

Trunkline

PART OF
A BETTER
FUTURE



THE MAGAZINE FOR WOODSIDE PEOPLE | Q1 2021



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On the cover

Sense of purpose: Ben Wilkinson, Alison Barnes and Ryan Tripodi examine sensors that are part of the Fuse project.

Editor

Mark Irving
e: mark.irving@woodside.com.au

Journalist

Nichola Zed

Administrator

Melissa Wright

Photography

James Campbell

Design

287 Design

Printing

Quality Press

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Woodside’s innovative spirit is evident in 2021 as our teams work to commercialise technology breakthroughs and transform our operations to ensure our ongoing success.

Our focus is firmly on the future as we embrace new ways of doing things and progress our growth plans that can set our company up for the decades to come.

Already, we have had some significant wins, including reaching a deal to commercialise technology that can support informed and timely decision-making across operational assets through continuous monitoring of conditions on site.

This technology, developed in-house by Woodside experts, has potential application across our industry and beyond.

In the past year, our company was confronted by multiple external challenges from the global COVID-19 pandemic and market turbulence. Despite this, Woodside succeeded in setting new records in production and safety.

We are making progress on our growth plans, with construction underway on the Interconnector pipeline linking the Pluto LNG facility and the Karratha Gas Plant (KGP) and deals struck to process third-party gas through KGP.

This Trunkline also details the practical application of technology in our operations, including the offshore Angel platform, which was a not-normally-staffed facility ahead of its time.

Of course, behind our successes lie the people who make these achievements happen. Woodside women were acknowledged in Q1 by their peers, and a new in-company advocacy group has sprung up to promote diversity among Woodsiders, as we continue to develop talent.

Read on for more of our achievements – past, present and those we’re striving for in the future.

Some photographs in this edition were taken before physical distancing measures were introduced to manage the risk of exposure to COVID-19.

Notes on Petroleum Resource Estimates: All petroleum resource estimates in this publication are to be read in conjunction with the Reserves Statement in Woodside’s most recent annual report, as updated by subsequent ASX announcements available at <http://www.woodside.com.au/Investors-Media/Announcements>. This publication may contain forward-looking statements that are subject to risk factors associated with oil and gas businesses.

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Stand-out performance: Enabling the North West Shelf (NWS) Project to evolve from gas producer into processor has required close collaboration between the NWS Extension team and its Woodside colleagues to deliver more than 50 agreements.

Open for business

Three key milestones have been achieved as the North West Shelf (NWS) Project progresses on its journey from producer to processor – that is, from merely producing gas from its NWS assets to becoming a tolling facility and processing gas from other resource owners (ORO).

This transformation is necessary to maximise value from the NWS assets as production tapers at the maturing NWS gas fields.

The latest three milestones were achieved at the end of 2020 and beginning of 2021.

The first was achieved on 18 December, when the NWS Project participants executed governance agreements to enable the NWS Project to process third-party gas.

“These agreements effectively established NWS as a tolling facility and allowed NWS to put up the ‘open for business’ sign,” explains Jay Wong, Technical Commercial Integration Lead for NWS Extension.

The second was passed five days later when the NWS Project participants executed two fully termed gas processing agreements (GPAs); one with Woodside Burrup Pty Ltd (Woodside Burrup) and the other with Waitisia Joint Venture.

“These agreements set the terms and

conditions for processing of gas from both the Pluto fields and the Waitisia Gas Project Stage 2 respectively, securing them as our first two ORO tenants at NWS,” says Wojciech Grzech, General Manager Commercial.

Correspondingly, the NWS Project took a final investment decision to implement infrastructure required to receive gas from the Pluto-KGP Interconnector and the Burrup Extension Pipeline, which will be utilised for Waitisia.

“The third milestone was finalising agreements with the Western Australian (WA) Government to enable the processing of both Pluto and Waitisia Project feed gas,” adds Dayna Burns, Senior Corporate Affairs Adviser.

The last of these government agreements was executed on 28 January 2021.

Sarah Carter, Vice President of Subsea and Pipelines and the former General Manager NWS Extension, says although the passing of the three milestones spanned just six weeks, it was the result of years of dedication, determination and teamwork across Woodside, including technical, commercial, legal, project, environment and corporate affairs functions.

“These achievements are unprecedented in Woodside’s history

and wouldn’t have been possible without the alignment, collaboration and partnership between Woodside, the NWS Project participants, the two ORO proponents and the WA Government,” Sarah adds.

“It’s an amazing collaborative effort when you consider that approximately 50 agreements in total were delivered on time, between more than 10 counterparties, and amidst a global pandemic.”

Executive Vice President Development and Marketing Meg O’Neill notes: “This is the first step in realising our vision for a regional LNG hub on the Burrup Peninsula.

“Our focus is now on transitioning our operations from a producer to processor and to ensure safe and successful construction of the Pluto-KGP Interconnector, with start-up targeted in 2022.”

Sherry Duhe, Executive Vice President and Chief Financial Officer, says these achievements are also significant for WA.

“The project builds on Woodside’s long-standing commitment to the WA gas market,” Sherry says.

“For government, it’s another sign that confidence has returned to the State with the project providing the energy security required to underpin the development of new industry.”

Pipeline of opportunity

Construction has started on the Pluto-KGP Interconnector – the first step in realising Woodside’s vision for a regional LNG hub on Western Australia’s Burrup Peninsula.

The interconnector will link Pluto LNG and Karratha Gas Plant (KGP) and increase flexibility for processing gas from various fields and third-party resource owners.

Project Manager Michael Gibson explains: “The interconnector will link Pluto LNG and the Karratha Gas Plant (KGP) with the construction of a 3.2 km-long 30-inch pipeline.

“The scope also includes new gas conditioning facilities at Pluto LNG, and common piping infrastructure at KGP that will allow gas to be received from both the new Interconnector Pipeline and existing Burrup Extension Pipeline.”

Transporting gas through the Pluto-KGP Interconnector provides opportunities to utilise future excess capacity at KGP.

It also provides potential to accelerate future developments of other offshore Pluto gas reserves and the gas of other resource owners (ORO).

Senior Corporate Affairs Adviser Heritage Daniel Thomas says: “The chosen design and route positions the Pluto-KGP Interconnector so it will avoid disturbance of protected heritage sites and environmental values.”

Some gas will be accelerated from the offshore Pluto fields through the Pluto-KGP Interconnector for processing at the North West Shelf (NWS) Project’s KGP.

Woodside announced a final investment decision on the pipeline component of the Pluto-KGP Interconnector in November 2019.

The NWS Project participants made a final investment decision in December 2020 for the additional required infrastructure to receive third-party gas at KGP.

“The Pluto-KGP Interconnector will optimise production across both facilities, underpin sustainable and long-term operation at both plants while supporting community development activities in the Pilbara,” says Michael.

“While many projects were slowing down in 2020, I’m proud of the determination and perseverance shown by the extended team to progress the project as the first step in realising Woodside’s vision for a regional LNG hub on the Burrup Peninsula.”

Michael adds: “It’s also rewarding to see the number of WA-based jobs and contracts the opportunity supported in 2020 and will support going forward.”

Many key contracts have already been awarded and WA-based companies

which won contracts include NEMMs JV for the civil works and Civmec for the fabrication of structural steel, piping, modules and skids.

At its peak, the construction and operation of the Pluto-KGP Interconnector will employ a workforce of about 370.

Start-up of the Pluto-KGP Interconnector is targeted in 2022.

The goal is to leverage existing infrastructure to unlock value by providing a long-term solution for processing gas resources for both the domestic and export markets.

The Interconnector is only one of a number of projects, such as Pluto Train 2, Scarborough Project and the NWS Project Extension, which are proposed to realise this vision.

Niall Myles, Senior Vice President Agility and previously SVP Power, New Energy and Burrup Hub, says: “The Interconnector has many strategic value elements.

“These include near-term revenue creation, providing the driver for NWS Project participants to complete the suite of agreements and infrastructure to process third party gas and keep KGP full.”

Niall adds: “It also creates options for future development opportunities.”

Building blocks: Project Manager Michael Gibson, fourth from left, and team members discuss plans for the Pluto-Karratha Gas Plant Interconnector.



Producing history

A severe cyclone season followed by a global pandemic posed considerable challenges to our operations in 2020, making Woodside's record-breaking production outcome all the more impressive.

For the first time in our company's history, production topped 100 million barrels of oil equivalent (MMboe), reaching 100.3 MMboe.

This was the result of an exceptional effort from across the business, as our people worked together with Compass values to deliver safe, reliable and efficient operations.

After Tropical Cyclones (TC) Blake and Claudia, TC Damien arrived in February as the most powerful cyclone ever to impact the North West Shelf (NWS) onshore assets.

"But our adherence to long-established and correctly followed procedures ensured there were no personal injuries to our team, either through the initial impact or the subsequent recovery," notes Onshore Turnaround Superintendent Andrew Grosse.

As if three cyclones weren't enough, another quickly followed, hard on the heels of TC Damien.

Our Karratha team was equal to the task, demonstrating exceptional community spirit and support in leading the town recovery.

Karratha also played a pivotal role in keeping our operations going as COVID-19 enforced extensive changes to our working arrangements to minimise health risks at our assets and comply with rapidly evolving regulations.

Multiple response teams were set up to manage the initial outbreak, the dynamic nature of the changes to public health protocols, the border restrictions (internal and external to WA) and the need to transition the majority of the workforce to a working-from-home model.

"A key to success was the requirement to set up and manage 'clean' quarantine camps in Perth, Karratha and Exmouth catering for a peak of more than 600 personnel," says Andrew.

Vamsi Manikyanivas, Production

Forecasting Technical Lead, accepts that 100 MMboe in a calendar year was always an ambitious target.

"It assumes top quartile performance in reliability, turnaround execution, recovery from weather-related production losses and delivery of production improving opportunities," Vamsi notes.

He cites three key areas which helped us meet the target, requiring a multi-disciplinary effort:

- Higher-than-planned reliability and reservoir performance on the NWS assets, delivered through excellent operational performance and reservoir optimisation
- Higher-than-planned domestic gas sales, thanks to Woodside's Marketing and Trading division, and strong reservoir performance from NWS assets
- Ngujima Yin (pictured below), Okha, Pluto and Wheatstone performance and reliability.

