Heading to the top of the world...

LIQUEFIED natural gas continues to be the bedrock of Australian production and development in 2016, and forecasts predict that the country will overtake Qatar as the largest LNG producer in the world in the next three to five years.

Pages 6 & 7
**CONFERENCE PROGRAM Wednesday 17 May 2017**

**11:15am – 3:00pm**

**Conference registration** — Central Foyer, Level 2

**11:30am – 11:45am**

**APPEA 2017 Exhibition open** — Exhibition Hall, Level 1

**SPONSORED BY** **Siemens**

**11:30am – 11:45am**

**APPEA 2017 Poster Presentations open** — Exhibition Hall, Level 1

**SPONSORED BY** **BP DEVELOPMENTS AUSTRALIA**

**11:45am – 11:50am**

**KPMG Meeting Zone open** — Exhibition Hall, Level 1

**SPONSORED BY** **KPMG**

**11:45am – 11:50am**

**Need a private meeting with your client?** With two private meeting rooms, each seating up to six people, the KPMG Meeting Zone can be booked on site with the reception staff at the Meeting Zone.

**11:30am – 11:45am**

**Federal Opposition Address**

Mr Tony Burke MP, Shadow Minister for Commerce Affairs and Shadow Minister Assisting for Resources

**SPONSORED BY** **Woodside Energy Ltd**

The global energy system is in transition. The world is moving towards cleaner forms of energy, societal expectations continue to shift and lower prices place pressure on existing business models and practices. The Australian oil and gas industry faces a similar transition and the industry is dealing with this transition in a variety of ways, including a greater focus on innovation, exploring opportunities for collaboration and reviving existing business models. An exclusive Industry Leaders Panel from APPEA’s explorative and production member companies will come together to discuss these transitions, what they mean for the industry globally and in Australia and how their business is responding to the changes and grasping the opportunities that arise when the industry is in a period of change.

**Facilitator:** Ms Maria van der Hoeven, Senior Associate Fellow Clingendael International Energy Programme and former Executive Director of the EA.

**Panelists:**

Ms Claire Fitzpatrick, Managing Director, BP Developments Australia

Mr Richard Davis, Chairman, Gasfield NSW

Mr Ian Davies, Managing Director & Chief Executive Officer, Senex Energy

**SPONSORED BY** **BP DEVELOPMENTS AUSTRALIA**

**11:30am – 11:45am**

**PLENARY: INDUSTRY LEADERS PANEL: THE AUSTRALIAN OIL AND GAS INDUSTRY IN TRANSITION**

**SPONSORED BY** **Siemens**

**CHAIR:** Mr Michael Abbott, Senior Vice-President, Corporate and Legal, Woodside Energy Ltd

**Panelists:**

Mrs Julie Fallon, Senior Vice President–Engineering, Woodside

Mr Terry Freckelton, Vice President Development, Shell Australia

Mr Michael Abbott, Senior Vice-President, Corporate and Legal, Woodside Energy Ltd

Mr Ian Davies, Managing Director & Chief Executive Officer, Senex Energy

**SPONSORED BY** **BP DEVELOPMENTS AUSTRALIA**

**11:15am – 11:30am**

**PLENARY: ADDRESSING TRUST CHALLENGES AND REGULATORY UNCERTAINTY**

**SPONSORED BY** **GDS**

**CHAIR:** Mr Frank Defina, Managing Director, GDS Australia, Enertrust and PNG

A new challenging environment for oil and gas investment increases the stakes in addressing above ground risks that prevent or delay exploration and development. Serious trust challenges have been created by incidents such as Macondo and a poisoning of oil field lands as part of the problem out part of the solutions to addressing climate change. A 2013 oil spill shocked the oil and gas industry as the least trusted industry that has a past with the industry. The lack of trust has been amplified by sophisticated actors. The industry needs to engage stakeholders with a better communication of technical issues. However, stakeholders are seeking measurable improvement in performance and greater transparency and disclosure by both industry actors and its regulators. This session will directly tackle the issues being faced and the lively panel debate will deliver a ‘must to be missed’ last session to APPEA 2017.

**Opening comments by session facilitator:** Ms Ali Moore, Journalist

**Improving trust through sharing lessons:** Origin Energy and NPOSEMA’s perspectives from the Crows Foot Seismic Survey

Ms Claire Fitzpatrick, Managing Director, BP Developments Australia

Mr Stuart Smith, Chief Executive Officer, NPOSEMA

**Managing social licence in the midst of chaos**

Ms Katherine Teh-White, Managing Director, Futureye

**Operating beyond social compliance**

Mr Richard Boele, Partner and KPMG Global Leader for Human Rights and Social Impact, KPMG Banarra

**Panel discussion with guest facilitator:** Mr Malbrough Roberts, Chief Executive, APPEA

**APPEA closing address** — Or Malcolm Roberts, Chief Executive, APPEA

**FAREWELL COCKTAILS**

**Farewell On East Street**

Summer Garden, Parthenon Convention and Exhibition Centre

There’s no better way to say goodbye to your APPEA 2017 Conference than by tasting the aperitives, canapés and wines from the Crowes Feet Seismic Survey. You will not forget the closure of the Conference with the dynamic sights and sounds of live performers combined with the energy to be found on ‘Eat Street’.

**Complimentary to full delegates and registered partners.**

**$50 per person for all other registration categories and additional guests.**

**Smart casual attire:**

(Outside function)

**CONCURRENT SESSIONS 21-24**

**CONCURRENT SESSION 21: Technology innovation**

**CHAIR:** Ms Julie Fallon, Senior Vice-President—Engineering, Woodside

**Learning and development from the world’s first operating subsurface compression system**

D. Yeom, A. Skinder, and N. Tsakaloudis (Alex Oilfield)

An integrated operations team to drill the Preludio deep tight gas wells in Western Australia. Working together delivers solutions.

