CEGSA NEWS

Newsletter of the Cave Exploration Group (South Australia) Inc.

Volume 61 Number 4 **Issue 244** **NOVEMBER 2016**

CAVE EXPLORATION GROUP (SOUTH AUSTRALIA) Inc.

PO Box 144, Rundle Mall, South Australia, 5000. **http://www.cegsa.org.au**

Meetings held on the fourth Wednesday of each month, except December, at 7.30 PM usually in the Royal Society of South Australia meeting room, Natural Science Building, South Australian Museum.

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Website Trip Log	All Trip Coordinators	See list p88

Area Coordinators

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SA Speleological Council	Graham Pilkington	As Above
Kanawinka Geopark Liaison	Ian Lewis	As Above
CDAA liaison	Ian Lewis	As Above
SA Scout Liaison	Ian Lewis	As Above

Cover Photograph: Water dripping from decoration near Woodside area of Corra Lynn Cave.

Photo: Mark Corbett.

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QUARTERMASTERS NOTE.

High usage equipment will now be stored at the quartermaster’s residence. Please make arrangements with the QM well in advance of required date for equipment. The QM can be contacted at the telephone numbers on the previous page.

NEWSLETTER MATERIAL

The deadline for copy or background material for Volume 62 Number 1 (Issue 245) must reach the Editor by Wednesday **8th FEBRUARY 2017**. Material not meeting this deadline may be retained for possible use in a following issue. The preferred method is via E-MAIL to atholjax@adam.com.au as an attachment or on a memory stick or CD, in Word *.doc(x) or *.rtf files. Of course other forms of communication will still be gratefully accepted. Photographs are preferred to be in colour as separate files and note in the article where to be inserted. (*.jpg format under 500Kb unless for the cover).

PRESIDENTS SPOT

In this issue I am delighted to see so many pikkies taken within Corra-Lynn Cave on the recent 'Search' exercise run between the Scout Caving Leader Group and CEGSA. There are several reasons for my delight –

The first is to see a pile of young people really enjoying themselves rattling around in the fissures and squeezes. My first visit there was in 1968 with Glenelg Scouts and we climbed up the same tree branches and had an equally good time exploring. So it is especially pleasing for me to see Scouts and Guides back in there 40 years later having an equally good time! There are a number of 'Pilkington-Lewis Squeeze Index' localities in there which I would no longer qualify for (due to my 'enhanced' diameter) but then I can justify such inactivity by using long and important-sounding geological words while sitting in one spot.

I am also delighted to see the array of beaut colourful images taken by the whole gang on the day. I recall several of us trying to capture some of the photographic essence of Corra-Lynn Cave decades ago with film but with limited success. I presume others have also tried, perhaps with better outcomes over the years? However, digital photography now really brings Corra-Lynn Cave alive and also shows the fun and engagement with that cave, not just the shape and form of it.

I believe that Corra-Lynn has not been systematically photographed over all the years of caver visitation and wonder if Mark's article and the Scout pikkies might be a trigger to draw together many photos within that cave from over the years to assemble a visual record? Perhaps we run some trips there just for photography? Maybe even that idea can be more open as the beaut results from the 'Search' trip were taken by cavers on the run (or on the crawl!) and have done such a good job! Well done Mark and everybody – a great trip. Bob the Bag was truly elusive and, true to form, when rescued did not have a word to say to the assembled media scrum.

There mustn't be a caver in South Australia who hasn't been to Corra-Lynn Cave in over 60 years of caving since CEGSA started in 1955 so wouldn't it be great to have a photo-set of the place for our website? Or even a CEGSA Occasional Paper – these sound formal but don't have to be and we haven't tried a pikkie book before! The explanation of all the internal place names in there would make excellent accompanying story lines. None of the Scouts knew why "Woodside" is so named for example - because that blank area on the map to the southwest of it is the unknown and undiscovered "Woods" which we have never been able to access by digging from any direction. Hence 'Woods-side' (Upper and Lower)! The stories of the other hundred or so names are part of every South Australian caver's culture and should be passed on for the next 60 years of cavers.

There's a Gloop Cave trip coming up in December – how about photographing the heck out of that one too while we are all there!!??

Ian Lewis.

TRIP REPORTS
Corra Lynn Cave trip 25 August 2016

Participants: Graham Pilkington, Michael Woodward, Gary Woodcock, Steve Wasilewski, Mark Sellars, FUSSI trip leader Thomas Varga, and 23 3-month Associates all students from Mercedes College.

The group was divided up into three teams. I'd decided to do something more than just a trip through the cave enjoying the fun of caving, and with a small team of 6 students this was a good opportunity to do so without most people being bored by inaction. So I made a thermal survey.

Everyone was given a task, albeit two members were used as trial subjects to see the effect of caving on personal temperature. We took the readings at only 8 locations – we had to do some caving! – the **cave** temperature readings shown in the chart are in degrees Centigrade and were made using a hand-held infrared thermometer.

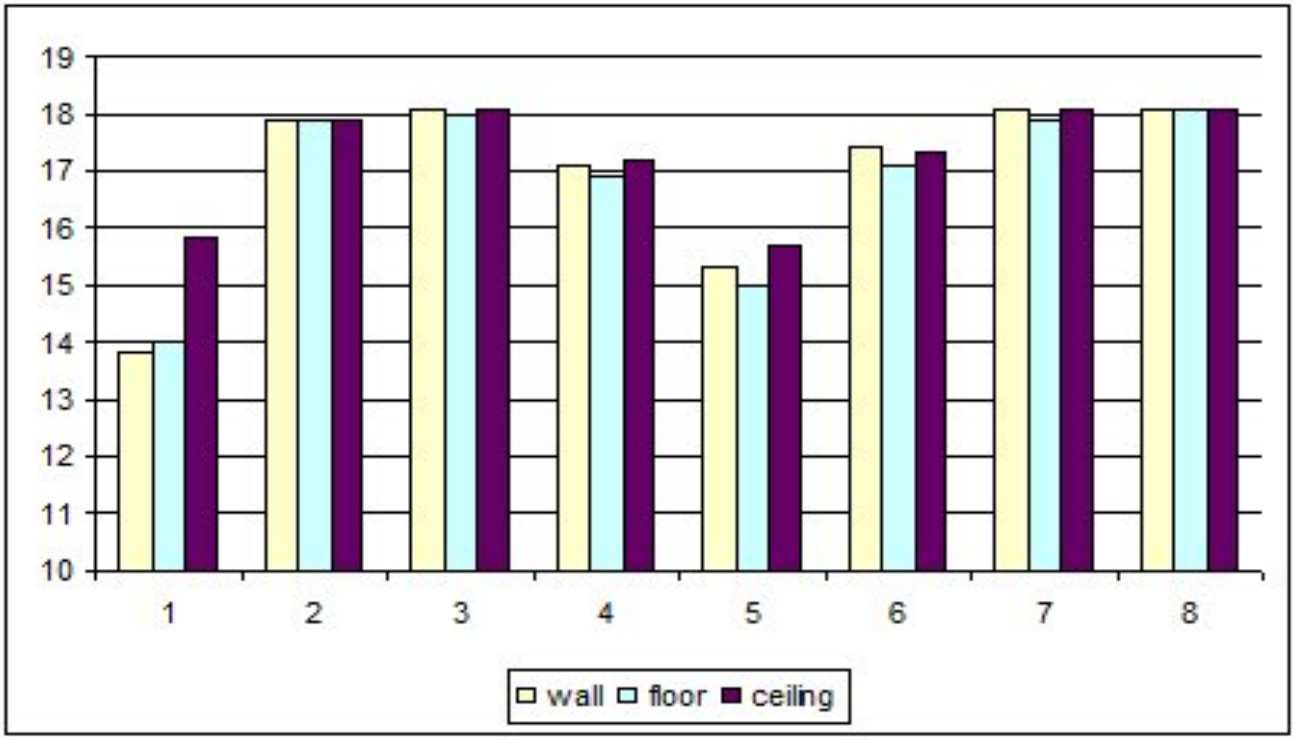
Notes
* values are +/- 0.2 relative
* values are +/- 1.0 absolute
* level = Upper(~12), Middle(18-24), Lower(~30). Typical depth in m
* read in constant order left-right-floor-ceiling
wall readings were averaged and usually taken about 1m above the floor

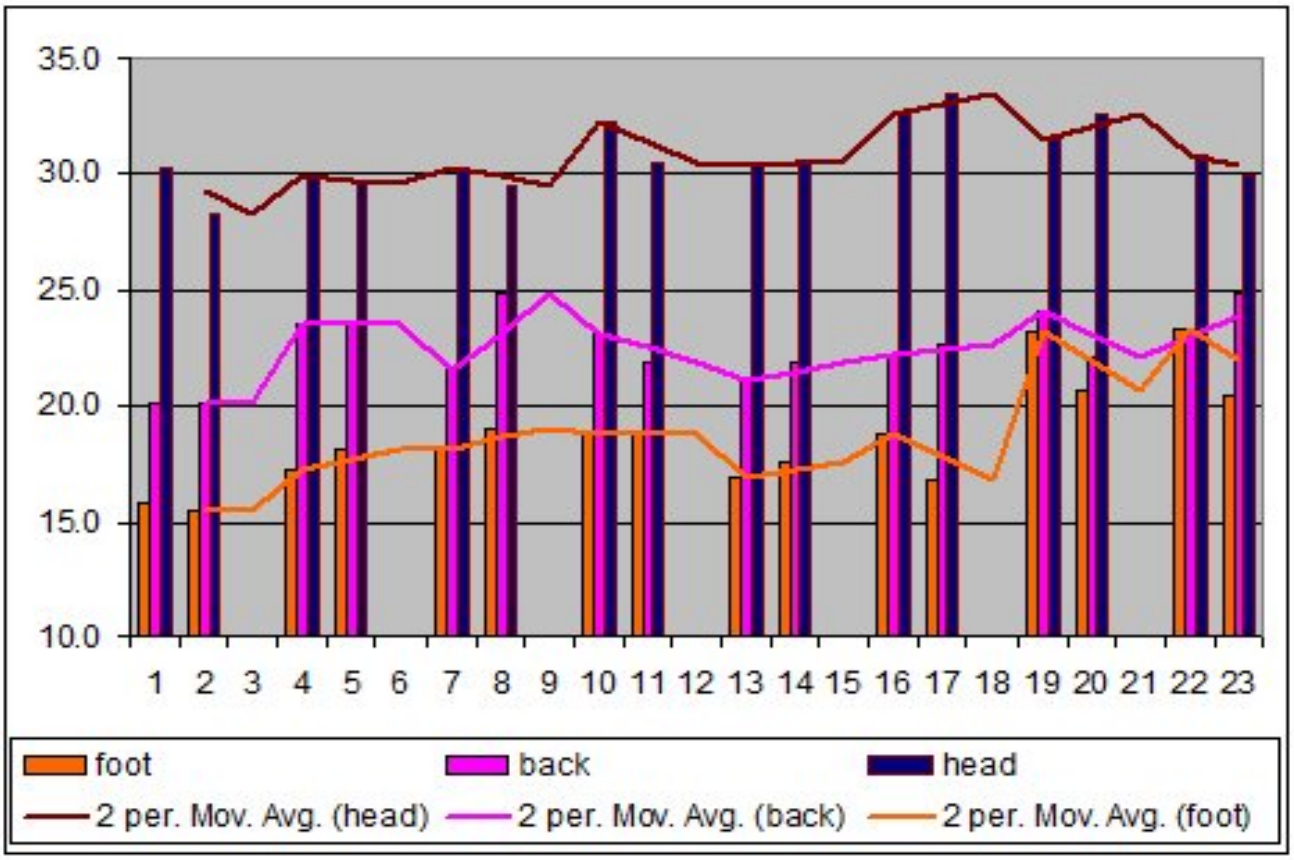
Results
* cool air flowed from the doline at 11°C to *Grand Central* (stations 1 to 5 to 4)
with some flow towards the *Rope Crevasse* (stations 1 to 5 to 6 to 7)
elevated roof temperature at stn 1, and to a lesser amount at stn 5, will be warm
* air flowing out of the cave
away from the entrance, radial temperatures appear to be equal within
* measurement tolerance
* inner cave temperature = 18.1°C

station	level	location
1	U	8m inside door
2	U	above steps outside *Ramshorns* entrance
3	U	above *Grand Central*
4	M	*Grand Central*
5	M	junction 10m from *Ramshorns* entrance on way to *Grand Central*
6	M	before turn into NE *Rope Crevasse* access passage
7	L	bottom of *Rope Crevasse*
8	L	central *Bushwalkers Chamber*

The **caver** temperatures shown are for the two subjects on a leisurely tour. Numbers 1 & 2 are at station 1, 4 & 5 at station 2, and so on with both subjects on the same chart.