Linda McKay, Senior Operations Reservoir Engineer, cites challenges that faced the NY floating production storage and offloading (FPSO) facility, servicing the Greater Enfield Project.

"But throughout the year and the different challenges, the common response was the offshore and onshore teams pulling together to achieve a common goal: to maintain production without compromising safety and environmental targets," Linda says.

"Remaining connected and determined was key to achieving 100 MMboe."

Senior Vice President Operations Fiona Hick says hitting the target demonstrates that Woodside can deliver even in the toughest of years.

"To deliver this in a year when our producing assets had to deal with major disruptions from Tropical Cyclone Damien and the COVID-19 global pandemic is an impressive achievement," says Fiona.

"Thank you to everybody who was part of delivering this and for the dedication, focus and teamwork that helped achieve this milestone."



Helping hands: Top, the Karratha workforce demonstrated exceptional community spirit in the city's clean-ups during the 2020 cyclone season. Below, challenges at the Ngujima Yin were overcome as the FPSO helped contribute to the company's record production.

For the first time in our company's history, production topped 100 million barrels of oil equivalent (MMboe), reaching 100.3 MMboe.





Quick action: Project Engineer Soon Khoo reviews a damaged North Rankin A caisson (right) and its removal – completed quickly, safely and successfully.

Quick action removes risks



A cross-company effort has removed a potential risk at North Rankin A (NRA) platform and highlighted Woodside’s ability to collaborate and accelerate.

The coordinated action between Brownfields and Subsea and Pipelines removed a caisson that was no longer needed – a caisson is a pipe which acts like a straw to “suck up” seawater to cool turbines and engines on the platform.

The caissons were installed at the time the platform was commissioned in 1984, but have not been used since 2013 because caissons on the adjacent North Rankin B (NRB) platform replaced them.

However, Project Engineer Soon Khoo says a series of inspections identified one NRA caisson in poor condition.

“It had some holes, cracks and corroded sections due to its long-time exposure to the sun, waves and saltwater,” Soon says.

It was decided the caisson needed to be removed to avoid risks to safety and production.

“This was the signal for company-wide collaboration,” notes Jamie Smith,

Civil/Structural Engineering Team Lead in brownfields.

“We decided to accelerate the caisson’s removal before the cyclone season and scheduled well intervention work began.

“So the various functions and teams that were involved had to work together efficiently, cooperatively and quickly.”

How quickly?

“A traditional approach would typically have taken 18 months; we squeezed it into three,” replies Soon.

Because of the size of the caisson – approximately 70 metres long and weighing an estimated 35 tonnes – it was decided to remove it in sections.

Subsea and Pipelines (SS&PL) were tasked with removing the lower part of the caisson, brownfields the upper part.

Jim Eu, Vessel Superintendent and Diving Technical Authority, says innovations included using magnets and rigging practice to laterally support the caisson to other caissons.

Jamie says the contractor and

Woodside teams worked tirelessly and innovatively to ensure the job was done safely and successfully.

“What we put in place to keep our people and the facility safe was always in the forefront of decision-making,” Scott reports.

“This brought in additional safety features to the lifting arrangement, and we managed to keep the facility running during the removal.”

He concludes: “This project was made a success through trust, long hours, people working as one team and quick decision-making.

“We’ve learnt some great lessons from this project and there are synergies we can take forward for continued success when it comes to managing our other caissons.”

Scott Cranston, Offshore Projects Delivery Manager says: “The lasting change in the level of collaboration between the asset and Projects couldn’t have come at a better time given the cost pressure that the business is facing.

“It paves a new way of working for future projects.”

Dollars and sensors

Woodside has commercialised an innovation, designed and developed at the robotics laboratory on the Mia Yellagonga campus in Perth, with a contract that opens the doors to potentially more sales.

It starts with an orange sensor that monitors temperatures and vibrations at our assets and which plays a key role in Fuse.

Fuse is what is known as a “digital twin” – a digital or virtual replica of a physical process, using real world data to create greater awareness and enable simulations to predict how a product or process will perform.

It was created in-house by our Intelligent Assets team for Pluto and other assets.

“Fuse is a sophisticated industrial digital twin solution that aims to provide improved asset awareness and digitise repetitive and unsafe work,” explains Intelligent Asset Manager Ben Wilkinson.

“It solves problems that many heavy industries face and we have a few parties interested in using it.”

When wireless sensors were first used at Woodside, they were expensive, lasted about two years on a battery and could only transmit about 50m.

A variant designed by the Intelligent Assets team, including Technologists Tom Chaney and Ryan Tripodi, has a much longer lifespan and can transmit for kilometres, not metres.

The cost of making the new sensor is also dramatically lower.

“The user-centric, full-stack solution includes custom hardware and software that fulfils the goal: ‘Make things work harder, so we can work smarter,’” says Ben.

Since July 2020 an opportunity team has been investigating and pursuing commercialisation opportunities.

Alison Barnes assumed the role of Commercialisation Manager in July last year.

“We really believed we could take Fuse to other operators of industrial assets, not just those in the oil and gas industry,” reports Alison, who received a Women in Resources Technological Innovation Award in March (see page 16).

“In doing so, we aim to unlock opportunities to improve the product for everyone using it, gain valuable skills in commercialising technology and create a new revenue stream for Woodside.”

The team will work with an international oil and gas major on a 15-week pilot of Fuse.

“It’s a great opportunity for us to learn and potentially collaborate with another oil and gas operator to improve the way we operate and to support new ways of working,” Alison notes.

She says Woodside has received solid interest from other companies, both in the oil and gas industry and outside, to make this commercially available.

Ben says this year will see his team continuing to innovate to create value for Woodside while pursuing commercialisation of this exciting product.

“Fuse is a sophisticated industrial digital twin solution that aims to provide improved asset awareness and digitise repetitive and unsafe work.”

Lighting the Fuse: Woodside is commercialising its technology know-how to support new ways of working and to create new revenue streams. Below, some of the team behind the Fuse innovation; right, Technology Adviser Ryan Tripodi with the sensor he helped develop.



Singapore smooths cargo transfer

Woodside has broken new ground by conducting its first-ever transhipment of an LNG cargo.

In LNG terms, a transhipment refers to the transfer of LNG from one LNG vessel to another.

In the Woodside first, the transhipment was from the Woodside Rogers to the Yari LNG, and it was conducted at the Singapore LNG (SLNG) Terminal in February.

Iain Scott, Singapore Country Manager and General Manager Trading, says the ability to conduct transhipments of cargoes is becoming more important for the LNG industry.

“This was our first transhipment and it was only possible because of the close

cooperation between our strategic partners, not least SLNG which provided the service,” Iain says.

But it is unlikely to be our last.

Iain believes more are likely because transhipments will enhance Woodside’s flexibility and access to new markets, and SLNG is ideally located.

“Transhipments are useful both operationally and commercially,” he notes.

“For instance, they might be used to mitigate an operational constraint with the primary LNG vessel or to breakbulk to smaller LNG cargoes to supply regional markets.”

In this instance, Woodside and our LNG

buyer performed the transhipment to mitigate the impacts of a recent cyclone event on the Pluto facilities which delayed the original loading of the Woodside Rogers.

Iain explains there are two main methods of making a transhipment: ship-to-ship or jetty-to-jetty transfer.

At the SLNG Terminal, jetty-to-jetty transfer is deployed.

To affect the LNG transfer, the unloading LNG vessel and receiving LNG vessel berth at separate jetties.

The LNG is then pumped from one LNG vessel to the other via the terminal’s pipelines, without it entering the terminal storage tanks.

“SLNG is very pleased to have played a role in this important operation for Woodside and its customer,” says Sandeep Mahawar, Senior Vice President (Commercial and Business Development) SLNG.

“We strive to be a partner and collaborator of choice to users of our terminal, constantly looking to explore new approaches and strengthen our existing offerings to support evolving needs of the market.

“We very much look forward to more of such collaborations with Woodside.”

SLNG is located to the south west of the main island of Singapore, on Jurong Island – an industrial centre and a home to many petrochemical and energy companies.

SLNG Terminal is Singapore’s first LNG terminal and, as such, is a key national infrastructure that supports the country’s energy diversification strategy and development of its energy sector.

The primary role of the terminal is to provide receipt, storage, regasification and send-out of LNG to support Singapore’s power generation sector which currently relies on natural gas to meet more than 95% of its power needs.



Singapore first: The transfer of a cargo from the Woodside Rogers, top, to another vessel marked our first-ever LNG ‘transhipment’. Below, Woodside’s Michelle Neo, second left, and Iain Scott, fifth from left, visit the SLNG Terminal. Images courtesy of Singapore LNG Corporation.



Conversion begins: The 323m-long Léopold Sédar Senghor in China for its transformation into a floating production storage and offloading (FPSO) facility for the Sangomar field, Senegal. Right, Woodsiders James Barton, Jack Donaldson and Paul Moscardini in the Dalian shipyard, China.

Getting ready for Sangomar



Woodside's 323m-long very large crude carrier (VLCC) has arrived in China to undergo a metamorphosis into the floating production storage and offloading (FPSO) facility for the Sangomar field offshore Senegal, West Africa.

The conversion will take around two years.

The VLCC arrived at the COSCO shipyard in Dalian, a major port city in Liaoning Province some 840 km east of Beijing, China's capital, in mid-February following a 4000 km-plus journey from Batam in Indonesia.

"This is a major milestone for the project and Woodside," says Shipyard Manager Paul Moscardini, who has mobilised to China to oversee the conversion.

"Our Woodside team based at the Dalian shipyard is looking forward to working with our contractor, MODEC, and getting to know the facility."

By the time it berthed in Dalian, the vessel had been named "FPSO Léopold Sédar Senghor" after Senegal's first president from 1960 to 1980.

"He was a poet, politician, fought in the French army and was a very popular person both at home in Senegal and in France," explains FPSO Delivery Manager Mike Campbell.

Before it departed Indonesia for China the vessel had to be cleaned of residual hydrocarbons, and its tank bulkhead thickness inspected to confirm the hull's structural integrity and aid development of the refurbishment scope.

The clean-out was no easy task.

