ASG

Activity Safety Guideline

Abseiling

September 2019 Version 3

SupportAdventure.co.nz

SAFETY SYSTEMS DRIVEN BY SAFETY CULTURE

Preface

This activity safety guideline (ASG) for abseiling was developed and published by Tourism Industry Aotearoa (TIA) with support from WorkSafe New Zealand. TIA involved experts from the abseiling sector and other relevant technical experts. More information about the development process can be found here.

Activity safety guidelines are a recommendation from the report of the 2009/10 government review of risk management and safety in the adventure and outdoor commercial sector in New Zealand. The variety of activities provided by these sectors is referred to broadly as adventure activities, and include activities provided by adventure tourism operators and outdoor education centres. More information about the government review can be found here.

The guideline is a web-based document and will be reviewed and updated as required. The current version is available at www.supportadventure.co.nz. Also, at this website is information that is generic to all activities, and should be read in conjunction with this Activity Safety Guideline (ASG). Users should periodically check the date and version number of the current online document to ensure that their printed copies are up to date.

TIA, WorkSafe, and the abseiling community have made every effort to ensure that the information contained in this guideline is reliable. We make no guarantee of its accuracy or completeness and do not accept any liability for any errors. We may change, add to, delete from, or otherwise amend the contents of this publication at any time without notice.

Document control

Version 3

Significant changes from Version 2	**Where**
Deleted generic information	Information generic to all ASGs is now at: www. supportadventure.co.nz – see the **Risk Management** and **Good Practice** sections, and the **Mountain Biking ASG – Core Principles**
Updated health and safety terminology	Throughout the document
Added *PAS* and *technical advisor* definitions and revised some definitions, eg *risk*	Definitions
Broadened the lanyards concept to personal anchor systems (PAS)	Section 4.3
Expanded the guidelines on self-belayed abseils	Section 4.8

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

Published

ISBN 978-0-9941265-2-8 (Online)

Version 3, September 2019

Version 2, April 2016; Version 1.2, July 2015; Version 1.1, December 2013

Cover photo: Outdoor Recreation Management

Acknowledgements

Other publications

This guidance contains adventure tourism and outdoor commercial sector information published on the SupportAdventure website, and public sector information published by WorkSafe New Zealand.

It refers to the Australian Standard 2316.1-2009 artificial climbing structures and challenge courses – fixed and mobile artificial climbing and abseiling walls.

Consultation

The guideline was developed in consultation with the commercial guiding and instructing abseiling sector and other relevant experts.

The following experts comprised the Abseiling ASG working group and are acknowledged for their advice and support: Chris Burtenshaw, Brenton Harrison, Ian Nicholson, Don Paterson, Bruce Postill, and Grant Prattley.

The following groups are also acknowledged for their input and support: Abseiling ASG Support Group, New Zealand Mountain Safety Council; New Zealand Outdoor Instructors Association; Outdoors New Zealand; outdoor safety auditors; ServiceIQ Industry Training Organisation; Tourism Industry Aotearoa; Water Safety New Zealand.

The 2019 review invited 75 stakeholders to provide input, many being operators registered with WorkSafe to provide adventure activities.

Contents

Definitions

This guideline assumes the reader has technical knowledge of abseiling. It defines only those terms that may be unique to this guideline, are used in a specific way, or that would otherwise be open to interpretation.

For the purposes of this document the following definitions apply.

Competent person (at a specific task)

A person who can correctly perform the task. They have usually acquired the knowledge and skills to do this through a combination of training, qualification, and experience.

Participant (or client)

A person who takes an active role in an adventure activity but is not in a leadership or supervisory role.

Direct supervision

Is when the person supervising is in a position to be able to physically intervene and manage anticipated hazards.

Edge

The place over which a person could fall if they are 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.

Good practice

The range of actions currently accepted within the adventure and outdoor sector to manage the risk of harm to staff, participants, and visitors.

Incident

An event that caused or could have caused harm to any person, that is, both accidents and near misses.

Indirect supervision

Is when the person supervising is able to communicate with the person being supervised, but may not be able to physically intervene to manage hazards should they develop. There are two types of indirect supervision:

- **Proactive** is where the supervising staff member is actively monitoring the participant and is in a position to provide verbal assistance to intervene and manage hazards should they develop.
- **Reactive** is where the supervising staff member is in a position to communicate verbally and provide assistance to a participant when sought, but may not be actively monitoring the participant or providing pre-emptive assistance.

Operator

Person or other legal entity (whether an employer, principal, or self-employed person) who provides an adventure activity to a participant.

Personal Anchor System (PAS)

A piece of equipment that secures you directly to the anchor or rope. It includes cow's tails, lanyards, adjustable tethers, and anchor chains (but not traditional daisy chains).

Placed protection anchors

Temporary anchors such as camming devices, wires, and nuts that are constructed at a site and removed on departure.

Qualified

A person who holds a current, nationally recognised qualification.

Risk

A chance of harm – a potential failure to ensure the health and safety of participants, staff, and others involved in an activity.

Risk assessment

A process undertaken by a competent person to identify hazards and their associated risks, and to assess the risks according to their significance – potential severity of impact and probability of occurrence.

Safety management plan (SMP)

The written plan outlining the systems an operator will use to manage safety.

Safety management system (SMS)

The overarching management system for controlling safety, that is, the SMP, SOPs, and all other documents that are part of an operator's safety planning, eg staff records and equipment checklists.

Sector

New Zealand adventure tourism and outdoor education providers, support organisations, and associations. A specific part of the sector may be referenced, eg the abseiling sector.

Staff

Employees, contractors or volunteers who work for an operator and are responsible for the safety of participants undertaking abseiling activities.

Standard operating procedures (SOPs)

Written guidance that provides safety information about a particular activity or task, such as how it should be conducted.

Technical advisor

A person with a high level of competence who usually holds a high-level qualification in the activity. They understand current good practice and have extensive knowledge, skills, and experience sufficient to advise an operator, including reviewing the activity policies, procedures and practices. They can be internal (a staff member) or external.

Technical expert

A person who has professional credentials such as a high level, nationally recognised qualification or, if a qualification is not available, extensive knowledge, skills, and experience. They advise auditors on whether safety plans are consistent with good practice and whether operators are working to them.

Section 1: Introduction

1.1 The scope of this guideline

Abseiling referred to in this guideline includes:

> Activities where abseiling is the primary purpose of the activity and is provided in a guided or instructed[1] environment. The abseiling could be on either natural or artificial surfaces and uses ropes and friction devices to manage the descent.

This guideline covers activities that meet this definition, whether or not they are advertised specifically as abseiling. Abseiling is also known as rappelling.

The guideline describes what operators and technical experts consider to be good practice for actively managing safety in providing commercial abseiling activities.

Abseiling is a component of many activities, eg rock climbing, mountaineering, caving, and canyoning. The broader context of the activity may well influence the abseiling safety management recommendations. The ASGs of other activities will be informed by this ASG and will recommend any necessary abseiling safety management variations. Where an activity involving abseiling does not have an ASG, consider the information in this ASG and source other activity-specific information on good practice.

> This guideline is written for commercial abseiling operators (the primary audience) and also for safety auditors and technical experts (the secondary audience) as a benchmark for current good practice.

It will also be useful for:

- Other people involved in abseiling, such as trainers and people involved with providing non-commercial abseiling activities.
- Activities other than abseiling that involve similar hazards, risks, and techniques.

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

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

> *Safety management systems are made of a safety management plan underpinned and driven by a positive safety culture.* www.SupportAdventure.co.nz
>
> For information on building a safety management system, see: www.supportadventure.co.nz

[1] Industrial rope access is outside the scope of this ASG. Safety recommendations can be found in the Industrial Rope Access in New Zealand: Best Practice Guidelines.

1.2 The abseiling sector

Abseiling as a specific activity occurs predominately within the instructional sector through outdoor education providers. It is usually offered either as a challenge within educational and personal growth courses or as a part of an instructional skills course for aspirant outdoor instructors or guides.

Some adventure tourism operators offer abseiling as a unique activity but this is not common. It is, however, a component of other adventure tourism activities such as canyoning and caving.

Commercial instructed and guided abseiling in New Zealand is long established, with information on safety management practices being shared across the different areas of provision. Some guides and instructors involved in abseiling activities also work within the international adventure activity community.

Recent times have seen information flow between the instructional and guided abseiling sector and the industrial access abseiling sector, although generally the two sectors are not well connected.

1.3 Legislation

Commercial abseiling operations are subject to the Health and Safety at Work Act 2015. Unless they provide the activity indoors, they are also subject to the Health and Safety at Work (Adventure Activities) Regulations 2016 (the Adventure Activities Regulations).

The health and safety legislation uses both *operators* and *providers* to refer to people or organisations who provide activities such as abseiling. This guideline uses *operators* throughout.

The Adventure Activities Regulations

Abseiling 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.

1.4 Purpose of this ASG & the SupportAdventure website

This ASG provides practical recommendations for commercial operators to actively manage the safety of the abseiling activities they provide. It should be used in conjunction with the information on the SupportAdventure website.

This website provides practical guidance on topics that apply across all adventure activities, including verifying staff competence, emergency preparedness, incident reporting, communication systems, and trip monitoring. It also provides advice on developing good practice safety management systems, including information and examples for developing a safety management plan

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

An investigation into an accident may look at how well an operator followed this guideline. However, risks may be managed in ways other than those recommended in this guideline and achieve the same level of safety or better.

1.5 Using this guideline

Building safety into your SOPs

As an operator, you need to have an overall safety management plan that you use to manage health and safety in everything you do. Ensure your plan contains standard operating procedures (SOPs) – or activity plans – for each activity you provide.

This guideline outlines good practice recommendations specific to abseiling. Conduct a 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 the recommendations given here, seek advice from an abseiling 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 is 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 are not exhaustive – think of 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 an abseiling operator to pass safety audits by an audit provider recognised by WorkSafe. Following this guideline will help operators to do this.

The Safety Audit Standard for Adventure Activities outlines the standards or requirements that adventure activity operators must comply with to reduce risks when providing adventure activities.

