



Alan Noble is

Engineering in the deep

Story by **Nina Keath**.

On a sunny autumn afternoon, overlooking the waters of Gulf St Vincent at Port Willunga, I meet Alan Noble to discuss his latest venture. We're in the perfect spot for it; as a passionate sailor, kayaker, kite-surfer and diver, it's no wonder it relates to the ocean.

'It was natural for me to think about oceans, even though I never studied marine biology,' he tells me.

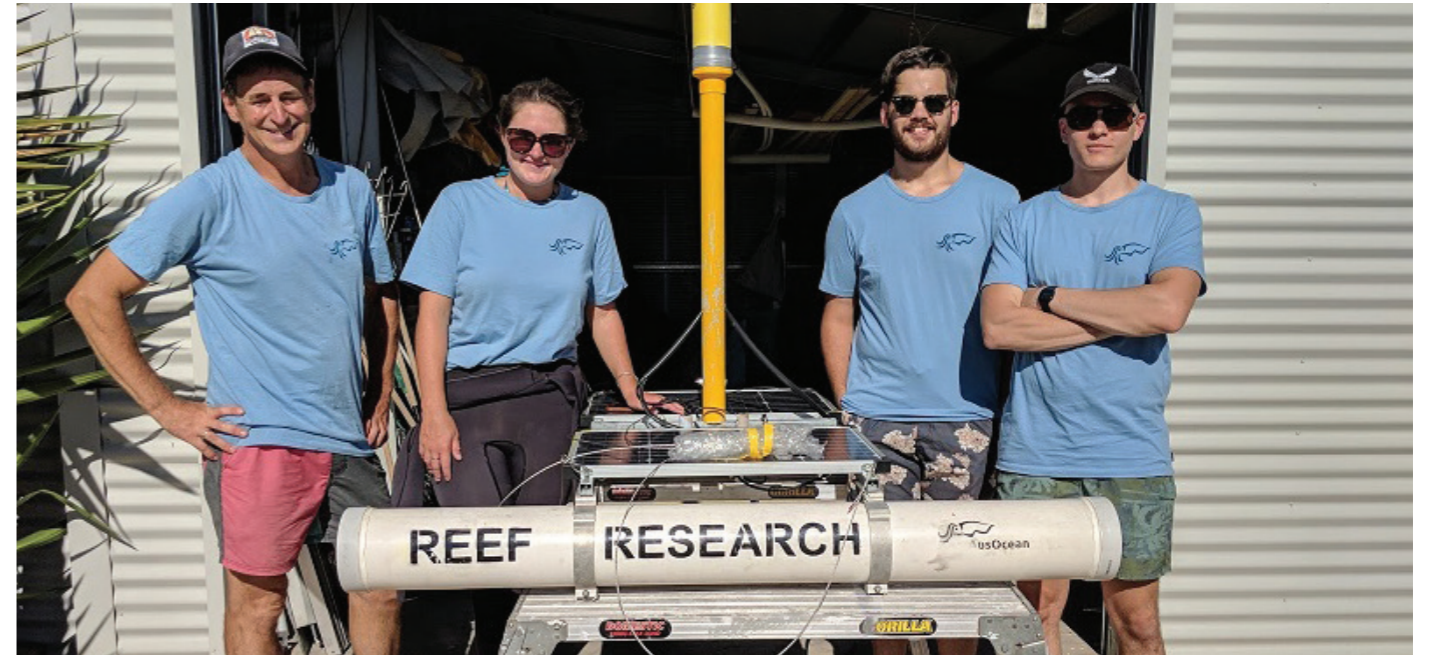
While his hobbies have long drawn him to the outdoors, it has been a different story for Alan's work life; the majority of it has been spent behind a computer. The Adelaide native worked as a serial entrepreneur in America's Silicon Valley, before returning to Australia in 2007 where he took up the esteemed job of Google Australia's Engineering Director – this role saw him lead 700 engineers. Over the years, his mind kept turning to the ocean. 'I started thinking about how we could leverage technology for the good of our environment and not just to build a cooler product,' he says.

