# AUSTRALIA Petroleum

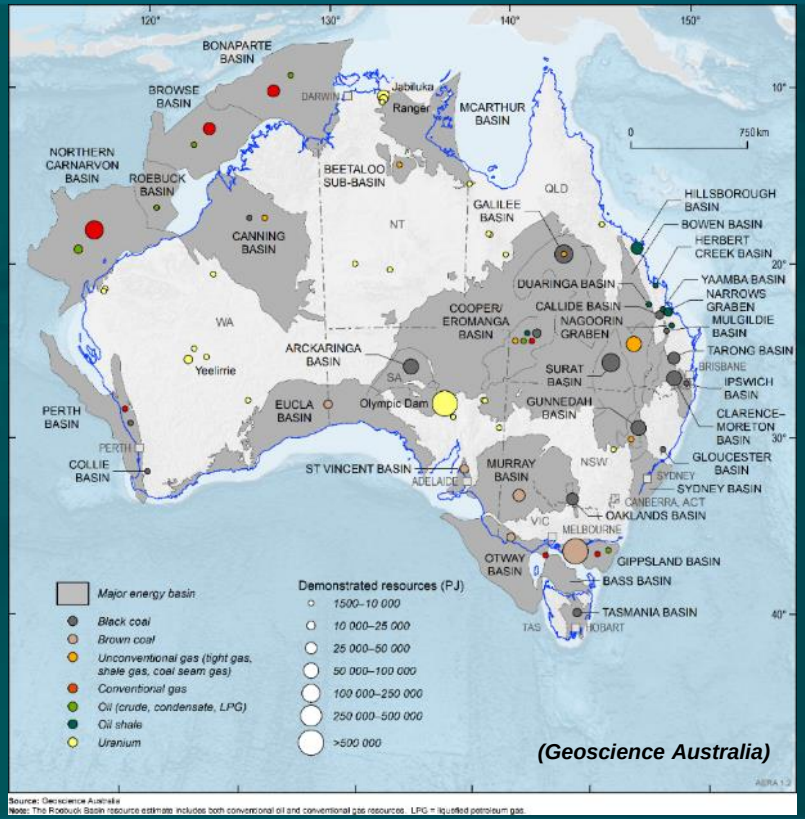
## Update and highlights in Australia's energy exploration and development projects

Tom Bernecker, Geoscience Australia, Canberra, ACT

with contributions from:

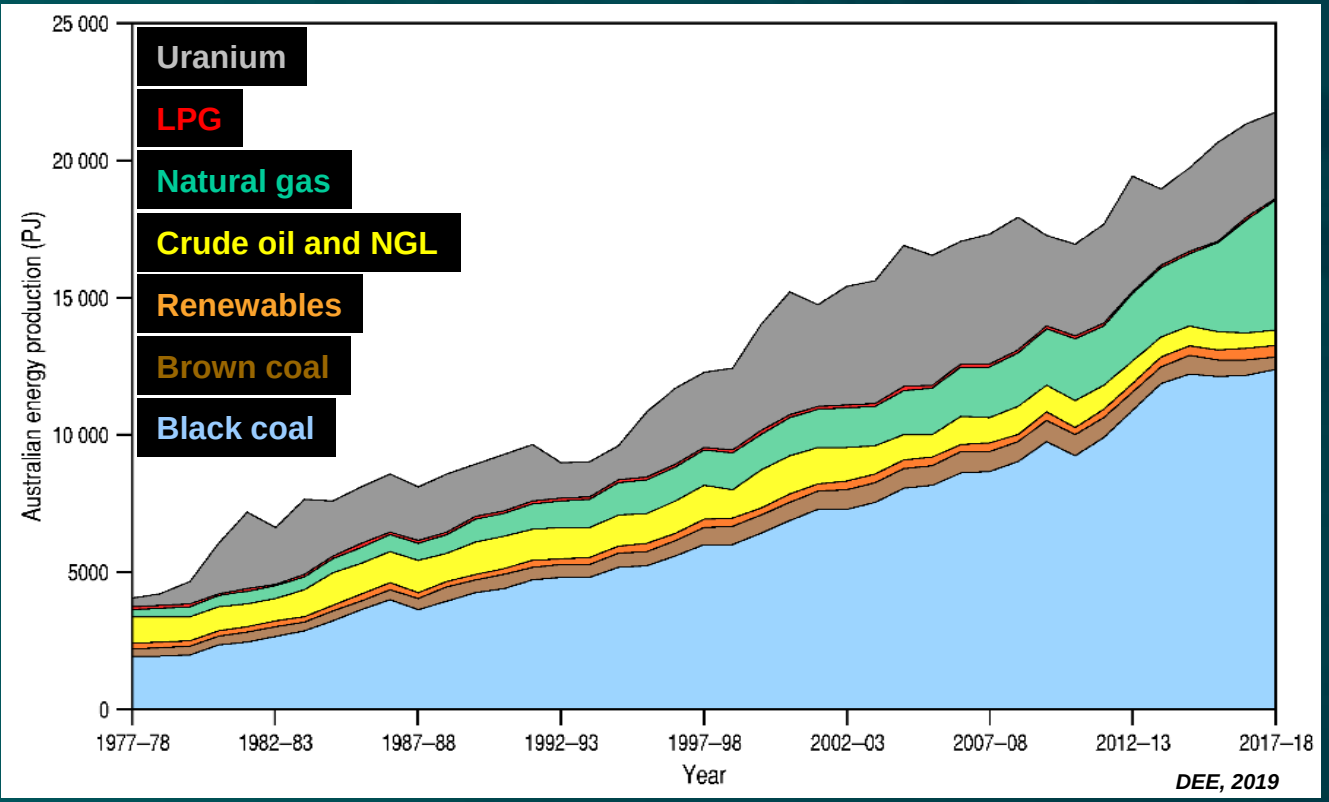
Dorothy Close (NT), Jeff Haworth (WA), Elinor Alexander (SA), Louise Goldie Divko (VIC), Kevin Ruming (NSW)

# Australia’s Energy Resources (2018)



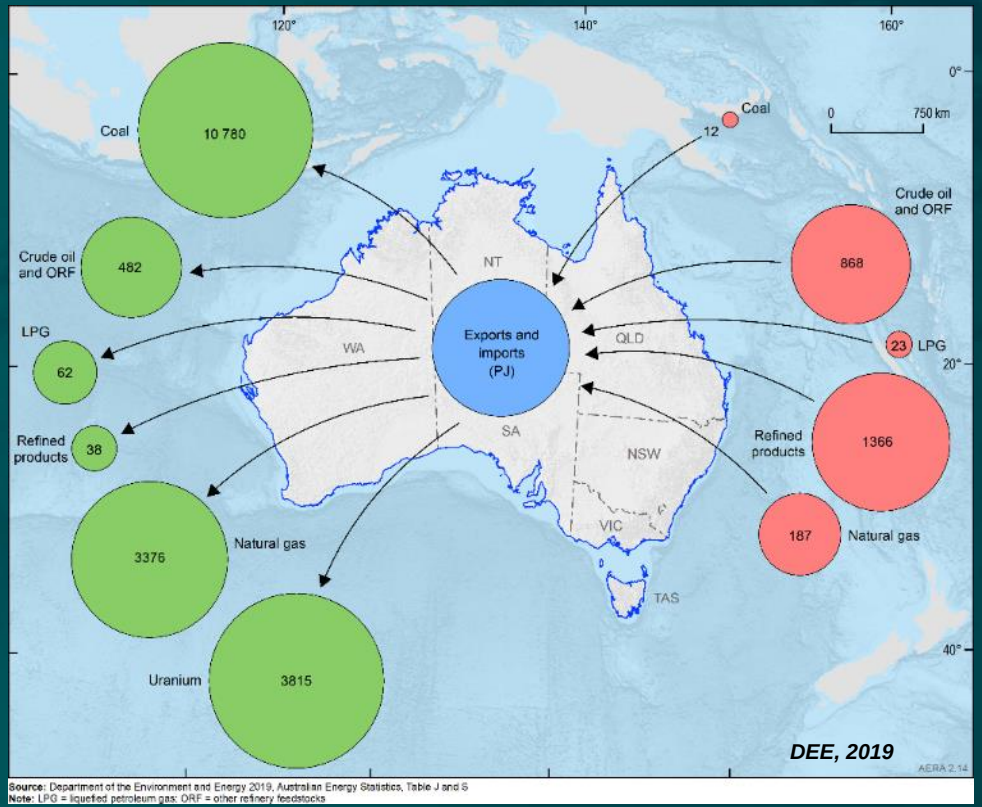

- Australia has abundant, high quality energy resources that are widely distributed across the country.
- These resources are expected to last for several decades even as production increases.
- Australia's future economic growth and clean energy security will be well supported by our world-class natural gas resources, together with our increasing renewable energy capacity and emerging hydrogen industry.

