
CAVE DIVING TRIP REPORT COOLEMAN PLAIN 22-28 JANUARY 2014

BY KEIR VAUGHAN-TAYLOR WITH INPUT FROM FELIX OSSIG-BONANNO AND IAN COOPER

Participants: Ian Cooper, Philip Maynard, Felix Ossig-Bonanno, Alan Pryke, Megan Pryke, Keir Vaughan-Taylor and special guests hanging out; Oliver, David Lee, Nicole Lee, Bill Lamb and Canberra colleges.

The drive to Cooleman was notable for blackened and charred hills from bush fires. At times the drive was halted waiting for a fire ravaged road to be re-opened. On all sides the landscape was blackened and charred. Seen across Blowering Reservoir a helicopter ferried buckets of water onto smoking fires. Later in the day rising winds re-fanned the flames and the fires went out of control. For members of our group arriving at night the distant hills around Talbingo could be seen engulfed in flames.

The first day we sought to get an overview of how high the water was and how silted. This would affect what caves we would do. We hoped the Murray Cave sump would be low enough to get a standard caving team in, but water levels were too high to pass safely without an air cylinder and mask. The sump is very cold, much more so than the flowing underground river further in. My initial splash into the water flooded my so called under water-camera. With water sloshing around in the view screen it was apparent there would be no pictures from this trip.

First day walks around Murray Cave area showed signs of powerful flood events. The North Branch sink, we think, will join somewhere into the downstream from Murray. The sink is changed in that rocks have moved around in the sink entrance however there is still no way into the underlying cave system.

Just upstream from North Branch sink in the dry river bed a new subsidence has opened and now the surface river is pouring into a cavity. The new collapse is entirely in stream gravels with the roof of the cavity only just supporting itself. Venturing a very short distance into the cavity mouth we looked along the gurgling water. It was far too dangerous to enter so we left it to erode away by itself for exploration on another day.

River Cave

Our main focus was to re-enter downstream River Cave aiming to reach the far back end, suggested to exist on the 1969 SUSS map which was surveyed during a drought. According to the 1969 River Cave map, on our last trip we had surveyed half way along the cave where a water filled tunnel prevented further exploration. The 1969 map annotates this place as “unexplored left hand branch” (UXB). We previously explored this serpentinous passage ending in a fast flowing water constriction. There would, according to the map, be at least another 100 meters of almost virgin cave.

There are two main sumps to pass. The first sump is part of the standard River Cave speleo trip requiring a breath hold and some bravado. The second sump was not passed, to our knowledge, since 1969, because the way on is not at all defined unless you are scuba equipped.

We took two 3 litre cylinders to pass the second downstream sump safely and later we would need the air to negotiate the obstructing sump at UXB, our last survey point.

Once past sump2, there is a swim and then a climb out of the river water into a large rocky chamber with the river barely audible down a rocky chute on the left but unobtainable.