L. Farrow, S. Yee, S. Lott, and N. Tsakaloudis (Alex Oilfield), T. B dziewczyn (BHP), and Z. Palank (Woodside)

A novel pipeline integrity inspection of Casino pipeline brings significant benefits

D. Yeom, J. Leman, D. Halkett, and N. Tsakaloudis (Alex Oilfield)

Advanced directional Corr system pushes integrity envelope to tolerate efficiencies and reduce costs

F. van Gijlswijk and J. Burghardt (Hunter Oilfield Technologies)

**CONCURRENT SESSION 22: Greater North West Shelf**

**CHAIR:** Dr Andrew Heap, Acting Chief of Division—Resources Division, Geoscience Australia

**Trasonic paleoecography and petroleum systems of the North West Shelf, Australian key insights from regional study**

J. McEwan, B. Feskin, and B. Potts (Carnarvon Petroleum)

**Visualization of geological and geophysical features and interpretation of the depositional system of the Browse Membina, (Ichthys Field)**

J. Furlong, J. Friel, J. Trombini, and L. Epprecht (INPEX–Ichthys Subsurface)

A re-evaluation of the issuer to middle Triassic on the Camden Terrace, Northern Carnarvon Basin

R. McGee, A. Jacobs, and S. Thomsen (Senex Energy)

**Integrated petroleum systems analysis to understand the source of fluids in the Browse Basin, Australia**

R. McPhee, J. Wyllie, J. Curnow, and S. Epprecht (INPEX–Ichthys Subsurface)

**CONCURRENT SESSION 23: Developments in LNG**

**CHAIR:** Mr Terry Freckelton, Vice President Development, Shell

**Quantifying host nation benefit from LNG developments**

M. Pettke, K. Gordon, and A. Ihlenfeldt (INPEX–Ichthys Subsurface), and N. Rollet, L. Hall, S. Brigham, and K. Higgins (INPEX–Ichthys Subsurface)

**The gas hub in Asia**

D. Farrow and A. Sallows (JPM)

**Uncharted waters: LNG as a Marine Fuel in Australia**

M. White, A. Godwin, and G. Pepper (Wintershall Dea) and R. Lecky (LNG Gas France)

**Floating liquified natural gas (FLNG): Is it still a nice niche?**

M. White (Wintershall Dea)

**FLNG innovation: discover development hotspots with patent landscaping**

R. Bollinger (Molinos)

**CONCURRENT SESSION 24: Regulation and taxation**

**CHAIR:** Ms Antoinette McEvoy, Acting Chief Financial Officer, Woodside

**NOW—strategic release of exploration areas**

M. O’Creadin, R. Jones, and S. Kaliounis (Woodside)

**The impact of competition law on destination restrictions in LNG contracts in the Asia-Pacific**

J. Williams (Woodside), and J. Kidy (Clifford Chance LLP)

**Achieving tax certainty for oil and gas projects**

K. Wroe (Australian Taxation Office)

**Australian taxation of offshore hubs: an examination of the law on the ability of Australian tax economic activity in offshore hubs and the position of the Australian Taxation Office**

J. Williams (Woodside)

Tax transparency is not just about tax

J. Williams (Woodside)
Woodside Energy was last night presented with the Australian Petroleum Production & Exploration Association Environment Excellence Award at the APPEA 2017 conference dinner in Perth.

Executive Chairman, Eric Streitberg, announced the award at Tuesday night’s APPEA Board member and Buru Energy Executive Chairman, Eric Streitberg, announced the award at Tuesday night’s APPEA 2017 conference dinner in Perth.

“Woodside has consistently shown excellence across all facets of environmental performance. Woodside has integrated world-class environmental management into its exploration and its facilities,” said Streitberg.

“The company seeks to protect its workers, its communities and the environment by delivering sustained leading Health, Safety, Environment and Quality (HSEQ) performance.”

Woodside’s environmental approach has four key elements: An integrated HSEQ culture that fosters environmental awareness and drives continuous improvement; a strong HSEQ capability that the company is continuously improving; using sound science and strong, long-term partnerships to understand local environments, deliver public benefit and build trust with stakeholders; and using strategic planning and risk management to minimise environmental risks and impacts.

“In 2016, Woodside focused strongly on energy efficiency and producing its energy as sustainably as possible,” Streitberg said.

“For the first time, energy efficiency was included as a metric in the company’s corporate scorecard...Woodside set a corporate target of 1% fuel intensity improvement. This is on top of its existing annual flare reduction target — since 2013 the company has reduced its flashed gas intensity by more than 50%.

“Woodside engineers developed several initiatives that directly reduced fuel usage or flaring, or improved the company’s production efficiency. By continuing to enhance its data science capacity, Woodside is finding more opportunities to use existing equipment in smarter ways that reduce emissions intensity and add value.”

To further reduce its emissions footprint, Woodside is also now aiming to maximise its use of liquefied natural gas as a shipping fuel. LNG has 25% fewer greenhouse gas emissions than diesel and 30% fewer emissions than heavy fuel oil (the dominant fuel in shipping). It also has no sulphur oxides or particulates and has low nitrogen oxide emissions.

Woodside in April 2016 signed a five-year charter of the Siem Thiima vessel from Siem Offshore. This is not only Australia’s first platform support vessel capable of running its engines on both LNG and diesel, but also the first vessel fuelled with LNG anywhere in the southern hemisphere.
Carbon emissions and climate impact have moved high up the global energy agenda, demonstrated by the Paris Agreement in December 2015. With currently 165 countries having submitted their Intended Nationally Determined Contributions (INDCs) and agreement trackers in place monitoring whether the country’s policies and actions align with the intentions, a level of transparency and baseline for accountability has been established.

Neither immigration agents nor high walls at country boundaries can stop carbon dioxide moving cross border, which makes this a truly global challenge.

Furthermore, the wealth distribution between the various countries and their respective need for and speed of economic development, beg the million dollar question: what are the collectively deemed fair expectations on country commitments to strike a balance between global climate support and national economics?

Developed countries have had the opportunity since the industrial revolution to ride the wave of growing prosperity, unconstraint by this issue.

A quick look at the World Bank data shows Australia in 12th place, just behind the US, on the global ranking of highest CO₂ emissions per capita. Also the historic relationship between income and emissions (Shell report, 2016: A Better Life with a Healthy Planet: Pathways to Net-Zero Emissions) is showing that countries with an abundance of fossil fuel reserves are on a development trajectory with significantly higher emissions per capita per GDP. The resource richness of Australia has made us historically less concerned about energy density, but the times that one could be proud of ranking high on energy consumption is long gone.

To make things more tangible, if we assume that India and China were developed to the same economic level as Australia, and were equally energy efficient and using the same fuel mix, this would add approximately 31.5 billion tonnes of CO₂ emissions. This would almost double the global total emissions today.