# Australia's Energy Production (2017-18)




- Australia's energy production has increased by 20% over the past 10 years.
- Gas production has continued to increase substantially, primarily driven by a rapid expansion of the Australian LNG industry – 30% of production in 2018 was from CSG in eastern Australia.
- Black coal is the main source (~57%) of energy production in Australia.
- Australia accounts for ~11% of the world's uranium production but production is declining as output winds down at the Ranger mine (scheduled shut down in 2021)

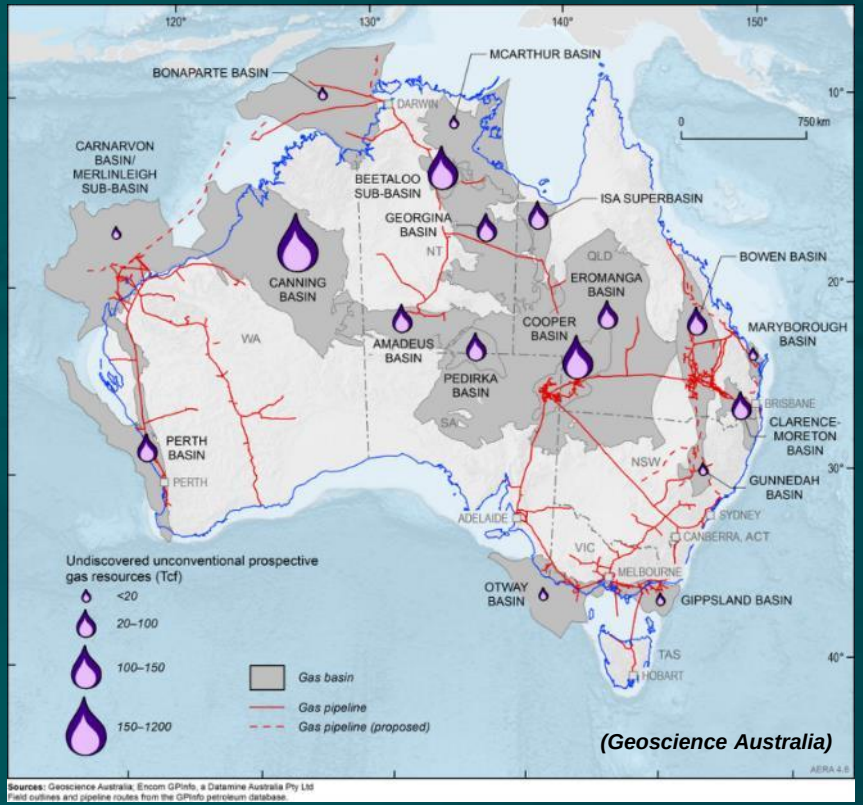
# Australia's Energy Trade Balance (2017-18)




Source: Department of the Environment and Energy 2019, Australian Energy Statistics, Table J and S
Note: LPG = liquefied petroleum gas; ORF = other refinery feedstocks

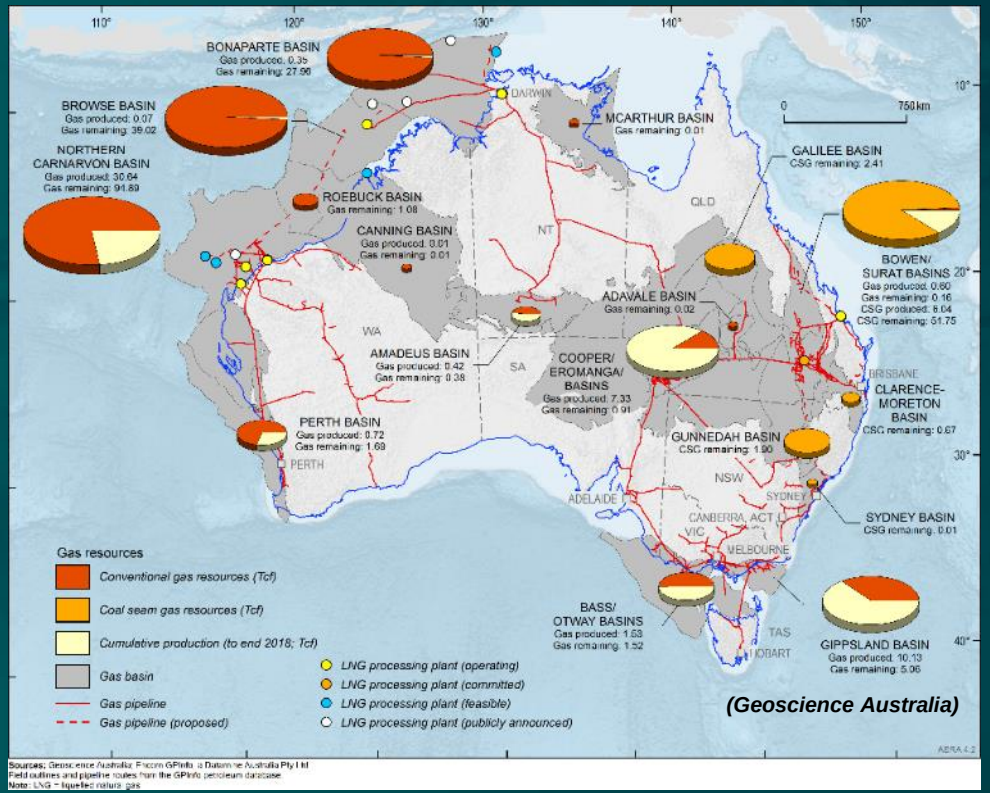
- Australia is a net exporter of energy, with ~85% of energy produced exported in 2017-18.
- LNG exports grew by 18 per cent in 2017-18 as new capacity came on-line on the North West Shelf – about 71% of all produced gas is exported.
- Australia is a net importer of crude oil and refined products - about 85% of crude oil produced is exported.
- About 73% of Australia's total energy exports are coal and coal products - most of our produced coal is exported.
- Australia is also a significant exporter of uranium for use in nuclear power plants in east Asian markets (China and Republic of Korea).

