

# No Substitute For Cubes.

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This expression encompasses American brutalism at its finest. It says that an engine, a V8 of course, with a large capacity of many square cubic inches will put the best layer of rubber on the road. So it is, if you want to move a lot of water in a cave, there is no substitute for amp hours. This is a story of finding those extra cubes.

Wombeyan's Fig Tree Cave is huge. During heavy rain the surface river, usually dry will start to flow and at times become a torrent. A river enters the main arch gushes along a pure white canyon of marble some sinking into grikes and rifts and some making it out into daylight at the other side of the arch cascading down a picturesque valley.

Under Fig Tree Cave lies an underground river, that unlike the surface river usually has a slow flow through a varied and splendid canyon. In normal circumstances travelling through this cave upstream or downstream there is much wading and some swims. Downstream it sumps and if you could follow the passage underwater it would surface in the exotic Olympic Chamber and thence journey through Junction Cave inside a mountainous ridge and emanating in a final resurgence at Mares Creek.

The important part of this story is the upstream source of the river where passage is denied to cavers at Drought Breaker. A ten meter high flow of stone seemingly in flow but frozen. The flow stone sparkles over an underlying orange calcite, standing sentinel over the last seen part of the river. The cave continues somewhere underwater and possibly to caves unknown somewhere in the Wombeyan hillside. Drought Breaker was named by managing Guide Dave Smith in 2004.

There are several short sumps prior to Drought Breaker. At that time we had no idea how difficult they were to dive. There are a couple of dips into watery sumps and they can be bypassed through a sporty rock pile. This made for healthy exercise for Greg Ryan when we had a go at diving the Drought Breaker sump. Fortunately Phil knew the way through a bypass. The rifts and tunnels go every which way. In places the way through is a wriggle and you need to thread your legs up one tunnel to allow a railway style shunt back the other way and into another wriggling passage. Its great sportiness however we wished to minimise how far we needed to encourage our helpers to pass dive gear along those tiny byways.

Drought Breaker Sump weeps water across the top of a gravel race to be carried away into a small marble canyon half filled with water. Somewhere in the bottom there must be a connection to the next sump further along the river path.

The dive begins sliding headfirst into the Drought Breaker Sump. It opens up quickly into a wide space that disappears in a cloud of silt seconds after disturbing the surface. I was pleased to find a small air bell with a formation drooping in from a small upward passage. This was not a way forward. With very little visibility I was just able to follow river gravels in the floor telling where the main flow was coming from. At the bottom of a phreatic loop I could spy a letterbox opening in one wall but it flattened out sandwiched between a hard roof and a floor of river gravels which were cemented together with calcite. It was enough to allow a body length into something more but not enough to engender confidence about returning. It would be possible to take a hammer to the stones to dig it out but it would be a lot of work and I had not brought a hammer.

After threading myself into the squeeze and then deciding, “nope”. I returned to Drought Breaker. Greg wanted to have a dive to see what he could make of it but he had no joy with the dive because I had stirred everything up for him and he couldn't find the letterbox. What was needed was a way to remove this body of water. Climate change was to come to our assistance.

In 2019 the drought intensified its grip across Australia, the Wombeyan underground river dried up. All the short sumps prior to Drought Breaker also dried up but the pool of water under the orange flow stone continued to slowly seep water.

The manager at Wombeyan, Dave Smith was a curious as a cat about what might be upstream. With that in mind I applied for a permit to pump out the Drought Breaker sump and because the sump is a high energy environment the permit was granted.

I kept my eye out on Ebay for specials and sure enough a reasonably priced “On Special” 120 amp hour gel cell was on offer and delivered to my verandah. We needed to move the water about 10 meters over a gravel race and into the river floor. Bunnings were able to sell me a reasonably cheap plastic concertina drainage pipe, for the bilge pump. These batteries were extremely valuable on multiple occasions helping people with cars that wouldn't start.

Draining a battery completely is bad for its life expectancy so a circuit that cuts off the pump when battery power falls to a low level was put in line and a marine bilge pump set running. Five hours later the sump had lowered 10 centimetres. And we had to head back to Sydney.

We needed more cubes.



There was a special on 75 amp hour batteries on Ebay so I bought two of those. Also two more 3000 gallons per hour American bilge pumps. Cave environments are not good for electrical connections. Mud gets into every thing and on the previous attempt the wire connects ended up coated in mud and were unreliable. I bought a box of Anderson connectors and crimped these connectors on the pumps the battery terminals and the protection circuits. Every connector was made was click on, click off and fully interchangeable. This configuration was quick to set up and more resistant to mud. We were set for another pumping effort.

