

Cave Diving New South Wales

2017 Projects Report

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SUSS

THIS DOCUMENT is a summary of projects and explorations being undertaken by Sydney University Speleological Society cave diving teams. It summarises some ongoing cave diving projects that have, in my opinion, considerable potential.

It should be said that much of the activities and successes over the past few years are the result of ongoing support from management authorities and for this support we are deeply grateful. It has greatly contributed to our knowledge of hydrological karst throughout New South Wales.

In 2018 a major project will be completed, having consumed years of research by Rod OBrien — the imminent publication of a book by Rod about New South Wales' history of cave diving.

Cave diving in Australia started in 1952 with the first dive in Australia being undertaken at Jenolan's Lower River in Mammoth Cave. Rod OBrien has gone to extreme lengths, travelling across Australia interviewing now elderly identities who contributed to the exploration and development of cave diving in Australia. Without Rod's enthusiasm this rich history would have been lost.

JENOLAN

Pool of Cerberus

The Pool of Cerberus is a lake in the Jenolan tourist caves that was first found by early explorer and guide Voss Wiburd. In the 1990s, after repeated diving, SUSS was able to find a way through the obscure passages downstream from the Pool and break through to the outside world, surfacing in Blue Lake.

Dives and dry caving trips in the Cerberus area remain of strong interest to me. Behind the Pool of Cerberus lake the underground river enters unseen though a squeeze hole under a cement bridge that tourists stand along to admire the pristine blue waters. The upstream river can also be accessed by climbing through grotty dry caving that emerges high above a few pools

of water. It was thought to be well-explored but with a little effort we were able to push a little further.

Rock climbing and rope work were used to safely cross a pitch into the plunge pool areas. The Plunge Pools are a series of limestone dissolved 'wells' — multiple pools separated by less than a metre of sharp pinnacled walls. After crossing the plunges, we climbed to an upper passage where we found Voss Wiburd's and Jack Edwards' signatures. Not to be outdone, we (not being handicapped with candles) hung a set of tapes and rope protection around a sharp promontory of rock into a rift. There was revealed yet another 'well' and beyond that another shaft and an abseil descent to water. A possible underwater passage yet to be explored led on from there.

The dive from Twin Bridges downstream towards Cerberus is roomy with very strange geology. The right side going downstream is paralleled by the tourist path that comes out at the top of a stairway overlooking the Pool of Cerberus. The left side of the diving passage is gnarled and a maze both above and below the water line. I had previously found an undocumented aven in the roof of the dive. A dive by myself, Phil Maynard and Rod OBrien in December 2017 returned to this air surface. Climbing out from the water and using aid climbing, we managed to hook tapes round a natural bollard and pull ourselves clear of the water, finding ourselves next to Wiburd's and Edward's signatures. Rather like déjà vu.

In the Cerberus dive just prior to the squeeze that gives access downstream to the Pool of Cerberus is a mysterious pit sinking into a second chamber that is yet to be explored.

River Styx

River Styx Pool is part of the River Cave tour. The water seems to form a river in a canyon and then stops for a while, as though just underneath, and then pops up again as another section of river called the Pool of Reflections. We now know they are



PHIL MAYNARD

Diving the River Styx

separate; the river runs elsewhere. These groups of water are connected to the main stream but in my view are a remnant of a river that flows under Lucas Cave.

Dives in 2016–2017 showed the Styx Pool is much deeper than previously thought. I reached a depth of at least 30 m where the bottom chamber hosts a strange life form. A photograph excised from a

GoPro video gives an idea of what these 'bio-forms' look like. They are unlike anything I have seen before. A future dive should secure better images. Tentative enquiries to experts in this field have met with blank, 'I don't know' responses. We fully intend to use a higher quality camera, obtain better images and hopefully get a bit more interest from experts.

Lower sections of Styx Pool seem to have ongoing passages but in diving the bottom room the silt rolls in rapidly, only giving seconds to see what is going on. The underwater survey of the passages places them a considerable distance away from Styx Pool, so some of us feel it likely that it is linked to water bodies underneath Lucas.