The outlook for Australia’s long-term savings account is filled with coal interests — 7% to 8% of global production and proven reserves, calculating to a 158-year (R/P) ratio at current levels. About 90% of the coal production being exported looks gloomy and it raises the question of whether our moral obligations also apply to the export side of the CO₂ equation.

Net zero under the spotlight

The unburnable carbon doctrine signals that only about one-third of proven reserves of fossil fuels can be consumed before 2050 if the world is to achieve the Paris goal.

Global energy scenarios from different organisations show various models, but have consensus on the continuous growth of total global energy consumption and the prediction that fossil fuels will still play a significant role in 2050. As example, the World Energy Council shows in its optimistic “symphony” scenario that fossil fuels still comprise about 59% of the total. As coal generates around twice the CO₂ emissions for the same energy output compared with natural gas, a continued shift within the fossil mix towards gas is expected to support the focus on emission reductions.

However CO₂ will continue to be generated from fossil fuel use, thus the net zero needs to be further supported by sequestration. With our industry used to technology thinking, the artificial sequestration methods like carbon capture and storage are front of mind.

The new resources

And what about natural sequestration? With an increasing number of countries putting a price on carbon (according to the World Bank around 40) and considering the global reach of this subject, a diversity of questions arise:

Would it be unthinkable that this too becomes a liquid global market? That the capacity to absorb CO₂ will be heavily traded? That forestry becomes a new business unit in integrated energy companies? That the price put on carbon will shift from consumption and emission towards fossil fuel production and exports? That countries with big land masses, fertile soils and ability to maintain and grow new forests will generate new income streams by becoming the biggest “CO₂ credits” traders in plant sequestration capacity?

Just crazy ideas? Remember this story when we reach “net-zero” before the middle of this century!

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Exploring carbon emissions: challenges & opportunities

By ALAN SAMUEL
Director Deloitte Consulting

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In the picture...
The key to offshore approval

COMPANIES seeking environmental approval for operating in offshore basins should invest early in high-quality predictive modelling and be prepared to collaborate early with a wide range of stakeholders, according to Giulio Pinzone of Adventus Consulting.

It would be a difficult process costing millions of dollars and would take at least two years, he said.

It required strong project management, an acceptance that there would be setbacks and a commitment to quality rather than cost.

There were difficult decisions to be made about how much technical information to release publicly and how soon to release it.

In the case of BP’s ultimately unsuccessful environmental applications in the Great Australian Bight, the Wilderness Society had released its own oil spill modelling early.

By the time BP released its own modelling six months later, public confidence had already been lost, he said.

Modelling possible spills in the Bight had been made difficult by the fact that the 10 exploration wells that had already been drilled had all been dry.

As a result, there were no hydrocarbon assays available to determine the trajectory of any spill.

Some of the software used to model potential spills could not cope with the rapid emulsification associated with the kind of light oils likely to be found in the region.

The water depth also affected the modelling, as it would take longer for any oil to reach the surface.

Therefore it could take longer to detect that there had been a spill on the seafloor, and it would therefore be more difficult to predict where to deploy resources to cope with a spill before the oil actually appeared.

It would also take longer to deploy resources from shore bases, Pinzone told APeA 2017.

In consulting with stakeholders, there was a fine line between releasing sufficient and insufficient information before submitting the full environmental proposals to the regulator.

Liquefied natural gas was the bedrock of Australian production and development activity in 2016, and that trend will continue in the future, according to research manager Frankie Cullen, who presented at APeA during the Petroleum Exploration Society of Australia’s 2016 review.

New LNG production is expected this year and early next from the Ichthys and Prelude projects in the Browse basin, and the Wheatstone development in the Carnarvon basin. Looking further ahead, there are various gas resources that could contribute to future Australian LNG output including Cash-Maple, Crux, Browse, Scarborough, Equus, Sunrise, Calidita-Barossa, Evans Shoal and Bonaparte.

Cullen said many of these resources have been delayed or deferred as a result of low oil and gas prices, but some could be brought on stream to fill a predicted LNG supply shortfall in the coming years.

In terms of the amount of production and development drilling in Australia in 2016, there was an increase in the number of such wells compared to 2015, primarily due to coiled tube gas drill rig in Queensland.

In terms of production, gas output was higher than in 2015, and the increase was driven by fields in the Northern Carnarvon and Browse basins.

Modelling possible spills in the Bight had been made difficult by the fact that the 10 exploration wells that had already been drilled had all been dry.

Liquefied natural gas was the bedrock of Australian production and development last year — and the country is forecast to be world’s largest producer in three to five years.

PESA celebrating 50 years of promoting excellence

THE Petroleum Exploration Society of Australia (PESA) is this year celebrating its 50th Anniversary.

The purpose and objectives of the society include the promotion of professional and technical excellence in the upstream petroleum industry throughout Australia, fostering and providing continuing education for the benefit of PESA members and students progressing towards a career choice, and maintaining a high standard of professional conduct on the part of its members.

PESA started life as the Professional Division of the Australian Petroleum Exploration Association (APEA now APeA) and was founded by Earl Abbott in 1967. With virtually no financial resources in the early days, the major objective was to keep PESA’s members interested and supportive.

One important social event in achieving this was the establishment of the New South Wales’ branch’s still continuing annual golf tournament that dates back to 1969.

PESA notes that from 1972 to 1975 relations between APEA, which was increasingly being seen as an industry lobby group, and the then federal Labor government became very strained, and the position of those members of the Professional Division who worked for federal or state governments became very difficult.

Accordingly, it was resolved to cut our formal ties with APEA and become the independent Petroleum Exploration Society of Australia.

“PESA in 1983 was formally incorporated to become the Petroleum Exploration Society of Australia. “The driving force behind incorporation was the legal opinion that the society members as individuals might be liable should an accident occur, or somebody take exception to something said at our meetings,” reads the society’s website.
Exploration ‘will always favour the brave’

AUSTRALIA is experiencing a "severe contraction" in exploration, but the former president of the Petroleum Exploration Society of Australia (PEsA) claims exploration still favours the brave.

Steve Mackie made the comments at the APPEA conference in Perth when giving his review on exploration in Australia during 2016.

Of the 28 offshore blocks offered last year, Mackie noted that only eight were awarded, down from 12 in 2015 and 19 in 2014.

Also of concern was that fact none of the successful bids for the offshore blocks awarded in 2016 contained guarantees for wells in their primary term.