Notes: The **foot** used was not consistent but both wore sandshoes.
Sometimes the caver had been sitting on floor before the reading was taken.Caver removed helmet just before the top of **head** measurement was read.





Both cavers warmed up during the 2-hour trip but the feet became significantly warmer after crawling from *Ramshorns* and along *Bushwalkers,* however, for most of the trip, their feet were at floor temperature. Because loss of heat by radiation is a function of the difference to the environment, most heat should be lost via the head (13°C difference) and not the body (4°C difference). Because the feet are in contact with the floor, they will loose most of their heat via conduction. Feet were at the same temperature as the floor during walking but after crawling, when the feet are raised onto the toes, the temperature rose significantly (by 5°C, to same as the body).

It would be useful to take temperature readings of cavers who were doing normal caving activities to see the extent of the temperature rise and the distribution of those rises.

Graham Pilkington

Corra Lynn Cave trip 3 September 2016

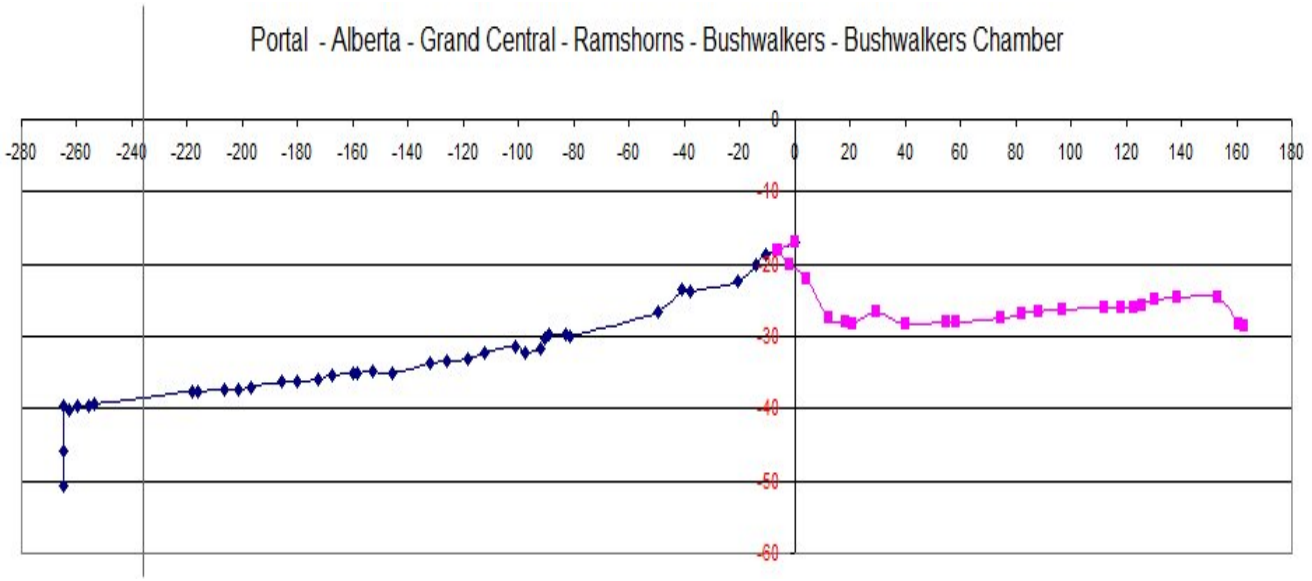
Participants: Graham Pilkington and Ian Lewis

This was a 2-day Scout Search and Rescue exercise that I attended on day one to assist in preparation without participating in the actual exercise.

I used most of the day planting Yacka cuttings in the doline. It's hoped that these will establish themselves and help to stabilise the rubble slopes. I planted one two years ago and it has managed to cope in the low rainfall limestone environment. Eventually all the barbed wire will be removed that's used to guide visitors down the steps and off the loose slopes.

Ian and I conducted a traverse from the entrance to *Bushwalkers Chamber* recording temperatures and elevations. When the bulk of Corra Lynn Cave was surveyed in the 1970's and 80's, we lacked an inclinometer and dip angles were measured using the tape and compass only where the dip was large enough to affect the plan length; the dip then used to adjust the plan length without being recorded. For an essentially horizontal passage system where we drew up the map independently for the various levels, elevation data was not considered a necessity. Radio Direction location surveys proved that the final map was accurate to within a metre throughout the system. The temperature readings were within 0.2 °C (within the accuracy of measurement) of those taken on the 25th August.

The DistoX2 used to make an elevation traverse along the *Bushwalkers Run* gave an average but consistent projected dip of 1.8 degrees upwards towards the *Bushwalkers Chamber*. Dip readings were accurate to 0.1 degrees. A traverse from the car park to the bottom of the *Portal Dig* along the *Alberta* made five years ago using two inclinometers (good to 0.5 degrees; one read in reverse by Ray Gibbons, giving a discrepancy of 0.5m over the 90m long traverse) gave an average projected dip of 3.8 degrees along *Alberta* from the *Clayballs Dig* to the *Portal,* over double that of the Bushwalkers. The surface has a similar dip to the passages below that might indicate that the top of the buried limestone follows a bedding plane. The accompanying profile is that of the elevation along the passages, not that of a projected profile that removes the passage kinks. The bottom of the *Portal* is over 20m deeper than that of *Bushwalkers Chamber*.



What the levelling has shown is that to produce a good 3D image of Corra Lynn Cave it's vital to have the passage elevations. It would also help in establishing passage relationships where they appear to nearly join. It should be quick to do the levelling with DistoX units using the current plan to plot the positions. Such a survey could also verify the map where RDF control does not exist. Alternatively, we could "simply" resurvey the whole cave using for instance a Zebedee 3D mapper.

Graham Pilkington

Searching for Dreamland. Corra Lynn September 3rd – 4th 2016

Many of you reading this article might have clocked up hundreds if not thousands of hours in Corra-Lynn. The same cannot be said for the newest breed of trainee cave guides of the Scout Caving Group. Don't get me wrong though, they are experienced cavers. Many of them have plenty of hours logged underground in the Upper & Lower South East and for some visits to the Flinders and Nullarbor. A large part of their hours are spent in service by taking Scouts caving, ensuring that their charges have a fun and challenging experience while keeping them safe. This leaves little time for them to push their limits and further develop their personal interests in caving. The purpose of this trip was to provide the opportunity to just cave for the pleasure of doing so, to build and strengthen the Scout Caving Group leadership team and to do a little bit of advanced navigation which no other cave in South Australia can offer on the scale and complexity of Corra-Lynn. If you are unfamiliar with the cave then a very nice description of the cave location and geology appears in the previous edition of CEGSA news (*NORTHERN YORKE PENINSULA EXCURSION by Ruth Robinson, CEGSA news, **243** vol 61(3), pp 66-68).*

After a few hundred e-mails to determine who was going and in what cars and from whence they would depart and where the coffee would be sourced from… We set out as a group from the service station at Bolivar at around 7:00 am (it was supposed to be earlier but certain trip leaders and their drivers may have had difficulty with a) being organised b) getting out of bed at a suitable time). We easily made the drive to Curramulka and met up with Graham Pilkington who would join us for the day. Some necessary paperwork ensued for our leaders who were not members of CEGSA and then we were ready to visit the cave.

I have spent many hours in Corra-Lynn but not in recent years and I was looking forward to reacquaint myself with the cave. I've certainly spent time enough to know the experience can be any or all of fun, terrifying, spacious (sometimes a little too spacious), squeezy (more on this later), dusty, muddy, straightforward (*eg*. for the next 20 minutes you'll be lying on your side on oddly shaped pebbles) and complicated.

Session 1: Free caving / navigational challenge

Our morning involved sending our bright young things off to the Skeleton system. Though "chaperoned" by Joel Dillon, he was under strict instructions not to assist with navigating in any way. Their missions were: To not get lost, return on time and to begin phase one tests of the Pilkington-Lewis Squeeze Index (PLSI). You may have seen mention of the PLSI in the previous edition CEGSA news. Briefly, it originated on the last Naracoorte Scout Caving Group trip as a part of game where while underground one leader would make up a brief and spurious question then pass it off to the other leader to fill in the details for the 10 or so impressionable and trusting Scouts looking on eager to hear the details. Discussion at dinner later that evening lead to the full-blown development of a potentially useful grading system for squeezes (the draft PLSI scoring system is yet to be published). Returning to Corra-Lynn, the party had made it through Wombat Runs and at the top of Skeleton Crevasse Joel demonstrated the old school method of traversing to the chock stones and descending at that point (Figure 1). When I first did this as a teenaged Scout (Venturer) I had a first generation Petzl zoom (I still have it and it still works!) and you couldn't actually see the bottom. Now in the days of high output LED torches it leaves nothing to the imagination as to what will happen if you slip. Skeleton Crevasse safely negotiated they moved on through Tasmania hole, the infamous "Vertical Crack" and the finally the first test of the PLSI at Wedding Cake squeeze. The whole party made it through, though some with more difficulty than others (Figure 2). Squeeze rating **9K+M** (9/15 difficulty, key hole shape [K], trending upwards [+], muddy surface [M]).

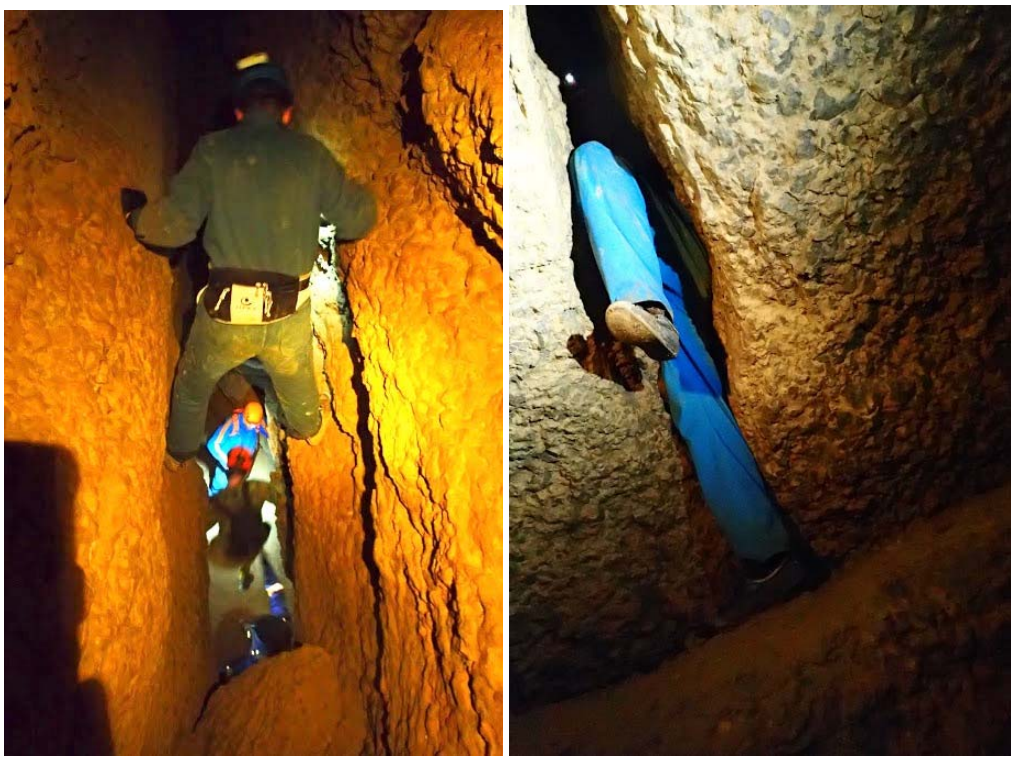


Figure 1: Left, the descent route of Skeleton Crevasse. Right, SCG leader Ryan Edwards disappears into the roof at the "Vertical Crack". Images by Joel Dillon

Figure2. The many faces of Wedding Cake squeeze. SCG members Matthias Fresacher, Callum "Nugget" Hue, Heather Siebert, Steve Minuzzo, Ryan (slippery snake) Edwards and Alex Macadam. Images by Joel Dillon.

