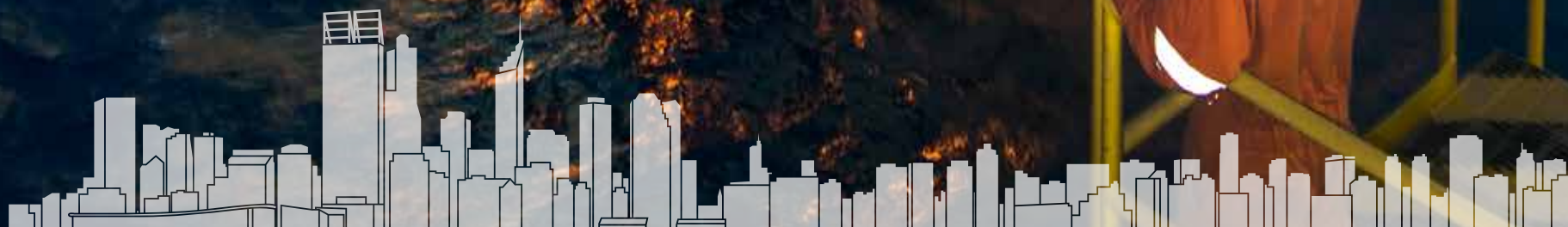




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Oil and Gas

SPECIAL REPORT





KICK-OFF: Wood plc has been growing its Perth presence, Ralph Ellis says. Photos: Gabriel Oliveria

Next boom nears as projects progr

Decisions are expected on three major oil and gas projects worth \$24 billion combined in 2020, with more to follow.



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6-PAGE FEATURE

A STRONG graduate intake at a major engineering firm is usually a good barometer of the positive state of the oil and gas sector.

Multinational company **Wood plc's** Australian class of 2020 will have about 30 people, mostly in Perth, about twice the number two years ago.

Wood has been undertaking front-end engineering and design work for Woodside Petroleum's

Scarborough LNG project, and was last year selected for feed studies on Shell's Crux expansion.

Decisions on these projects, and Santos' Barossa, are due in 2020.

Wood president operation services for Asia Pacific, Ralph Ellis, told *Business News* the company had grown its team in Perth from about 500 to more than 1,000 in the past three years.

Part of that was organic, driven by minerals and oil and gas, while part of it was through the acquisition of Amec Foster Wheeler.

There's been growth across the market, according to the latest BNiQ data (see page 22), with the number of engineers employed at the 10 biggest engineering businesses in WA up 35 per cent year on year, to nearly 4,700.

The biggest movement was at **Worley**, up from 650 to 1,700 engineers in the past year, thanks in part to the company's acquisition of Jacobs Engineering.

Worley's oil and gas exposure includes engineering, procurement and construction management work at Woodside's Karratha gas plant, and brown-field engineering support for Chevron across its WA assets.

Wood's Mr Ellis said the outlook for the industry was good, with potentially two big projects from Woodside backed up by a pipeline of other developments.

"When you throw in Chevron, Inpex, we're working for Conoco, we're working for Inpex, we see investment in existing assets across a number of the owner organisations," he said.

"We see a cautiously optimistic picture; there's plenty of opportunity to do good work on good facilities, we just have to meet the market.

"Things like Crux are moving to the next phase of its evolution, we're currently in phase two

support as it moves into the execute phase."

Mr Ellis said the Woodside projects, in particular Browse and Scarborough, would intensify demand for skilled workers in WA.

Pipeline

The two big Woodside projects are among 10 worth more than \$500 million each that are under-way or in the pipeline for WA.

At its recent results briefing, the company said the **\$27 billion Browse** development was ready for front-end engineering and design work now, with a final investment decision late next year.

The FEED period was extended a few months, however, partly because the floating production platforms for the project would be some of the world's most complex, chief executive Peter Coleman told investors.

Protracted discussions between the Browse partners and the owners of the North West Shelf Venture, where the gas will be processed, are also delaying a decision.

