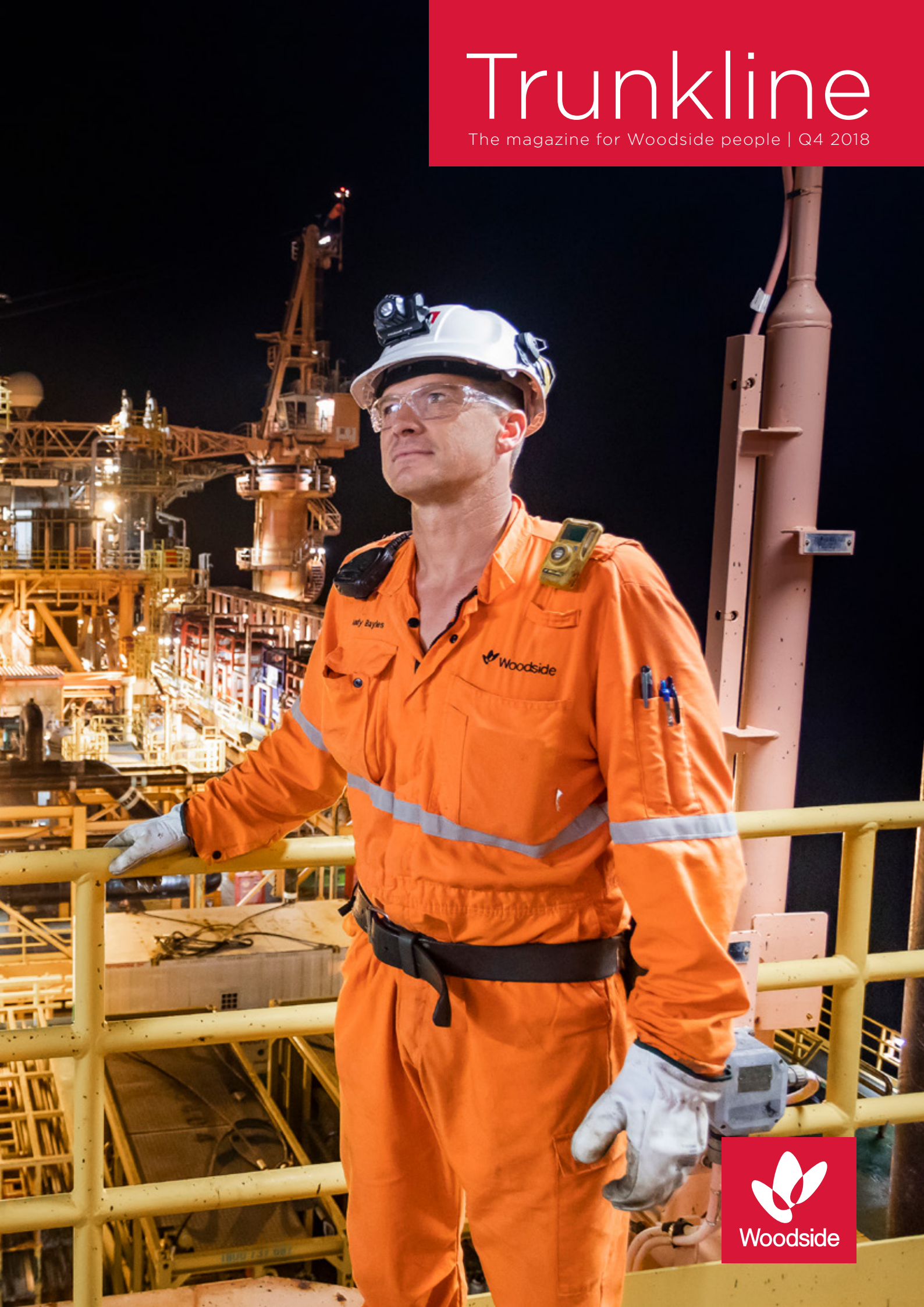
Trunkline

The magazine for Woodside people | Q4 2018



Woodside

On the cover

Fond farewell: Production maintenance technician Andrew Bayles on board the Nganhurra, the floating production storage and offloading (FPSO) facility which retired from the Enfield oil field in Q4 after a successful 13-year stint. Picture: James Campbell

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Over the past 12 months, Woodside has made significant strides in its growth journey.

We have successfully grown our portfolio and our market, while working to maximise the value of our base business.

The effort that underpins this is vast and varied, as our article on this year's Woodside Award winners reveals.

It involves doing the basics right, as evidenced by the great safety record of our Nganhurra crew, as much as it does thinking outside the square, like our SMART Apps team.

It means working with others to share ideas, as shown by our NASA collaboration, and being mindful of building an inclusive workplace, as is clear in our Reconciliation Action Plan.

Please read on for a snapshot of what has been a busy year of progress.

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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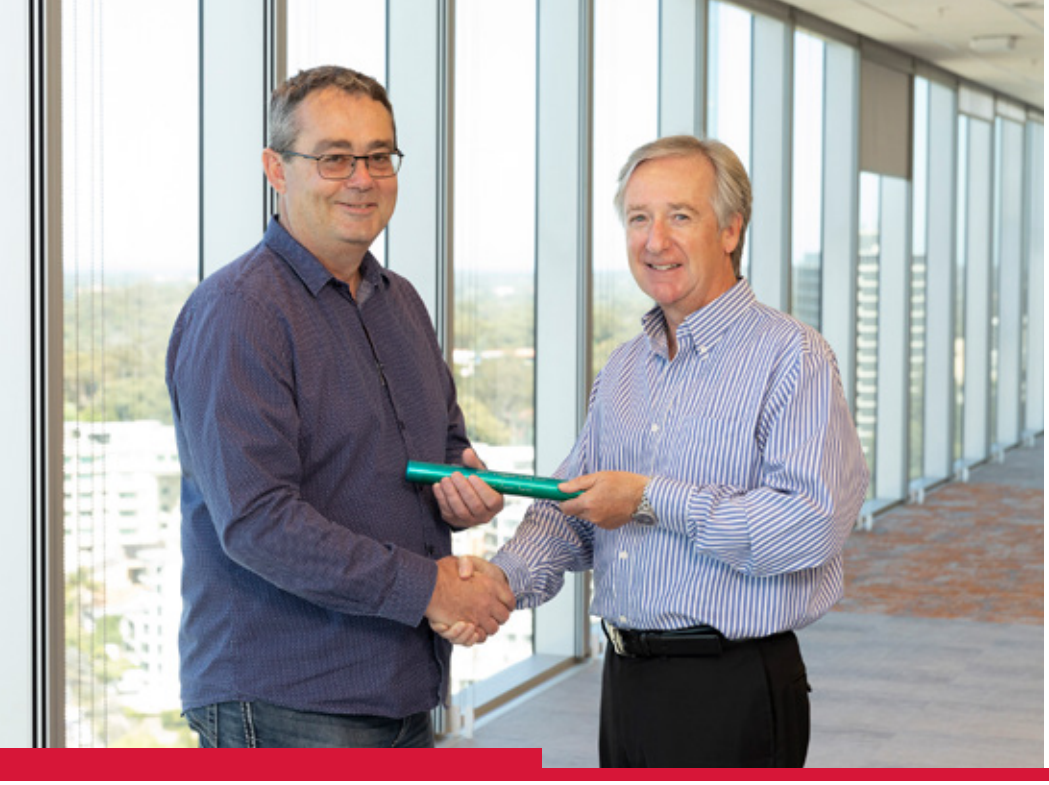


GWF-2 puts foot on the gas

First gas from the Greater Western Flank-2 (GWF-2) Project commenced early in October 2018 – six months ahead of schedule and US$630 million ($890 million) under the project's original budget of US$2 billion.

First gas was achieved on 23 October from the Lady Nora Pemberton 03 well.

"It's a fantastic result and only possible thanks to outstanding collaboration, planning and execution across the business," says GWF-2 project manager Andy Fielding.

"Whenever we came across a challenge we worked together to achieve our objective without compromising safety or reliability.

"It's also a tribute to our contractors who were willing to work closely with us to push the envelope and accelerate the project. That was absolutely critical."

GWF-2 seeks to develop six hydrocarbon fields located some 175 km north west of Dampier, off WA's north west coast, with eight production wells tied back to Goodwyn Alpha (GWA) platform via a 35 km-long subsea pipeline.

Andy took charge of GWF-2 in September 2014.

"I clearly remember FID (final investment decision) as it occurred on the day of the Woodside end of year party in 2015," he recounts.

"It gave the project team something extra to celebrate.

"At that time we didn't know the project would be as successful as it was; but I did know I would ask the team to go after every opportunity."

Andy lists some of those opportunities, and how they were seized.

"Our mission was to develop five wells on a P50 (50% probability) basis by the middle of 2019 and another three wells by the end of 2019," he explains.

"Through many, many different approaches we delivered all eight wells in one go – before the end of 2018."

It wasn't all plain sailing, and Andy recalls an early hiccup.

"In fact, we started behind the eight ball on day one because drilling was delayed by three months when the drilling rig we had lined up was redeployed to Pluto," he notes.

Rather than delay to match the rig availability, "we kept our foot on the gas," as Andy describes it, "and pressed on with our base plan so if other opportunities emerged, the schedule would be ahead of the game, not behind."

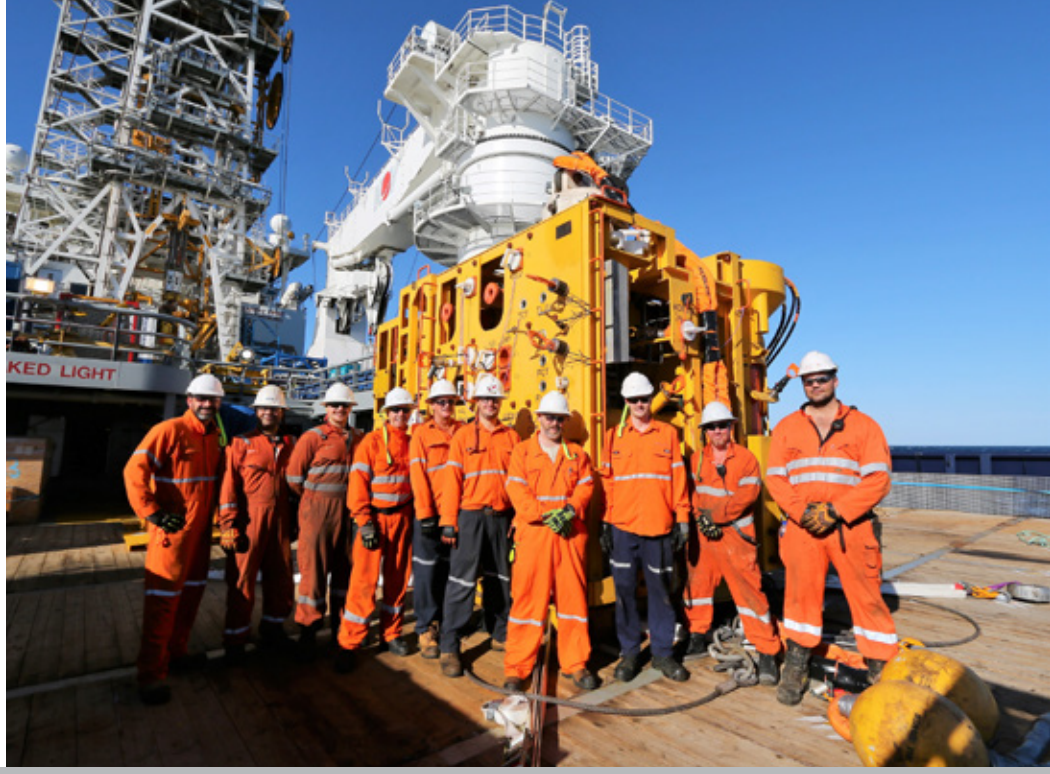
And that's exactly what happened when another rig became available.

"We tried to create more value by virtue of creating opportunities wherever we could and protecting known opportunities by de-risking hardware delivery and offshore activities as much as possible," Andy continues.

"For example, we decided to use a light well intervention vessel, not the rig, to deploy the subsea trees which meant we could take their delivery off the critical path and deliver them later."

Also critical to the success of the project was enabling innovative thinking.

Every six months, the project team would come together to discuss our



Mission accomplished: From left, opposite page: start-up manager Dave Watson, left, is handed the GWF-2 baton from project manager Andy Fielding, to take over the next stage of the six-field tie-back to GWA; onboard the Island Performer, the purpose-built light well intervention (LWI) vessel with a deployment tower to lower and land the LWI stack on to the christmas tree and recover barrier plugs from wells; the umbilical termination head is lifted through the hatch for installation; the Island Performer crew.

delivery work scopes bringing clarity to project interfaces across the project.

"It meant the core project team could work collaboratively and actively look for opportunities to execute the project safely and in the most efficient way," Andy reports.

Combining two drilling campaigns into one scope and accelerating subsea and pipelines scopes were the major contributors for early first gas.

Andy asked Paul Kelley, general manager well engineering, and Dave Noblett, lead development coordinator, if they could bring forward two wells from the planned second campaign into the first.

They could.

He then asked for the third and final well to be brought in, too.

The biggest barrier was completing the well during the cyclone season.

So an investment in longer term weather forecasting was made, providing confidence for the team to combine the final well into single, consolidated campaign.

The result?

Drilling had been scheduled to be completed in the second half of 2018; instead, it finished before the end of March 2018.

Another important contributor was collaboration with contractors, such as the pipelay contractor, McDermott.

Woodside worked with McDermott at its fabrication facility in Batam, Indonesia, to develop a double joint method for pipelay.

"The 12-metre pipes were double-jointed into 24-metre lengths," explains pipeline delivery manager Leigh Coleman.

"The pipe was then shipped directly from Batam to the pipelay vessel to the field where they were laid to the seabed to construct the pipeline."

This halved the laying time at sea, cutting out vessel waiting time, reducing costs and drastically reducing HSE exposure.

"We adopted the mantra 'Simplify, simplify and simplify again' and we tried to simplify the design at all stages," adds Andy, pointing to another successful collaboration – with Oceaneering.

Simplifying the design of the umbilical meant Oceaneering could manufacture the umbilical without any modifications to its plant in Scotland.

Fiachra Gleeson is Subsea and Pipelines (SS&PL) delivery manager for Senegal, and previously held the same position for GWF-2.

"The subsea team displayed fantastic collaboration and innovation in accelerating its work scopes," Fiachra says.

He singles out:

- Decoupling the tubing head spool delivery from the Xmas tree delivery, enabling a low-cost vessel of opportunity to be used instead of the more expensive drill rig;
- Installing the Xmas trees as part of the light well installation campaign, which also produced savings and schedule benefits;
- The seamless loadout of umbilical to the installation vessel carousel at the umbilical manufacturer's facility.

Fiachra adds: "Credit is due to the team and the support they received from Projects, Drilling and Completions and SS&PL. Without this collaboration, such success would not have been achievable."