Alan tells me that Google inspired him to use technology as a force for good. So, after more than a decade in the job, he stepped

down this year to focus his energies on his new project: AusOcean. The business is not-for-profit, with a mission to develop and apply technologies to better understand our oceans; as a result, it will hopefully help to preserve, restore and enhance them for future generations. The idea came about when Alan met his AusOcean co-founder, Professor Sean Connell from the University of Adelaide, and they had what he remembers as a light-bulb moment. 'Sean was describing how marine biologists go about their work and it struck me as very labour intensive and expensive to get relatively little data,' he says. 'It's not a criticism of marine biologists, it's just that the technology hasn't yet been developed to make it more productive.'

This is where AusOcean comes in, Alan tells me. 'Part of the reason I think AusOcean can be different – and ultimately successful – is because I'm going into this with a completely separate set of ideas than people who traditionally do marine science,' he explains. 'I look at these [problems] fundamentally as engineering problems. If you can put some monitoring equipment in the water, then you avoid sending out divers and boats – all of which is very expensive. Ocean-monitoring technologies and software are the low hanging fruit for marine science.'

Alan is a wealth of knowledge when it comes to the ocean. He tells me that – prior to colonization – southern Australia was home to an



Previous page: Alan carrying out some ocean monitoring on the Yorke Peninsula. Top: Alan with the first cohort of AusOcean interns: Catherine, Jack and Saxon (taken on Yorke Peninsula). Bottom left: Alan and Charlie Huvener, a shark researcher, taken at North Neptune Island. Bottom right: A natural shellfish reef in Tasmania, one of the last remaining in the wild.

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extensive network of near-shore shellfish reefs, or oyster beds, that spanned most of the way from Perth right around South Australia, Tasmania, Victoria and up into southern New South Wales. However, within decades of colonisation, over-harvesting of oysters saw the destruction of these reefs to the point where there are now no natural shellfish reefs remaining in South Australia. 'They were wiped out by sheer over-exploitation,' Alan laments. 'We became more and more brutally effective. Imagine a big metal basket that you drag along the sea-floor; they were horrible things. They weren't harvesting the oysters so much as literally dredging the reef.'

Two hundred years later, AusOcean is participating in a major reef restoration project on the Yorke Peninsula. Known as Windara reef, the project is a first for South Australia and involves laying down twenty hectares of concrete blocks and limestone substrate on which native Angasi Oyster are then cultivated. Once established, the oysters will continue to propagate and grow the reef themselves, creating habitat for other sea creatures to populate and enrich. 'The poor old Gulf St Vincent is a bit of an ecological wasteland right now because we've removed a lot of the natural diversity,' Alan says. 'A big part of the Windara reef project is to bring that back; it's a bit like reforestation.'

AusOcean is developing and trialling novel monitoring technologies to help gather data about the reef restoration process, with the aim

of supporting the re-establishment of shellfish reefs right across southern Australia and making cheap, easy to build technologies that can be readily applied by communities and researchers. Reef restoration is an emerging science and there is still much to learn. 'The holy-grail is evidence-based policy and that evidence comes in large part from scientific data,' he explains. 'So, I want to help solve that problem. If we've got great data and evidence that can be gathered reliably and cheaply, then we can drive great policies.'

As a property owner in Willunga and Kangaroo Island, Alan says that a reef on the Fleurieu would provide easier access and enable AusOcean and local researchers to do even more science and monitoring. In fact, a Fleurieu reef is not beyond the realms of possibility, he tells me. The current Marshall Liberal Government, as part of their election campaign, committed to establishing artificial reefs as a counterpoint to the marine parks that have frustrated recreational fishers. Alan believes that the Fleurieu would be a prime candidate for at least one of these reefs – but he cautions that most artificial reefs are just 'a bunch of concrete or rubber tires, which create habitat for fish but aren't the slightest bit natural'. 'Whereas, with a shellfish reef, you have to jumpstart the process by creating limestone substrate about 50cm tall, which is just enough for the oysters to get established. From there the reef grows naturally and over time can rise metres and metres high.' 