



Minimal Impact Cave Rescue Code

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ASF Australian Cave Rescue Commission

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1 Preamble

Rescue from caves is difficult and typically has a significant impact on caves.

Cavers understand that the environment can make cave rescue difficult. They practise and prepare for the possibility of a rescue.

Recognising their primary aim of protecting caves and karst, ASF members:

- promote safe caving practices
- train to provide cave rescue
- support emergency services in understanding how to:
 - move in caves safely and with minimal impact
 - carry out rescues and rescue training in caves safely and with minimum impact



This document should be read as additional detail to the ASF Code of Ethics and Minimal Impact Caving Code.

2 Rescue in Caves

When rescue is required from a cave, the first priority is the safety of the rescuers and those being rescued. As far as practicable, the rescue should also have minimal impact to the cave environment.

An important way to reduce damage to caves is for rescuers to participate in cave rescue training exercises and become familiar with minimal impact caving techniques. ([Link](#)) Cave rescue training exercises are conducted every year in most states of Australia. Members of the Australian Speleological Federation support cave rescue training for emergency services.

Cave rescues are rare but often very complex. Adequate cave training to understand the challenges and to build capability with the caving community is essential. Those familiar with caves and caving are best able to recognise suitable routes and rescue strategies.

While impact on caves is not the highest priority in an authentic cave rescue, all training should follow minimal impact procedures, partly to increase knowledge of these in the event of an authentic rescue, and partly to protect the caves.

3 Potential impacts to caves from rescue or training

3.1 Biological

Caves typically have limited inputs from the outside environment. It is important to:

- reduce the chance of introducing foreign organisms or nutrients
- reduce the impact on organisms that live in caves

3.2 Speleothems

Cave decorations (speleothems) are obvious items to protect. In order to limit damage:

- move slowly and carefully
- be careful with placement of hands and feet
- avoid caving when tired
- where possible, not rig using speleothems
- seek alternate routes that reduce damage
- keep pack sizes small and collaborate to pass equipment

3.3 Sediments

Sediments can contain valuable scientific information or biological communities and can be moved to contaminate other parts of the cave. Appropriate solutions include:

- use marked tracks through caves. Avoid entering No Go areas
- wash boots and gloves when moving from muddy to clean areas
- remove muddy equipment before entering undisturbed areas
- avoid disturbing sediment banks

3.4 Human wastes

Everything taken into a cave should be taken out again. Human waste must not be left in caves. Appropriate measures must be undertaken to remove solid and liquid wastes and food crumbs from the cave.

3.5 Trail marking

- use marked trails where they exist. If no trail is marked, use temporary marking materials such as flagging tape to mark a trail to minimise damage. Use expert local cavers to choose the best routes
- avoid deviating from the trail
- after an event, remove trail marking placed for the event and clean/repair any damage

- for training exercises, use cavers to assist in pre-planning access routes and No Go areas

3.6 Cave modification

In some cases it will be necessary to divert stream flows, excavate, drain or otherwise modify caves for an authentic rescue. Often there will be another route which does not require this, but, if it is deemed necessary, the use of local experts is highly desirable to reduce risk to rescuers and impact on the cave.

Training for cave modification should normally be limited to disturbed surface areas such as quarries.

Typically, the placement of artificial anchors will be necessary in rescues, and therefore, should be considered in training. Where possible, artificial anchors should be removable. A specifically placed anchor will often result in less damage to the surrounding cave as well as greater safety for rescuers and casualties compared to having to find and access an effective 'natural' anchor. Reference should be made to ASF's Cave Anchor Code when it becomes available.

4 Resources available for cave rescue

- Local relationships between emergency services and local cavers are the single most important resource. All caving regions in Australia have cavers interested in rescue, who train and collaborate with similar cavers.
- The Australian Cave Rescue Commission (ACRC) has a network of people around Australia supporting preparedness for rescue in caves.
- State councils of caving clubs support the ACRC and local cavers preparing for cave rescue.
- Shared training between emergency services and local cavers is essential preparation for rescues from caves. Both cavers and emergency service professionals have much to learn from each other. Cavers can provide subject matter experts to support cave-based training.
- Regular collaboration to prepare for cave rescue is highly desirable.
- The ASF Code of Ethics and Minimal Impact Caving Code describe how people should protect caves. They can be found at <https://www.caves.org.au/administration/codes-and-standards>

5 Strategies to reduce impact

5.1 Briefing

Participants in a rescue or rescue training will be briefed before entering caves. Remind them how to make as little impact on the cave as possible. Use cavers to demonstrate, explain and teach about preventing impact in caves.