Senior vice president Projects Mike Robinson describes GWF-2 as "a fantastic achievement" and "a world-class result that continues to build on our track record of delivering to or better than our promise".

Mike adds: "It demonstrates our ability to collaborate, innovate and accelerate in a way that delivers maximum value for our business and that of our partners.

"I thank everyone involved in the GWF-2 Project for their hard work, resilience, teamwork and dedication throughout."

Scene set for turnaround success

Four major turnarounds – at Karratha Gas Plant (KGP), North Rankin Complex (NRC) and the Goodwyn facility – were successfully completed in 2018, setting the bar high for another big year of turnarounds to come.

The basis lay in good, comprehensive planning across the business and beyond.

Maintenance, Operations, brownfields projects, Engineering, Subsea and Pipelines, Logistics, Contracts and Procurement plus many other functions and teams worked closely with contractors and suppliers to deliver one of the most complex shutdown scopes in many years.

Multiple work fronts across multiple disciplines were simultaneously executed.

Highlights included:

- no recordable incidents in 300,000 hours worked;
- delivered an additional 13kT of production over what was originally projected;
- execution within 3% of the original target for the overall budget.

Mike Steel, offshore turnaround superintendent, says that these major work scopes are needed to perform integrity and safety critical maintenance that allows the business to continue producing safely, as well as enhancing future production values through Project upgrades.

"For example, to ensure efficient and reliable production on NRC we needed to replace the power turbine on its Train 3 export compressor turbine for the first time, which had its own unique set of challenges," Mike notes.

General manager Maintenance Ragan Stonier says the turnaround execution team showed unwavering commitment to Compass values and kept a firm focus on:

- health, safety and environment as our number one priority, with no exceptions;
- ensuring quality, first and foremost with all considerations and decisions focused on a quality outcome that would ensure the best long-term solution for Woodside;
- having the discipline to do what is right and to challenge ourselves to deliver the best outcome, even when it was very difficult to achieve.

"These achievements were made possible through the outstanding teamwork and collaboration of many areas of the business," Ragan points out.

These included Operations and Engineering, the turnaround excellence team, campaign maintenance teams, brownfields and many more.

Looking forward, 2019 will be a year unlike any other in the history of Woodside, with preparations underway for five major turnarounds at our onshore and offshore infrastructure.

Turnaround excellence manager Russell Probert says: "Thanks to a collaborative effort involving turnaround excellence leadership, asset owners and production planning and market liaison, these schedules have been developed to minimise impact on production while executing turnarounds safely, on time and on budget."

Maintaining production: This year's turnarounds included the replacement of the molecular sieve on Karratha Gas Plant Train 2, and these photographs illustrate some of the scope. Opposite page and left, removing and replacing the piping; above, turnaround maintenance team lead Richard Horlock inspects the site before the sieve is removed; below, installing a refurbished process control valve was part of the scope.

Russell adds the turnaround excellence team is confident that it can demonstrate the outstanding performance of 2018 is part of a longer-term drive for repeatable, sustainable outcomes whereby expectations will continue to be met or exceeded in 2019 and beyond.

"But that will require a continued focus on health, safety, environment, quality and discipline, as well as collaboration across the business and beyond."

Ragan says he is very pleased with the success of the massive work scopes in 2018.

"Success means safely executing quality work and returning the business to normal operations on plan," he explains.

"And this was a terrific success with no recordable incidents and completion within range."

He continues: "I appreciate the dedication of all teams to work together for quality outcomes.

"I know that learnings are already being considered for future turnaround campaigns."

Fond farewell for 'exceptional' Nganhurra

The curtain fell in Q4 on Nganhurra's 13-year stint over the Enfield oil field – and it finished on a high note, performing to an exceptionally high standard.

The reservoir, about 50 km north north west of Exmouth on the West Australian coast, has reached the end of its field life.

"We were going to decommission Nganhurra at the end of 2017, but because of her exceptional performance we extended her life by a year," says asset manager Gerard Ransom.

Production ceased at midnight on 7 November and the process of disconnecting the floating production storage and offloading (FPSO) facility from the field began. At 9.36am, on 5 December, she officially disconnected and sailed away for the last time.

The 270 m-long double-hulled custom-built facility will lay up in Labuan, Malaysia, awaiting its next oil field or maybe new owner because its condition makes it too good for the scrap yard.

"We'd be keen to use her again if the need arose, or pass her on to another owner," says Gerard.

"She's been a wonderful asset to the company and has generated some marvellous memories for a lot of Woodsiders."

Gerard cites just three of Nganhurra's impressive credits:

- In August 2017, she surpassed her long-standing personal safety record of 777 injury-free days – not only setting a new facility record, but a new company-wide record, too;
- Over the past three years, Nganhurra has delivered top quartile performance with average reliability of more than 96 per cent;
- Lifting costs have been maintained at less than US$40 notwithstanding a fall in 50% in production volumes over the past three years.

It's a terrific record but a lot of hard work and impressive collaboration on and off deck has been required to create what is known as "the Nganhurra way of working" and which resulted in the highest cross-skilling of any Woodside asset.

Tony Wood relates his own story.

"Cross-skilling has given me the opportunity to move from marine into a production and maintenance skillset," Tony said in October.

"I started as ship's master. Then I became a utilities operator, process operator, control room operator, permit control officer, and I'm currently a production maintenance coordinator.

"I gained all these new skills since my mid-30s."

Tony is only one of seven people assigned to the facility from its very first day with the company, when it left a South Korea shipyard, until its final day at Enfield.

The others are Terry Kohrs, Shane Maguire, Grant Penn, Dug Neeson, John Robson, and Stef Albu.

They're part of the 200-strong crew over the past 13 years who've helped create the team culture for which the FPSO is famous.

"A lot of credit for that must go to James Carter and the late Alex Fairbairn who put together the team for Nganhurra," explains Tony.

"They chose people for the facility who were dynamic, on the ball and experts in their field but at the same time they were people with a relaxed demeanour.

"They brought together these experts in their various fields and told them 'we want you to get this facility up and running, and when it is, we want you to start cross-skilling and sharing your knowledge and info with the team so we become a multi-skilled asset.'

"There hadn't been such an asset among Australian FPSOs before."

Gerard says that team culture has delivered outstanding safety achievements, in part because of a "find and fix" attitude embedded in the facility.

"This has been a key enabler for both its high reliability and strong process safety performance," he adds.

Tony reckons he can count the number of "bad vibe" days on one hand onboard the Nganhurra – which comes from the Baiyungu language and means "we all" out of respect for current and past Elders.

"A lot of credit must go to the lots of people who've made up the team – their acceptance of each other and the inclusive culture we've developed on board," he notes.

Top teamwork: A strong, united and inclusive culture is cited as critical to the success of the Nganhurra, helping the FPSO crew deliver top quartile performance as well as setting safety records.

"That's what we've focused on over the years – working together and putting aside differences. We've worked hard to ingrain a team culture that includes the various people who have joined during a turnover.

"For example, whenever we have contractors out here, we make sure they don't feel like they're outsiders but part of the team. We've always tried to ensure it's not an 'us and them' situation. It's just 'us'."

Offshore installation manager Tim Sullivan agrees.

"When I arrived three years ago, I was set up to succeed by this team culture," Tim recalls.

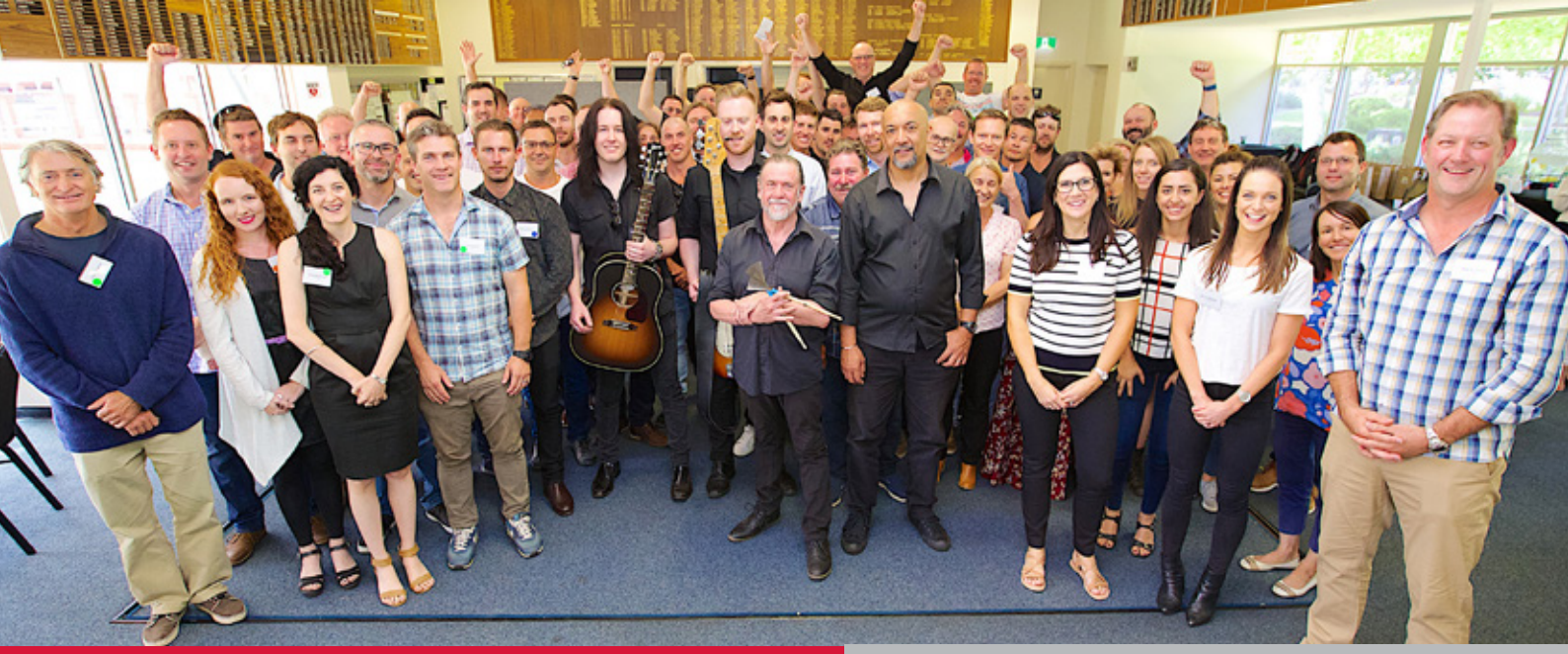
"The contractors, the team culture and the inclusivity of contractors have been key to the success of the Nganhurra and to achieving the safety and productivity targets.

"The crew have been coming up with innovative simple solutions to expensive problems."

That crew has now been redeployed to various assets as the Nganhurra awaits a decision on the next chapter in her life story.

Fast facts

- The Nganhurra was built in the Samsung shipyards on Geoje Island, South Korea, in 2006
- Its build and commissioning took 19 months, setting an industry record for a complete FPSO project
- First oil was 28 June 2006
- In total, it produced more than 80 million barrels
- Its minimum crew is 21, maximum 64 (previously 80)



Joint goal: WA Youth Orchestra management staff joined Health Safety and Environment representatives at two forums in Q4, sharing experiences to improve health and safety.

Songsters find safety in numbers

There's no comparison between the health and safety challenges faced by the oil and gas industry and those confronting professional musicians, right?

Wrong, says Rob Neesham.

"Noise, ergonomics, mental stress and the very real potential for personal injuries – they're all issues musicians face, as do we in oil and gas," says Rob, senior Health, Safety, Environment and Quality (HSEQ) business adviser.

Which is why Woodside partner the WA Youth Orchestra (WAYO) was invited to participate at this year's annual forums for our frontline Health, Safety and Environment representatives (HSERs).

Deborah Peach, general manager HSEQ for Operations, says HSERs are at the frontline of health, safety and environment and are critical in helping us achieve a perfect HSE day every day.

"The forum has become an annual event to celebrate the important role of our HSERs to share improvements and success stories, build capability and promote collaboration across the network," she explains.

This year's forums included a variety of activities such as a fitness for work session with the Fremantle Dockers, an interactive energy efficiency WELopoly game, senior leader Q&A panel and workshops to build capability in communicating HSE messages using powerful story-telling techniques.

One session that certainly got the attention of the crowd was a panel session with members of the WAYO.

"The contributions and insights from the WAYO management team were fantastic," says Rob.

"They discussed the challenges they faced and we could compare them with those for our people on the frontline."

Deb says she was very happy with the participation and turnout.

"In total, we have 150 Woodside and contractor frontline HSERs across our production and supply facilities and this year I'm happy to report we hit a new attendance record with more than 100 HSERs," she reports.

She told the HSERs their roles were both challenging and rewarding.

"You influence the behaviours and culture of HSE on the ground – where it counts," she said.

"You encourage people to speak up; you coach and mentor your team mates and our new starters; and you have the opportunity to bring the big and small issues to make our workplace safer and reduce impacts to the environment."

In a session designed to challenge attendees, WAYO personnel set up their musical instruments, and Rob announced a singalong.

With the help of a voice coach, the HSERs learnt Kenny Rogers' classic The Gambler, with lyrics adapted by Woodsiders Donna Walker and Leanne Taylor.

"The lyrics were all about hand safety, which is a challenge in our industry and there are a lot of correlations with musicians' desire to protect their hands," says Rob.

"People were initially reticent and somewhat confronted by singing but there was a lot of positive feedback at the end, and it met the criteria of wanting to stretch people out of their comfort zone in a fun way."

Overall the forums were a resounding success and continue to provide an opportunity for our HSERs to share, learn and collaborate in new and innovative ways.

Working hand in glove

Being able to use both hands is something most of us take for granted until perhaps we lose the use of one.

So Woodside's petrophysics team ran a joint workshop with Schlumberger to show just how debilitating losing a hand can be to one's livelihood, life and the lives of those around us.

"We noticed a rise in industry-reported hand injuries and we wanted to take positive action to try to arrest this trend," says senior petrophysicist Jonathan Slade.

"We felt the best way to do this was to run a Helping Hands Program activity, so we met with Health, Safety, Environment and Quality (HSEQ) representatives to develop the idea.

The program involves building prosthetic hands which are then donated to victims of land mines in developing nations.

The prosthetics comprise moving and non-moving digits controlled by a spring-loaded mechanism, strapped (not surgically attached) to the amputee's arm.

They are assembled from 30 unmarked pieces of plastic and metal by participants whose dominant hand is immobilised to recreate the experience of trying to achieve dexterity with only one hand.

Jonathan says his team learnt of the program during Stand Together For Safety 2018.

It was agreed such an event would best be run in conjunction with a contractor partner heavily involved in aspects of the business where hand and finger safety was particularly pertinent.

Oil and gas services company Schlumberger was asked if a joint workshop could be arranged, and the event used as a "seed point" to spread the HSE safety message.

Schlumberger readily agreed, and the activity was held in November at its premises in Jandakot.