# Australia's undiscovered unconventional prospective gas resources (2018)



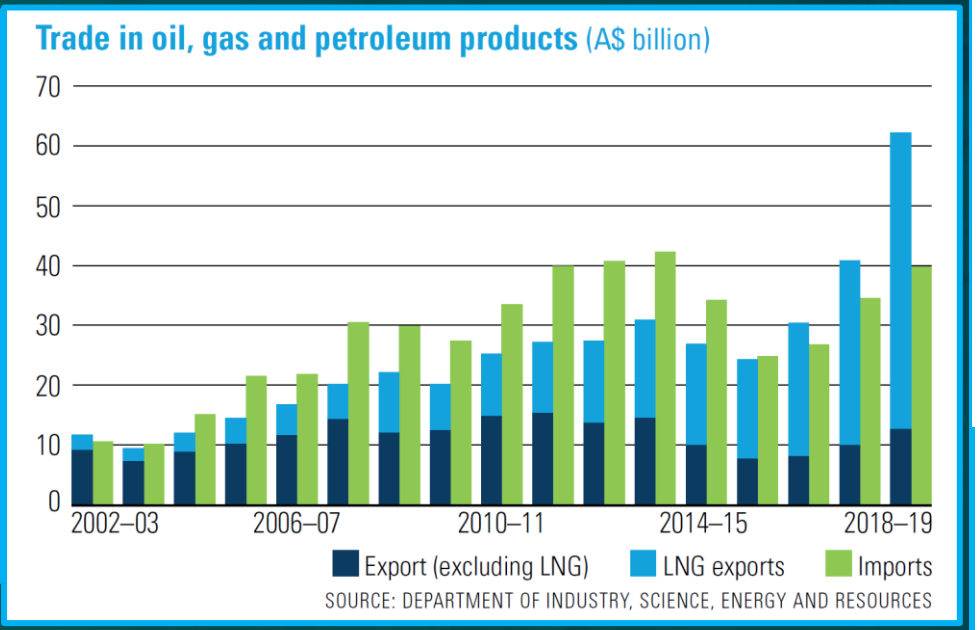

- No shale gas production yet
- Three areas to commence production in the near future:
  - Beetaloo Sub-basin (NT)
  - Canning Basin (WA)
  - Cooper Basin (SA)
- Need for new supporting infrastructure, including pipelines
- Obtaining social licence to operate is key aspect of any future production

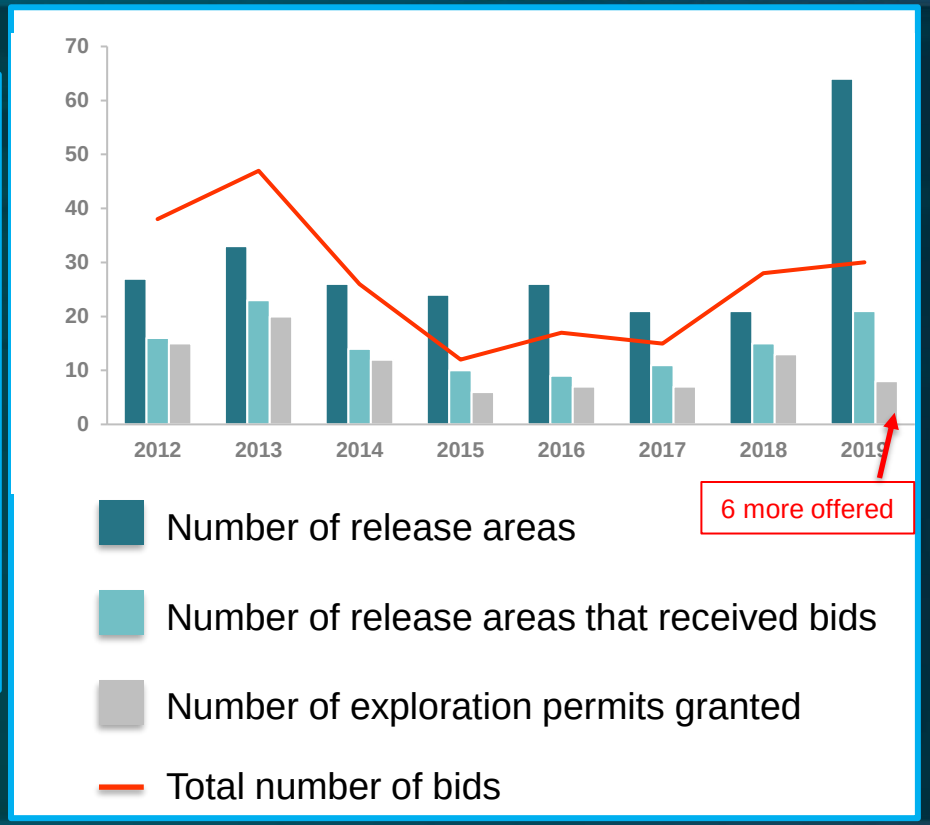
# Australia’s Identified (2P+2C) Gas Resources (2018)



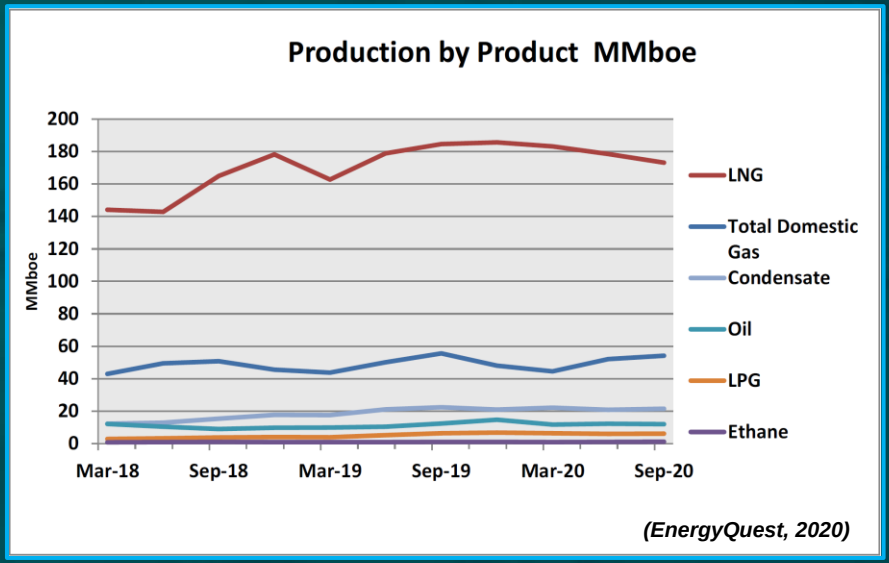

- Australia's total identified remaining conventional gas resources at the end of 2018 were estimated at 173 Tcf – about 75% of total remaining gas resources.
- These conventional gas resources are mainly located on the North West Shelf - southeast Australian basins are rapidly maturing (supply shortfall for domestic gas).
- Coal seam gas in eastern Australian basins remains the main source of unconventional gas.
- Future gas security in eastern Australia will rely on converting contingent and prospective CSG and other unconventional resources into reserves.

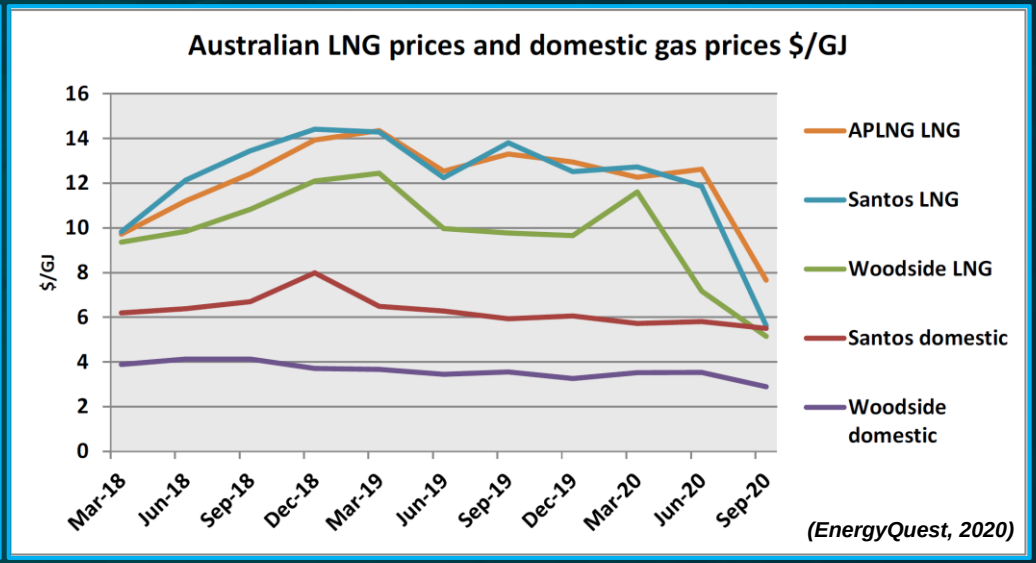
# Review -
# 2012 -2019 offshore exploration activity, oil and gas trade :
## *(was it ) a positive outlook?*