Elsewhere in Corra-Lynn, Matt Smith, Michael Woodward and I were busy setting up for the afternoon. Our mission was to rig a ladder at Upper Woodside. We found an excellent natural anchor to thread a tape through and noted this for a trip planned for Venturers in 2017. We also left behind one of our team members "Bob the bag" at this point in preparation for our search exercise. Woodside has active formations comprising fantastic, colourless, crystalline, stalactites and helictites. We nipped around to Beard squeeze rating it as a **2Ki-** the [i] indicates the keyhole [K] shape is inverted and the direction we took the squeeze trended downwards (-) from the opposite direction the squeeze was rated **3Ki+** because it was harder to get through it going up hill [+]. Then we familiarised ourselves with some Corra-Lynn classics; we had a peep at Rat squeeze but found that this has been silted up, over Taylor's Tomb after first mistakenly climbing around in a nearby

crevasse that looked familiar but felt a bit spacious. We went down Rope Crevasse and into Bushwalker's run where we met Graham and Ian on their return from Bushwalker's chamber where they had been taking temperature readings and also surveying the depth of the chamber. After a short rest, thinly disguised as an in depth discussion on the nuances of the cave and caving in general, Matt, Michael and I continued on to Bushwalkers chamber ourselves before turning and heading out for lunch via Rams horn. The "Skeleton crew" had also returned to the surface so we were all set for the afternoon.

Decorations near Woodside. Images by Mark Corbett (left) and Joel Dillon (right)

Session 2: Search for Bob the bag.

By the end of lunch it was clear there was a problem! Bob the bag had not returned and though this was likely on account of the fact that he is actually a bag and not a person, nonetheless he needed to be found. We were fortunate to have Graham, the leading authority on Corra-Lynn present with us to share his insight on how best to strategically search the cave taking into account it's maze like structure. Graham pointed out that the cave is actually a series of interconnected mazes each with unique entry and exit points that can be targeted during a search to ensure that a lost party, if still moving around the cave can be trapped in a location where they will be found. For example, you can only exit the Skeleton system via Bandicoots Bypass or Wombat Runs. The purpose of the exercise was more to give our group a feel for what is involved in a search rather than conduct a full-scale search. We set a known perimeter where Bob could be in the area around Grand Central and made some assumptions that we had already trapped and searched other areas of the cave. We stationed Ian at the cave entrance to be our communications and operations manager and divided our team into three groups. Having left details of where each party would search with Ian, we headed into the cave *en masse* towards the entrance of Bandicoots Bypass via Grand Central. Arriving at Bob the bag's fictional last known location and not finding him present we each set off to our predetermined search locations heading back towards the entrance (Figure 3). Once again, those familiar with the cave were instructed to be particularly unhelpful in assisting with navigation. We moved off…slowly.

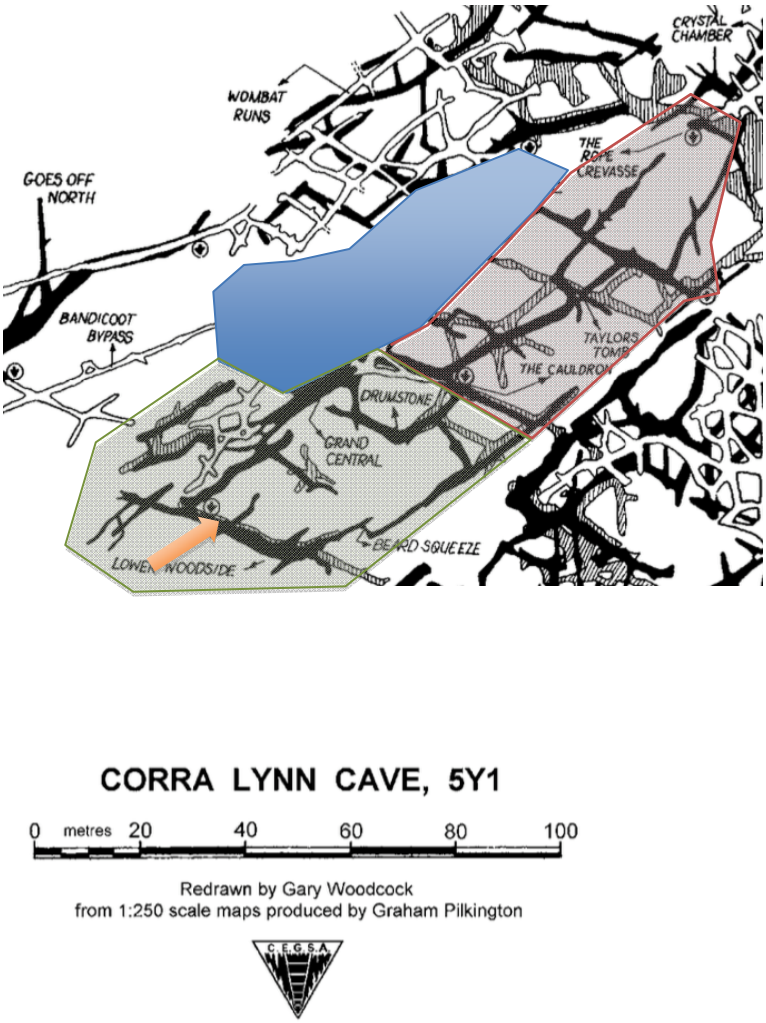


Figure 3. Left, our reduced search area divided into three sections as shown in blue, red and green. The orange arrow indicates Bob the bag's location. Map excerpt from Field Guide to the Caves of the Gambier Karst, Ken G Grimes (Editor); Redrawn by Gary Woodcock from original 1:250 scale maps produced by Graham Pilkington. Below, the group discuss the search. Image by Joel Dillon.

It took the parties an hour from the time we entered the cave to locate Bob and report back to Ian at command central. The difficulties of the logistics of the exercise were highlighted. Using only a small section of the cave, it took two to four times longer to complete the preliminary search than it should have in a real world situation. The search being concluded, we headed out once more as a group to Taylor's Tomb for some more tests of endurance and mental strength. During our search exercise, Graham took the opportunity to do some maintenance of the surface area, clearing the weeds from the stairway and putting in some plants to act as a natural barrier to prevent people and animals from accidentally approaching the entrance from the wrong direction. If you happen to be out that way, be sure to give the new plants a bit of water.

The first day wrapped up with some of the group returning to Adelaide while others retired to the Minlaton Hotel for dinner, debrief and pool competition. We stayed overnight in the Minlaton Area school gym (our thanks to principal Ali Bogle), which will be an excellent venue for our planned Venturer trip next year.

Day 2: Dreamland

The overnight crew were up early for a quick breakfast and then headed back out to the cave for an expedition to Dreamland. I can count on one hand the number of times I have made the trip out there and fair to say I had forgotten just how good it is. You have to pay for it though, with the epic crawl through Alberta before you reach The Portal. The climb is very exposed in places though the rope ladder that is placed there makes it a bit easier to get to the top. Alex, Nugget and I made the climb while Matt and Heather elected to wait it out.

We were amazed at the difference in the preservation of the cave in Dreamland. We saw some fantastic decoration including a "wedding cake" (in much better shape than the one at Wedding Cake squeeze) at the top of The Portal, an amazing piece of hanging flowstone that had had it's support eroded away from underneath it (Figure 4) and numerous cave coral formations some that we named "nippleites" due to their suggestive shape (Figure 5). We made sure to stick to the areas that had

been previously trogged, carefully navigating through sections amassed with gypsum crystals and edging around tiny cones of red sand that had worked it's way down through tiny cracks from the surface. Initially not having a particular goal in mind we decided after looking at the map to head for The Freeway by taking a North Easterly direction (Figure 5). Being unfamiliar with our surroundings we also took the slightly unorthodox precaution of photographing our path through the cave for later reference, just in case (figure 5). We descended the portal on belay with Nugget abseiling it on double rope (Figure 5). We left a 6 m tape that was in good condition around the chock stone at the top so others now can know it was placed there 04/09/2016.

Figure 4. Formations in Dreamland. Left, a "wedding cake" at the top of The Portal. Right. Hanging flowstone from the back (top) and the front (bottom). Images by Mark Corbett.

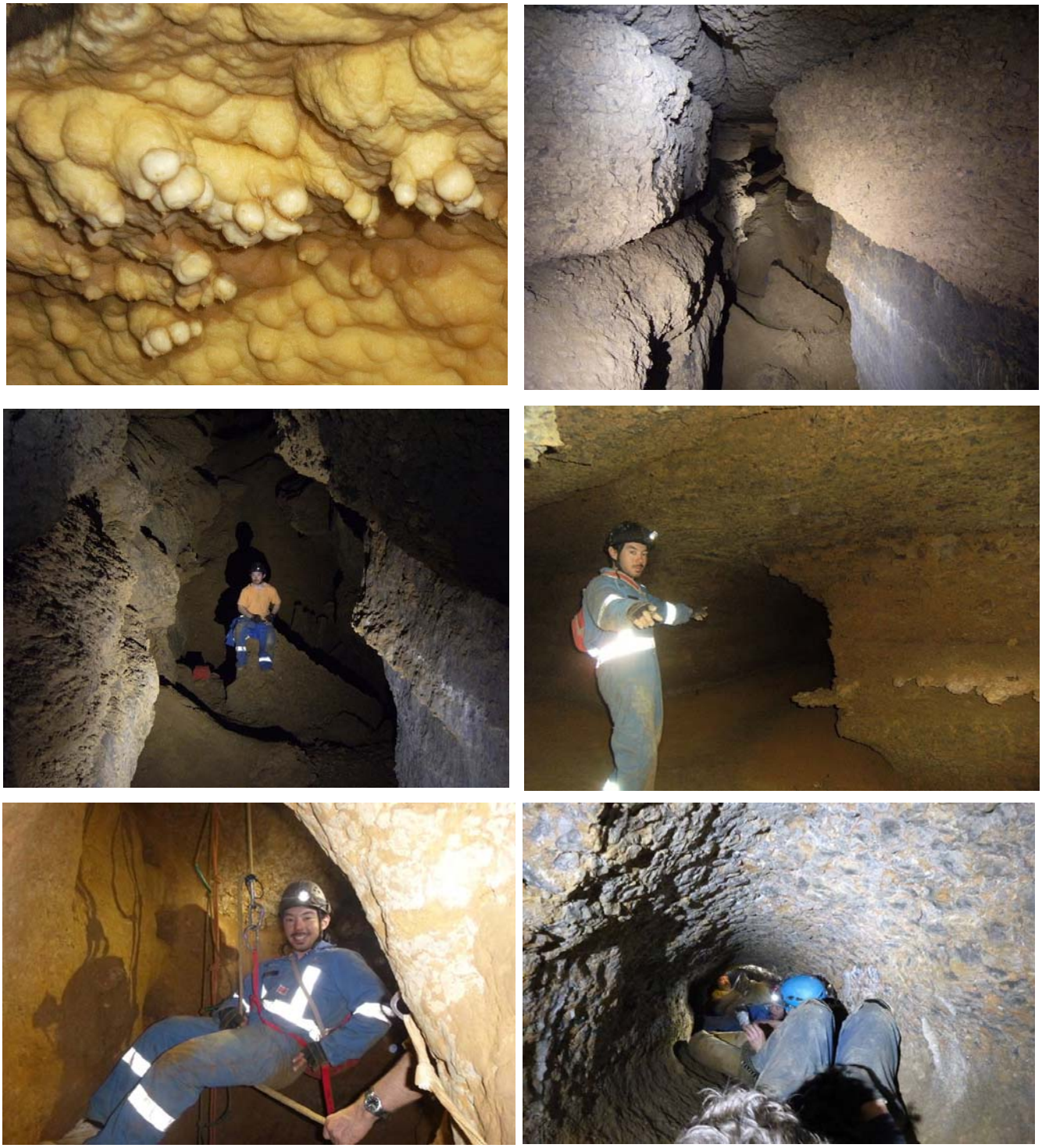


Figure 5. Dreamland (or 'the Nugget show') Top left, Nippleites! Top right and middle left show The Freeway. In the first image, Nugget is concealed behind the pointy rock, lighting up the back of the cavern. Middle right, they went that way! Note the centrally trogged path leading into the tunnel, the rest of the surface is loose clay, at one time much of Corra-Lynn would have been like that. Bottom left, abseiling The Portal. Bottom right, resting in Alberta on the way back. Top four images by Mark Corbett; bottom two images by Heather Siebert.