Mr Coleman said the negotiations were down to the last three or four key value items.

Asked if the Browse delay would lead to an ullage, or excess capacity, at North West Shelf's five Karratha processing trains in the mid 2020s, he said there were other potential gas sources under consideration.

"We're hopeful that we're not going to see any ullage in North

\$7bn
BAROSSA PROJECT
CAPEX FORECAST

Source: Santos



OPTIMISM: Kelvin Andrijich says bigger opportunities are on the horizon.

ress

said, affected by the coronavirus and an expected oversupply in the market.

Woodside selected Australasian Gas Infrastructure Group in November for construction of an interconnector pipeline between the neighbouring Pluto and Karratha plants.

There was also a final investment decision in the last quarter of 2019 on the **Julimar-Brunello** tieback into the Wheatstone plant, operated by Chevron. Subsea 7 won a contract valued at up to \$US300 million for a transmission flowline and umbilical system.

Drilling will begin early this year and completion is due in 2022.

Meanwhile, moves were made on a series of other big projects, which together would be worth more than \$14 billion.

The biggest is **Barossa**, to supply the existing Darwin LNG plant.

Technip, Allseas and Modec International were awarded contracts last year on the \$7 billion development in the Timor Sea.

Control of the project will be shifting to Santos, which committed to buy ConocoPhillips' share of the Barossa and Darwin LNG assets late last year.

A final investment decision is expected in the second quarter of this year.

Santos will also enter FEED for the **\$2 billion Dorado oil** development, in the Carnarvon Basin, in the June quarter.

Shell has been moving forward on the **\$2 billion Crux tieback** into the Prelude FLNG vessel, selecting KBR and Wood for feed work early last year.

A final investment decision is expected this year.

Chevron named Aker to undertake FEED work on a compression system at the **Jansz/Jo** field last year, while further in the distance is the company's **Clio/Acme** tieback to Karratha, and Western Gas's **Equus** development.

Deloitte national oil and gas leader Bernadette Cullinane, who is a key figure in Australasian Oil and Gas Exhibition and Conference's industry supply forum, said she expected a number of projects in the pipeline would be sanctioned.

Ms Cullinane said demand for LNG would continue to rise.

"I'd feel very positive about the future in WA," she said.

"It'll be a time of significant change."

Optimism

The biggest project under way now is Chevron's **Gorgon stage two**.

Henderson-based contractor **Civmec** has worked on

“I think (opportunities) are here in the year ahead, and there's some bigger fish coming up - Kelvin Andrijich

fabrication of subsea equipment for the project.

Chief executive Pat Tallon was optimistic there would be a pipeline of work for the fabrication business ahead.

"The first indicators of what's happening are going to come from client and engineering houses; if they are active in getting ready for something, it's going to hit us in a couple of years," Mr Tallon said.

"We're seeing general activity mainly in subsea work, and we have some indication that onshore capital expenditure could be in the realms of late 2022 or 2023.

"Two or three years ago we had no vision on anything happening in this space."

Clough executive vice-president John Galvin said he expected bigger construction work packages would start to flow through next year, although some smaller projects were available now.

The company is the lead contractor for Mitsui's **Waitsia** development (see page 21).

"We're doing some FEED [work] for Woodside at the moment," Mr Galvin said.

"We've got engineering capability as well as construction ... from a construction perspective we're a couple of years off of the bigger stuff."

He said the local labour market was starting to dry up, with Clough on the front foot to recruit good people early, ahead of the market.

Alltype Engineering managing director Kelvin Andrijich said enquiries to the Naval Base-based company had increased.

He said the business was involved in a number of maintenance projects and minor projects.

"I think [opportunities] are here in the year ahead, and there's some bigger fish coming up," he said.

Continued on page 21

West Shelf, the only issue we would see is the composition of the gas, the multiple compositions, and whether the capacity of the plant will be affected," Mr Coleman said.

"We don't see a big gap with any delay in Browse at this point, however, it does get to a point where the ullage at North West Shelf is larger than these multiple sources of gas can service."

