



# Australian Speleological Federation Inc. Risk Management and Emergency Procedures Guidelines

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## Introduction

Activities that involve natural environments such as caves have many hazards. A risk is a potential event that, if it occurs, produces an accident or an incident that has a negative impact upon the objectives of the party or of a party member. The Australian Speleological Federation Inc (ASF) understands that it is impossible to remove risks completely in karst environments; these guidelines encourage leaders and members to assess the hazards and give members tools and advice on reducing them on a formal (written) or informal (unwritten) basis.

Risk Management is “a process consisting of well-defined steps which, taken in sequence, support better decision making by contributing a greater insight into risks and their impacts.” [ ISO 31000:2018]

The aim of the ASF risk management guidelines is to assist clubs and their leaders to identify hazards and risks and to take action either to avoid accidents and incidents or to moderate their effects. We have little control over the conditions of the environment, but we can prepare ourselves so that the risk level becomes acceptable.

Risk is rated by the size of the potential harm and by the likelihood of the event happening. So, risk may be minor and unlikely, or minor and likely, or severe but unlikely, or severe and likely. A severe and likely risk is unacceptable. If it cannot be reduced, the action should be stopped or the trip cancelled.

Risk can be reduced by reducing the size of the potential harm or by reducing the likelihood of the event happening. E.g. head injury from falling stones can be reduced by wearing a helmet or by not standing where stones could fall, or both.

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When organising activities leaders and party members must assess the likelihood and consequence of each risk, decide if the risk is unacceptable or acceptable, and, if unacceptable, plan to avoid that risk or to reduce it. All members should be continually assessing risks during the activity. If a trip member is at any time uncomfortable about the level of risk, either personal or to the group, they should be encouraged to voice their concerns and discuss with the trip leader or other members of the group.

### References

ASF Safety Guidelines - <https://www.caves.org.au/administration/codes-and-standards/send/8-codes-and-standards/57-asf-safety-guidelines-april-2011>

Guidelines for Managing Risk in Sport and Recreation, First published as HB 246—2002. © Standards Australia International

Victorian Department of Education Excursions Risk Register and Emergency Management plan

## **Definitions**

### **Hazard**

A hazard is something that has the potential to cause death, injury, or property damage. Hazards may be a product of the current physical environment of the trip, the forecast physical environment, any limitations of the equipment, or the physical and psychological state of party members.

### **Risk**

The chance of a hazard causing something to happen that will have a negative impact upon the group's objectives. For the individual it is the potential for physical harm, or the loss of something of value. Risk is measured in terms of likelihood and consequences.

### **Acceptable Level of Risk**

The level of risk at which all participants are comfortable commencing or continuing the activity, knowing the risks involved. A low or moderate risk should be acceptable. An acceptable risk can be managed by techniques or equipment which mitigates the risk.

### **Unacceptable Level of Risk**

A level of risk where the likelihood of occurrence and/or the consequences are deemed too severe by the party or by individuals in the party. These risks must be dealt with and removed for the activity to commence or continue as planned. If the risk cannot be removed entirely, it must be reduced to an acceptable level.

### **Incident or Accident**

An accident is an event that causes death or injury, or damage to property or to the environment. An incident is a near-miss to an accident or something minor that interferes with the party's or members' objectives.

## Responsibilities

The Australian common-law system of liability is founded on the principles of personal responsibility for one's behaviour and duty of care towards others. Duty of care is an "obligation to take responsible care to avoid injury to a person whom, it can be reasonably foreseen, might be injured by an act or omission." (tafensw.edu.au) These principles apply to everyone, all the time. Your responsibilities on a trip are:

- Responsibility to apply a duty of care to the people you are leading, if you are a trip leader.
- Responsibility to apply a duty of care to the people on the trip with you, whether or not you are a trip leader.
- Responsibility to apply a duty of care to people not on your trip.
- A personal responsibility to ensure your own safety.

