Australia reveals full licence card

The Australian government unveiled full details of the opportunities on offer for offshore exploration in the country’s 2018 licensing round on Wednesday, with the spotlight on acreage off the west and north-west coasts.

Pages 8&9

---

Australia’s Oil & Gas Company

Woodside has demonstrated world-class capabilities during more than 60 years exploring, developing, producing and supplying oil and gas.

Please find us at stand #136
Thursday 17 May 2018

CONFERENCE PROGRAM Thursday 17 May 2018

10:00am-10:15am MORNING TEA IN THE EXHIBITION HALL

8:30am–10:30am APPEA 2018 Poster Presentations open
8:00am–3:00pm Thursday 17 May

PLENARY ROOM C/D, Ground Level
CHAIR: Dr Richard Dean, Chairman, ExxonMobil Australia in Australia
FACILITATOR: Mr Nathan Roost, Partner, EY
Guest of Honour: Mr Andrew Taylor, Associate Director, APPEA

2018 Australian Oilfield Golf Tournament
The Australian Oilfield Golf Tournament (AOGT) has been a staple feature that follows the APPEA annual conference program for over 12 years. Each year, the AOGT provides a fantastic opportunity for delegates to network, socialise and relax amidst the picturesque scenery of Adelaide—Southern Australia’s best kept secret. The event is sponsored by Wood and is open to all APPEA 2018 delegates who have pre-registered for the tournament.

1:00pm–2.30pm TECHNICAL AND BUSINESS PROGRAM SESSIONS 21–24

CONCURRENT SESSION 21: Decommissioning—is it the end? (Room A, Upper Level)
CHAIR: Mr Andrew Heap, Chief Executive, Geoscience Australia
FACILITATOR: Mr Nathan Roost, Partner, EY
Guest of Honour: Mr Andrew Taylor, Associate Director, APPEA
Panel discussion

CONCURRENT SESSION 22: A new Australian petroleum province (Room C/D)
CHAIR: Dr Michael Bowen, Director General, Australia’s Resources
FACILITATOR: Mr Nathan Roost, Partner, EY

Recent exploration results in the Lower Triassic, Bedout Sub-basin—Australia’s next petroleum province?
Mr Thompson, P Widdowson, J Morgan, G Goule, F Hernandez, M Kangarwin, J Hansen, D Raitt and P Henson (Quadrant Energy)

Tectonostratigraphic framework of the inner Gruetera Formation, Bedout Sub-basin—interplay of tectonics and sedimentary systems
B Gower, M Thompson, M O’Donnell, B Long and P Henson (Quadrant Energy)

The Lower Triassic Cycle: member depositional facies, reservoir quality and seismic expression
J Widdowson, J Morgan, M Thompson, M Kangarwin, J Hansen and P Henson (Quadrant Energy)

Geena/Spiritual insights in the Bedout Sub-basin: exploiting technologies for understanding reservoir settings
D Gaskin, S Siddle, M Thompson, F Hernandez, J Morgan and T Coburn (Quadrant Energy)

Panel discussion

CONCURRENT SESSION 23: The edge of environment (Room E, Upper Level)
CHAIR: Mr Andrew Heap, Chief Executive, Geoscience Australia
FACILITATOR: Mr Nathan Roost, Partner, EY

Navigating the Great Australian Bight using systems models
C Brown, F Fulton (CO2CRC Oceans and Atmosphere) and S Edgington (South Australian Research and Development Institute)

International perspective: making the supply chain work for you
Mr Andrew Kuyenga, Vice President, NODP COMEX (Canada)
From start-up to success
Ms Sarah Doolan, Manager, Suncor Energy
Panel discussion

Award presentations
APPEA Closing Address | Dr Malcolm Roberts, Chief Executive, APPEA

FAREWELL COCKTAILS
Southern Seat—Outdoor Terrace, Adelaide Convention Centre
Thursday 17 May 2018

APPEA Conference and Exhibition
8:30am–10:30am APPEA 2018 Poster Presentations open
8:00am–3:00pm Thursday 17 May

PLENARY ROOM C/D, Ground Level
CHAIR: Mr Richard Dean, Chairman, ExxonMobil Australia in Australia
FACILITATOR: Mr Nathan Roost, Partner, EY
Guest of Honour: Mr Andrew Taylor, Associate Director, APPEA

What does success look like in the new energy market?
In this session, hear from major producers and contractors, small businesses and start-ups as they discuss how to position business in the new energy market, how to build enduring relationships and consider what each part of the supply chain is looking for in the other.

Unlocking value in the new energy market
Mr Peter Bennett, Chief Executive Officer and Managing Director, Chepng

Beach Energy’s growth in the Australian gas market—leveraging the supply chain
Mr Lee Marsham, Group Executive Corporate Strategy and Commercial, Beach Energy

International perspectives: making the supply chain work for you
Mr Andrew Kuyenga, Vice President, NODP COMEX (Canada)
From start-up to success
Ms Sarah Doolan, Manager, Suncor Energy
Panel discussion

Award presentations
APPEA Closing Address | Dr Malcolm Roberts, Chief Executive, APPEA

* Program subject to change. Program correct as of 12 May 2018
WOODSIDE Energy has won the Australian Petroleum Production & Exploration Association Safety Excellence Award for 2018, for an outstanding contribution to safety leadership and performance.

APPEA board member and general manager Australia, BHP Billiton Petroleum, Graham Salmond announced the award at last night’s APPEA 2018 Conference Dinner.

“Woodside believes continuous improvement in its health and safety performance is essential to its business success and growth,” Salmond said.

“The company is continuing its strong focus on process safety and asset management, and is increasing its use of data analytics to provide insights to enhance decision making and systematically minimise risks.”

Woodside had strengthened its safety management by collaborating with contractors and using a risk-based approach that stressed leadership and operational discipline, he said. Woodside is applying IBM’s advanced data science system – Watson – to health, safety, environment and quality management. Watson is an intelligent data analysis and visualisation service that can be used to quickly discover patterns and meaning in data sets. This lets users extract valuable insights from more than 30 years of corporate knowledge. One major component of the Watson project is analysis of the many data sources relevant to the Karratha Gas Plant (KGP).

This gives KGP operations and maintenance teams a comprehensive view of facility issues and planned maintenance and remedial work. It also identifies areas of potential risk and indications of risk severity; monitors and tracks changes over time; and identifies potential conflicts between facility issues and planned operational activities.