A decision on the **\$15 billion Scarborough project**, including a second train at Pluto LNG, is due in the middle of this year.

Mr Coleman said Woodside planned to have about half its offtake gas contracted by the time it pushed the go button, and expects to achieve the target.

A tolling agreement between Woodside and partner BHP should be finalised within months, he said.

That is happening amid a soft market for LNG, Mr Coleman

Onshore options attract attention

The Perth Basin could be in for a transformational year.

Matt McKenzie

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THREE companies with connections to prominent Western Australian business figures plan to spend more than \$110 million in the Perth Basin starting this year.

That follows years of promise in the basin, which covers the area about two hours north of Perth.

Mineral Resources, headed by Chris Ellison, has said it would allocate about \$30 million to the basin this financial year.

The two main items will be seismic survey work across nine tenements and one conventional gas well.

MinRes has partnered with Norwest Energy on the Lockyer Deep prospect, where the well is to be drilled this year.

The company has also crept up Norwest's register, increasing its holding to 19.9 per cent in February.

The biggest potential Perth Basin investment would be the Waitsia stage two gas project, owned by Japanese business Mitsui and **Beach Energy**.

Beach counts Kerry Stokes' Seven Group as a major shareholder.

Last year, the partners agreed to a small expansion of the existing Waitsia facility, doubling capacity to 20 terajoules a day. But an investment of at least \$100 million, of which Beach would be expected to contribute \$50 million, would raise capacity to as much as 150tj/d.

That represents roughly 15 per cent of WA's domestic gas market.

An expansion of this nature has been on the radar for years, but now seems closer to fruition after the completion of front-end engineering and design work, with a final investment decision targeted by the end of the 2020 financial year.

Beach said it would spend \$35 million in the year to June on capital expenditure in the Perth

Basin, including appraisal drilling and long lead items for 2021 exploration.

Mitsui and Beach also share an interest in Beharra Springs, which was drilled in October and hit gas.

Strike Energy, which boasts John Poynton as chairman, raised \$31.4 million for appraisal drilling at West Erregulla in the Perth Basin and for operations on the east coast.

West Erregulla is jointly owned by Strike and Warrego Energy.

Strike hopes to deliver first gas from the field by 2022.

Long life

There is a series of smaller, existing production facilities in the Perth Basin, in addition to Waitsia.

Triangle Energy operates the Cliff Head oil field and Arrowsmith production plant, which it acquired in 2016.

The company produces about 1,000 barrels of oil daily, trucked to the BP Kwinana refinery.

Chief executive Rob Towner told *Business News Triangle* was analysing data on a number of prospective nearby fields.

Production at the existing wells will decline in the next five or six years, so the focus will be on potential fields nearby to keep Arrowsmith running.

Arrowsmith had capacity of 15,000 barrels a day, Mr Towner said.

"We see a lot of value in the [processing] infrastructure," he said.

"For that to be valuable, we're looking at our own Cliff Head field, how we can increase production through opportunity in what we now produce.

"For identification of additional prospects and leads to drill, we'd potentially look at partnering, with a company wanting to come into the basin to look for oil.

"It is production relatively quickly that can be taken to market."



OUTPUT: Rob Towner says the Arrowsmith production plant has a capacity of 15,000 barrels a day. **Photo:** Gabriel Oliveira

“The amount of investment that’s gone into Cooper Basin, Eromanga Basin, and up into Queensland has not been mirrored in the Perth Basin at all – Rob Towner

In the short term there would be investment of up to \$6 million at Arrowsmith, Mr Towner said, to optimise the plant.

"We've got the ability [now] to reinvest revenue into infrastructure for the longer term," he said.

"Of all the basins in Australia at the moment, there's not one

... large ASX or global oil-focused company in the basin looking for oil at all.

"They have been in the basin before but they, like everyone

else, have done no extensive drilling at all.

"The amount of investment that's gone into Cooper Basin, Eromanga Basin, and up into Queensland has not been mirrored in the Perth Basin at all."

