

Environmental services

SPECIAL REPORT



Key takeaways

- Big data for managing water, power use and geospatial services
- Sustainable tech businesses also include those focused on renewables and recycling
- Work picking up for environmental consultants is a good sign for the economy

data helps drive optimal outcomes

WATER WISE: Ivor Gaylard (left) and Rod Campbell founded

From the use of big data to recycling plastics, WA businesses are developing a sustainability niche, but the path to commercialisation can be tough.



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4-PAGE FEATURE

WESTERN Australia's vast landscapes are known worldwide for their bountiful natural resources, but one of life's most important commodities, water, is often in short supply.

So perhaps Perth is a good place for **Swan Systems** to be based, with the startup using remote sensing and big data to track water usage and improve efficiency.

"We're the second driest state in the driest continent ... we've always been attuned to a lack of water supply," co-founder Rod Campbell told *Business News*.

Swan unites data such as weather projections and crop or grass types to help farmers and businesses schedule their application of water and nutrients.

"People overwater by 20 to 30 per cent, it's just what you do," Mr Campbell said.

"If you're overwatering you're wasting fertiliser, you're letting it leach into the groundwater.

"We inform the user exactly when and how much water they need to put on."

This is beneficial to agribusinesses in helping to optimise yields.

Wine production was one particular market segment Swan Systems was targeting, Mr Campbell said.

He said Swan could be specific in managing water usage based on age and variety of grapes, which would improve quality and perfect the level of sugar content.

Users could choose locations within a field for different water volumes.

Other applications for Swan's services included local councils

managing their bore water allocations for maintenance of parks and other community infrastructure, Mr Campbell said.

The business was founded in 2016, evolving out of consultancy AFS Agriculture.

Swan won a \$590,000 Accelerating Commercialisation grant from the federal government in early 2018.

Since then, Mr Campbell said the business had grown from seven customers to about 25, which now included Pardoo Station and Melbourne City Council.

"We're not in full-scale commercialisation," he said.

"And we're just in the process of raising some funds ... up to \$4 million."

Mr Campbell said venture capitalists Delta Eight Group had been appointed adviser for the raising, and while Swan was working towards a potential initial public offering, he maintained the business was still too early in its development to make that leap.

\$34m

RAISED BY POWER LEDGER'S 2017 INITIAL COIN OFFERING

"We need to be able to show two or three years of solid scaling," Mr Campbell said.

A more likely option would be a trade sale to a big business.

"We'll be collecting a lot of data, and analysts will be able to do a whole lot of smarts," he said.

"It's not too hard to get some machine learning, artificial intelligence around [the data] to synthesise and determine yields."

Big data is also at the centre of Fremantle-based **Ecocentric's** business model.

In collaboration with the CSIRO, Ecocentric developed a device called Numen to collect data on energy usage in buildings, which can then be processed using machine

learning analytics to make power usage more efficient or to predict faults for preemptive maintenance.

Chief executive Tim Bray said the company wanted to be like a 'search engine' of energy.

"When machines are performing as they should, they aren't wasting excess energy and the risk of catastrophic failure is reduced," he said.

"Numen is an early warning system for machine failure, which has the potential to result in significant damage."

Business News understands the company will also soon close a capital raising.

Another environmental technology business, **Emapper**, was spun-out of environmental consultancy Astron (see page 18).

Emapper founder Julian Kruger told *Business News* it was a platform to collect biological and geographical data.

"It brings in a whole range of different digital monitoring technologies," Mr Kruger said.

"Drones, internet of things sensors, digital field data,



Swan Systems.

Photo: Gabriel Oliveira

satellite imagery, and centralised into a place where people can procure those services and also use it as a management, monitoring, and decision support tool."

The company was set up in 2016, and has six months left on a two-year commercialisation program.

"We picked up a grant from the federal government through Mets Ignited in conjunction with Roy Hill, Mt Gibson Iron and Anglo American," Mr Kruger said.