Your level of responsibility on a trip depends on your training and experience. An experienced person on a trip has a higher level of responsibility than a beginner. A trip leader is assumed to have the experience and training to lead the trip and will always be held responsible for the safety of party members.

If you breach your duty of care to another person and that person suffers injury or loss as a result, you are responsible for that loss and may be held liable for civil damages. Your level of culpability depends on what happened. You are negligent if you did not notice a risk which you should have noted or you are reckless if you saw the risk and allowed it to manifest without taking action.

ASF has an insurance policy for members providing cover for civil damages. You should never assume that this gives you the right to be negligent or reckless with another person's safety. Particularly in cases of a reckless breach of duty-of-care, the insurance company may refuse a claim.

- See section 4 of the ASF Safety Guidelines for Trip leader's responsibilities
- See Section 5 of the ASF Safety Guidelines for Individual responsibilities

## Hazards and Risk Management process

The risk management process involves 7 simple steps:

### 1. Context of the trip

The hazards and risks of a trip may depend on the type of caving trip.

Is the trip a recreational trip, a photographic trip, a diving trip, a beginner's trip, a surveying and exploration trip? Is it a trip across barren land mid-summer? Or in the Tassie rainforest mid-winter? Are there deep pits or tight squeezes? Is there foul air or freezing winds?

Each of these types will have different hazards and risks. A survey trip may be for four hours duration and a photographic trip may take eighteen hours!

The age, the health and the current condition of the party members will be a factor in the assessment.

### 2. Identifying hazards and risks

Hazards need to be identified before any risks can be assessed and managed. Hazards may be a result of the natural environment, or the composition of the party, or the type of trip planned. Identification of hazards needs to be done both before and during the trip.

A list of possible hazards is found at appendix 1

### 3. Assessing risk

The level of risk associated with any hazard can be assessed according to likelihood of risk occurring and consequences of risk occurring. A risk matrix formally plots these two assessments against each other and comes up with an answer about acceptable or unacceptable risk. An example of a risk matrix is provided below.

A formal risk matrix style of assessment is almost certainly too formal for volunteers running club trips. The principle of assessing likelihood and consequences of risks is a good one, and you should do this for trips you lead even if informally.

#### Likelihood definitions

Descriptor	Description	Indicative %
Rare	May never occur	<5%
Unlikely	Would be somewhat surprising if it occurred	5–25%
Possible	May occur at some stage	26–65%
Likely	Probably will occur (no surprise)	66–95%
Almost Certain	Expected to occur	>95%

An example of a Risk assessment pro forma is shown in appendix 2 and 3

### 4. Evaluating risks to determine whether the level of risk is acceptable or unacceptable

The risk rating is determined by assessing the likelihood against the consequence. Use the **Risk Rating Matrix** to do this.

A risk matrix can be used to assess levels of risk with no risk management in place and compared to when management strategies are used. For example free climbing a sheer aven may be considered an Extreme risk, but when rigged for SRT the risk becomes acceptable.

### Risk Rating Matrix

Likelihood	Consequence of continuing with the activity				
	1-Insignificant	2-Minor	3-Moderate	4-Major	5-Severe or Catastrophic
1-Rare	1	2	3	4	5
2-Unlikely	2	4	6	8	10
3-Possible	3	6	9	12	15
4-Likely	4	8	12	16	20
5-Certain	5	10	15	20	25

Risks rated Low or Medium do not necessarily require further action as this level of risk is usually acceptable.

Risks rated High or Extreme require further action to reduce their level.