This ASG sets out recommended technical standards for commercial abseiling activities. It will help safety auditors assess whether an operator is complying with good practice.

Section 2: The Abseiling Environment

Abseiling serious injuries are usually caused by falling from height or being hit by falling objects. Focus risk management strategies on preventing these from occurring.

Abseiling takes place in many different environments and the significance of particular hazards will vary hugely from site to site. The information in this section should not be considered all-inclusive. It is essential to carry out site and activity-specific risk management processes, and for guides and instructors to conduct ongoing dynamic hazard identification, assessment, and management.

Although not covered in this section, consideration should be given to hazards associated with farm animals and wildlife such as wasps.

> The most likely abseiling serious injury involving multiple people is the collapse of a purpose-built abseiling structure (see section 3.1).

2.1 Falling from height

All abseiling activities involve exposing people to edges and the risk of falling from height. This section looks at managing this risk regarding access and egress at the abseil site, and with participants waiting to participate or who have finished the abseil. For information on the risk of falling from height associated with operational aspects, see section 4.

Consider the entire abseil site, including access and egress routes, and manage the risk of falling whenever a person could be injured if they fell. Note that the often-quoted concept that no controls are needed where a person faces a three-metre fall or less is incorrect.

Ensure that people stay far enough away from edges to minimise the risk of overbalancing or being bumped by another person and falling. This will often include establishing safe zones and communicating these clearly to participants.

Ensure supervision systems are suited to the risk and consider using assistant supervisors and buddy systems.

Exposure to edges when accessing purpose-built abseiling structures is often eliminated by using stairways or other access options compliant with the building code.

Where exposure to edges cannot be avoided, belay participants and staff[2] or attach them to a safety point when, in the opinion of a competent person:

- they are likely to fall and the fall is likely to cause serious injury, or
- a staff member needs to be attached in order to protect the participant safely.

Assess the likelihood to fall by looking at factors such as:

- how close people are to the edge
- how much the surface slopes down
- how unstable or slippery the surface is

[2] It is a common error to overlook staff when focusing on participants. You must ensure that staff are protected from falling from height, both during the setup and during the activity itself.

- the ability of the participant and the staff member
- the ability of the participant to follow instructions.

2.2 Falling objects

Falling objects can be a significant hazard and have the potential to injure large numbers of people without warning. This section considers both natural, eg rocks and vegetation, and human-related objects, eg abseiling equipment, cell phones, and bags.

Note: In extreme cases, the cliff face itself could collapse.

Natural objects

Assess, monitor and manage the abseil site for the likelihood of falling natural items. Ensure that risk assessment considers the type and quality of the rock and vegetation at the top of the site and on the abseiling route surface. Establish subsequent monitoring schedules and techniques based on the associated risk.

Strategies for managing risks include:

- using a different route down the cliff face or a completely different abseiling site
- cordoning off areas at the top of the site involving loose natural objects
- stabilising loose objects – this may be simple or quite complex such as using experts to stabilise or remove loose rock
- wearing helmets
- ensuring participants know to move quickly out of fall zones once they finish the abseil
- ensuring staff and participants have agreed protocols for falling objects such as yelling ‘rock’ and not looking up
- ensuring the fall zone is clear of bystanders.

Human-related objects

Strategies for managing risks involved with human-related objects falling from above include:

- placing loose abseiling equipment back from the edge or attaching it so that it cannot fall
- ensuring participants and staff near the edge do not have unnecessary loose items on their person that could fall and injure others – consider securing items such as cameras to the participant with a lanyard
- wearing helmets
- ensuring participants know to move quickly out of fall zones, particularly once they finish the abseil
- ensuring staff and participants have agreed protocols for falling objects such as yelling ‘rock’ and not looking up
- ensuring the fall zone is clear of bystanders.

2.3 Cliff face collapse

The collapse of the cliff face being used for abseiling has the potential to injure large numbers of people.

Assess and monitor the abseil site for the likelihood of cliff face collapse, considering the quality of the rock and vegetation. Consider obtaining advice from experts in cliff stability, and establish monitoring schedules and techniques based on the risk.

Ensure the risk of cliff face collapse is eliminated. Options for achieving this include:

- choose stable cliffs for abseil sites
- cordon off areas where the risk exists
- stabilise the cliff face – obtain advice from experts.

2.4 Extreme temperature

Abseiling often involves the risk of being without shelter or shade for extended periods. If the temperature is particularly cold or hot it can result in participants struggling to safely participate and becoming hypothermic or hyperthermic.

Strategies for managing this include:

- training guides and instructors to recognise and manage extreme temperature hazards
- managing the start times and duration of the activity to suit the temperature
- ensuring that participants are clothed for the expected temperatures
- minimising the time participants are exposed to cold or heat while waiting to abseil, eg using a shelter, running more than one abseil station, or providing other activities for those waiting to abseil
- carrying and using extra thermal clothing, food, and heat sources.

2.5 Other natural events

People at abseil sites can be exposed to the effects of weather events such as high winds and lightning. Other weather-related hazards such as fog can impact on visibility and affect management of the participant abseiling and other participants at the abseil site, including options for access and egress.

Natural events such as earthquakes can dangerously disrupt safety procedures, such as belaying, and damage safety critical parts of anchors and abseil structures.

Ensure guides and instructors are well aware of the risk of hazardous weather and other natural events for the abseil sites they work and that they know how to monitor, plan for, and react to events should they occur.

Strategies for managing hazards associated with weather and other natural events should be based on the associated risk. Options include ensuring that guides and instructors know:

- local hazardous weather patterns and indicators such as relevant forecasts and visual signs
- how and when to cancel the activity due to weather or natural event concerns
- which structural aspects of the facility are most likely to be unsafe during or after a natural event
- procedures for dealing with a natural event on site, such as how to manage the safety of the people at height, safe waiting areas, and evacuation routes
- procedures for managing weather and natural-event injuries such as lightning strikes.

2.6 High and rising water levels

Abseiling in waterfalls or into water can expose people to high or rising water-level hazards. Water levels can rise for several reasons, including heavy or persistent rain or snow melt in the water catchment area, dam releases, or landslides or avalanches into the water source.

Ensure that guides and instructors are well aware of the risks of high and rising water levels, and how to monitor, plan for, and react to them.

Strategies for managing risks associated with high and rising water levels should be based on ensuring that guides and instructors know:

- local catchment areas and associated dangerous weather patterns, eg the likelihood of thunderstorms
- any upstream dams and release schedules
- likely water rising rates for particular weather patterns and catchment surface conditions
- the best weather forecasting service available and how to use it
- how and when to cancel an abseiling activity due to water-level concerns
- methods for monitoring water rising rates, water-level indicators, and maximum safe-water levels
- procedures for dealing with rising water levels at the abseiling site, such as safe waiting areas, escape routes, and evacuation procedures
- landslide or avalanche hazards that could affect the catchment, how to monitor them, and any activity cancellation parameters.

2.7 Being swept into the sea

Abseiling at sites by the sea may include the risk of people being swept into the sea. They may be accessing the abseil site or returning to the top, or waiting before or after the abseil.

Assess the site for the likelihood of people being swept into the sea. Consider the effect of tides, rogue waves, winds and ocean swell height, force, and direction.

Strategies for managing risks associated with being swept into the sea include:

- ensuring guides and instructors know and use the best available methods for predicting ocean conditions such as forecasting services and local indicators
- establishing parameters for site use such as time margins either side of high or low tide, maximum ocean swell height, direction, and wind combinations
- using local no-go indicators such as whether a particular rock is clear of waves
- ensuring pre-activity procedures include checking that ocean conditions are suitable
- ensuring there are procedures for cancelling the abseiling activity due to concerns about ocean conditions
- establishing procedures for managing unexpected changes in ocean conditions such as safe waiting areas, escape routes, and evacuation procedures.

2.8 Public use of an abseil site

Design or rig the abseil site to minimise the risk of the public using it without adequate supervision. For purpose-built sites, ensure there are a minimum of two deterrents to unsupervised use.

If practicable, remove equipment such as access ways, ropes, hangers, or anchors. If this is not practicable, ensure there is signage to warn people of the hazard and that tells them not to use the site. Consider additional safety management strategies based on the associated risk such as removing abseiling equipment or locking access and abseil systems in a way that prevents their use.

2.9 Changes to the hazards

Significant environmental events such as heavy rain and earthquakes may affect known existing hazards at an abseiling site or create new hazards. Check sites after environmental events that could have changed or created hazards. Record any changes and notify relevant staff and other known abseil-site users.

Standard use of the facility may also change hazards. For maintenance and inspection recommendations, see section 3.2 and section 7.3.

Section 3: Designing & Maintaining Structures

Abseiling may take place on a purpose-built structure or in the natural environment. The latter may use fixed anchors, eg bolts or posts, or temporary anchors using rock climbing equipment.

This section deals with purpose-built abseiling structures. For recommendations for natural environment anchors, see section 7.

An abseiling structure has potential to cause serious injury through structure collapse or component failure involving multiple people. Focus design and maintenance strategies on preventing these from occurring.

This section looks at two key aspects of structure design and build. It identifies significant hazards and good practice for managing the risks. The two key aspects are:

- Ensuring the abseiling structure has structural integrity and is suited to abseiling activities.
- Abseiling structure maintenance, testing, and inspection.

> This guideline looks at structures designed to hold static abseiling loads. For information on structures designed to hold climbing loads, see the Indoor Climbing ASG.

This section refers to Australian Standard 2316.1-2009 (AS 2316.1-2009), *Artificial climbing structures and challenge courses. Fixed and mobile artificial climbing and abseiling walls*. This can be found at www.saiglobal.com.

Additional recommendations have been made to reflect the good practice recommendations of the New Zealand abseiling sector, and the requirement of New Zealand's health and safety legislation to take reasonably practicable steps to manage risks.