In 2017, an internal audit confirmed that Woodside had achieved a step-change in safety performance.

Buru gets credit for protecting the bilby

BURU Energy has won an APPEA Environment Project Excellence Award for its efforts to ensure that its operations in the Kimberley do not harm the region’s bilbies.

In announcing the award at last night’s conference dinner, APPEA board member and general manager Australia, BHP Billiton Petroleum, Graham Salmond, said the judges found that Buru’s Kimberley Bilby Initiative was a notable example of the company’s culture of environmental protection.

“Buru is committed to safe and environmentally responsible development of the Canning basin’s oil and gas resources,” Salmond said.

“The company is not only working to ensure its operations do not harm the region’s bilbies, it is also making an important contribution to zoology and environmental science by addressing gaps in knowledge about this threatened marsupial.”

The Canning is one of the few regions in Australia that still has a healthy population of the greater bilby. Buru expanded its bilby surveys and research by co-funding a three-year Murdoch University PhD research project.

The results have been shared with interested stakeholders and will be made publicly available through peer-reviewed journal articles and the research thesis.

Much of the fieldwork for the project was undertaken with the Yawuru people and local ranger groups. The research has added significantly to knowledge of the Canning bilbies’ diet, movements, habitat use and their role in the local ecosystem.

It will also help Buru improve its risk management, site selection and operational planning to reduce any impacts upon the bilby population.

It has already implemented avoidance zones and vehicle speed restrictions, and has prohibited night-time driving except in emergencies.

Stickland gains honorary life membership

PETER Stickland, former chief executive of Melbana Energy, has been awarded honorary life membership of APPEA in recognition of his distinguished contribution to the Australian oil and gas industry.

He was an APPEA director for almost nine years and has been a member of APPEA’s Exploration Committee for nearly two decades, including seven years as chair.

APPEA director and Buru Energy executive chairman Eric Streitberg told APPEA’s conference dinner last night that Stickland has been a passionate supporter of small and medium-sized companies in the Australian oil and gas industry.

“Peter has been a strong voice on the APPEA board ensuring that all parts of the industry, large and small, are considered as part of APPEA’s advocacy,” Streitberg said.

Stickland’s association with APPEA goes back to 1998 when he prepared and presented a peer-reviewed technical paper at that year’s APPEA Conference.

From 1990 until 2005, he was an exploration section leader in BHP Petroleum. He joined Tap Oil in 2005 as exploration manager and was Tap’s chief executive from 2008 until late 2010. He then joined MEO Australia as exploration manager. In January 2015, he assumed the role of managing director and chief executive and led the company’s reformation as Melbana Energy.
Social licences to operate: an evolving ecosystem

Michael Wood and Bronwyn Deegan

As the world advances in digital technology, it is becoming increasingly clear there is a need to understand how oil and gas companies manage the evolution of social licences.

Deloitte’s social licence expert, Dr Leeora Black explains that the term ‘social licence’ draws attention to the difference between a legal permit and the social acceptance or legitimacy that is essential for companies to survive.

They are equally important, but are they becoming interchangeable?

When asked about imposing the gas reservation policy, Prime Minister Malcolm Turnbull responded: “The gas companies – I have no doubt – are very well aware they operate with the benefit of a social licence from the Australian people, and they cannot expect to maintain that while billions of dollars of gas are being exported...”

Greater focus on the environmental impact of oil and gas operations, both local (e.g. hydraulic fracturing) and global (e.g. climate change) issues have heightened the requirements for social licence. Historically, the oil and gas industry has not been sufficiently proactive in how the issue is managed.

On hydraulic fracturing, journalist Steve Coll told Politico in 2012 that, “[the industry is] in denial about how hard the politics of this is going to prove to be over time”.

Sharing information

With the digital shift, the social licence ecosystem is evolving at an ever-increasing rate. The sharing of information and ideas is faster and more widespread, especially through social media.

Social media has changed the way many organisations connect with their stakeholders, but, as Dr Craig Styan and his team at University College London found, the energy and resources industry has significantly lagged behind others in its use.

Shell Australia’s Zoe Yujnovich says: “We must extend the conversation to the lounge rooms, train stations and coffee queues across the country where 60 square centimetres of screen has become the only battleground that really matters.”

The ecosystem of social licences can be effectively managed when well understood. It is not ‘set and forget’, social licence is an evolving ecosystem and must be understood and proactively managed.

The digital shift presents new risks by accelerating the social licence evolution, whilst conversely presenting new pathways to engage with stakeholders in an agile manner. Fully understanding the dynamic and digital socio-political and community landscape is essential for oil and gas companies to survive.

• Michael Wood is a risk advisory director and Bronwyn Deegan a consultant in operations consulting at Deloitte Australia

Commentary:

Australian Prime Minister Malcolm Turnbull

Photo: AP/SCANPIX

SAVE THE DATE

APPEA2019

27–30 MAY BRISBANE

coming soon...call for papers, exhibition and sponsorship information

www.appeaconference.com.au
In the picture...
South Australia bids to entice exploration work

State has taken a number of initiatives in hope of drawing in further industry investment to sector

JOSH LEWIS
Adelaide

SOUTH Australia is hoping a number of initiatives introduced in the state in recent years will help drive investment in exploration. Speaking at APPEA 2018, Barry Goldstein, executive director for Energy Resources at the South Australian Department of the Premier & Cabinet, explained the first step that helped drive investment after the oil price crash was the combining of petroleum programmes bids over a total area of what we would see from work in the future.

"Back in 2014, when the price of oil was beginning to fall, we were asked how can we minimise the pain for industry," he said. "Some thought has to go and be put into a design." Goldstein said then in 2016 the government came to the realisation that if it could bring down by a dollar the price of gas per gigajoule, it would have a greater effect on the South Australian economy than the royalties collected from production.

"If we could get local gas that doesn't travel from farther away we could realistically just strip out some pipeline tariff costs and lower the cost of gas to local consumers," he added.

This led to another initiative, the Plan for Accelerating Exploration (Pace) Gas grant programme with the goal of increasing gas supply into South Australia's energy market.

Goldstein said this essentially armed him with A$48 million (US$35.9 million) to approach companies operating in the state and find out which projects the government could help fund that would otherwise not proceed due to the low oil prices at the time.

"That was a significant design way of beguiling investment that actually helps South Australian communities in particular with South Australian tax money," he said.

"We are trying to increase supply side competition in gas markets."