Petrophysics adviser Ben van Deijl and Schlumberger HSE manager Richard Taylor explained to the 60 participants how hand-related injuries account for almost one-third of all recordable HSE incidents in Schlumberger Australia.

The workshop also discussed the value of a prosthetic in a developing nation, talked about team learning and collaboration – and how the event would give the participants a glimpse of life without their dominant hand.

The 19 Woodsiders participating came from Drilling and Completions, petrophysics, Global Exploration, Geoscience and Contracting and Procurement.

They and 41 Schlumberger employees split into teams to build the prosthetics with their dominant hand "disabled" by a special glove.

Jonathan reports the participants responded with enthusiasm.

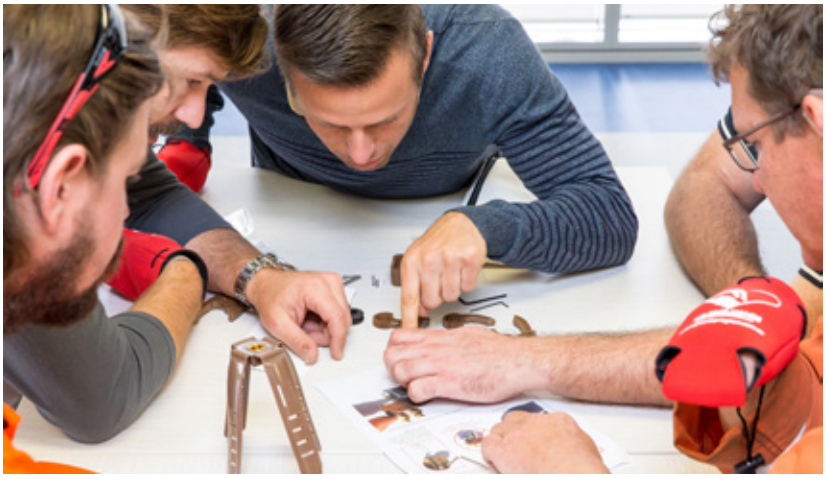
"I feel very grateful to have been given the opportunity to do something practical, and genuinely useful to help people who really need it," said one.

Another said it also made poignant the importance of taking ownership of individual safety.

As for the enforced impairment, one said: "It made all of us slow down and take the time to complete the task right the first time – that is, actually read the instructions, ensure we had right tool and equipment available, have a clear understanding of what we were trying to do and who was to do what."

Richard says the workshop was perfectly aligned with Schlumberger's aim of preventing injuries and helping in the community, noting the company has been very active in tackling hand safety and has recently implemented a number of initiatives.

"We were very excited to have been part of this exercise and look forward to working with Woodside in the future on similar initiatives."



Helping out: After some intensive puzzle-solving to assemble prosthetic hands, top, participants from one team proudly display their efforts, below.

Hats off to Watson

Woodside has collected the Institute of Chemical Engineers (IChemE) Australasian and Global Safety Centre Awards for its implementation of process safety best practice and improvements to reduce major loss of containment risks.

"This is fantastic recognition for our company's collaborative effort in building the tool," says Fiona Hick, vice president Health, Safety, Environment and Quality (HSEQ).

"We couldn't have achieved this outcome with a single discipline approach.

"We gathered input not only from data scientists but we also approached health and safety advisers, geoscientists, environmental scientists, analysts and more.

"It's a great example of the whole being greater than the sum of the parts."

The tool is called Watson for HSEQ, and it's one of a kind.

Released in early 2017, it's a program that has taken more than 30 years of historical information and surfaces deeper insights, initiating a step-change in data analytics.

"It's like a search engine on steroids," exclaims health and safety analyst Leanne Taylor.

"During safety investigations, what used to take several days of cross referencing and searching can now be done in a matter of hours."

Health and safety is not the only area reaping benefits from the tool. Teams across Woodside are also accessing Watson for HSEQ to prioritise, plan and make better decisions.

The engineering centre process team uses the tool during risk assessments to provide operational data in planning workshops.

"Good process safety management involves building lessons learnt from the past into existing and future operation and plant designs," explains onshore process technical authority Mike Lewis.

"Being able to draw real world operating experience into our future designs is very powerful."

Woodside's permit process has also been improved through Watson for HSEQ.

"We receive nearly 10,000 SAFE (See, Assess, Fix, Encourage) Cards a month at the Karratha Gas Plant and manually going through them would take hours, possibly days," explains operations adviser Gavin Ramsden.

"What Watson for HSEQ allows us to do is analyse the cards to obtain feedback on our permit process, and then provide those insights to our site controllers to drive action and improvement."

The IChemE awards also recognised Woodside's collaboration with International Business Machines (IBM) on Watson for HSEQ.

"During the six months it took to build Watson for HSEQ, IBM contractors and our HSEQ staff became a single team," notes data science manager Neil Richards.

Neil, who led the team during the building of the program, says the collaboration between the Digital and HSEQ teams was a key component in the success of the tool.

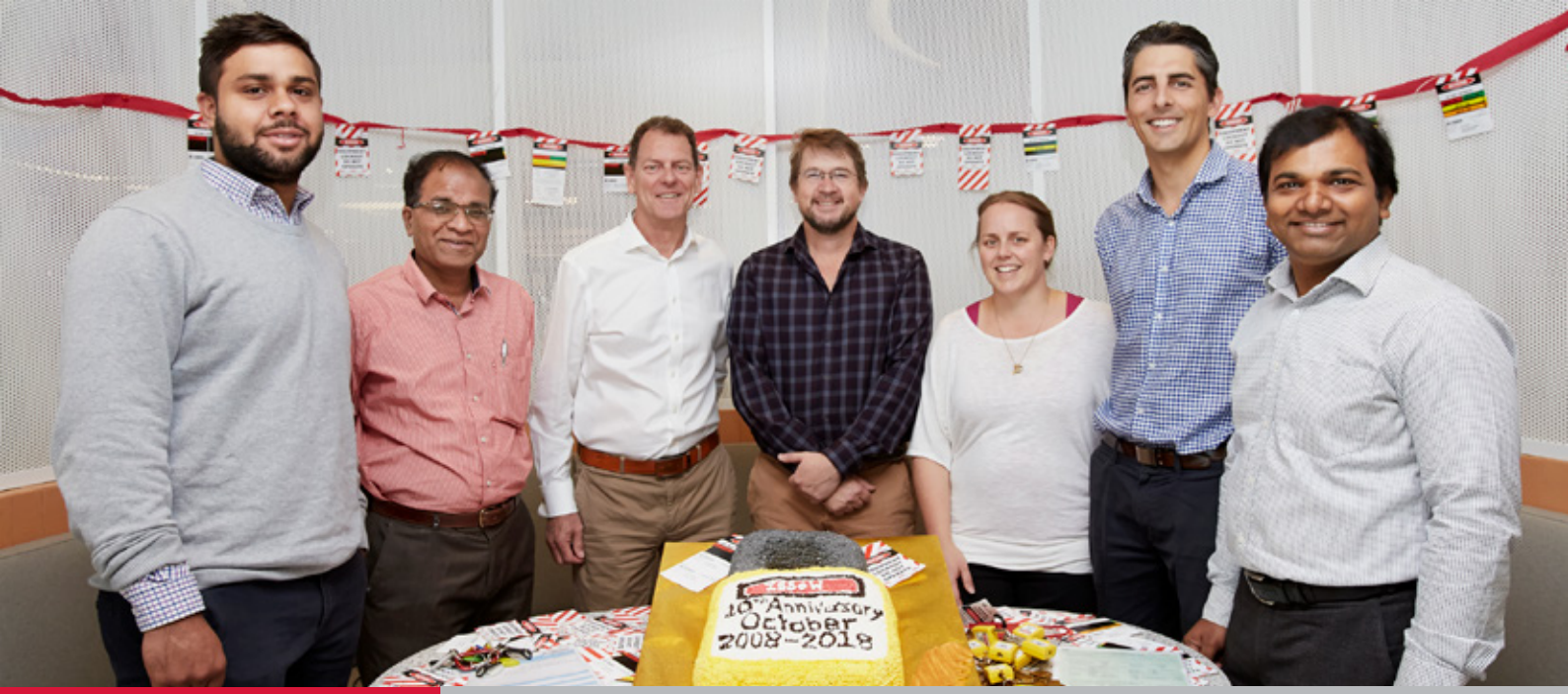
"The seamless interaction, communication and co-operation of the whole team was paramount to the success of Watson for HSEQ."

What's next for the tool?

"We are looking at the opportunity for improved data interrogation to reveal better and deeper insights of events to assist with faster and better decision making," enthuses Neil.

"This would mean Watson for HSEQ could look at all the data it has, rapidly establish connecting trends and derive deeper insights, to enable proactive activity management. Identifying those early warning signs and responding to prevent a future event is our goal."

Winners are grinners: Watson for HSEQ has received global recognition, thanks to the collaborative efforts of Health, Safety, Environment and Quality (HSEQ) and Digital.



Let them eat cake: The tenth anniversary of ISSoW (Integrated Safe System of Work) was an event for reflection, celebration, anticipation of further improvements . . . and birthday cake.

Top ten for ISSoW

Woodside celebrated the 10th anniversary of the Integrated Safe System of Work (ISSoW) with some reflections, a birthday cake and the prospect of an even more successful decade ahead.

Our ISSoW combines an electronic permit to work system, risk assessment tool, isolation management feature and lock-out tag-out practices, together with promoting an understanding and ownership of work.

It's a step-change improvement on the wieldy paper-based system that preceded it – a system featuring carbon-copies that increasingly was showing signs of strain.

"There was limited standardisation across the facilities," recalls operations adviser Matt Hill.

"We average around 4000 active users in our permit system and generally 2500 are contractors who move from facility to facility, so they had to adapt to different methods of doing things."

It was no recipe for success.

Indeed, the root causes of incidents were often traced back to permit processes – either in weaknesses in their rules or structure, or in the application of the systems.

What was needed was a common set of business rules utilising modern technology – a robust, transparent and intuitive tool that would capture procedures and store them in a data base of information and hazards. A tool that was capable of being easily updated.

Woodside worked with a software vendor to build such a system.

It's now known as Prometheus ePAS (electronic permitting administration system) after the Prometheus Group purchased the software vendor.

"ISSoW has standardised our expectations for managing risks and hazards and applying controls," says operations adviser Erin Commijs.

The statistics show the successes.

- Permit-related incidents have fallen from 60% of total incidents to less than 20%;
- One and a half times more hazards and four times more hazard controls are identified;
- Isolation scheme preparation time has shortened from six hours to 15 minutes;
- Some 5000 pages of procedure rules governing permit to work have been reduced to 100 pages.

However, current ISSoW operations authority Thomas Pritchard remembers it wasn't all smooth sailing.

"The process had been working well at other facilities but had become bogged down at Karratha Gas Plant (KGP) mainly due to the sheer scale of the facility and the vast amount of permits needed to keep the plant operating," Thomas recalls.

In fact, he spent 12 months refining ISSoW to remove some of its complexities and make it more efficient.

"ISSoW continues to play a critical role in keeping our people safe and our facilities operating reliably and efficiently," he notes.

Tom Walsh, a former process owner, says: "ISSoW has developed from being simply a tool to allow consistent application of a set of rules across our assets to a truly integrated system which is now also focusing on delivering efficiencies and sharing lessons learnt.

"And one of the really great things is the majority of the improvement and innovation over the years has been driven by our users on the frontline."

Ryan Beccarelli, general manager operations support, says the next stage in ISSoW's development will include improvement to the permit span of control to control authorisation of permits to the right person in line with the risk.

"This will improve efficiency, but more importantly will improve safety by creating a priority focus on high-risk work," Ryan notes.

Pedal to the metal of possibility

3D printing holds out the prospect of enormous potential benefits to the oil and gas industry – and it might also be useful for the many Woodsiders who are keen cyclists, judging by this new-fangled bicycle.

It was designed, printed and assembled by the team at FutureLab – the Woodside-supported unit at Monash University in Melbourne.

This bicycle is a demonstration aimed at highlighting opportunities to replace existing metal components with strong, lightweight and corrosion-resistant composite materials.

The FutureLab team used a carbon fibre-nylon composite material printed on a Markforged X7 3D printer to construct the bike frame, which was supplemented by conventionally manufactured bike parts.

It was brought to Mia Yellagonga by Nick Birbilis, the Woodside Innovation Chair at Monash until his recent departure for the Australian National University, and some of Monash post-graduate research students.

"The team was able to take the bicycle from conceptual design to fabricated end-use-part in six months at a total cost of $2,500 – a drastic cost reduction compared to traditionally machined carbon bicycles currently available with retail prices of around $10,000," Nick says.

"Production of such complex components is now possible by future manufacturing methods, such as net shape composite printing.

"The possibilities for custom plant repair, or a plant of the future, are here to be realised."

A major challenge was the constraint of the design imposed by the printer build volume. As a result, the joint design became a critical focus of the design process.

The bike had to be printed as modular components (more than 40 in total) which were joined together into a final assembly.

Nick says the design process for the bicycle was highly iterative, with multiple designs for both joints and components.

"By utilising additive manufacturing or 3D printing, benefits such as reduced costs and time associated with producing various prototypes were realised, allowing the team to create and innovate openly," he explains.

"In addition, because additive manufacturing allows more flexibility in design and fabrication, there is the potential to 3D print all of the components for the bicycle including metal – the pedals, gears, etc – as well as rubber for the tyres and seat.

"3D printing opens the doors for innovative and ground-breaking new ideas – the possibilities are endless."