Other standards that are useful for design and build of abseiling structures include the:

- Association for Challenge Course Technology (ACCT) Standard for Challenge Courses and Canopy/Zipline Tours.
- Industrial Rope Access in New Zealand: Best Practice Guidelines.
- European Standard 15567-1 (EN 15567-1).

The information in this section should not be considered all-inclusive. It is essential to carry out site and activity specific hazard management processes, and for staff to conduct on-going dynamic hazard identification, assessment, and management.

3.1 Ensuring structural integrity and suitability

Ensure the abseiling structure is designed and built to be compliant with the New Zealand Building Code and that this compliance includes a building consent.

Ensure the compliance check takes into account expected loadings and pull forces as per the relevant recommendations in AS 2316.1-2009 sections 2.1 and 2.2.

Note: Where AS 2316.1-2009 refers to Australian standards for building materials, use of corresponding New Zealand standards is appropriate.

Ensure the abseiling attachment, practice, and launching areas are suited to abseiling as per the recommendations in section 4, and that any objects over which rope or synthetic tape runs or is threaded have a minimum curve radius of 4.5mm, as per AS 2316.1-2009 section 2.5.

Padding of fall zones as per AS 2316.1-2009 section 2.9 is more suited to artificial climbing structure activities such as bouldering or indirectly supervised climbing using participant belayers. Abseiling activities should focus safety management strategies on preventing falls by following the recommendations in section 4 of this guideline.

Guidance on assessing pre-existing abseiling structures for structural integrity and abseiling suitability can be found in Appendix 1.

3.2 Maintenance, testing, and inspection

For information on anchors and general use and emergency equipment, see section 7, and for information on ensuring the safety of staff working at height, see section 5.4.

Maintain, inspect, and test the abseiling structure and its equipment regularly to ensure reliability.

Ensure that maintenance, inspection, and testing techniques and schedules are consistent with manufacturers' recommendations and the relevant points in AS2316.1-2009 section 3.1, while noting that:

- safety equipment should be identifiable so that it can be tracked for purposes of inspection, maintenance, and retirement
- establish details of checks taking into account manufacturer's recommendations and advice of a competent person
- the competent person carrying out inspections may be involved in the daily operation of the facility – take care to mitigate for familiarity of the site affecting hazard identification

- some of the checks referenced under AS 2316.1-2009 section 3.1.1 (d) as annual inspections may be at intervals of up to two years if specified by a manufacturer or engineer.

Regular inspections recommended in AS2316.1-2009 include:

- pre-activity inspections – these checks are conducted from easily accessible locations and include visual checks of the structure for obvious faults and physical checks of safety equipment serviceability, and should occur every day the structure is in use
- operational inspections – these checks should occur every one to three months depending on structure usage and manufacturers' recommendations, and are more detailed inspections to check operation and stability of all equipment and wear on any components, particularly anchor and belay points
- annual inspections – these checks are to establish the overall level of safety of the structure.

Ensure inspection includes concealed components such as those in protective sleeves.

Section 4: Providing the Abseiling Activity

This section looks at managing the risk of serious injury associated with abseiling. The most likely serious injuries are associated with falling from height and the incorrect attachment to, or use of, the abseiling or belaying system.

This section makes recommendations common to all abseiling activities, and for other specific abseiling-related activities. It identifies significant hazards abseiling usually involves and good practice for managing those hazards.

The information in this section should not be considered all-inclusive. It is essential to carry out site and activity-specific hazard management processes, and for guides and instructors to conduct ongoing dynamic hazard identification, assessment, and management.

Additional sources of information and technical expert advice on managing abseiling include the New Zealand Mountain Safety Council Abseiling Manual (5th edition), the New Zealand Outdoor Instructors Association (NZOIA), and the New Zealand Mountain Guides Association (NZMGA).

> Some of the other most likely hazards to contribute to falling from height are associated with exposure of people to edges (see section 2.1) and with anchor or equipment failure (see section 7).
>
> The other most likely serious injury is from falling objects (see section 2.2).
>
> The most likely abseiling serious injury involving multiple people is the collapse of a purpose-built abseiling structure (see section 3.1).

All abseiling involves exposing people to the risks of falling from height, and suspension trauma.

For recommendations on managing the risks of falling, such as when accessing or egressing the abseil site, and with participants who are waiting to participate or have finished participating.

4.1 Choosing to use one or two ropes

Use an abseil system suited to the participants, the site, and the route.

Two-rope systems

Two-rope systems are most common. They involve an abseil line plus a separate belay rope and usually managed by the guide or instructor, who will usually belay from the top.

They have the benefit of enabling simple rescues and providing the belayer with control of the abseiler's descent. Other factors to consider include:

- rescue scenarios include the option of lowering the participant on two ropes or releasing the abseil rope and lowering the participant on the belay rope
- there is less chance that a sharp edge will result in a fall

The disadvantage is that there are two ropes to rig and manage when setting up and operating the abseil – for some activities, this can affect the practicality of using the system.

Single-rope systems

Single-rope systems are less commonly used. They involve using one rope as both the abseil and belay rope. Belaying may involve a bottom belayer (fireman's belay) or the abseiler self-belaying using a prusik or another rope-grab device. The most likely abseiling activity to use a single-rope system is a long abseil. For more information on long abseils, see section 4.5.

Self-belaying requires a high level of competence and has a number of other hazards. It occurs with competent participants in longer instructional courses with skills-based outcomes – see section 4.8 for more information.

Single-rope systems are more susceptible to cutting on sharp edges. Other factors to consider include:

- rescue scenarios are usually more complex than those for two-rope systems and require a rope twice the length of the abseil or a hauling system to raise the participant back up
- careful consideration needs to be given to the time required to rescue a stuck abseiler in order to manage the risk of suspension trauma
- bottom-brake belay systems require a competent person (often a trained participant) to belay, and a guide or instructor to remain at the top to manage rescue scenarios
- the abseiler requires a higher level of competence than those using two-rope systems

The advantage is there is only one rope to rig and operate.

4.2 Hazards common to all abseiling

Suspension trauma

Abseiling involves exposing people to the risk of suffering from suspension trauma, which results from being suspended in a harness without relieving pressure points for an unsafe period of time.

Ensure that procedures involve people hanging in harnesses being able to adjust pressure points, and knowing that they should. On longer abseils, encourage participants to adjust pressure points, eg by regularly moving their legs (like pedalling a bicycle) or by raising their legs to their chest.

Establish the safe time limits for the activity, equipment in use, and emergency scenarios – including a scenario with a suspended and unconscious person.

Ensure that guides and instructors:

- Know the suspension time limits and are aware that for unconscious people it can be as little as five minutes.

- Know how to identify and manage a person who has suspension trauma. Likely signs and symptoms include a tingling of the toes and fingers, numbness, sweating up the side of the head, disorientation, and nausea. In the event of a prolonged rescue scenario with a conscious suspended victim, consider providing the victim with some way to relieve pressure points, such as a sling to stand up in.
- Use abseiling systems that are releasable, or include another option for recovering the abseiler within a safe time period in stuck-abseiler scenarios, eg hauling systems or lowering using another rope.

Note: Ensure any person who has been unconscious while suspended receives immediate medical attention. Information on suspension trauma and current first aid practice can be found at www.resus.org.au.

Other hazards common to all abseiling

Factors to consider when identifying hazards for all abseiling activities include:

- exposure to edge and falling from height
- emotional or psychological trauma
- the guide or instructor making a mistake associated with lack of focus due to fatigue or repetition
- incorrect technique or equipment use
- exposure of ropes or anchor rigging to sharp or abrasive surfaces
- a difficult abseil starting area affecting the ease of weighting the rope, participant body position, and options to practice
- participant following incorrect abseil route and risking a harmful pendulum
- top-heavy participants who have a possibility of inverting
- abseiling at speed causing loss of control, rope burn, and loading anchors and equipment if there is a sudden stop
- abseiler stuck on the rope or route, eg through the belay rope becoming tangled and not passing through the belay device, the abseiler getting stuck on a ledge, or the abseil device being jammed by hair, clothing, or jewellery
- abseiling off the end of the rope
- no guide or instructor at the bottom of the abseil, making it difficult for the participant to communicate with the guide or instructor.

Managing the other risks

Include strategies for managing risks stemming from technical systems, participant management, and participant briefings.

Technical systems

If there is a ledge on the abseil which could allow an abseiler to stop, the instructor or guide must have demonstrated competence in ledge rescue, and should have appropriate equipment available, eg a separate rope.

When choosing technical equipment, follow the recommendations in section 7 and:

- provide participants who may invert while abseiling with equipment to maintain them in an upright position, such as a chest harness or full body harness
- ensure abseil device choice and rigging suits the friction requirements of the activity and participant, such as rigging a figure 8 with an extra wrap to increase friction

- use a locking carabiner to attach the abseil device to the participant
- ensure the rope reaches the ground and enables safe resolution of emergency scenarios.

When setting up technical systems and operating the abseil:

- manage exposure to edges as per the recommendations in section 2.1 – when positioning staff safety systems, consider operational and emergency procedures and ensure anchors are sufficient to hold 22KN
- manage the risk of emotional or psychological trauma through careful progression, briefing, and challenge by choice
- manage the risk of suspension trauma as per the recommendations earlier in this section
- assess and manage the risk of guide or instructor error associated with lack of focus, fatigue, or repetition of tasks
- ensure the abseil system is releasable or includes another option for recovering the abseiler in a stuck abseiler scenario, eg a hauling system or lowering using another rope
- ensure participants have a safety backup system while abseiling, usually a belay by a guide or instructor on a separate rope:
  - if using one rope and participants bottom-brake belaying, follow the recommendations in section 4.4
  - if allowing participants to self-belay, follow the recommendations in section 4.8
- choose abseil sites and instructor or guide positions to enable suitable supervision of the abseiler's descent, such as being able to see and talk with a nervous abseiler during difficult
- protect ropes and webbing from sharp or abrasive surfaces – use edge protection such as padding or directionals (to re-direct ropes)
- ensure the abseil starting point setup suits the participant's abilities, particularly around ease of weighting the rope while maintaining the correct abseiling position and options for practising abseiling techniques before hanging vertically – use setups with a high focal point for abseils that begin with a short transition from horizontal to vertical.