What I like about SUSS is the acceptance of projects that might seem to most people to have little chance of succeeding. You outline a plan, nearly everyone steps forward ready to give the plan a try. Some of our women in SUSS members are extremely enthusiastic and the challenge of moving heavy gel cells in a caving packs seemed no deterrent. David and Alan helped as well nevertheless hard pressed to keep up to the hard yakka part of the chain. We cheerfully passed and loaded batteries pumps and wiring through all the dry sumps to set up at Drought Breaker. Happily no need to take all that gear though the bypass. We were soon moving a volumes of water out of the sump and into the dry marble canyon downstream.

Alan had brought lengths of electricians PVC tubing. At one end he fixed a Go Pro camera and a light and tried to get investigative photographs of what was in the sump prior to lowering the water. Surprisingly buoyancy was important.

Alan would push the camera in and find it bouncing on the roof. Surprisingly the “probe” behaviour was significantly improved altering the amount of water inside the PVC piping. Upstream in the canyon is a climb up that eventually drops into one of the now dry sumps. The marble canyon is normally waste deep but now everything

in the canyon was dry. We observed in the bottom there is drain hole that normally cannot be seen into which water flows and out into one of the dry sumps further downstream. This is very lucky otherwise we would have had to run pipes from the pumps up and over the climb up.

This trip our pumps were really moving a lot of water. All those amp hour gel cells were humming like a turbine in powerhouse. The downside was we were filling the downstream sumps. At first the marble canyon merely transported the flows to the next downstream sump through the hole in its floor but it was apparent the water level was gradually rising.



*Photo 1: Candi McNeil Oxana Repina at dry sump. Note water line. Photo: Keir Vaughan-Taylor*

There was caving to do elsewhere at Wombeyan. After standing around admiring our engineering feat we left the pumps running and went off to go caving elsewhere. We would return in three or four hours to see how it was going. Of course we were gone longer than anticipated.

I had to leave for Sydney early so I had mixed feelings about not having enough time to do the job properly. There were questions in my mind. If it was a success would I and my team have time to explore what was beyond. Would I be annoyed if everyone else went off exploring and I had to leave. While off caving elsewhere would the sumps downstream from Drought Breaker fill with water pumped out of the sump. If that were the case we would only be able to get back to our pumps station by going through the bypass. That would be okay however, we would need to negotiate the

bypass in and then coming out, carry with all those batteries, pumps and wires through that intricate labyrinth.

As it turned out the downstream sumps were only half full so we were pleased that all we needed to crawl through half filled water passages. At Drought Breaker one of the outlet pipes, being a concertina, had sprung back from depositing payload downstream and instead was flailing aimlessly in the remains of a lake at the bottom of a downward tube. As the water level had fallen, the bilge pump dropped down the tunnel and had pulled the pipe in after it. Thereafter still powered by the battery it continued to pump water uselessly around the new chamber.

What was good is we had a nice large cavern exposed, which was the void I had found previous diving but had been unable to see. There was still a meter and a half of water in the chamber that might have been evacuated except for a lot of pumping wasted. We needed the water level needed to go down a little more to expose the letterbox in the floor. Sadly that wasn't going to happen on this trip.



*Photo 2: The exposed chamber. Photo: Alan Green (video extract)*

Nevertheless there was excitement exploring the newly exposed room. Alan waded valiantly into the waist deep murk capturing video risking a watery death for his camera. We all had a go taking photographs. I had been so focused on emulating Bridge builder John Bradfield I neglected my photographic responsibilities.

David Reuda valiantly climbed up two flow stone formations eventually getting close to possible leads in the roof. I knew one route that didn't go because, in the past I had been floating around up there but in this "improved" environment you never know what might turn up. As it turned out - nothing

Most of our team were hanging about at the summit of gravel ramp tube thinking some reason that they had to be called down by fearless leader. (That would be me I think) A sort of politeness soon faded as they determined we didn't really mind if they joined in. We only thought they might not want to stand waist deep in a heavily muddiest lake. It was not long before the room was like a summer Saturday at the local pool. The mud in the floor was slightly anoxic yielding foul smelling gases.

It was all very exciting how well this had worked. It was late in the day. We still had to clean everything up, carry the gear out and I had to get back to Sydney. Next time I would allocate plenty of time for the project and we immediately put in for another permit. This discovery was going to get much bigger but as fate would have it disasters came to Australia one after another.

Australia seemed to catch fire in nearly every quadrant of the country. With enormous effort by guides and locals and of course the RFS, Wombeyan buildings and cottages were only just saved. Then as though the second horseman just rode around the hairpin bend, a change in the weather brought record rain downpours. The camping area and car park were swept asunder by driving rain filling and overflowing the creek that then left deep sediment deposited across the grounds. In addition flooding rain on the Wombeyan Road brought landslides, distablising the upper hills. The road from Mittagong to Wombeyan is unlikely to open for at least a year.

Here in May there are no permits but maybe a trip in the next month can at least determine if the underground river is flowing again.

In the hope we will one day get back bought another 75 amp hour battery adding yet again to our cubes..