### Key Risk Treatment and Consequence

1-4 Low Risk	<ul style="list-style-type: none"> <li>• <b>Risk is usually acceptable.</b></li> <li>• Risk does not generally need to be managed any further. Current controls are sufficient, however the risk should be monitored during the activity.</li> <li>• Could result in minor injury requiring no first aid or peer support.</li> </ul>
5-9 Medium Risk	<ul style="list-style-type: none"> <li>• <b>Risk is usually acceptable if the party agrees.</b></li> <li>• Conditions need to be regularly monitored for any changes as a change could move it into High Risk.</li> <li>• Could result in injury or ill health requiring first aid and peer support</li> </ul>
10-14 High Risk	<ul style="list-style-type: none"> <li>• <b>Risk is most likely unacceptable. Risk should be moderated or removed.</b></li> <li>• Trip Leader and party need to reassess the situation.</li> <li>• Could result in injury or ill health requiring medical attention and a need for external support.</li> </ul>
15+ Extreme Risk	<ul style="list-style-type: none"> <li>• <b>Unacceptable risk. Urgent attention must be taken to avoid or remove the risk.</b></li> <li>• Trip leader and party need immediately to deal with the situation. The trip may have to be abandoned.</li> <li>• Likely to result in fatality or severe injure and a need for extensive external support.</li> </ul>

## 5. Mitigating risk

Priorities of risk management

Order of Priorities for risk management

- Avoiding hazards  
Is it possible to prevent an unacceptable risk from being present in the first place?
- Removing hazards
- Managing unacceptable risks to an acceptable level (e.g. only undertaking a roof sniff in a flood prone cave in the dry season, with an extremely good and reliable weather forecast).

## Avoiding hazards

There are occasions when a trip should end before it begins. Consider the hazards that make a trip non-viable before you commit to the effort of organising or travelling. Once party members have committed to a trip, it is psychologically much harder to cancel the trip.

- Are party members capable of the trip?
- Can you realistically expect your trip to run without an emergency, given the people who are on it?
- Deciding on your route and planning your objective.

If you don't have a clear idea of what you are doing, you can't understand the risk. Trip leaders need to have an objective for your trip, whether that be exploration, recreation or any other objective. Other party members should know the objective, the route, the expected level of physical and technical difficulty and an idea of the length expected.

- Is it time to turn around?

Things change during a trip. The weather, condition of your party members, condition of your equipment, and/or condition of the cave, may convert an acceptable risk into an unacceptable risk. Be prepared to turn around and walk away. Be aware of the points in the trip where an irreversible commitment to go forward is being made, e.g. pull-down pitches.

- A useful tool party members may use to help them determine if they are safe to undertake, or continue, on a trip is a mental checklist. An example of one is the IMSAFE checklist used by pilots. It is equally applicable to cavers. It can be found here: <https://www.spedmo.com/content/ImSafe.pg>



**I'M SAFE CHECKLIST**

**I**llness—Do I have any symptoms?

**M**edication—Have I been taking prescription or over-the-counter drugs?

**S**tress—Am I under psychological pressure from the job? Worried about financial matters, health problems, or family discord?

**A**lcohol—Have I been drinking within 8 hours? Within 24 hours?

**F**atigue—Am I tired and not adequately rested?

**E**ating—Am I adequately nourished?

## **Removing hazards**

Hazards can present themselves during a trip and the risks posed by these hazards may not be avoidable in advance. Removing hazards you encounter is the way to deal with these risks and reduce the risk to an acceptable level.

### **Personal equipment**

- Carry and use personal equipment suitable to prevent unacceptable risk while on the trip.
- See section 6 of the ASF Safety Guidelines for Personal Equipment

### **Removing immediate hazards**

- Prevent unacceptable risk by e.g., removing loose rocks on pitches, dealing with hazardous fauna and flora, handling slip hazards on slopes.
- Technical Trips. Gear checks, rigging checks, and assessment of the physical environment may all be required. The bottom line for technical trips is that the equipment needs to be in working order, is set correctly, and party members have the training and experience to use it.

## **Dealing with residual risks which are present on the trip**

After avoiding and removing all the unacceptable risks before the trip starts, all risks should now be at an acceptable level before the trip starts.