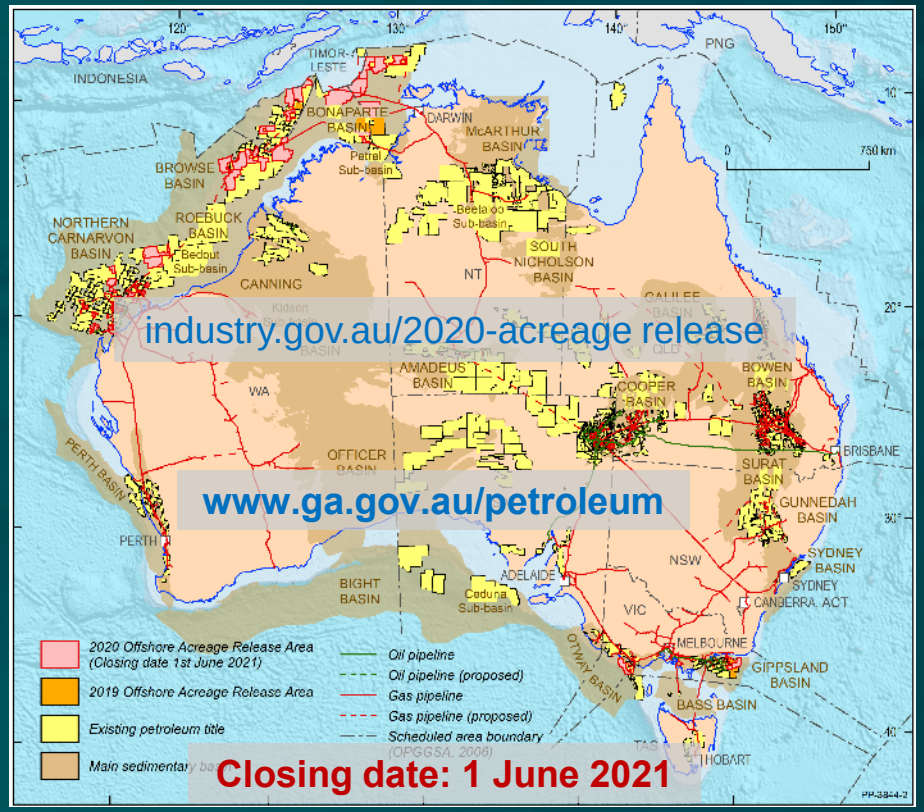



# Hydrocarbon production and gas pricing 2018 -2020



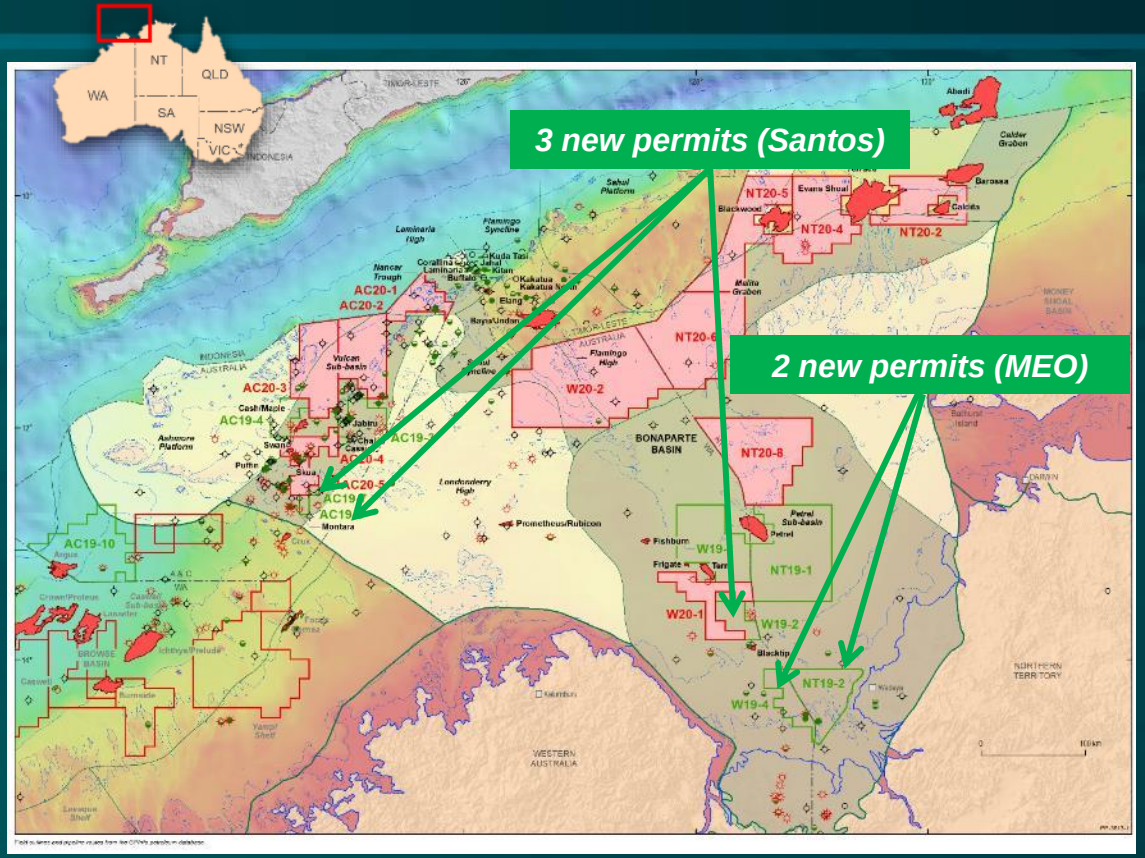



# Current offshore permits, 2019 and 2020 release areas




- 42 new areas released on 26 August 2020
- NW Shelf continues to attract the vast majority of industry nominations
- Bonaparte Basin new focus of interest
- Southern margin remains underexplored
- Otway and Gippsland basins important for adding gas volumes to SE-Australia

# Bonaparte Basin:
# 2019 and 2020 release areas




New areas cover 3 established hydrocarbon provinces:

- Petrel Sub-basin
- Troubadour Terrace
- Vulcan Sub-basin

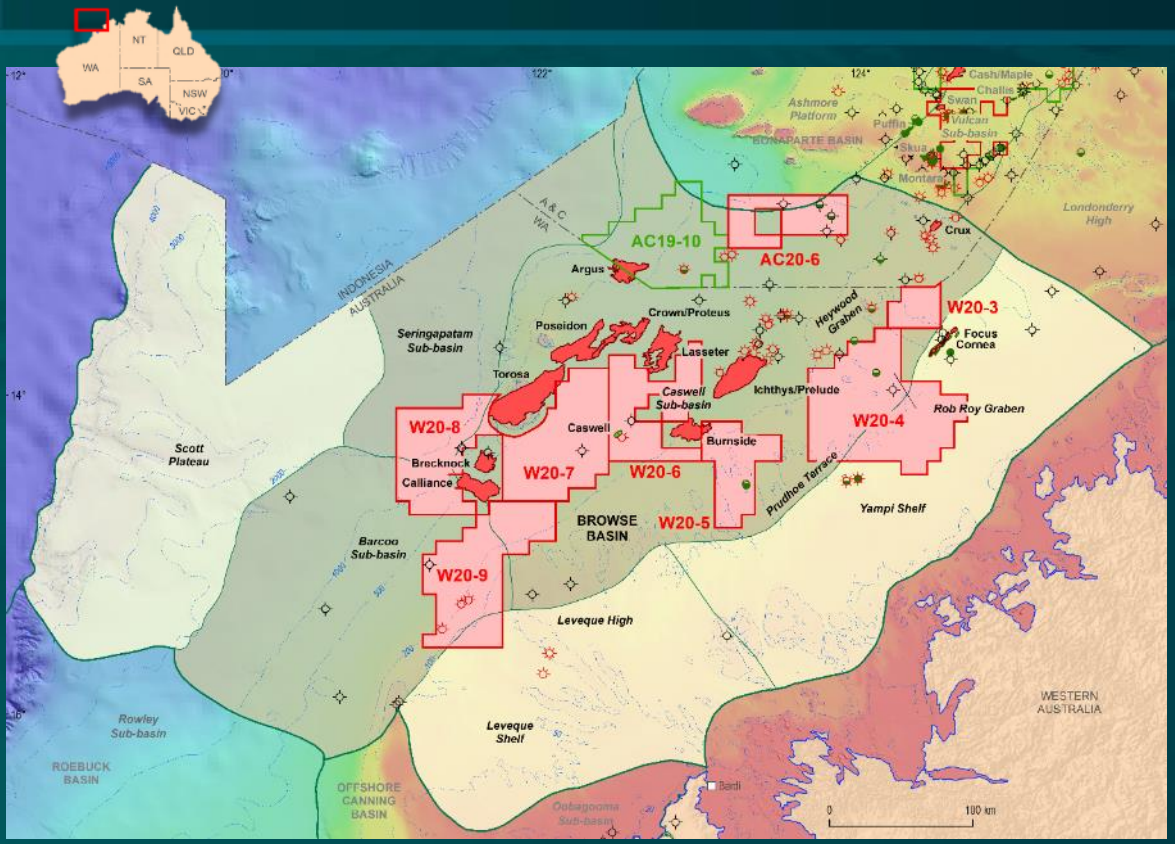
In addition, Malita Graben areas offer untapped potential