"The contractor had to overcome multiple COVID-19-related challenges including new personnel mobilisation processes, using an accommodation barge for the cleaning crews and lots of COVID-19 virus testing," Mike reports.

The work was completed safely, as was the transit of the vessel to China.

The coronavirus pandemic has also impacted Woodside's ability to mobilise people into yards to witness and complete assurance on various activities. This required rethinking how best to meet assurance requirements and suitable standards.

A technology solution was devised that saved time and money and can be utilised in future projects.

"We now have a wearable technology set-up so you can have a first-person view of what's going on during construction on-site – from Mia Yellagonga or wherever you are in the world," says Jeremy Damonse, Manager Quality.

"The tech provides a recordable live feed of an activity to confirm what has taken place. It's also a fantastic tool for training, building and capturing knowledge."

Other shipyards in China will be used to complete the work necessary for the vessel's conversion to an FPSO and Woodside will be working in four yards.

In parallel, Woodside has mobilised an engineering and project management team to MODEC's office in Singapore.

"After months of video conferencing, and different time zones, it's great to finally meet face to face with our counterparts from MODEC – now the real work can begin," says Senior Planner Natalie Kosmanopoulos, based in the Singapore Office.

The Sangomar field, containing both oil and gas, is located 100 km south of Dakar, Senegal's capital, and will be the country's first offshore oil development.

First oil production from the FPSO Léopold Sédar Senghor is targeted in 2023, with the Sangomar Field Development Phase 1 targeting approximately 230 million barrels of crude oil, at an initial peak rate of 100,000 Bbls /day.



Helping hand: Robotics Engineer Robert Reid, second from the left, organised a workshop where university students enjoyed hands-on experience with the Robot Operating System (ROS).

Spreading the word

Woodside engaged with university students at a successful workshop in Q1 to educate and inspire students about robots and the Robot Operating System (ROS).

It's the third year this educational outreach program has been held.

Its organiser, Woodside's Robotics Engineer Robert Reid, reports that attendance was double that of previous years, suggesting more students are interested in robots and what they can offer – both to industry and in terms of career choices.

Rob says the workshops have allowed students to get hands-on experience with robots and ROS, while spreading the word about how they can be used in industry.

"We had about 50 students from Curtin University, University of Western Australia, Edith Cowan University and Murdoch University together with mentors from several Perth-based robotics companies that service multiple industry sectors," he notes.

Rob was the workshop's organiser

but not the only speaker/mentor from industry at the event.

"We wanted to get as many industry mentors and university students together as possible, working alongside each other to learn about ROS and robots and how they can solve business problems," he says.

"There were representatives from robotics companies around Perth and we took several robots along for the students to experiment with."

The week-long workshop was held in the middle of February at the University of Western Australia's Clough Engineering Centre.

"We advertised to students that were either nearing the end of their undergraduate studies, postgraduate researchers across multiple engineering disciplines or other industry folk looking to upskill in ROS and robotics," Rob notes.

ROS is a software framework that brings together many open-source robotics packages to build applications that run on robots.

Rob adds that many final-year engineering students are required to do a major project and over the past few years the workshop has helped many students since ROS is not typically taught as a part of their studies.

"The workshop has given them a crash course in ROS that has helped unlock impressive capabilities in their projects," he explains.

For Woodside, one benefit was making connections with promising students soon to be looking to start careers.

"We have a few students that attended previous workshops who are now working for Woodside in engineering roles," he notes.

Innovation Manager Lauren Stafford agrees that the workshops make valuable contributions to capacity building in robotics and automation.

"The deeper the talent pool, the faster we'll be able to develop and deliver business value," Lauren notes.

Partners in progress

Woodside's partnership with Monash University took two big strides forward in 2020: the completion of the Woodside Building for Technology and Design and the appointment of Professor Paul Webley as Woodside Monash Energy Partnership Director.

Paul brings to the role 15 years' industry and academic experience in the development and management of clean energy technologies, specifically carbon capture.

New Energy Partnership Program Manager Andrea Galt says: "Paul has been a tremendous add to the new energy partnership, which kicked off in 2019.

"He has already contributed great work in research and development, progressing the partnership ambition to develop innovative responses to real-world energy challenges."

The Woodside Monash Energy Partnership is progressing energy solutions to transition to a lower carbon future.

"We are focusing on leadership and novel technologies in new energy and carbon abatement," Paul explains. "We aim to accelerate the energy transition."

One of the areas the partnership is examining is the electrolysis required to create "green hydrogen".

"Blue hydrogen" can be generated by using natural gas as its energy source and is seen as an entry point for producing hydrogen. But the holy grail is to create hydrogen by electrolysis of water using renewable energy sources such as solar or wind – "green hydrogen".

In 2020, the partnership commissioned a major program in seawater electrolysis as an achievable pathway to large-scale green hydrogen production.

"Large scale production of green hydrogen will require large amounts of clean water – a precious commodity in Australia," Paul notes.

"Using seawater avoids the need for costly desalination.

"To do this, however, an entirely different approach is needed, and this is where the partnership is bringing together leading researchers from Monash into collaboration with Woodside expertise to fast track the development of these much-needed solutions.

"We are exploring new materials, electrocatalysts and new cell designs that are environmentally friendly, and economically viable.

"If we are successful, this will be a massive breakthrough."

Paul says the partnership is also taking

"a regenerative and circular approach" to energy transition.

"We're creating pathways for emissions to be reused or recycled," he continues.

Technology is one component.

"But policy and leadership are just as critical," Paul adds.

He points to the work of PhD student Stephan Modest in Monash's Faculty of Business and Economics. Stephan is building insights for "carbon labelling" – an effective policy tool to improve sustainable energy transparency.

"Stephan's research into market mechanisms and consumer behaviour in the Australian energy sector has the potential to support sustainability-conscious businesses in choosing effective carbon neutral product strategies," Paul reports.

"It will provide policymakers with insights that will support meaningful low-carbon regulation."

Stephan says: "It's through this partnership that I will gain important insights and the skillset to support our global energy transition."

The Woodside Monash Energy Partnership is also working together with global leaders to accelerate the development of new solutions to shared global energy challenges.

One on one: Below left, Woodside Monash Energy Partnership Director Paul Webley with PhD student Stephan Modest; right, Woodside's New Energy Partnership Program Manager Andrea Galt catches up with Paul at Monash University.





Analyse this: Vice President Business Environment and Chief Economist Paul Tiernan, third from left, and his team of analysts have the task of interpreting global developments and trends, energy prices and forecasts in a volatile world.

Future imperfect

It was playwright George Bernard Shaw who is credited with the saying: “If all the economists in the world were laid end to end, they’d never reach a conclusion.”

But Paul Tiernan, Vice President Business Environment and Chief Economist, and his small but knowledgeable team of energy analysts have the task of doing just that.

They analyse views and facts, opinions and trends to deliver forecasts in price, supply and demand of our energy products.

Will prices rise; how will pressure to manage climate change affect investments in oil and gas; how soon before electric (or hydrogen) powered vehicles outnumber petrol and diesel vehicles?

“We routinely liaise with ExCom (Executive Committee) and other decision-makers with information and analysis that addresses these questions and many other issues,” Paul says.

There’s a weekly update on strategic activity in the oil and gas sector, and another that focuses on key events relevant to energy markets and the global economy.

“We also compile other reports – generally for ExCom – on other issues in the external environment that are relevant for decision-making, such as the outlook for global energy demand,

deeper dives into competitors’ financials, and the like,” he adds.

Geopolitical issues and events relevant to energy markets are all examined and assessed.

The Global Economic Outlook is his team’s quarterly report for ExCom which analyses the economic situation and outlook and relevant issues such as industry trends, geopolitics and climate policy.

Information from service providers, open sources (such as government agencies, news media) and from other functions in the company (Marketing and Trading, Treasury, Climate, etc) and economic models to create price forecasts is also assessed.

Clearly, knowledge is power.

So all this analysis means the forecasts are spot on, right?

Well, it’s not that simple, replies Paul.

“There are simply too many unknowns to think that you can always come up with the ‘right’ answer, for oil price forecasts or for anything else,” he notes.

“As with many other aspects of our industry, we have to be comfortable with rapid change and a high degree of underlying uncertainty.

“It can sometimes be more appropriate to think about the relative likelihood

of various events and the range of possible outcomes and incorporate these into scenarios.”

The coronavirus has illustrated how quickly hitherto firm foundations can be undone.

Paul says COVID-19 has been the biggest shock to economic activity in our lifetimes and remains the key short-term driver of global economic activity and energy demand.

“This has meant that the team has needed to develop a deep understanding of the relevant issues to form the basis of projections around when global restrictions are likely to be eased and people start driving and flying again,” he adds.

So close attention is paid to COVID-19 vaccine rollouts and how well vaccines are controlling infection, illness and transmission and when the world might return to “normal”.

With so many variables to assess and consider, is it true that economists can’t reach a conclusion?

“It’s our job to bring order to a very complex and changing world, to help the company make the very best possible decisions,” Paul responds.

“Sometimes a firm conclusion is appropriate; at other times the best approach is to spell out the range of credible outcomes, so that we’re ready for whatever happens.”

Expanding focus

Woodside has broadened its approach to reporting its aims and performance in the area of sustainability and how it aligns with the global agenda for sustainability through the United Nations Sustainable Development Goals (SDGs).

Each year, the company outlines its approach to sustainability across a range of key areas including climate change, health and safety and social and cultural impacts in the Sustainable Development Report.

“There was a great deal of work conducted across the business last year in sustainability and the 2020 Sustainable Development Report highlights include achieving our best-ever personal safety performance and meeting our energy efficiency targets,” says Laura Lunt, Corporate Affairs Manager Sustainability.

The 2020 Sustainability Report, which was released simultaneously with our 2020 Annual Report in February 2021, also outlined Woodside’s revised strategy to contribute to the SDGs.

The SDGs are set to tackle the planet’s most pressing environmental, economic and social challenges. Each SDG is measured by targets for governments and business.

There are 17 SDGs; for the past three years, Woodside has measured its progress against five SDGs.

No longer.

“Last year we finalised a review of this strategy to see if it still best represented our contribution and aligned with the underlying SDG targets,” Laura says.

That review concluded an expanded focus to include more SDGs would better reflect how Woodside contributes to the global sustainability agenda.

