

ASG

Activity Safety Guideline

Canyoning



May 2026 v4

Preface

This Activity Safety Guideline (ASG) was originally developed for abseiling only by Tourism Industry Aotearoa (TIA) with support from WorkSafe New Zealand. This revision was facilitated by the Register of Outdoor Safety Auditors (ROSA) using experts from the canyoning sector. Information about the guideline development process can be found at www.supportadventure.co.nz

The guideline will be reviewed and updated as required. The current version is available at www.worksafe.govt.nz Users should check the date and version number of the current online document to ensure that their printed copies are up to date.

ROSA, WorkSafe New Zealand, and the canyoning community have made every effort to ensure that the information is reliable. We make no guarantee of its accuracy or completeness and don't accept liability for any errors. We may change, add to, or delete from the contents at any time without notice.

Acknowledgements

The guideline was developed in consultation with the guiding and instructing canyoning sector.

The expert Working Group who drafted this ASG comprised Ross Fraser and Shanan Fraser. They're acknowledged for their expert advice and support, along with the Consultation Group comprising Toine Houtenbos, Dave Vass, Osar Burford, Koryn Gould, Steve Parker, and Cam Bowen.

Document control

Version 4

Significant changes from Version 3	Where
Revised and realigned hazards and management strategies	Section 2
Canyon Leader level added	Section 4.3
Recommended ratios clarified	Section 4.3
Bolt anchor testing revised	Section 5.3
Definitions added	Definitions

As well as these significant changes, there are small changes throughout the document.

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Cover photo: Hope River, Tasman. Photo: Shanan Fraser

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Section 1: Introduction

1.1 The canyoning sector

Commercial canyoning in New Zealand occurs in outdoor education centres and tourism operations. Trips in the higher-grade canyons tend to be more common with adventure tourism operations.

1.2 Scope

This guideline defines canyoning as:

An activity involving the descent or ascent of a watercourse using specific techniques and/or equipment but excluding a craft. The watercourse often contains water and often has vertical sides and/or difficult egress and access and is not a cave.

This guideline covers activities that meet this definition, whether or not they're advertised specifically as canyoning. It describes what canyoning operators and technical experts consider to be good practice for actively managing safety in providing canyoning activities in New Zealand.

This guideline focuses on preventing serious injury or death. It identifies significant hazards that participants and the guides or instructors who lead them may be exposed to. It makes recommendations for managing these risks.

The primary audience is commercial canyoning operators and the secondary audience is safety auditors and technical advisors as a benchmark for good practice.

Activities associated with taking participants to and from canyoning activities are outside the scope of this guideline. Operators who provide these activities need to manage the associated risks.

1.3 Legislation

Commercial canyoning operations are subject to the Health and Safety at Work Act 2015. They're also subject to the Health and Safety at Work (Adventure Activities) Regulations 2016.

The Adventure Activities Regulations

Canyoning activities expose the participant to risks of the kind defined in the Adventure Activities Regulations. The regulations cover activities where:

- the recreational or educational experience the participant has is the main purpose
- the participant is guided, taught or otherwise assisted to participate in the activities
- the design of the activities deliberately exposes the participant to a serious risk to their health and safety that must be managed by the operator
- failure of the operator's management systems is likely to result in a serious risk to the participant's health and safety.

The regulations require operations providing these activities to undergo an external safety audit and be registered with WorkSafe.

This guideline and the [SupportAdventure](#) website act as companions to the health and safety legislation. They're not part of the health and safety legislation, but following their recommendations will help operators meet legal requirements to take all practicable steps to identify and manage hazards.



1.4 Using this guideline

Building safety into your SOPs

This guideline outlines good practice for canyoning activities.

Conduct site-specific hazard identification and risk management process, consider the recommendations in this guideline, and add the relevant procedures to your SOPs.

Before departing from these recommendations, seek advice from a canyoning technical advisor. Variations must be at least as good as the guidelines, and an operator will need to be able to justify why they use a different procedure from the guideline.

It's essential that, alongside site-specific assessments and the use of this guideline, guides and instructors conduct dynamic hazard identification and risk management.

This guideline gives examples which aren't exhaustive – consider other examples that could apply to your specific activity. The responsibility for making safe decisions remains with the operator.

Passing safety audits

The Adventure Activities Regulations require canyoning operators to pass safety audits by an audit provider recognised by WorkSafe New Zealand. Following this guideline will help operators do this.

The [Safety Audit Standard for Adventure Activities](#) outlines the requirements that adventure activity operators must comply with to reduce risks when providing adventure activities, including implementing good practice.

This ASG helps safety auditors assess whether an operator is complying with good practice.