**Gas produced: 0.35 Tcf**
**Gas remaining: 27.96 Tcf (2P + 2C)**

**Oil produced: 449 MMbbl**
**Oil remaining: 90 MMbbl (2P + 2C)**
**Condensate remaining: 437 MMbbl**

***(Geoscience Australia)***

# Browse Basin:
# 2019 and 2020 release areas



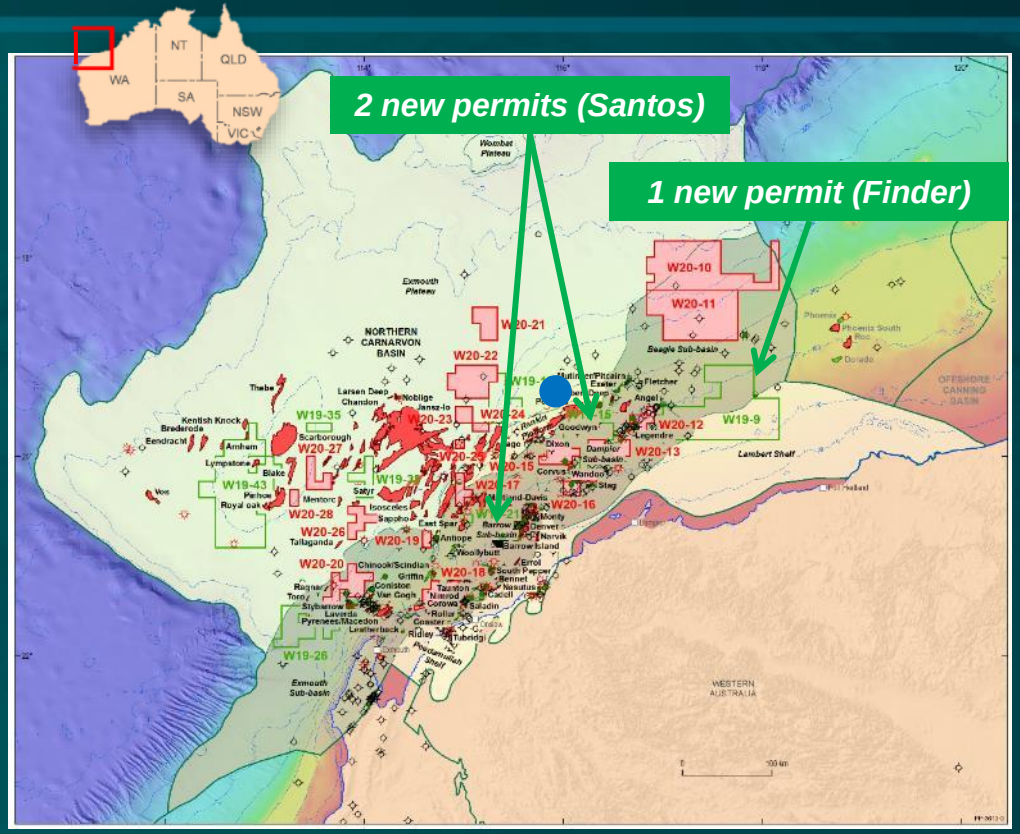

- Gas and condensate production commenced in 2018 (Inpex operated Ichthys field), followed by Shell-operated Prelude FLNG in 2019
- Discussions regarding the development of additional resources continue.
- Eight areas on offer in 2020
  - *Caswell Sub-basin*
  - *Yampi Shelf*
  - *Barcoo Sub-basin*

**Gas produced: 0.07 Tcf**
**Gas remaining: 39.75 Tcf (2P + 2C)**

**Oil produced: 3 MMbbl**
**Oil remaining: 37 MMbbl (2P + 2C)**
**Condensate remaining: 1173 MMbbl**
**LPG remaining: 60 MMbbl**

***(Geoscience Australia)***

# Northern Carnarvon Basin: 2019 and 2020 release areas



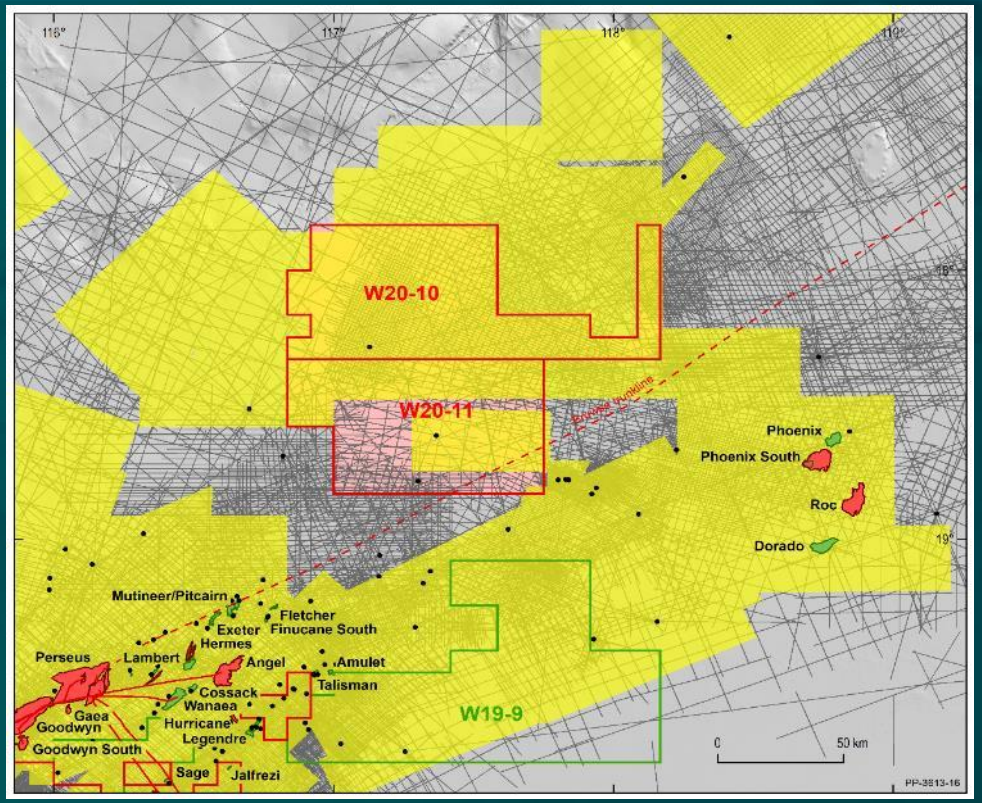

- Australia's premier hydrocarbon province since the mid-1990s, attractive to companies of all sizes
- LNG export hub, expanding infrastructure
- Inboard areas offer access to multiple gas and oil-prone petroleum systems
- Outboard areas offer access to world class gas play (Upper Triassic Mungaroo deltaic system)
- Untapped Lower-mid Triassic targets, including "deep Mungaroo" (BP's **Ironbark-1** in WA-359-P)