A second Pace Gas round was also launched in 2017 and both rounds combined saw 23 applications from 15 applicants, with a total of nine projects eventually awarded grants.

On top of the A$47.8 million which the government handed out in grants, industry invested nearly A$223.5 million, meaning the Pace Gas initiative has led to total investments of more than A$273 million.

In total the Pace Gas scheme has helped fund projects targeting nearly 217.3 petajoules of unrisked gas, with a further A$56.6 million in low-up potential.

In addition to the South Australian government’s Pace Gas grants, the federal government’s Gas Acceleration Program also handed out A$6 million grant in the state to Beach Energy for its A$22.6 million project to construct a new Katoomba gas processing facility.

All of the work put in over recent years is now being recognised with South Australia being voted the best jurisdiction in Australia, the best jurisdiction in Oceania and ranked the highest in the southern hemisphere in last year’s Fraser Institute Global Petroleum Survey.

While South Australia is proving to be a popular destination for investment, Goldstein warned that it was not without risk.

"It isn’t quite as simple as go to South Australia, drill a well and bingo," he said. "Some thought has to go and be put into a design."

Woodside on ‘global first’ path

AUSTRALIAN operator Woodside Petroleum is preparing to install a lithium-ion battery system to provide power for turbines on its Goodwyn A platform off Western Australia in what it terms will be a “global first”.

The battery plan is a prototype project, and the system will enable Woodside to run three gas turbines.

With those turbines being powered by battery, fuel gas usage will be reduced by about 7.5 tonnes per day, carbon dioxide emissions will be about 5% less and the amount of maintenance work will be reduced.

The installation is scheduled for the third quarter this year.

The battery system will allow the number of generators to be reduced from four to three, while the remaining units will operate at lower cost and higher efficiency, said Woodside.

The Australian independent claims it will be the first offshore application of the technology in the world and it is looking to expand the use of the technology across other assets in the future.

“Developing our energy storage capability on Goodwyn A is a first step in enabling Woodside to accelerate scaling of the application in larger oil and gas assets, both offshore and onshore,” Woodside’s chief technology officer Shaun Gregory said previously.

Doris ends Western job

SERVICE provider Doris Engineering has completed an engineering study for Perth-based operator Western Gas.

Doris said its Perth and Paris teams worked with Western Gas, which allowed it to demonstrate its capabilities in carrying out screening and concept select studies for subsea developments.

“Western Gas was able to investigate alternative options for developing the Equus field, which allowed us to move forward with our base case and consequently issued the [request for proposals] to secure a local partner,” Woodside’s senior vice president and chief executive Andrew Leibovich said.

Western Gas late last year acquired the offshore Equus gas field on Western Australia’s North West Shelf from US company Hess.

Western Gas earlier this week revealed it seeking a partner as it looks to develop the estimated 2 trillion cubic feet of gas and 41 million barrels of condensate at the field.
EXPLORATION

Australia on drilling spree

Number of exploration wells highest since 2014, despite total licence area slipping

JOSH LEWIS
Adelaide

EXPLORATION drilling in Australia appears to be on the rise, despite the total area covered by exploration and production licences slipping to its lowest level in several years.

Speaking at APPEA 2018, Matthew Quinn, senior customer solutions provider for financial services company IHS Markit, said 130 exploration wells were drilled in 2017 – the highest level since 2014.

“That represents just under 9% of the total exploratory wells drilled globally and continues an increasing trend seen over the past couple of years,” Quinn said.

Of the wells drilled last year, five were offshore – comprising two exploration wells and three appraisal wells.

However, Quinn noted that IHS considered Woodside Petroleum’s Swell-1 and Swell-1A wells as two near-field wildcats as they had different targets but were both plugged and abandoned following disappointing results.

All three offshore appraisal wells were drilled by US major ConocoPhillips at its Barossa-Caldisa development off northern Australia, which in April entered the front-end engineering and design phase following the successful drilling campaign.

Quinn said 44 onshore wildcats were drilled in 2017, 35 of which were targeting conventional targets, while the remaining nine were chasing unconventional targets.

A total of 41 appraisal wells were also drilled, 29 of which were conventional and the other 12 appraising unconventional fields.

“If we just look at new field wildcat drilling, so excluding appraisal wells, as has been the case since 2013, the majority were drilled in the Cooper-Eromanga basin,” Quinn said.

“This year, no new field wildcat drilling was undertaken in the Canning, Browse, McArthur, Bonaparte and Otway basins.”

While exploration drilling was on the rise, Quinn said discovered volumes exhibited “a sharp decrease” in 2017 with a total of 22 million barrels of oil equivalent discovered across 14 fields.

All of those finds were made in the Cooper-Eromanga basin, with the exception of Norwest Energy’s Xanadu discovery in the onshore Perth basin.

The largest discovery in 2017 was made by Santos with its Ranger-1 well in Queensland which hit 11 metres of net gas pay across a 157-metre gross section in the Patchawarra formation.

Despite the 2017 increase in exploration drilling, the total area in Australia under both exploration and production licences fell last year.

Quinn said the total area under licence fell by just over 100,000 square kilometres compared to 2016, to it lowest level in the IHS Markit analysis period which began in 2010.

A rise in the area under licence in the Browse, Canning, Bonaparte and Perth basins was offset by a near 40% reduction in the area under licence in the Roebuck basin, as well as reductions in the Otway, North Carnarvon, Bight, Bowen-Surat, Gippsland, Eromanga and McArthur basins.

While the area under licence reduced in 2017, the year still saw a total of 70 licences awarded, including 20 offshore licences of which eight came via the 2016 offshore acreage release.

These included Inpex’s WA-532-P licence which Quinn claimed was the largest permit ever to be granted in Australia - the block covers more than 26,000 square kilometres in the Browse basin.

Quinn noted that drilling had increased in the first quarter of 2018, compared to a year ago, while discoveries in the first quarter amounted to more than 7 million boe.

Quinn also highlighted three “wells to watch” in 2018...

Woodside’s recently spudded Ferrand-1 well, as well as the Cue Energy Resources-operated Ironbark-1, where UK supermajor BP has an option to farm-in until October this year.

The final well to keep an eye on, according to IHS Markit, is Quadrant Energy’s frontier Dorado-1 well, which is a follow up to its successful Phoenix South and Roc finds.
LICENSING

Full details of new Australian licence round are unveiled

Focus on permits off west and north-west coasts as specific information on prospectivity of blocks on offer is revealed

MARK HILLIER
Adelaide

The Australian government highlighted the potential of exploration permits being offered off the west and north-west coasts when on Wednesday it unveiled full details of the opportunities on offer for offshore exploration in the country’s 2018 licensing round.