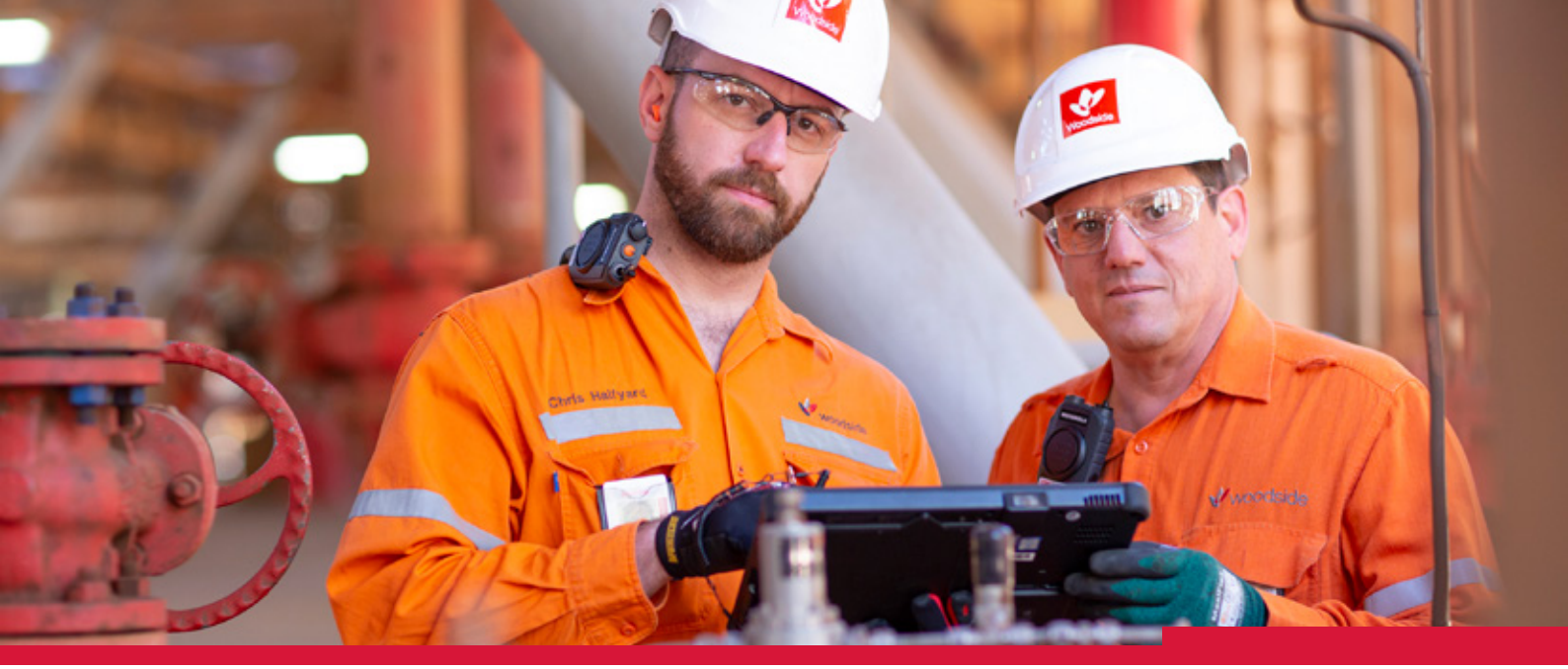
Technology manager Voula Terzoudi says the ability to replace heavy metal components with lightweight carbon fibre composites has the potential for huge savings.

"Woodside is next examining how 3D printing might produce replacement parts for our plants and, more importantly, embark on the journey of 'spares on demand' and developing a 'sparing philosophy' that fits in the 21st century," Voula says.

"For such a journey, all parties – including vendors, subject matter experts, technical authorities and process owners – need to be ready through management of change to embrace fit-for-purpose parts that have been made using the newest manufacturing techniques.

"As technologies change, engineers need to keep up to stay in the race."

Wheel potential: Voula Terzoudi, centre, admires a bicycle built by research students from FutureLab at Monash University. Nick Birbilis, the then Woodside Innovation Chair at Monash, is far left.



Frontline smart: Chris Halfyard and Geoff McCombe check out the SMART Apps at Karratha Gas Plant.

Get SMART on the frontline

Innovation can occur anywhere – in universities, in laboratories and on the frontline in a gas plant.

Its ingredients usually include a problem, a creative mind and a healthy dose of collaboration.

Which is how Chris Halfyard came to create a new way of reporting data – without compromising safety and reliability of operations.

Chris, an instrument electrician (Inlec) at Karratha Gas Plant (KGP), believes manual forms and reporting are the enemies of efficiency.

"The reactive nature of frontline work makes it very difficult to keep track of what has been closed out and updated in SAP," he says.

He knew juggling such demands increases pressures, which can lead to costly mistakes.

With colleagues, he devised a prototype to track progress of their allocated tasks and close out their work from a simpler interface than SAP.

"It has significantly changed the way we worked and increased the quality of SAP closeouts," reports James Hodnett, frontline supervisor at KGP.

Digital's Ben Quartermaine now leads a highly skilled, agile SMART (Simplified Maintenance and Reliability Tools) Apps team charged with developing mobility-enabled apps to deliver Chris's vision.

With Digital providing expertise in software development, system integration and SAP, and Maintenance supplying business process knowledge, a successful collaboration with a strong focus on understanding the needs of end users was forged.

"The project team has always been very committed to finding simple and effective solutions for end-users," says Wade Reynolds, North Rankin Complex (NRC) maintenance supervisor.

"From Chris visiting NRC pre-project to talk through what the apps will look like and how they will work, to frequent face-to-face meetings over Skype, the team has been able to action our suggestions for improvement within small timeframes.

"Working in this way we've been able to roll out something of this magnitude successfully and thoughtfully.

"We look forward to further efficiencies with the addition of more apps."

Using the latest cloud-based software development technology and leveraging high levels of automation in Digital's newly established Veloc'it cloud computing platform, the team has delivered a secure and quality product.

To date, the team has developed two SMART Apps: Technician Tool Time (also known as T3) and Fix-It both compatible with personal computers, SmartPhones and tablets.Site-based workers use T3 to record their tool time to assist in the identification/elimination of waste during their working day. Fix-It simplifies the creation of corrective maintenance requests.

Ragan Stonier, general manager of Maintenance, says the two apps can significantly improve productivity.

The next app, 2DO, will allow work order execution and close out to be more efficiently conducted in the field.

"It will bring the frontline workforce into alignment with the paperless way of working at Mia Yellagonga," notes Tyrone White, the SMART Apps project sponsor.

"The SMART Apps team is ticking every box in the innovate, collaborate, accelerate mantra.

"They innovate by bringing new and improved solutions; collaborate by working across functions and assets; and accelerate by aligning priorities to business goals and implementing feedback to create a product that customers want."

Ragan hopes that all frontline staff – more than 2000 people – soon will be using SMART Apps.

Woodsiders on NASA mission

This story isn't set a long time ago in a galaxy far, far away and there's no Galactic Empire.

But it does feature a robot in distress called R2B and stars two intrepid Woodside adventurers called Andrew and "Pickles" who dash to the rescue.

R2B lives on the International Space Station (ISS), orbiting 400 km above Earth.

Sadly, he was malfunctioning and there was no Luke Skywalker to fix him.

So NASA decided to bring R2B home to Earth which prompted Houston to issue the call: "Woodside, we have a problem."

Why Woodside?

In 2017, we entered into a five-year program with NASA for the development of robotics technology for Woodside.

That program saw a robot called R2C3 (one of NASA's Robonaut series) transfer to Perth, creating an opportunity to explore value-adding and improve risk management as well as swapping expertise.

R2B, the older brother of R2C3, was deployed in 2011 to the ISS as its flight unit.

But R2B developed an intermittent power fault which couldn't be fixed in space.

In May, he was returned to the Johnson Space Center in Houston for a bit of TLC.

But the Center's workforce was under a heavy workload so NASA asked Woodside if we had a communications technician and electrical engineer to help.

Andrew and senior communications technician Michael "Pickles" Peters were chosen.

"We haven't got the robotics skills they have at NASA," Andrew acknowledges,

"But what we do possess is the skill sets to come up with simple solutions quickly.

"That's what oil and gas engineers excel at, and that's certainly what we do in Operations."

For seven weeks, Andrew and Michael swapped Operations for Mission Control, operations risk assessment for the space station interface document, and The Shelf for Starbucks.

Michael describes the experience as "truly amazing".

"At first it was daunting, but the skills I had obtained working with communications and electronics throughout my career were able to be transferred to repairing these state of the art robots," he says.

The pair worked with NASA engineers to come up with solutions for R2B's problem.

In the last week of their stay, they helped present the teams' solutions to NASA engineers and project leads to gain approval for R2B's repair plan. The presentation was a success and the repair and re-commissioning of R2B is underway.

"NASA's approach to designing robots and our approach to fixing things came up with the best solution," Andrew explains.

He says the pair captured invaluable lessons for Woodside as the company takes robots into operations.

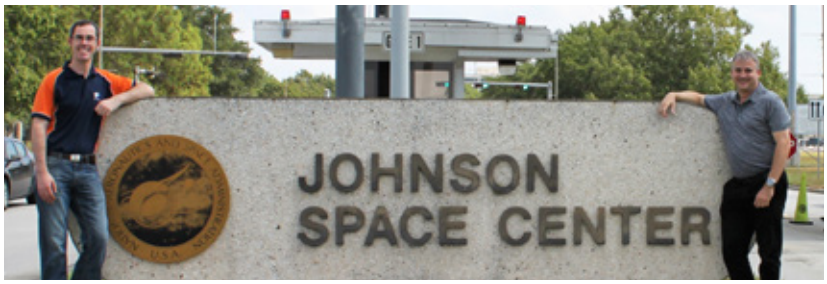
Since returning, Michael and Andrew have passed on their knowledge, helping draft a deployment process for robots at Woodside.

Michael says one of his key takeaways is the importance of documentation – and how quickly and easily changes can be lost when people become swept up in the excitement of delivering a project.

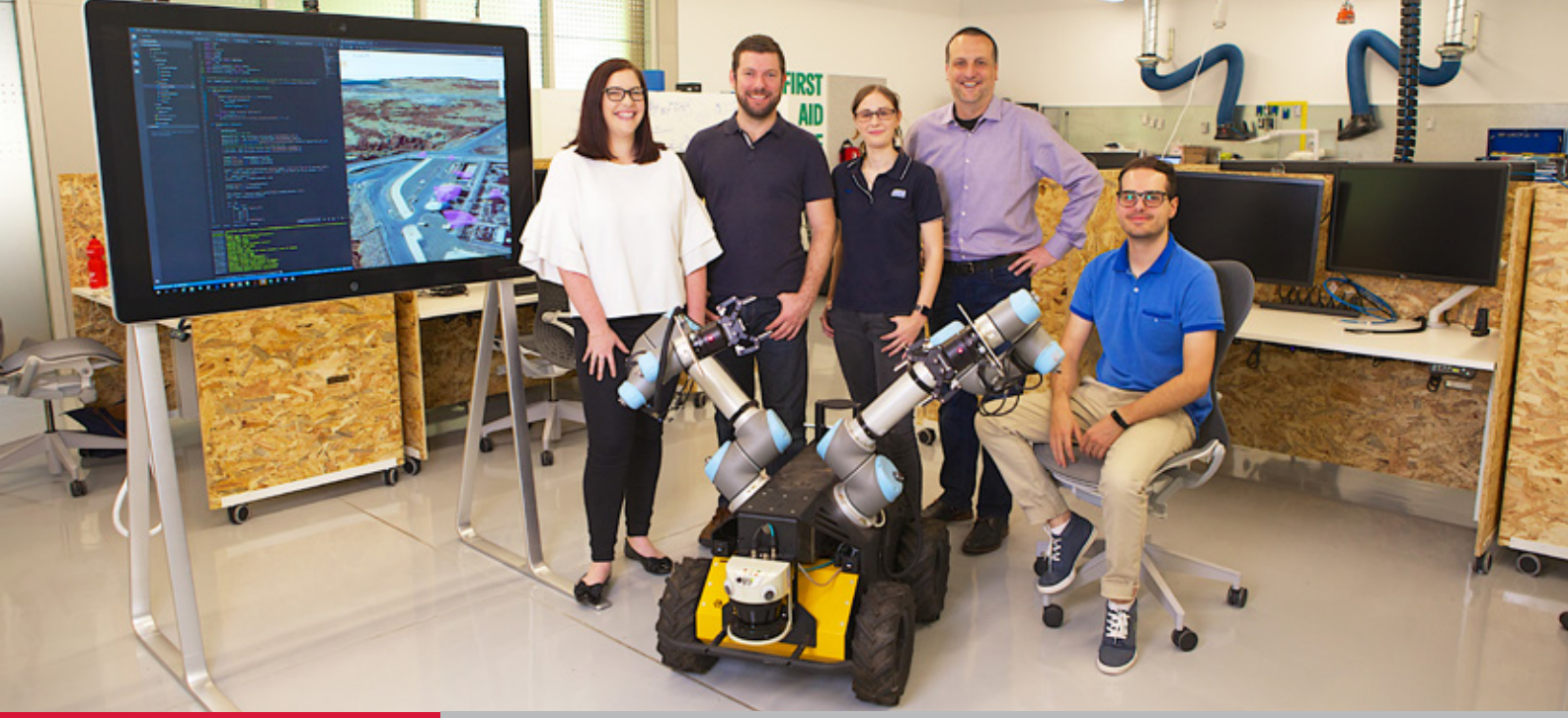
Ryan Beccarelli, general manager operations support, recently remote-operated a robot on the North Rankin Complex from the Perth office.

"The experience exceeded my expectations," Ryan reports.

"This demonstrated capability not only for emergency response, but also for collaborative robots to assist operations in daily tasks such as conducting Operator Proactive Monitoring (OPAM) rounds, thereby freeing up the human operator to complete more interesting and valuable work."



Men on a mission: Andrew Corrigan and Michael Peters captured invaluable lessons for Woodside during their time in Houston spent helping solve robotics problems at NASA.



Moving in: The intelligent and autonomous systems team is enjoying purpose-built work space in the Mia Yellagonga campus.

New home for new tools

With the safe relocation in late October of our Robonaut and Ripley, our transition from Woodside Plaza to Mia Yellagonga is now complete.

As our two robots settled into their new home, the intelligent and autonomous systems team was eagerly awaiting to put them to work in the laboratory at Karda.

The laboratory boasts an electrically grounded floor to eliminate static electricity; dedicated emergency power shutdown; flexible working spaces and an adjoining secure test facility which eliminates the need to travel outside Mia Yellagonga to conduct tests and experiments.

"This is a great space to enable the cross-collaboration we need and which we couldn't achieve previously," says the team's general manager, Russell Potapinski.

"This open layout also allows better interaction between my two groups – one working on pure robotics, the other on advanced sensor systems along with facility and visualisation.

"Though they're two groups, I don't want them working separately, so we've brought them together to become one, and that's facilitated by this more open and collaborative working environment."

And it's not just a case of collaboration between the two groups because Russell juggles a host of alliances that stretch well outside the confines of Mia Yellagonga.

The objective?

To take advantage of specialist skills that help us become more innovative in such areas as the remote operation of un-crewed facilities like the Pluto and Angel platforms, and future endeavours such as Browse, Scarborough and Senegal.

Drones and artificial intelligence (AI), analytics and machine vision, geospatial positioning and advanced sensors – these are the tools not just of the future but of the here and now, and Woodside needs to better understand them to fully utilise them.

"Our collaboration is aimed at weaving together a lot of technologies that were never designed to work together, such as analytic platforms, sensors, robotics, robust back-end communications, high-end computing," explains Russell.

"There's no one discipline that can cover it all off.

"So we collaborate with leading-edge organisations like NASA, ASC (maintainer of the Collins Class submarines) and the University of Texas just to name a few, and we enjoy the cross-sector fertilisation of ideas from sectors like mining, space and defence."

This fertilisation feeds into Production, with which Russell's team is deeply involved.

"We're like the experimental sandpit and Production can take from our learnings here and take them into the real world," he says.

North Rankin platform is already working with robotics and Pluto LNG Plant is piloting other technological advances.

Mike Price, vice president Pluto, says: "This facility is the nursery for development and application of new technologies we can then graft on to our existing business to make actual operations more efficient and productive."

And Richard Van Lent, senior vice president Browse, anticipates great benefits accruing from the robotics team.