**Gas produced: 30.64 Tcf**
**Gas remaining: 94.89 Tcf (2P + 2C)**

**Oil produced: 3207 MMbbl**
**Oil remaining: 1039 MMbbl (2P + 2C)**
**Condensate remaining: 950 MMbbl**
**LPG remaining: 1 MMbbl**

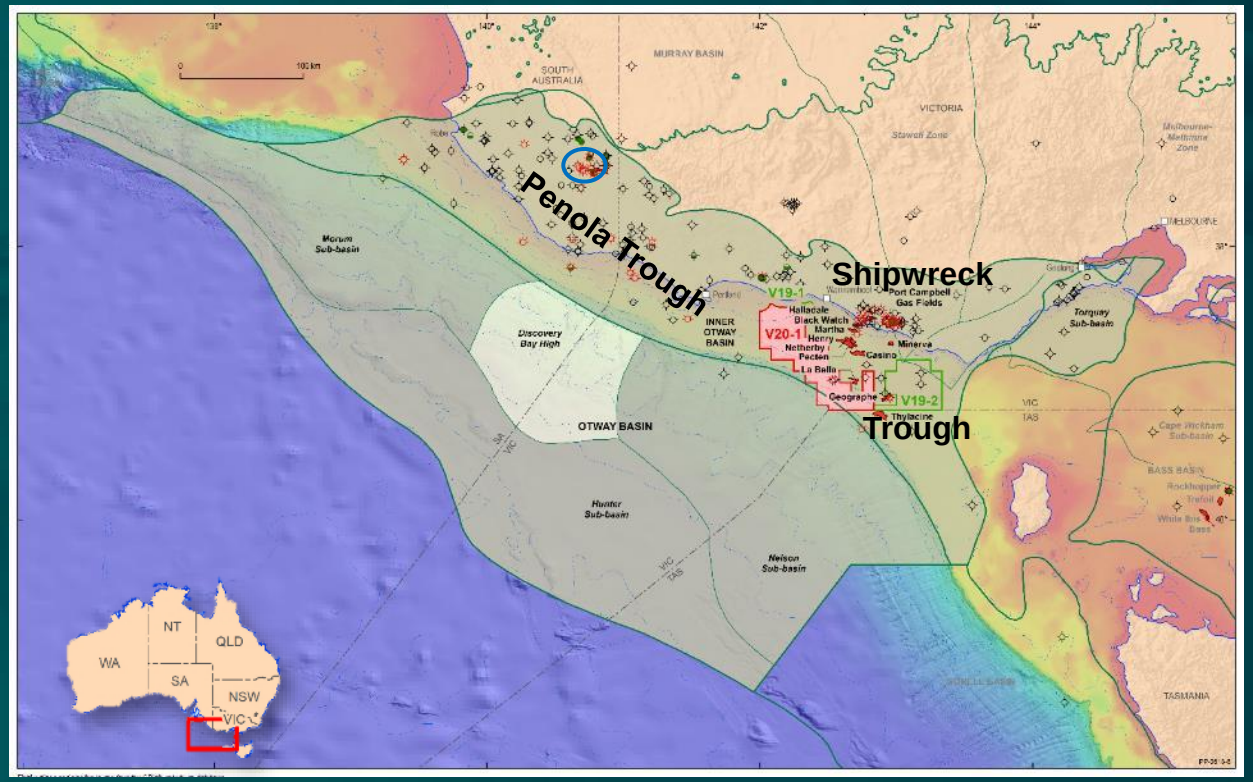
*(Geoscience Australia)*

# Beagle Sub-basin




- Northern part of Area W20-10 considered deep-water frontier
- Nebo-1 indicates presence of liquid petroleum system
- Success in Bedout Sub-basin has triggered strong interest in surrounding region
- Triassic is untapped target in Beagle Sub-basin
- Understanding of Late Permian – Early Triassic basin evolution may hold key to success
- Extensive 3D seismic coverage, including parts of TGS's regional Capreolus survey

# Otway Basin:
# 2019 and 2020 release areas



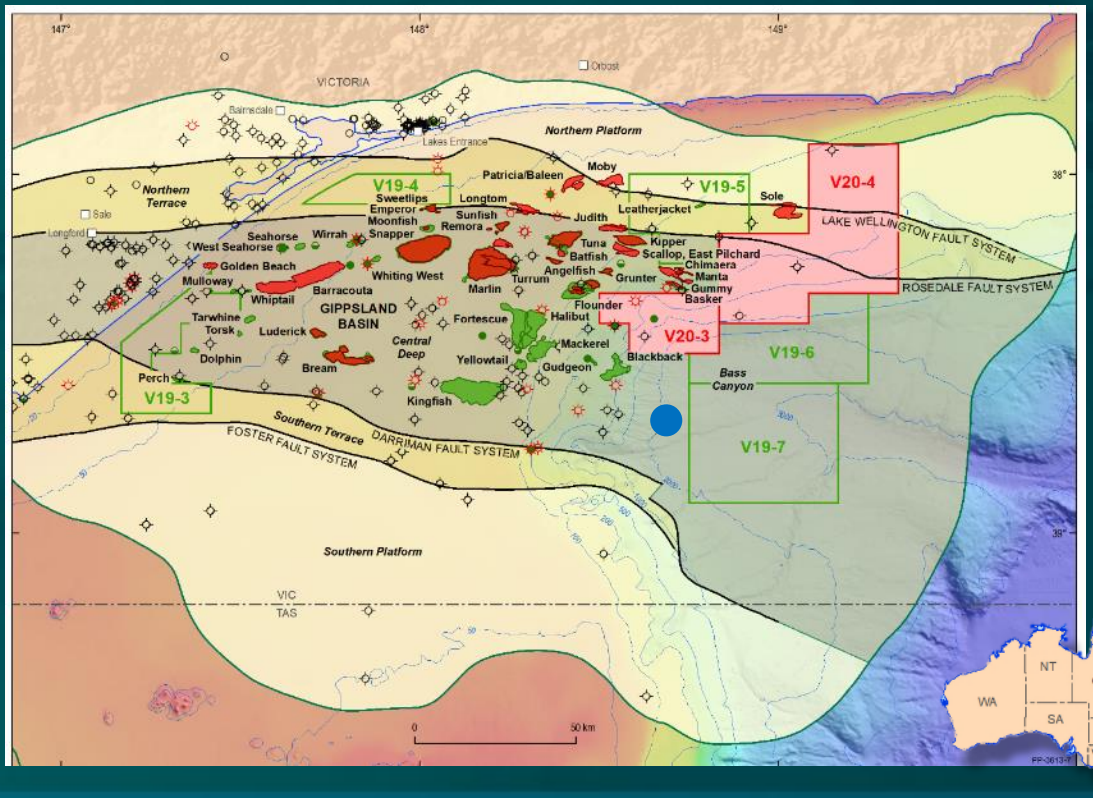

- Gas producing province since late 1990s
- Rapid suite of new discoveries since Geographe/Thylacine in 2001
- Waarre Fm (Late Cretaceous, Turonian) in Shipwreck Trough is main play
- Additional discoveries (onshore) are related to Early Cretaceous “Pretty Hill Formation”, eg. Hazelgrove in Penola Trough, South Australia

**Gas produced: 1.53 Tcf**
**Gas remaining: 1.52 Tcf (2P + 2C)**

**Oil produced: 28 MMbbl**
**Oil remaining: 7 MMbbl (2P + 2C)**
**Condensate remaining: 22 MMbbl**
**LPG remaining: 25 MMbbl**

