Oil and Gas in Australia: Status and Opportunities

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The Australian Government administers offshore waters (outside 3 mile nautical limit).

State and Territory governments administer onshore and inside the 3 mile nautical limit.

Australian governments own the resource in the ground, rather than individual landowners.

Government roles:
- regulating industry – safety & environment,
- issuing oil and gas exploration/production permits
- collecting royalties & fees,
- managing submitted industry data,
- acquiring pre-competitive data
- carrying out regional geological studies,
- optimising exploration access to sea & land.
Offshore Australia: current status

• Australia not immune to global downturn; experiencing lowest exploration activity in many years

• Deepwater drilling in Bight Basin rescheduled for 2018 - 2019

• New oil province discovered on North West Shelf

• Strong industry participation in nominations for new acreage

• New seismic data acquired by Geoscience Australia to open untapped potential in frontier regions
Australia is underexplored

- 50 years since first oil and gas discovery in offshore Gippsland Basin
- North West Shelf has become focus of activities
- Northern Carnarvon Basin is now Australia’s premier province
- Production from Bonaparte Basin is increasing, from Browse Basin about to commence
- Vast regions remain un- and underexplored offering frontier opportunities.
Offshore Australia: current status

Natural Gas
- 169 Tcf / 4.5 Tcm of conventional gas
- +235 Tcf / 6.7 Tcm of coal bed methane
- 400 Tcf / 11.3 Tcm of shale gas

On track to be the world's largest LNG exporter
- LNG exports of 37 mtpa (A$16 billion)
- Several new projects have recently commenced production, further under construction

Dom-gas production:
- 1,100 PJ of dom-gas production (260 PJ of CBM)

Oil and Condensate
- Currently a net oil importer
- Significant condensate and shale liquids potential

Australia's OECD LNG victory

QATAR has upped the rhetoric in dominating the LNG world as the International Energy Agency confirmed Australia has already overtaken the Gulf state while the US has dropped off the pace.
Projects in operation:

Offshore natural gas:
North West Shelf Venture, Darwin LNG, Pluto LNG, Gorgon LNG and Wheatstone

Coal bed methane:
Queensland Curtis LNG, Gladstone LNG, Australia-Pacific LNG

Projects under Construction:

Offshore natural gas:
Ichthys LNG
Prelude Floating LNG

Ten LNG plants with almost 90 mtpa of liquefaction capacity by 2020
Key Investment Considerations

Proximity to Asian markets

Strong economic resilience and world class business environment

Stable objective-based petroleum regulatory regime

- Security of title with clear role of Government, regulators and industry
- Pre-competitive data and analysis available at cost of transfer
- Ongoing efforts to reduce regulatory burden

Oil and Gas In Australia, October 2017
Exploration is key to future investment

Acreage Release is the major annual investment opportunity for offshore exploration in Australia

Areas from Round 2 of the 2017 Acreage Release are currently available for bidding

Key dates:
- Round two closes **22 March 2018**
- 2018 Release to be launched **14 May 2018**
• Next producing hydrocarbon province on NWS

• Prelude FLNG and Ichthys condensate production from 2018 onwards

• Heywood Graben offers new opportunities

• GA’s new study highlights distribution of petroleum systems
Browse Basin: Main Operators

- Bounty Oil & Gas
- ConocoPhillips
- Cornea Resources
- Eni Australia
- Finder
- INPEX
- IBP WA
- Karoon Gas

- Murphy Australia
- Pathfinder Energy
- Santos
- SGH Energy
- Shell Australia
- Sinopec
- Total
Heywood Graben

1. Extension fault blocks, rollover anticlines
   eg. Brewster-1A, Brecknock-1, Crux-1

2. Miocene inversion anticlines
   eg. Bassett-1A, Lynher-1

3. Drape folds
   eg. Caswell-2-ST2, Focus-1, Psepotus-1

4. Submarine fan sandstones and mudstones
   eg. Discorbis-1, Carbine-1, Braveheart-1

5. Stratigraphic pinchout
   eg. Cornea-1

Potential Jurassic and Cretaceous plays in the Heywood Graben with access to charge from Jurassic and Cretaceous source rocks

Total HC expelled Vulcan Fm (mmoe km²)