"In addition to embedding these technologies in our existing facilities, we're already designing our new facilities such as Browse to incorporate the advantages they might bring to the table," Richard says.

A day in the life of ... a contracting and procurement adviser

Like many Woodsiders who call Western Australia home, senior Contracting and Procurement (C&P) adviser Rita Pinheiro originally moved for only a short time but is happy to stay longer.

"I've taken to the Perth lifestyle," says Rita.

"And the traffic is a dream compared with Sydney's."

Rita Hoskins (as she was then) moved from Sydney to Perth with then fiancée Elder Pinheiro in 2015 to take up a two-year contract with Woodside as a category specialist in C&P.

"I didn't set out to work in contracting and procurement," she explains.

"I took an available role at a company I wanted to work for and never expected it to open up a world of career opportunities as well as provide me with valuable life skills, such as negotiation, understanding contracts and most importantly, working together in challenging situations to achieve an outcome or common goal."

Immediately prior to joining Woodside, Rita was a commercial manager for AMP.

Before that, she was a procurement manager for the NSW Police Force and previously at QANTAS providing C&P support to catering, logistics, group safety and customer experience.

Rita says she likes the variety Woodside has provided and working closely with stakeholders to get the best outcome for the business.

"The beauty of C&P is that no two days are the same – that is what makes working in this function so exciting," she enthuses.

Rita and Elder married in 2017 and the couple spent Q3 this year busily preparing for an expanded family.

In the middle of Q4, Rita went on parental leave, having given birth to their first child, Eva, in mid-November.

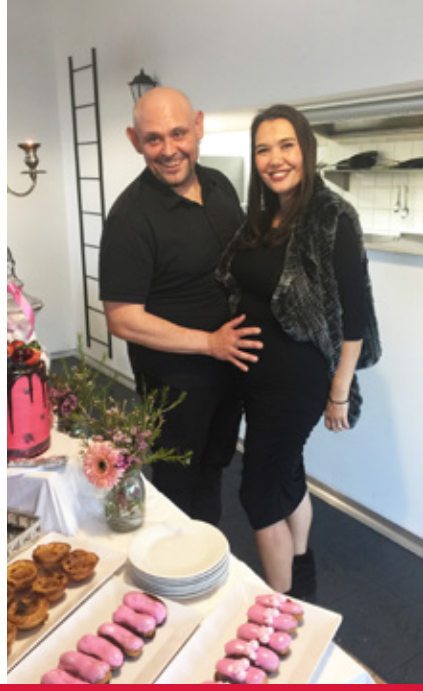
"I'm looking forward to seeing what childcare facilities Mia Yellagonga might offer as I hope to return to work in March 2019," she says.

Below is a typical work day before Rita took leave:

7.30am: I live close to the city and usually arrive at work around 7.30am. First job is to check emails to see if anything from our international offices has arrived overnight that needs to be actioned. For instance, our London office might require assistance onboarding a supplier, or the Canadian office may be seeking advice on how to engage a specialist provider of geological studies.

C&P is organised in "categories" to support the business – exploration and international, subsea, drilling and completions, to name a few. I've previously worked in the Maintain, Repair and Operate (MRO) category which is basically the supply of materials such as fuel, lubricants, tooling, etc, to Woodside's producing assets. In a previous role, supporting Production, I was able to visit the gas plants, King Bay Supply Facility and work from Karratha Gas Plant occasionally.

Since I joined the exploration contracts team, I've been involved in lots of very



Buying power: From left, Rita Pinheiro didn't plan a career in contracting and procurement (C&P) but has never looked back since becoming an adviser; with colleagues in the exploration and international C&P team; stratigraphy manager Neil Marshall explains sea fossils to Rita, who manages contracts for geoscience technology, including for biostratigraphy on exploration wells; with husband Elder Pinheiro, shortly before the birth of daughter Eva.

exciting projects including Myanmar, Senegal, Browse and Scarborough. We get involved in contracts that might vary from seismic acquisition and geophysical to engaging geological services to peer review geological models, rock sampling, palaeontology and laboratory testing.

8am: A meeting with the geotechnical operations (GTO) survey manager Mike Bowler to discuss upcoming GTO projects, for which I might need to organise seismic data acquisition, geotechnical surveys or multi-client data acquisition.

For C&P advisers like me, the key is to remain flexible so that we can respond quickly to business and customer needs.

We also need to work closely with our stakeholders – not only at the start but throughout the entire contract.

That means giving support in areas from strategy development and market engagement to negotiating with suppliers on terms and conditions of contracts.

It also includes assisting with supplier performance management, and building strong relationships with stakeholders which requires regular meetings.

9.am: Back at my desk to progress a tender evaluation.

Using our Contracts Lifecycle Management System (CLMS), I can easily access tender submissions and distribute the technical responses to the technical evaluation panel for review.

This is an extremely important part of the procurement process and we need to ensure our contractors can access the system and have submitted their tenders properly and in compliance with Woodside's requirements.

I also perform an initial review of the commercial tender submissions, which includes financial due diligence, anti-bribery and corruption due diligence and contract term negotiations.

11.30am: I meet with geoscience technology manager Amanda Panting to agree priorities for the following week.

We're creating a strategy for seismic data processing and Amanda is keen to understand our approach. This covers areas like how we intend to engage the market, which contractors have been selected to participate, confirmation that the technical representatives have provided a clear scope of work and, importantly, the estimated contract value.

This is before we issue an invitation to tender or request for a quotation.

12pm: I often take lunch with my husband somewhere outside the office where he can bring me a nice home-cooked meal. Having Level 2 at Mia Yellagonga where families are welcome means he can actually come into Woodside now.

12.30: I need to review our team activity plan to identify any expiring contracts and prioritise actioning those that are expiring. The activity plan is our way of managing the team workload. It ensures we are aware of business priorities and can allocate resources accordingly.

1.30pm: A meeting with subsurface data information management covers upcoming contractual requirements for database subscriptions, software licences and seismic data storage.

My job is to facilitate any commercial discussions – such as pricing – and ensure we have the correct terms and conditions in place which align to the scope of work.

2pm: C&P advisers often work across the business to collate information. Currently, I'm working on a deepwater geotechnical site investigation and environmental survey so I need to take advice from GTO, Health, Safety and Environment, as well as Employee and Industrial Relations on addressing specific risks in a tender.

3pm: I work on some draft tender documents and then switch to update the Myanmar contract register to ensure we demonstrate compliance with our contractual obligations and that our contracts are accessible to internal and joint venture auditors.

5pm: About now I usually head for home, unless we are in the middle of major tendering activities or working on an international project and need to be available for teleconferences with suppliers in places like London or Houston.

Once home I like to relax by reading a book, or playing a game with Elder on our PlayStation.

Accrual value adds up

Woodside's costs pour in from around the globe, so keeping track of what needs to be accounted for at the right time is no small task.

Like all large businesses, Woodside uses the accrual accounting method to accurately record and report company liabilities at the end of each month.

Traditionally, this has been accomplished manually on spreadsheets.

The process relied on several iterations of the same data being manually handled by many people across multiple functions before the final product was validated and loaded into SAP, Woodside's finance system.

In all, four or five steps had to be taken before that information entered SAP – and more steps equals more room for human error, more time and cost.

Recognising a significant opportunity for improvement, Finance, Project Services and Digital worked together to develop an automated way to generate cost accruals.It is based on the value of work done for Woodside, and enables SAP to be automatically populated, complete with business rules and validation to ensure data integrity.

The key was Woodside's projects cost management system, Unifier.

Woodside has used Unifier since 2012 within the Projects function.

Following collaboration within the business, its recent upgrade and reimplementation created flexibility to produce the opportunity for automated accrual.

Mike Burns, project controls lead, explains how a conversation with Brett Van der Mescht, finance manager group reporting, on the train home from work one Friday evening, was the spark for the change.

"Brett was talking about automation of finance processes and I suggested he should look at Unifier to leverage the work already developed around automation," recalls Mike.

Accruals count: Brett Van der Mescht, Mike Burns and Liz Barker worked together on a valuable improvement that was triggered by a conversation on a train ride.

"On the following Monday, senior systems specialist Donna Heathcote and I presented the Unifier solution to Brett and his team.

"The feedback was very positive, so a team was established to start and scope the project."

In a team effort led by Donna, the new automated accrual process went live in May with all accruals produced from the Unifier system being posted directly into SAP via automated integration.

Liz Barker was one of those who contributed to developing the new process, and as cost control team leader on the Scarborough development projects she's a customer, too.

Liz says it's eliminated a lot of manual handling of information between Cost Control and Finance, adding: "The entire process is now very slick and highly efficient."

Brett says the cross functional collaboration between Finance, Projects and Digital excited him most about the project.

"We ended with an automated process that has the minimum human touch-points and that actually saves time for everyone involved," Brett says.

Management accountant Chin Tan also hopes it can be an example from which future cross-functional project teams can benefit.

"If properly planned and executed, the potential gains from these projects can be truly limitless," Chin notes.

Liz agrees.

"The successful implementation of integrated accrual process opens the door to develop new ways of working across all our business support functions," she says.

"There are many similar opportunities across our business support services and I am hopeful that this is only the beginning of an integrated process improvement approach across the organisation."

Speedy Sprint showcases success

Two days of inspiring, entertaining and enlightening sessions brought employees together at the Woodside Week Sprint, held for the first time at our new campus, Mia Yellagonga.

For the statistically minded, it comprised 71 speakers at 13 sessions and 24 discussions, and was attended by more than 1400 people.

As befits its name, the Sprint proved to be fast paced.

It showcased our worthy Woodside Award winners and created a great opportunity for people to learn how other areas of the business are excelling.

And it featured some entertaining sessions, including ENERGY X Rebellious Thinking, supporting our ambitions to accelerate the way we work, and Q&A ExCom Edition of You Can't Ask That!

Lively discussions also took place at Woodside's progress across our Horizons, as well as at the Innovation session.

The Safety Session and High Performing Teams talks provided thought-provoking material and consolidated how important collaboration and safety culture drive performance.

Meanwhile, Level 2 of Karlak came alive as people explored the Wellbeing and Technology Pitstops while enjoying the charity barbeque on the Boolah daa moort terrace.

Tapping knowledge: Staff shared information and ideas via presentations, networking sessions, workshops and more at the annual Woodside Week Sprint.

Building success

For Woodside's new headquarters, Mia Yellagonga, the journey has been as important as the destination.

Every step of the project's progress has been guided by a desire to foster innovation, collaboration and acceleration in line with company values.

And that journey was rewarded with the coveted Chairman's trophy at the annual Woodside Awards in October.

Mia Yellagonga has a six Green Star rating, advanced wellness features and a variety of workspace choices, enabled by cutting edge technology.

As Chairman Richard Goyder explained, the building sets the scene for optimal performance – now and well into the future.

"In all, it has been a massive company effort guided by our Global Workplace & Property Team," he said. "They are very worthy winners."

From the use of biometrics, backed by global best practice processes, to the commissioning of artworks that highlight the Whadjuk Noongar people's connection to the land, each feature has been carefully considered and integrated.

The win also acknowledged the effort to ready staff for the move and to open the door to new ways of working.

In fact, innovative thinking was a feature of the ceremony, with high praise given to all 100 entries.

In the end though, there could be only one winner for each category. And the winners were:

Value: Accelerating Greater Western Flank 2

The GWF2 Team, working together with our contractors, used innovative offshore execution practices to improve performance and delivery. They were able to consolidate two separate ready for start-up scopes into a single RFSU, bringing the project six months ahead of schedule and achieving significant savings. With ullage emerging at the Karratha Gas Plant, this outcome improves operational flexibility as well as project economics. A great result for our business.

Sustainable Outcomes: Mercury Recovery Facility

Mercury, which is removed from natural gas to make LNG, can be harmful to human health if not managed appropriately. Woodside worked with specialists to design, build and ensure safe operation of a state-of-the-art mercury recovery facility in Karratha. This reduces the likelihood of people being harmed through accident or mishap, eliminates the need for long-term storage while waiting for Basel Convention permits, ensures quick removal of the material during turnarounds and builds advanced technology in the Pilbara, creating jobs. It provides a cradle-to-grave Australian solution to dealing with this hazardous waste.

Worthy winners: Clockwise from the top of the opposite page, a mighty effort from across the company went into our move to Mia Yellagonga, and this was recognised with the Chairman's trophy at the Woodside Awards; the Chairman's award is saluted with some excited fist-pumping; the Culture & Inclusion award went to GEM; a creative solution to a misplaced beam at Pluto gas plant delivered the Innovation award; a cradle-to-grave solution to recover mercury won the Sustainable Outcomes category; and accelerating Greater Wester Flank 2 took out the Value award.

Innovation: Safe and Speedy Pluto Flare Solution

What do a sock, Post-It notes and a hula-hoop have in common? Combined with some clever thinking, they helped safely secure a misplaced beam at our Pluto gas plant. Discovered during a routine inspection, the beam sat above critical piping and only 10m away from the flare tips. Keen to avoid a major unplanned shutdown – the simple and most conventional approach to solving the problem – a multidisciplinary team was formed to take on the challenge. They combined to deliver a quick, creative and highly innovative solution.

Culture & Inclusion: GEM: Value Through Gender Equality and Inclusion

In the past year, GEM has had a change of name and launched its inaugural five-year plan. Its strategy is clear, resting on four solid pillars – challenge norms, elevate role modelling and pathways, support the modern worker, and dismantle barriers through advocacy. Membership is booming with stretch targets reached across all parts of the organisation, taking in greater gender balance, function and seniority, and work location. Momentum is strong.

Ngujima-Yin on show

The Vincent oil field's floating production storage and offloading (FPSO) facility was the centre of attention recently when 18 visitors enjoyed a guided tour of the Ngujima-Yin in Singapore in late September.

The guests were customers from India, Malaysia, Thailand and Japan, plus representatives of Mitsui – Woodside's joint venture participant in Vincent.

They were in Singapore for the annual Asia Pacific Petroleum Conference (APPEC), and Marketing and Trading offered them a first-hand inspection of the Ngujima-Yin at Keppel Shipyard.

"It's not often customers get the chance to view an FPSO and when we extended them the opportunity, many jumped at it," reports oil trading manager Ian Sutherland.

"The feedback was that they were impressed by the scale of the facility and the scope of work being undertaken.

"There is no doubt that the visit left a lasting impression with the customers and will be in the front of their minds in 2019 when it comes to procuring oil for their refining systems."

Singapore-based staff Jarad Archer, Iain Livingstone and Mark Taylor led the guided tour, which was organised by Jamie Patten, Seline Neo and Amy Chao in the Singapore office.

Many of the visitors had a refinery background and were amazed by the complexity of the Ngujima-Yin.

"Some likened the facility to a floating refinery and were impressed by the amount of work and attention to detail being undertaken," Ian says.

Vincent produces a heavy sweet crude oil and its main markets have been China, India, Korea, USA, Malaysia, Thailand and Japan.