***(Geoscience Australia)***

# Gippsland Basin:
# 2019 and 2020 release areas



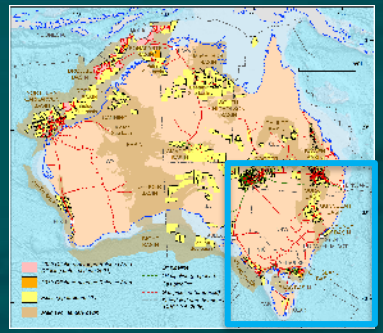

- World class oil gas province with continued oil and gas production since 1970
- Wide-ranging untested exploration targets, especially in the east and along the basin flanks
- New permit awards in recent years indicate that the basin has maintained its attractiveness
- Sculpin-1 (ExxonMobil) newest exploration well, drilled in Nov/Dec2019 (2,300 m water depth)

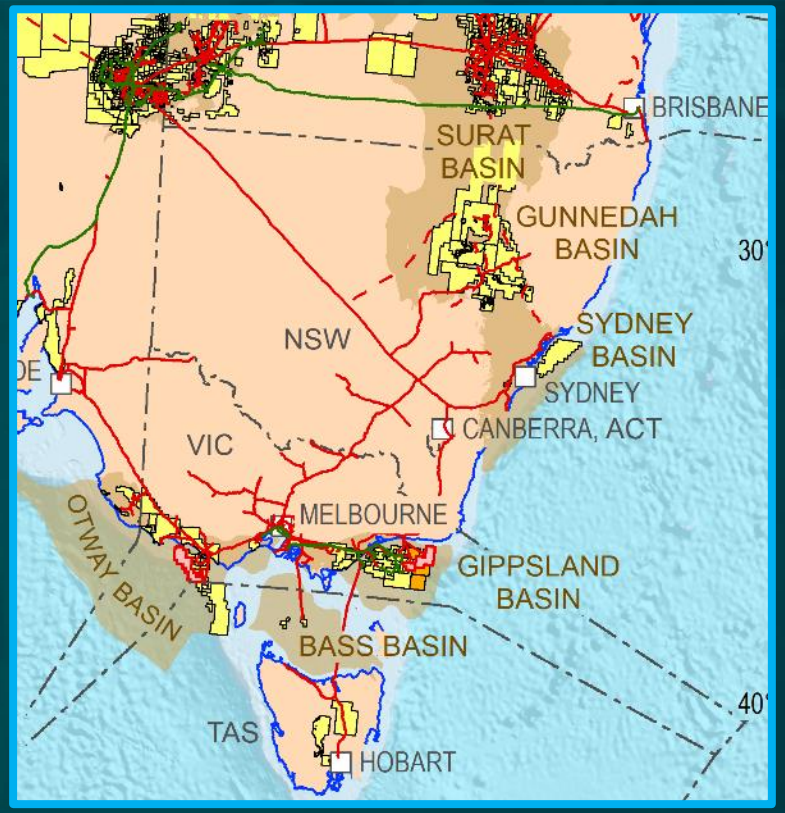
**Gas produced: 10.13 Tcf**
**Gas remaining: 5.06 Tcf (2P + 2C)**

**Oil produced: 4940 MMbbl**
**Oil remaining: 171 MMbbl (2P + 2C)**
**Condensate remaining: 130 MMbbl**
**LPG remaining: 210 MMbbl**

*(Geoscience Australia)*

# Otway and Gippsland basins: main gas suppliers for SE-Australia





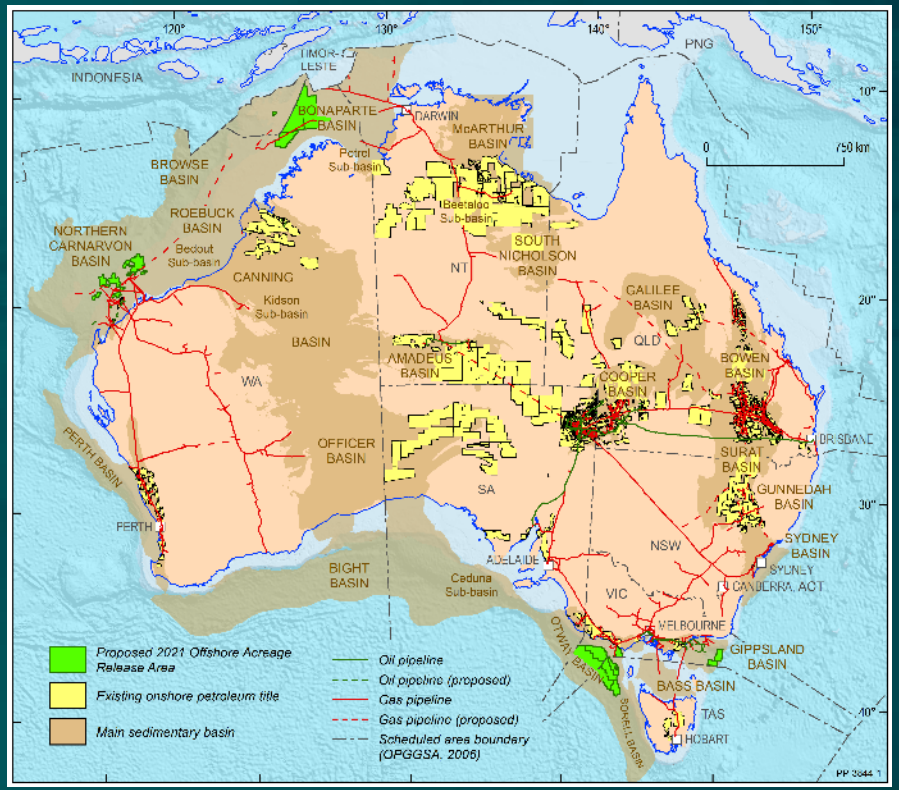

**OTWAY:**

- New comprehensive regional prospectivity study involving GA, SA and VIC
- Major seismic data acquisition in deep water region
- Expanding gas development

**GIPPSLAND:**

- Gas production to be ramped up (West-Barracouta)
- Continued exploration for additional gas resources
- Distribution and quality of source rocks poorly understood

# Nominated areas proposed for 2021 release




- Nominations closed 27 October 2020
- Robust participation with 57 nominations submitted
- Strong interest in Bonaparte, Northern Carnarvon, Otway and Gippsland basins
- 21 areas submitted for public consultation; closing 8 March 2021
- New offshore acreage to be released on 15 June 2021 (APPEA Conference, Perth)

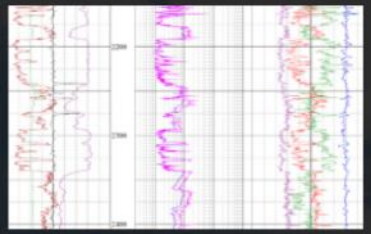
Australian Government
Geoscience Australia
National Offshore Petroleum Titles Administrator

# National Offshore Petroleum Information Management System (NOPIMS)

## Welcome to NOPIMS

Geoscience Australia has developed the National Offshore Petroleum Information Management System (NOPIMS) as an online data discovery and delivery system for all Australian offshore petroleum wells and survey information.

Data Access



### Otway Legacy Well Log Digitisation

12/05/2020

Direct access to 10 new digitised logs available for wells drilled offshore in the Otway Basin.

