



THE BIG PICTURE

Dr Melanie Finch hopes to accelerate Australia’s green energy transition.

As a child, Finch was fascinated by the macroscopic questions of geoscience: “how mountains were made, what made volcanoes erupt”.

Her PhD at Monash University focussed on shear zones: “‘conveyor belts’ that can stack rocks tens of km thick”. As crystals shift and deform, water seeps through, dissolving then depositing critical minerals. Shear zones, Finch says, are “water superhighways and can move quantities of fluid a couple of hundred times the volume of Sydney Harbour”.

But the process is poorly understood, and Australia’s substantial critical mineral deposits have hitherto been uncovered largely by chance.

“If we can figure out how these critical mineral deposits form in shear zones, we can find more of them, making the switch to green energy technology quicker and cheaper,” says Finch.

“At James Cook University, I am part of the Economic Geology Research Unit, where we work closely with mining companies to better understand ore deposits and aid companies in their current exploration efforts. Research we are doing today could impact the discovery of critical mineral deposits within the next five to 10 years.”

Finch says we have the technology to produce enough green energy for the domestic and export markets.

“The next step is to build the infrastructure. This investment will have to come from industry, but it can be incentivised by the government.

“Now is the time for visionary leadership. The pay-off will be huge for Australian jobs, the economy and for our planet.” — **Alison Ratcliffe**

TALKING POINT

Allison Britt unlocked the synergy of her science and communication skills at university.

You could say that, in the 1990s, Allison was a step ahead of her time. She took an interest in the confluence of geoscience and environmentalism at a moment when the possibility that the two could, or indeed should, coexist was a bit of a novelty.

“I studied (at ANU) under some of Australia’s leading geologists. My supervisor was the famed Australian geologist and Antarctic explorer, Douglas Mawson,” she laughs.

“The program was academically rigorous, and the thought at the time was that ANU geology students would have a solid grounding in all the major science subjects that could then be applied to whatever career path they chose.”

“That kind of thinking and the scientific thought processes — these just get passed down the generations.”

As she was leaving ANU, it established the School of Resource and Environmental Management, making Britt’s area of interest the crest of an environmental land management wave we’re still surfing today.

“As I was leaving university, jobs were just becoming available in the mining industry for environmental management,” she recalls. “Some of my university colleagues went into that career path. We were right on the cusp of that shift.”

Britt herself joined the CSIRO, where she worked as a science communicator changing public conception of the mining industry as environmentally irresponsible and destructive. That revelation was not received so warmly by some of the old blokes in industry, she says, but her managers at the CSIRO supported her and that understanding has driven the rest of her career.

She spent several years overseas, and returned to Australia in 2008, when she joined the government body Geoscience Australia.

“My most satisfying job is helping to ensure that Australia understands its own national minerals inventory,” Allison says.

“It is now my great privilege as the director of mineral resources, advice and promotion to be helping lead Australia’s critical minerals program.”

— **Rachael Bolton**



MELANIE FINCH

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ALLISON BRITT

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