These residual risks are the result of hazards that remain after removing any hazards that you are able to. Residual risks are unavoidable, and need to be accepted as part of the activities we undertake. Dealing with residual risks requires knowledge, training, skills and sensible decision-making. Together, these should prevent the risk from causing an accident or incident.

## **6. Monitor and review**

In the lead up to the activity and during the activity the hazards and risks should be reviewed regularly to ensure all information is up to date. Changes to risks may be required if some factors change, Eg the weather and participants.

## **7. Communication and reporting**

Communicate the risks with all participating members of the activity and ensure that each member understands their role in monitoring the risks during the activity.

The other aspect of communicating is completing an accident report form to assist in the education of other ASF members in future activities.

## **Accident and Incident responses**

When a hazard manifests on a trip, an emergency situation may exist. Deal with the emergency priorities in order. Do not place additional lives at risk by ignoring priority one.

### **First priority – Prevent further injury and death**

- Do not make an emergency worse. Prevent injuries and death by acting immediately to provide first aid – if it is possible to reach a victim without causing fresh casualties.

- Prevent uninjured people from becoming fresh casualties
- Without endangering other party members, protect the victim from further harm or move them from danger (dependent on the level of injury and nature of the hazard).
- First aid for priority injured victims – **DRSABCD** \*
- First aid for remaining victims

\*Assess **D**anger, check **R**esponse, **S**end for help, check **A**irway, check **B**reathing, check **C**irculation, Use **D**efibrillator (if available)

### **Second priority – Stabilise the situation**

- What is required to lessen or end the risk? Can the party safely move away from a physical hazard?
- Is every member of the party in a safe location, and are they personally equipped to prevent further emergencies (such as hypothermia, drowning, etc) from occurring?
- Has first aid successfully stabilised the condition of victims? Is there a need for ongoing emergency aid?

### **Third priority – Assess the next step**

- Is medical intervention required? What type of intervention? Does a specialist remote-access paramedic team need to enter a cave? Is medically-equipped transport (ambulance or helicopter) required?
- Can the incident be managed with a self-rescue?
- Does the incident require an external rescue service to attend?

### **Fourth priority – Seek professional help as necessary**

- Is there an emergency locator beacon available on the trip? Activate it once the decision is made to seek external help.
- Send for help. If possible notify the local cave rescuers, then call 000, and tell 000 the contact numbers for the local cave rescuers with the aim of getting them working together. Note that persons calling for emergency support will need to remain in communication with 000, and probably guide/welcome/inform professionals as they arrive.
- If party size allows, two people should exit the scene of the accident and start an emergency call-out, while at least two people remain with an injured victim.
- Make sure that the people who leave to seek help have a clear idea of the location of the incident. If the trip is in a remote location, they should have a GPS device with track mode switched on.
- Make sure that the people who leave to seek help have a clear idea of the situation, injuries and the type of help required.

Trip leaders and other party members should assist the emergency response to the best of their training, experience and current mental and physical state.

The ASF Cave Rescue Commission (ACRC) provides cavers advice and training in cave rescue techniques. NSW has a specific cave rescue organisation, the NSW Cave Rescue Squad. Information about this squad is at [www.caverescue.org.au](http://www.caverescue.org.au).



In the case of remote areas, trip leaders should be prepared and have shared a plan for how emergencies can be responded to.

All participants should know the incident response plan for the proposed activity.

Leaders should know the call-out system for their state. The leader should have the phone numbers of the local management authority or the landowner, Police, and Cave Rescue. There should be an expected return time and a call-out time. There should be designated call-out person (not on the trip) to raise the alarm at the call-out time.

It will take many hours from the time of call-out to the time a rescue party reaches an accident site. It is essential the call-out person raises an alarm at the call-out time. If the call-out person waits (“I’ll wait an hour as they’re probably just a little delayed.”) people can die. The call-out person may pre-warn potential rescuers of the possibility of a call-out if the party is overdue.