Woodside broadened its focus to nine of the 17 where we can make a positive impact.

“Furthermore,” Laura adds, “we have divided our SDGs into two tiers of primary and secondary goals. The first

tier comprises three primary goals, the second tier contains five secondary goals.

“And they are all underpinned by SDG 17: Partnerships for the goals – the aspiration to work with our key stakeholders to enhance our contribution across the primary and secondary SDGs.”

While Woodside’s focus on SDG7: Affordable and clean energy is the basis of our company strategy to respond to the energy transition, our contribution to the global agenda extends more broadly.

The revised approach includes the addition of SDG 8: decent work and economic growth, reflecting our role as a responsible employer and the activities we are undertaking to build industry capability, SDG 4: quality education, which aligns with our efforts to improve early childhood education through the Woodside Development Fund and other education initiatives

and SDG 11: sustainable cities and communities to acknowledge our efforts to preserve cultural heritage.

“We also added SDG 15: Life on Land, which aligns with the efforts of our carbon team to improve degraded habitats through our tree-planting programs,” Laura notes.

Ann Pickard, Woodside Board Director and Sustainability Committee Chair, says the broader suite of SDGs more clearly demonstrates where Woodside’s contribution is the greatest.

“The key deliverables for each have been identified and progress against these will be published in this report each year,” she states.

Laura reports that Woodside was recently rated by The Global ESG Monitor as the second top ASX-listed company for the quality of its Environmental, Social and Governance (ESG) reporting.



Poster people: Corporate Affairs Manager Sustainability Laura Lunt, centre of the front row, and colleagues display Woodside’s broadened focus of nine Sustainable Development Goals.

Double awards triumph



When two Woodsiders won their categories in the Chamber of Minerals and Energy of Western Australia Women in Resources Awards (WIRA) in March, both had messages for their infant sons.

Alison Barnes, who won the Woman in Resources Technological Innovation Award, hopes that gender equality will be so entrenched by the time her boys grow up that they'll consider it a curiosity that she ever received such an award.

And Laura Allen, who was named Outstanding Operator/Technician/Trade Woman in Resources, joked in her acceptance speech that her son had better respect women . . . or he'd end up homeless.

Both speeches received rousing applause from the 1,000-strong audience at the gala dinner.

Yvette Manolas, Asset Manager Pluto, was honoured as a finalist in the Outstanding Women in Resources category.

Woodside has a strong history of winners and finalists in the WIRA awards, which recognise the power of gender diversity in the WA mining and resources sector, attracting more than 80 competitive nominations this year.

Laura's award nomination praised her infectious personality, passion for her trade, describing her as a natural leader. Laura, in Production Support, has often been the only woman on site throughout her career, and usually the youngest.

Early in her career she won Apprentice of the Year at Electrical Group Training and her nomination recognised that she continues to go from strength to strength

in capability and leadership. "I have been given great opportunities since starting at Woodside – my trade has actually turned into a career," she says.

"I was the first female Responsible Person Electrical (RPE) offshore in 2015 and I was responsible for the safe execution of all electrical work at any facility."

In 2017, Laura became the first female Production Maintenance Coordinator on a floating production storage and offloading vessel.

"I call for all women in operations to be bold and step up," she declares.

"Young women, we are counting on you to join us."

Alison, Commercialisation Manager in Technology, started at Woodside working on the offshore Goodwyn asset,

#WIRA2021

presented by CME



Stars align: Opposite page, Woodsiders Yvette Manolas, Alison Barnes and Laura Allen were finalists in the Chamber of Minerals and Energy of Western Australia's 2021 Women in Resources Awards, with Alison and Laura collecting awards. Above, Finalists eagerly await the announcements of the winners of the six categories.

before moving to Karratha for the Pluto LNG Project.

In 2016 she completed an MBA.

"It is important to be proactive and positive, give all opportunities a chance, no matter how daunting they may seem at first, you never know where it will take you," Alison states.

She works with the intelligent and autonomous systems team, commercialising some of the technology she helped to create.

She is proud that the robotics team she built up and once led now has one of the highest in-house robotics capability of any oil and gas company in Australia and is deploying world-class software developed with NASA to our Woodside assets.

"The NASA project challenged me," says Alison. "It was a career-defining opportunity."

Alison notes the importance of mentoring and networking to help younger colleagues garner the confidence they need to grow in their career.

Yvette leads a team of 300 and was awarded the WA Young Business Woman of the Year Award in 2009.

She believes anyone, regardless of gender, should be able to pursue their dreams and achieve their potential.

Jacky Connolly, Vice President People and Global Capability, says: "We are so proud of the winners and finalist,

"We feel privileged to have them work at Woodside."

"Alison hopes that gender equality will be so entrenched by the time her boys grow up that they'll consider it a curiosity that she ever received such an award."

A day in the life of ...

a general manager quality

What does Quality mean to you?

For Paul Dragovic, General Manager Quality, it is to grow the line-led quality culture, provide efficient process and build quality capability at Woodside.

“Quality is about doing the right thing, in the right way, at the right time,” Paul explains.

“A wise man also once told me that, today’s quality is tomorrow’s safety. When you relate quality to safety, the importance of quality begins to crystallise.

“I am most excited about working with our team of passionate Quality Managers and Advisers to deliver our quality strategy in 2021.”

Quality became separate from Health, Safety, Environment and Quality (HSEQ) last July. As a stand-alone function, it transferred to the Development and Marketing division to increase the focus on quality to support the successful delivery of our world-class developments.

“Our aspiration is to enhance value through outstanding quality performance and the vision for our future state is line-led quality culture coached by our Quality team,” Paul says.

Paul’s background is as a mechanical engineer and project manager.

He started his career in 1992 with an engineering contractor in Perth.

Over the next 20 years he managed to forge a career path through engineering design, engineering management, project management and business development, seizing opportunities to work in the US, UK, SE Asia and the Middle East.

Paul joined Woodside almost three years ago as the Browse floating production storage and offloading (FPSO) Delivery Manager, when the project was in concept select phase.

He says his new role speaks to the importance he’s placed on quality over his career in the energy industry.

“I quickly discovered the importance of quality through the supply chain, starting from being the engineer during design, the package engineer during procurement, through to becoming the site engineer during construction and commissioning of the facility,” he states.

And he loves working at Woodside.

“I’m proud to be part of a respected Australian organisation that is innovative and agile, has a clear growth strategy, responsible environmental management and a strong focus on inclusion and diversity,” he declares.

Outside work, Paul loves to exercise and makes lunchtime exercise a daily habit.

“I also love to cycle on weekends, playing social AFL footy and spending time with my family,” he adds.

“I play footy with a local team and we had the great John Worsfold, the former Eagles’ captain and coach, in our team a few years back.”

Below is a typical day for Paul.

7am: I start work early as I find this is when I get my best thinking done.

I grab a coffee and read the news so I can catch up on the key events happening in our industry and around the globe.

7:30am: I check my calendar and set myself tasks for the day. Planning and

preparation are important to me and I also allocate time between meetings for any unplanned events or to stay on top of email communications.

9am: A meeting with the Development and Marketing leadership team to discuss the new Woodside Inclusion and Diversity strategy and how this will be cascaded through our teams.

10am: A team meeting. I have regular meetings with my team as a function and also individually with its members. The feedback from the one-on-one meetings has been very positive. We discuss key achievements and work through any key challenges.

I see my role as helping all members of the Quality team to develop our function’s strategic goals. It also includes building a strong quality culture in Woodside and delivering quality outcomes through our contractors and suppliers. I try to ensure I’m structured, open and accountable. And I foster an environment for teamwork which I believe is key to the success of the Quality function.

11am: I meet with graduate Shashank Shetty to help him focus on SMART goals. SMART is the acronym for specific, measurable, achievable, relevant and time-based and I believe it is important to set SMART goals and interim milestones in the lead-up to achieving your goals. Milestones are a good way to track your progress helping all the members of the Woodside Quality team to develop our function strategic goals.

12 noon: I like to head off for a run through Kings Park or to the Woodside gym if it’s raining outside. It’s a great way to break up the day and re-energise for the afternoon. It helps to support my physical and mental health.



Team Quality: Clockwise from top, members of the Quality function assemble at Mia Yellagonga; Paul Dragovic with his social ‘footy’ teammate John Worsfold; Paul joined the company almost three years ago after more than a quarter of a century in engineering and project management; in discussion with Graduate Adviser Shashank Shetty.

1pm: A meeting with Executive Vice President Development and Marketing Meg O’Neill. I’m developing a quality policy for the company, which I believe will provide a great opportunity to declare our commitment to quality in Woodside to support our key business growth and new energy objectives. I discuss its progress with Meg, who believes quality is a vital focus all the way from design, through fabrication, to installation and into operations.

3pm: I meet Darren Ross, General

Manager Integrated Projects, to deliver the best-in-class operation digital application for start-up excellence that Quality developed. This application enables real-time data collection and analysis of information recorded by inspectors in the field.

4pm: Contractor relationship meeting. Woodside delivers a great portion of our work through our contractors. It’s important to ensure our quality expectations are clearly communicated and that our contractors’ quality

culture and management supports their success as well as ours.

5pm: A calendar check to ensure I’m up to date with any preparations for tomorrow.

6pm: Before I walk through the front door at home, I like to take a couple of minutes sitting in my car to transition my focus from work and concentrate on how to greet my family so when I enter the house my focus is on them and how their day has been.

Past shows path ahead

For more than a decade, Woodside has been working with communities and contractors to improve employment outcomes for local Indigenous residents. New skills in a variety of trades are developed through trainee and apprenticeships.

More than 80 Indigenous Australians currently work at Woodside assets and a further 49 are in various stages of training. Of those beginning their training in 2021, 69% are Indigenous and 52% female.

And Woodside has been able to offer fulfilling employment to local residents of communities across the Pilbara and beyond.

Indigenous Employment Training Manager Michael Roe recalls there was very little training targeted specifically at Indigenous workers before the Mirnuwarnigu Yirdiya Pathways Program started in 2009.

Mirnuwarnigu Yirdiya (“learning road” in the Ngarluma language) was Woodside’s first interaction with Indigenous training programs.

“This set the ball rolling to develop a traineeship to allow Indigenous workers to gain the valuable onsite experience as well as TAFE credentials in two fields, logistics and operations,” Michael recalls.