We had a great trip. I'd particularly like to thank Graham, Ian and Michael for joining us and sharing their collective knowledge of Corra-Lynn and cave search and rescue techniques.

Mark Corbett.

Past Trips from General Meetings

August 2016

1. Scout Caving Group visited Naracoorte on the 13th and 14th of August. 48 Scouts into Wet, Blackberry, Victoria Fossil Cave, Little Vic and Appledore.

September 2016

No meeting held.

October 2016

1. 3-4 Sept Scout Caving Group and CEGSA members visited Corra-lynn . On Saturday both groups undertook a search exeercise insaide the cave. SCG members visited Dreamland on Sunday. Ian & Graham did a levelling traverse from the entrance to Grand Central.
2. On the October Long Weekend (October 1-3) the Scout Caving Group and Beeefacres Venturers visited Byaduk & Mt Eccles. Caves visited included The Theatre, Shepherds Cave, Carmichaels Cave, North Pole Cave and Pudding Cave.
3. Nullarbor trip in October with FUSSI and CEGSA members. Koonalda, Webubbie and Abrakurrie caves were visited largely for research.
4. Grant Gartrell was up at Wooltana Cave in the Flinders Rangees – the sign indicating the cave is closed is still there.
5. Grant Gartrell spent time walking around at Delamere looking at various holes after some significant rain.
6. Steve Milner “Let's ava drink Speleos” LADS digging in Ireland. Close to breaking through to what they believe is a significant cave.
7. 25th August Mercedes College visited Corra-Lynn cave with Graham Pilkington and other CEGSA members

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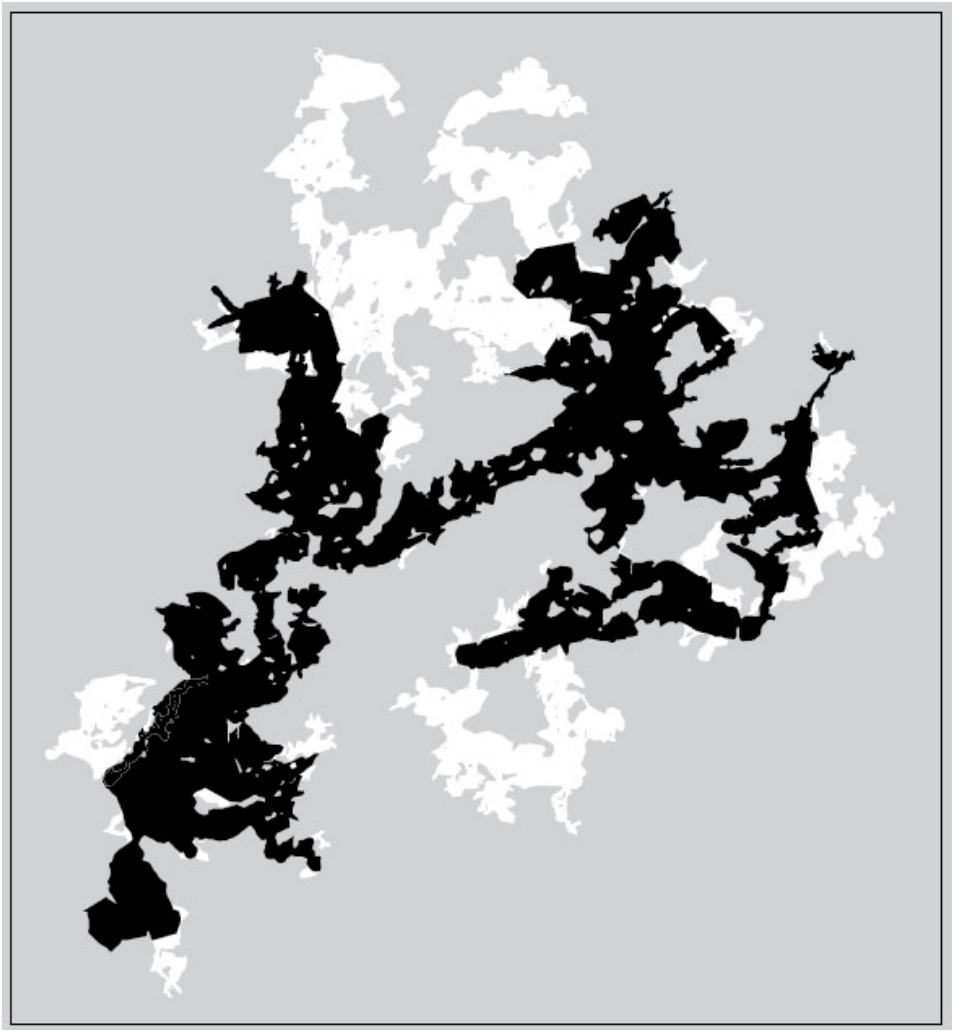
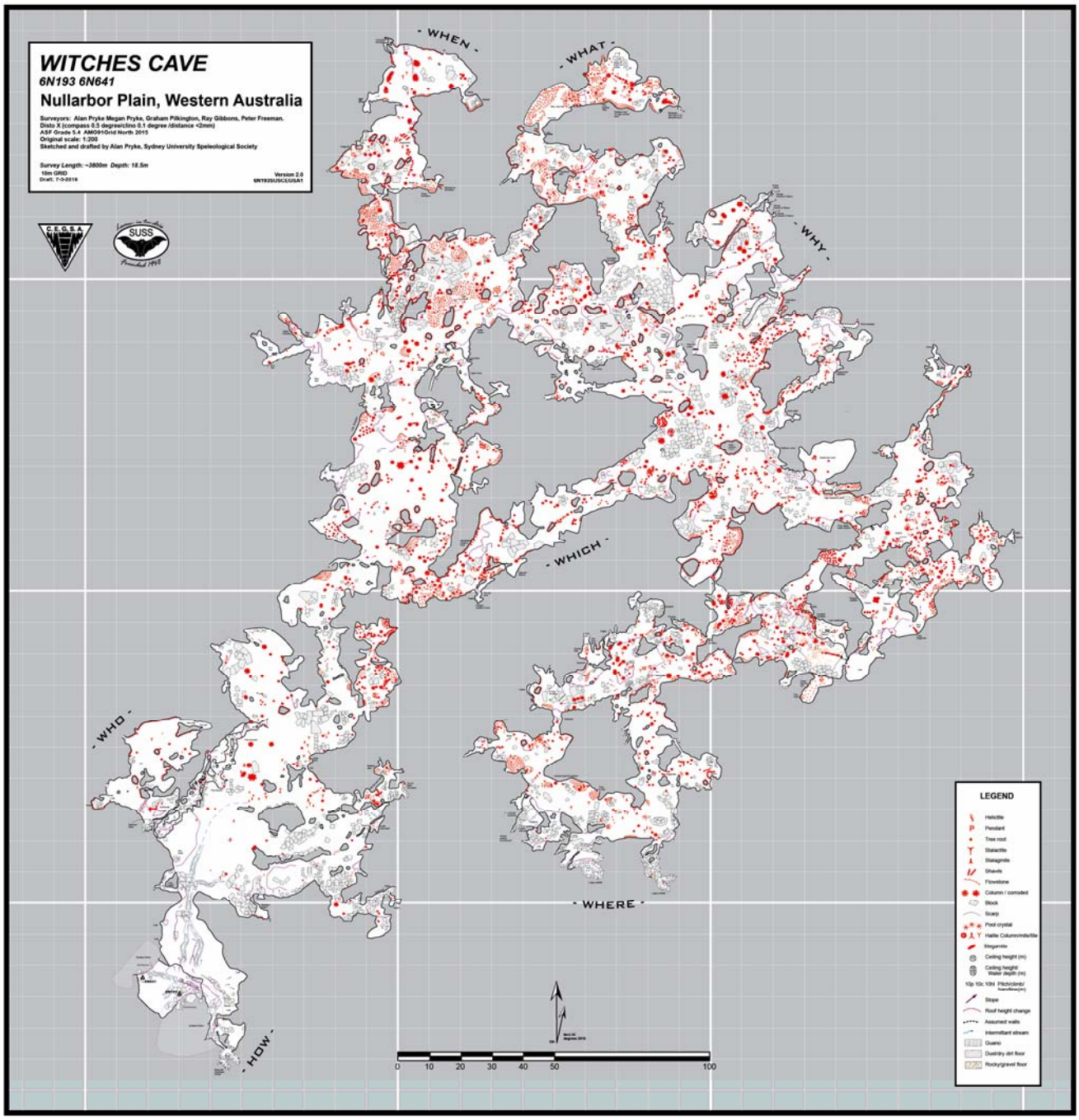
Witches Cave Maps

The following 2 maps are to be used in conjunction with the Witches Cave article in the last CEGSA NEWS, edition 243.




WITCHES CAVE
6N193 6N641
Nullarbor Plain, Western Australia
Surveyors: Alan Pryke Megan Pryke, Graham Pilkington, Ray Gibbons, Peter Freeman.
Disto X (compass 0.5 degree/clino 0.1 degree /distance <2mm)
ASF Grade 5.4 AMG91Grid North 2015
Original scale: 1:200
Sketched and drafted by Alan Pryke, Sydney University Speleological Society
Survey Length: ~3800m Depth: 18.5m
10m GRID
Draft: 7-3-2016
Version 2.0
6N193SUSCS/USA1
CEGSA
SUSS
- WHEN -
- WHAT -
- WHY -
- WHICH -
- WHO -
- WHERE -
- HOW -
LEGEND
Helictite
Pendant
Tree root
Stalactite
Stalagmite
Shawls
Flowstone
Column / corroded
Block
Scarp
Pool crystal
Halite Columns/rafts/tile
Ringwinkle
Ceiling height (m)
Ceiling height/ Water depth (m)
10p 10c 10H Pitch/climb/ traverse(m)
Slope
Roof height change
Assumed walls
Intermittant stream
Guano
Dust/dry dirt floor
Rocky/gravel floor
0 10 20 30 40 50 100

TECHNICAL and OTHER ARTICLES

MEMBERSHIP FEES

CEGSA MEMBERSHIP FEES become due on January 1st. To ensure continuity of membership and privileges (particularly insurance) please pay before the due date.

CEGSA MEMBERSHIP FEES FOR 2017 YEAR

Full Membership	$ 45.00
Full Country Membership	39.00
Associate Membership	37.00
Long Term Associate	45.00
3 Month Introductory	5.00
Joining Fee (N/A to 3mth Intro)	12.00
Discount for Country Membership	6.00
Print Form CEGSA News	25.00

ASF LEVY FEE FOR 2017 YEAR

Single	$ 68.00
Family	119.00
3 Month Introductory	20.00
Journal Subscription	25.00

2017 YEAR FEES

	CEGSA	+ASF	TOTAL
Full Membership	$45.00	$ 68.00	$113.00
Full Country Membership	39.00	68.00	107.00
Associate Membership	37.00	68.00	105.00
3 Month Introductory	5.00	20.00	25.00

Variation for Family Membership

1st Full Member + 2nd Full Member	$90.00	$119.00	$209.00
1st Full Member + 2nd Associate Member	$82.00	$119.00	$201.00
1st Assoc Member + 2nd Assoc Member	$74.00	$119.00	$193.00

Discount for Country Membership applies for Family Memberships.
ASF Family Membership Fee has increased from the 2017 year.

The 2016 Membership Mailing List will be issued with the 2017 accounts to all current members. Copies of the Annual Report will be available for reading at the Annual General Meeting for members not receiving print form.