The 2018 round was officially launched on 15 May but specific details on the individual blocks and their prospectivity were provided on 16 May.

A total of 21 permits are up for grabs, including five cash-bid blocks.

There are 12 blocks off Western Australia, one in the Ashmore-Cartier area off north-west Australia, seven off the state of Victoria, and one in the Great Australian Bight off South Australia.

All the permits are supported by pre-competitive geological and geophysical data and analysis by Geoscience Australia.

The blocks are located in mostly proven petroleum basins — the Bonaparte basin, Browse basin, Northern Carnarvon basin, Otway basin and Gippsland basin.

One block is offered in a frontier deep-water exploration province called the Ceduna sub-basin, which Bernecker said permits are offered regularly in the Vulcan, and quite regularly taken up.

AC18-1 is located in shallow to moderate water depths of between 100 and 500 metres and contains about 30 previous wells with shows in several.

A second permit, W18-1, is offered in the Bonaparte right alongside AC18-1. Water depths are between 50 and 200 metres, with about 11 previous wells including the recent Halcyon-1 non-commercial gas discovery. Permits W18-2 and W18-3 are in the Caswell sub-basin of the Browse basin, which Bernecker referred to as the “next big Australian production province”.

The Caswell sub-basin, he added, is recognised as “one of the most prospective areas in the Browse basin”.

Inpex’s giant Ichthys field is nearby, as is Shell’s Prelude field. W18-2 is located in shallow waters of between 90 and 250 metres, and previous drilling has uncovered hydrocarbon shows at the Yampi-1, Yampi-2 and Schooner-1 wells. W18-3 is surrounded by the large gas fields of the Brecknock-Scott Reef trend and includes the Caswell oil discovery. Water depths range from 90 to 490 metres.

Nine permits are available in the Northern Carnarvon basin, which Bernecker described as Australia’s “prime hydrocarbon province which continues to provide success for the exploration industry”. Four of the blocks are available on a cash-bid basis, whereby no work programme is required, but permit holders have six years to bring on stream a discovery.

The cash-bid system was introduced in 2014 for permits in mature areas or areas known to contain petroleum discoveries, but only one block has been awarded since then.

Three of the cash-bid blocks in the Northern Carnarvon are in shallow waters, one is in deep water.

Bernecker made special mention of the Beagle sub-basin as “one of the remaining areas in the Carnarvon basin that has remained under explored”.

An active petroleum system has been confirmed by the Nebo-1 oil discovery in W18-4, while W18-5 contains about 10 previous wells. W18-4 might have similar properties to the recent discoveries in the Roebuck basin — the Greater Phoenix finds, while W18-5 may have similarities to the nearby Fletcher-Fiucane oilfields.

“Overall, recent exploration efforts clearly indicate that the Triassic is the emerging play fairway in this area,” said Bernecker.

In the deep-water frontier Great Australian Bight off South Australia, one permit is available.

“BP and Chevron decided unfortunately to move away from the Right but this has provided an opportunity for new acreage to be made available,” said Bernecker, who added that “Statoil is very committed to drilling its first well in the next 12 months”.

Block SI8-1 represents part of the most prospective sections in the Ceduna sub-basin.

Water depths range from shallow to ultra-deep, and there are multiple potential oil and gas-prone source rocks, and a range of structural plays.

Heading farther east to the state of Victoria, the Otway basin has two blocks on a work programme basis and one on a cash-bid basis. “The Otway is an important area as a gas province linked by infrastructure to the eastern Australian gas market. Any new discovery even of relatively small size can be monetised very quickly,” said Bernecker.

Block SI8-1 and V18-2 are shallow-water permits close to the producing Minerva, Casino and Halladale Speculant gas fields.

The V18-3 cash-bid area hosts the La Bella gas field, which contains about 180 billion cubic feet of gas “and is ready for production after some further evaluation”, said Bernecker.

The Gippsland basin is a mature shallow-water province made famous by ExxonMobil’s Bass Strait fields.

Bernecker said the gippsland basin “is back on people’s radars again because additional gas is required for the eastern Australia gas markets. It’s a world-class province but production is in rapid decline especially oil”.

V18-4 contains a gas discovery with minor oil shows at Omeo-1, while V18-5 is referred to as the “hole in the donut”, said Bernecker.

The area is surrounded by some of ExxonMobil’s giant fields, “and has been elusive for past explorers, but still intrigues explorers”.

V18-6 and V18-7 are in deeper water on the north-east flank of the Bass Canyon, the deepest well ever drilled in the Gippsland — the Whaleshark-1 in water depths of 717 metres, is located in V18-7.

Bids for the first nine work programmes blocks are due on 18 October 2018, and for the second batch of seven on 21 March 2018.

Pre-qualification for the five cash-bid blocks is set for 4 October 2018 and the actual auction is on 7 February 2019.
FIVE of the exploration permits in Australia’s 2018 offshore licensing round are available on a cash-bid basis, which the upstream oil and gas industry association APPEA does not favour, writes Russell Searancke.

The cash-bid system was introduced in 2014 for permits in mature areas or areas known to contain petroleum discoveries, but only one block has been awarded since then, last year to Chevron. The 2015 and 2016 offerings were not taken up by industry.

APPEA argues that the long-established work programme system is the best method for allocating exploration blocks. The cash-bid blocks do not attract a work programme; instead the permit holder has six years to bring on stream a discovery.

Four of the cash-bid blocks are in the Northern Carnarvon — three are in shallow waters and one is in deep water. Area W18-6 includes the Sage oil discovery in shallow-water depths between 60 and 70 metres. It is close to numerous oil and gas accumulations including Saffron, Reindeer, Gungurru and Wandoo.

W18-7 is also a shallow-water permit in very close proximity of the Wheatstone, Pluto, Iago, Brunello and Julimar gas fields. W18-8 is another shallow-water block alongside the Spar and East Spar fields, and just south of John Brookes Rosella and Maitland gas fields.

W18-10 is a deep-water permit directly below the large Pinhoe and Royal Oak discoveries in about 1000 metres of water on the Exmouth Plateau.

The fifth cash-bid permit is V18-3 in the Otway basin. V18-3 hosts the La Bella gas accumulation, which contains about 180 billion cubic feet of gas.