Other publications

For further information, see:

[ASG Core 2026](#), WorkSafe New Zealand

[Bolting Code of Practice 2022](#), New Zealand Canyoning Association

[Bolts: A guide to installing and replacing bolts on climbing routes 2025](#). UIAA

[Canyoning Technical Manual 2023](#), Grant Prattley and Daniel Clearwater

1.5 Protecting the environment

Check with the local canyoning community and the land manager before bolting or rebolting.

Professional operators set the tone for environmental protection.

Note!

It's critical that operators and participants carefully follow the [Leave No Trace NZ](#) principles at all times. Don't accept anything else from guides, instructors, or participants.



Mathers Creek, Haast Pass. Photo: Shanan Fraser

Section 2: Trip Management

This section identifies good practice safety management strategies for dealing with key aspects of the canyoning environment. The information isn't all-inclusive. It's essential to carry out site and activity-specific risk management processes, and for guides and instructors to conduct ongoing dynamic hazard identification and risk management.

However, while focusing on the details of each part of the trip, don't lose sight of the big picture, such as an extraordinary flood event.

2.1 The canyoning environment

New Zealand canyons tend to be wet, cold, slippery, and hard to escape. They may vary considerably seasonally and water flows can change very quickly. Communications are often limited.

For levels of canyon difficulty, see [section 4.3 – Supervising participants](#), but always keep in mind that the grading may not be accurate for a particular day.

2.2 Rising water level

 **Note!** Drowning is the source of one of the most likely causes of death while canyoning, especially when there's an unexpected rise in water level. Focus safety management strategies on preventing this.

Water level can rise for several reasons, including heavy or persistent rain or snow melt in the canyon water catchment area, dam collapse or release, and landslides or avalanches.

Ensure that guides and instructors are well aware of the causes of rising water for the canyons they work in, and that they know how to plan for, monitor, and react to rising water level.

To do this they should know:

- the canyon terrain that will cause hazards during high-water events, eg recirculating hydraulics, eddies that will feed swimmers back into the waterfall or pour over, siphons, strainers, and undercuts
- all catchment areas and any associated dangerous-weather patterns or dam and slide hazards – make conservative decisions regarding weather if catchments aren't well known
- likely water rising rates for particular weather patterns and catchment surface conditions
- the best weather-forecasting service available (most up to date and most accurate) and how to use it for the canyons they work in
- how and when to cancel a trip due to water-level concerns
- methods for monitoring water rising rates, water-level indicators, and procedures for dealing with rising water level, eg safe waiting areas, escape routes, and evacuation procedures
- landslide or avalanche hazards that could affect the catchment, how to monitor them, and associated cancellation parameters.

2.3 Swimming and wading

Canyoning often involves swimming and wading, exposing people to the risk of drowning.

Participant management

Guides and instructors should understand the characteristics of the group and manage the safety of each member.

Participant information

Ensure participants are informed that water may be over their head and they will need to swim. Ask participants if they have limited or no swimming ability. Also see [section 4.1 – Screening participants](#).

Include information on suitable risk avoidance techniques in safety briefings for swimming or wading, eg:

- wading and/or swimming techniques suited to the route to be negotiated
- ways to recognise hazards such as trees or undercut walls
- actively swimming away from hazards
- entrapment avoidance techniques such as white-water float position and defensive and active swimming.

 **Note!** See [section 2.2](#) for recommendations on managing the risk associated with rising water level and the effects of cold temperatures.

Risk management

Establish maximum safe water levels for swimming, wading and other water related activities — operate within these levels.

Assess swims and wades to ensure that guides or instructors can supervise and intervene as needed.

Hazards	Risk management
Participants with limited or no swimming ability	• Check participants' swimming competence before activities that demand strong swimming ability • Ensure that non-swimmers demonstrate correct floating position (on back with arms wide) and sandwich or buddy them with more competent participants • Choose swim or wade activities and routes that match participant abilities • Use additional buoyancy aids as in the recommendations in section 5.1.
Cold temperatures	• Ensure participants are well clothed • Plan the start time and trip duration to suit the temperature • Instruct participants on techniques to actively rewarm themselves

Hazards	Risk management
	• Carry extra clothing, food, and heat sources
Fast-flowing water or aerated water reducing buoyancy	• Use rope techniques – a throw bag or a length of abseil rope • Directly supervise swim or wade exit points where exiting at that point is required for safety
Features that could trap people	• Avoid known areas with a high risk of foot or body entrapment, eg strainers • Manage participant equipment to eliminate or minimise entrapment risks • Instruct defensive and aggressive swimming techniques such as swimming away from hazards • Only allow participants to swim over drops when the landing area is deep and obstacle free



Kaiate Falls, Bay of Plenty. Photo: Shanan Fraser

2.4 Falls from height

Negotiating canyons often involves exposing participants and guides or instructors to edges and the risk of falling from height. If participants are used to belay, ensure that belayers are focused and understand the procedure.