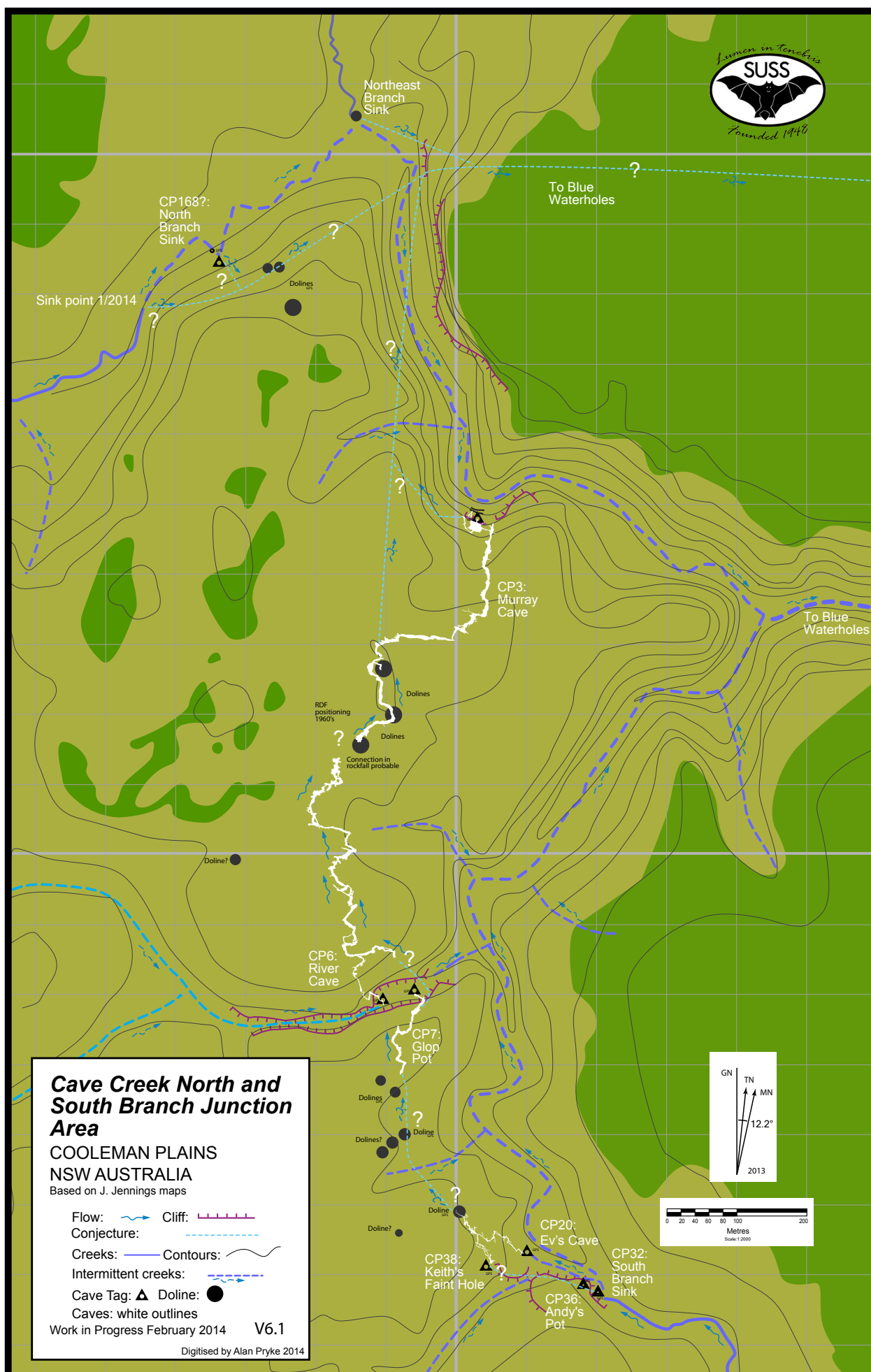
The way on passes through a squeeze. It is the only squeeze in the whole journey through the cave. This is my kind of cave! The squeeze is sandwiched between two river packed stones and drops vertically into decorated river passage where we have rejoined the river, although missing some of its full flow capacity. Flowing water cascades from swimmable passages entering on the right. Some were explored to a point where the tube passage split in multiple directions.

Hands and knees crawling was required and, although not that onerous, we retreated, instead returning to the main goal of the day, to survey to the furthest point of the river. Most likely the water connects back into the river that disappeared under the large chamber before the squeeze.

At UXB we found that carrying the cylinders all the way from sump 2 had been unnecessary. The sump that previously obstructed us was no longer filled as high with water and this day was an easy roof sniff along a straight triangular passage.

A mud embankment rising at the other end drops again into the bed of a full flowing river sweeping across the mud bank from the left. It's time to swim. Upstream to the left a serpentine passage stretches 40 meters and then sumps. This flow is likely to source from the sump seen at UXB.

The mud embankment at the waters edge sustains a variety of organisms like worms, some 7 - 8 cm long, perhaps 3mm wide. Some, but not all, are milky transparent. There are small creatures swimming around in the shallows, a silvery-white colour with legs they used to scoot around on. They had an oval shaped cross-section and seemed a bit



too top heavy because they kept falling over when they made a sharp turn. They seemed aware of our presence or maybe affected by the light, and they would retreat, burrowing into small holes in the mud. There are occasional web clusters similar to the thick gloopy threads of glow worms, in places snaring hapless insects. These are unlikely to be glow worms because they remain present in their web. Most likely they are spider webs but unusual because the thickness and sticky globs. Hard life being an insect. First caught in a flood, washed into a cave, dashed about but then snared by a web casting monster and eaten.