Pre-qualification for the five cash-bid blocks is set for 4 October 2018 and the actual auction is on 7 February 2019.

The Otway is an important area as a gas province linked by infrastructure to the eastern Australia gas market. Any new discovery, even of relatively small size, can be monetised very quickly.

Thomas Bernecker, Geoscience Australia’s head of acreage release and petroleum promotion
**Duo eye gas field appraisal**

**WESTERN AUSTRALIA**

Pancontinental and UIL to drill at Walyering field

ASK-LISTED Pancontinental Oil & Gas is preparing to appraise the Walyering gas field in Western Australia’s onshore Perth basin, writes Josh Lewis.

Pancontinental and UIL Energy will carry out a 50-square kilometre 3D seismic survey in the field in November this year.

Walyering was discovered in 1971 and the Walyering-1 discovery well flowed naturally at a rate of 13.5 million cubic feet per day from Jurassic age conventional sandstone reservoirs.

A recent resource upgrade placed the mean prospective resources at the field at 100 billion cubic feet of gas and 2.5 million barrels of condensate.

Pancontinental believes most of the structure, which covers 10 square kilometres, remains un tapped by early drilling, which it said was poorly positioned on either flank of the structure.

It claims there is a 57% chance of finding gas in the Central High, which the company said had been mapped more than 200 metres shallower than the highest gas intersected in the peripheral wells.

However, it added that the upcoming 3D survey was required to provide better definition of the mapping at the gas reservoir levels.

If the survey backs the company’s structural and gas resource mapping, it considers the principle risk to commercial development would be effective drilling and completion of producing wells enabling the reservoirs to flow naturally at high rates as in Walyering-1.

“We have been steadily working away on Walyering behind the scenes and are very pleased with the increased scale and materiality that has emerged,” said the company’s chief executive John Begg.

“That there is a prominent central high, with the reservoirs of metres higher than the historic gas intersections seems very clear from our mapping. The position relative to infrastructure could be better for this project to advance.”

Pancontinental is funding and managing the 3D survey, which is expected to cost less than A$2 million (US$1.5 million) as part of a farm-in deal which will see it earn 70% operating stake in the southern part of EP447 covering the Walyering gas field.

Following completion of the farm-in, UIL will hold the remaining 30% equity.

**Liquefied Natural Gas**

**Australia steps closer to being global LNG leader**

**With Prelude expected to export first volumes late this year and Ichthys due to produce gas soon, country is on course to overtake Qatar as lead supplier in 2019 or 2020**

Amanda Battersby

Adelaide

Australia is progressing its charge towards becoming the world’s number one liquefied natural gas exporter, though two key grassroots mega-projects might not yet start-up for another few months.

Shell’s Prelude floating liquefied natural gas project off Australia will export its first cargo in the fourth quarter this year, according to Graeme Bethune, chief executive of local energy advisory company EnergyQuest.

He noted in EnergyQuest’s monthly LNG report of April 2018 that the LNG carrier Gallina arrived on location in mid-April to deliver a cool-down cargo to the FLNG vessel but Gallina had not docked as of 8 May.

Shell declined to comment on the progress and status of its multi-billion dollar Prelude project other than to repeat its earlier stated “we expect cash flow in 2018”.

Meanwhile, industry is keenly watching Inpex’s Ichthys LNG project. Chief executive Toshiaki Kitamura said on Friday that the project could produce first gas later this month, although industry sources are more cautious about when exports will flow with some suggesting that may not happen until July or August.

The exact timing remains unclear but company sources said the operator wants to ensure that its operations are safe and that is more important than trying to rush the ongoing commissioning process.

The Japanese operator last month bought an LNG cargo to cool the tanks ahead of starting up the project — the LNG carrier Pacific Breeze arrived on 26 April at the Bladin Point terminal near Darwin, according to EnergyQuest.

However, whether Australia does actually overtake Qatar as the leading global LNG exporter in 2019 or 2020 will depend on the forecast decline from Australia’s mature North West Shelf project rather than new schemes coming into operation, Bethune said Upstream.

Looking ahead, Australia’s LNG industry looks set for a further boost with Woodside aiming in 2020 to take the final investment decision on its greenfield Scarborough project.

The intention is to exploit Scarborough via a new train at the operator’s existing Pluto project in Western Australia, with start-up understood to be scheduled for 2025.

At least some of these liquefaction projects down under will have to contend with the issues that are now plaguing Australia’s Oil Search, one of the partners in the ExxonMobil-led PNG LNG project in Papua New Guinea.

“Local landowners are placing pressure on the PNG government and Oil Search to hand over royalties from PNG LNG,” said the latest LNG report by EnergyQuest. “Oil Search blames the government for not on passing royalties that the project has paid,” it added.

Australian LNG projects in April exported 78 cargoes, totalling 5.3 million tonnes, slightly down on the 5.4 million tonnes exported via 80 cargoes the previous month.

EnergyQuest estimated that LNG export revenues in April were A$2.9 billion (US$2.17 billion), up from the earlier record $2.8 billion in March, as the impact of higher oil prices on LNG values more than offset the slightly lower volumes.

Australia today is the largest supplier of LNG to Japan and China and the second largest to South Korea.
Wintershall files plan for Nova field off Norway

Operator cuts back investment for development by 25% from original budget

WINTERSHALL has filed a Nkr9.9 billion (A$1.63 billion) development plan with the authorities for its Nova field off Norway.

The targeted investment figure for the field scheme, which will be tied back to the Neptune-operated Gjoa platform in the northern North Sea, has been chopped by 25% from an original budget estimate of Nkr13.2 billion as the German operator has benefited from lower contractor costs.

Wintershall’s managing director for Norway, Hugo Dijkgraaf, confirmed to Upstream that “tie-in negotiations with the Gjoa licence have been completed” and “we have reached an agreement that is satisfactory for the parties involved”.

The Nova field, which has estimated recoverable resources of 80 million barrels of oil equivalent, will be developed using two subsea templates tied back to the Gjoa facility for processing and export. It is due on line in 2021, with an estimated field life to 2027.

Gjoa’s topsides will be modified with the addition of a new dedicated module to provide gas lift and water injection for pressure support at Nova, which will account for around Nkr2 billion of the development cost.

Wintershall executive board member Martin Bachmann said the final investment decision on Nova “demonstrates our commitment to Norway... showing that we are prepared to take promising Norwegian assets through the whole lifecycle from discovery to development and into production”.