Further north (of Perth Basin) in the Canning Basin, Buru Energy has assumed titles to three exploration permits, with a farmout process on the company's Kimberley exploration portfolio to begin in March.

Buru's Ungani oilfield is pumping about 1,500 barrels a day, the company said in February.

BNIQ .com.au Mineral Resources

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Sector engineers \$24bn project potential

From page 19

Contract awards – a selection in the past 12 months

CONTRACTOR	PROPONENT	PROJECT	TYPE	SPECIFICS	DATE
Subsea 7	Woodside	Julimar-Brunello	EPCI	Flowline, umbilical system	Nov 19
Aker Solutions	Chevron	Jansz-lo	FEED	Subsea compression system	Mar 19
Technip	ConocoPhillips	Barossa	EPC	Subsea production system	May 19
SNC-Lavalin	Woodside	Goodwyn A	Operational	Hazop gap analysis	May 19
SNC-Lavalin	Santos	Devil Creek	E&D	Power station	May 19
KBR and Wood Group	Shell	Crux	FEED	Platform & pipeline	Feb 19
Modect International	ConocoPhillips	Barossa	EPC	FPSO	Oct 19
Allseas	ConocoPhillips	Barossa	EPC	Pipeline	Oct 19
UGL	Chevron	Gorgon	Operational	Maintenance & turnaround	Feb 20
UGL	Chevron	Wheatstone	Operational	Maintenance & turnaround	Feb 20
Ausgroup	Chevron	Gorgon	Operational	Maintenance (extension)	Feb 19
AGIG	Woodside	Burrup Hub	D,C&O	Interconnector pipeline	Nov 19

“Drilling activity is up. Everybody is pushing it along.”

“There is a lag, but it’s one of those things, knowing these projects are getting to the point of final investment, and the economics seem to make sense.”

Mr Andrijich said he hoped to double the company’s workforce in the next few years.

Baker Hughes is also involved on Gorgon stage two, contracted for well construction services.

Speaking to *Business News* ahead of AOG in Perth this month, Baker Hughes vice-president Graham Gillies was another to express confidence in the sector’s outlook.

“We’re back now to sustainable energy demand,” Mr Gillies said.

“It’s a very positive trend we see, it’s shown some level of stability.”

He said the labour market had also stabilised.

“When you have five or six mega projects going on, resource

availability is a constraint,” Mr Gillies said.

“A more sustainable phased approach allows a more sustainable workforce.”

Also viewed in a positive light was the introduction of the state government’s jobs taskforce.

Mr Gillies said the taskforce was trying to develop sustainable capability, and determine how to create a nucleus of sustainable technology and jobs.

The workgroup had been collaborating on deploying technology such as drones and digital twins to improve productivity, he said.

“Digital technology that enables predictive maintenance and artificial intelligence analytics will play a key role in raising the productivity of the industry,” Mr

Gillies said.

“Early adoption can give the workforce in WA and future university students a competitive edge as well.”

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Clough

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WA's LARGEST ENGINEERING COMPANIES