Sometimes exposure to drops can't be avoided. Belay participants or attach them to a safety point when the fall is likely to cause serious injury.

Hazards	Risk management
Falling over an edge, especially when the top is sloping or slippery	• Keep participants back from a drop – establish a safe zone if they're waiting • Wear helmets • Practise jumping in a low-consequence zone • Position a guide or instructor attached to an anchor next to a participant who is about to jump or slide • Instruct participants on how to take off and land safely • Ensure participants don't land on one another • Use a deep-water belay, ensuring that landing zones are safe – consider whether it's deep enough (especially if aerated) and whether rocks or logs are in the water, which may require physically checking the landing first • When there are short drops, consider spotting participants
Participants unclipping in a hazard zone	• Check that participants can use a personal anchor system (PAS) correctly – observe them clipping and unclipping until you know they're competent to do the task • Practise in a low-consequence zone • Use participant buddy checks
Participants unable to reach clip and unclip points	• Ensure that supervision meets each participant's needs
Carabiners opening accidentally	• Check carabiner positions and that they're done up • Use participant buddy checks
Ropes cutting on an edge	• Position ropes carefully • Use rope protectors and ropes resistant to cutting
High forces on people and equipment	• Ensure rigging and belaying minimise a potential fall

2.5 Lowering

Lowering is used in place of abseiling if the participant isn't suited to an abseil because they're scared, tired, or lack the skill. It's also used as a technique in its own right as the safest and fastest way to descend, enabling the instructor or guide to maintain more control over the descent. It's also used to

establish rope length.

When lowering, keep the rope under tension and ensure participants know to keep moving to avoid creating slack and a potential shock load.

To avoid snags, consider where the knot will end up once the participant disconnects.

2.6 Abseiling



Atuatumoe Canyon, Coromandel Photo: Shanan Fraser

Instruct participants on efficient abseil techniques and the potential hazards.

Ensure participants have a safety backup system while abseiling. This will usually involve being belayed by a guide or instructor or, sometimes, by another participant.

Participants using a self-managed system will generally only occur in an instructional setting. This is a critical decision that should only be made if the guide or instructor has observed the participant perform the task correctly and they understand that they'll do buddy checks while still attached with a PAS.

When abseiling into water, recheck participants' swimming ability and confidence.

Hazards	Managing the risk
Exposure of people to edges and falling	- Choose abseil sites carefully, especially the starting points - Attach participants and guides or instructors to an anchor
A difficult abseil starting area affecting the ease of weighting the rope and the participant's ability to practise	Choose abseil sites carefully, especially the starting points
Loose items such as hair or equipment catching in the abseil device	- Plan a progression – start with an easy site to instruct and practise - Check loose items carefully - Use a releasable abseil - Ensure there's rope available to descend to a stuck participant if necessary
Incorrect abseiling technique or equipment use	- Start with an easy site to instruct and practise - Instruct participants to abseil slowly and what to do if they lose control of the rope - Have participants talk through the process - Check their attachment and abseil device setup
Participants inverting	- Look for body shapes where a sit harness may slide off - Use equipment that maintains the participant in an upright position, especially if they're top heavy and have narrow hips
Objects falling from above and landing on the participant or others waiting below	- Clear the top of loose objects - Instruct those waiting below to keep clear
Difficulty for the guide or instructor to communicate with the participant	If possible, choose sites that enable the guide or instructor to see and talk with the participant – also see section 2.11 – Communication
The participant is suspended in a harness for an extended time	Use a releasable abseil or have another option available such as a hauling system
Increased load on equipment and anchors on guided abseils	Ensure that the system can handle the extra load
Abseiling into a hazard, eg a hydraulic	Ensure that the tension and angle in a guided abseil is sufficient to avoid any hazards in the landing zone
Abseiling into a pool	Ensure the rope finishes at or above deep

Hazards	Managing the risk
	water to avoid entanglement • Ensure there's enough rope in a shallow pool so that participants can't fall or drop off the end of the rope and risk leg injuries • Ensure there's no knot on the end of the rope • Ensure the abseil device enables easy rope release • Instruct the participant on how to get clear of the rope
Abseiling into moving water	• Check for strainers in the water below • Consider using a PFD for extra buoyancy, especially if the water is aerated • Position a guide or instructor at the bottom of the pool if there are downstream hazards • Manage the abseil from the bottom, stacking participants, or ensuring they're competent to load themselves • Send the strongest participant down first to assist others
Abseiling in a waterfall	• Remove packs if there's a high water flow • Consider using a guided abseil or abseiling in a sitting/sliding position to reduce the risk of slipping • Discuss rock features and slipperiness that could cause falls or foot entrapment • Instruct participants on how to maintain a breathing space • Discuss the effect of water hitting the participant and instruct them to keep moving
Bottom-brake belayers not performing their task well	• Ensure they're well trained and brief them carefully on their critical role • Instruct them on rescue techniques if necessary

2.7 Falling rocks and vegetation

When assessing this hazard, consider the rock quality and vegetation stability. Also consider how heavy rain, wildlife, hikers, hunters, and members of the public can create fall hazards.