The Styx Pool canyon links back behind the Minarette to pools left of the tourist path in Lucas Cave, where it forms a broken line of pools joining to Lucas Pool. Diving these pools so far has not found any significant connections to deeper water bodies that might lie under the Lucas Cavern collapse. Rod O'Brien years ago dived the shaft in the Pool of Reflections and found a small and uninviting fourth river at Jenolan. There are some pools yet to be examined behind the Minarette.

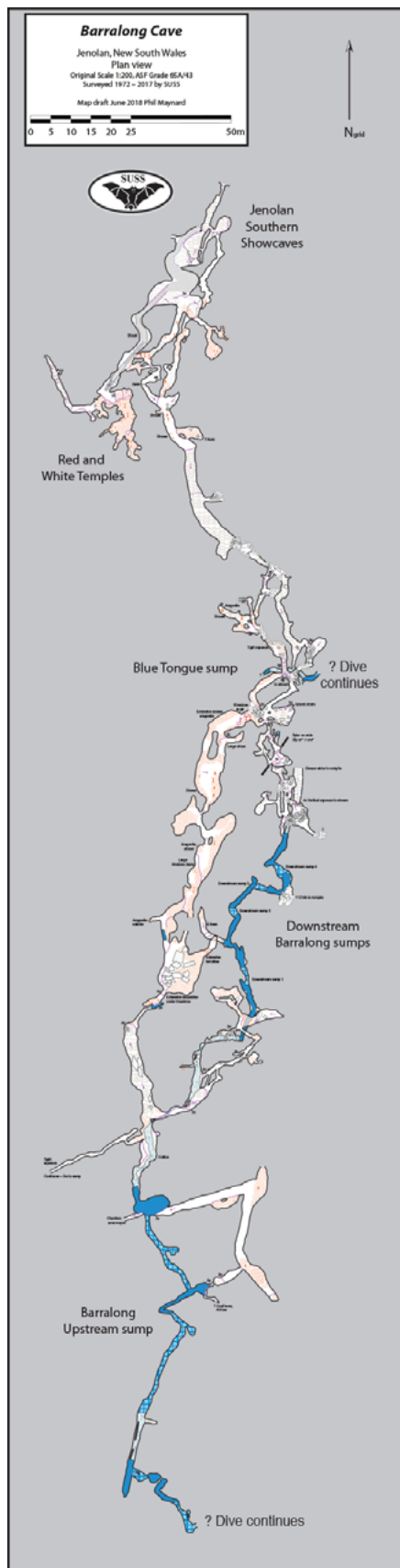
Barralong

Jenolan has two distinct main river systems both emerging in the Blue Lake, one from the north and the other from the south.

Each river has a complex and beautiful cave system surrounding it but there is so much more to find. In the 1960s guides discovered the currently southernmost source of the river, Barralong Cave. The discovery doubled the stretch of the tourist caves into the south, ending at the edge of an upwelling lake feeding the river that emerges at Blue Lake. This is the gateway to an enormous karst area stretching more than 2 km further south. The river in Barralong is likely to be integral to cave development in the south and geologically related to cavernous pits that sink from the surface but never quite connect to the elusive underground river. Such caves include Block Cave, Bottomless Pit, Hefalump Trap and numerous significant dolines appearing near surface river level.

A trip to the back of Barralong has, in the past, meant navigating areas of high decoration and pristine beauty incurring time overheads protecting vulnerable formations. Visits to Barralong are restricted because of the varied and beautiful decoration. To dive the upstream lake all gear has to be containerised in padded cave packs to help reduce possible impacts.

Some years ago Missing Link was found.



It provided a new route through undecorated wet passages, following the actual underground river.

The disadvantage to this route is there is some really sporty crawling through rock-piles and four short sumps, just long enough that they cannot be free-dived. A dive party can now use this route to explore

Barralong's furthest point with minimal impact to the environment. Trip logistics are complicated in that it requires a party of four to help transport gear, all with cave diving experience.