Last year also saw a decline in seismic acquisition. However, a number of landmark surveys were carried out including the 1700 square-kilometre snowball seismic, which was the largest onshore 3D survey ever to be acquired in Australia.

Mackie also noted the first ocean bottom nodal survey in Australia was acquired by Chevron over the Gorgon field in 2016.

The number of exploration wells being drilled also continued to slide in 2016, a trend that Mackie said had been occurring even before the oil price crash in late 2014.

"The trend in exploration drilling is not just a response to the oil price crash, although that's exacerbated it, it is a very long-term trend and that is something that is quite concerning to the industry," he said.

Despite the drop in exploration drilling there were still a number of notable discoveries in 2016, including Quadrant Energy’s Spartan and Davis discoveries off Western Australia, while Quadrant also enjoyed success with the drillbit at its appraisal campaign at the Phoenix South and Roc discoveries.

There was also success onshore with Bengal Energy’s Shefu-1 find in the Cooper-Eromanga basin, while Origin Energy has potentially uncovered an unconventional gas play with its Amugee find in the Beetaloo basin, which flowed at rates of up to 1.1 million cubic feet per day.

While the industry is in the midst of a downturn, with Mackie claiming the number of the wells drilled offshore was the worst in 30 years and the number onshore the worst in about 40 years, he also found positives.

One was that he said the industry was starting to "huddle together", similar to when a sports team is behind in a game and the players get together to find out how they can improve.

Mackie pointed to the APPEA conference being a conduit for a similar behaviour.

"The earlier APPEA conferences were held specifically to do that, and they heralded the greatest decade of discovery in Australia’s history," he said.

"So don’t always look to linear extrapolation, there are positives and exploration will always favour the brave."
Players eye riches with Perth Basin

Companies targeting hydrocarbon riches in Western Australia basin, spurred on by giant Waitsia discovery

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is synonymous with big offshore gas fields and liquefied natural gas operations, and yet in the background a pool of mid and small-cap companies is leading a renaissance in onshore upstream activities in the Perth basin.

The participants in the Perth basin have traditionally gone quietly about their business, led by AWE, Origin Energy and Empire Oil & Gas, which have for some years produced modest volumes of conventional gas and condensate from fields in the Dongara region, such as Beharra Springs, Corvus, Dongara, Gingin West, Hovea, Red Gully and Redback.

Yet in the last two years there have been occasional exploration wells targeting near-field prospects, while companies such as Transerv Energy and CalEnergy have attempted to unlock the Warro and Whacher Range tight gas fields, respectively.

Waitsia discovery

Everything changed in September 2014 with AWE’s discovery of the Waitsia gas field during drilling of the Senecio-3 well.

AWE and 50:50 partner Origin claim it is the biggest onshore conventional gas field discovery in Australia in more than 30 years.

An independent report by RISC puts Waitsia’s proven and probable reserves at 460 billion cubic feet of gas plus 222 Bcf of condensate.

AWE believes those numbers support nearly 100 million cubic feet per day of supply for 10 years, and the field has the potential to deliver up to 150 MMcfd.

Waitsia has sparked a renaissance in the basin,” says Norwest Energy chief executive Shelley Robertson.

“A lot more focus has been brought to the basin, a lot more people have become aware of what is going on, and it’s helped us from an investment perspective.”

She adds: “2017 is shaping up to be a year in which a number of wells will be drilled in the Perth basin — this will reduce costs to all operators by sharing mobilisation and other costs where appropriate.”

The initial wells this year are the Waitsia-3 and Waitsia-4 appraisals, which will test the southern and western extremities of the field and will be completed as producers.

Enerdrill Rig 3, which drilled the original Senecio-3 discovery well and the three subsequent appraisals, is understood to have been contracted for the next two Waitsia appraisals.

The same rig is a contender for the norwest Energy-operated Xanadu oil exploration well, which is a significant prospect that has moved to prominence following norwest’s introduction of three farm-in partners — Australian pair Transerv Energy and Triangle Energy plus Guernsey incorporated 3C Group.

Xanadu has the potential to hold 160 million barrels of oil, and will be a deviated well into offshore Block TP11.

Later this year, Empire Oil & Gas — the largest acreage holder in the basin — is targeting the drilling of either the Lockyer Deep or North Erregulla Deep gas prospects in Block EP168, subject to funding.

The EP368 joint venture comprises Empire on 80% and norwest on 20%.

Drilling prospects

AWE and Origin are understood to be considering another couple of wells at Waitsia — not forgetting that Origin was a whisker away from divesting its entire Perth basin business until it decided in December 2016 to retain the assets for its newly-created upstream company Newco.

Another drilling prospect is Arrowsmith-3 in Block EP413, which contains the Arrowsmith gas discovery from 2011.

The joint venture — comprising operator norwest on 80%, AWE on 44.25% and India’s Bharat PetroResources on 27.60% — believes the permit contains significant potential for conventional gas.

Other operators with drilling plans include UIL Energy, which aims to have the Ocean Hill-2 well permitted and ready to spud in late 2017 in Block EP408.

Meanwhile, the EP407 joint venture comprising Key Petroleum and Rey Resources each on 43.47% and Pilot Energy on 13.06% have approved the budget for drilling the Wye Knot-1 exploration well in 2017.
Enerdrill and Aztech crucial to success for region

Two of the main contractors servicing the onshore Perth basin operators in Western Australia have been crucial to the recent success in the region, writes Russell Searancke.

Enerdrill, the Perth-based drilling contractor, owns three drilling rigs and a workover rig. Enerdrill Rig 3 and Enerdrill Rig 1 have been particularly active, with some rigs working simultaneously.

Rig 3 was used between July 2014 and August 2015 for the landmark discovery and appraisal wells on AWE’s large Waitsia gas field, Senecio-3, Irwin-1, Waitsia-1 and Waitsia-2. The same rig was then used for two wells at the Warro tight gas field, then worked for Empire Oil & Gas at the Red Gully North-I prospect, and the Mondara-9 gas storage well for APA.

Enerdrill says the success of the Senecio-3 well, which discovered the Waitsia field, was helped by the efficiency of its own team seeing as the well reached its planned total depth of 2783 metres ahead of schedule and below budget. This enabled AWE to continue with the unplanned drilling of the deeper secondary Kingia-High Cliff sandstone, which contained a significant resource.

Enerdrill says it then — under a state government requirement — had to spend A$500,000 (US$371,214) to upgrade the blowout preventer on Rig 3 to a 15,000 psi unit before drilling any other deep wells in the Perth basin. Enerdrill also updated the rig’s top drive, buying a GDM electric top drive “which has performed superbly.”