Wear helmets and move quickly through unstable areas.

2.8 Sliding and jumping

Sliding and jumping are the two canyoning activities most likely to cause serious injury. They involve hazards associated with height, take-off, speed, water, and the inability to directly manage the participant throughout the activity. Also see: [section 2.4 – Falls from height](#).



Glentui River, Canterbury Photo: Shanan Fraser

Hazard	Managing the risk
Exposure of people to drops, especially slippery or sloping take-off areas	• Directly control participant's take-off if required, eg the guide or instructor being attached at the top of a jump to enable hands-on guidance
Difficult and exposed access routes	• Protect participants from falling as they access take-off areas, eg include using fixed lines and a PAS or direct guide or instructor assistance
Lack of confidence or ability of the participant	• Participants should be informed before a trip commences if a trip contains high-risk activities with no alternative options • Inform participants that they can do a less risky activity such as a lower jump, abseiling, or being lowered • Consider practice jumps to observe correct technique
Long horizontal distance of landing zones from the take-off position	• Practice take offs in a low-risk area such as flat ground and progress in small jumps to ensure participants are aware of jumping forward and not just down • Have a robust system for assessing clients' ability to do higher or more technical jumps • Directly control participant's take-off if required, eg the guide or instructor being attached at the top of a jump to enable hands-on guidance
Obstacles in jump or slide route	• Consider the use of padding to protect the participant, particularly their spine, eg neoprene, PFDs • Manage hazardous landing areas, eg marking hazards or standing on them and directing jumpers
The landing zone is too shallow or contains obstacles	• Assess landing zones to ensure they have sufficient depth and no dangerous obstacles, especially after a storm or earthquake • Consider alternative jumping styles, eg belly flops (chin up), leaping backwards and landing on your back, or banana/L jumps so that participants don't go too deep • Ensure participants don't land on one another
Hard landings due to non-aerated water in the landing zone	• Assess landing zones to ensure the impact on the participant is acceptable – consider both water aeration and jump height • Instruct participants on take-off and landing positions, including body, head, and limb positions

Hazard	Managing the risk
	(be wary of shoulder dislocations)
Equipment hitting the jumper on landing, particularly packs	- Remove packs and, in high jumps, tighten PFDs so they don't move - Remove packs and ensure that the PAS is attached to the gear loop
Washing downstream	- Rope participants when sliding or jumping into turbulent pools to manage the recirculation and downstream flow hazards - Alternatively, position a guide or instructor to stop participants from being washed downstream in landing zones

2.9 Ziplines

Canyoning often involves ziplines (also called 'guided lowers') to avoid obstacles or provide more adventure. Also see the [Aerial Activities ASG](#).

Hazards	Managing the risk
Incorrect attachment to the zipline	Check the connection of the participant's device to the zipline before they launch
Exposure to edges and falling	Participants are protected from unsafe exposure to edges
Impact of peak forces on people and equipment	- Launching and stopping systems ensure participants don't endure impact likely to cause harm - Use appropriate braking systems and clear communication between instructor or guide to participant to ensure that the belayer is ready.
Lack of ground clearance in take-off areas	Ensure the zipline enable clearance
Participants hitting obstacles in the path of travel or stopping zones	Zipline routes and landing zones are free of obstacles
Participants not stopping in time or stopping too abruptly due to inadequate braking systems	Ropes, wires, anchors, and other system components manage the likely forces of normal zipline use and emergency procedures¹
Participants suspended in a harness for an extended period	- Zipline angles and participant retrieval systems enable efficient participant travel and rescue - Know what to do to stop sliding back along the zipline when they reach the end point.

¹ Strength requirements for load-bearing ropes in ziplines will almost certainly exceed the recommendations made for general use ropes in [section 5](#). Examples of ways to manage the additional forces include using higher-strength ropes, lower-stretch ropes, double ropes, or metal cables for low-angle, horizontal, or highly tensioned ziplines.

Hazards	Managing the risk
	- Consider using releasable systems - Rescues are practised regularly
Participants' hands, hair, or equipment being in positions where they could be caught in pulleys	- Check participants carefully before they move off - Instruct safe hand positions to ensure that their hands will not become entrapped in pulleys or braking systems - Consider using releasable systems - Rescues are practised regularly

Good practice alert for using ziplines

There have been incidents involving participants connected to ziplines with one point of attachment. This has resulted in WorkSafe and the ASG Working Group recommending:

- Use two points of attachment between the participant's harness and the zipline
- Ensure that attachments don't cause an entanglement hazard

2.10 Changes to hazards

Significant environmental events such as floods, tree fall, and rockfall may affect known existing hazards on a trip or create new hazards.