Mets Ignited chipped in \$1.2 million, matched by the industry collaborators.

"We're pre-commercial ... we're in beta testing at the moment," Mr Kruger said.

"We're selling some of the data services already; we're not selling subscriptions to the platform but we're generating revenue.

"We're working closely with the partners, getting their requirements built into the platform for monitoring and reporting purposes."

He said there was a good reason WA was home to a number of data-driven, remote monitoring businesses.

"WA has a lot of natural area," Mr Kruger said.

"The expanse ... lends itself to using these remote technologies.

“It's not too hard to get some machine learning, artificial intelligence around [the data] to synthesise and determine yields

- Rod Campbell

"Having an ability to have better data, quantitative data out of satellite imagery, WA has got that in spades."

Niche

Other businesses offering innovative sustainability services include Wide Open

Agriculture, **Power Ledger**, Kooda and Greenbatch.

Power Ledger uses blockchain technology to track movements of electricity over distributed energy systems, and raised \$34 million through an initial coin offering in 2017.

The company's technology has been trialled in Australia, Austria, Thailand, Japan and the US.

In June, Power Ledger announced a deal with Clearway Energy Group to develop a platform to trade renewable energy certificates in the US.

Environmental health services company **Kooda** is focused on the collection and processing of food waste into compost at scale.

Founded by Carly Hardy, Kooda was part of Spacecubed's Plus Eight accelerator program in 2018, and received about \$400,000 of seed funding.

Williams-based **Wide Open Agriculture** raised \$5 million and completed an IPO in July 2018.

The business operates using a regenerative agriculture approach, which focuses on soil health, carbon storage and biodiversity.

Since the listing, Wide Open has inked distribution deals for lamb and beef with 20 local restaurants, was granted a licence to grow industrial hemp, and launched a part time food delivery service in Perth.

Mt Claremont-based Greenbatch reprocesses plastic waste to create 3D printer filament, and was founded by Darren Lomman, a 2007 40under40 winner and former WA Young Australian of the Year.

Challenges

Many sustainability innovators have had to work through tough times, with **Carnegie Clean Energy** a good case study.

Carnegie developed technology to generate electricity from wave movements, with one iteration of its products used at Garden Island.

Over the eight years to 2016, Carnegie spent \$100 million developing that technology, and was granted 70 patents.

But tax changes and an acquisition gone wrong meant the

company entered administration in March.

The focus since has been on a recapitalisation, with hopes to raise up to \$11.5 million.

In the company's prospectus, released in July, chair Terry Stinson said wave energy was one of the largest untapped sources of clean energy.

Carnegie plans to refine its approach to be much less capital intensive, relying more heavily on machine learning to sharpen-up the wave generators.

"Carnegie will seek to integrate elements of machine learning, advanced electrical machines and advanced hydrodynamics into (a new) prototype, with an aim of bringing the CETO Unit power production costs down the cost curve far more rapidly than incremental in-sea deployments," the prospectus said.

A further project would be machine learning software that can solve fluid dynamics problems in real time, much faster than traditional software.

BNiQ SEARCH Power Ledger



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Consultants nurture growth opportunities

The environmental consulting sector is an effective leading indicator of WA's economic performance, and industry leaders are noticing a big improvement.



AERIAL ROUTE: Julian Kruger says Astron is expanding its geospatial data business. Photo: Gabriel Oliveira

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THE growing number of opportunities now available for the state's environmental consultants is a welcome relief for an industry that took a battering during Western Australia's recent downturn.

While traditional sources of work such as mining and infrastructure have provided a steady stream of positions in the past year, new sources of work have sprung up.

RPS general manager WA David Sim said there was lots of demand from mining expansion projects, and exploration growth in oil and gas.

Mr Sim told *Business News* projects in hydrogen and renewables were emerging sectors.

"There's a lot more activity in renewables, solar and wind projects," he said.

Going into 2020, RPS will be particularly focused on the water sector.

"The water supply in Perth

continues to be a really topical issue," Mr Sim said.