The second main contractor is Perth-based Aztech Well Construction, which has managed the drilling operations of most, if not all, recent wells in the Perth basin. Operating since 2008, Aztech’s teams have drilled four to five wells per year on behalf of clients, says a company spokesman.

“We’re working in a competitive market but Aztech has been successful fully grown with our commitment to ensuring wells are designed, drilled, completed and maintained to high and consistent standards, but with an underlying focus on cost-effective solutions,” says the spokesman.

“We don’t cut corners but we do consistently challenge paradigms with an objective of maximised efficiency.”

The company has a positive outlook for the Perth basin.

“Across the industry there was a reduction in exploration costs in 2015 and 2016. However Aztech believes the market stabilised in the later part of 2016. Aztech has kicked off planning for new wells in the Perth basin and is also providing well management support for two offshore projects.”

Domestic demand drives E&P

Operators in Western Australia’s onshore Perth basin are motivated to discover new gas fields given the strong demand signals in the domestic market, writes Russell Searancke.

Supply shortfalls into the domestic market are predicted, and the timing is good for new volumes from about 2020 on, according to producers.

The largest new source of domestic supply is the Waitsia field, and owners AWE and Origin are currently in the market for buyers for their stage two volumes of up to 100 million cubic feet per day of gas starting in 2020 for 10 years.

AWE characterises the Western Australia gas market as having “high value domestic markets with strong demand and pricing growth potential”.

Empire Oil & Gas, which produced 560 terajoules (510 million cubic feet) in the March 2017 quarter from the Red Gully field, says new domgas supply “is priced significantly higher than historical supply, due to cost base”.

Empire says gas prices are forecast to increase from A$5.68 (US$4.22) per gigajoule to A$9.43 per gigajoule from 2016 to 2025. New mining projects that are coming online in Western Australia are expected to boost demand for gas, adds Empire.

AWE and Origin held a tender process last year for Waitsia’s gas, and bid volumes totalled more than double the partnership’s proven and probable reserves.

The pair have signed up one customer — AGL Energy — and are confident of completing supply arrangements in the coming months.

AWE chief executive David Riggs says the agreement with AGL “reflects the growing demand for onshore gas and highlights the benefits that a new supplier can bring to the market in terms of diversity, lower risk and certainty of supply”.

Another potential opportunity is provided by the North West Shelf LNG project reducing its domestic supply volumes, according to UIL Energy. UIL quoted research by ACIL Allen that states the North West Shelf’s domestic supplies “will be exhausted by the early 2020s”.

The legal requirement for the state’s liquefied natural gas projects to reserve 15% of their gas reserves for the domestic market might also play into the hands of domestic producers. LNG operators such as Woodside (North West Shelf and Pluto) and Chevron (Gorgon and Wheatstone) see the domestic producers as a potential way of offsetting their own domestic supply requirements.

In theory, LNG producers could buy gas from the likes of AWE and Empire to meet their domestic supply obligations instead of piping their own gas all the way from Karratha and Onslow.
Oil price takes a jump

Oil jumped 2% to its highest price in more than three weeks on Monday, topping US$52 per barrel after Saudi Arabia and Russia said that supply cuts need to last into 2018, a step towards extending an Opec-led deal to support prices for longer than first agreed.

Energy ministers from the world’s top two producers said that supply cuts should be prolonged for nine months, until March 2018. That is longer than the optional six-month extension specified in the deal, and shows that the battle to reduce overall supply has been more difficult than originally anticipated, in part because of rising US production.

The ministers said they hoped other producers would join the cut, which would initially be on the same volume terms as before. Global benchmark Brent crude settled up 98 US cents, or 1.9%, at US$51.82 per barrel, having touched US$52.83, the highest since 21 April, US crude settled US$0.01 firmer at US$48.85 per barrel, a 2.1% gain.

Oil traders were surprised by the strong wording of the announcements, though it remained to be seen whether all countries participating in the deal would agree with the Saudi stance when they meet to decide policy on 25 May in Vienna.

“Today’s announcement will likely further extend the oil price rebound started last week on decent stock draws and low positioning,” said analysts at Goldman Sachs in a note. They noted the rally has been modest so far.

Opec, Russia and other producers originally agreed to cut output by 1.8 million barrels per day in the first half of 2017, with a possible six-month extension, in a bid to shore up prices.

US production is currently forecast to average about 9.31 million bpd this year, a level reached only briefly in 2015, according to government figures. Slower says it could surpass that if buoyed by higher prices.

Some analysts doubted that the producers would stick to a production path.

“Extending the cuts until March 2018 would take account of the fact that demand in the first quarter of a year is lowest for seasonal reasons,” said Commerzbank analysts.

Chevron shuts down Gorgon Train 1 again

Output halted due to failure of flow measurement device and is expected to be down for a month

JOSH LEWIS
Perth

US SUPERMAJOR Chevron has again been forced to shut down the first train at its Gorgon liquefied natural gas project in Western Australia.

A spokesperson for Chevron confirmed with Upstream that output from Train 1 was halted on 15 May due to the failure of a flow measurement device.

“Train 1 is expected to be down for approximately one month for this replacement and we will take this opportunity to perform other routine maintenance,” the spokesperson said. “Trains 2 and 3 are running normally and we are continuing to ship cargoes.”

It comes after Train 2 at the LNG project was shut down in March to address an issue with a mechanical device.

In an earnings call last month president of Chevron Asia Pacific Exploration & Production, Stephen Green said the device was part of the flow measurement apparatus that the company had previously dealt with at Train 1.

The Chevron spokesperson did not elaborate in its initial comments to Upstream on Tuesday if the latest failure of the flow measurement device at Train 1 was related to earlier shutdowns, or if it was expected to affect the other trains.

Output at Train 1 was halted in November last year for about a month to assess and address some performance variations, and the latest shutdown marks the fifth time production has been halted on Train 1 since it started production in March last year.

Green had said last month that Chevron was focused on ramping up output at Gorgon to have all three trains running simultaneously at their combined 15.6 million tonnes per annum capacity for the first time.

The woes at Gorgon also come as the chief executive of joint venture partner Woodside Petroleum revealed on Monday the first LNG cargo from Chevron’s nearby Wheatstone LNG project would likely slip back to August unless things worked “perfectly”.