- High: 45
- Low: 0

Acreage Release
• New oil discovery by Phoenix South-1
• Follow-up wells Roc-1, Roc-2 and Phoenix South-2 confirm prospectivity
• At least two operating petroleum systems identified (oil and wet gas)
• Source rocks not understood (stratigraphy, facies)
• Reservoir quality variable across sub-basin
• Early Triassic (and older?) section offer new exploration opportunities
• Recent award of WA-527-P
• Continued strong industry interest
Northern Carnarvon Basin

- Australia’s premier hydrocarbon province
- New discoveries
- Gorgon and Wheatstone (LNG) online
- Production (oil) from Coniston commenced
- Shallow water areas provide access to oil and gas accumulations
- Deep water areas represent high risk/high reward frontier potential
- Early Triassic may offer new plays
Houtman Sub-basin: W17-9 and W17-10 (closing 22 March 2018)

• Large areas (>300 graticular blocks) covering one of Australia’s remaining offshore frontiers

• New regional 2D seismic survey acquired by Geoscience Australia to fill data gap between Perth and Southern Carnarvon Basin

• Prospectivity study indicates that petroleum systems identified in Abrolhos Sub-basin may continue northwards

• Strong industry interest expressed during nomination process
Gippsland, Otway, Bass Basins (closing 19 October 2017)

- Mature hydrocarbon provinces with untapped exploration potential
- Well established infrastructure serving an expanding gas market
- Renewed industry focus on providing additional gas volumes to market
- Deeper water areas have remained largely unexplored.
Geoscience Australia’s Petroleum Program

- **Role:**
  - Attract exploration investment to Australia by building a prospectus of energy resource potential

- **Strategies:**
  - Provide information to support the annual offshore acreage release
  - Provide a functional national repository of offshore petroleum data and samples
    - National Offshore Petroleum Data and Core Repository
    - National Offshore Petroleum Information Management System (NOPIMS)
  - Identify new prospective energy provinces through the acquisition, analysis and delivery of pre-competitive information
  - Provide independent information and advice to government and other stakeholders
Inventory of Offshore Frontier Basins

- Comprehensive assessment of:
  - Geology
  - Petroleum systems
  - Exploration status
  - Data coverage

- 35 offshore basins and sub-basins

- Analysis of the critical exploration and geoscientific questions

- Recommendations for future work

- Inventory for onshore frontier basins (Vol. 1) published, Vol. 2 in progress

Download from: www.ga.gov.au
Exploring for the Future

- A major new investment in pre-competitive geoscience from the Minister for Resources and Northern Australia
- Federal Budget measure of $100.5 million over 4 years (2016 to 2020)
- Comprises three integrated elements:
  - Minerals
  - Energy
  - Groundwater
- For a targeted resource prospectus aimed at attracting industry exploration investment to northern Australia
Exploring for the Future

- Approximately 40% of Australia’s land area
- Energy Program focussed on seismic data acquisition and stratigraphic drilling
- Selected areas include South Nicholson Basin (NT/Qld) and Kidson Sub-basin (WA)
- Collaboration with States/Territory
Welcome to NOPIMS 2017

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

Acreage Release
21/04/2017


National Archives Awards for Digital Excellence
04/05/2017

Geoscience Australia has won with NOPIMS, the National Archives of Australia’s Award for Digital Excellence.
Data Support: NOPIMS

- Improved user interface; cross multi-browser compatibility, new higher quality maps with ArcGIS integration
- Well header metadata: 3426 items
- Survey header metadata: 1975 items
- Well documents: 15,432 items
- Survey documents: 16,356 items
- Robotic Data Store Library: 2.37 Petabytes
- Physical Cores and samples curated: 16,000 km
- Total number of curated database items: 1.3 million items
Data Support: NEATS

- Access to publicly available information about offshore petroleum titles and applications
- Portal access for the online payment of fees
- Lodgement and tracking of applications
Further Information

www.petroleum-acreage.gov.au
Acreage Release process, how to obtain acreage, petroleum geological information

www.ga.gov.au/nopims
Access to offshore petroleum data (seismic surveys, well logs, well completion reports etc.)

Information about existing offshore petroleum titles and applications

www.ga.gov.au
Information about Geoscience Australia’s role and activities