Ranked by number of engineers in WA, then by total staff in WA



Rank	Change from previous year	Company name	Senior executive and title	Year est. in WA	Total staff in WA	Number of engineers in WA	Offices a) WA b) inter-state	Current projects (top 5 only)	Location of Head Office
1	↑	Worley	Mr Chris Ashton Chief Executive	1978	2,000	1,700	a) 3 b) 8	Woodside EPCM, Chevron ABU Support, Koodaideri (Rio Tinto), Alcoa Brownfields, Tanami Expansion Project	Sydney, NSW
2	↓	Wood plc	Mr Ralph Ellis President, Operations Services, Asia Pacific	1978		920	a) 2 b) 3	Bayu Undan maintenance services (CloughAMEC JV), Gruyere EPC (Cimtec JV), Woodside Brownfield EPCM services, ConocoPhillips engineering services, Caltex Maintenance Services	Aberdeen, UK
3	—	GHD	Mr Sheldon Krahe Manager, WA	1975	643	480	a) 5 b) 42	Forrestfield Airport Link, Metropolitan Road Improvement Program, Horizon Power, Pilbara Power Program, Department of Defence SEA 5000, Main Roads Asset Management Support Services	Sydney, NSW
4	↑	Aurecon	Mr Daniel Bree Regional Director, WA & NT	1950	230	NFP	a) 1 b) 20	Bellevue railcar depot - Midland line extension project, Perth airport extension	Docklands, Victoria
5	↑	Calibre	Mr George Nuich Head of Mining and Minerals	1998	500	NFP	a) 5 b) 17	Robe Valley Sustaining Project, Western Turner Syncline 2	Sydney, NSW
6	↑	Stantec	Mr Matthew Todd General Manager - Mining (Australia)	2005	310	NFP	a) 3 b) 6	Origami sculptures Perth Zoo, Fiona Stanley Hospital Family Birthing Centre, De Havilland Apartments Midland	Edmonton, Canada
7	↓	AECOM	Mr John Macaulay Group Director - WA	1947	300	200	a) 1 b) 14	METRONET, NorthLink Stage 2, Metropolitan Roads Improvement Alliance, Perth Stadium Station	Brisbane, QLD
8	↓	DRA Global	Mr Andrew Naude Chief Executive Officer	2018		NFP	a) 1 b) 2	Kalium Lakes purification plant	Perth, WA
9	↑	WSP	Mr Alan Rimmer Regional Director, WA	1962	224	193	a) 1 b) 10	Far East Consortium - Elizabeth Quay, Lot 9 & 10 - The Towers and Ritz Carlton, Far East Consortium - Perth City Link - The Dorsett Hotel & Apartment Building, Macquarie Street Hotel, Mount Holland Lithium Project, Water Mains Asset Renewal	Montreal, Canada
10	↑	SNC-Lavalin	Mr Graham Punler General Manager, Mining & Metallurgy Asia Pacific	1989	200	190	a) 2 b) 4	Chevron: Onshore & Offshore telecoms maintenance & support; Clean TeQ Sunrise Project. Roy Hill: Senior Lenders Technical Advisor; Forrestfield Airport Link - Independent Safety Assessments	Montreal, Canada
11	↓	Clough	Mr Peter Bennett Chief Executive	1919	250	NFP	a) 1 b) 3	BHP South Flank Non Process Infrastructure, Nui Power POM Power Station, Water Corporation Beenyup Advanced Water Recycling Plant (Stage 2), Rio Tinto Oyu Tolgoi, INPEX Ichthys Hook-up and commissioning	Perth, WA
12	↓	Hatch	Mr Dale Harris Iron Ore Director, Australia	1987	200	150	a) 1 b) 5	Key clients: Chevron Australia, Rio Tinto, BHP Billiton, South32, Cameco and Tronox	Toronto, Canada