However, in response, Chevron reiterated that it was still targeting the first LNG cargo to leave Wheatstone by mid-year.

Wheatstone first cargo likely to slip back to August

The first cargo of liquefied natural gas from Chevron’s Wheatstone project in Western Australia is likely to slip back to August, according to joint venture partner Woodside Petroleum.

Chevron was focused on ramping up output at Gorgon to have all three trains running simultaneously at their combined 15.6 million tonnes per annum capacity for the first time.

The Wheatstone LNG project involves an onshore facility near Onslow in Western Australia’s Pilbara region and includes two LNG trains with a combined capacity of 8.9 million tonnes per annum and a domestic gas plant.

The facilities will be fed by natural gas from the offshore Wheatstone and Iago fields, as well as third-party gas, and is expected to start production from mid-2017.
Industry ‘needs more women’

Oil and gas is lagging behind and failing to exploit a most valuable resource, says report

AMANDA BATTERSBY

Perth

THE oil and gas industry has yet to fully exploit its most valuable resources, namely its human resource and this means having more women in the sector, according to consultants EY.

Today only 11% of senior leadership positions at oil and gas companies are filled by women, Lynn Kraus, EY Oceania Markets Leader told delegates at APPEA 2017.

In a 2016 EY global survey on gender diversity in the workplace about 74% of respondents said they were effective both at attracting women to their organisation and retaining them.

However, only 46% said that they are effective at identifying, retaining and promoting female leaders.

Sectors differ when asked if they think their own leadership teams are sufficiently diverse in thought and leadership. 63% of respondents from banking and capital markets believed they could do more to bring greater diversity to their leadership teams, compared to just 44% of senior oil and gas executives.

“If I look across at different industries, corporates are doing some wonderful things, but there is this long-term societal view about the roles of men and women and that’s going to take an awful long time to change,” Kraus told Upstream on the sidelines of the APPEA conference.

“We have to stop ‘high fiving’ the guy that leaves early at four o’clock to go to his daughter’s ballet class or his son’s soccer team.

“I look at it as ‘he’s the father, of course he should be doing that’. Whereas if a woman were to do it, she’s somehow not prioritising her career or work. That long-term view is hard to change,” she said.

EY reckons there are five disconnects that hold back gender diversity and stifle innovation in the workplace.

- The progress disconnect: Business leaders assume the issue is nearly solved despite little progress within their own companies.

- The data disconnect: Companies do not effectively measure how well women are progressing through the workforce and into senior leadership.

- The pipeline disconnect: Organisations are not creating pipelines for future female leaders.

- The perception and perspective disconnect: Men and women don’t see issues in the same way.

- The progress disconnect: Different sectors agree on the value of diversity but are making uneven progress toward gender parity.

A statement on EY’s website reads: “Accelerating achievement of gender parity within EY and in business at large is an economic imperative. The world can’t afford to wait as long as some estimates predict — another 170 years — for women to achieve gender parity in the workplace.”

Standing room only for Australian Bight results

THERE was standing room only and very little of that in River View Room 4 on Monday for a rapid but comprehensive presentation of results from the A$20 million (US$14.85 million) Great Australian Bight Research Program.

The programme has been designed to get comprehensive, whole-of-ecosystem understanding of the environmental, social and economic value of the area and to create a dynamic model of the ecology to get greater understanding of the possible impacts of future activities.

The project’s research director, Ben Baghurst, from the South Australian Research and Development Institute, said one of the advantages of the programme was getting in early and doing the research during the exploration, ahead of production, “so we know exactly how these system operate before any potential impacts”.

He told the audience that some of the work did find signs of hydrocarbon seepage.

The researchers had found tar balls and other evidence on the beaches. By running their oceanographic models in reverse, they were then able to “indicate very specific locations out in the Bight” as the sources of this material.

The programme is a collaboration between BP, CSIRO, the South Australian Research and Development Institute, the University of Adelaide and Flinders University.

The oceanographic research had shown that there was great biological productivity at depth in the eastern side of the Bight, driven by a nutrient rich upwelling. The central area of the Bight had similar productivity but was regenerating nitrogen.

Most of the animals and plants found on the surface were already known to science, but there were a huge number of creatures unique to the Bight and new to science, which were found in the sediments.

One surprise was that sampling in water depths of up to three kilometres had found that the amount of biomass depended more on depth than latitude.

Social and economic studies suggested a value of A$400 million to A$600 million for fisheries in the Bight, and had looked at the likely oil spill impacts on the industry.

The four-year programme began in 2013 and will have its final seminar in August. All the papers and reports produced are being made publicly available.
Gender target for BHP

AUSTRALIAN resources giant BHP Billiton has set itself a “bold diversity target” of having gender balance in its workforce by 2025.

Graham Salmond, BHP Billiton Petroleum’s general manager Australia, said it was a provocative target but it underlined BHP’s intent to raise the percentage of females in its workforce from the current rate of about 17 per cent.

That rate appeared to be reflective of the general rate percentage of women working in the oil and gas industry, said Salmond.

In order to attract the best and most diverse talent to the company, BHP had realised it had to take steps to attract, employ and retain more women in its workforce.

The company believes this is such a critically important facet in its business plan that an inclusion and diversity clause has been included in its company charter.

“The charter was developed in 1999, it’s at the heart of everything we do, and we recognise it needs to evolve to meet our future success needs, and that is why we have included the clause that we’re successful when we’re inclusive and diverse,” said Salmond.

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Takeover battle

REBEL shareholders determined to block the Macquarie Group’s agreed takeover bid for Australian junior Central Petroleum have hit a speed bump in their attempt to replace three of Central’s directors.

Central’s board said yesterday that the requisition notice received from the rebels on May 15 contains sufficient uncertainties and irregularities to render it invalid for the purposes of section 249D of the Corporations Act.

“Accordingly, the board will not take any further action at this time in relation to the notice,” the company said.

The dissident shareholders, who say they control just over 5 per cent of Central’s shares, are seeking to replace the company’s chairman, Robert Hubbard, and non-executive directors William Gartzen and Professor Peter Moore with their own nominees, former Dana Petroleum chairman Colin Goodall, former federal senator Nick Bolkus and Stuart Howes, a former executive with ExxonMobil and BHP Billiton.

In a statement to the Australian Stock Exchange yesterday Central said it had written to Howes, the nominated representative of the requisitioning shareholders, identifying the company’s concerns with the original purported requisition and indicating willingness to work with him to rectify these deficiencies.