The company is targeting investments of Nkr20 billion in Norway between 2017 and 2020 covering Nova and Equinor’s (formerly Statoil) Aasta Hansteen project in which it is a partner, as well as further development of its Brage field, and drilling of five exploration wells this year.

Further projects are also in the pipeline with discussions ongoing with partners on a possible development of the Asterix discovery, while Wintershall is also assessing the commerciality of the Orion (ex-Antares) and Syrah finds, according to Dijkgraaf.

Wintershall holds a 35% operating stake in production licence 418 that hosts Nova, with partners Cairn Energy unit Capricorn and Spirit Energy each on 20%, Edison 15% and Dea 10%.

Aker nets Troll field modules

AKER Solutions has won a coveted contract worth more than Nkr1 billion (A$165 million) to deliver a topsides module for phase three of Equinor’s (formerly Statoil) Troll field development off Norway.

The local contractor will carry out engineering, procurement, construction and installation of the new module that will be installed on the Troll A platform to boost gas output from the North Sea field. The module will enable the platform to receive and process gas from the Troll West satellite before onward export to the onshore Kollsnes facility near Bergen on Norway’s west coast.

Troll phase three involves the development of large gas reserves in the western part of the field, which is located some 60 kilometres west of Sognefjorden.
Gas role for power set to fall

**RENEWABLES EXPANSION**

**Prediction of 70% drop in demand in eight years**

Demand for gas for power generation in South Australia is likely to drop by 70% over the next eight years because of the rapid growth of renewables, according to a study by Wood Mackenzie.

One of the study's authors, Nicholas Brown, addressing a session on gas markets at APPEA 2018, said power demand for gas would also become much more volatile than it is now, with demand on some days dropping to zero.

"By 2025 demand (for gas) will be a lot more volatile. Some months there will be quite significant demand, and others when there will be almost no demand for gas," he said.

The question was whether gas supply contracts could be made flexible enough to deal with this scenario, he said.

The study, which looked at gas price scenarios between $7 and $13, as against $8 to $10 today, found that renewables on a purely economic basis were still not "in the money", despite dramatic falls in the cost of both wind and solar.

WoodMac's view was that the cost of renewable energy, which had fallen by at least half since 2011, would continue to decline, by around 15% for wind, 25% for solar and possibly 50% for batteries, by 2025.

"If you do assume these cost declines, then renewables do become more competitive compared with gas," he added.

However, the decline in battery costs was less certain because there were uncertainties on the supply and cost of the raw materials they required and the cost of disposal.

Some gas would still be needed, especially to meet peak demand.

Browne stressed the study focused on South Australia, which has been a leader in the switch to renewables. The state has a third of the nation's wind generation capacity and half of its solar power. South Australia last year backed this up by installing a 100-megawatt Tesla battery, which was then the world's largest li-ion battery.

The WoodMac study assumed that almost 4000 megawatts of additional wind and solar capacity already planned or under construction in South Australia, would all be delivered.

Gas power demand in other states was not expected to decline in line with South Australia, and demand would continue to grow very rapidly in Asia, particularly in China and India.

---

Wood marks out intent to expand in Australia

**Services giant sees wide range of opportunities from concept engineering to brownfield maintenance for it to grow in sector**

**RUSSLE SEARANCKE**

Adelaide

UK-HQEDQUARTERED oilfield services giant Wood has its sights set on expanding even further its footprint in Australia based on the company’s optimism about new offshore developments and field expansions.

Wood has a vast range of capabilities that it describes as “full asset life cycle”, starting with feasibility and concept design all the way to brownfield engineering and operations maintenance.

Its services activities have been bolstered in the past decade by a string of major company acquisitions. The latest was AmecFoster Wheeler, which Wood completed in October 2017.

Prior acquisitions included subsea engineer JP Kenny, topsides specialist Mustang Engineering and asset support company PSN.

Wood has just launched an initiative in Australia to help spur new investment in developing offshore oil and gas fields by deploying automation and robotics.

Alan Fotheringham, president of strategy and development for Wood’s Specialist Technical Solutions business, said: “Automation technology is an untapped resource which could de-risk installations, provide new inspection opportunities in subsea and topsides, deliver virtual systems design while increasing safety and up-skilling the workforce.”

Wood added that the automotive industry has led the way in automation technology. For new production lines, these are virtually commissioned before installation so control systems and safety can be tested via simulation.

Fotheringham said Wood is aiming to use automation technology to reduce both capital and operating expenditure and on offshore projects with, for example, virtually operated, unmanned facilities and sees the opportunity for this to be applied in Australia’s offshore sector.

One example is an unmanned floating gas compression facility. In Australia, there are large gas projects and as reservoir performance depletes over time compression is generally required.

“Wood believes that Australia has the potential to deliver a healthy portfolio of future offshore projects. “There’s been a hiatus in larger offshore projects,” said Fotheringham, “but we’re confident that it will come back. All the major projects have a phase two, or a future phase, so we feel well positioned having been involved in the original projects”.

Wood was quite heavily involved in Inpex’s Ichthys development – the contractor did the original concept design for the gas export pipeline, the original verification of concept for the central processing platform and detailed design of platform’s top sides.

"If you look at the scale of Ichthys, a future phase of that is probably about the same size as a greenfield development in the UK North Sea, so it’s that large," said Fotheringham.

Wood’s offshore and onshore capacities were boosted by the acquisition of AmecFosterWheeler.

Amec brought an ability to deliver large capital offshore projects, he said.

"Wood was used to delivering large programmes as multiple smaller project bundles whereas Amec had the large capital project capacity. FosterWheeler was renowned in downstream refining and chemicals and LNG.

“We feel the combination with AmecFosterWheeler was very complementary,” said Fotheringham.\n
---

Services giant sees wide range of opportunities from concept engineering to brownfield maintenance for it to grow in sector

**Photo: BASHTA**
BRAZIL

**Three join race to supply large FPSO to Petrobras**

** Surprise addition of MISC to tender adds to options in battle for Buzios pre-salt field unit

**FABIO PALMIGIANI**
Rio de Janeiro

**THREE** floater specialists have submitted bids to supply Brazilian state-controlled oil giant Petrobras with a large floating production, storage and offloading vessel for the giant Buzios pre-salt field in the Santos basin.

Well-informed sources told Upstream that Japan's Modec International, Belgium's Exmar and Malaysia's MISC presented commercial offers on Tuesday afternoon in the tender for the Buzios-5 FPSO.