5.2 Assessment of routes

In the case of both authentic and training rescues, time spent evaluating routes for travel by both rescuers and casualties is time well spent. The potential impact on a route in a cave should be considered. Using cavers familiar with the cave will be more effective and efficient. Marking routes with easily removable, non-polluting track marking is essential.

5.3 Cave biology

Caves often have unique ecosystems and may be home to highly specialised fauna including micro-organisms. Equipment being used in caves should not carry in organisms from other caves or soil. All equipment should be cleaned so that there is no risk of cross-contamination. Further information can be found in the Minimal Impact Caving Code.

Bats and other cave animals should not be disturbed more than is absolutely necessary. Care should be taken to avoid disturbance during training activities.

5.4 Rigging

No wire traces (except for surface rigging on tropical 'razorkarst'). Protect surfaces (and ropes) with packs, etc. Removable artificial anchors will often be necessary in an authentic rescue. Training should reflect this. Consider the relevant ASF codes. Use of pre-existing artificial anchors must be assessed as to their suitability for rescue loads.

5.5 Cave modification

Modification of cave entrances, streams/sumps, cave passages or sediments can alter the unique and highly specific microclimate of the cave, with detrimental effects on cave fauna and speleothems. Digging/excavation can damage fossil, bone or archaeological values not necessarily obvious to rescuers.

There is significant safety risk in shifting rocks in caves. Try for an alternative route, local cavers are likely to know of alternatives.

Engineering in a cave should be undertaken by trained operators who possess an understanding of the cave environment wherever possible. Changes to rock piles or any rock not part of the bed rock should be assessed by an expert such as an experienced local caving leader wherever possible.

In the event of cave modification being necessary in an authentic rescue, landowners or management authorities must be informed. Modifications must be the minimum necessary for a safe rescue. Cave modification should not be undertaken for the purpose of cave rescue training.

5.6 Packs and equipment

Caves are frequently tight and difficult to move through. Consideration must be given to reducing the amount of equipment that needs to be brought into a cave, and into bringing it in packs that can be moved efficiently – compact, few straps and protrusions.

5.7 Time on duty

Caves are unforgiving/uncomfortable places to work: cold, wet, breezy, hot, humid, muddy, dusty, tight, uneven, slippery. There is potential for cave rescues to take many days in Australian caves. Tired rescuers are at increased risk to safety (their own and others) and more likely to impact the cave.

Managing fatigue during rescues and training is essential and may require the use of underground camps or rest areas.

5.8 Rest areas

In long duration rescues, cavers need a place to rest, eat (and probably, warm up). The surface will usually be best, but, if it's necessary to have rest areas in a cave, choosing areas that are more

appropriate and providing tarp flooring etc. will reduce the impact on the cave. Consideration should be given to suitable sites during route planning.

5.9 Rescuers underground

Team sizes are usually better small. More people moving in the cave increases the risk of accident to a rescuer, further injury to a casualty and impact to the cave. The fewer rescuers in the cave, the safer and less impact. The need for sufficient rescuers at each work site and their travel times must be balanced with this imperative. Effective cave-surface communication makes this more achievable.

5.10 Rescue training

- should involve cave subject matter experts. Work with cavers
- in selecting a cave for training, liaison should be made with land/cave managers
- should use rescue equipment suitable for caves: specialised stretchers, single-wire Michie phones, mechanical devices that do not clog with mud, etc.
- should primarily occur in robust caves, or those which have already been significantly impacted. Some training may need to be carried out in specific caves which are assessed as carrying a high risk of rescue potential. This training must be carefully planned and managed to minimise impact.
- where the training is focussed on those not familiar with caves, the training should be based on how to minimise impact while moving through, searching for, or extracting a casualty
- some forms of rescue training are better performed outside a cave. Consideration should always be given to the planned outcomes for the training, and whether a cave is the best place to achieve these.
- training in caves should include planning for routes and no go areas and should involve marking these in an appropriate way (and the subsequent removal of marking). Use of local cavers is obviously advantageous
- if, during training, a route is obviously becoming degraded, the exercise must be modified and/or suspended

5.11 Debrief

Include a reminder to thoroughly clean all equipment used in a cave before its use in another situation.