Upstream the passage is mostly 'stand up' size. It is characterised by limestone intruded extensively with a black minerals, possibly basalt, intruding as dykes but also in micro dimensions. In places, extruding from fissure lines, out of the limestone wall in places like a multi blade razor. Something other than a volcanic intrusion is happening but also big stone dykes and black rounded rocks litter the floor. Para-phrasing Ian Cooper's emails on the matter:

There are no basalt dykes like we see at Jenolan. Fracture orientation is an orthogonal set of subvertical fractures running E-W and N-S. These appear to control veins, dykes and cave passages.

In Murray Cave, the multiple thin veins of less soluble material are dominated by Siderite (FeCO_3), ankerite ($\text{Ca}(\text{Fe}_2+\text{MnMg})(\text{CO}_3)_2$) and dolomite ($\text{MgFe}(\text{CO}_3)_2$). Minor amounts of quartz (SiO_2) and pyrite FeS are present. These minerals weather to black Mn & Fe oxides which coat the veins slowing weathering. These veins are formed by hot waters coming off granites less than 1000m below and flowing up fractures.

In the area near side creek sink on the way to Murray, the next step up is to have increased amounts of quartz and sulphides such as pyrite, galena (PbS), sphalerite (ZnS), arsenopyrite (Fe_2+AsS), and chalcopyrite (CuFe_2+S_2). This material is what was mined at the Black Range Mine. These veins are up to 5m wide and grade into microgranite dykes.

Below Clarke Gorge microgranite dykes up to 50m wide are present.

Often the river splits taking multiple paths rejoining sometimes and perhaps not. Side streams entering were in some cases reconvening anabranches. In at least one inflow passage, Felix followed to find its source. Felix was off for some time but returned, exclaiming "the side passages just kept going!" These may yet be an example of the characteristic splitting and reconvening of the river but also, more interestingly for finding new cave, there may be other inflows from other stream sources.

The main backbone of the cave ends as described in the 1969 maps with a final shallow lake. Only 4 or 5 meters across buttressed with a stack of eroded stones and boulders. Water flows out through a pile of rocks, cold and tightening stones. Some rocks can be moved but a connection remained elusive. In places you can see through the boulders into what may be another chamber. I believe this is looking into the very back of Murray cave. It is difficult to say for sure. Felix is interested in the small life forms and swam into the rock pile looking for spiders or glow worms. Near some organisms web he found a piece of orange dive line, a cut tie-off knot, swept in from somewhere in the last flood.

Starting at the very back of the cave we spent hours of marking survey stations, recording Disto X readings and sketching. We were caving for seven hours mostly standing waist deep in the river. Special credit to Phil hanging in there with his shivering pencil in hand wading to the next point through the thigh deep river water and me trailing along marking survey stations and pontificating about interesting features to mark on the cave sketches. Finally, the last survey connection point we placed a year ago. Sadly there was not enough time to survey or explore potential side passages but given the cold, it was a brave effort.

Murray Cave

Joe Jennings has previously published a map of Murray. His interpretation of the cave floor and wall features was of its time but today's standard, with the aid of software packages, there is a considerable improvement. It turns out Joe's cave profiles and dimensions were very good for someone without the benefit of laser distance measurement.

Alan, Megan and Felix began an extensive and detailed survey of the front part of Murray. This included the small passage such as the Evil Twin. At its end there is a squeeze but thereafter it is still blocked by a sump and this remains to be surveyed. We require a drought, but if passed, this might be the big downstream lead we need to get into the main water course going to Blue Waterholes.

We now wanted a survey and a map with a good confidence about the x,y position of the final chamber and its relationship to the back of River. Of course they connect but is the room we see from the back of River the same room we see in Murray? The obvious test would be simultaneous trip into both caves and make a voice connection. To do that we would need another pair of divers along. Not to be on this trip.

Phil and I set out to dive through the Murray Sump and a re-survey with the Disto X survey equipment carefully packed in an o-ring sealed case. Murray's passage is largely walk along without substantial side passages, with one notable exception. We thought it would be straight forward, being a single backbone traverse. We underestimated the job and we were in there for hours. The still waters of the first sump makes the perishingly cold river seem warm by comparison. The first days splash in Murray Sump 1 emphasised the need to respect that cold. With full

wet suit kit we sank into the sump paying out dive line; it sets the tone for our watery misadventures.