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NEW PROJECTS

Workplace diversity ‘breeds success in different ways’

In the workplace, diversity helps breed success in different ways, the chief executive of Australian contractor Clough said.

Peter Bennett told delegates at the APPEA Conference in Perth on Tuesday that increased diversity in the workplace had led to enhanced decision making, increased abilities to reach strategic goals and, ultimately, stronger bottom lines.

“Statistics will tell you that companies in the top quartile of diversity are 15% more likely to have better financial returns above the national industry average,” he said.

Companies in the UK on average experience a 3.5% increase in earnings before interest and taxes for every 10% increase in gender diversity in their executive management teams.

However, there are barriers that remain in increasing diversity in the industry, and Bennett noted the need to increase the attractiveness of the industry to young people to help increase the resource pool from which to employ talent.

“I think for a long time we’ve been able to rely on the excuse that there’s just not enough diversity in the resource pool that we can choose from,” he said.

“We need to help improve that pool, we can’t rely on others to do it for us, we need to get out and engage and market ourselves and develop that resource pool from the grass roots of our industry.”

Bennett also noted the need to make the workplace within the industry more attractive, whether that be through daycare facilities for young mothers, time off or shorter working weeks.

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JOSH LEWIS

Perth
New research to protect industry from cyclones

Companies buy into programme designed to produce earlier and better forecasts

The Australian Bureau of Meteorology (BOM) partnered up with the oil and gas industry to develop new research which will improve tropical cyclone forecasts for offshore facilities.

The two-year research programme was funded by oil and gas giants Shell, Woodside, Chevron and Inpex and was aimed at developing new meteorological modeling to produce longer range and more detailed tropical cyclone forecasts.

BOM resource sector manager Andrew Burton said the research would help operators make more informed decisions when preparing their offshore infrastructure for the potential impacts of cyclones.

“This new research allows us to paint a much clearer picture of the threat from a tropical cyclone at a particular location, three to seven days ahead of the event,” he said.

“For the first time, offshore operators can receive an objective analysis of the risk at their location at timescales that match their operational response planning.”

The research also will also help predict the threat of destructive cyclone waves off the coast of Western Australia and the Northern Territory.

“Offshore operators will now have a better insight into the highest wave conditions that could be experienced at a location — allowing them to safely relocate ships or de-man facilities if required,” Burton added.

Lead ocean engineer at Shell Australia Jan Flynn said the research would help operators make more informed decisions much earlier and reduce the number of events where they might respond unnecessarily.

“Tropical cyclones cause major disruptions to offshore operations, as well as potential damage to infrastructure,” she said.

“It takes time to prepare an offshore facility for a tropical cyclone, incurring additional exposure for our personnel and in the past we’ve seen facilities shut down and de-manned unnecessarily due to the uncertainty in the forecast.”

Ichthys kit up for auction

PSST! Wanna buy cheap rigging equipment, generators, welding equipment, shipping containers and pipe cutters? How about a modular 600-tonne lifting beam, splendid in fire engine red? A 6000-litre diesel fuel cell? A crate full of heavy duty D shackles?

Secondhand equipment from the Inpex-operated Ichthys LNG project will go under the hammer in a series of rolling online auctions starting on 18 May and continuing through June.

All items will be unreserved, but expressions of interest may be sought for some of the larger or more unique items.

Auction house Grays Online announced yesterday that it had won a contract to manage the sales on behalf of one of the project’s major contractors. Catalogues are expected to be available by Thursday.
Jangkrik on line early

ITALIAN player Eni has started production from its Jangkrik field off Indonesia “ahead of schedule.”

The Jangkrik project comprises the Jangkrik and Jangkrik North East gas fields, located in the Muara Bakau block, Kutai basin, in the deep water of the Makassar Strait.

Eni said on Monday that start-up was initially scheduled to take place “by the first half of the year.” However, the process was expedited following the start-up of East Hub in Angola.

“Production from 10 deep-water subsea wells, connected to the newly built floating production unit Jangkrik, will gradually reach 450 million standard cubic feet per day, equivalent to 83,000 barrels of oil equivalent per day,” the company said.

The gas, once processed onboard the FPU, will flow via a dedicated 79-kilometre pipeline to the onshore receiving facility, both built by Eni, and then through the East Kalimantan Transportation System, finally reaching the Bontang gas liquefaction plant.

Gas volumes from Jangkrik will then supply the local domestic market as well as the LNG export market.

Eni is the operator of the Muara Bakau production-sharing contract, where it is partnered by Engie E&P and Saka Energi Muara Bakau.

“We are very proud of what we have achieved with the Jangkrik development project,” Eni chief executive Claudio Descalzi added.

“The completion of the project and the start-up of production ahead of schedule provides the opportunity for the Jangkrik FPU to become a hub for the development of our nearby gas discovery Merakes, which could start production within the next few years.”

“We will consolidate our near-field exploration strategy and operating model and maximise the integrated development of our projects also in Indonesia,” Descalzi added.

Merakes is operated by Eni with 85%, together with Pertamina on 15%.

FORWARD PLANNING

INDUSTRY players are getting to grips with a volatile and uncertain sector, as a recent survey revealed that upstream companies are expecting increased spending in the years ahead, according to consultancy Wood Mackenzie.

The survey looked at how the sector’s key players view the future, and, while consensus remains that “the oil and gas industry is facing a challenging year,” companies expressed optimism about oil prices.

“The industry is very cautious right now and risk appetite is low. The upstream sector’s key priorities for 2017 include protecting the dividend and strengthening balance sheets,” said Martin Kelly, WoodMac’s head of corporate analysis. According to the survey, “there is a clear consensus that oil prices will be in the US$50 (€46.3) to US$60 per barrel range this year (80% of respondents).”

However, 75% of responders also said that oil prices “will be in the US$60 to US$80 per barrel range in 2020.”

“If correct, (this) will generate significant free cash flow for the industry,” Kelly said.

The survey also found that on balance, respondents expect investment in M&A, exploration and capital spending to rise this year.

However, only 25% of the survey’s respondents believe that frontier exploration or corporate M&A will deliver the best returns this year. “Uncertainty remains about service costs, with respondents split almost equally over whether they will rise or not in 2017,” the survey showed.

WoodMac’s survey also revealed that, moving forward, the industry could increasingly get involved in renewables.