The backmost passages of Barralong remain puzzling and possibly not representative of the entire river flow. There are many grikes and rifts that have not been adequately examined that may take the river through an alternative route. The main focus is at the bottom of a rift that dives into passage blocked by sand. Near this obstacle are above-water leads that need further inspection.

Spider Cave

Spider Cave lies between the tourist caves and Mammoth Cave. Spider was joined to the tourist caves through the Imperial River dives but the connection of Spider to Mammoth is elusive.

Endzone is a puddle of water in the northernmost part of Spider and must ultimately connect to Mammoth. Previous dives at Endzone were highly successful, pushing the limit of exploration close to underneath a doline on the river flat area called the Playing Fields.

Previous geotechnical studies on the Playing Fields revealed a gravity low on the west side. This finding intensified exploration in targeted places in Spider, resulting in finding the extension we now call Endzone. More interestingly, the survey showed a much larger gravity low on the east side of the valley, located under a degraded doline on the side of the hill. We believe the subsequent dives in Spider almost reached the place where the gravity low is shown.

At a higher level than Endzone (55 m below the valley floor) a dry passage may contain an earlier connection that crosses the valley to the cave system on the eastern side.

Such cave development might be found in an abandoned streamway prior to Endzone, but this is all conjecture. Dives previously undertaken some time ago in Spider used bulkier equipment. This acted as an obstacle to pushing against currents in the X-Window dive but even with modern equipment, these are hard dives.

While Spider contains many delicate and beautiful formations, the route to Endzone is robust. After the entrance series and wading upstream in the river, the trip passes through rockpile. Dive trips moving through here will not damage the cave. The Endzone dive should be surveyed to give an accurate position of the furthest exploration point.

Diver reports from the end point suggest a possible surface above, and there may be



Tina Willmore at Widow Sump, Spider Cave

an opportunity to connect into the chamber represented by that gravity low.

Lower River, Mammoth Cave

Exploration upstream in Lower River has been an extraordinary effort led by Rod OBrien, pushing to unexpected depths in tight conditions while experiencing high water flows. My view is that this dive has gone as far as is safely possible and no more exploration is likely. While Lower River harbours the mystery of the cave systems to the north of Mammoth, at this time that exploration prize is only likely to be found by other leads turned up by dry cavers.

Slug Lake, Mammoth Cave

Explorations started by Al Warild and Rod OBrien have lately been largely coordinated by Deborah Johnston and Dave Apperley. This exploration is highly significant, exposing an extension to the known lake Gargle Chamber. An aid climb above the lake led to major dry passages and chambers. While the dive has been surveyed through the underwater restriction at -23 m and up to the surface in Gargle, the pitch and dry caves have yet to be mapped.

In the other direction from the surface, Gargle Chamber was dived by Ron Allum using a helium mix to a depth of 95 m. The lake considered independently from its depth is of unbelievable size. There are significant geological questions yet to be answered about why this geological development is possible – the underwater passage is on a completely different scale to the dry cave that leads to Slug Lake. The dives are difficult and the tasks to accomplish in defining this monster are hard to achieve.

Tuglow

Tuglow is a highly technical dive requiring a strong support team. With a good team we are now transporting dive kit from the top of the cave to the downstream dive

site in less than an hour. The dive line has been extended through a squeeze full of gravel, tied off on a good anchor on the other side, and extended 30 m beyond. The sump has been surveyed as far as the tie-off on the other side of the squeeze.

The puzzle of Tuglow is that the current diving depth is 33 m, putting the dive passage about ten metres below the Kowmung River. The known resurgence T9 is about 18 m above the river, implying a substantial rise in the cave dive should follow, possibly with another dry cave associated with that. There is evidence of multiple resurgences on the hillside, and an assertion by geologist Ian Cooper that one of these resurgences is unrelated to the Tuglow stream.