Funding was obtained in 2008 and the first intake to the program, in 2009, was more than 50% female.

Accompanying Woodside (and playing an integral role) on this journey has been Programmed, a leading provider of operations and maintenance services in Australia.

Programmed employs trainees and apprentices while they are hosted by Woodside, and many are later employed at the company.

“We believe more than half Woodside’s current operations workforce and 94% of the Indigenous workforce have participated in our training programs,” says Dave Hilliard, Programmed’s Operations Manager.

“These programs have delivered significant outcomes for local employment and skills development, with many former apprentices and trainees still with Woodside and now advancing their own careers.”

In 2016, the program evolved into a “pre-pathways” or pre-apprentice program to attract a younger cohort gain valuable onsite experience, together with TAFE studies, so they could be better prepared for apprenticeships and traineeships.

“School-based traineeships were also

introduced – another great avenue into a pre-pathways program or apprenticeship,” Michael notes.

Since then, “graduates” of the various courses have gone on to take roles including Operator Technician, Instrument Electrician (Inlec), Mechanical Technician, Logistics Operator, Laboratory Analyst and Management and Administration Assistant.

Others have forged successful careers elsewhere.

Erin Ronan was in the initial intake of Operations Support trainees in 2009 and is now an Issuing Authority Representative (IAR) for Campaign Maintenance Operations Planner.

“I have encountered many challenges along the way but the confidence, resilience, knowledge and practical skills I’ve gained, has made it all worthwhile,” Erin reports.

Timaya Dann graduated from the Pre-Pathways Program last year and is among the latest intake of Operations Support trainees.

“Since starting this new stage, I’ve reflected on what the program gave me – training in all sorts of technical and personal skills, opening my eyes – and I’m really excited about this next challenge,” says Timaya.

Starting out: Left, this year’s intake of Operations Support Trainees - Shaniah Grassenis, Alexander Knight, Timaya Dann and Mitch O’Driscoll; right, Lennis Connors, the then Indigenous Traineeship Coordinator, (back right) with the 2009 intake of Operations Trainees.





Scholarship students: Standing, left to right, Caitlin Shaw, Sam Careless and Shayla Costello. Seated, Ellen Weiss, Lesley-Anne Hayes and Daniel Day.

New scholarships a hit

Woodside has improved the way it supports tertiary students, with a new scholarship program unveiled to help build mutually beneficial relationships.

The Woodside Scholarship Program proved an instant success, garnering expressions of interest from some 700 students across Australia in a few short weeks of marketing, coordinated by People and Global Capability (P&GC) and an external agency.

Talent Acquisition Specialist Lesley-Anne Hayes says the response was greater than expected.

“We are thrilled the program attracted so many applicants,” Lesley-Anne reports.

“We’re now carefully going through the applications to select candidates for the next selection stage.”

But some students on earlier scholarships have already been notified they will be offered places on the new program, including those who have been working at Woodside on work experience during the summer vacation.

Employment Pathways Specialist Marisa Bradshaw explains the program has been designed to be competitive and offer much more than merely financial support.

“Besides an allowance for the duration of the degree, the scholarship includes work experience of between six and 12 weeks a year, personal leadership training and coaching sessions, as well

as the opportunity to be assessed for the company’s Graduate Development Program,” Marisa says.

And as well as formal business engagement, the program establishes mentor and “buddy” relationships to help students integrate into our workforce.

Marisa adds: “We want to create ongoing relationships with students through extensive on-the-job work experience that is meaningful and instructive.

“For Woodside it means an ongoing talent pipeline to drive the company’s growth strategy.”

Lesley-Anne says the aim is to recruit undergraduates from a wide cross-section of disciplines including digital, health safety and environment, new energy, engineering, procurement, finance and commercial.

“The program will be coordinated by P&GC but in collaboration with the various functions,” she adds.

Caitlin Shaw is studying for a double degree in mechatronics engineering honours and computer science and is one of the first to be offered a scholarship.

Caitlin has transferred from the “Woodside Women in IT” scholarship

she was awarded last year.

“My hope is to work in robotics and over the summer I was lucky enough to work in the Karda robotics lab on the summer vacation program,” she says.

Sam Careless is studying a double major in instrumentation and control and industrial computer systems at Murdoch University.

During the summer vacation program, Sam was deployed with the Pluto engineering surveillance team and he has transferred to the Woodside Scholarship Program from the Tailored Assistance Employment Grants scheme.

“The support Woodside provided me throughout my summer vacation program gave me an insight into the support the Woodside scholarship could offer,” Ben says.

P&GC Vice President Jacky Connolly says the new scholarship program aims to build a closer connection with students, so they feel a part of Woodside and become familiar with our culture.

“The remuneration will provide welcome support to those students who may be struggling, but the scholarship provides much more than financial support - it’s about building mutually beneficial relationships,” Jacky says.



Growing community connections

Woodside's partnership with Greening Australia has helped 20 Noongar Rangers complete a seed collection training program and graduate with a qualification in Conservation and Land Management.

Noongar people are the Traditional Custodians of Country in south-western Western Australia.

Funding for the Noongar Rangers comes from governments, corporates and non-government organisations (NGOs) to manage land.

The seed collection training program was established in 2019 in partnership with Greening Australia, an environmental enterprise, with the aim of providing opportunity for five Noongar Ranger groups with paid, on-the-job, seed collection work over a year.

The five were the Tjaltjiraak, Tambellup, Nowanup, Ballardong and Ngoolark Rangers.

Many ranger groups, including those five, are exploring ways to look after country sustainably by establishing business enterprises.

The aim was to encourage capacity building of seed collection and land management practices within the Noongar community.

The training program model was co-designed by Greening Australia and the Noongar Ranger groups.

The on-country learning provides opportunity for rangers to work with senior cultural advisers and contribute to the already-rich cultural relationships rangers have with country and community.

"You just get a certain type of feeling when you're working on Country because you know you're doing your part in regrowing it," explains Jermaine David on behalf of the Ballardong Ranger team.

Vice President Carbon Jayne Baird presented the rangers with their Certificate II in Conservation and Land Management on Ballardong Country in Northam, WA, in February.

"It was important to Woodside that the rangers could participate in an accredited training program," Jayne says.

"We are proud to have been part of something that connected people to community and Country, provided paid employment and offered a pathway to rewarding ongoing employment and local business opportunities for the future."



Country people: Opposite page, Noongar Ranger groups with representatives from Woodside and Greening Australia at the seed collection training graduation ceremony at Yaraguia Farm, WA. Above, Oral McGuire (left) welcomes Uncle Eugene Eades to Ballardong Country at Avondale Park, Northam, WA. Right, Ngoolark Rangers Ezzard Flowers and Johnny Rodd collecting seeds. Photos: Jesse Collins and Badgebup Aboriginal Corporation & Push Consulting.



The training was also an opportunity for Woodside to support regional Western Australia and the local communities where our carbon projects are being established.

The training which builds skills in collecting native seeds, recognising plants and preparing and preserving plant specimens also contributes to capacity building within the expanding carbon farming industry.

The long-term vision for the training is to enable foundational capacity and skills to support the development of Noongar seed supply enterprises.

Through this initiative, Woodside sees a path to direct economic opportunity for Noongar people and environmental benefits for all Australians.

Consistent with this vision, Woodside

was able to fund some of the ranger groups to undertake planting work on selected sections of the 2200 hectares of land that Woodside planted with native seedlings in 2020 (see Trunkline Q4 2020).

This training program ties directly into “Caring for Country” – one of the National Leadership projects under Woodside’s 2021–2025 Reconciliation Action Plan (RAP).

The Caring for Country project recognises the vital role that Indigenous rangers fulfil in protecting Country, managing heritage and providing meaningful and culturally appropriate employment, training and career pathways.

Woodside’s 2021–2025 RAP will be released in Q2 this year.

“You just get a certain type of feeling when you’re working on Country because you know you’re doing your part in regrowing it.”



Come together: The Neurodiversity Advocacy Community (NAC) committee. The NAC aims to support neurodiverse employees realise their full potential at work and help create an inclusive work environment for minds of all kinds.

Embracing differences

Some mornings, Chief Data Officer Lauchlan Wallace catches sight of himself in the mirror and thinks: “This is the last time today I’ll see someone who thinks exactly like me.”

It’s fair to say science and society are only recently coming to terms with the diversity in the ways people think, and the term “neurodiversity” was coined as recently as 1998.

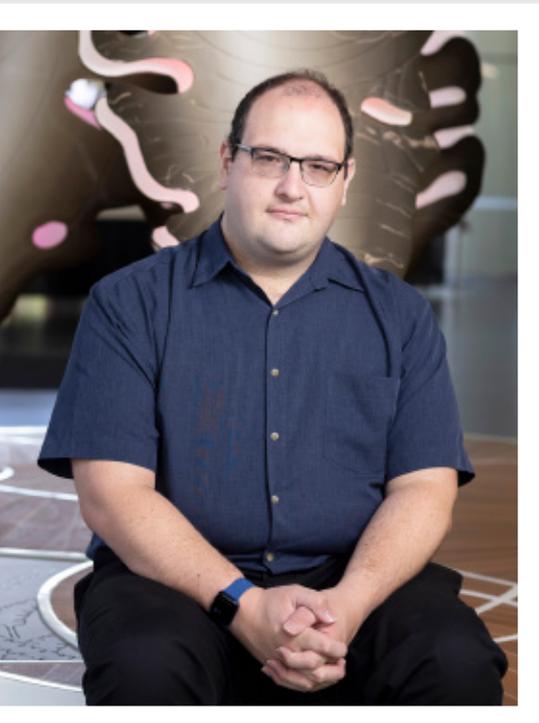
Neurodiversity describes the normal variations in the human brain and cognitive function, including differences in sociability, learning, attention, and other mental functions.

The term neurodivergent (ND) includes individuals with autism, attention deficit hyperactivity disorder (ADHD), dyslexia, and other conditions which often include heightened skills or strengths as

well as disabilities or weaknesses.

And Woodside’s Neurodiversity Advocacy Community (NAC), which formed in 2020, aims to highlight the advantages diverse thinkers can bring to an organisation like Woodside.