"Customers need sophisticated refineries to get the best value from this heavy sweet crude," notes Ian.

"And with the impending International Maritime Organisation's (IMO) regulations mandating low sulphur fuel for shipping from 2020, the facility is well positioned to satisfy the expected increased demand."

Given the interest in the crude oil from customers, one question that kept coming up was when the Ngujima-Yin would be back in field producing.

It is anticipated that will be mid-2019.

New look for FPSO

After 78 days and more than 443,000 working hours, the Ngujima-Yin returned to the water in October.

FPSO delivery manager Jamie Patten says the 19-hour-long operation went smoothly and resulted in the Ngujima-Yin once again afloat after spending some 78 days being refurbished at Keppel Shipyard in Singapore.

"It looks very smart with a new hull top half colour which matches the new Woodside red logo," Jamie reports.

Keppel construction manager Aloysius Cai says it was one of the most successful and smooth vessel movement operations held at Keppel during his time at the shipyard.

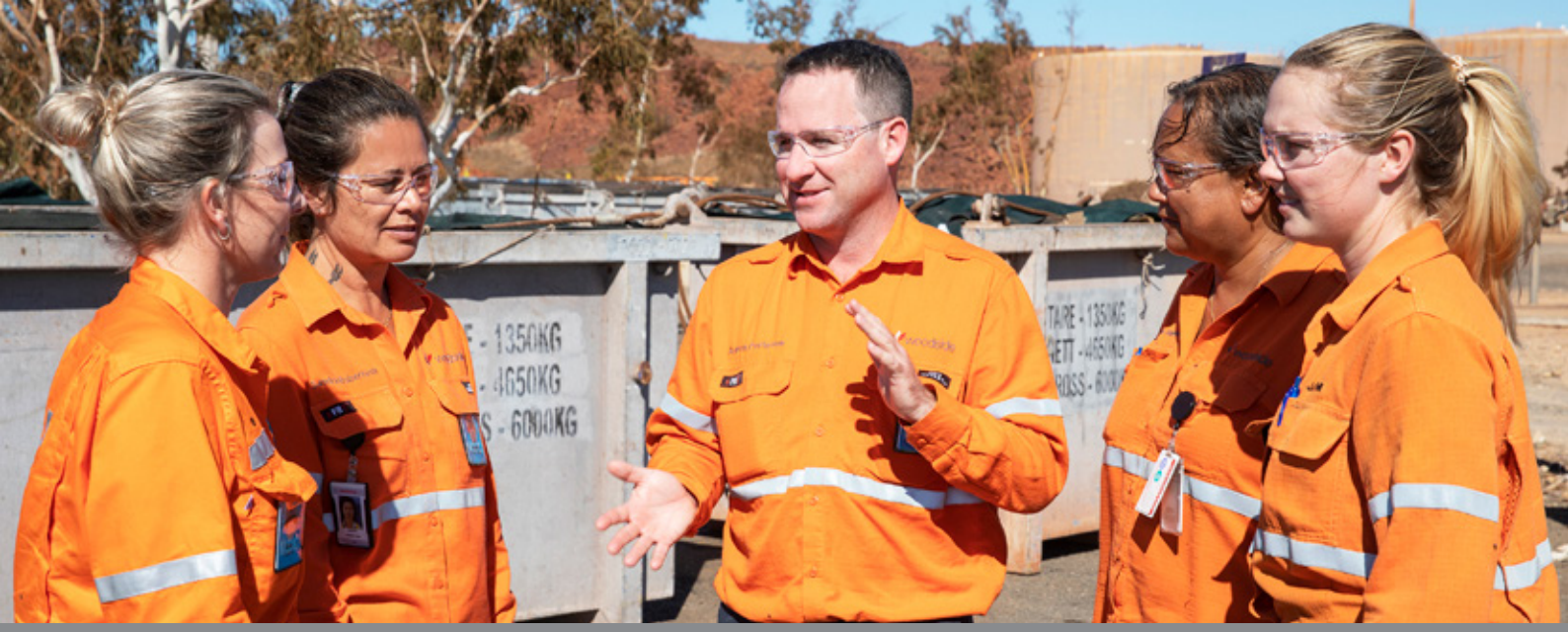
"It was a quality achievement with credit to the Woodside Marine team for their strong support during the operation," Aloysius says.

Besides a new hull coating, the FPSO benefited from a raft of other important critical activities, carried out on schedule, while in dry dock.

These included the removal and reinstatement of the propeller and shaft for inspection; renewal of all shipside valves; completion of all Lloyds Register docking survey items; and removal and reinstatement of the rudder inclusive of renewing the rudder carrier bearing and steering gear hydraulics.

The Ngujima-Yin is expected to leave Singapore around the end of Q1 2019.

All aboard: Top, visitors to the Ngujima-Yin facility at Keppel Shipyard, Singapore; below, the facility returned to the water in October, refurbished and with a fresh coat of paint for its hull.



Waste not: Regional logistics manager Aaron Porteous discusses with Woodsiders Sandra Robertson and Geanne Quartermaine, and North West Alliance's Bree Flagg and Jayme Dobson (far left and far right respectively) the new contract between Woodside and NWA.

RAP engagement generates jobs

Improved outcomes for Indigenous people and increased opportunities for Indigenous businesses – our Reconciliation Action Plan (RAP) guides Woodside on achieving these important goals.

One way is through engaging with Indigenous businesses; another is by encouraging our suppliers to do the same, and to boost Aboriginal employment and/or training opportunities at their organisations.

"These obligations are inserted into the contracts representing significant Indigenous opportunity with our suppliers," states Contracting and Procurement (C&P) senior adviser Erika Barrett.

"Late last year we conducted an Indigenous-only tender for the award of the civils contract award. This comprised minor building works, road works, concreting and civil works of that nature."

The successful contractor was NEMMS JV – a joint venture partly owned by Indigenous interests and well known in WA's mining industry. The contract is helping the JV transition into the oil and gas industry, and build capability and capacity.

Meanwhile, more than 400 employee houses are being upgraded in the NWS housing refurbishment program. A joint award has been made to an Indigenous business and a non-Indigenous business.

"We've released a large number of houses so they can take a longer-term view of their work schedules which has enabled them to hire more Indigenous trainees and engage more with local businesses in Karratha," says Erika.

"That's generated substantial employment in the Pilbara, where they've been recruiting Indigenous workers for the project."

In September, Woodside signed a four-year contract (with options for extension) with North West Alliance (NWA) to provide waste management services onshore across the Burrup and to offshore facilities.

"This was a great collaborative effort between Logistics, facility management and C&P, capturing efficiencies and further building on the relationship with a high-performing Indigenous business," says Peter Balfe, facility management team lead.

The contract includes targets around continuous improvement, a school environmental awareness program, innovation research projects including working with Woodside on waste minimisation, diversion from landfill and drill mud treatment, an increase in local waste treatment and recycling, and employment diversity.

NWA is a fully incorporated 50:50 JV between Veolia, a global environmental solutions company, and Our Country founded by Palyku Traditional Owner Blaze Kwaymullina.

Blaze applauds Woodside for taking a long-term strategic view on the contract.

"This allows us to cascade the opportunities down the supply chain and have a greater impact on the local economy because our contractors and suppliers know they can invest with more certainty," Blaze explains.

"It's the same with people. It takes time to bring people on.

"We've set ambitious targets for local, Aboriginal and female employment. The Woodside contract has allowed us to take on more employees and trainees and transition people into leadership roles."

Blaze advises Indigenous companies hoping to connect with Woodside to begin a dialogue and take a long-term view on how both parties can benefit from the arrangement.

"Long-term opportunities will come out of proven performance," he believes.

Participating partners: Amber Hasler, festival director of Fringe World – one of several Woodside community partners which featured in the Mia Yellagonga building induction video.

Deeper engagement a good investment

Woodside's social investment team in Corporate Affairs helps engage our employees with the communities in which the company operates.

And thanks to a combination of proven systems and new technology, this engagement is becoming deeper than ever.

The existing system is SuccessFactors – a tool Woodside uses to assist employees in such areas as performance and learning.

"Leveraging SuccessFactors means we can provide targeted information on our partnerships," says Corporate Affairs adviser Ryan Felton.

A module within SuccessFactors called My Community Interests allows employees to register their specific community interests and then matches those interests to relevant community partners of the company.

The module enables staff to take up some exciting offers and experiences with our partners.

The social investment team has also leveraged the new digital screens throughout Mia Yellagonga, Woodside's new headquarters in Perth, to promote information around the various partnerships.

Ryan notes: "This enables our employees to be more informed on Woodside's social investment approach." And our partners are happy to reciprocate.

Several recently helped create a building induction video for Mia Yellagonga. Corporate Affairs manager of social investment Gemma Rapson says nourishing these partnerships is important.

"By supporting these organisations and programs, we are helping to build our local communities and support long-lasting outcomes," says Gemma.

"We want our employees to be our biggest advocates for Woodside's work within the community, so we need to provide them the tools and knowledge to engage with our programs across four key community areas."

Those areas are:

Arts, culture and community well-being
Woodside invests in local arts, culture and community programs, aiming to grow vibrant and inclusive communities and provide opportunities for those involved to learn, grow and inspire others.

In November, Woodside's Principal Partnership with the FRINGE WORLD Festival reached new heights with the signing of a three-year agreement securing naming rights to its central hub, The Woodside Pleasure Garden.

This extends on the long-term Woodside-Fringe relationship, which also supports local artists through the Homegrown Heroes program.

Education and early childhood development
We partner with not-for-profit organisations, businesses, schools and government to support early childhood education, specifically in science, technology, maths and engineering (STEM) subjects.

And in collaboration with EarthScience WA, the company has delivered free science learning activities to more than 10,000 students across the state through the STEM in Schools program.

Systems engineer Jyothi Pandalaneni says: "Many students say it's the best science lesson they've ever had."

Environment
Woodside has collaborated with government and non-government research organisations and experts to build greater understanding of the diverse environments in which we work.

One example is our long-term partnership with the Western Australian Museum, which turns 20 this year. This led to our securing naming rights for a learning gallery at the new WA Museum, scheduled to open in 2020.

Technology and Innovation
Through the Woodside FutureLab, experts from world-class research institutions, start-ups, entrepreneurs and adjacent leading industries develop new and innovative solutions to challenges facing our industry.

"We believe collaborative innovation is the key to future growth and that's what Woodside FutureLab is all about," says technology manager Voula Terzoudi.

Developing healthier future

Helping those who help others is an important part of Woodside's social contribution to the communities in which we operate, and it's a journey that takes numerous routes.

For example, we forge strategic partnerships to support initiatives aimed at producing mutual benefits with our host communities.

Another path is the Woodside Development Fund, which works to improve early childhood outcomes for children up to 8 years old.

And there's also a philanthropic dimension, whereby we donate staff time through our volunteering program and assistance through donations, small-scale community grants and contributions to provide emergency relief.

This year, Woodside made such a contribution to Telethon Speech and Hearing – the not-for-profit charity and independent school offering diagnostic, therapy and support services for children with hearing loss and speech and language delays.

A $250,000 donation was presented by our chief executive officer Peter Coleman and vice president Corporate Affairs Sandra McInnes.

Also at the Lexus Ball, a further $100,000 was pledged towards the Gift of Giving auction supporting the important work by researchers at the Telethon Kid's Institute focused on youth mental health and suicide prevention.

The CEO made the point that Woodside, like Telethon, has been a long-time supporter of those who support others in Western Australia.

And he said he was personally passionate about the work of Telethon – an institution in the WA community.

He also thanked the Telethon team for its work over half a century in raising more than $306 million for the children of the State.

These donations were only part of the company's contribution this year to Telethon Trust beneficiaries, which in number totals 43.

At the 21st Juvenile Diabetes Research Foundation Gala in Perth, $50,000 was donated to the Find A Cure program aimed at funding research to cure, treat and prevent Type 1 Diabetes.

Type 1 Diabetes is suffered by 1 in 200 Australians, and well delivery manager Josie Fourie knows personally the value of such research. Her daughter, Evie, was diagnosed a year ago with Type 1 diabetes just after she'd turned 9.

Evie was immediately transferred to emergency and was then in hospital for a week as her blood glucose level was stabilised and her parents were trained in being carers.

Josie and her husband, Louis, knew that Evie would need daily injections of insulin as a result of her diagnosis.

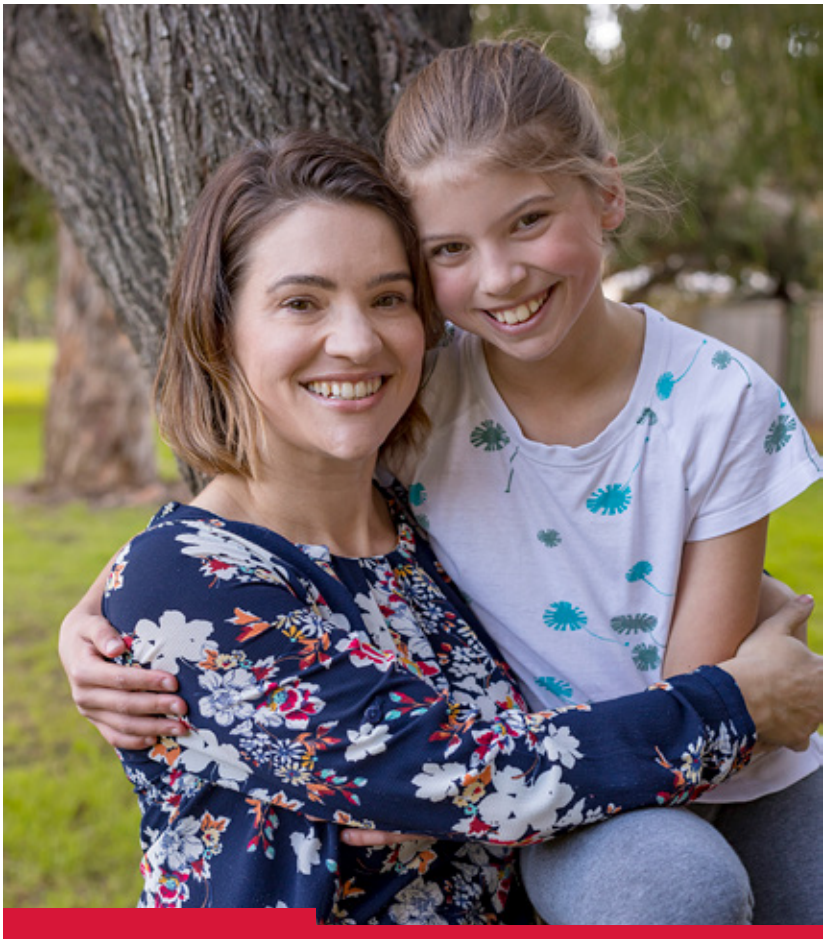
"But we had no idea about the full 24/7 nature of this illness," Josie says.

"It's a relentless disease that's not well understood. Type II diabetes isn't the same – it's not as volatile.