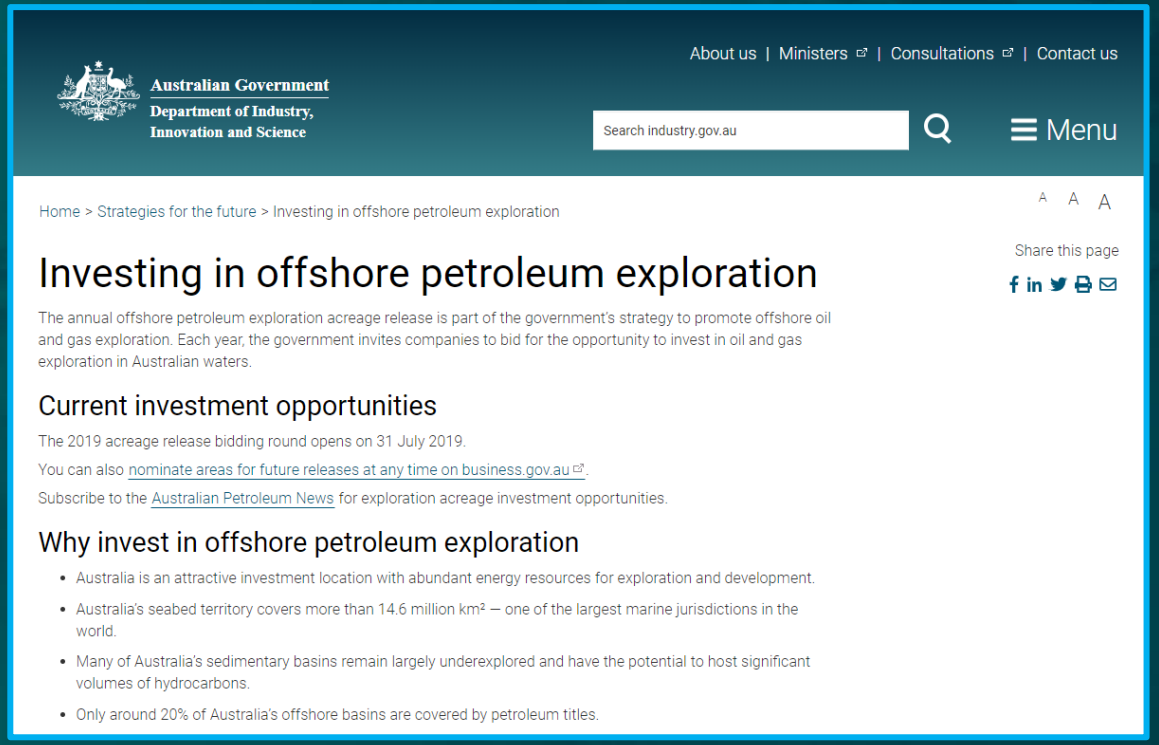
### 2020 Acreage Release consultation

04/05/2020

Consultation on potential areas for the 2020 Offshore Petroleum Acreage Release is now open.

https://www.ga.gov.au/nopims

# Further Information



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## Investing in offshore petroleum exploration

The annual offshore petroleum exploration acreage release is part of the government's strategy to promote offshore oil and gas exploration. Each year, the government invites companies to bid for the opportunity to invest in oil and gas exploration in Australian waters.

### Current investment opportunities

The 2019 acreage release bidding round opens on 31 July 2019.

You can also nominate areas for future releases at any time on business.gov.au.

Subscribe to the Australian Petroleum News for exploration acreage investment opportunities.

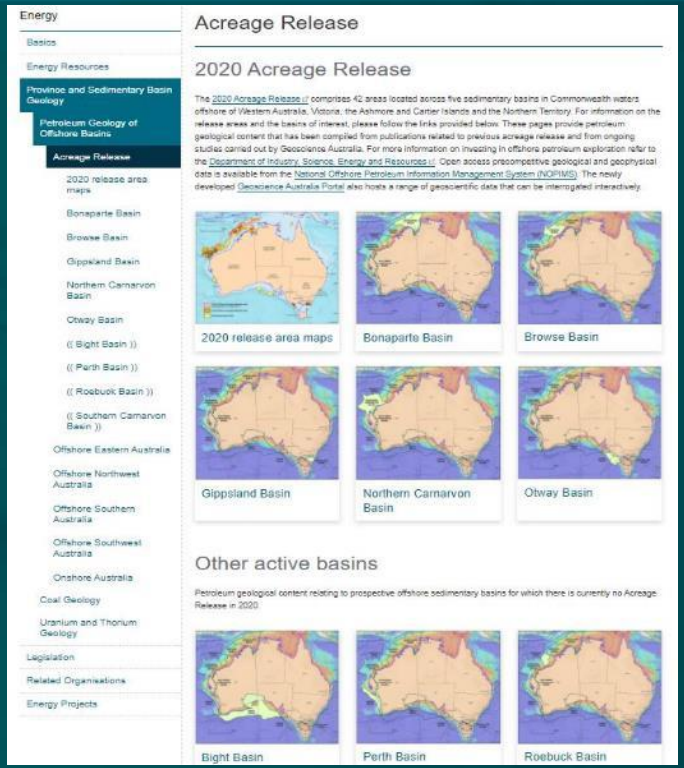
### Why invest in offshore petroleum exploration

- Australia is an attractive investment location with abundant energy resources for exploration and development.
- Australia's seabed territory covers more than 14.6 million km² — one of the largest marine jurisdictions in the world.
- Many of Australia's sedimentary basins remain largely underexplored and have the potential to host significant volumes of hydrocarbons.
- Only around 20% of Australia's offshore basins are covered by petroleum titles.

industry.gov.au/2020-acreage-release

- Acreage Release process
- How to obtain acreage, bidding process
- Release area maps ("QuickLooks")
- Block listings and diagrams
- How to nominate areas for future release

# Further Information

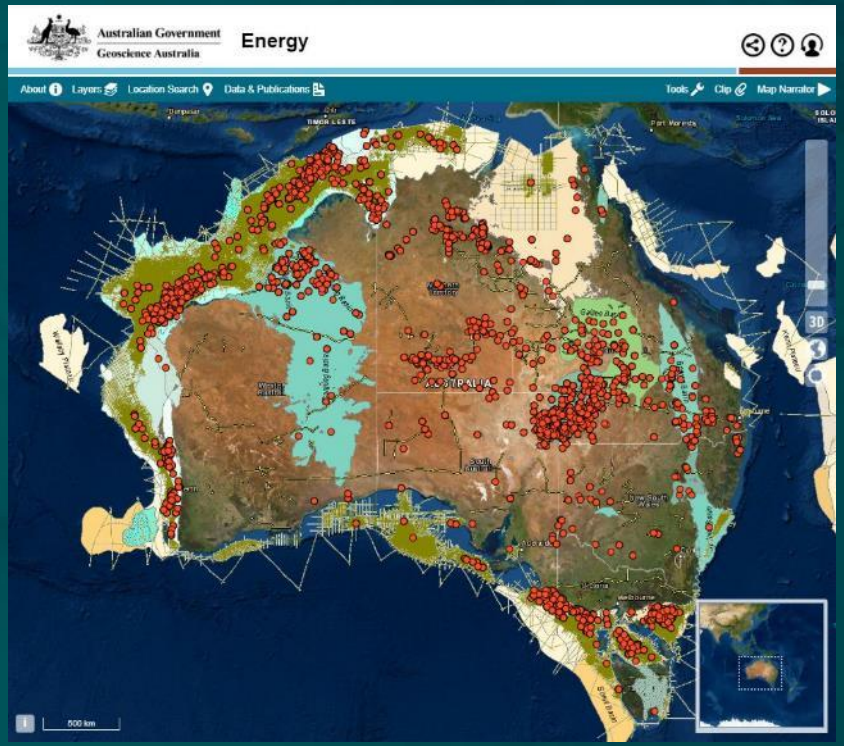



**www.ga.gov.au/petroleum**

Geoscience Australia supports the annual acreage release with a suite of regional petroleum geological information including:

- basin evolution
- stratigraphy
- petroleum systems
- exploration histories
- key references
- a variety of thematic maps and figures

# Geoscience Australia's Data Discovery Portal




https://portal.ga.gov.au/persona/energy

Geoscience Australia's newly developed data discovery portal allows access to a wide range of geological and geospatial data, including:

- petroleum wells
- source rock geochemistry
- stratigraphic information
- province and basin geology
- geophysical data coverage
- a range of geospatial and administrative datasets