Ensure that systems are in place to check canyons and specific activities within canyons after environmental events such as storms and earthquakes that could have changed or created hazards. Record any changes and notify staff and other canyon users.

2.11 Communication

Communicating within the canyon

Communicating within a canyon is often difficult due to distance, gradient, and water noise.



Note!

When there's more than one guide or instructor, they must work in partnership, especially around drops and jumps.

Ensure that guides or instructors are trained in the use of an agreed set of signals. These will often include hand, whistle, and rope signals.

External communication

The limited access of many canyons can make emergency evacuation difficult and can lead to lengthy waits for external emergency support. Ensure you have a suitable communications device.

Strategies for managing difficult canyon access should be based on the associated risk. Options include:

- increasing the guide-to-participant ratio
- deploying multiple guides or instructors on level 2 canyons

- mapping options for access and escape
- pre-rigging emergency access ropes or ladders
- caching emergency clothing and equipment
- induction training and ongoing practice for guides or instructors on access and escape routes
- training or informing local emergency services about your access systems and their limitations
- considering accessibility when determining guide or instructor to participant ratios, assessing participants, and setting competence requirements for guides or instructors
- ensuring that sufficient equipment is available to ensure group safety during a delay leaving the canyon, such as a bothy bag or tarp and high-energy food.



Hope River, Tasman. Photo: Toine Houtenbos

Section 3: Staff

3.1 Knowledge of the trip

Ensure that guides or instructors are familiar with the hazards of the canyon they're working and with the operator's SOPs. The number of trips and amount of training this requires will vary.

Factors to consider include the grade of the canyon and its specific hazards, the competence of the guide or instructor, and the canyon familiarity of other guides or instructors working the trip.

3.2 Qualifications

The *Safety management system requirements for adventure activity operators* 2023 states that nationally recognised qualifications should be used where relevant. NZOIA administers New Zealand's canyoning qualifications, which are:

Canyon Leader: Can lead and manage trips in canyons up to v2a2II, in conditions described as normal by the organisation's SOPs. The canyon leader must be inducted into the site and it's recommended this is completed by a NZOIA Canyon 1 or 2 holder. In addition, the canyon leader can assist a NZOIA Canyon 1 or 2 holder in canyons up to v3a3III.

Canyon 1: Can organise, instruct, and guide in canyons up to v3a3III.

Canyon 2: Can organise, instruct, and guide all aspects of canyoning including leading trips in canyons above v3a3III, running and supervising canyon training courses, and training canyon guides and instructors.

For more information on these qualifications, including more detailed skill-set breakdowns, experience prerequisites, and minimum recommended first aid certification, see www.nzoia.org.nz

NZOIA accepts the Switzerland Outdoor Association (SOA) as equivalent to the NZOIA Canyon 2 qualification. See the [qualifications](#) matrix on the NZOIA website.

3.3 Internal assessment

If instructors or guides haven't been externally assessed, internal assessment of competency should be done by a qualified person.

Section 4: Participants



Andrews Stream, Canterbury. Photo: Shanan Fraser

4.1 Screening participants

Assess participants to check that they're suited to the canyoning trip and its particular activities. This should happen before the trip begins and be ongoing during the trip.

Assessing participants

Use information gathered while assessing participants to inform trip options, participant supervision levels, and activity choice within the trip.

Staff other than guides or instructors, eg front-of-house staff or drivers, may be involved in assessing participants. Assessment should be consistent across staff and reflect the requirements of each trip. The operator's safety management plan should detail what to assess.

Factors to assess include:

- fitness and physical ability –the ability required for the trip, such as swimming
- psychological factors such as the ability and likelihood to follow instructions, confidence in the canyon

environment, and phobias or fears – particularly of heights and water

- medical issues, particularly pre-existing conditions and histories, eg shoulder – If booking staff are made aware of a serious medical condition or are unsure about client suitability for other reasons, they should discuss it with the Operations Manager or Senior Guide before committing to the booking
- dislocations, neck or spinal injuries, epilepsy, diabetes, heart problems, allergies, anaphylaxis, and blood thinners –before committing to the booking the guide or instructor should discuss it with another person, ideally the Operations Manager or a senior guide

Note!

Participants sometimes downplay their condition because they think they may not be allowed to participate. They may not realise the consequences of their condition worsening during the trip and the risk to themselves and others. The operator needs to decide whether they participate or to participate with special precautions.

Participant screening

Establish minimum-age guidance for each canyoning trip.