Please make sure your payment of fees includes CEGSA and ASF, if applicable.

Membership Fees can be paid direct into CEGSA Account BSB 105-900 Account No 950661040 and reference with your Name, CEGSA Fees or Membership Number.

Chris Gibbons. Treasurer/Membership Officer.

Approved CEGSA Trip Leaders

Name	Caving Leader level
Marie Choi	Horizontal, Laddering and Vertical
Mark Corbett	Horizontal and Laddering
Stan Flavel	Horizontal and Laddering
Grant Gartrell	Nil
Chris Gibbons	Nil
Paul Harper	Horizontal, Laddering and Vertical
Richard Harris	Horizontal
Lance Hoey	Horizontal and Laddering
Peter Horne	Horizontal and Laddering
Peter Kraehenbuehl	Horizontal, Laddering and Vertical
Ian Lewis	Horizontal and Laddering
George MacLucas	Horizontal, Laddering and Vertical
June MacLucas	Horizontal
Steve Milner	Horizontal, Laddering and Vertical
Tim Payne	Horizontal, Laddering and Vertical
Graham Pilkington	Horizontal and Laddering
Eddie Rubessa	Horizontal and Laddering
Mark Sefton	Horizontal and Laddering
Matt Smith	Horizontal and Laddering
Tom Szabo	Horizontal and Laddering
Gary Woodcock	Horizontal and Laddering
Michael Woodward	Horizontal, Laddering and Vertical

All the above named are also CEGSA Trip Coordinators.
Members may query the classification of any Trip Leader at any time with the committee.
It is a requirement that each trip be organised by an approved Trip Coordinator to be classed as an official CEGSA trip. It is also a requirement that dependent party trips be led by an approved Trip Leader at the appropriate skill level for the cave being entered.

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WET CAVE rescue email from Naracoorte Caves Manager.

From: Craven-Carden, Deborah (DEWNR)

Sent: Wednesday, 26 October, 2016 6:32 PM

Subject: Successful cave rescue Thurs 20 Oct '16

Superb team work by Naracoorte guide staff with particular mention to Jinhwa Lee, Dannielle Thomas and Jakin Manser for their excellent first response/sustaining of patient till SES and CFS arrived and Decima McTernan as Snr Guide who was a key in co-ordinating the site response. Other staff assisted, stayed on or came back in to help.

- Debriefing, info gathering, decision-making > that will go on for a while.
- For Jinhwa, Dannielle and Jakin it was their first rescue. Pleasing that it was relatively straight-forward. Very good application of SAREX learnings.

Am proud of them all.

Regard,

Deborah

Deborah Craven-Carden

Boy freed from cave

Olive oil helps emergency crews rescue youngster

By Todd Lewis, Border Watch, Mt Gambier, SA. (reprinted with permission)

OLIVE oil helped free a young boy from the Naracoorte caves on Thursday evening after he was trapped in a crevice for around five hours. Around 10 litres of oil was poured over the 12-year-old boy by ambulance officers to help emergency crews pull him out of the cave with slings and ropes.

The boy became trapped 15m underground in the Wet Cave after he slipped and was wedged at the hips in a spot commonly referred to as "The Slot". He was part of a visiting group from Pilgrim Primary School in Adelaide and the incident occurred while he was on a guided tour of the cave. Staff from the school and the National Park tried to free the boy before deciding to call emergency services.

"He's quite a tall boy and he just couldn't get any purchase to get himself out," Pilgrim Primary School principal Nigel Bennett said. "Two guides worked to try and free him, but soon elected to call emergency services after it became a difficult task." Naracoorte and Johanna Country Fire Service responded with the State Emergency Service, police, ambulance officers and National Park's staff at 5.30pm to help free the boy.

CFS brigade member Alan Marshall said the schoolboy was completing the last leg of the guided tour when the incident occurred. "He was completing the last challenge and slipped, causing him to become firmly wedged between the rocks," Mr Marshall said. "Luckily he couldn't have fallen any further, so it was just a matter of getting him out." The boy was sedated by ambulance officers to help relieve the pain and keep him calm to allow emergency crews to work to free him. "We started talking to him about his girlfriends and things like that to keep him calm," Mr Marshall said. "He had a few panic attacks, but overall he was pretty good and remained quite calm."

A woman staff member from the National Park also stayed with the boy for the duration of the incident. "I commend the one woman from the park for staying with him the whole time," Mr Marshall said. "We offered her a break, but she did not want to leave the boy's side." Around 8.30pm, the boy was finally freed from the crevice and placed on a stretcher before being transferred to Naracoorte Hospital.

He only had minor grazes and bruises as a result of the incident. "He was actually walking afterwards, but ambulance officers took all the necessary precautions," Mr Bennett said. "I'll be following up with all the emergency services, hospital staff and park staff to let them know how impressed and grateful we were with how the situation was handled."

Mr Bennett said the school had been travelling to Naracoorte for a Year 7 challenge camp for over 15 years. "It's a big part of our year as it allows all students to bond and work as a team," Mr Bennett said.

"We know how big the caves are for tourism in the South East and this was just one unlucky incident, so we certainly don't want it to affect the livelihood of the caves."

CAVE RESCUE: Country Fire Service Brigade members Alan Marshall and Shane Smith inspect the spot where they rescued a 12-year-old boy on Thursday evening.

WET CAVE: The Wet Cave (right), where the boy was rescued, is one of many caves visitors tour in the Naracoorte Caves National Park.

Naracoorte Caves National Park / Australian Fossil Mammal Site - Naracoorte ~ Visitor Facility Upgrades

This article is dedicated to Ken Grimes, Scientist (geology / geomorphology), ACKMA Member, karst expert, caver and friend. Ken had a long association with Naracoorte Caves National Park and World Heritage Area and we are all deeply saddened by his tragic loss in August '16..

From the time I took up the position as Manager Naracoorte and Tantanoola in 2009 Ken unstintingly provided me his expert advice and opinion. He freely and generously helped me with the Field Guide for the 2015 ACKMA Conference that we hosted in Naracoorte. Between 2014 until early August 2016 he provided comment on the Master Plan visitor asset upgrade proposals. We also formally contracted him too, to provide karst geology training to Site Interpreters and in the past nine months, in conjunction with geotechnical engineer Tony Meyers and with long-time friends and karst associates Kevin Mott and Ian Lewis, he was very involved in a process whereby karst values were considered in the design phases for visitor asset upgrades and therefore ensuring that those values, along with other natural, historical and cultural values are protected and conserved during construction.

Visitor Facility Upgrades

BACKGROUND
In 2012 the Department of Environment, Water and Natural Resources (DEWNR) commissioned Shannon Architects to produce a Master Plan so as to direct the upgrading of 15-20 year old infrastructure in the Naracoorte Caves National Park and World Heritage Area, including interpretation. In conjunction with this DEWNR established a Master Plan Community Group comprising local, regional, State and Federal-level representatives, inviting their input into the upgrade planning.

In 2013 the Federal Government granted funding to establish a World Heritage governance group and for an Executive Officer position to provide secretariat services to the group and assist the Australian Fossil Mammal Site (AFMS) Property Manager with World Heritage administrative matters. DEWNR invited the organisations with representatives on the Master Plan Community Group to transfer that representation to the World Heritage governance group, the Inter-agency Community Reference Group (IRG).

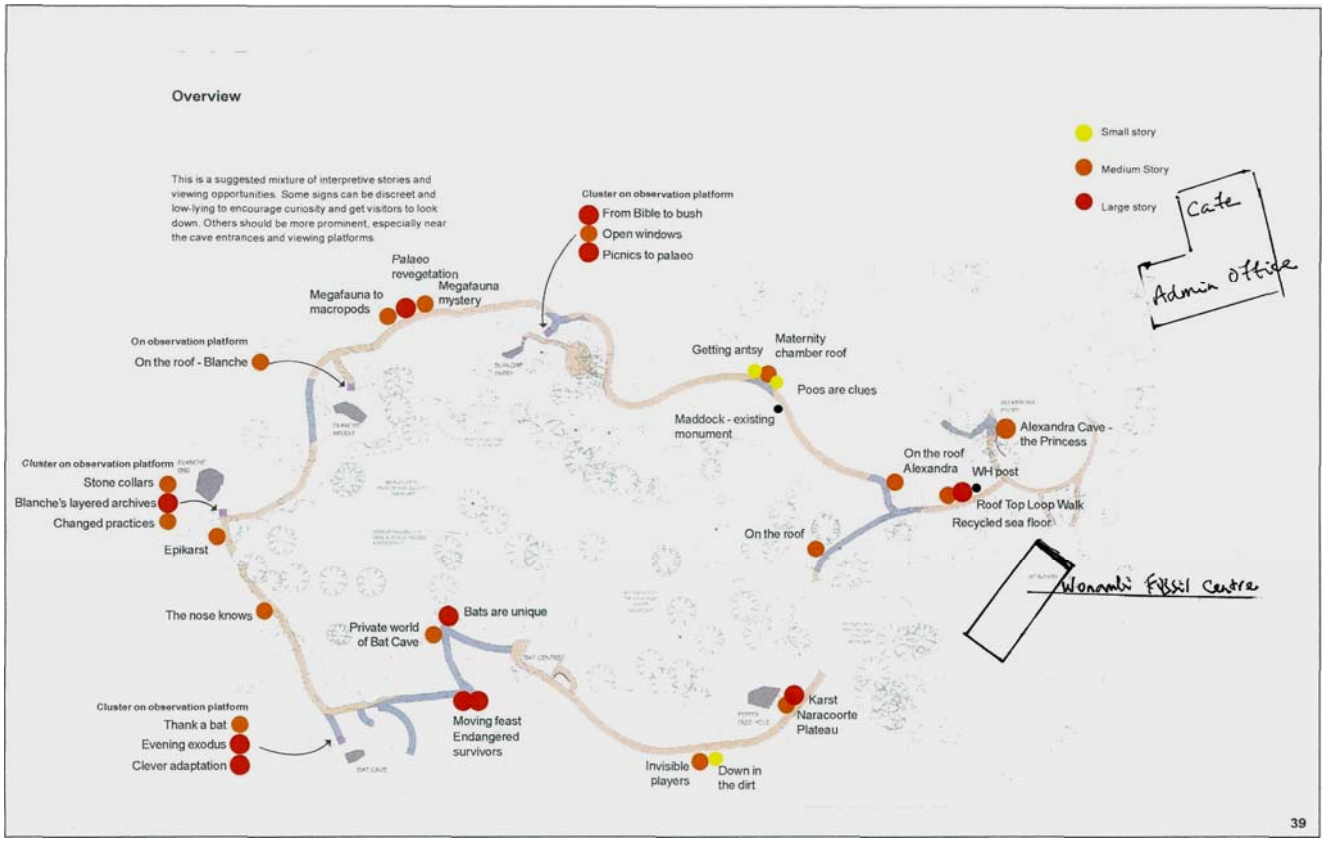
- On 17 December 2014 the IRG and DEWNR Executive endorsed the costed Naracoorte Caves National Park & World Heritage Master Plan.
- Early in 2015 special tourism funding was granted by the South Australian Tourism Commission and DEWNR to begin the first upgrade, the 'Roof-top' Loop Walk. Funds were also made available to commission a Style Guide to ensure cohesion to directional and informative wayfinding and interpretation around the Park, in the Wonambi Fossil Centre upgrade and in-caves.

The 'Roof-top' Loop Walk

Upgrading this walk will open up part of the National Park to a wider range of visitors so they can enjoy perspectives of the Park many are not otherwise able to experience. In doing this DEWNR continues to meet an important obligation - that World Heritage sites should "have a place in the life of the community".

A key audience of this upgrade comprises visitors who cannot go into a cave for various reasons (less-abled or vision impaired visitors, people who are claustrophobic, those who cannot afford a cave tour); families with young children in pushers and older children who need to expend a bit of energy. Visitors who just enjoy walking in a National Park will benefit. Currently wheel-chair users can only access the Wonambi Fossil Centre, the Bat Observation Centre and the Caves Café.

The 850 metre walk will link the Wonambi Fossil Centre, the Bat Observation Centre and Blanche Cave as the original walk did. The difference is that it will be a loop without short-cuts. One access road and two pathways wide enough to be utilised by vehicles will be removed because they run across the top of Bat Cave maternity chambers where in some places the caprock thickness for vehicle traffic is less than approved karst geotechnical specifications.