The survey showed that 75% of responders said that the best way for the industry to respond to climate change is to “either reduce carbon footprints or increase exposure to renewables”.

Meanwhile, consultancy Westwood has warned that the industry needs to “focus on finding low cost oil and gas profitable to develop at US$40 per barrel or less.”

Westwood said that “finding this year.”

Survey sees increase in spending in years ahead

Wood Mackenzie reports caution but expectation of recovery to US$60 - US$80 per barrel by 2020

ANAMARIA DEDULEAS
London

DUTCH offshore contractor Royal Boskalis Westminster is to axe more than 200 workers as the dire oil price market continues to hammer the company’s results.

Boskalis said on Monday it had completed a review of its headquarter organisation and is to cut about 230 jobs.

This is part of an effort to save between €30 million and €50 million (US$34.6 million to US$75.3 million) and is part of the overall corporate business plan for 2017 to 2019, which was implemented last year.

“The reason for the study is that Boskalis is impacted by the negative market developments, mainly as a result of the low oil price,” the company said on Monday.

“As a result of this measure around 230 employees will be made redundant at the head office in Papendrecht.”

“The reduction will be absorbed through attrition and redeployment where possible, but compulsory redundancies cannot be ruled out.”

“Boskalis has requested the formal opinion of the Works Council with regard to this intended decision.”

The company announced last July that it was letting about 650 workers go as it sold off vessels amid a fleet rationalisation study. In total, 14 units working in the offshore energy industry were to be taken out of the market in the next two years, with 10 vessels working in the dredging market also being pushed to the side.

The moves saw the 24 units either scrapped, sold or laid up, with all the vessels earmarked for sidelining either 30 years or older.

The units to go include heavy-lift vessels, anchor-handling tugs, suction hopper dredgers and cutter suction dredgers.
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Opportunity to lead the field

Disposal of ageing oil and gas facilities could open up a new wave of business for service contractors

AMANDA BATTERSBY
Perth

Decommissioning of ageing oil and gas facilities could open up a new wave of business for service contractors in Australia’s upstream industry.

The upcoming decommissioning wave represents a perfect greenfield opportunity for the country’s oil and gas industry to apply innovative thinking, new technologies, new workforce skills and collaborative approaches, according to a new report from Deloitte.

The current cost of decommissioning Australia’s oil and gas infrastructure is estimated at more than US$21 billion (A$28.3 billion) over the next 50 years.

“Decommissioning is an opportunity for Australia to demonstrate global leadership in this inevitable final stage of the oil and gas life cycle,” said Deloitte Australian Oil & Gas Leader and report co-author, Bernadette Cullinane.

“With the recent focus on the massive investment in liquefied natural gas, it is easy to forget the Australian oil and gas industry is nearly 100 years old and many assets are reaching the end of their producing life.”

However, the Oil and Gas Competitiveness Assessment recently published by the National Energy Resources Australia Growth Centre ranked Australia at the bottom of 30 oil and gas producing nations in abandonment and decommissioning.

“With more than 300 platforms and subsea structures located in Australian waters, spread across its vast coastline, founded in notoriously fickle carbonate seabed deposits, in some of the most pristine and unique marine environments on the planet, offshore decommissioning is going to be complex, challenging and costly,” said report co-author, UWA Professor Susan Gourvenec of the Centre for Offshore Foundation Systems and Oceans Institute.

“The industry needs to work together, and with the government, regulators and research sector to facilitate the trans-disciplinary, transformational strategies needed to address this looming challenge, to reduce the cost and risk of decommissioning and deliver the best outcomes for Australia,” added Gourvenec.

Cullinane and Gourvenec highlighted four key areas that the oil and gas industry, government and regulators need to address to efficiently tackle the upcoming wave of decommissioning activity.

Firstly, the evaluation of a range of approaches from complete removal to allowing assets to remain in situ. “The base case for decommissioning offshore infrastructure is complete removal, which presents technical challenges, risk to personnel and the environment and is complex and costly.”

“The optimal decommissioning solution may not be complete removal and will depend on what is technically feasible and desirable from an environmental, economic and societal perspective,” they said.

There is also the need to develop multi- and inter-disciplinary solutions based on the collaborative input of all stakeholders and ocean users to develop a framework suited to our location and environment.

“Any decommissioning decision must be based on scientific evidence. The holistic body of knowledge applicable to the unique challenges of Australian waters is still being developed.”

“Decommissioning will require a balance of learning from best practice globally while also leveraging local knowledge, capability and services.

“This phase of the life cycle provides a perfect opportunity to develop and apply many new technologies, equipment and skills,” they added.

There is too the requirement to develop fit-for-purpose policies and regulations to support the most appropriate decommissioning framework for Australia.

“Policy and regulation play an important role in shaping decommissioning solutions. Australia needs clear, evidenced-based policy and regulation, relevant to its location and environment, to enable optimal decommissioning solutions to be realised.”

“Policy and regulation play an important role in shaping decommissioning solutions. Australia needs clear, evidenced-based policy and regulation, relevant to its location and environment, to enable optimal decommissioning solutions to be realised.”

A one-size-fits-all approach may not be practical for existing developments and future investment in the industry.

The report’s co-authors said that there is the need to build workforce capability and capacity to support efficient decommissioning activities and stimulate economic growth.

Decommissioning challenges particular to Australia include its geographical remoteness with offshore hubs across three coasts - Bass Strait, North West and North-Eastern Australia - and its “notoriously variable” carbonate shallow-water seabeds in contrast to the soft muds encountered in the Gulf of Mexico, said the report.

The Australian supply chain today lacks some of the required vessels, tooling, disposal facilities and the trained workforce for offshore decommissioning, and importing these capabilities will be costly.

“So it is important that Australia develops expertise locally. Significant opportunity exists to export this capability to the broader Asia-Pacific region where nearly 50% of offshore platforms are older than 20 years and more than 600 fields, the majority offshore, are expected to cease production in the next 20 years.”

Cullinane added: “With so many offshore decommissioning projects on the near to medium-term horizon, Australia has the potential to become a leader in end of life-cycle asset management, further building on the experience in the construction, operations and maintenance of major capital projects.

“Developing regional-specific techniques and technologies for decommissioning presents a great opportunity for both operators and our services sector in Australia and in APAC.”

The report, Decommissioning: The next wave of opportunity in Australian oil and gas, was launched yesterday at APPEA 2017.