Although a River connection is what we are after, the real prize is a downstream lead because that might reveal the river system going towards the Blue Water Holes emergence. Murray's Sump 2 is most of the time a swim down a triangular tunnel through a black dyke that once blocked the exit to the Murray passages. In flood the main drain's water flow is constricted at this dyke. It backs up through the triangular passage up the mud embankment and ultimately out through the entrance chamber known and loved by tourists.

I tried to dive along the bottom of the basalt dyke hoping to find an alternate way to the downstream. Feeling along the dyke there is some space in the direction we wanted but there is no way on and it all snubs out.

The line through the third sump was washed out floating aimlessly on the brown eddy currents. The way on is along the right hand wall, but down and under a shelf to the left, tracing along the right hand wall.

On the other side, line was secured at the surface where we found ourselves floating in the main drain, finding the way on in a reversed direction. The right hand pitted tunnel turns back on itself along a corridor maybe 11 metres long. We risked Phil's Disto X health standing waist deep, measuring legs along the length of the kinked tunnel and getting directions on the incoming guide line. At its end the way kinks back in the other direction. Immediately on the left is an entering passage that climbs up and up. The Disto X measurement from the top of the first climb records the roof a distant 25 meters. The rock face is carved with keyhole slots and an evident top passage. The face isn't quite vertical and with a little climbing gear we could access the passage top. The Joe Jennings Murray Cave map shows a surface doline overlaid near this aven.

Right at the back of the cave is a rock collapse and a book to sign. On the left water enters but to the right of the book is a little more passage with a water entry point through tumbled rock collapse and a rock penetration that might be our connection. In one place you can turn upside down into a small chamber of river gravels and see part of the river streaming in from the right hand side. Tantalising and tight it may one day succumb to a little determination

Evs Cave - Keith's Faint Hole

Alan and Felix went to Evs cave to investigate any possible connections between the water source in Glop Pot to Keith's Faint hole. The entrance was near the South Branch Sink, it has many boulders at the entrance, demanding careful squeezing on entry. In general the cave is tight involving much crawling often in mud.

Alan made his way along a small stream meandering its way through the mud, and then followed wet rocks meeting at an active river passage. Alan was certain he had made a connection into Keith's Faint Hole.

The connection was confirmed finding a crescent shaped hole just above the water's surface known as the Wetter Box. The time and trouble to get to this point meant that this was the turn around point, although Felix reported getting very wet reversing out of the Wetter Box.

The cave was surveyed and the maps joined to the current map of Keith's Faint Hole.

Glop Pot

Because of technical difficulties there was only one short dive in Glop Pot. The goal was to investigate the theory of a vertical downward passage in the centre of the entry lake. Ladders and gear was transported to the last pitch that overhangs the entry lake. I kitted up in the water and laid line straight down slightly to the right of where the ladder enters the water.

Looking down the pitch it could be seen that the water was considerably silted from the start and visual navigation wasn't going to be a big asset on this dive. Descending in the main chamber the floor could be felt to be rocky and not silted. Most of the dive time was feeling around in the dark finding a route but the entrance must be fairly large since a deeper descent was soon found.

Phil and Ian reported that my air bubbles disappeared and were therefore rising to some other place. The edges of whatever passage I was in had heaped silt, lightly piled against the sides of the passage and was easily disturbed.

There was a brief moment when the roof of a passage was visible and some success making a straight line into a spacious passage. Laying 25 meters of line at a depth of 15 metres, another encounter with a silt bank blew out visibility. After some abortive attempts to relocate the way, I started to feel the cold and decided to return, however I was probably within cooee of connecting to the the River Cave guide line.

It was time to go home. No sign of Andy Spate's ladder and Rod's hammer is still waiting to be picked up. One day we will find them.