KOSCIUSKO

Yarrangobilly: Mill Creek Swallet.

Mill Creek is a swallet in a valley near the bottom of cliff faces underneath Yarrangobilly tourist caves. This swallet is like a mini-Tasmanian cave although only for a very short distance — a serpentine stream passage enters a large chamber with fissures in the floor. A series of parallel crawlways drops to a sump with a pleasant dive. A spacious underwater passage is interrupted

by an air chamber halfway along its length. The underwater section continues beyond a short gravel race with a descent then ending in an upward passage blocked by large rounded river stones forced into position by floods. The blockage is at 30 m depth and is likely the low point in a phreatic loop. It should be possible to pull these rocks out and find what lies beyond.

Yarrangobilly: Coppermine

Coppermine is a major resurgence, draining many swallets with a large catchment area. Exploration upstream in Coppermine has an enormous potential for new and undiscovered cave as might be expected by the considerable volume of water emerging from the base of the limestone and pouring into the Yarrangobilly River. In one of the muddy sections of Coppermine's lesser known areas is a small triangular passage with continuous wind perpetually blowing outwards, suggesting a good-sized cave lies behind the hill.

Historically, Ron Allum dived in Coppermine's river wearing back-mounted tanks and found it impossible getting upstream at all. Ron's diving equipment was much bulkier than the low profile buoyancy compensator and side-mount systems we now use.

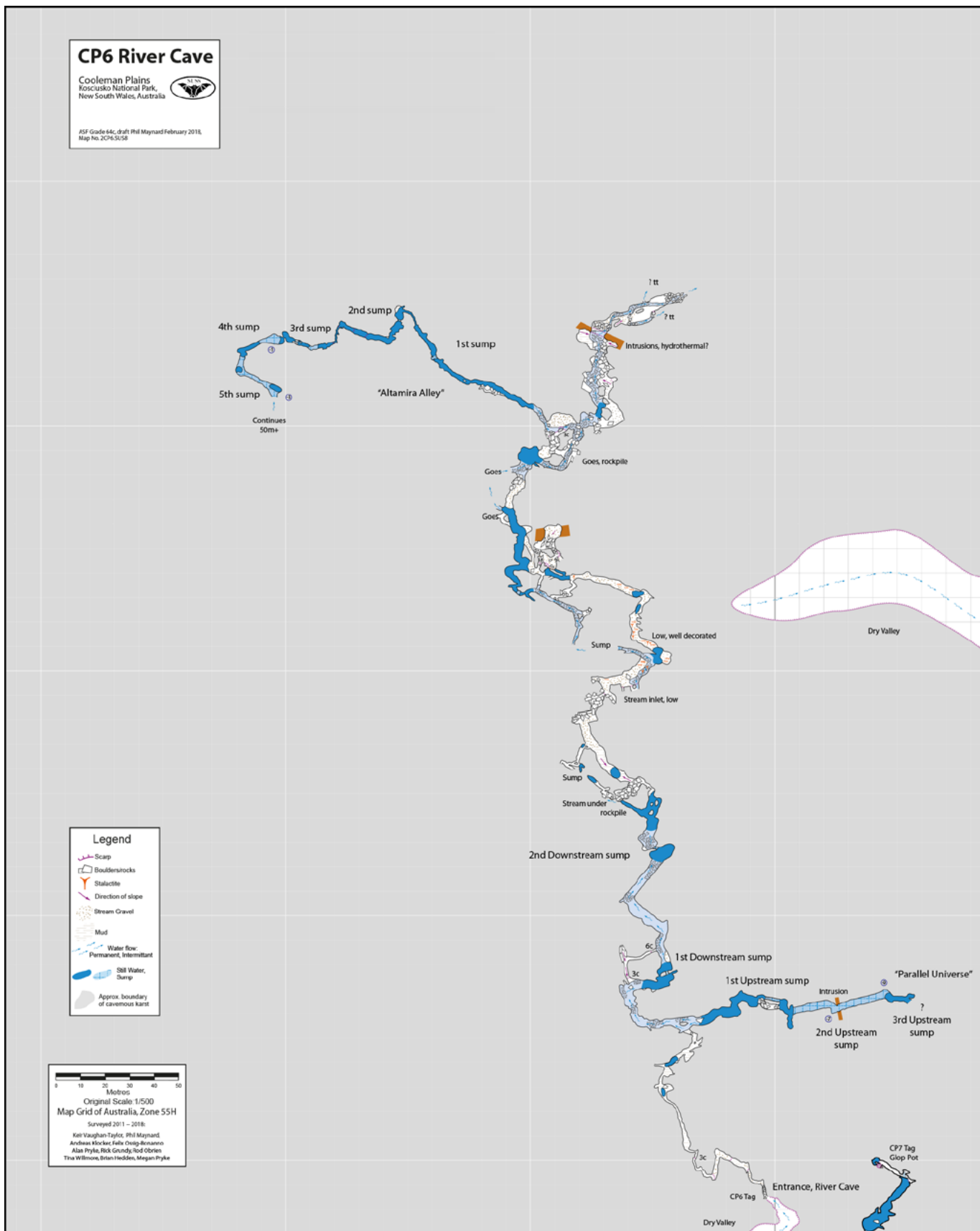
Recent diving (Deborah Johnston using 3-litre side-mounts) found ongoing passage that she had to leave because of her small capacity tanks. The potential of Coppermine seems very good and the cave will undoubtedly be pushed in the near future.