Participant management

Ensure guides and instructors conduct a pre-use safety check before transferring the participant to the abseil system. This includes checking the connection of each participant's abseil device to the rope unless all the following conditions are met:

- the decision to allow a participant to check their own abseil device connection is made by an experienced guide or instructor verified as competent to do so – for more information on guide and instructor competence, see section 7
- the guide or instructor has previously taught and/or observed the participant performing the skills required and has confidence that in both normal and adverse conditions the participant will perform the skills correctly
- the initial weighting of the participant's abseil setup is backed up by another form of safety such as the participant being attached to the anchor by a personal anchor system (PAS)
- buddy checks are used.

Ensure emergency procedures consider guide or instructor location and overall management of the group, particularly around communication systems and management of participants exposed to edges.

Participant briefing

Consider using a low-level practice site or other progression.

Instruct participants on:

- Abseil body position and techniques for speed control and braking.
- The abseil route and how to negotiate it, including how to avoid pendulums.
- Securing loose items that could catch in the abseil device, eg hair, clothing, and helmet strap.
- If there is no instructor or guide at the bottom of the abseil, instruct participants on how to detach from the rope and how to communicate with the guide or instructor if there is a problem.

4.3 Using a personal anchor system (PAS)

A PAS[3] is commonly used to manage exposure to edges by containing participants in a safe place or guarding against falls, particularly when accessing the top of an abseil site and when preparing to abseil. A PAS is not to catch a fall but is used to prevent a fall.

This section assumes the operator is using either a PAS[4] involving webbing or rope and one or two carabiners.

Personal anchor systems may be managed by a guide or instructor, or be self-managed by the participant. It does involve the risk of participants completely detaching their personal anchor system, losing their balance, and falling from height. Self-management requires appropriate supervision, some participant technical skill, and a high level of task focus.

It is uncommon to use personal anchor systems in conjunction with vertical travel for abseiling activities, eg when it is likely that the participant will climb above the point where the personal anchor system attaches to the safety line, or when falls could generate fall factors outside the force absorption capacity of the personal anchor system. If using personal anchor systems with vertical travel, follow the associated recommendations in the High Wire and Swing ASG.

Note: The Canyoning and Caving ASGs provide different good practice guidance for the horizontal use of personal anchor systems.

Identifying the hazards

Factors to consider when identifying hazards for all PAS use include:

- anchors or safety lines not adequately protecting people from falls
- carabiner gates opening accidentally
- high peak forces in a fall.

Factors to consider when identifying hazards for self-managed PAS use include:

- not understanding the consequence of incorrect use
- insufficient training or supervision
- being distracted or not focusing on the task
- incorrect attachment to the safety line

[3] Personal anchor systems should use EN/UIAA rated materials.

[4] There are mechanical lanyard systems that reduce the risks associated with self-managed lanyard use. These are not commonly used within the abseiling sector. For more information, see the High Wire and Swing ASG.

- not being able to reach clip and unclip points.

Managing the risks

Include strategies for managing risks in technical systems, participant management techniques, and participant briefings.

Technical systems

Ensure that:

- Anchors and safety lines are positioned to prevent people falling over edges.
- Carabiners are of a locking type – twist lock and other single-action carabiners are not recommended.
- Unclip and clipping points are within safe reach of participants – easy-on, easy-off.
- Attachment points stay above waist height, reducing potential fall energy.
- Where there is one point of attachment, its attachment to safety lines or anchors is managed by a guide or instructor.
- When establishing safety lines, consider the effect vector angles and possible dynamic forces will have on anchor and line strength.
- When there are intermediate changeovers, a self-managed PAS should have at least two independent points of attachment and use simple and consistent systems to identify clip and unclip points.

Participant management

Supervise participants during the unclipping and re-clipping of personal anchor systems to safety lines as per the recommendations in this section.

When safety is self-managed, directly supervise participants attaching and re-clipping personal safety system to safety lines unless:

- the participant has practised first in a low-consequence environment, and
- has been approved for indirect supervision by an experienced guide or instructor verified as competent to do so, and
- the guide or instructor has previously taught or observed the participant performing the tasks required and has absolute confidence that they will perform the skills correctly in normal conditions, particularly around avoiding a full unclip, and
- the participant understands and accepts the increased responsibility indirect supervision places on them.

Direct supervision techniques could include visual checks of participants doing carabiner *squeeze tests*.

When safety is self-managed and the guide or instructor is supervising indirectly, use indirect supervision level 1[5] unless at least two of the following risk-management strategies are used:

- buddy checks
- three lanyard clips rather than the usual two

[5] Reactive indirect supervision may be acceptable if the guide or instructor has previously taught or observed the participant performing the tasks required and is confident that they will perform the skills correctly in both normal and adverse conditions, particularly around avoiding a full unclip. This would generally only occur on longer instructional courses with skills-based outcomes rather than within the guided abseiling sector.

- two lines with staggered unclip points, so that the two clips will not need to be undone at the same location
- assigning assistant supervisors to supervise specific groups of participants – use adults and ensure they are trained and verified as competent in supervising and checking the points below.

Participant briefing

If PAS use is managed by the guide or instructor, brief the participants on the importance of waiting for the guide or instructor to manage the attachment and:

- the possible consequences of a full unclip in the hazard zone
- the importance of keeping the attachments to the safety line above waist height.

If the PAS use is self-managed by the participants, brief participants on the above two bullet points and:

- stress the additional responsibility self-managed use places on them, the importance of correct and diligent PAS use, and the consequences of a full unclip
- how to identify clip and unclip points
- strategies for staying attached, such as *add before you subtract* and buddy or supervisor checks
- carabiner or attachment system use and orientation, such as the *squeeze test*.

4.4 Participants belaying

Participants are sometimes used to bottom-brake belay (fireman's belay) after training, although the site must be safe from rock fall, and participants at the top should be instructed to be careful not to drop items. Occasionally, participants belay from the top of the abseil site.

Using participant belayers exposes the abseiler to a higher risk of belayer error, and exposes the belayer to the risks of either falling from height or being hit by falling objects.

Identifying the hazards

Factors to consider when identifying hazards when using participants to belay include:

- the belayer not being competent to manage the task
- the belayer being distracted or not focusing on the task
- the belayer using an incorrect belay technique
- the belayer using safety equipment incorrectly, such as harnesses and rope attachment systems
- loose items, fingers, jewellery, and hair becoming jammed in the belay device
- the rope having too much stretch for a bottom-brake belay to be effective.

For information on using participants to bottom-brake belay for abseiling in waterfalls, see section 4.9.

Include strategies for managing risks related to technical systems, participant-management techniques, and participant briefings.

Technical systems

When belaying from the top of the site, ensure the belayer is protected from falling as in the recommendations in section 2.1.

Participant management

Pay particular attention to assessing participants and allocating belaying tasks to a suitable person.

Use a back-up belayer if the primary belayer is new to the task or the environment may be distracting. Options include:

- using an additional person/s to back-up belay – holding the brake rope with two hands, thumbs up, and below the abseil device
- the primary belayer or the backup belayer using a prusik or another rope-grab device
- the back-up belayer using a waist belay

Directly supervise participant belayers unless the following conditions are all met:

- the belayer is 14 years of age or older
- the belayer has been approved for indirect supervision by an experienced guide or instructor verified as competent to do so – for information on staff competence, see Section 7
- the guide or instructor has previously taught or observed the belayer performing the task required and has confidence that they will perform the skills correctly in both normal and adverse conditions
- the belayer and the guide or instructor are able to communicate throughout the belay process – ideally, they are able to see each other.

Participant briefing

Instruct participants on the belay techniques for the system and equipment in use. Stress the importance of correct and diligent belaying and the consequences of belay failure.

Instruct the belayer to secure loose items that could interfere with belay devices, such as hair, clothes, and helmet straps.

4.5 Long abseils

For the purposes of this guideline, long abseils include those where verbal communication is extremely difficult, visual communication may not be possible, and rope weight has a significant influence on safely managing the activity. They involve the risk that the abseiling is technically difficult and that the participant will have less supervision and communication from the instructor or guide.

Note: These factors are most common on abseils greater than 50 metres, but are site specific and may also occur on shorter abseils.

Identifying the hazards

Factors to consider when identifying hazards for long abseils include:

- compromised ability of the guide or instructor to communicate with the participant
- heat build-up in the device causing burnt hands and, possibly, rope-sheath glazing
- difficulty of managing a two-rope system
- weight of the rope affecting abseil device performance
- environmental factors such as cold, wet, darkness, and noise affecting communication and the participant's ability to abseil
- participant spending a long time hanging in their harness, increasing the risk of suspension trauma
- ineffective bottom-brake belaying, eg through rope stretch.

Managing the risks

Include strategies for managing these factors in technical systems, participant management techniques, and participant briefings.

Technical systems

Technical systems need to take into account equipment loadings, participant ability, and the time a participant spends hanging in a harness. Long abseils often use a single rope system – see section 4.1 for more information.

- If considering using bottom-brake belaying, test its effectiveness first – there have been fatal accidents associated with bottom-belaying long abseils, probably with dynamic ropes. Other options include clipping into participants and abseiling with them.
- Ensure there is a system in place to indicate when the abseiler is safe on the ground. Consider using a spotter who is able to see the abseiler at the bottom and can communicate with the guide or instructor at the top of the abseil, or use rope tugs, whistle calls, or radios.
- Use an abseil device that has a level of friction that enables the abseiler to descend at a safe rate, including when they approach the bottom of the abseil. Consider the weight of the participant and the weight of the rope.
- If using a two-rope system, do not use a dynamic rope for the belay line because it may not arrest a falling abseiler before the ground.
- Consider equipping the abseiler with well-fitting gloves.
- Manage the risk of suspension trauma as per the recommendations in section 4.2.

Participant management

Ensure guides and instructors are confident that participants undertaking long abseils are competent to do so. This will usually mean they have abseiled before or received training.