North Branch Sink

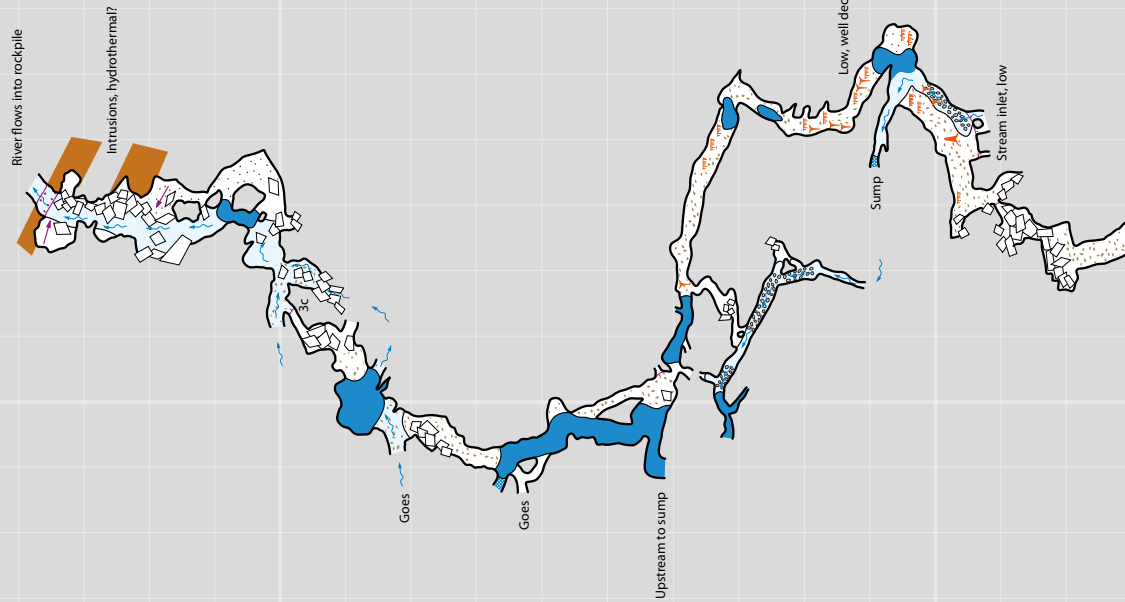
CP6 River Cave

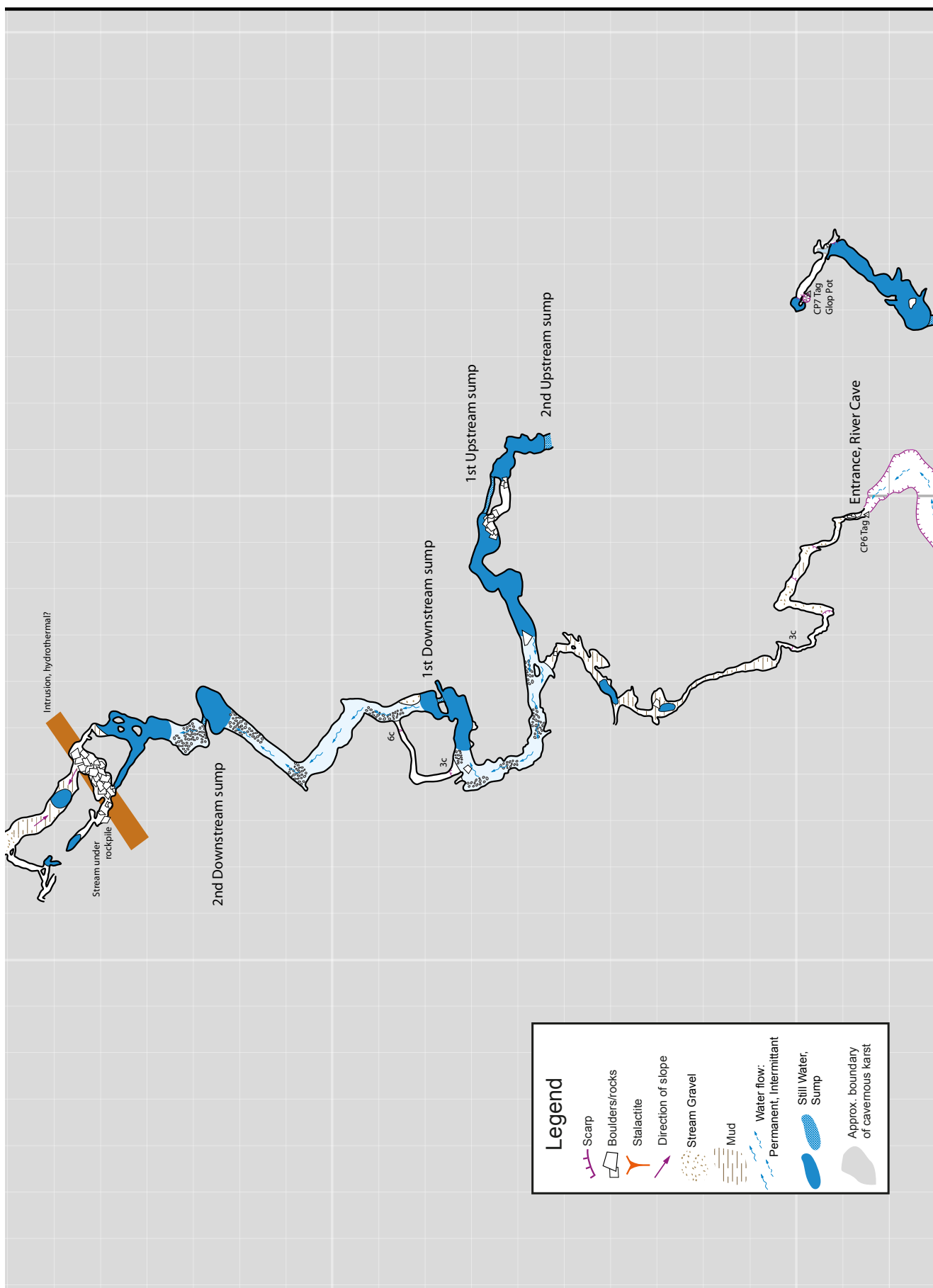
Coolleman Plains
Kosciusko National Park,
New South Wales, Australia
ASF Grade 54c, draft Phil Maynard April 2014,
Map No. 2CP6.SUSS