The trip leader should ensure the expected return time and call-out time are reasonable, balancing the risk of an unnecessary call-out against the risk of delay in rescue.

## **Accident and Incident reporting**

Reporting is one way to reduce future risk through education. When members of ASF report on accidents and incidents that have occurred on trips, other members of ASF may recognise hazards in advance and be able to avoid, remove or mitigate the risks on their trips.

A proper incident reporting scheme requires several cultural features to be in place within the organisation:

- (a) A genuine commitment to prevention of future incidents/accidents.
- (b) Self-reporting without the fear – justified or perceived – of retribution. Judgement-free collation and publication of incident reports is critical.
- (c) A well-publicised location for reports to go to. In ASF, the SLARM Commissioner is responsible for receiving incident reports.
- (d) A well-publicised person who will collate incident reports and comment on risks in a public forum, without necessarily naming names. In ASF, the SLARM Commissioner is responsible for these roles.
- (e) A location where members expect and anticipate reports to be published.

ASF is committed to implementing all of these requirements for a successful educational incident reporting system. We understand that major incidents will be published; it is the minor incidents and especially the near-misses that need to be documented (and which are missed by default unless there is a system in place). If someone dies, we don’t want to hear conversation along the lines of: “everyone knew that bolt was dodgy”.

### What to report?

- Accidents which have led to physical injury requiring medical treatment and/or rescue of the victim.
- Incidents which have led to only minor injuries but which have implications for future trips.
- Near-misses which have implications for future trips.

### How to report?

The ASF incident reporting scheme is intended to provide a system that's efficient, accessible to members, secure and easy to compile into regular reports.

- a copy of the **incident report can be found online** at <https://www.caves.org.au/administration/commissions/cave-safety-leadership-risk-management-slarm>

### Publishing the outcomes

The ASF incident reporting system exists to inform members about risks. Information drawn from the reporting system may consist of:

- Summaries of individual events
- Statistical information summarising more than one event
- Assessments of how to avoid, remove or mitigate risks which have caused reported incidents
- Follow-ups on previously-published risks

The ASF is committed to making this information available to members.

Members filing a report may require that names of persons involved and details of the incident location shall be removed for publication.

## Appendix 1: Examples of potential hazards of a caving trip

(This is not a complete list!)

Hazard	Description
<b>People (skill, experience, health, fitness)</b>	
The age of the members	Older members may not be as fit as younger members, younger members may not be as robust as older members.
Experience	Are the members capable of doing the trip?
Health	If members are unwell – should they participate? Are there any underlying health issues the trip leader should be aware of?
<b>Environment</b>	
Storms and lightning	Can cause flash flooding. Lightning strikes may start fires.
Bushfires or grass fires	Can kill or maim
Floods	After severe storms or tropical cyclones watercourses can be flooded.
Heat	Sunstroke and heat exhaustion are possible. In monsoon areas, may be associated with high humidity.
Rock falls	Are a concern in the area either from earthquake movement or by dislodging loose rocks
Karst	Karren may cause injuries if a walker slips. Navigation may be difficult increase in karst terrain.
Diseases (e.g. Ross River fever, Hepatitis)	These may be within the community or transferred by insects in the region
Snake bites	Snakes may be prevalent in the region
<b>Caver-specific activity hazards</b>	
General injuries	These often occur and are of a minor nature such as cuts and scratches or being bitten by small creatures.
Lighting failure	
Surface or in-cave navigation problems	It is easy for separated party members to get lost.
Hunger	Hungry cavers may not perform well.
Thirst	Thirsty cavers may not perform well.
Solo caving	This often happens to route find while surveying is progressing
Hypothermia	Hypothermia is a serious condition that can occur in cold caves especially where it is likely that participants will get wet.
Foul air	High concentrations of CO <sub>2</sub> in cave atmospheres can reduce a caver's ability to move and react effectively. The higher the level the more negative the impact on the caver. Different people may have differing reactions to
Rock movement	Rocks may move in the cave and cause a caver to fall.
Equipment failure	Gear not checked or anchored properly. Old gear may fail causing a caver to fall.
Wrong placement of anchors	Incorrectly placed anchors may fail or allow rope rubs.