Rank	Change from previous year	Company name	Senior executive and title	Year est. in WA	Total staff in WA	Number of engineers in WA	Offices a) WA b) inter-state	Current projects (top 5 only)	Location of Head Office
13	↑	Arup	Mr Alistair Avern-Taplin Principal, WA Office Leader	1969	180	135	a) 1 b) 11	Optus Stadium, Perth Airport T1 Domestic and T1 Forecourt, Great Northern Highway, Capital Square, Elizabeth Quay	Sydney, NSW
14	↑	Monadelphous	Mr Rob Velletri Managing Director	1972	4,000	127	a) 8 b) 12	BHP: Iron Ore and Nicket West, BP: Kwinana Refinery, Chevron Australia: Gorgon and Wheatstone, Fortescue Metals Group: Solomon Hub, Shell Australia: Prelude, South 32: Worsley Alumina.	Perth, WA
15	↑	CPC Engineering	Mr Glen Weir Chief Executive	1970	350	110	a) 6	Evolution Mining: Cowal	West Perth, WA
16	↑	Aerison	Mr Giuseppe Leone Executive Director	1988	450	100	a) 2 b) 1	BHP Nickel West: Kwinana Nickel Refinery	West Perth, WA
17	↑	Georgiou Group	Mr Rob Monaci Chief Executive	1977	430	100	a) 3 b) 2	Perth Airport Skybridge, Marina East Apartments, Roe Kalamunda Interchange, Karel Avenue Upgrade, Hollywood Hospital Expansion	Osborne Park, WA
18	↓	Jacobs Engineering	Mr Richard Hayers ANZ Vice President & Regional Director	1990	200	100	a) 1 b) 5	Great Northern Highway upgrade (JV), Water Corporation, Woodside Engineering Services	Dallas, United States
19	↑	Golder Associates	Ms Marisa Barbaro Regional Manager	1977	160	100	a) 1 b) 8		Perth, WA
20	↑	Laing O'Rourke	Mr Stuart Crofts Regional Director, Western Region	2006	NFP	NFP	a) 3 b) 8	Main Roads: NorthLink WA Central Section. Public Transport Authority: Perth Stadium Station and East Perth Station Upgrade. BHP: Low Level Bridges	Dartford, UK
21	↑	Engenium	Mr Wayne Peel Managing Director	2003	172	86	a) 2 b) 20		Perth, WA
22	↑	MRX Technologies – A Siemens Company	Mr Alarico Allegri Managing Director	1996	NFP	NFP	a) 1		West Perth, WA

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All information compiled using surveys, publicly available data and contact with industry sources. Other companies may be eligible for inclusion. If you believe your company is eligible, please email: claire.byl@businessnews.com.au
WND: Would Not Disclose, NFP: Not For Publication, N/A: Not Applicable or Not Available.

Oil and Gas

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13 Jan 2020 by Matt Birney

scheduling all but finalised. Buru is seeking to discover oil and gas reserves in stratigraphic traps within ...

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commercial building completed in Perth – fellow oil and gas major Woodside Petroleum's Mia Yellagonga, which ... said the oil and gas giant had been careful to focus on the indigenous history of the land on which the ...

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Setting a path for 2020 and beyond

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is we've got some pockets of really high-grade digital capability in WA: the mining industry, oil and ... gas, radio astronomy, population health and genetics, and some strength building in cybersecurity. ...

Strike kicks off Perth Basin oil and gas well

06 Jun 2019 by Matt Birney

Strike Energy has spudded its highly anticipated West Erregulla-2 well in the Perth Basin, WA, that is targeting up to 1.16 trillion cubic feet of gas in the primary target Kingia High Cliff and 7.2 million barrels of conventional oil in the Jurassic Catta ...

Perth Startup Ajero Brings Digital Know-how to Oil and Gas Decommissioning

20 May 2019 by BN Announcements

Announcements (Sponsored Content) Three oil and gas industry executives have found a way to tap into a \$35 ... to facilitate the decommissioning process for the oil and gas industry by helping to determine the ... rehabilitation," Mr Marfatia says. "Literally, it means oil and gas companies must leave the title area how they ...

Buru shifts into high gear for WA oil and gas hunt

15 May 2019 by Matt Birney

Buru Energy has kicked off a flurry of drilling activity that seeks to unlock the oil and gas potential of the severely underexplored Canning Basin in northern WA. Besides two horizontal production wells that could substantially increase its oil output, th ...

Strike on track to spud Perth Basin oil and gas well

08 May 2019 by Matt Birney

Strike Energy is on track to spud its highly anticipated West Erregulla-2 well in the Perth Basin, which will target up to 1.16 trillion cubic feet of gas and 7.2 million barrels of oil, later this month. The company recently uncovered further evidence tha ...

Contracts, challenges for \$60bn of oil and gas projects

18 Mar 2019 by Matt Mckenzie

SPECIAL REPORT: Major new engineering contracts show momentum is building for \$60 billion of oil and gas projects in WA, but the issue of carbon policy has once again created an obstacle. ...

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