Neurodivergent people have extra-large gaps between their strengths and weaknesses.



Building life skills

Data student Ryan Oakley spent his summer working at Woodside in the Digital function and says he enjoyed a remarkably successful internship.

In 2016, Ryan was diagnosed with Asperger’s Syndrome – a form of autism.

But rather than see it as a setback, it spurred him on.

“I spent the next four years empowered by this knowledge to build my life skills,” he reports.

To put that to the test, he applied for Woodside’s student vacation program.

“Autism isn’t all negative; I knew I had a lot to offer, and that my creativity and deep technical skills could be of use to Woodside,” he explains.

Ryan says he disclosed his Asperger’s on his application form “because I wanted to give Woodside the choice if they wanted to take it on or not”.

He says he was delighted to be accepted and discovered an “incredibly supportive” environment at Mia Yellagonga.

“My line manager James Rees was super supportive and helped foster skills to deal with the work day, as did my buddy Jeremy Ciccarelli,” he reports.

Besides his Digital work, Ryan gave five talks to the NAC in just 12 weeks.

“I can recommend Woodside as a welcoming and supportive employer to other neurodiverse students,” he declares.

“Put simply, it’s a difference in thought processes that distinguishes an individual from the bulk of the ‘neurotypical’ population,” explains Lauchlan.

“But every ND person has a unique set of skills and deficits, just like neurotypical people.

“If we just focus on the areas of difficulty, we miss the areas of strength, and in some cases exceptional ability.”

Neurodivergent skills are particularly valuable to science, technology, engineering and maths (STEM) areas such as engineering, data science and cyber security.

“About 10 per cent of the population are neurodivergent, but 34% of ND people are unemployed,” says Development Engineer Emily Kendall.

Emily is chair of a group of Woodsiders behind the formation of NAC.

“Neurodiversity has been raised at values moments and discussion has become more widespread,” she says.

“As a result, people have identified as a parent of a neurodivergent child or ND themselves.

“But until it became clear that we were a ‘safe space’ to have the conversation, people we worked closely with had

not disclosed they were ND. Nor was it obvious that they were.”

Senior Flow Assurance Engineer Rachel Green agrees.

“The defining moment for me was hearing that a neurodivergent person in my team had never heard ND discussed positively before,” Rachel says.

“I didn’t want that for my kids and I don’t want that sort of talent to be wasted. We all lose when human potential is squandered.

“For example, a statistically significant number of autistic children present with hyperlexia, which is the precocious ability to read at a high level without prior training.

“This on its own does not constitute autism; but when combined with, for example, repetitive behaviours, communication and social difficulties it is typical of a collective group of symptoms of autism.”

ND people process the world differently, and this provides the potential for them to identify risks and opportunities the bulk of the neurotypical population don’t see.

“Many adults with ADHD – including Sir Richard Branson, President John F. Kennedy and US Olympic swimmer Michael Phelps – have directed their energy and enthusiasm to achieve great success,” Rachel notes.

In many cases, it may be quite simple to unlock these strengths – making changes to the physical and emotional environment to fit the person not trying to change the person to fit the environment.

“The US Job Accommodation Network found that 59 per cent of the common adjustments required to assist the neurodiverse worker cost the employer nothing,” Rachel reports.

“But mostly they need us to be aware, open-minded and willing to accommodate differences,” she says.

Lauchlan, Rachel and Emily say: “Our goal is to contribute to a workplace in which every employee can perform at their best.”

Ruth Lyall, General Manager Organisational Development, says Woodside is embracing the talent acquisition opportunities presented by applicants with diverse backgrounds.

“Woodside’s new Inclusion and Diversity strategy has broadened its focus to incorporate a wider range of diverse groups, including those who have different abilities,” Ruth says.

“This year, we have been pleased to welcome individuals comfortable to share their ND backgrounds as they bring their whole selves to work.”

Finding her feet

Hannah Ashley thought only naughty schoolboys and people who bounced off walls were afflicted by attention deficit hyperactivity disorder (ADHD).

It was her now-husband, himself diagnosed with ADHD, who spotted the signs.

He recognised that some of her behaviours like playing a video game and realising only six hours later that dinner was still in the microwave were possible symptoms.

Hannah says getting her diagnosis was like

having a weight lifted from her shoulders.

“It meant that it explained some of my behaviours and that it wasn’t just my being lazy or unmotivated,” she says.

“Also, knowing the cause meant I could put in place support methods.”

However, it’s still taken a long time and a lot of coaching, therapy, support, resilience and self-belief for her to accept who and what she is.

“It’s also taken a while for me to find

a place at Woodside where I feel that my atypical brain is being fully utilised rather than worked around,” she adds.

Hannah is now an Engineering Data Management Analyst.

“Finding the right role with the right leadership style and support from my manager and NAC has allowed me to finally feel safe to bring my whole self to work.

“Twelve months ago, the suggestion of sharing my story in Trunkline would have had me running for the hills.”





OceanWorks at work: Above, Jeff Hansen checks buoy data; Marie-Lise Schläppy and Terry Griffiths with models of their pipe-loving ‘critters’. Opposite page, Jack Lee-Kopij, Matthew Zed and UWA’s Ian Milne are part of a team that has delivered significant improvements to drilling campaigns. Below, buoys like this measure data on the ocean surface in real time.

Life on the ocean wave

If you want to be inspired about the innovation we can harness from the ocean, both for energy and safety, Woodside’s collaboration with OceanWorks at the University of Western Australia (UWA) would be hard to beat.

The collaboration dates back to 2017 when Woodside became a foundation partner in OceanWorks, part of the Woodside FutureLab Network.

Since then OceanWorks has connected industry professionals with university researchers and students to solve engineering challenges for current and future offshore operations.

Read on for some exciting examples of the alliance’s work.



Buoys will be buoys

Did you know we have two drifting buoys along the coast of Western Australia (WA) measuring data on the ocean surface in real-time? This information has the potential to improve the accuracy of forecast swell amplitude and arrival time at our berths, critical for safe and efficient offtake operations.

The Swell-Local Adjustment via Monitoring (SLAM) project led by UWA’s Jeff Hansen captures data from these floating wave buoys to enhance model prediction of offshore sea conditions.

This project captured the super storm

waves along 100 km of WA’s coast in 2020.

“With recent Perth storms causing many beaches to severely erode, the data from these buoys provided important information about how much energy from the ocean was impacting the coastline,” says Dr Hansen.

This is purely data-driven research, rather than using a physics-based approach to forecasting waves. The primary motivation for this project for Woodside is a more reliable forecasts of wave conditions at Mermaid Sound,

off Dampier, north-west WA.

“We are hoping this machine-learning approach might lead to an enhanced version of the system we have,” explains Michael Garvey, Senior Metocean Engineer.

This is a low-expenditure, high-value project, which can provide several hours of early warning for an arriving swell or storm. Woodside is looking to deploy this forecasting system integrated into our new Elements Online web platform, which can be used anywhere using any device.

Pipe-loving critters

UWA's Terry Griffiths and Marie-Lise Schläppy have led a series of OceanWorks projects on marine growth in offshore engineering contexts. Their latest results suggest that marine growth may have a surprising effect of stabilising pipelines.

They were able to demonstrate that marine growth has the potential to disrupt vortex-induced vibrations (VIV) for pipelines, eliminating the need for expansive span analysis and rectification procedures.

VIV is what can occur when a current goes past or around a pipeline and is caused by unsteady flow behind the pipe. It is similar to the effect that causes a flag to flap in the breeze.

Marine "critters" that live on pipelines or cables are called sessile epibenthic biota, and include barnacles, algae, mussels and the like.

This project showed that such critters could have a surprising benefit by changing the hydrodynamic profile of pipelines and acting as a stabiliser.

Dr Schläppy says by changing the way that marine organisms growing on offshore structures were considered, and by updating previous models, these changes could lead to huge savings in time and energy for offshore renewables as well as the oil and gas industry.

"We found that the fluffier the marine

growth, the more it contributed to stabilising the pipe or cable and drastically reduced the intensity of vortex-shedding, which is the phenomena that causes vortex-induced vibrations that can rapidly cause pipe fatigue failure," Mr Griffiths says.

Nino Fogliani, Development Manager New Business, says the OceanWorks collaboration brings together marine biologists, engineers and researchers in a way that enables communication and sharing of ideas.

Surf's up

Surfers aren't the only ones who check out waves.

Understanding the ocean environment is a key to ensuring the safety, integrity and operability of our drilling campaigns.

One of the successes of FutureLab is the collaboration of UWA's Professor Ian Milne and Senior Metocean Engineer Matthew Zed on improving the predictability of vessel responses to unpredictable ocean conditions.

They are part of a team behind a tool that has delivered significant improvements to the safety, integrity and operability of drilling campaigns.

Known as the Vessel Operability Planning Software (VOPS), it can determine the motion of a vessel directly from a full description of the ocean wave environment.

It's a step change in the quality of information available to support decision-making which has seen rapid

uptake of the tool in drilling campaign scheduling, rig selection, mooring optimisation and aviation.

"VOPS is a great demonstration of seamlessly commercialising the value from Woodside's research investment through effective software development processes, enabling us to plan drilling operations with more confidence than ever before," explains James Whelan, Senior Naval Architect and Woodside's subject matter expert (SME) for vessel hydrodynamics.

Matthew adds: "VOPS delivers big improvements on the engineering methods previously employed.

"The result is safer and more reliable operational planning and it has been instrumental in realising significant savings to both schedule and rig configuration costs across our campaigns.

"It allows us to prepare for inclement

weather and has now become a standard operational guidance tool for use in drilling campaigns globally."

VOPS was developed in less than three months including one of the first full-scale validations against high-quality measurements from a drillship in the open ocean.

Professor Milne says the results were reviewed by industry and independent academic experts through presentations at the Offshore Technology Conference in 2018 and publication in Ocean Engineering in 2019.

"The next phase of the UWA FutureLab initiative, known as TIDE (Transforming energy Infrastructure through Digital Engineering), has targeted VOPS as a platform for continuous improvement for us to move forward over the five-year program," he says.

Learn more at www.uwa.edu.au/facilities/oceanworks





Lighting the way

This is the time of year when Environment Adviser Erin Chen-Wilson makes regular trips to Holden Beach, located within the Pluto LNG plant at Karratha.