COOLEMAN PLAIN

Having worked Cooleman as an ongoing project for many years, we have made many finds. To a certain extent the cave scientist Joe Jennings' hydrological model of the area is upheld; however, finding new inflowing streams such as Altamera Alley in River Cave suggests his model will be much more complicated than he envisaged.



End of CP6 River Cave — David Rueda-Roca and Rod OBrien surveying



RIVER CAVE/MURRAY CAVE

The part of Murray Cave known to tourists is a long passage that starts as a giant fissure in the cliff and ends in a sump. Decoration is badly damaged by easy public access, but beyond the sump the passages are highly decorated. There is a long section of cave beyond the sump, eventually meet-

ing the active river system and heading upstream before finishing in rockpile collapse.

A voice connection between Murray Cave and downstream River Cave was confirmed on one of our 2017 trips. The downstream survey in River Cave was extended to the absolute end of passable passage on the January 2018 trip, and the

gap between the two surveys is now about thirty metres. The surface above the gap is a massive doline.

Altamera Alley is a major side creek inside River Cave.

Recent diving by Rod OBrien and Brian Hedden has pushed the limits of the upstream sumps in this creek, with the survey



CAVE DIVING NEW SOUTH WALES 2017 PROJECTS REPORT

lagging behind the exploration by more than 50 m.

The survey in upstream River Cave progresses, although the water is cold and usually with poor visibility. The downstream end of Glop Pot is a mere 50 m from River Cave and contains a deep lake that surely must connect to the River Cave water.

The latest surveys in upstream River show it is trending away from Glop Pot, defying our expectations and leading us to call this area Parallel Universe.

Dives upstream in Glop Pot found hundreds of meters of walk-along passage, half of it surveyed but downstream no passages have been found.

Future visits to River will concentrate on the upstream survey and we still have hope of achieving a connection to Glop Pot. Completed surveys connecting River Cave to Glop Pot and further Glop survey reaching beyond the second upstream sump will be added to River Cave surveys. We anticipate this work will document a cave more than 2 km long.

EASTER CAVE

The Easter Cave area continues to be of interest with surveys inside a number of the local dry caves adding to our knowledge, and the expectation of a river system inside the mountain bypassing the 60 m high cascades/waterfalls.

The known underground river at the Easter resurgence almost immediately has a well-known duck-under, which leads to some sizeable chambers with a flowing river at the base. The upstream end of the cave is a sump which has so far only had one dive. This cave needs exploration and survey.