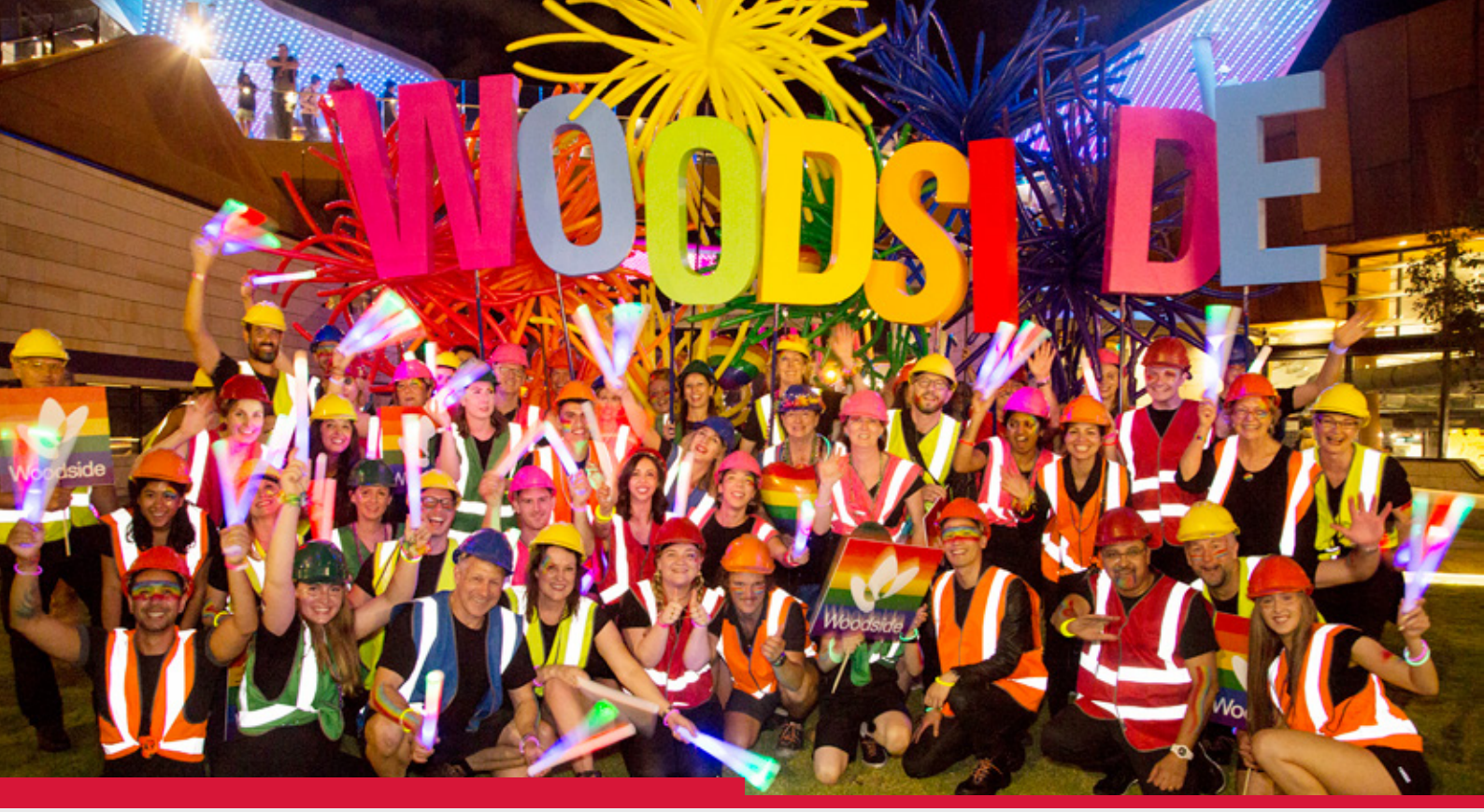
"You basically have to live with an emergency management plan all the time and a transition plan for when they return to school to ensure the child is safe."

Evie wears in her arm a sensor that talks to a mobile phone and sends her parents medical data, which set alarms to notify if glucose or insulin is needed to restore her glucose blood levels to a safe range.

"Though technology has helped manage Evie's condition, treatment for type 1 has not advanced beyond insulin therapy and that's why research is so important," Josie says.



Health management: Well delivery manager Josie Fourie's daughter Evie was diagnosed with Type 1 diabetes in 2017.



Party time: From left, Spectrum members and supporters took part in the biggest-ever Pride Parade, held in Perth in November; celebrating Spectrum's second birthday; opposite page, Holly Thomas, left, with AFLW Dockers star Dana Hooker.

Spectrum steps out with pride

Members and supporters of Spectrum proudly marched and danced under the Woodside banner in November as the community joined more than 100 organisations in celebrating PrideFest.

A 60-strong dance troupe dressed in hi-vis clothing, wearing rainbow make-up and glitter-decorated helmets and sporting balloons, danced their way through the Perth entertainment district of Northbridge before thousands of spectators.

PrideFest is the successor to Pride Parade, born in 1989 to protest the criminalisation of homosexuality in Western Australia.

It has since grown into a colourful, annual extravaganza, showcasing LGBTI lives, culture, community and creativity through choreography, costume and floats.

This year was the largest Pride Parade to date, with entries from across the State's sporting and community groups, political parties, support organisations and businesses.

It was also Woodside's first entry and chief executive officer Peter Coleman, chief operations officer Meg O'Neill, chief financial officer Sherry Duhe and Spectrum's executive sponsor Jacky Connolly were among the participants.

The crown atop Mia Yellagonga, Woodside's headquarters, was lit up in dancing rainbow lights during the parade.

Jacky, vice president People and Global Capability, says: "It was a real honour to be part of our awesome group to fly the flag for inclusion at Woodside.

"I honestly have not felt that proud of any company I've been employed by."

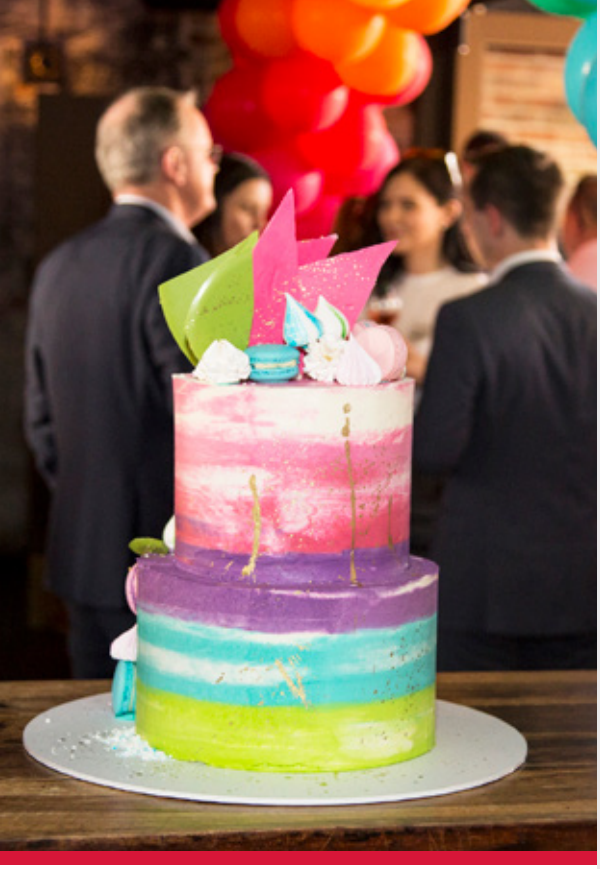
Lead organiser Caitriona Puren notes: "This took an enormous effort by Corporate Affairs, Security and Emergency Management and friends and family of Woodsiders to help out with the choreography, music, painting and design."

And Spectrum co-chair Georgia McClanachan adds: "There was an unmatched feeling of pride being able to march under the Woodside banner – an identity that has expanded to include such phenomenal diversity."

The parade came hard on the heels of another big night for Spectrum; only a couple of weeks earlier, the community had celebrated its second birthday at Connections night club.

More than 120 people from Woodside and network leads from other organisations, including Chevron and PwC, attended the celebration which included a powerful speech by chief operations officer Meg O'Neill and culminated in a drag performance.

Georgia says Spectrum's coming out to be visible in the community is a key milestone in its five-year roadmap from



awareness to advocacy to eventual cultural change.

"We've worked hard over the past two years internally to ensure we're fostering the right environment for our staff," she explains.

"Now, we're looking to advertise that culture and help other companies on their journey."

Demonstrating Spectrum's leadership in this space, Georgie and Spectrum Committee member Paul Henderson were invited to speak in September at the Australian Ally Conference at Curtin University, when they presented on the challenges of being authentic in the workplace after leaving university.

Jacky notes: "We don't discriminate when it comes to talent.

"If there's talent that we're missing out on because certain people don't feel comfortable here, then we need to address that."

Spectrum was launched in 2016 to support an inclusive environment for LGBTI+ staff and allies, and now has more than 500 members.

Caitriona says Spectrum hopes to have an even better float for next year's PrideFest.

"Synergy won best float this year, but I think we can top it," she predicts.

"The brainstorming has already begun."

Footy GEM

Woodsiders in Karratha heard from one of the nation's leading Aussie Rules players when Dana Hooker spoke at Karratha Gas Plant in Q4.

Dana, the Fremantle Dockers Women's Fairest and Best winner in the team's inaugural season, shared insights on resilience, transitioning through change and balancing priorities in life.

Do everything possible in preparation for execution, was one lesson she shared.

This, she advised, would help reduce elements of doubt that could prevent a person from performing to their best and achieving the desired outcome.

The event was jointly organised by KNet, the Karratha Network set up early last year for Woodsiders working in the Pilbara, and GEM or Gender Equality Matters (formerly Women of Woodside).

System engineer Kelsie Clarke, GEM representative in Karratha, says the event was well supported, as were other GEM events held this year.

"As part of the strategy refresh in Q1, site engagement was identified as a key enabler to moving GEM forward," Kelsie notes.

Previously, GEM's presence in Karratha was restricted to participating in teleconferences.

"But I'm pleased to say we've already held two successful 'Gems of Wisdom' events, actively supported by asset manager Andrew Lobb, where speakers share experiences, stories and knowledge to support gender equality, and we've built some incredible engagement," Kelsie reports.

Figures support that with GEM increasing its membership in Karratha by more than 37 per cent.

On White Ribbon Day in November, GEM sold out of white ribbons and wristbands within one hour, raising $700 to help victims of domestic violence.

GEM is hoping to build on the momentum in 2019.

Legendre

legend laid out

On the morning of 16 August 1968, Mike Smith was on-board the drill ship *Glomar Tasman* which was anchored on the North West Shelf (NWS) some 120km north north west of Legendre Island off Dampier.

Mike was a wellsite geologist for BOC Australia Ltd (BOCAL) – the operator for a joint venture exploring for oil offshore on the NWS.

BOCAL was a subsidiary of established British company Burmah Oil. Another JV partner was a company yet to discover profitable production 14 years after it was established as Woodside (Lakes Entrance) Oil Co NL.

Mike examined the cuttings as they came to the surface under a microscope and found no trace of oil. He got the same result when they were examined under fluorescent light in a UV box.

"The next test was to add solvent to the sample to flush out any hydrocarbon," Mike recalls.

"Under the microscope the solvent released streams of viscous fluid – it was oil!"

Three months later, oil flowed to the surface.

The Legendre-1 well completion report described the find as "a highly significant test . . . The recovery of oil upgrades the northern portion of the Carnarvon basin as a highly potential hydrocarbon-bearing area."

Not bad for the first offshore well drilled in WA waters and only the second well drilled offshore on the NWS.

This was the oil that launched the NWS oil and gas story. The discovery lifted Woodside's share price by some 75 per cent and set the company on the path to becoming the nation's largest independent oil and gas producer.

Mike's recollection comes in a new publication, *Legendre: Legends and Legacies – First Offshore Oil Discovery on Australia's North West Shelf.*

The book, written by Perth resources lawyer Andrew Thompson, explores the early days of WA offshore oil exploration.

It traces the events from 1963 when Woodside and Burmah Oil became associated in oil and gas exploration in Australia through the formation of the initial NWS consortium, with BOCAL as operator, to the establishment of a new jointly owned entity, Woodside-Burmah Oil, until the transfer of operatorship from BOCAL to Woodside Petroleum and withdrawal by Burmah Oil from its NWS investments in 1976.

Some of the pioneers who went on to become Woodside "legends" recount anecdotes from these times.

And it includes characters like Nicholas Boutakoff – the Russian-born geologist who held the firm belief the shelf off the WA coast contained hydrocarbons. When Boutakoff joined Woodside in 1962, he was given the task of mapping possible oil- bearing structures on the NWS to prove that belief.

His work formed the basis for the 1962 permit applications stretching from a southern boundary line offshore Dampier northwards to offshore Northern Territory and including areas in the Timor Sea.

The book also details the many frustrations endured and obstacles overcome before the 1971/72 gas bonanza discoveries of North Rankin, Goodwyn and Angel and subsequently the commercial, technical, political and legal challenges that had to be confronted to commercialise those discoveries.

Old times: Opposite page, from left, the Glomar Tasman drill ship; retired wellsite geologist Mike Smith (right) presents a memento safety hat to chief reservoir engineer Lupo Guerrera; the Ocean Legend mobile production unit which started production from the Legendre field in 2001; drillers on the North Rankin A platform; Andrew Thompson, author of Legendre: Legends and Legacies.

Andrew joined Burmah Oil Co in London in 1971 and was assistant legal and lands manager for BOCAL on his return to Perth. He subsequently was appointed legal and lands manager and company secretary for successor operator Woodside Petroleum Development Pty Ltd.

"I knew a lot of the people associated with these events, and the book in some ways just tells their stories," he says.

His book is based on interviews with the personnel involved at that time plus research of archived company records, published materials and unpublished memoirs of involved personnel.

Legendre: Legends and Legacies was launched in Perth on 13 November – the 50th anniversary of first offshore oil to surface on the NWS – by Woodside's immediate past Chairman of the Board, Michael Chaney.

Michael has memories of those days himself.

He joined BOCAL as a graduate wellsite geologist in 1972, and later switched to Woodside, returning as a director in 2005.

In the book's foreword, Michael writes of the difficulties faced by oil and gas explorers: "Even knowing exactly where you were located offshore, before the days of satellite navigation, was a huge challenge . . .

"As Andrew describes, the remoteness of the area, its unknown geology, financial constraints, the lack of legal certainty and political upheavals added to the technical challenges which were immense themselves: how to locate a seismic or drilling program in one of the remotest parts of the world; how to locate yourself, how to anchor on a hard seabed, how to achieve the movement of the necessary personnel in the absence of established transport services."

Legendre-1 marked a trifecta of firsts for Burmah: first oil discovered in Persia (now Iran); first oil discovery in the North Sea; and now first oil discovered on Australia's NWS.

For Woodside, it was more a matter of survival.

The company's lack of revenue made it reliant on the whims of its shareholders for continued support.