Factors to consider include:

- the grade of the canyon
- activities within the canyon and their specific hazards
- whether the participant fits the safety equipment
- the ease of canyon access and escape
- the ability to access external emergency support
- supervision levels
- experience and skill of guides and instructors.

There are no overarching age recommendations for canyoning in New Zealand but it's common practice for operators to require children aged under 18 to have parent or guardian consent to participate.

Identifying and managing unsafe participants

Don't permit a person to participate in a canyoning trip if they're in a state of impairment that they may be a hazard to themselves or to any person on the trip. Impairment could be due to alcohol, drugs (including prescription medicine), or fatigue.

Identify as a hazard any participant who is unable to perform safety procedures as outlined in the safety instructions. Management strategies should suit the significance of the risk and include directing the participant towards less risky activities, increasing supervision levels, or removing them from the trip.

Removing an unsafe participant from a trip can be very difficult if the participant disagrees, but doing so may result in avoiding an incident.

4.2 Informing participants about safety

Managing safety is more effective if participants are well informed, particularly on the risks and requirements of the trip.

Pre-trip risk disclosure

Before setting off on a trip, inform every participant of the following information:

- canyoning is an adventure activity involving risk of serious injury or death. Participants should be aware that the canyoning operator cannot guarantee the participant's safety
- the trip is mentally and physically demanding and requires the participant to be comfortable and confident with moving over uneven and possibly slippery terrain, being in the water, and dealing with heights
- the participant needs to follow the guide or instructor's instructions at all times and understand that this is critical to their safety and that of the group.

Mention specific hazards and emphasise whether or not they can be avoided or place extra responsibility on the participant. These include sole-guided trips and activities such as swimming or wading in moving water, jumping from height, abseils, and slides.

Inform participants of any difficulties regarding escaping from the canyon and communicating with external emergency support.

General safety information

Instruct participants in canyoning awareness and general techniques. This will occur before and during the trip.

Factors to cover include:

- awareness of and warnings about the hazards of the canyon
- the importance of listening to the guide or instructor
- procedures for routine movement through the canyon, such as how to move on slippery and unstable rocks, staying back from edges, and taking care around the exits of pools
- communication systems such as the 'OK' signal
- methods for maintaining body temperature
- emergency procedures such as staying where they're and waiting for instructions from the guide or instructor.

For parts of the canyon involving a significant hazard, or requiring technical manoeuvring to negotiate, inform participants of:

- the hazard and warn of its dangers
- options for avoiding the hazard such as alternative routes or techniques
- the location of safe zones, such as waiting areas back from edges
- the techniques required to negotiate the hazard or participate in the activity, such as procedures for use of technical equipment and performing technical actions
- applicable emergency procedures or self-rescue techniques.

For guidance on points to cover for specific activities see [section 2](#).

Using demonstrations and activity progressions

Use demonstrations and activity progressions where practicable, particularly for more difficult activities. This helps ensure participants are prepared and fully understand what they're required to do.

4.3 Supervising participants

Supervision levels

The recommended maximum ratios are for normal flows, although some canyons may require tighter ratios. Tighter ratios may also be required for high water flows, bad weather, and less capable participants.

Skill level NZOIA or equivalent	Up to grade V2 A2 II	Up to grade V3 A3 III	Above grade A3 V3 III
NZOIA Canyon Leader	1:6	NA	NA
NZOIA Canyon 1	1:8	1:6	NA
NZOIA Canyon 2	1:8	1:8	1:6

For more information on the French grading system, see www.kiwicanyons.org.

When two guides are deployed, maximum participant numbers wouldn't necessarily double the numbers above unless they can move in two separate groups.

4.4 Parameters for sole guiding or instructing

Sole guided or instructed trips involve an increased risk of participants being inadequately supervised or spending extended periods of time in the canyon in an emergency scenario.

Assessing and informing participants

When establishing parameters for assessing participants for a sole guided or instructed trip, factors to consider include:

- increasing minimum age requirements
- increasing technical ability or training requirements
- increasing psychological suitability requirements — such as high confidence in the canyon environment and likelihood to follow instructions.

Inform participants of the risk that they may spend extended periods of time in the canyon in an emergency scenario. Inform participants how they can assist with managing this risk. This should include:

- emphasising the heightened responsibility that sole guiding places on them
- emphasising the importance of following instructions
- training them in signals required to assist with communication within the canyon
- training them how to maintain body temperature and how to use and access heat sources
- training them in what to do if the guide or instructor becomes unable to assist them, such as instructing them to stay where they're, how to call for outside help, how to escape the canyon, and supplying a map showing escape routes.

Requirements for sole guides or instructors

Ensure that guides or instructors working sole guided trips are experienced and verified as competent to

manage the trip alone.