Original Scale: 1/500
Map Grid of Australia, Zone 55H

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Andreas Klocker, Felix Ossig-Bonanno
Alan Pryke, Anna Ossig-Bonanno,
Megan Pryke





MURRAY CAVE

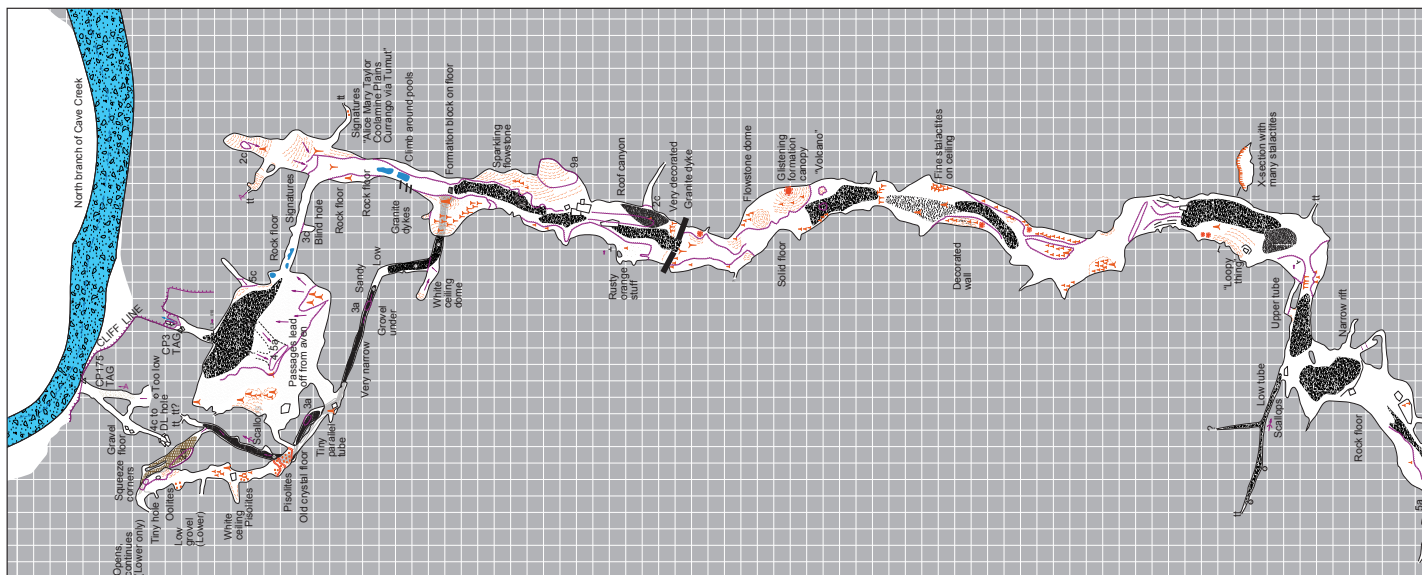
CP3/CP175

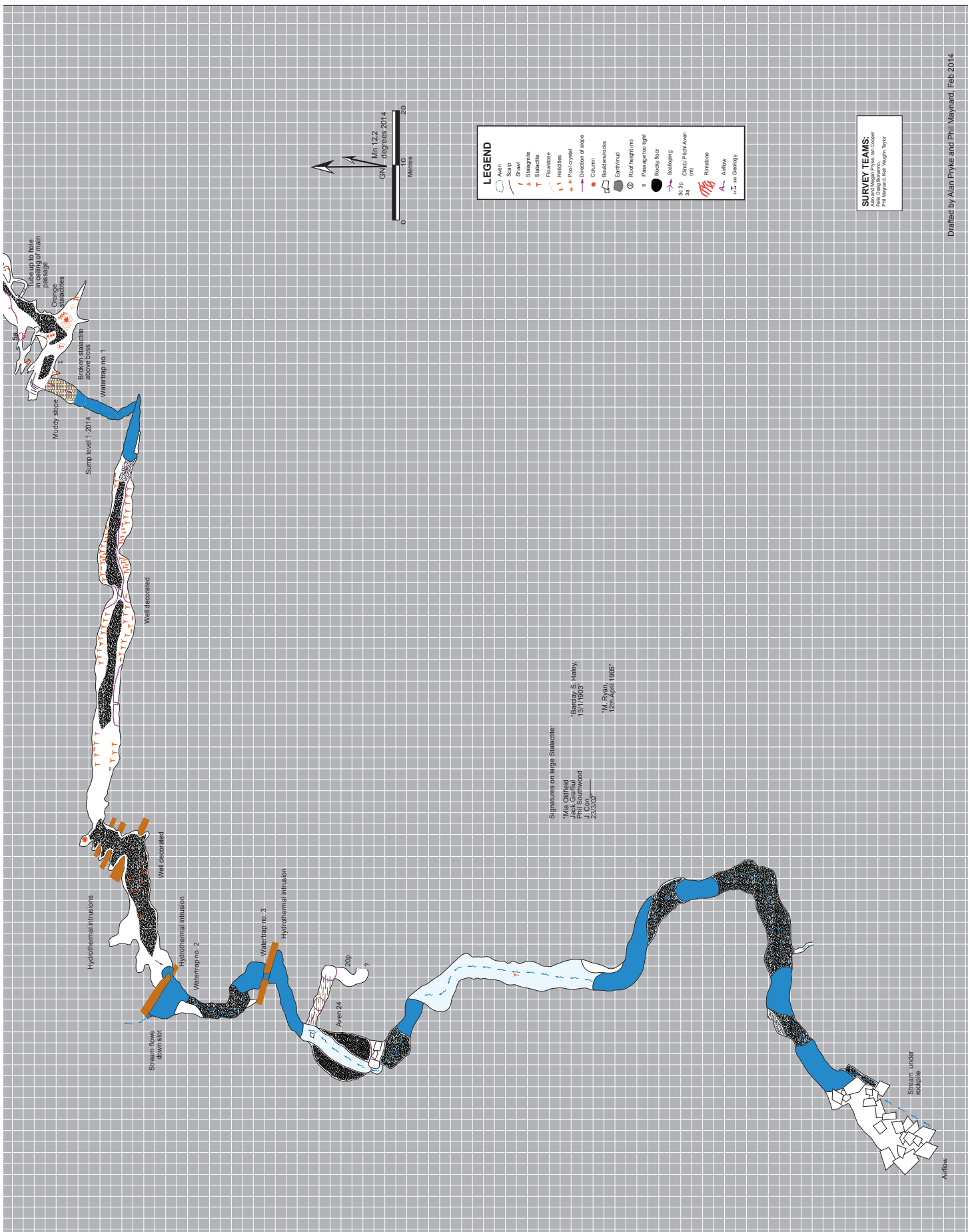
Coolman Plains

NSW Australia

GDA94 Grid ASF54c

Computer Draft Version: Jan 2014 ASF Map 2CP3SUS1





Drafted by Alan Pryke and Phil Maynard Feb 2014