Roof Top Loop Walk

The map shows the route of the walk and the placement of interpretation panels at wheel-chair rest nodes. Visitors to the Loop Walk will gain a good perspective of the site's natural and cultural heritage from the stories on the panels so that if that if all they do on their visit they will leave with awareness and appreciation of South Australia only World Heritage Area.

Two-tone path surfaces. The re-routed pathway between the second and third chambers of Blanche Cave. The path here is utilising in-cave pillars for strength.

Disability Access
The walk plan was assessed by a disability auditor regarding access requirements for less-abled users. The gradient for wheel-chair users is 1-20 or less and pathways require rest nodes at set distances. Observation platforms at cave openings will be accessible to all visitors and allow everyone an opportunity to look down 'from the roof' into at cave entrances and openings (hence the name, the 'Roof-top' Loop Walk).

Telling the Stories
Sections of the walk follow the original pathway and are still crossing over some sections of Bat, Blanche and Alexandra Caves. Where the walk crosses a cave the colour of surface material comprises grey-coloured scalps (gravel) which is to let visitors know they are walking over the roof of a cave. Where it is not over a cave the surface material is light-coloured limestone scalps.

On the interpretation panels hand-drawn illustrations and early (black and white) photographs will be used rather than coloured photographs, the intention being that the illustrative style reflects scientific drawings and diagrams, internationally recognisable and timeless. This style emphasises and promotes the Naracoorte Caves Australian Fossil Mammal Site's brand driver of science and research being a fundamental factor in sustaining a 'living and engaging' National Park and World Heritage Site.

Due Diligence
Prior to the letting of a construction contract to Bulls Bros Pty (a local Naracoorte firm), a nine month consultative process was undertaken around karst conservation and endangered species and fossil protection. This included researching Cave Exploration Group South Australia (CEGSA) and SA Mines Dept cave maps, contracting ground-penetrating radar analysis, contracting surface and in-cave surveying and geotechnical engineering analysis and involving reputable karst scientists and geologists.

Geotechnical engineer Tony Meyers, Rocktest Ltd, Adelaide had been contracted in October 2015 to undertake a structural assessment of the show-caves and adventure caving caves where DEWNR conducts its tourism business. Tony provided a structural report, a ground-control management plan and an emergency response plan. He has provided training for the cave guides and site management, teaching us what to look for regarding change in cave structure. He recommended specific work to be done on entry structures, which has been completed, and for glass slides to be installed in caves as part of the caves' monitoring (ground-control) program.

The geotechnical learning is very interesting and the cave guides are developing and implementing the ground control (monitoring) plan. As the site's Work, Health and Safety representative cave guide Frank Bromley is tasked as being the lead.

Throughout the due diligence process Ken Grimes, Kevin Mott and Ian Lewis added their knowledge of the site and karst expertise which is taken into account in infrastructure design and location of walks, observation platforms and possible relocation of some cave fences. Ken was formally contracted to assist the geotech analysis. Kevin retired from DEWNR in 2015 but continues to provide an experienced, respected cave and karst management voice to the Department. He was invited onto the IRG in 2015 after he retired and his long-term involvement with Naracoorte Caves has been very well utilised during the year. He has an amazing archive of maps and plans into which he has delved. Ian is still employed by DEWNR and is a key adviser on karst matters.

Discussions were held on site with bat specialists Terry Reardon and Lindy Lumsden regarding the walk upgrade. They support the decision to remove the access road from across the top of the maternity chambers and to re-route the two pathways that are occasionally used as vehicle access - mitigating of vehicle vibration over pupping mums/new babies.
The proposed design of the observation platforms was assessed. Research around echo-location was considered and the advice was that safety glass should be substituted with balusters in the platform design. The research considers bats can 'locate' glass but in certain circumstances reflections may cause a bat to think it's looking at potential food or just cause disorientation and collision.

Path lighting and lighting around Bat Cave was discussed and styles and locations agreed. DEWNR has to comply with rules around providing visitors' access to the Observation Centre and Bat Cave at night - pathways must be light. The results of the discussions with Terry and Lindy are that in the vicinity of the Bat and Blanche Caves the existing tall lampposts will be removed. Red lighting will be

used from the back of the Bat Observation Centre towards the Bat Cave and inside the Bat Cave when the bats are in residence. The pathways facing away from the Bat Cave between the Bat Observation Centre to the Wonambi Fossil Centre (WFC, the Park's Visitor Centre) will have white coloured lighting, complying with the visitor access code.

Current pathway construction is timetabled around the Southern Bentwinged bats' breeding seasons (as to whether they are off or on site and if on site, where - because they winter-over on site most years). The installation of observation platforms, interpretive panels and lighting will also take account of bats' seasonal whereabouts.

The Director of the Federal Government's World Heritage Division, Veronica Blazeley accepted an invitation to visit AFMS - Naracoorte in February 2016. Veronica was impressed with the consultative and thorough approach the site takes regarding its World Heritage administration and OUV and other heritage asset protection. We discussed whether or not an EPBC referral would be required with regard the 'Roof-top' Loop Walk upgrade but Veronica was satisfied that the mitigation measures were sufficient not to require referral.

WEIGHTS, HEIGHTS AND ACTIONS

In designing the construction contract and thinking about future maintenance we took into account a range of aspects – the location of caves and their individual configurations (span, shape, height and width, slope and gradient and features such as the position of pillars. The thickness of limestone over a void is important). ACKMA's Susan White's paper on the Naracoorte Caves limestone was considered. The shape, width, location and surfacing of pathways is a prime long-term maintenance consideration. A new alternate vehicle access route to Bat Cave was agreed.

The relevant characteristics of a void (treating each cave on its merits) and consideration of the frequency and type of traffic over a void need to be taken onto account and matched with the geotechnical recommendations regarding thicknesses of limestone which are:

- Pedestrians - one metre minimum thickness
- Light vehicles such as a park utility - three metres minimum thickness
- Heavy trucks such as a fire truck - five metres minimum thickness

When establishing the construction contract particular regard was given to the weight and action of machinery and vehicles. Three sections of the Loop Walk involve working over caves. In these areas the work is done 'by hand'. 'By hand' includes hand-work with shovels supported by specified light-weight machines. Bulls Bros bought a motorised wheelbarrow that has tracks instead of wheels especially for this job and are very pleased with how useful this item is proving. These machines have great capability regarding stability, manoeuvrability and minimising vibration effects.

Motorised wheel-barrow on the new pathway to the Bat Observation Centre, no cave is recorded under here but the path is adjacent Peppertree doline.

Bulls Bros are fully engaged in good practices regarding working in the karst. They are not permitted to cut into the limestone even when it's not going over a cave. They have been diligent in this and have shifted the path alignment at times to meet this condition.

They got very excited when they uncovered some epikarst near Blanche Cave and happily exposed a section beside the track so we can interpret it. Photos were sent to Ken, Kevin and Ian to gain expert description - the latter two came back with some very silly ideas, Ian concluding with asking Kevin if he was "karsting aspersions". Fortunately Ken was able to provide sense to the discussion.

Hand-work on the epikarst adjacent Blanche Cave.

By the time discussion was needed about the 'Peppertree Hole' doline Kevin and Ian had regained their senses and the three of them agreed it has the characteristics of a solution doline. Ken had further thoughts about collapse doline but decided it was too hard to tell.

Ian Lewis at the now treeless 'Peppertree Hole' doline. The non-native trees were affected by a prescribed burn in 2014 / removed by fire staff in preparation for the new pathway.

Exposed section of epikarst / pathway upgrade, adjacent Blanche Cave's third roof hole

RESURVEYS

Resurvey of Mulberry Tree Chamber, Victoria Fossil Cave (VFC)

If all goes to plan the VFC Precinct will be upgraded in 2017-18. In the process of designing a concept we had considerable discussion about caprock thickness. When Kevin (Mott the original Mulberry Chamber surveyor) said he thought it wasn't located quite where it was shown on the map we had it resurveyed. And he was right ….the chamber had 'moved' by about two metres.

This is to the advantage of cave conservation regarding the revamp of the car-parking area. With the location confirmed Kevin recalculated the slope and depth of the chamber under the car-parking area, updating cross-section views. The limestone thickness ranges between five to 20 metres.

Resurvey of Bat and Blanche Caves

Since VFC had 'moved a bit' Kevin and I thought it pertinent to have a resurvey done of Bat and Blanche Caves. These proved to be pretty accurate, only minor adjustments.

We pin-pointed the location of the series of adjoining pillars in the second chamber of Blanche Cave so that the new walk goes over the pillars which means we more than meet the geotechnical recommendations re limestone thickness - the walk now has floor-to-ceiling structure underneath it. Kevin was keen for the surveyor to record the 'Mines datum point' located between the second and third roof holes. Copies of the updated Bat and Blanche Caves now reside in Kevin's archives.

On the 'Roof-top'

The Loop Walk will be available for visitors in October 2016. Wheel-chair users, other less-abled and visitors with young children in or not-in pushers will be specifically invited to test-drive the walk so we can see if we need to iron-out anything before we can officially declare it as a Class One Walk. There will some disruption to access during the installation of observation platforms, lighting and interpretation panels for which we have just received funding. An official opening will be held once this infrastructure is installed.

Deborah Craven-Carden
Manager
Naracoorte and Tantanoola Caves
September 2016

Cave Wall samples from the "The Shaft" (5L-158)

by

Ian Lewis (CEGSA), Michael R Snow (CEGSA, SA Museum), Neville Skinner (CEGSA) and Deb Johnston (Sydney University Speleological Society (SUSS), Cave Divers Association of Australia (CDAA))

Of all the deep sinkholes in the Mount Gambier region of South Australia, "The Shaft" (L158) is the deepest at 120m (Figure 1). Diving to these depths requires special gas mixes for cave divers as it is fatal to dive below about 55m on normal air due to the high partial pressure of oxygen in the air mix.

All sinkholes have large white limestone walls which divers can swim along in a generally circular pattern as the sinkholes are shaped like gigantic inverted cones with a central rock pile. A normal sinkhole entrance is usually a circular freshwater lake about 30m across. However, The Shaft has a tiny entrance 1m in diameter and two metres deep (it's a short solution pipe) which opens out into a small air bell above a gigantic underwater cathedral-sized room. The cave is called "The Shaft" due to the piercing blue ray of light which shines through the entrance hole in summer and produces a beam of blue sunlight in the clear water down to about 60m depth. Divers dive down this shaft of light in an amazing experience!

By contrast with all other sinkholes, the walls of The Shaft are white limestone but are completely covered throughout the sinkhole in a thin black crust. This makes the whole dive very dark as the walls absorb cave diving lights. A fragment of this crust is like a potato chip - thin and brittle, and you can poke your fingers through the crust into the white limestone behind it easily. But the crust covers the entire sinkhole, unlike any other sinkhole in the region. Clearly some different natural process has happened in The Shaft and one question is whether this is in some way linked to its great depth? Perhaps some quality of the groundwater is different in this locality compared to all other local sinkholes?

With this question in mind, Ian arranged with two other very experience cave divers, Deb Johnston from Sydney University Speleos (SUSS) and our own Neville Skinner (CEGSA) who are both top-level divers in the Cave Divers Association of Australia (CDAA) to gather four samples of the black crust from the walls of The Shaft in a dive there earlier this year. Deb carefully sampled from four locations down the great northern wall at 10m, 20m 30m and 40m depth in the areas where divers descend to the top of the rock pile before heading sideways into the darkness (see map). [Regarding the map in this article, it must be noted that it was drawn by Ken Grimes, a highly-qualified geologist and speleologist who died recently in an accident in Western Victoria. Although not a cave diver, Ken provided excellent, clear, readable and informative maps for many of the caves in the South East and in western Victoria which are used by all of us.]

Using the scale at the sides, you can see that samples taken at 10m intervals down to 40m are significant. While they nowhere nearly cover the whole giant system, they are a great start! Deeper divers report that the black crusting extends on all walls right down to the 120m tunnels. At these depths, so much concentration on the extreme diving is needed that I have not asked them to collect wall samples as well, although that may be done in the future.