Factors to consider include:

- their level of experience and ability in the skills required for leading the trip, including managing emergency scenarios
- their degree of familiarity with the environmental particulars of that canyon trip
- their degree of familiarity with the operator's standard operating and emergency procedures
- the ease of external communication from the canyon and the commitment level of the trip.

Rigging canyons for sole guided or instructed trips

Ensure that canyon rigging enables participants to be supervised or contained in a safe place. Examples include using:

- stacked abseils
- clearly identified safe areas
- additional safety attachments such as a PAS and safety lines.



Andrew's Stream, Canterbury. Photo: Shanan Fraser

Section 5: Equipment

Equipment choices should be based on:

- the canyoning activities on the trip
- identified hazards and associated management strategies
- emergency scenarios and response plans
- factors on the day, eg guide or instructor skills, participant ability, and environmental conditions.

5.1 General use equipment

Use equipment according to manufacturers' recommendations and current industry use. Use equipment that complies with recognised standards such as from the International Mountaineering and Climbing Federation (UIAA), the European Committee for Standardization (EN), and the New Zealand and Australian standard (AS/NZS). Equipment should be manufactured specifically for rock climbing, abseiling, canyoning or whitewater.

Participant equipment

Correctly fit equipment as per the manufacturers' instructions. Check equipment for fit as suitable throughout the trip, eg before using a harness.

Participants should have:

- thermal clothing or wetsuits that are sufficient to protect participants from risks such as hypothermia, impact, and abrasion
- a helmet designed for the most relevant significant hazard presented by the canyon.

Equipment for trips requiring buoyancy

Factors to consider for the use of a PFD, impact vest, or added neoprene include:

- the participant's swimming ability
- shallow-water landings or when there will be an impact on the torso, eg during a slide
- the likelihood of being trapped by hazards such as the river bottom and strainers
- aeration and strong flow
- extreme cold, eg in snow or glacial fed streams
- the likelihood of a participant being in moving water for a long time
- the ability to hold onto a person, eg when 'catching' a participant above a hazard.

 **Note!** PFDs and impact vests should be fitted correctly to avoid riding up, obstructing movement, and causing injuries when jumping from height.

Equipment for the vertical environment

Technical equipment for the vertical environment will depend on the activities of the trip. It needs to enable risk management and emergency response strategies to be carried out, and will usually include a harness, descent device, carabiner/s, and a PAS.

Guide and instructor equipment

Guides or instructors' equipment recommendations are the same as those for participants, with the addition of:

- a whistle suited to a wet environment
- a knife.

These items must be easily accessible, such as being carried on the guide's harness.

Life-bearing ropes

Choose ropes based on the expected use of the rope. Life-bearing canyoning ropes (excluding ziplines) are usually:

- in the 18–22kN range for rope breaking strength
- static, low stretch, or semi-static
- kernmantle or braid-on-braid design
- compliant with one of the following standards: EN 1891, AS4142.3, AS4142.2, CI1801.

Anchors and rigging

Ensure anchor construction, rigging, and bolting is carried out by a person competent to do so and follows these recommendations:

- consider rigging multi-point anchors to enable result in load sharing – one-point anchors should only be used if deemed to be failsafe, eg a solid tree
- bolt anchors should have at least two bolts, unless the hazard isn't significant, eg some handlines
- bolt diameters and types should be suited to the rock in which they're placed and be able to support normal operational and emergency use, eg using bolts and hangers rated to 20KN for life-bearing loads
- anchors should be placed away from expected floods and debris – if this isn't possible, the anchor should be identified as a hazard and monitored within the operator's risk management system
- metal should be preferred over webbing or rope in permanent anchors, or those which are left in place for extended periods of time – if it isn't practicable to use metal, the use of webbing or rope should be identified as a hazard in the operator's risk management system
- rigging and rope systems should be protected from sharp edges or particularly abrasive surfaces.

Also see [section 5.3 – Bolt anchor inspection](#).

5.2 Equipment maintenance

Maintain, inspect, and test equipment regularly and thoroughly enough to ensure its reliability.

Pay particular attention to safety equipment that is permanently installed, or that is left set up for extended periods of time, eg anchors, bolts, ropes, webbing, and cables.

Where a site has multiple users, it's recommended to share information and responsibilities on shared equipment maintenance, inspection, and testing. Keep records of equipment information as per the recommendations at www.supportadventure.co.nz.

Additional information on equipment inspection can be found at www.aspiring.co.nz/equipment-inspection. Although it's designed for situations outside the scope of this guideline, useful information on equipment, maintenance, testing, and inspection can be found in the *Industrial Rope Access in New Zealand; Best Practice Guidelines*.

Maintenance and inspection schedules

Inspect equipment before it's used. Focus on identifying any major issues that could affect the performance of the equipment, and any other issues that require testing or maintenance.