Ensure participants are approved for participating in long abseils by a guide or instructor verified as competent to do so. For information on staff competence, see section 5.

Participant briefing

Ensure participants are aware of the increased risk involved with long abseils and the extra responsibility it places on them.

Brief the participant on how to:

- negotiate the entire abseil route before they start the abseil, such as how to get past a ledge or an overhanging section
- manage the additional weight of the rope
- signal to let the guide or instructor know when they are safely on the ground
- avoid the abseil device heating by descending slowly and steadily, and not stopping.

4.6 Using guided lines

Guided-line abseils refer to those using an additional rope to track participants away from hazards as they abseil. This guideline refers to guided line abseils where most of the abseiler's weight is held by the abseil line and the guided line is solely for directional purposes.

As guided lines move away from vertical and towards being horizontal and weight bearing, they become Tyrolean systems and outside the scope of this guideline.

Identifying the hazards

Factors to consider when identifying hazards for abseiling using guided lines include:

- overly horizontal angle on guided line, increasing the load on equipment and anchors
- not avoiding the hazard as intended
- a harmful pendulum into abseil face in event of failure of the guided line
- longer time spent hanging in harness (suspension trauma).

Managing the risks

Include strategies for managing these factors in technical systems, participant management techniques, and participant briefings.

Technical systems

Ensure that:

- The vast majority of the abseiler's weight is supported by the abseil line – consider vector effects when establishing guided line angles and anchors.
- Guided-line tension and the angle are sufficient to track the participant away from the relevant hazard and to the landing zone. Consider making the guided line adjustable at one end so that the tension can be managed to keep the abseiler in the right location and to keep angles acceptable.
- Abseil devices do not overheat. Consider using abseil devices that allow less friction and enable a reasonable rate of descent.

Participant briefing

Instruct participants to ensure that the abseil rope is slack before they unclip from the guided line at the end of the abseil.

4.7 Multi-pitch abseiling

Multi-pitch abseiling involves transfers from one abseil to another and requires attaching to safety points.

Multi-pitch abseiling is likely to involve a higher risk of people falling from height due to increased levels of technical difficulty. They usually involve using one rope (the abseil line) and require a high level of instructor or guide technical skill. They are not common within the instructed or guided abseiling sector, but often feature in other outdoor activities.

Identifying the hazards

Factors to consider when identifying hazards for multi-pitch abseiling include:

- falling from height during changeovers from one pitch to the next
- route choice or anchor sites not enabling safe participant management or gear retrieval
- being hit by objects that have been dislodged while retrieving ropes
- being unable to retrieve the rope from the previous pitch
- time needed to complete the activity – consider the exposure to weather and darkness

- complex emergency scenarios, both for the guide or instructor running the abseil and for external emergency support
- equipment needed to complete the abseil needs to be carried on route
- equipment needed to complete the abseil being dropped.

Managing the risks

Include strategies for managing these factors in technical systems, participant management techniques, and participant briefings.

Technical systems

Ensure route choice and anchor sites and setups enable safe participant management including transfer to the next abseil. Factors to consider include the ability to communicate with participants while they are abseiling, the ability to belay participants, the amount of space and equipment needed at anchor sites to manage participants, and the amount of time required to complete the activity.

Use sufficient equipment to enable safe setup of all anchors and participant management systems. Consider the ease of retrieval of equipment from one pitch to the next, including factors such as friction and rope-joining methods.

Choose a route that enables effective rope retrieval, including not dislodging rocks. Make pre-retrieval checks.

Ensure safety equipment is secured and will not be dropped.

When developing emergency procedures, consider hauling equipment, egress options such as ledges, and management of multiple participants.

Participant management

Ensure guides and instructors are confident that participants undertaking multi-pitch abseils are competent to do so. This will usually mean they have abseiled before or received training.

Ensure participants and guides or instructors are adequately clothed for the weather and have sufficient food and water.

Participant briefing

Ensure participants are aware of the increased risk involved with multi-pitch abseils and the extra responsibility it places on them.

4.8 Self-belayed abseiling

Self-belaying or abseiling with a backup (prusik or other rope-grab devices as a *third hand*) requires skilled participants as it involves the risk that participants will make an error and fall. It is used when teaching the skills required for independent abseiling.

Identifying the hazards

Factors to consider when identifying hazards for self-belayed abseiling include:

- participant not sufficiently competent to manage the system
- participant not using the system correctly
- self-belay system not engaging or becoming locked or jammed

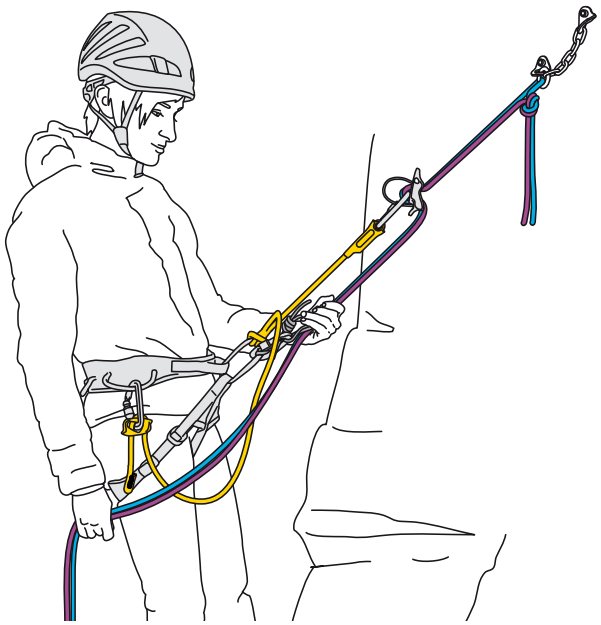
- self-belay system interfering with the abseil device and releasing it
- participant being incapacitated and unable to work the self-belay
- system relying on one rope – for more information, see section 4.1
- using an inappropriate choice of self-belay system.

Managing the risks

Technical systems

Ensure that participants understand the need to:

- Keep the abseil device clear of anything that could jam it:
  - clip the device onto their PAS so that it is clear of their body, unless the situation makes this unwieldy, eg low-angle slabs and severely overhanging edges
  - manage loose clothing, hair, jewellery, and helmet straps.
- Use a backup system and understand:
  - the pros and cons of various set-ups, eg placing the prusik above or below the abseil device and attaching the prusik to the leg loop or the belay loop
  - the number of wraps is critical to the prusik running but still locks when required
  - how to avoid disabling the prusik through over gripping, eg by holding the rope with the bottom hand below the prusik and the top hand holding the prusik.



www.petzl.com/US/en/Sport/Techniques

Ensure the risk of objects falling from above is extremely low – see section 2.2 for more information.

Use a self-managed belay system that aligns with participant competence and the hazards of the route. Consider the ease of setup and of releasing the belay system once it has been locked.

Before self-belaying, participants should practise with a top-rope belay as well, including practising how to release from a jammed abseil.

Ensure the self-managed belay system is checked and weighted before detaching from other safety systems.

Participant management

Ensure that the guide or instructor has previously taught and/or observed the participant performing the skill set required and has confidence that, in both normal and adverse conditions, the participant will perform the skills correctly.

4.9 Abseiling into water

Abseiling in waterfalls or into water adds the risk of drowning to that of falling. The degree of risk involved will usually increase with the amount of water, the number of entrapment features, and the length of the abseil.

Identifying the hazards

Factors to consider when identifying hazards include:

- features in the rock behind the waterfall trapping the abseiler, eg cracks, chockstones, and hanging pools
- water hitting the abseiler or belayer, affecting their ability to abseil or belay
- a slippery surface leading to foot entrapments or inability to maintain the abseil stance
- difficult communication between participant and the instructor or guide
- the abseiler becoming entangled in rope when abseiling into water
- the abseil finishing in deep or moving water where swimming is required
- participant bottom-brake belayers needing to assist with pulling the abseil line to move the abseiler out of the flow of the waterfall.

Managing the risks

Include strategies for managing hazards in technical systems, participant management techniques, and participant briefings.

Technical systems

When participants are exposed to the risk of drowning, and where the risk is not managed by techniques such as clipping to fixed lines to keep out of the water, ensure the equipment provides sufficient buoyancy for participants to float, eg neoprene, inner tubes, or a personal flotation device (PFD).

Use a PFD to provide buoyancy if moving water and features within it are assessed as significant hazards for that particular participant. Factors to consider include:

- the swimming ability of the participant
- the likelihood of a participant being trapped by hazards such as the river bottom, hydraulics, recirculation, siphons, strainers, and hanging pools in waterfalls
- aerated water providing insufficient buoyancy
- the likelihood of a participant being flushed downstream or being in moving water for a long time.

If abseiling into fast water, ensure the abseil line finishes at or above water level (when loaded), the abseil device allows easy rope release, and there is no knot in the end of the rope.

Packs should not be worn when abseiling in waterfalls with significant water flows.

Ensure participant bottom-brake belayers stand back from the waterfall, have stable footing, and have good visibility of the abseiler.

Participant management

Use participant assessment and progressions to ensure participants are suited to managing their role when abseiling in waterfalls.

Ensure the abseiler is within sight of the guide or instructor in the parts of their descent involving significant water flows, ledges containing pools of water which present a drowning risk, or rock features which present an entrapment risk.

