroQuest Australia maps the Moby Dick anomaly as part of a large (Ghawar size) Regional Arch that extends into the southern area of the PetroQuest blocks. The regional arch is expressed as a large positive Bouguer (gravity) anomaly that lies on an extension of the NE-SW Albany Fraser Liniment that is timed as being of Grenvillian age. When the potential field data (grav/mag) is modelled a large structure, almost 2,000 km$^2$ in area with almost 2,000 meters of vertical relief is resolved.

*Figure 8 - 3D Gravity Magnetics Map*



*3D Depth Model of Moby Dick Structure (Closure) From Potential Field Data*

This long-standing regional high is perfectly positioned as a focus of migrating hydrocarbons exiting the kitchen areas of both the Lennis Sub-Basin to the north and the Wanna Trough to the south. The Neoproterozoic section, that is proven to the north, likely extends over this regional arch providing the four-way drape necessary to trap hydrocarbons within any reservoirs and top-seal present in the area.

## Gravity & Magnetics

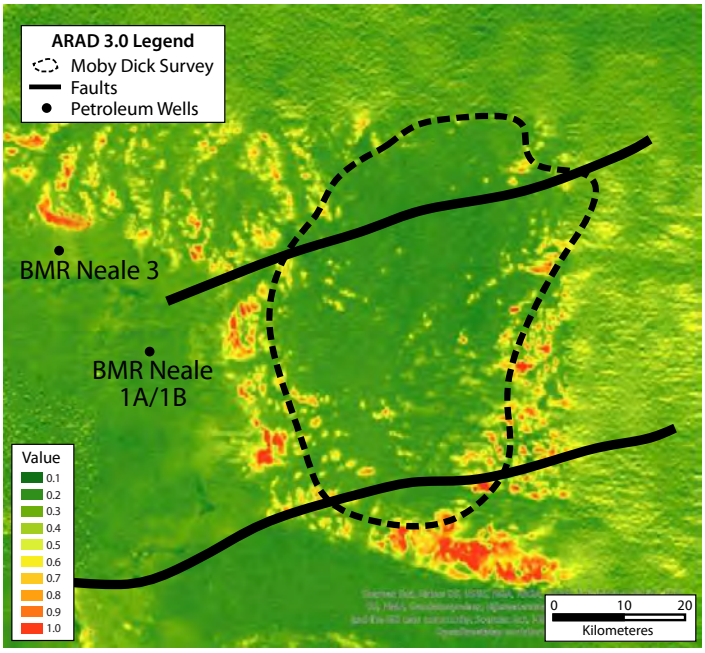
The Moby Dick mega-structure lies atop of lifted basement with 5 km of sediments. Gravity and Magnetic data were used to map the different faulting in the area. The structure could contain 7.0 Bboe (un-risked) a truly elephantine lead.

Moby Dick 3D GravMag subsurface mapping revealed a compartmentalized structures with a major faulted anticline that correlate to the radiometric mapping.

## ARAD Radiometrics

A new radiometric technique, ARAD 3.0 detects soil alterations caused by near vertical migration of micro-seepages from underlying hydrocarbon accumulations. The technique, acquired by fixed wing aircraft flying over vast areas assesses the concentration of uranium and potassium at the surface and any mutual divergence in the two is a gamma anomaly.

*Figure 9 - ARAD 3.0 Radiometrics Map*




This technique has proven to be highly successful for pre-drill prediction in the North the Perth Basin and by extension to the Officer Basin. The mapped current oil

To date, Liberty has facilitated over US$1.7 billion dollars in exploration and development work program expenditures resulting in numerous discoveries both onshore and offshore.

window and ARAD 3.0 anomalies in undrilled structures provide a remarkable fit (Figure 5). Moreover the legacy dry holes have no ARAD 3.0 radiometric anomalies present.

The mega structure of Moby Dick is controlled by NE-SW deep faults The ARAD 3.0 radiometric mapping show very high radiometric anomalies in the mapped subsurface target formation. This section identifies the presence of Grade I ARAD (very high anomaly intensity) to the west of the Neal South, as seen on different studies in multi-basin, the ARAD high intensity spots may refer to the OWC.

## Risk Mitigation

Risk mitigation may be provided by PetroQuest's proprietary ARAD 3.0 technology (Dr Afif Arbi 2023), which suggests co-location of high ARAD 3.0 radiometric anomalies with depth mapped closures. Legacy dry holes have no ARAD 3.0 anomalies so there are no false positives. The ARAD 3.0 technique incorporates Machine based Learning Algorithms which have been trained over a population of 1,500 wells from both the Cooper-Eromanga and North Perth Basins.

The mapped leads and prospects risks range from 10->40% (20 prospects exceed 30% POS alone). These prospects can be drilled cheaply with a light rig as most are close to the main highway.

## Top 5 Prospect Un-Risked Volumes by Block

| Prospect | OOIP Un-Risked | Block |
|---|---|---|
| Minke | 1,006 MMbbls | EPA-0118 |
| Blue | 2,658 MMbbls | EPA-0071 |
| Narwal West | 441 MMbbls | EPA-0116 |
| Orca | 649 MMbbls | EPA-0076 |
| Trues | 548 MMbbls | EPA-0067 |

## Our Track-Record of Success

Since our inception in 1997 we have acquired over 24 distinct exploration blocks worldwide. The giant Poseidon gas/condensate field operated by **Conoco Phillips** was ranked by Rigzone as one of the ten largest global discoveries of 2009. **ExxonMobil** negotiated a farm-in from Liberty in 2019 on the VIC-P70 permit in the offshore Gippsland Basin that resulted in the drilling of three wells (~US$200M) including the Sculpin well, drilled in the deepest water depths ever undertaken in Australia.

## The Opportunity

Liberty Petroleum specializes in acquiring high impact exploration licenses globally. LPC's business model is to capture early stage and/or frontier areas that have major (one billion barrel plus) exploration opportunities. Once captured, LPC seeks to find a world class operator to de-risk the opportunity through seismic and drilling commitments.

A data room is available for interested parties upon execution of a Confidentiality Agreement.



For more information please contact us at:

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