Erin is looking for signs of transient visitors to the beach – nesting sea turtles.

Every year, the females of various turtle species make the annual pilgrimage back to the exact beach where they were born to lay eggs.

Their power flippers leave distinctive marks as they emerge from the sea at night to lay their eggs 50m or so from the water's edge.

The nesting and hatchling season lasts from September to March or later.

Erin checks for turtle tracks which give clues as to the species of turtles – usually flatback or green turtles.

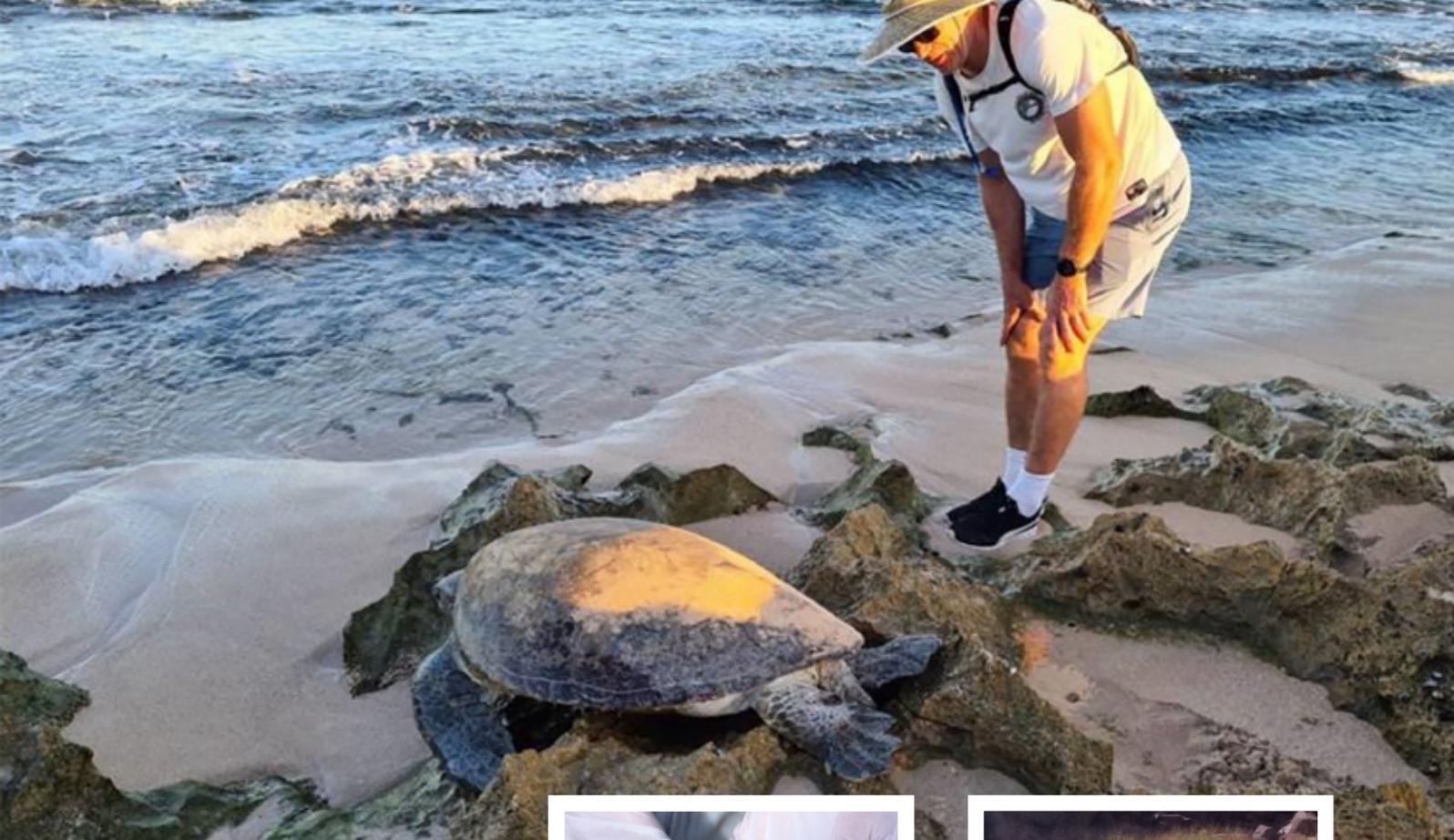
“Holden Beach usually hosts a relatively small number of nesting turtles compared to other beaches along the North West coastline and islands of Western Australia,” she reports.

“In fact, there have been years of zero activity.

“But it’s important that whether the numbers are small or not, the nesting females are protected as much as possible.”



Environment lookout: Top, Environment Advisers Angus Parker and Erin Chen-Wilson check out a new ‘turtle light’ at Pluto LNG plant. It emits a softer glow than standard lights to minimise disturbance to nesting turtles. Left, a green turtle makes its way back to the water.



Shell be right: Top, Operations Adviser Danny Hill gets a close inspection of a green turtle. Left, Danny holds a turtle hatchling. Photo courtesy of Ashleigh Crichton, West Pilbara Turtle Program. Right, Environment Adviser Erin Chen-Wilson inspects tracks made by turtles to identify the species.



The monitoring is a commitment made by Woodside to the State Government as part of the conditions agreed for the construction and operation of the plant.

It's a commitment the Pluto Joint Venture takes seriously, notes Environment Adviser Angus Parker.

"For example, this year, we have invested in new light diffusers," Angus notes.

"Probably the biggest impact our activities at Pluto LNG plant have on the nesting turtles is the lighting we have on 24/7 as part of the plant's safety plan.

"We call the new lighting 'Turtle Lights', they have orange filter sleeves which

reduce short wavelength light and softens the glow, minimising the disturbance compared to normal white light.

"The aim is to keep disturbance to the turtles to a minimum while still adhering to best-practice safety."

Meanwhile, further south on the Western Australian coastline, Danny Hill, Operations Adviser Pluto floating production storage and offloading (FPSO) facilities and Wheatstone, and Alana Gentiluomo, Integrated Activity Planning Adviser, were also on the trail of turtles.

They took the opportunity to spend three days in January 2021 monitoring

track numbers and evidence of egg-laying activity in the Ningaloo Turtle Program (NTP).

"I especially liked the opportunity to assist turtles who were trapped in exposed rocks," reports Danny.

"The consensus from regulars to the program is that the rock exposure is worsening, and seeing the turtles return to the water after being trapped for many hours was very gratifying."

Woodside and Mitsui E&P Australia Pty Ltd are joint venture participants in Vincent, Greater Enfield and Enfield projects and the JV have supported the NTP since 2012.

"The aim is to keep disturbance to the turtles to a minimum while still adhering to best-practice safety."



Traders' deal: Attendees at the formal presentation of the Trusted Trade accreditation at Mia Yellagonga included (seated) James Copeman, the Australian Border Force's Regional Commander Operations West, and Sherry Duhe, Executive Vice President and Chief Financial Officer.

Winning trust

Woodside has received an important stamp of approval from the Australian Border Force (ABF) and is now officially an Australian Trusted Trader.

Such accreditation is awarded to businesses that the ABF assess as possessing supply chain and trade compliance consistent with World Customs Organisation standards.

Woodside is only the second company among its oil and gas peers to achieve such a status.

"It's an honour for Woodside to be recognised as a Trusted Trader and from a practical point of view it means the ABF significantly reduces its administration of the import and export of the company's goods," says Kirsty Brieschke, Customs and Trade Assurance Adviser.

Kirsty goes on to explain that among the benefits generated, the Trusted Trader status provides dedicated support via an Account Manager for all communications with the ABF and Department of Home Affairs; a reduction in red tape at the border, including 'top of the pile' processing for customs rulings, valuations and refunds.

In addition, Woodside will be able

to partner with the Australian Government and discuss future policy developments.

"This will have immeasurable value as we move forward on our growth projects," Kirsty notes.

She says the process to gain Trusted Trader status took the team including Customs and Global Trade Compliance Manager Murray Motroni, Taxation Manager Chantel Arnold and herself almost two and a half years and involved a comprehensive examination of Woodside's procedures and processes by the ABF.

A range of divisions and functions including Legal and Secretariat, Security and Emergency Management, Logistics and Materials Management, Marketing, Trading and Shipping, Digital and Governance, Risk and Compliance were involved in the application process and participated in our on-site validation with the ABF.

The formal presentation of the Trusted Trader accreditation was completed at Mia Yellagonga at the end of Q4 2020.

Executive Vice President and Chief Financial Officer Sherry Duhe accepted the Trusted Trader certificate on behalf of Woodside from James Copeman,

ABF Regional Commander for WA.

By the end of 2020, close to 800 Australian businesses had been accredited as Trusted Traders, with a further 330 progressing towards accreditation.

In total, more than 1,100 businesses are actively engaged in the program.

With the COVID-19 pandemic having an on-going impact on trade, the ABF is working with Trusted Traders to reduce business costs and to develop a genuine partnership with the Federal Government.

The Woodside Customs team are also progressing with the accreditation of other Woodside group companies, that import or export, which would benefit from becoming Trusted Traders.

Woodside was able recently to use of one of the Trusted Trader benefits on the importation of the Pluto Water Handling (PWH) module from Malaysia (see Trunkline Q4 2020).

"This was a lengthy process, that demonstrated the benefit of collaboration across the business, strong and courteous communication and negotiations with our vendors and sheer persistence," Kirsty points out.

Making his mark

A geotechnical engineer who helped overcome a crippling problem with the North Rankin (NRA) platform's foundations has been appointed an Officer of the Order of Australia.

The award, announced in the Australia Day 2021 Honours List, was bestowed on Mark Randolph, Emeritus Professor of Civil Engineering in the Centre for Offshore Foundation Systems at the University of Western Australia (UWA).

He was working at Cambridge University in 1984 when he became involved in the problem besetting the NRA platform's legs.

As convention dictated, the platform's design had involved driving four or five tubular steel piles more than 100 m into the seabed to support each of the platform's legs.

"But the resistance in the soil for the NRA piles was extremely low and it only took one or two blows in some instances to reach the full 106 m penetration," Professor Randolph explains.