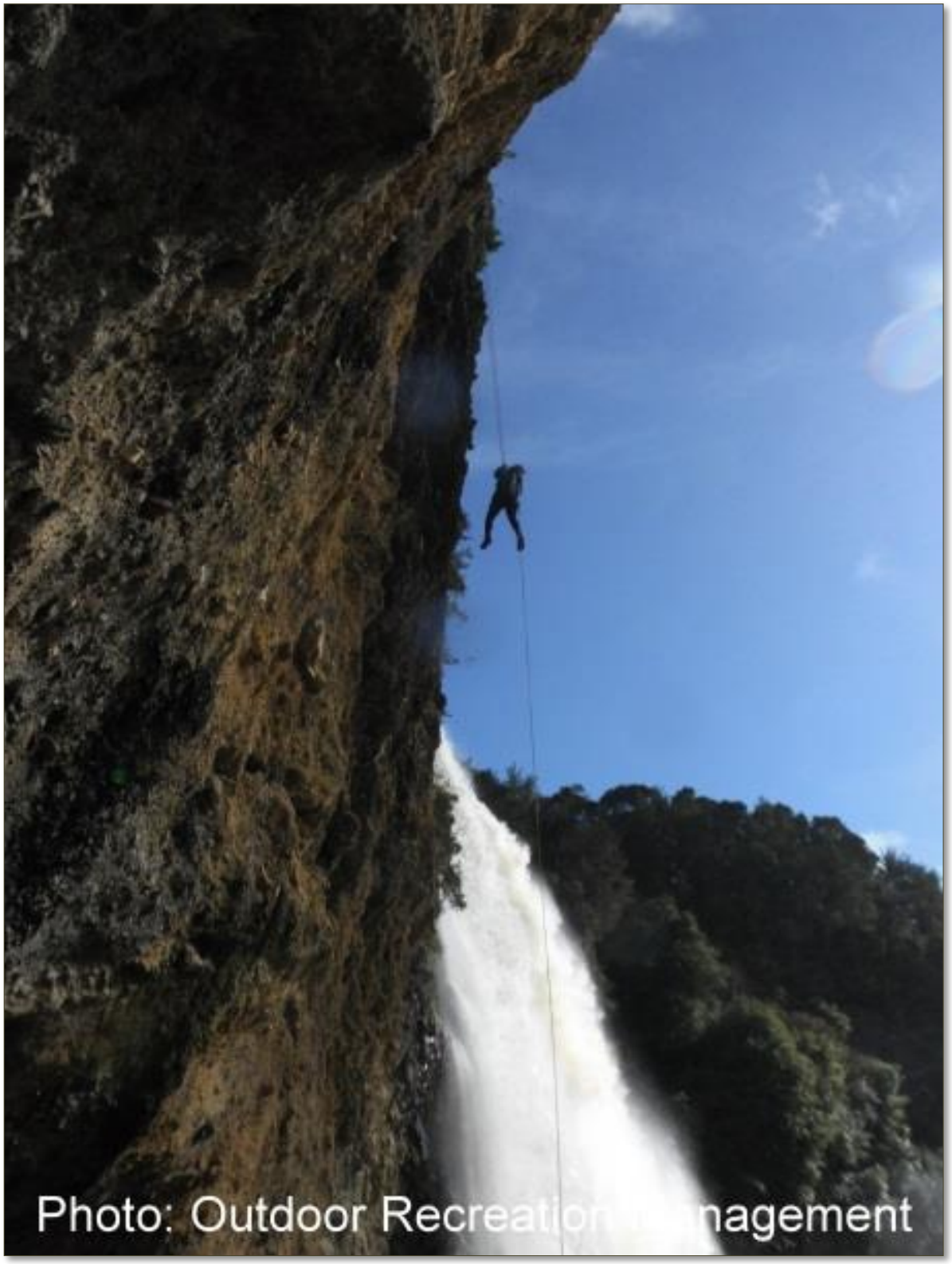
If bottom-brake belayers need to assist in rescues, such as those requiring them to assist with moving the abseiler out of the main flow, observe them competently performing the tasks required to assist in the rescue before they belay.

If swimming is required, check participants' swimming ability.

Participant briefing

Briefing information will vary greatly depending on the actual hazards of a particular waterfall. Points to consider include instruction on managing slippery surfaces, avoiding entrapment features, and ways to maintain a breathing space, such as body and head positions.

If abseiling into water, instruct participants on how to get clear of the rope.



Section 5: Staff

This section does not address broader safety-related roles such as operations management or other operation-specific safety responsibilities. Ensure that these are identified and staff are competent as per the recommendations in the sections above.

Nor does it look at competence for working at height where staff use safety systems in ways other than how they would be used during normal operations. For general information on ensuring the safety of staff working at height, see section 5.4.

5.1 Site and activity management

Site and activity management includes ensuring that each abseiling activity is staffed and monitored effectively and that the most practicable communications systems are in place.

Use guides or instructors competent at the skills required to manage the abseiling activity – see section 5.2.

Ensure that guides or instructors are familiar with the hazards of the site and with the operator's standard operating procedures. The amount of training this requires will vary. Factors to consider include:

- the specific hazards and associated safety management strategies of the abseiling site, eg those that affect accessing and rigging the site, especially if it is wet and slippery
- the complexity of the abseiling activity such as single-pitch abseiling compared with multi-pitch abseiling
- the competence of the guide or instructor.

Communication between guides or instructors

If instructors or guides are working together to manage safety of the same abseiling activity, ensure they can communicate easily or are managing tasks that do not require them to communicate with each other.

Communicating between the top and bottom of abseiling sites can be difficult. If this is required, such as when a guide or instructor at the bottom of the site is offering belaying support, ensure there is an effective communication system in place, eg verbal calls, visual signals, or use of communication devices such as radios.

5.2 Competency requirements

This section identifies the technical safety responsibilities and competencies for guiding or instructing abseiling activities and for the in-house training and assessing of staff.

Role: Guide or instructor

Purpose: To guide or instruct an abseiling activity (excluding teaching participants to belay) under the indirect supervision of a guide or instructor with the **Perform rescues** competencies (see below).

Safety responsibilities	Safety functions	Safety competencies
Guide or instruct participants in abseiling	Train and assess participants to abseil	Can demonstrate knowledge of current sector good practice in abseiling skills, including pre-abseil safety checks and self-belaying techniques
	Guide or instruct participants as they participate in abseiling	Can demonstrate a process to assess participant suitability to participate in abseiling Can demonstrate safe management of a participant during an abseil including: • Transitions from one safety system to another • Belaying *Note:* Teaching participant belaying is a separate role • Communications systems • Can apply a process to teach participants abseiling skills
	Monitor all participants at the abseiling site	Can apply their role within the operator's supervision system Can identify and correct dangerous abseiling techniques and general participant actions and behaviour Can demonstrate good situational awareness and visual scanning skills Can affect rescues, including ledge rescues
Ensure participant safety equipment is used correctly and is safe for use	Allocate and fit safety equipment to participants	Can apply a system to fit and check harnesses and the attachment of participants to abseil and belay systems
	Continually monitor and assess all equipment used by the participant	Can identify and manage dangerous equipment via repair, replacement or isolation, including harnesses, belay and abseil devices, ropes, and other equipment used to attach participants to the abseil system
Assist in response to emergency scenarios	Assist staff to perform rescues	Can demonstrate skills sufficient to assist in rescue scenarios including belaying other staff and managing the safety of non-abseiling participants

Role: Perform rescues

Purpose: To perform the practical aspects of rescues for all identified rescue scenarios.

This role may only be held by a person with the guide or instructor competencies.

Relate competencies in this table to a specific abseiling activity.

Safety responsibilities	Safety functions	Safety competencies
Responding to emergency scenarios	Perform rescues for all identified rescue scenarios	Can demonstrate rescues for all identified emergency scenarios including a stuck abseiler For activities involving participants belaying, this also includes a jammed belay device and excessive slack rope in the belay system
	Apply the operation's overarching participant emergency management process	Can apply the operation's overarching participant emergency management procedures, including ensuring all participants are no longer exposed to falling or other identified significant hazards

Role: Set up and inspect operational and safety systems

Purpose: To setup an abseil activity and to conduct inspections of operational equipment.

Relate competencies in this table to specific activities and anchor systems.

Safety responsibilities	Safety functions	Safety competencies
Set up the abseil	Set up the abseil and other site safety systems	Can demonstrate knowledge of sector good practice in setting up an abseil and site safety systems, including setting up anchors and using personal anchor systems
Assess safety system equipment	Conduct pre-activity inspections of safety system equipment	Can identify and manage dangerous safety equipment via repair, replacement, or isolation, including anchor components and critical connections

Role: Teach belay skills to participants

Purpose: To teach and assess participant belaying skills.

Relate competencies in this table to a specific belaying activity.

Safety responsibilities	Safety functions	Safety competencies
Teach, assess, and monitor participant belaying	Teach and assess participant belay skills for a specified level of supervision	Can demonstrate knowledge of current sector accepted practice in belay skills, including pre-belay safety checks Can apply a process to teach belaying, including teaching pre-belay safety checks as required by the specified level of supervision
	Sign off participants as competent for a specified level of supervision	Can apply a process to sign-off participants as competent to belay under a specified level of supervision
	Monitor participant belaying	Can identify and correct dangerous belaying techniques

Role: Manage the operator's supervision system and emergency response

Purpose: To manage the operator's supervision system and in-field emergency response processes when there is more than one staff member.

This role may only be held by a person with the competencies for both the guide or instructor and *Perform rescue* roles.

Relate competencies in this table to a specific abseiling activity and site

Safety responsibilities	Safety functions	Safety competencies
Supervise staff	Delegate tasks to staff Monitor staff	Can identify and correct dangerous guiding or instructing techniques and staff behaviour Has good visual scanning skills Has strong communication skills
Manage the application of the operation's supervision system	Apply and oversee the facility's supervision system	Can apply a process to oversee the facility's supervision system
Manage emergency scenarios	Oversee the operation's overarching in-field emergency management process	Can apply a process to manage the operation's overarching in-field emergency management procedures

Role: In-house trainer of guides or instructors

Purpose: To train guides or instructors for safety responsible roles for a particular facility or operation

Safety responsibilities	Safety functions	Safety competencies
Deliver staff training	Train staff to perform job role functions	Can demonstrate knowledge of job role functions Can apply a system to deliver staff training

Role: In-house assessor of guides or instructors

Purpose: To assess guide or instructor competence in safety responsible roles for a particular facility or operation

Safety responsibilities	Safety functions	Safety competencies
Assess staff	Assess staff performance against a standard (internal or external)	Has knowledge of the standard applicable for the skills being assessed Can demonstrate skills and knowledge in the competencies that are being assessed to at least the level they are assessing Can assess competence and provide feedback

5.3 Qualifications

Nationally recognised abseiling-specific qualifications are administered by the New Zealand Outdoor Instructors Association (NZOIA) and Skills Active Aotearoa Industry Training Organisation.