Our own Mike Snow, a Chemist in CEGSA who is examining mineralogy in many cave specimens including bat guano from all sorts of cave sites across South Australia and the Nullarbor, very generously offered to analyse the black crust samples to give us an idea of what minerals they contain. His report follows.

Four samples were obtained from The Shaft at depths of 10, 20, 30 and 40 meters measured from the lake surface. The Cave water level is slightly above sea level so these depths are not ASL.

The samples all have thin brown encrustation covering larger pieces of white crystalline material. We have made X-ray diffraction traces of the samples which are shown in the Figure 2. below.

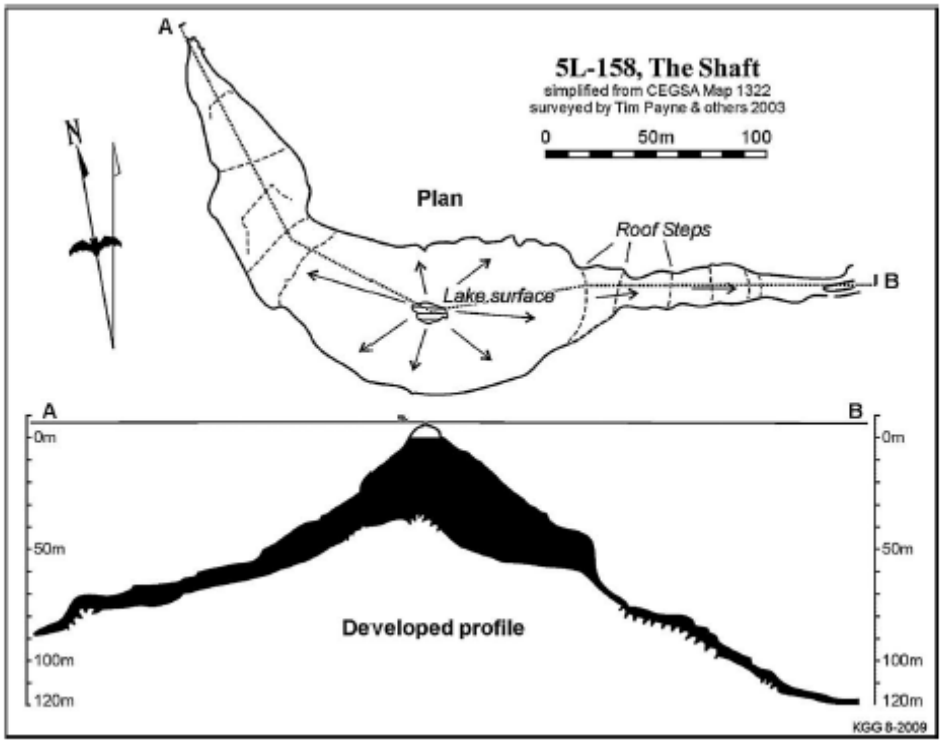


Fig. 7. Map of The Shaft. See Fig. 1 for location. Additional data provided by T. Payne and C. Brown.

Figure 1. Plan and profile of The Shaft.

The brown mineral is goethite, FeO(OH) which is a common iron mineral in caves. Examination of the sample shows both a thin dark black layer in some of the samples and also fine yellow material. The diffraction pattern suggests these are mineralogically identical.

The white crystalline material backing the thin, less than 1mm thick, goethite film is a magnesian calcite, with several percent magnesium. This does not show in all traces as in some cases we were able to pick the coating off free from the wall rock. This magnesian calcite layer is also deposited and can be several mm thick. However we did not determine the deep wall nature of the cave wall which is known to be Mt Gambier limestone, an almost pure calcite, and not a magnesium calcite.

All the samples a thin goethite layer, but the 30M sample (blue trace) shows quartz, which is not evident in the samples from the other depths. There is evidence of a clay mineral assigned as montmorillonite 15A in the 20M trace (green), but that is not final as we only have a single broad peak as the first peak on the left hand side. The quartz band is several mm thick and interestingly has little magnesian calcite. We have no ready explanation for the quartz (silica) in 30M sample, but are aware that silica can be transported to form opal for example. The temperature may drop in this region of the cave and if the water is saturated in silica is could crystallise out. We don't have any temperature data for the cave and the water body may not be an entirely closed system.

The origin of the calcium, magnesium, silicates, and iron must come from the country rock. Mt. Gambier limestone is widely used for glass making, building, road base and in agriculture. Its composition is variable, but it is basically calcium carbonate as calcite with some minor elements. General purpose cream/white filler from Jarvis has 0.7% $MgCO_3$, 0.5% silica, 0.16% iron with similar aluminium and minor amounts of manganese, potassium and titanium all below 0.1% (Flint,1981). Its is exactly these 3 minor components of magnesium, iron and silica which appear in our samples.

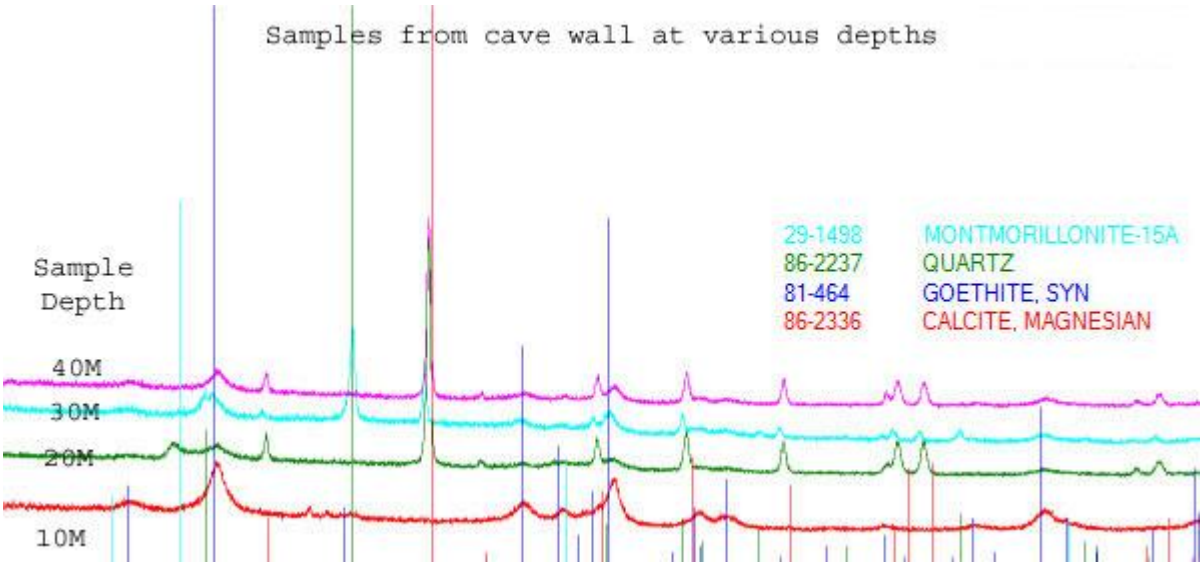


Figure 2. X-ray diffractometer traces for the sample at marked depths in The Shaft.

We are still trying to understand what the mineralogy is telling up about the limestone and the groundwater in The Shaft and why it seems to have produced this unique wall phenomenon. Clearly there are geological and hydrogeological implications and I am working on an explanation based on Mike's analysis. We are particularly grateful to the SA Museum for providing the facilities to make this geochemical assessment and for support and advice from Dr. Ben Grguric and Professor Allan Pring. It is very satisfying for CEGSA to be working with the SA Museum as our society has been a Museum Affiliate for 60 years. It is likely that underwater caves were not considered as part of CEGSA's research 60 years ago, when SCUBA diving had only been invented 10 years before World War II. Nowadays, cave diving and underground water are a new area of important research in a drying planet where the importance of water is being much more fully appreciated.

Map source: Webb, J.A., Grimes, K.G., Lewis, I.D., 2010. Volcanogenic origin of cenotes near Mt Gambier, Southeastern Australia. Geomorphology 119, 23–35.

Flint, D.J., 1981, Review of Gambier Limestone, p42, see https://sarigbasis.pir.sa.gov.au/WebtopEw/ws/samref/sarig1/image/DDD/RB8800002.pdf

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ASF's AGM and 60th Anniversary Celebration Dinner

On 7th January 2017, the ASF is holding its Annual General Meeting at the Somerset Hotel, 505 Bridge Road PARA HILLS. Normally these meetings are held during the Biennial Conference but in 2017 the ASF is skipping a Conference because it's hosting the 17th UIS (the Union of International Speleology) Congress near Sydney in July 2017. All ASF members are welcome to attend the board meeting (usually from 9am to 5pm). The cost of morning and afternoon refreshments will be about $10 each with lunch obtainable from the Hotel dining room or from the adjacent shopping centre.

After the meeting there will be a Dinner held at the same venue (cost approximately $40 each plus drinks). All CEGSA members are encouraged to attend. This is a good opportunity to obtain contacts for caving interstate as well as put faces to those names that you hear about.

For more information and updates, contact

Graham Pilkington

Umpherston Sinkhole's beauty showcased

LEON RADEMEYER Border Watch, Mt Gambier (reprinted with permission)

SOUTH African cave diving couple Don and Andre Shirley were introduced to Mount Gambier's iconic Umpherston Sinkhole by veteran cave diver and Cave Divers Association of Australia (CDAA) life member Ian Lewis on the weekend. The internationally renowned cave divers were keynote speakers at the CDAA's 43rd annual general meeting and divers symposium in the city on Saturday and took a moment to admire the scenery after formal proceedings ended.

JOVIAL MOOD: South African cave diver Don Shirley (second from left) with Cave Divers Association of Australia standards director John Dalla-Zuanna, national director John Vanderleest and life member Ian Lewis at Mount Gambier's Umpherston Sinkhole.
Picture: ANDRE SHIRLEY

"After hearing their fascinating stories about caves and sinkholes in Southern Africa, I offered to show Don and Andre our very own Umpherston Sinkhole as a means of comparing sinkhole formation in Africa and Australia," Mr Lewis said. "Umpherston tells the story of all sinkholes in the South East and is an excellent site to explain the region's formation at one place."

A hydro-geologist by profession, Mr Lewis said he explained the role of groundwater in the formation of limestone sinkholes and touched on the general geology of the region. This included discussing fluctuating groundwater levels during the past century.

In addition, Mr Lewis gave a short historical overview of the sinkhole's European discovery and use as a rubbish dump from the 1930s to the '50s. "The sinkhole was also a place for the visitors to see possums which were luckily out and about when they arrived on the scene," Mr Lewis said.

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Divers Visit Region

Mount Gambier hosts annual meeting

LEON RADEMEYER Border Watch, Mt Gambier. (reprinted with permission)

CAVE DIVERS: South African cave diving couple Don and Andre Shirley with Cave Divers Association of Australia national director John Vanderleest and standards director John Dalla-Zuanna at Mount Gambier's Main Corner. The Shirleys were invited as keynote speakers for the CDAA's 43rd Annual General Meeting and divers symposium on the weekend. Picture: LEON RADEMEYER

"CAVE diving is about exploration in the first place, not about chasing depth or records," keynote speaker and world renowned South African cave diver Don Shirley told a gathering of cave divers in Mount Gambier on the weekend.

More than 60 cave divers from across the country gathered in the city on Saturday for the 43th Annual General Meeting and members symposium of the Cave Divers Association of Australia (CDAA).

The highlight of the symposium was presentations by Mr Shirley and his wife, Andre, regarding their extreme cave diving explorations over more than three decades. Mr Shirley's keynote presentation related to the tragic death of his friend, Australian cave diver Dave Shaw, who lost his life in 2005 at a depth of 270 metres in a South African underwater cave. The men were leading a team of divers to recover the body of Deon Dreyer, 20, who disappeared in the cave during a diving accident a decade earlier. Mr Dreyer's body was discovered by Mr Shaw at a depth of 270 metres during an exploration dive with Mr Shirley in Bushman's Hole - one of the deepest underwater caves in the world - in October 2004.

Mr Shaw secured the body, which was on the cave floor with a cave line to the main line leading up to the cave's entrance for future reference.