"One of the things we're working on at the moment is innovation around water capture and storage, managed aquifer recharge.

"We have to make sure we supplement our groundwater resources.

"Managed aquifer recharge is innovation in terms of how we secure Perth's future water supply.

"It's not all around desalination; that can be expensive."

Managed aquifer recharge takes water, such as stormwater, and moves it into aquifers for reuse or environmental benefit.

Mr Sim said the market would also be waiting for the outcome of the Westport outer harbour taskforce.

"It's going to be interesting to see what government does with the recommendations from the Westport committee, that's due at the end of the year," he said.

GHD market leader environment, Nick Houldsworth, said it

felt like the upturn in demand was sustainable and across multiple markets.

Mr Houldsworth agreed that new opportunities, such as lithium mining and the hydrogen economy, were supplementing traditional sources of work such as iron ore, gold and infrastructure.

"The upturn feels more sustainable, spread across a diverse range of markets and subsectors," Mr Houldsworth said.

Astron managing director Julian Kruger is optimistic for his Margaret River-based consultancy.

"Things are going well at the moment," Mr Kruger said.

"It's a lot easier to find opportunities now than it was a couple of years ago."

He said mining and government work had both picked up.

That included new iron ore developments, rehabilitation of old mines, and jobs with utilities such as Water Corporation.

Astron is one of numerous consulting businesses moving

“ One of the things we’re working on at the moment is innovation around water capture and storage, managed aquifer recharge - David Sim

into new offerings or markets, in this case geospatial services – acquiring and analysing data from sources such as drones and satellites.

"We built a geospatial team, that's probably the biggest growth area for us," Mr Kruger said.

"We could service more work on the biodiversity side of things, but we're just going to hold steady; last time we probably grew a bit too rapidly."

One example of Astron's geospatial activity was mapping Victoria's wetlands using imagery from Geoscience Australia to track years of changes.

Astron was also working in overseas markets such as Guinea and India.

"People are definitely more comfortable with geospatial services, they've seen some of the real applications," Mr Kruger said.

"Mine closure plans are getting approved by the regulator with remote sensing as the key monitoring technique."

Earlier this year, Subia-co-based Strategen merged with national firm JBS&G.

Strategen-JBS&G executive director Darren Walsh said the deal had given the business more depth and ability to offer more services.

With about 200 people in the business nationally, there was more capability for supporting environmental approvals after the merger, Mr Walsh said.

Senior executive and title | Total staff in WA | No. Prof Environmental Staff in WA

1 Advisian

Worley Group

 Mr Peter Mann
 Principal & Managing Consultant | 330 |

110

Senior executive and title | Total staff in WA | No. Prof Environmental Staff in WA

6

 Mr Tim Bowra
 State Manager, WA | 65 |

60

2

 Mr Sheldon Krahe
 Manager, Western Australia | 812 |

87

7 AECOM

 Mr John Macaulay
 Group Director - Western Australia | 300 |

50

3 JACOBS

 Mr Richard Hayers
 ANZ Vice President & Regional Director | 300 |

80

8 coffey

 Mr Wayne McFerran
 General Manager, WA & NT | 140 |

NFP

4 MAKING COMPLEX EASY

 Mr David Sim
 General Manager, Environment & Water, WA & NT | 158 |

80

9 BMT

 Mr Mark Bailey
 Managing Director | 51 |

45

5 astron

 Mr Julian Kruger
 Managing Director | 70 |

62

10 Stantec

 Mr Matthew Todd
 General Manager - Mining (Australia) | 48 |

43

11
55
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NFP = not for publication

He said JBS&G had been particularly strong in contaminated sites and remediation work in WA, and that the merger had roughly doubled the size of that team.

BMT principal marine ecologist Glenn Shiell told *Business News* the company's local office had been winning work in the United Arab Emirates.

"In the oil and gas industry ... a lot of it is reflected by oil pricing and as things improve it seems to be picking up," Mr Shiell said.