Norway's BW Offshore and Malaysia's Bumi Armada, which at one point were seen as contenders for the Buzios-5 FPSO, opted out of the race.

"I do not think anyone expected MISC to bid. It was definitely a surprise, and a positive one for Petrobras, having a new player participating in its tenders," said a source.

Modec, which has been tipped as the frontrunner to win the contract, is working with two Chinese yards — Cosco Shipping Heavy Industries and Bomesc.

Petrobras earlier this year introduced more flexible rules regarding local content for Buzios-5, in a sign the oil company was trying to secure lower dayrates and make competition more attractive.

The first option featured a smaller project configuration with local content requirements set at 25% for the whole unit, while the second had local content varying from zero for hull fabrication to a mixture of percentages for topsides modules and integration work.

Sources said that Modec and Exmar presented offers for both options, while MISC only bid for the 25% local content alternative.

Petrobras will only open the proposals for the second option if prices for the first alternative come in higher than expected.

The operator is looking for a floater with capacity to produce 180,000 barrels per day of oil and 6 million cubic metres per day of natural gas. Petrobras' 100%-held P-77, is earmarked for start-up in 2019.

Two more units — P-75 and P-76 — are due to enter operations later this year, while a fourth floater, P-78 is earmarked for start-up in 2021.

**Choices: Petrobras exploration and production director Solange Guedes**

Photo: FLAVIO EMANUEL/ PETROBRAS

Sinopec names new president

**CHINESE** oil company Sinopec has named Dai Houliang as its new chairman and president, filling the vacuum created after predecessor Wang Yupu last September left the company to head up the nation’s workplace safety watchdog, the State Administration of Work Safety.

Dai is a Sinopec veteran, having started work with the company in 1985 as a technician at Sinopec Yangzi Petrochemical in Nanjing. In 2002 he was appointed president of Yangzi.

In 2005, he was appointed as Sinopec’s petrochemical business vice president, a position he held until this week’s promotion by the State Council, China’s highest governing body.

**Top job: Sinopec has promoted Dai Houliang to become company chairman and president**

Photo: REUTERS/SCANPIX

**Total set for UK wildcat**

**FRENCH** major Total is set to spud an exploration well on the Glendronach prospect in the West of Shetland area off the UK before the end of the month.

Glendronach is located on Block 20/6a, the same tract as the producing Edradour gas field, which is 1.1 kilometres away.

“We’re on course to spud before the end of May,” a Total spokesman this week told Upstream.

The well, which will be drilled by the semi-submersible rig Stena Don from the Edradour subsea manifold in a water depth of 287 metres, will aim for a Lower Cretaceous Royal Sovereign Sandstone target.

Total operates the block, holding a 60% interest in partnership with Ineos on 20% and SSE E&P UK also on 20%.
**RIG MARKET**

**Keppel O&M to sell five jack-ups to Borr Drilling**

Construction yard opts to switch clients as it moves from building units for other contractors to bundling all for Norwegian

**AMANDA BATTERSBY**

**Adelaide**

SINGAPORE’S Keppel Offshore & Marine has agreed sell five rigs that it had been building for other clients to Norwegian contractor Borr Drilling for around A$998 million (US$745 million).

The total price for the five KFels B class jack-ups excludes any down payments made by the rigs’ respective original owners.

A Borr investor presentation suggested the average original order price for the five premium rigs, which can operate in water depths of up to 400 feet, was between US$205 million and US$225 million each.

The rigs, two of which are understood to be Mexico compliant, are due to be delivered progressively.

The first unit is due to leave Keppel’s yard in the fourth quarter of 2019 and the other four will follow in 2020, with the last in the fourth quarter of that year.

“We are pleased to be getting another five high-quality jack-up rigs from Keppel FELS on top of the five we acquired earlier,” said Borr chief executive Svend Anton Maier.

“This is an opportune time for us to grow our fleet of highly capable jack-up rigs as the market is showing signs of recovery from the bottom of the business cycle.”

The Master Agreement announced on Wednesday between Keppel and Borr will come into effect on the satisfaction of certain conditions including Borr raising sufficient funds and relevant sales and purchase agreements being entered into for the individual rigs.

The terms of the deal require Borr to pay an initial US$288 million within 20 business days of the Master Agreement becoming effective. The remaining amounts will become due within five years from the delivery date of each respective drilling unit, on a seller’s credit with interest at market rates.

“The agreement with Borr Drilling demonstrates that rig owners continue to look for reliable, high-quality rigs such as the KFels B class, to maximise efficiency and productivity,” said Keppel O&M chief executive Chris Ong.

“This is a win-win agreement for all parties and enables Keppel O&M to further improve our cash flow, minimise the holding risks of the projects, and clear several of the deferred orders.”

**Ex-Rice team in fund move**

FORMER executives from Rice Energy have formed an oil and gas sector investment group following the recent acquisition of that company by US natural gas giant EQT Resources.

The newly formed Rice Investment Group (RIG) is a US$200 million (A$267.5 million) multi-strategy energy investment fund led by Rice Energy’s former management team Daniel, Toby, Derek and Ryan Rice, and Kyle Derham.

RIG is seeking to make investments of between US$1 million and US$40 million across upstream, midstream, oilfield services and technology sectors, according to its website.

**‘No hurry’ to grow in Permian**

CONOCOPHILLIPS is in “no hurry” to quickly grow its unconventional production from the booming US Permian basin as the region grapples with limited options for takeaway capacity, according to chief executive Ryan Lance.

“There’s bottlenecks on the gas side, there’s bottlenecks on the oil side, so why would you try to ramp up and produce into that when you don’t need to?” Lance this week told reporters at ConocoPhillips’ annual shareholders meeting in Houston.

“And, in fact, we can take the time to learn and we can take the time to experiment and optimise how we want to do it.”

Ballooning production in the Permian has started to outpace takeaway capacity, leading to pipeline bottlenecks and fluctuating differentials for West Texas Intermediate crude. The crunch has caught some producers off guard.

ConocoPhillips last year produced 19,000 barrels of oil equivalent per day from its unconventional Permian operations, compared with 41,000 boepd from its unconventional assets in the region and 65,000 boepd in the Bakken, where it is one of the largest acreage holders.

While Lance expects the company’s unconventional production from the Permian to grow over time, he said ConocoPhillips prefers to take a slower pace to fully understand the asset.

“You want to go slow and you want to understand what you’re doing before you get into full manufacturing mode,” he said.