"It was like driving a nail into plasterboard wall and seeing it go straight in. Essentially the restraint against waves hitting the platform was very low so something had to be done to increase the robustness."

That lack of resistance was due to the

composition of the carbonate sediments – decayed skeletal remains of organisms – in the North West Shelf (NWS).

"In Bass Strait, the seabed comprises somewhat coarser carbonate sands than on the North West Shelf, with less dramatic consequences for driven piles," Professor Randolph continues.

The NWS Project Joint Venture's six participants respectively assigned experts to devise solutions, and the one selected involved excavating beneath the piles, first injecting a chemical to stabilise the soft sediments locally before constructing concrete bell foundations.

"It was an enormous undertaking," he recalls.

Professor Randolph migrated from the UK in 1986 to join UWA.

He says it was a difficult decision to leave a tenured position at the highly prestigious British university, but he and his wife, Cherry, felt that the worst that could happen would be for the family, including their two young sons, to spend a couple of years of sunshine in Australia.

That couple of years has extended to 35, with the Randolphs now grandparents to three young Aussies.

Professor Randolph was inducted into

Western Australia's Science Hall of Fame in 2020 and in 2013 was named WA Scientist of the Year.

He has continued his involvement with Woodside since 1986, both through consulting and his teaching and research at UWA.

Over the years he has developed close links with a number of Woodsiders, either former students or as colleagues on major projects.

Climate Change Manager Marc Senders acknowledges Professor Randolph's contribution and cites him as the reason he started his doctorate at UWA.

"He proved to me that besides being the most knowledgeable man on earth (geotechnically at least), he is also a great motivator, has vision, enormous patience, and can always guide you towards a better solution," Marc states.

Fiona Chow first came to WA for five months at the invitation of Professor Randolph to conduct work on increasing foundation capacity through the calcite cementation of carbonate sand.

"I returned three years later to marry an Australian," Fiona recalls.

"If it hadn't been for Mark, I'd probably still be living in London."

Emeritus Professor Mark Randolph examines the first geotechnical centrifuge at the University of Western Australia – "still running well after 30 years".



Angel to fly again



Early days: Left, the opening of the “buyback” valve in October 2008 brought gas on to the Angel platform for the first time. Right, Angel will enjoy new life with the Lambert Deep tieback project.

The Angel has folded its wings, but soon this star will rise again.

The ground-breaking platform located some 120 km north west of Karratha, off Western Australia, closed in September – 12 years after its start-up.

Its three wells finally watered out.

But Angel will not lie down. New life will be breathed into the platform with the Lambert Deep tieback project, which will help keep the North West Shelf (NWS) trains occupied.

“The plan is to use the Angel infrastructure for the development of Lambert Deep reserves, some 15 km north west of the Angel platform, to enable the most operationally efficient of all the Woodside assets to shine proud for years to come,” says Operations Readiness Manager Dave Watson.

So how did Angel achieve its “jewel in the crown” status?

Andy Miles-Tweedie, now Development Manager Myanmar, worked on the Angel development between 2000 and 2004.

“Angel was discovered in 1971 but it wasn’t needed until the North West Shelf’s other platforms were declining in resources,” Andy notes.

After the decision was made to bring Angel on stream, the team resolved

to learn from our operating assets of Goodwyn A (GWA) and North Rankin A (NRA) and make it not normally staffed.

“We wanted to make it as safe as a subsea development where there’s no people,” Andy explains.

“The key was to justify everything in. Minimise equipment, then select equipment and materials with the best lifecycle costs.

“So in the early phases we focused on eliminating systems (ie power generation; firewater, seawater, caissons, etc) and designing out the need to attend the facility. The whole project team were aligned on developing a high quality, safe and reliable design.”

The design work paid off. The reliability of the platform over its 12 years of operation averaged over 99%, much higher than similar facilities, boosting production revenue.

Operations Readiness Manager Tim Gibbons was the Onshore Installation Manager (OIM) on Angel between 2005 to 2010.

“I had the best job in the world – OIM of an unattended facility,” he says.

“It was ahead of its time and the most complex not-normally-staffed facility of its kind in the world.

“Angel is still the benchmark for other operators to follow and we get tapped on the shoulder regularly to understand our processes. I inform them we had a great learning ground with NRA and GWA setting the scene”.

Tim says the approach was to chase every single hour of potential work on the facility and design it out, by keeping it simple.

“If we determined that it couldn’t be designed out, we then designed it so it was operationally efficient,” he explains.

During the design phases, there were the doubters who thought it would not be possible that we would ever actually be able to operate Angel unattended, but 12 years of safe, reliable operations is the proof of the pudding.

It requires just 5,500 maintenance hours and six planned interventions a year to run, spawning major benefits in reduced risk to personnel and lower operating costs.

“The savings in operating expenditure for Angel were substantial; and the goal of safe reliable gas production with minimal equipment and human intervention was achieved,” says Tim.

“This operating record was one of the key reasons the Lambert Deep tieback project in execution now met the economic hurdles to proceed.”

This is where Woodsiders discover a little bit more about their colleagues – and what they’ve been getting up to outside work hours. Think of it as Trunkline’s version of the water cooler.

Because whether it’s satisfying a passion for a sport, an unusual hobby or doing good deeds in the community, Woodside’s employees and contractors tend to live life to the full. As a result, they often have interesting stories or experiences to recount.

If that sounds like you or a colleague and you think it should be shared with the Woodside community, give us a call or drop us a line.

Spaceman back home

For most of us, our work isn’t rocket science.

But it is for former Woodsider Enrico Palermo, the new head of the Australian Space Agency.

West Australian-born Enrico moved back to Australia from the US with wife Nadia and two young sons in December and had been in his new role little more than a week when he spoke with Trunkline.

He explained that while undertaking a double degree in engineering and science at the University of Western Australia he enrolled in our student vacation program for the summer of 2001/2.

“I worked at Karratha Gas Plant and it was a lot of fun,” he recalled.

“The grad program was terrific. I was fortunate to have great leaders and mentors some who are still with Woodside today like Damien Constable.”

In 2003, Enrico joined Woodside and his assignments included the asset integrity team, a life extension project on an FPSO and he also led a project installing reverse osmosis on an offshore platform. He is pictured, far right of the front row, in April 2004 at an Offshore Gas Community Day helping restore church gardens.

But his passion for human space travel saw Enrico and Nadia head off to Europe, where he studied at the International Space University in France before landing a job in 2006 at Virgin Galactic.

“I knew space had an incredible capacity to inspire and it can attract the best talent in the world and a lot of Australians, here and overseas, are doing amazing things,” he said.

“It’s a multi-disciplinary industry and touches every part of our lives.”

Enrico next moved to California, started up Virgin Galactic’s manufacturing operations, was part of the core team which took Virgin Galactic public and became Chief Operating Officer of Virgin Galactic before landing his current position, based in Adelaide.

“Our mission is to grow and transform

a globally respected Australian space sector,” he declared.

“We have a vision to triple the contribution of space to the Australian economy by 2030. On the way we aim to create 20,000 jobs.

“It’s a big task but one we’re going after.”



Balancing act

At Woodside, he's a cool-headed Project Manager solving issues in Digital; outside work, Xue Fen Tan (known as Fong) is a passionate drummer.

"Being an analytical, digital type of person, it's good to be able to achieve a balance by exploring my artistic side," he explains.

Fong's Japanese drumming group, Taiko On, made its Fringe Festival debut this year and was quite a hit.

"We normally perform traditional Japanese drumming, but for Fringe we tried something a little bit more experimental with Buddhist chanting, didgeridoo and other musical instruments," Fong recounts.

After six sold-out shows, Taiko On's final gig was cancelled due to the COVID-19 lockdown. When the lockdown in Perth was lifted, festival organisers asked for not one but two final shows – and at a venue twice the size of the previous appearances.

It's all very gratifying for Fong, who began Chinese drumming as a kid in his home country, Malaysia.

After graduating from high school, he

and his friends founded a professional percussion company which performs internationally and teaches Chinese drumming at more than 40 schools in Malaysia.

Fong then started learning Japanese drumming around 1996.

"The percussion techniques are very similar and though the music is a little different, it was easy to pick up," he explains.

Taiko On has performed at festivals, Telethon, social events – and now it's added Fringe Festival to its CV.



Life saver



A Woodside contractor came to the rescue on a mid-flight drama in January, performing cardiopulmonary resuscitation (CPR) that saved the life of a passenger.

Hilary Carter, a registered nurse with 10 years' experience, is employed by Corporate Protection Australia Group and has been based at Karratha Gas Plant as a Health and Safety Adviser/ Site Medic for almost a year.

She was onboard an afternoon flight from Perth to Karratha when a flight attendant asked over the intercom if a nurse or doctor was onboard and Hilary made herself known.

Hilary deduced that the passenger, who had recently been discharged from hospital, was a severe asthmatic and requested a first aid kit.

But when the passenger stopped breathing and went into cardiac arrest, CPR was necessary.

"You have to think quickly in a situation like that," she says, "and there were so many factors that made it difficult giving CPR in a confined space."

With a decade of nursing experience, including emergency nursing, it is not surprising that Hilary has been called upon to save lives before – but never in

the cramped confines of an aircraft.

However, she successfully revived the passenger who was taken to hospital after the pilot diverted the plane to Geraldton.

"We've been in touch via social media and I was reassured to discover the patient made a full recovery," Hilary reports.

The airline also has been in touch to inquire about the emergency first aid kit and Hilary was happy to report it was very well equipped.

Hilary urges everybody who works at Woodside – indeed, any workplace – to take a basic lifesaving course.

"Contact an organisation like the Red Cross or St John Ambulance and see what they recommend because you never know when you might need those skills and knowledge," she says.



“We may be in lockdown but mother nature is out in all her glory,” remarked Project Services Manager Michael Viljoen, who took this shot of a semi-submersible rig off Perth’s coast with his phone in February during a cycle ride. A super photo, but Michael points out the sun is setting into a “dystopian west”: the smoky clouds were generated by bushfires which caused heartache to many West Australians, including Woodsiders.



Woodside Energy Ltd.
11 Mount Street Perth, Western Australia
G.P.O. Box D188 Perth, Western Australia 6840
t: +61 8 9348 4000 f: +61 8 9214 2777
www.woodside.com.au