"We do work in the Middle East, in the UAE particularly; they're definitely seeing a turnaround there, it's a lot more buoyant.

"At the moment, it's almost a FIFO arrangement, we're flying backwards and forwards.

"It's getting to the point where we're starting to think about some of the options.

"We've just found the way we conduct business, the way the environment is regulated in Australia, particularly WA, seems to really resonate with our clients in the UAE.

"We work with the environment agency out of Abu Dhabi.

"We picked up an initial project, they saw the way we were operating, the tools we were applying.

"Some of those tools have been developed here with the WA EPA in mind ... and we've taken them across to the Middle East."

Locally, there was also cause for optimism.

"We can actually say now things are finally starting to turn around," Mr Shiell said.

"There's a lot of consistency to the workflow."

Finding workers

GHD's Mr Houldsworth said the biggest challenge was getting the right workforce.

"At the same time, we're increasingly looking to hire," he said.

"There's actually a shortage of good people out there.

"It's challenging to find people.

"The focus for the past five or six years for employees has been to find secure roles.

"In the previous boom we were just shipping people in from over east or offshore.

"Now we've got an east coast infrastructure boom with so many large projects... we can't."

Strategen-JBS&G's Mr Walsh agreed it was difficult to fill some positions.

"At the graduate level it's still good, we've got a pretty strong graduate program," he said.

"There's certainly still a gap in the WA market in terms of senior experienced people,

it's never changed despite the downturn.

"It's still often a challenge in Perth to fill a senior, experienced role.

"Part of it is people are tending to stay put a bit more over the past four or five years, people can see moving organisations as a risk.

"During the boom times people would move around a bit.

"It's still a bit of a constraint on our sorts of businesses in Perth."

BNIQ SEARCH  Strategen-JBS&G

 There are **58** results from our index of **100,665** articles, **10,058** companies and **37,844** people

Environmental services

SPECIAL REPORT

BNiQ SEARCH *environmental services*



There are **155** results from our index of **100,665** articles,
10,058 companies and **37,844** people

QED Environmental Services

Established in 1993, QED Environmental Services is a multi-disciplined professional group of ...

Astron Environmental Services

experience in WA. Astron provides a comprehensive range of environmental services, categorised across the ... Offices in WA: 3 Services offered: Astron provides a comprehensive range of environmental services to ...

Land Assessment

Established in 1991, Land Assessment has provided environmental services and reports to assist in ...

360 Environmental

a wide range of environmental services to our clients, including impact, site and contamination ...

MBS Environmental

Perth, Western Australia. It provides a range of environmental services to mining and other industries ...

Ninox Wildlife Consulting

Total staff in WA: 1 Professional Environmental Staff in WA: 1 Offices in WA: 1 Services offered: Fauna- fauna monitoring, rehabilitation, ecological assessments. Is the organisation headquartered in WA?: Yes ...

Hyd2o

Hyd2o are a specialist professional hydrological consultancy providing integrated services in hydrology, drainage, and urban water management to urban and regional areas of Western Australia. Its clients benefit from the company delivering both the technic ...

Claw Environmental

CLAW Environmental operates a plastic recycling business in Welshpool, specialising in the following areas: Drum Muster- the regional collection and recycling of used agricultural chemical containers; EPS- Expanded Polystyrene recycling; Granulation of loc ...

ECO Environmental

ECO Environmental is a national company that specialises in rental and sale of environmental monitoring and sampling equipment. Offices in WA: 1 Offices interstate: 2 Is the operator based in WA?: Yes ...

Biota Environmental Sciences

Biota Environmental Sciences is a scientific consultancy, specialising in flora, fauna and ecological studies for environmental impact assessment. Its services include flora and vegetation surveys, vertebrate fauna surveys, subterranean and short range end ...

Acacia Springs Environmental

Acacia Springs Environmental has been providing consulting advice since 1996 from its base in Perth Western Australia. ASE has undertaken projects throughout WA, Australia, Indonesia and The Philippines.