“So the Delaware basin is complicated because it’s a thick column full of different stratigraphies that are potentially producible, whether it’s the Wolfcamp, the Bone Springs or the Avalon. Our task as a company is to use our capability, our technology and understand first how to optimally develop things.”

**Deal: the total price that Borr will pay for the five rigs excludes the downpayments made by the rigs’ original owners**

This is an opportune time for us to grow our fleet of highly capable jack-up rigs as the market is showing signs of recovery from the bottom of the business cycle.”

Svend Anton Maier. Borr Drilling
An investment in knowledge always pays the best interest

Benjamin Franklin

Over 80% of our subscribers say that “Upstream has helped them or their company identify leads or business opportunities”. For these oil and gas professionals, Upstream is an investment.

To stay fully abreast of the latest energy news from around the world, you could try subscribing to multiple publications or spend hours trawling the web. Alternatively, you could get it all from one high-quality and reliable source – Upstream.

In addition to the acclaimed weekly edition, subscribers are given full access to UpstreamOnline.com, offering unlimited access to our live 24-hour news service. You can also choose to receive daily news bulletins containing a quick summary of the must-read news from the last 24 hours and access the complete archive of all stories ever published in Upstream. Altogether, a wise investment in knowledge that saves you time and helps your business.

Why waste time and money on scores of magazines, newsletters and overpriced reports when your energy information needs can be met through one single subscription to Upstream? For your free two-week trial, please go to:

www.upstreamonline.com
Industry will need to adapt

TODAY’S oil and gas leaders will need to be ready to compete “on a vastly different playing field” against much more tech-savvy rivals as digitisation and electrification spread across all industries, according to Deloitte Australia oil and gas leader Bernadette Cullinane.

She and Steve McGill, Deloitte Australia energy specialist, on Wednesday presented a paper called ‘Enter the Volt-Age: Electric vehicle disruption of the oil and gas industry’ at APPEA 2018.

They said that one of the biggest game-changers for the oil and gas industry will come from the road transportation sector that today accounts for 46% of total oil demand.

The consultants cautioned there are questions around just how seriously the oil and gas sector is taking the electric vehicle (EV) revolution and the steps it is taking to anticipate and successfully prepare for the disruption.

A Deloitte study found oil and gas companies have a high level of awareness of the potential of EVs to disrupt their business models but they aren’t rising to the challenge as much as other industries.

Cullinane highlighted in another presentation to APPEA earlier this week how the drive towards a low carbon future is creating new opportunities for the oil and gas sector.

She said the shift from hydrocarbons to electrons is leading many within the industry to fundamentally reimagine what the energy company of the future looks like.

“Factors driving the EV revolution include the improvement in battery, solar photovoltaics and wind technologies and subsequent reduction in their costs and the widespread embrace of electrification by automotive manufacturers,” said study co-author McGill.

“Change will not come in the form of a one-for-one fuel switch from petrol to electricity but rather through a fundamental reimagining of the concept of transportation. The challenges and opportunities of this major disruption will impact all market segments and industries, including Australia’s oil and gas industry.”

Cullinane concluded: “The EV opportunity is enormous – the oil and gas operators must recognise this and should not ignore it. The size of EVs will mean they should use their massive competitive advantage in the form of scale to develop great technological prowess and their skills in managing large and risky capital projects and operations to get out in front of the unfolding energy and transport revolution.”

ENERGY TRANSITION

Changes on the horizon: a pumpjack operating on an oil well as wind turbines stand behind

Thursday 17 May 2018

Carbon challenge is set to take the gloves off

Peak demand for oil is still some way off but companies will have to focus on the changing energy landscape in transition

THE Paris Agreement targets for reducing greenhouse gas emissions are still out of reach and the oil industry will be the next battleground for carbon dioxide reductions, according to Gavin Thompson, Wood Mackenzie head of Asia Pacific research.

Decarbonisation is accelerating with coal being hardest hit by the energy transition, although there will be no peak demand for oil and gas demand before 2035, he said.

Addressing the Carbon Conscious session at APPEA 2018, Thompson said that solar and wind have “extraordinary potential”. He predicted China, the US and the EU would achieve or exceed a 20% renewable power output share by 2035.

However, he cautioned that the future is uncertain — technologically, environmentally and macroeconomic risks could materially change the energy view in that timeframe.

Thompson said that today industry majors are showing different levels of commitment to renewables.

“The oil and gas industry is already poised to make its transition to a lower carbon economy, carbon capture and storage and related technology solutions are being developed by industry to reduce greenhouse gas emissions and lower [companies’] emissions portfolios,” said Shiva Tyagi, ERM managing partner – power sector, sustainability & climate change leader, Australia & New Zealand.

Tyagi told delegates that Norway’s Statoil (now Equinor) intends to put almost 20% of its capital investment into renewable by 2030 while Anglo-Dutch supermajor Shell “aspires to bring down its carbon footprint by 20% per unit of energy by 2035. “Shell [aspire] to slash down further to 50% by 2050 by investing in biofuels, renewables and green technologies such as CCS,” he said.

Meanwhile, Australia’s Origin is targeting a 50% reduction in absolute scope one and two carbon emissions by 2032 “leading the transition to a cleaner and smarter energy future”, according to Tyagi.

He added that the guidelines of the task force on climate related financial disclosures (TCFD) could help the oil and gas industry not least by showing them how resilient their business is around “the ever changing and fast paced climate change initiatives”.

“Have they analysed how their current methodologies, framework and data quality are placed to help identify, manage and report climate risk? Are they prepared to make sudden, rapid shifts to a low-energy future?”

The Zero Routine Flaring by 2030 initiative, introduced by the World Bank, brings together governments, oil companies and development institutions that recognise flaring is unsustainable from a resource management and environmental perspective.

Thousands of gas flares at oil production sites worldwide burn around approximately 140 billion cubic metres per annum of natural gas causing more than 300 million tonnes of carbon dioxide to be emitted into the atmosphere.

If this amount of gas were used for power generation, it could provide about 750 billion kilowatt hours of electricity, or more than the African continent’s current annual electricity consumption, Jane Cutler, consultant to the World Bank told delegates at the same conference session on Wednesday.

She said that the ZRF initiative is “all about seeking solutions” rather than ending flaring if companies are not able to do so in the next 12 years.

Australia ranked 32nd globally in the league table of top flaring nations from 2013 to 2016 and was at the same position for flaring intensity, which some within industry claim is more reflective of a nation’s emissions status.