Ensure ongoing maintenance, inspection, and testing techniques and schedules are consistent with manufacturers' recommendations and reflect factors such as:

- normal operational wear and tear
- operational incidents such as exposure of ropes to sharp edges or emergency loads
- anticipated emergency loadings
- environmental factors such as the nature of the rock supporting a bolt or anchor
- time elapsed since the last check
- exposure to environmental factors that could have damaged the equipment, eg rockfall, freeze-thaw action, avalanche, or flooding.
- Concealed components such as those in protective sleeves, eg anchors around trees that are wrapped in protective material.



Atuatumoe Canyon, Coromandel. Photo: Canyonz

5.3 Bolt anchor inspection

There should be scheduled expert inspections and pre-activity checks that bolt anchors are safe to use.

Scheduled inspections

On a planned schedule, senior instructors and guides should inspect and record:

- the stability/solidity of the surrounding rock, considering hardness, friability, cracks, and bulges
- the appropriateness of bolt type (expansion or glue-in) and size for rock quality and angle of the rock face
- the bolt position in relation to other bolts, holes, and cracks – the cone of stress has a radius that is about 1.5 times the length of the bolt, so:
 - for a 75mm expansion bolt, 12cm from any crack or edge and 25cm between anchor bolts
 - for a 100mm glue-in bolt, 15cm from any crack or edge and 30cm between anchor bolts

Note!

The softer the rock and the longer the bolt, the more space is needed between bolts and to cracks and edges.

- the bolt position in terms of whether a carabiner or quickdraw will be loaded over an edge
- signs of bolt and hanger damage, including signs of rust and/or corrosion
- that the nut is tight.

For expansion bolts::

- check that the hanger is sitting flush and the bolt is perpendicular to the rock surface
- check the bolt stability by adding some torque with a spanner, being careful not to over torque.

Pre-activity checks

Before use, instructors and guides should check:

- the stability/solidity of the surrounding rock (considering friability and cracks)
- for signs of bolt and hanger damage, including signs of rust and/or corrosion.
- that the nut is tight.

5.4 Emergency equipment

Accessibility

Ensure that trip emergency equipment is suitably available and accessible. The nature of the canyon trip and environment will determine whether equipment is attached to the guide or instructor's harness, carried in a backpack, and/or cached in the canyon.

Note!

Packs used to carry gear should have flotation when water is a significant factor.

General emergency equipment

Ensure that emergency equipment is sufficient and suitable for managing group safety and chosen based

on identified emergency scenarios.

Essential items are a first aid kit, a communications device, emergency shelter, and high energy food.

The following items should be considered:

- heat sources such as space blankets and heat packs
- throw bags
- a diving mask
- an adjustable spanner
- ground insulation
- additional thermal clothing.
- a backboard or stretcher – consider including rated attachment points for hauling and helicopter strop use and stationing it strategically within the canyon.

First aid supplies

Ensure that first aid supplies are suitable for the identified first aid scenarios of the trip. Suggestions for first aid kit contents can be found at www.supportadventure.co.nz.

Vertical environments

Ensure that there's equipment available to manage emergencies on the most technical or longest vertical pitch, eg:

- for canyons with committing abseils without escape — static rope/s twice the length of the longest non-avoidable abseil, and potentially some extra length as backup
- hardware such as carabiners, descent devices, ascent devices, and a hauling or progress-capture device.

When choosing equipment, consider rope diameter and hardware compatibility, and whether they're likely to be wet or dry, particularly when considering mechanical rope grabs versus prusik cord.

Definitions

This guideline only defines terms that directly relate to canyoning. General terms are defined in the *Core ASG*.

Botton-brake belay

A safety technique used in abseiling where a person at the bottom of the pitch holds and controls the rope. Also called a bottom-rope belay, a fireman's belay, or bell ringing.

Deep-water belaying

A safety system where a deep-water landing is used to protect people falling from height.

Edge

The place over which a person could fall if they're not attached to a safety system.

Fixed anchors

Anchors that are not placed protection anchors nor part of a building or structure, eg bolts or natural features such as strong trees or boulders.

Guided abseil

A technique where a second, tensioned rope (guideline) is used to direct a participant away from hazards, such as waterfalls or hydraulics, or to land on a safe ledge. It acts like a zipline, allowing the participant to control their speed while being guided along a set path.

Hydraulic

A feature formed when water flows over an obstruction (like a rock, ledge, or weir) and creates a recirculating, upstream-flowing current at the surface that can trap people and objects.

Personal Anchor System (PAS)

A piece of equipment that secures you directly to the anchor or rope – a cow's tail, PAS, adjustable tether, or anchor chain.

PFD

Personal Flotation Device