The qualifications are:

- **NZOIA Abseil Leader:** for people working at a site that is easy to manage, within an activity specific risk management plan, with their setup approved by an NZOIA Rock 1 or 2 instructor, and using abseiling structures or fixed anchors.
- **Skills Active New Zealand Certificate in Outdoor Leadership: Leader – Abseiling:** for people working at a site that is easy to manage, within an organisation's safety management system, and using abseiling structures or fixed protection.

Note: These qualifications do not include verification of competence for instructing or guiding multi-pitch abseiling, abseiling in waterfalls or into water, using guided lines, or long abseils.

For more information on these qualifications, including on how they should be used, detailed skill breakdowns, and experience prerequisites contact the administering organisation via their websites: www.nzoia.org.nz or www.skillsactive.org.nz.

Broader qualifications that include relevant competencies

This section groups the qualifications according to which abseiling activities they cover.

For more information on these qualifications, including more detailed skill breakdowns, experience prerequisites, and minimum recommended first aid certification, contact the administering organisation via their website www.nzoia.org.nz, www.nzmga.org.nz or www.skillsactive.org.nz

Abseiling using abseiling structures with fixed and placed anchors

This excludes long, guided-line, multi-pitch abseils or abseiling in waterfalls or into water.

The qualifications that include the technical competencies to guide or instruct these abseils are:

- New Zealand Mountain Guides Association (NZMGA) Climbing Guide, Alpine Trekking Guide, and Hard Ice Guide.
- New Zealand Outdoor Instructors Association (NZOIA) Rock 1 and Canyon 1.
- Skills Active New Zealand Certificate in Outdoor Leadership: Leader – Caving

All abseiling activities excluding in waterfalls or into water

The qualifications that include the technical competencies to guide or instruct these abseils are:

- International Federation of Mountain Guides Association (IFMGA) Guide.
- NZMGA Climbing Guide.
- NZOIA Rock 2 and Cave 2.
- Skills Active New Zealand Certificate in Outdoor Leadership: Caving – Guide / Instructor Senior Leader

All the abseiling activities in this guideline

The qualification that includes the technical competencies for all the abseiling activities in this guideline is NZOIA Canyon 2.

5.4 Working at height

Working at height refers to work where the staff member is exposed to the risk of injury associated with falling from height, and they are using safety systems in ways other than how they would be used during normal operations. Working at height could include setting up activities and conducting facility or activity maintenance, testing, and on-going inspection.

Ensure the safety of staff working at height by following the recommendations in this section and in WorkSafe's Best Practice Guidelines for Working at Height in New Zealand.

Safety equipment

Staff may use normal operational safety equipment when working at height if they are using safety systems in the same way they would normally be used during abseiling or climbing activities. If using the site in other ways, follow the recommendations in the WorkSafe guidelines.

If a fall is possible, ensure anchors are suitable for fall arrest. If travelling vertically, use either assisted belaying or a self-managed belay system suited for vertical use and fall arrest. For more information on anchors, see section 7.1.

Note: Do not use climbing staples (metal staples often used as climbing steps in poles at high ropes courses) for purposes of fall arrest. They are generally untested and not approved as anchors capable of supporting a fall.

Working alone and the risk of suspension trauma

The WorkSafe guidelines recommend not working alone. For the purposes of this guideline, working alone involves being exposed to the risk of delayed rescue and an increased risk of suspension trauma. The speed that rescue support needs to be available to manage this risk will vary depending on the nature of the emergency.

Assess emergency scenarios for the risk that the staff member will be suspended and injured or at risk of suspension trauma. Factors to consider include:

- the likelihood that the staff member would suffer an injury if they fell, particularly impact injuries that could affect their ability to self-rescue, alleviate pressure points, or call for help
- the ability of the staff member to self-rescue if they fall
- the ability of the staff member to alleviate pressure points if they are suspended – what type of harness are they using, do they have equipment to help them (such as slings to stand up in), and are they trained in its use?

Ensure that rescue support is available to staff within time frames that enable effective rescue for identified emergency scenarios. Base safety management strategies on the associated risk and the following recommendations:

- a single staff member working under normal activity or site monitoring procedures may be suitable if emergency scenarios do not include falling and suffering injury and the staff member is able to self-rescue – ensure the staff member has a communication device on their person
- if staff could fall and be injured or not self-rescue or alleviate pressure points, ensure there are at least two staff members working together and that they are competent to rescue each other.

Section 6: Participants

6.1 Informing participants about safety

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

Pre-activity risk disclosure

Before beginning the abseiling activity, inform participants of the following information:

- abseiling is an adventure activity involving risk of serious injury or death. Participants should be aware that the abseiling operator cannot totally guarantee the participant's safety
- the activity may be mentally and physically demanding and requires the participant to operate at height
- the procedures for managing exposure to edges and falling objects, such as staying back from edges, how to use abseil site safety systems, and the location of safe zones
- the need 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
- relevant communication systems such as the *off-rope* call
- what they need to do when they complete their abseil
- any difficulties related to leaving the abseil site and communicating with external emergency support.

Mention significant hazards that cannot be eliminated or that place extra responsibility on the participant. These include sole-guided activities in remote areas, abseils with difficult site access, long abseils, abseils involving water, multi-pitch abseils, and self-belayed or participant-belayed abseils.

Using demonstrations and activity progressions

Use demonstrations and activity progressions where practicable, particularly for more difficult abseils. This could involve a practice run on a steep, grass slope. This helps ensure participants are prepared and fully understand what they are required to do.

6.2 What to include in a supervision system

Ensure there is an experienced staff member at the site responsible for managing the supervision system. For more information on site and activity management, see section 5.1.

Strategies to consider when developing a supervision system include:

- ensuring instructors and guides are aware of the risk of fatigue and task repetition and that workplace culture includes a focus of self and peer awareness and support on these issues
- using pre-use safety checks such as instructor or guide buddy checks, repeating out loud, or safety calls (such as *safety on* and *safety off*) at crucial safety moments such as before the participant detaches from the abseil setup safety system to begin abseiling
- having an overall safety supervisor who roams between abseil stations to check safety systems and monitor instructor and guide performance – ensure the ratio of supervisor to instructors and guides allows for effective checking and monitoring
- scheduling regular breaks for instructors and guides
- rotating instructors and guides through different roles on a regular basis

- managing exposure of people to edges and falling from height
- slowing the activity down and using buddy checks, checklists, and simple and consistent systems where there is a risk of instructor error due to fatigue or repetition.

6.3 Parameters for sole instructing

Many abseiling activities are sole instructed. See the supportadventure website for general information on this.

The challenge for a sole instructor is that the group becomes split between the top and the bottom, and some participants may go out of sight.

Group management actions include:

- clearly instructing participants what to do when they've completed their abseil, eg walking the group back to the top before the abseil activity to clarify the route and/ or marking the return route so that participants don't stray into hazards
- instructing a helper to manage the abseiler to detach and move to a safe place.

Section 7: Anchors and Equipment

Anchor failure associated with poor anchor choice, construction, or location is one of the most likely contributing factors to serious injury when abseiling. Focus safety management strategies on ensuring anchors are fit for purpose.

The recommendations in this section are for abseiling anchors and equipment designed to hold static loads positioned below the anchor. Seek additional expert advice if constructing or using anchors or equipment that may be used for dynamic loads or other increased anchor loading situations such as Tyrolean systems.

For information on abseiling structures, see section 3.

7.1 Constructing anchors

When constructing anchors, ensure that instructors and guides and where practical other users, know whether anchors are designed for static or dynamic loads.

For the purposes of this guideline, abseil anchors have been categorised as permanent, fixed, or placed-protection anchors. For information on proof testing bolts and other fixed anchors, see section 7.3.

Permanent anchors

Construct permanent anchors as per the recommendations in the Australian Standard 2316.1-2009 (AS 2316.1-2009).

Additional information on permanent anchor construction can be found in Industrial Rope Access in New Zealand: Best Practice Guidelines.

Fixed and placed-protection anchors

This section looks at fixed and placed-protection anchors, and specifically at using bolts.

Ensure that anchors and rigging result in sufficient safety margins to support both normal operational and emergency loads, and sufficient redundancy to allow for factors such as sharp or abrasive surfaces. Sufficient safety margins include a minimum of 22KN for a two-person static load – consider the weakest point in the anchor system when assessing safety margins[6].

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

- ensure that placement of multipoint anchors results in load sharing
- ideally avoid sites with sharp edges or particularly abrasive surfaces – if this is not possible, ensure anchor rigging is not in direct contact with those surfaces, or that anchor rigging is metal chain or cable
- if using re-directional anchors, consider the forces involved and the consequence of re-directional anchor failure, including shock loading the primary anchor
- place anchors where they are protected from expected falling debris and other environmental factors such as the freeze/thaw effect – if this protected placement is not possible, identify the anchor as a hazard requiring monitoring within the operator's hazard management system

[6] Additional information is available through the NZ Canyoning Association, NZ Alpine Club, NZ Mountain Guides Association, NZ Outdoor Instructors Association, NZ Speleological Society, and industrial rope access companies. Although it is designed for situations outside the scope of this guideline, information on bolts and fall arrests can be found in AS/NZS 4488 and AS/NZS 1891.4.

- if leaving anchor rigging in place for extended periods of time, metal should be preferred over webbing or rope – if it is not practicable to use metal, identify webbing or rope failure as a hazard requiring monitoring within the operator's hazard management system.

Using metal pickets

If using metal picket anchors, ensure that:

- the metal is verified as strong enough to hold the required loads
- the metal is an anticorrosive steel
- sufficient length is in the ground, allowing for the firmness of the ground.

Consider slipping galvanised steel pipe over the picket to eliminate sharp edges.

Note: Traditional star pickets – fencing standards or waratahs – do not meet these requirements.