And although Legendre-1 was not exploited until years later, its discovery had wider commercial significance at the time: it provided a critical boost in investment confidence for the members of the NWS consortium.

As Michael notes, the discovery of oil at Legendre-1 helped persuade the joint venture partners to commit to the huge amount of exploration funds needed for the vast concession area.

The result was the discovery of massive gas fields at Scott Reef (now Torosa), North Rankin, Angel and Goodwyn and offshore Northern Territory, at Troubadour and Sunrise.

Fifty years after the Legendre-1 discovery, the NWS accounts for more than one-third of Australia's oil and gas production.

Besides continuing to exploit its well-established NWS and Pluto liquefied natural gas (LNG) projects, Woodside is pursuing further developments, such as the Scarborough/Thebe; Browse and Greater Sunrise projects, which increase the company's contingent resources on the NWS to more than 5000 Mmboe.

And this remarkable story started 50 years ago with the Legendre-1 well.

As Andrew writes: "It is a story of boldness, vision, persistence, disappointments and, ultimately, success."

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.

Art moves

He is regarded as one of those who, together with Picasso and Matisse, helped changed attitudes towards art in the 20th century.

And Marcel Duchamp has a dedicated follower in Digital's Tom Picton-Warlow.

Tom, a business analyst, owns some significant pieces of the French-born Duchamp and spent a year working with the Lawrence Wilson Art Gallery at University of Western Australia to mark the 50th anniversary of Duchamp's death with an exhibition.

HERE&NOW18, which ran from September to early December, presented works from West Australian artists influenced by Duchamp – plus some original Duchamp works. Tom is pictured with his children Alex and Harry at the exhibition.

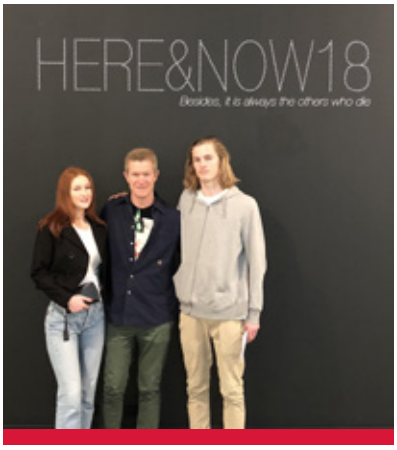
Tom has a degree in fine art and history, as well as a degree in computing and an MBA in Business, so it's perhaps not surprising he lists his interests as art, computing science, chess and artificial intelligence (AI).

And he claims Duchamp is the common thread.

"He broke down the boundaries between works of art and everyday objects and is considered one of the leading spirits of the 20th-century shaping new attitudes toward art, society and led the way to the Pop art movement," Tom explains.

Duchamp famously said that "while all artists are not chess players, all chess players are artists," and HERE&NOW18 drew upon many mediums to link art, chess, AI and computing science.

Duchamp also said: "In chess there are some extremely beautiful things in the domain of movement, but not in the visual domain. It's the imagining of the movement or the gesture that makes the beauty, in this case."



Picture show

Many Woodsiders are keen photographers, as followers of the Woodside Creative Collective on Yammer appreciate.

And two were able to secure a wider audience for their photographic talents when they contributed to the SHOTS exhibition held in Fremantle's West End in November.

SHOTS was organised through a group of enthusiasts who meet online to share images, arrange meetups and discuss their passion for the medium.

It comprised 100 images – taken locally, nationally and internationally and covering a variety of genres – from 23 photographers.

Liz (pictured left), a cost control team leader, thanks Tracey, a cost controller, for igniting her interest in photography.

"I've always had a camera and after I bought a new one a few years ago, I completed a course," Liz says.

"But it wasn't until Tracey introduced me to a group of photography enthusiasts that my passion was ignited.

"That was two years ago and it was the beginning of a very rewarding learning curve across both the technical and creative side of photography."

Tracey started her photography hobby some four years ago, soon falling in love with night-time and long-exposure photography.

"For me it's about making something beautiful out of the darkness and seeing what others may not," she explains.

Tracey says SHOTS provided a great avenue to display some of her work within an "amazing and diverse collection".

She and Liz are both looking forward to participating again at the next SHOTS exhibition.

Penny-farthing raises thousands

How do you attract attention to raise thousands for a worthy cause?

Subsea and Pipeline engineer Linden Blair's solution was a penny-farthing.

"I needed to prevent fundraising fatigue, and riding 200 km on a penny-farthing seemed crazy enough that people might support me," he reasons.

Woodsiders have supported the annual Ride to Conquer Cancer (RTCC) since 2012, raising more than one million dollars for the Harry Perkins Institute of Medical Research in the process

Linden himself has twice ridden the RTCC so he's no newcomer to charity rides.

But never on a penny-farthing.

He bought his online from South Korea in January, but was posted to Malaysia in February, so his training was curtailed until he returned to Perth only three weeks before the October ride.

Wearing protective gear, Linden perfected his riding technique first at a local basketball court and then by commuting to work.

The RTCC is a 200 km round trip from Perth to Mandurah, and weather plays a big part in how challenging it can be. This year's ride enjoyed all the elements, and one issue Linden had not foreseen was the effect of rain.

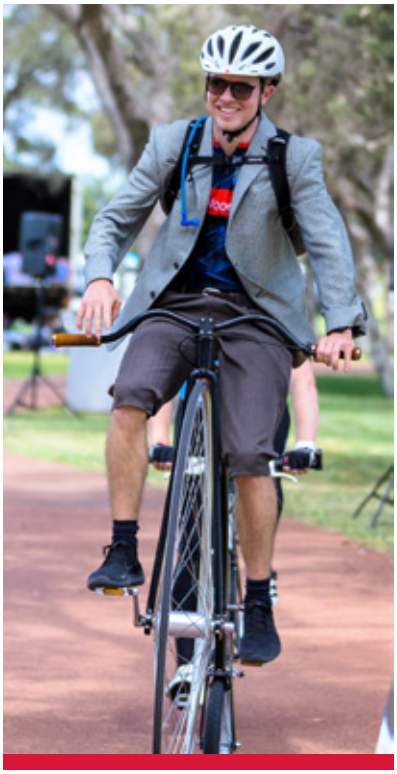
"The glue holding the front tyre to the rim dissolved and I had to ride below 20 km/h so that the centrifugal force didn't flip it off," he recounts.

On the ride back to Perth, a detour to Bunnings provided an engineered solution: cable ties to secure the tyre to the rim.

The 90 km/h cross winds around Rockingham proved another challenge – staying upright.

But Linden ploughed on to complete his fund-raising ride.

In for a penny, in for a pound.



Marathon cause

Project engineer James Adie has never considered himself much of an endurance runner.

His rugby playing keeps him fit but he hadn't run distance since primary school.

However, James was happy to put himself through the gruelling physical and mental demands of running a marathon to help a cause dear to his heart.

One of his friends from university, Dr Matt Dunn, discovered earlier this year that his three-year-old daughter Josie had a devastating form of brain tumour known as diffuse intrinsic pontine glioma or DIPG.

"Astronaut Neil Armstrong's daughter Karen died from it before he walked on the moon," says James.

The prognosis for DIPG sufferers is pretty poor, and he adds the treatment hasn't really improved in decades.

Matt, who is a medical researcher, switched his focus from leukaemia to DIPG to try to rectify that situation at the Hunter Medical Research Institute (attached to the University of Newcastle), where he's funded by donations.

He is also one of a dozen-strong team of family and friends who have formed RUNDIPG, to raise money to support that work.

"Matt used running as a method of dealing with Josie's diagnosis and RUNDIPG arose out of that," explains James.

"I was happy to help."

James set himself a target of running a marathon to raise awareness and funds for RUNDIPG, and entered the Rottnest Island marathon in October, supported by many of his Woodside colleagues.

He endured terrible pre-race preparation (he was sea sick going to Rottnest) and injured his knee at 16 km and then his foot.

But urged on by the support of his wife, Peta, he managed to finish the race and raise more than $5000.

James says he was determined to finish.

And more marathons for RUNDIPG are now on the cards.

Beauty meets function

Many Woodsiders love their coffee but few have a passion for the machines that make it.

This love story travels from France, US and Italy, begins in the 1950s and is dedicated to beauty and function.

Morné van Wyngaard, part of the Global Property and Workplace team, first set eyes on the Faema E61 coffee machine four years ago, and it was love at first sight.

Faema is famous for its espresso machines and its E61 is legendary among coffee aficionados.

It was the first to use a heat exchanger boiler with a volumetric pump giving the ideal pressure profile and continuous water supply during the extraction process, perfecting the espresso.

Morné knew then that he had to have one and his search ended in a farm shed in Bologna, Italy.

He was undeterred by logistics and expense of bringing this legendary machine to Australia, and once it arrived spent five months restoring it to its former glory.

"I had to learn soldering, how to restore brass, re-chrome, re-copper, self-manufacture parts that I couldn't buy and work between imperial and metric gauges," he says with a grin.

But it was merely the first of three Faema coffee machines Morné bought – all proudly restored by him and all single group espresso machines.

This makes them the rarest type of Faemas as it was only the extremely wealthy who owned such a show piece and production numbers low.

His search for the second machine led him via the US to a French village where he found a Faema Urania 1954, and later the ultra-rare 1952 Faema Marte.

His favourite?

"The Faema E61," he proclaims with a satisfied smile.

Honouring **Stuart**

A fund established in memory of Woodsider Stuart Pharoah has raised $10,000 for research into motor neurone disease (MND) and to help families of sufferers.

Stuart (on the left in the picture) worked at Woodside for 20 years and rose to become the company's founding chief rotating engineer, making many friends and admirers along the way.

He passed away in April after being diagnosed with the terminal MND in 2016.

Stuart's widow, Petah, set up a memorial fund on the online fundraising platform Everyday Hero, to honour both his memory and the way he approached the disease.

Funds raised were donated to the MND Association of WA (MNDWA), and donors included many Woodsiders, prompting Petah to pen a thank-you note.

"Thank you to everyone who made such generous donations," writes Petah.

"The final figure of $10,003 far exceeded my expectations and is a wonderful legacy.

"Donations are vital to funding research into finding a cure or at least successful treatment to reduce the impact and improve the long term survival rate, which is sadly an average of two years from diagnosis.

"One of the biggest hurdles is that no-one knows why MND occurs, and doctors don't know what triggers the disease or why it affects some people but not others.

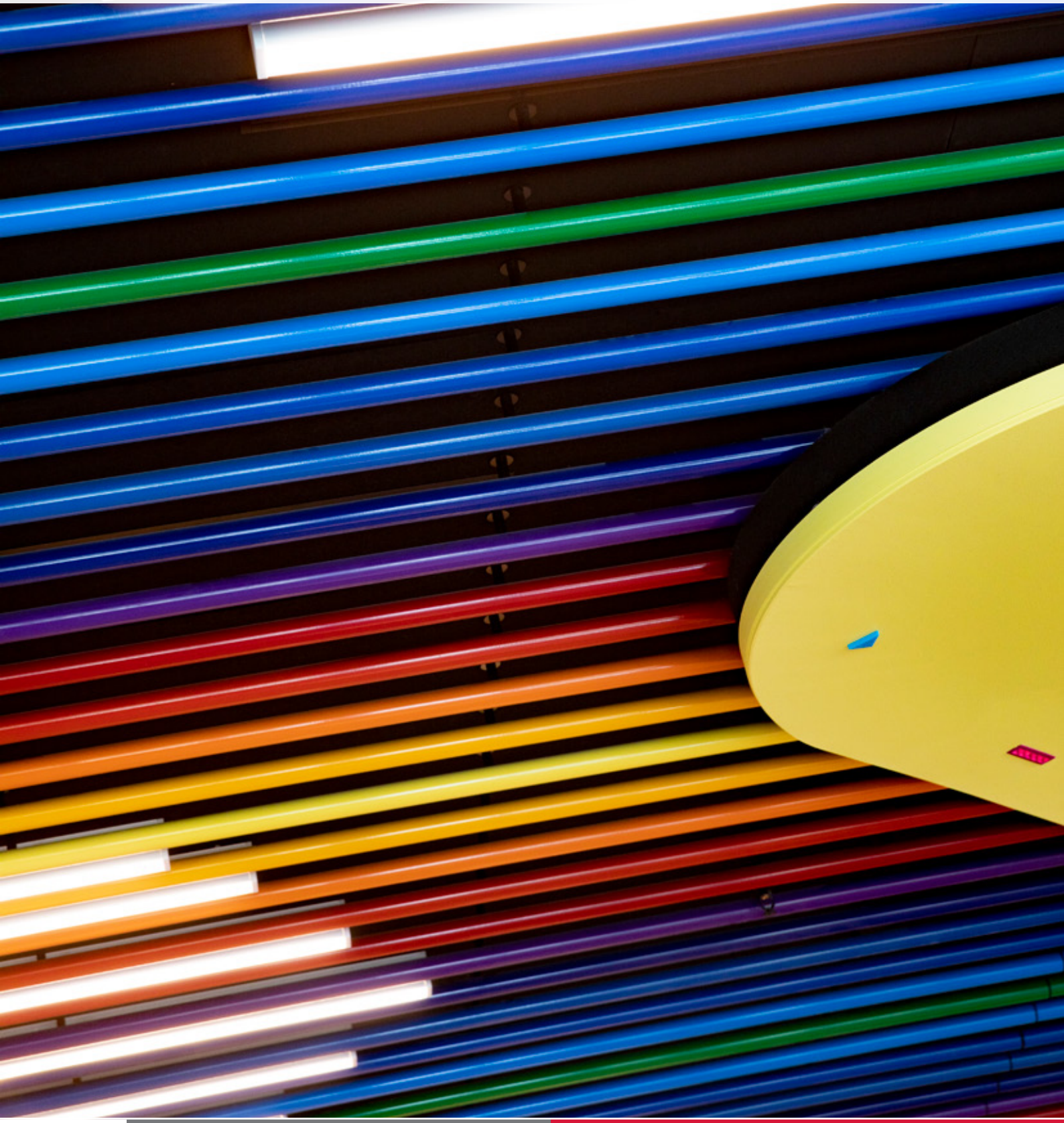
"Until that wonderful day when they do find a cure or successful treatment the most important thing is to look after those diagnosed and their families the best we can. This is where donations are so important."

MNDWA loans equipment such as motorised wheelchairs, lift recliners and communication devices to MND patients, and many are financed from donations of families of MND sufferers.

Petah finishes her note: "Thank you again in showing your support for this memorial for Stuart. Your donation will make a difference to all those lives touched by MND now and into the future."

If this photo is puzzling, chances are you've yet to explore family-friendly Level 2 at Karlak, in Woodside's new Mia Yellagonga campus. Or maybe you've yet to glance up in the Family Zone, where these massive "pencils" adorn the ceiling.

Level 2 is where family of Woodsiders are welcome to visit and it was a popular venue during December when children took the opportunity during school holidays to pop in and say hi to mum or dad.



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