## Appendix 2 - Example of a risk assessment pro forma

ACTIVITY DETAILS <i>Step 1 – Establish the context</i>			
Activity type	<i>E.g. - Beginners trip, photographic, expedition, surveying</i>	Trip Leader	
Location		Participating members	
Dates			

RISK ASSESSMENT					
Step 2 – Risk Identification		Step 3 – Risk Analysis	Step 4 – Risk Evaluation	Step 5 – Action to reduce High Risk or Extreme Risk	
Risk <i>What are the hazards?</i>	Causes and Consequences <i>What is the harm associated with the hazard?</i>	Existing controls <i>What do we have in place to reduce the risk?</i>	Current risk rating	Action Person responsible	Due date of completion of Action
<b>People (skill, experience, health, fitness, behaviour).</b> <i>Add additional rows as necessary.</i>					
<b>Equipment (clothing, ropes).</b> <i>Add additional rows as necessary.</i>					
<b>Environment (weather, remoteness, terrain, shelter).</b> <i>Add additional rows as necessary.</i>					

## Appendix 3 - 2<sup>nd</sup> example of a Risk Management plan



# Crate Climb Risk Management Plan

Lutanda Toukley

School: \_\_\_\_\_ Year: \_\_\_\_\_ Dates: \_\_\_\_\_

Program: \_\_\_\_\_ Supervising Staff: \_\_\_\_\_

### Activity Context

Crate Climb is a team activity where participants take it in turns to climb a stack of crates while being belayed on a rope. Other participants help to build the stack of crates and belay the climbers. Participants are given clear instructions on the different roles in the activity, and are encouraged to work as a team to build the highest stack of crates.

This document contains the specific risks, control measures and grading for the Crate Climb activity. Please refer to the document **General Activity RMP – Lutanda Toukley** for a list of general risks and control measure relevant for all Lutanda Toukley activities, as well as risk rating information.

### Risk Management Plan

Hazard / Risk Description	Existing Control Measures	Risk Rating		
		Likelihood	Consequence	Control Effectiveness
Crate Climb Specific – Risk factors specifically associated with the Crate Climb activity at Lutanda Toukley				
Fall from height	<ul style="list-style-type: none"><li>Pre-activity briefing conducted by Activity Leader</li><li>All participants must wear correctly fitted harness and helmet, and connected to lifeline / belay rope</li><li>Participants belayed by team of belayers</li><li>Activity Leaders check that participants are connected to belay lines and check equipment prior to participant starting</li><li>Friction devices installed in belay lines to slow movement of rope</li></ul>	Rare	Major	Low
Belayers Participants belaying incorrectly	<ul style="list-style-type: none"><li>Pre-activity briefing conducted by Activity Leader</li><li>At least 3 belayers on the team at once</li><li>Activity Leaders check belay team is ready prior to climb</li><li>Friction devices installed in belay lines to slow movement of rope</li><li>Belaying is supervised by Activity Leader</li></ul>	Likely	Minor	Medium
Impact By participant <ul style="list-style-type: none"><li>To other persons</li><li>To pole</li><li>Landing too hard on ground</li></ul>	<ul style="list-style-type: none"><li>Boundaries identified to group at start of the activity</li><li>Belay lines are set away from poles</li><li>Activity Leader warns participant if they are swinging towards pole</li><li>Participants required to wear helmets</li><li>Activity Leader encourages participant to bend their knees as they reach the ground</li><li>Activity Leader guides belay team through lowering climbers</li><li>Crate stacks to be only pushed over away from other participants</li><li>Crate stacks to be only pushed over when Activity Leader gives signal</li></ul>	Possible	Minor	Medium

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