After the dive, he decided to recover the body for the sake of Mr Dreyer's parents and asked for Mr Shirley's assistance in coordinating and managing the operation as well as being his deep support diver.

The recovery dive took place on January 8, 2005, amid international media attention, but sadly Mr Shaw did not return to the surface after he experienced a number of problems - including getting entangled in the cave line which played a part in prohibiting him from reaching the main line to ascend to the surface.

As his support diver, Mr Shirley had problems of his own, with a component of his diving gear imploding at a depth of 250 metres as a result of the immense water pressure.

In his own struggle for survival, Mr Shirley broke the surface around 12 hours later with, among other things, a serious inner ear problem requiring many hours of recompression treatment.

However, when the main diving line was recovered from the cave days later it brought Mr Shaw's and Mr Dreyer's bodies to the surface as both had been entangled in the cave line which was still attached to the main line.

"In the end, Dave did recover Deon's body, just as he said he would," Mr Shirley told those attending.

Relating to his experience, Mr Shirley said he stayed perfectly calm and "did what he had to do". "In a situation like that, you tackle each problem separately and when the next thing to do is to breathe - you breathe."

Mr Shirley said he started cave diving "to see what was around the next corner", not to reach a specific goal or break a long-standing record. "If exploring necessitates depth, a dive would be deeper, but exploration could also entail long penetration dives at shallower depths," he said. "In the end it's about training, experience and planning."

The couple - who own and operate the Komati Springs dive centre in South Africa's Mpumalanga province - spoke about their experiences at CDAA events in Sydney, Brisbane and Melbourne before arriving in Mount Gambier.

"We are off to the Nullarbor shortly and will also be speaking in Perth and Cairns before returning to South Africa," Ms Shirley told *The Border Watch*. "Our reception in Australia has been absolutely wonderful and we have made many friends. "We took time to dive Tank Cave earlier and it was without doubt an experience to remember.

"The Limestone Coast with its caves and sinkholes is truly a special place and one to which we will return."

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CEGSA AGM and BBQ

The CEGSA AGM will be held on Saturday 11th February at Steve Milners home at 19 McNamara Rd, Coromandel Valley.

CEGSA members welcome from 3pm, with the BBQ to start at 4pm.

The AGM will start at 7pm for the presentation of reports and the election of officers for 2017.

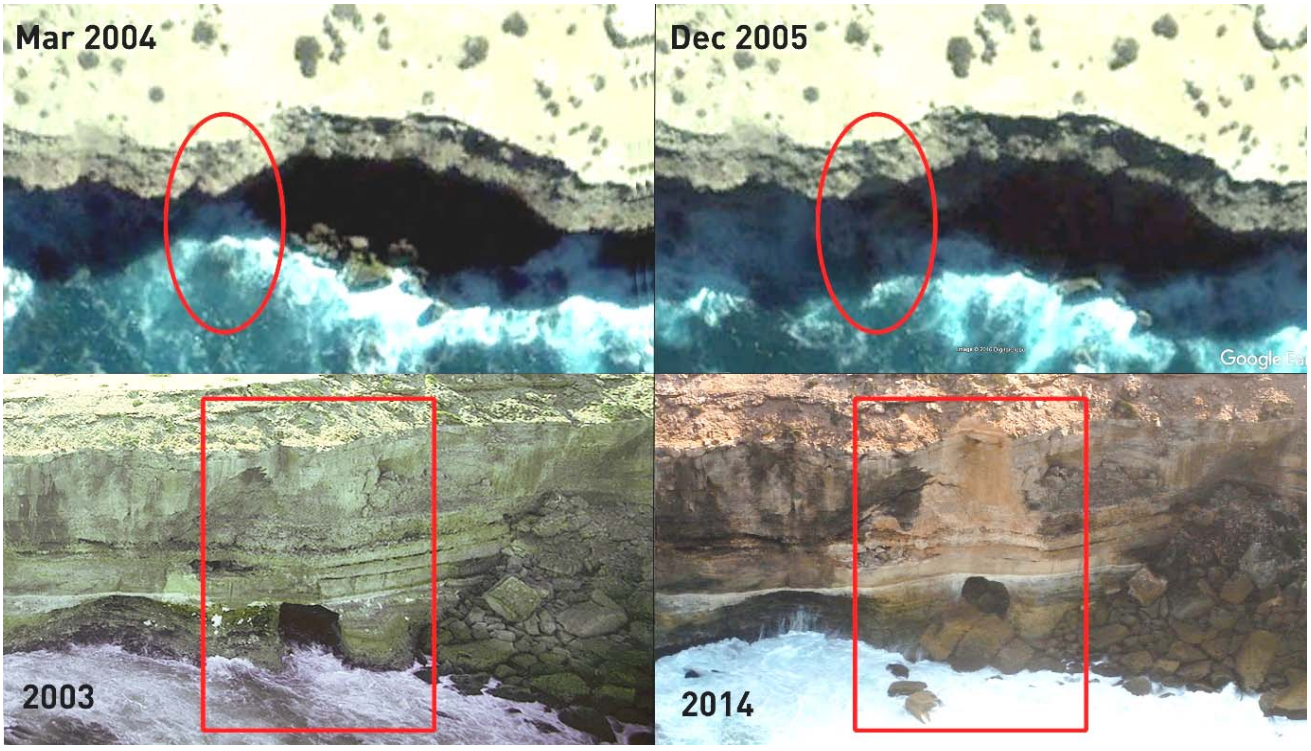
BYO Food, drinks, chairs. Please consider volunteering for a place on the committee.

Would all office bearers please submit their reports for the Annual Report by Sunday 29th January.

Bunda Cliffs Heading North

During investigations of the Bunda Cliffs, Nullarbor, evidence of retreat of the cliffs is noted; the changing nature of the cliffs highlights safety considerations when exploring the caves and challenges when using surface features to locate the caves. Two examples are shown below.
N1409 (Chardonnay Cave) – an area of 50m x 10m detached from the cliffs sometime between December 2004 and October 2010. The amount of rock is estimated to be approx. 40,000 tonnes:

N6718 (Percussion Cave) – while the amount of rock that detached from the cliff between March 2004 and December 2005 was smaller than at Chardonnay Cave, approx. 5,000 tonnes, it had the impact of turning a wave cut cave into a rock shelter:



The image below is one of many examples of unstable cliffs edges seen on the Bunda Cliffs that could detach at any time.

Alan Campbell inspecting an unstable area on the Bunda Cliffs

Acknowledgements
Thank you to Ian Oswald-Jacobs for the 2003 aerial images, to Ian Lewis for the 2014 aerial images, and Google for the satellite imagery.

Steve Milner.

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The Mystery of Corra Lynn Cave

This cave appears to be in two parts. The "Old" part has the entrance and the new part is *Dreamland*.

For many years, it was apparent that the Old part of the cave never went beyond an almost straight northeast-southwest line on the south east side of the cave that became known as t*he Off*. Very few passages even approached *the Off* and those that did either went parallel to it or petered out. Max Meth set out to breach this line and after three years of pushing every crack, it was breached by digging through a rock wall to locate the Alberta. We did discover that others had been partway into Alberta when it was almost filled by dirt before a deluge had cleared away the dirt then finished by collapsing a 10m stretch of tunnel and blocked access, probably in 1944. The start of this blocked tunnel is under a dirt pile just east of the *Drumstone*.

After completing the survey of the cave, it was found that *Dreamland* has the same aversion to *the Off* as did the Old part except that it has some major tunnels running almost continuously parallel with but adjacent to the Off whereas the Old part only has a few discontinuous tunnels at that alignment and position. There's also a 2m drop in level from the access tunnel near the Cauldron to those at the start of the Alberta. Levelling data also indicates that the Alberta tunnels are more inclined than those of the Old cave but much more levelling data is needed to confirm this. Also, does Dreamland have the same dip as Alberta? If there is this significant difference in dip, 3.8 verses 1.8 degrees, between the old and new parts of the cave, then it implies that *the Off* is more than a just a line on the map but a junction between two large rock masses tipped at different angles. If so, then why isn't there a step in the overlying surface? Maybe because the step is so old that it was eroded away millions of years ago or maybe it is there but buried under the 6m of soil cover.

Some of the questions that need answering are:

- why do no major passages cross *the Off* or at least terminate at it?
- are the two parts at different dips?
- is there a difference in strata level across *the Off*? And how do the strata pair up?
- why is there no major passage along *the Off*? This is a very unusual situation in dense limestones such as those in which Corra Lynn is contained where almost all water transmission is along cracks. Caves preferentially form along such cracks.
- were the two parts of the cave formed at the same time?
- were the parts formed separately and subsequently moved into their current relationship? This would explain the lack of *Off*-crossing passages and if cave formation had ceased before movement then this would also explain why there's no cave along *the Off*.
- was *the Off* along an axis of a compression at the time of cave development? A compression would close all cracks along *the Off* and prevent any cave forming there. Such a compression could also bow out the adjacent rock, creating cracks almost parallel with the axis and along which caves would form. The largest cracks, and subsequent cave passage, would be expected closest to the axis. Also the passages would tend to arc into compression nodes along the axis, close to which all cracks would be small and terminate the system. In other words, Corra Lynn Cave passage layout would resemble the lines of force around the central part of a bar magnet. Maybe there are more Corra Lynn type caves further along the axis past these nodes!

Graham Pilkington

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FUSSI PROGRAMME

University Break 21 Nov - 20th Feb 2017

Feb: 4-12 Tassie Clare coordinating. ***RSVP September 1st 2016***

April 7-22 Nullarbor. Clare Coordinating. Trip subject to permit approvals.

IUS international Caving conference: 23-29th July. Penrith, NSW. Pre and post conference caving trips around the country and New Zealand. See: www.speleo2017.com

CALENDAR OF EVENTS

Date	Type of Event	Description	Contact
23/11/16	General Meeting	Royal Society Room, SA Museum, Adel. End of year BBQ	Ian Lewis
26/11/16	Working Bee	Library and Records	Graham Pilkington
??/12/16	Committee Meeting	TBA	Ian Lewis
28/12/16	**No General Meeting**	**There is no December General Meeting**	Ian Lewis
24/12-02/01/17	Xmas-New Year	Anyone Caving.	
07/01/17	ASF AGM & Dinner	ASF AGM and 60th anniversary Dinner	Graham Pilkington
??/01/17	Committee Meeting	TBA	Ian Lewis
25/01/17	General Meeting	Royal Society Room, SA Museum, Adel. Mt Eccles and Byaduk Lava Caves.	Matt Smith
26/01/17	Australia Day P/H		
28/01/17	Working Bee	Library and Records	Graham Pilkington
??/02/17	Committee Meeting	TBA	Ian Lewis
08/02/17	CEGSA NEWS	Articles due	Athol Jackson
11/02/17	**AGM and BBQ**	**19 McNamara Rd, Coromandel Valley. 3pm, BBQ starts at 4pm, AGM at 7pm**	Ian Lewis
22/02/17	General Meeting	Royal Society Room, SA Museum, Adel. Bat shit, not boring!	Mike Snow
25/02/17	Working Bee	Library and Records	Graham Pilkington
??/03/17	Committee Meeting	TBA	Ian Lewis
22/03/17	General Meeting	Royal Society Room, SA Museum, Adel.	Ian Lewis
25/03/17	Working Bee	Library and Records	Graham Pilkington
23-29/07/17	Conference	UIS Congress, Penrith, NSW	Graham Pilkington
Jul/Aug/17	Caving	UIS Congress Field Trips See: www.speleo2017.com	
	Caving	Ongoing Vic Fossil survey	Gary Woodcock
	Caving	Continuing Fleurieu Peninsula Exploration	Grant Gartrell

****Extra trips will be notified in the Calendar on the Website or at General Meetings****

To be covered by insurance it is mandatory that caving trips involving club members must be registered as CEGSA Trips. To do this, the nature and timing of the trip must be entered in the Calendar of events in CEGSA NEWS, minuted at a General Meeting of Members or entered in the Website Calendar. The member registering such a trip must be an accredited CEGSA Trip Coordinator and must agree to act in this capacity for the trip. There must also be an accredited trip leader with the appropriate skill endorsement to take a dependent party caving.
Also, please ensure that a report of the trip is submitted to the Records Officer in a timely manner.