Using bolts

Bolt anchor capacity is dependent on the strength of the rock, the size and depth of the bolt, and the rock-bolt bond. Placing larger diameter bolts deeply into the rock and using chemical bonds will generally provide a more secure placement. When constructing bolt anchors, ensure that manufacturer's instructions are followed and:

- bolt diameters, bolt types, and hangers are suited to the rock in which they are placed and, if they are intended to support life bearing loads, are rated to a minimum of 22KN
- for anchors expected to hold a two-person load, and are in outdoor settings where bolt anchor use and other environmental factors are hard to monitor, use at least two bolts.

Friction and chemical bolts should be loaded in shear, not in tension, unless they are specifically designed and installed for a tension pull. For example, unless expert advice is sought, ensure the pull-on, collared-eye bolts do not exceed 20° to the surface in which the bolt is installed. For more information, see AS/NZS 1891.4.

Carry a spanner to tighten any loose nuts.

7.2 General use equipment

Use equipment according to manufacturers' recommendations and current sector use.

Selecting equipment

Use equipment that complies with relevant internationally or nationally recognised standards such as the International Mountaineering and Climbing Federation (UIAA), the European Conformity (CE), the Cordage Institute (CI), and New Zealand and Australian standards (AS/NZS). Equipment should be manufactured for activities such as rock climbing, abseiling, mountaineering, and canyoning.

Ensure that equipment is suitable and in good condition. Base equipment choices on:

- the abseiling anchor style – part of a purpose- built abseiling structure, permanent, fixed or placed protection
- the type of abseiling activity
- identified hazards and associated management strategies
- emergency scenarios and response plans
- factors on the day such as guide or instructor skills, participant ability, and environmental conditions.

Participant equipment

This section looks at participant equipment recommended for all abseiling. Some abseiling activities will require additional participant equipment – see the activity-specific information in section 4.

Correctly fit equipment as per the manufacturer's instructions. Check equipment for fit as suitable throughout the activity.

Ensure all abseiling participants have the following equipment:

- a helmet designed for the most relevant significant hazard on the abseil, eg objects falling from above or impact against rock face due to pendulums or slips
- a harness
- footwear that is unlikely to fall off during the descent – consider closed-toe shoes if the abseil face or access route are uneven or rough.

Ensure the following equipment is available for each participant as they need it:

- a descent device suited to the abseiling activity
- a locking carabiner – twist locks and other single-action carabiners are not recommended
- a chest or full body harness.

Guide and instructor equipment

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

- a descent device suited to the activity
- a rope grab system such as two prusiks or a set of ascenders
- equipment for freeing a jammed abseil device, such as a lowering or hauling system or a knife
- a sufficient number of locking carabiners to run the abseil activity and manage identified emergency scenarios.

Additional equipment may be required depending on site safety management strategies and participant needs. Consider a lanyard, a personal edge kit, a length of webbing, and hair-ties.

Life-bearing ropes

Choose ropes based on the expected use of the rope, such as belaying or abseiling, and the information in this section. Ensure life bearing ropes are a minimum of 22KN breaking strength and at least 9mm diameter. They are usually also:

- static, low stretch, or semi-static if used as the abseil line
- dynamic or semi-static if used for belaying, fixed access (personal safety system clip in), or instructor or guide cliff-top safety

  Note: If using dynamic lines for belaying very heavy participants or belaying long abseils, rope stretch could result in a ground fall or in a locked-off belay rope not taking the weight off the abseil line
- kernmantle or braid-on-braid design
- compliant with one of the following standards: EN 1891, AS4142.3, AS4142.2, ANSI Z133, CI1801.

Ropes used for emergencies need to be suitable for identified emergency scenarios. For more information, see section 7.4.

7.3 Equipment maintenance, testing, and inspection

Maintain, inspect, and test equipment regularly and thoroughly enough to ensure reliability. This section makes recommendations on:

- establishing maintenance, inspection, and testing schedules
- proof testing of bolts and other fixed anchor points.

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

Where an abseil site has multiple users, it is recommended to share information and responsibilities on shared equipment maintenance, inspection, and testing. Keep records of equipment information as per the recommendations in the equipment section of www.supportadventure.co.nz.

Additional information on equipment inspection can be found at www.aspiring.co.nz. For information on maintenance and inspection of purpose-built abseiling structures, see section 3. Although it is 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.

Establishing maintenance, inspection, and testing schedules

Inspect equipment before it is 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 sea spray, rockfall, freeze-thaw, avalanche, or flooding.

Ensure inspection includes concealed components such as those in protective sleeves, eg anchors around trees that are wrapped in protective material.

Proof testing bolts and other fixed anchor points

Through-bolted engineered anchors do not require testing and should not be tested. These anchor types do, however, require maintenance and periodic inspection by a competent person in accordance with the designer's specifications. This competent person will usually be a registered professional engineer.

Proof test bolts and other non-through-bolted engineered fixed anchors such as posts (or obtain evidence that they have already been tested). Examples of proof-testing techniques include the use of load cells.

Conduct a risk assessment to determine when proof testing should occur, if sampling is suitable and, if so, what sampling schedule should be used. The risk assessment should consider factors such as:

- anchorage type, such as chemical or friction
- frequency of use
- exposure to environmental factors
- years in service
- expected wear and tear.

If sampling is used, ensure that it is sufficient to give assurance of overall anchor and equipment reliability and does not extend beyond six years between tests for any particular anchor. This maximum time frame aligns with the Department of Conservation's backcountry structure proof-testing regime.

Ensure that anchors are able to support a 22KN load. When proof testing anchors, use test loads that are 50% of the strength limit state capacity of the anchors. For example, to check that an anchor is sufficient for a 22KN load test to 12KN, and if the anchor has multiple legs, test each leg to 6KN.

Note: Do not test legs to less than 6KN This is due to the difficulties of accurately predicting load sharing between linked anchor legs.

When proof testing anchors ensure that:

- Testing is done with certified and calibrated equipment and by a competent person – testing equipment, eg load cells, can be hired from industrial tools and equipment companies and some general hire companies.
- Proof test loads are applied gradually and held for at least two minutes – a positive test will show no signs of the anchor yielding or reduction of the load applied.

Using load cells to apply an axial pull is a practicable test for bolts. However, it may not be for other fixed anchors such as pickets or posts. Other testing options include loading anchors in shear. If testing anchors in shear, ensure that:

- loads are applied in the direction the anchor will be used
- loads are sufficient (friction will decrease the load) – options include using a load cell in between the anchor and the load
- anchor movement is measured against a fixed point – use a measuring device such as a dial gauge that indicates movement in at least millimetre increments (a positive test will show no deformation of the anchor and no movement at ground level)[7].

Some anchors may show marginal movement at ground level and still be able to safely support a 22KN load. If an anchor shows movement at ground level, seek expert advice or treat the test as a fail.

Additional sources of information and experts on bolt testing and load cell use include industrial rope access companies and engineers.

7.4 Emergency equipment

Accessibility of emergency equipment

Ensure that emergency equipment is suitably available and accessible. The nature of the abseil site will determine whether equipment is attached to the guide or instructor's harness, carried in a backpack, and/or staged at the top or bottom of the abseil site.

[7] These recommendations are based on engineering advice.

Note: It is often most useful to have first aid supplies at the bottom of the abseil rather than the top.

Emergency equipment

Ensure that emergency equipment is sufficient and suitable for managing group safety and chosen based on identified emergency scenarios.

The easiest rescue technique for lowering an abseiler to the ground usually involves having an abseil line of twice the length of the abseil and using both the abseil and belay lines to lower the abseiler. Some rescues may involve raising the abseiler to safety or using pick-off techniques.

Ensure there is sufficient equipment and rope to manage emergency scenarios as planned – for multi-pitch abseils, consider the longest pitch.

For cold weather abseiling, consider including shelter and heat sources such as space blankets, heat packs, bothy bags, ground insulation, high energy food, and additional thermal clothing.

First aid supplies

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

For more information on managing the equipment aspects of your operation, see:
www.supportadventure.co.nz

Appendix 1: Checking Abseiling Structures

Verify that existing purpose-built abseiling structures have structural integrity and are suitable for abseiling activities. This involves checking the abseiling structure design, build, and current condition.

If the abseiling structure is owned by another organisation, check that their inspection regime is up to date.

Checking design and build

Proof of design and build suitability may be achieved via manufacturers' instructions, building consents, or engineers' reports. Ensure that such documentation has taken into account peak forces likely to be generated by abseiling activities.

Where none of these are available, the abseiling structure should undergo a check as described in the following section. This check should be carried out by an engineer, registered builder, or abseiling structure designer who has an understanding of the peak forces likely to be generated. Where an abseiling structure designer is used, ensure they incorporate checks against engineering and Building Code standards and are competent to do so.

Ensure that there is an easy and safe transition from the safe zone to the abseil ropes.

Checking current condition

Check the current condition of existing abseiling structure by carrying out an inspection as outlined in the recommendations relevant to abseiling structures in AS 2316.1-2009 section 3.1.1 (d) – annual inspection.

Check anchors as per the recommendations in AS 2316.1-2009 section 3.1.2. Ensure the check of anchors includes sighting current records of, or undertaking visual inspection and proof testing – if proof testing anchors, follow the recommendations in section 7.3 of this guideline.

For the initial check, the abseiling structure operators should consider using a person who is not involved in the day-to-day operation of the site. This mitigates the risk of familiarity with the structure influencing their inspection. Ongoing annual checks and anchor proof testing by facility staff is acceptable. Ensure they are competent to carry out the required tasks.

The frequency and focus of future checks should be informed by the above inspection and the recommendations relevant to abseiling structures in AS 2316.1-2009 section 3.1.1 (d) and 3.1.2.

Inspecting areas with limited access

Some existing abseiling structures may include sections that are difficult to get behind and visually inspect. Where a section includes safety critical components and is not able to be visually inspected, add redundancy to give assurance that it will support its intended load, eg by backing up an anchor point or installing another separate anchor.

Design new abseiling structures so that thorough visual inspection is possible.