ASG

Activity Safety Guideline

Abseiling

April 2016 Version 2

SupportAdventure.co.nz

SAFETY SYSTEMS DRIVEN BY SAFETY CULTURE

Preface

This activity safety guideline for abseiling is published by the Tourism Industry Association of New Zealand (TIA) with support from WorkSafe New Zealand. The guideline was developed in association with experts from the abseiling sector and other relevant technical experts. More information about the guideline development process 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. Users should periodically check the date and version number of the current online document to ensure that their printed copies are up-to-date.

Activity safety guidelines are the result of a recommendation from the final 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.

TIA, WorkSafe New Zealand, 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.

Development was managed by the Tourism Industry Association New Zealand: www.tianz.org.nz with the support of WorkSafe New Zealand: www.business.govt.nz/worksafe.

Document control

Version 2

Changes from versions 1.1 and 1.2	**Where**
Updated the health and safety regulator's name	Throughout document
Revised references to the health and safety legislation	Throughout document
Revised the technical expert definition	Definitions
Revised the guidance on vertical lanyards to be consistent with guidance in other ASGs	Section 5.3
Changed the age that operators commonly require guardian consent to under 18 years	Section 8.2
Added a section on proof testing bolts to be consistent with guidance in other ASGs	Section 9.3

Published

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

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 www.supportadventure.co.nz, and public sector information published by WorkSafe.

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 activity safety guideline working group and are acknowledged for their advice and support:

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The following groups are also acknowledged for their input and support:

Abseiling Activity Safety Guideline Support Group, New Zealand Mountain Safety Council; New Zealand Outdoor Instructors Association; Outdoors New Zealand; Outdoor Safety Auditors; ServiceIQ Industry Training Organisation; Tourism Industry Association New Zealand; Water Safety New Zealand.

Contents

Definitions

This guideline assumes the reader has technical knowledge of this activity. 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.

Client

A person (participant) 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 suitable as sole anchor points such as suitable 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.

Guide or instructor

A person who is responsible for guiding or instructing clients.

Health and safety terms

See Appendix 1 for an explanation of the terms *all practicable steps, hazards* and *significant hazards,* and *serious harm*.

Incident

An event that caused or could have caused harm to any person.

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 client 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 client or providing pre-emptive assistance.

Operator

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

Permanent anchors

Anchors that are on or part of buildings or structures.

Placed protection anchors

Temporary anchors that are entirely constructed at a site and removed on departure. They are generally constructed using technical rock climbing equipment such as camming devices, wires, and nuts.

Purpose-built abseil structure

A built structure designed specifically for abseiling.

Qualified

A person who holds a current, nationally recognised qualification.

Risk

Effect of uncertainty on safety objectives.

Risk assessment

A process undertaken by a competent person to identify risks and their associated hazards, and to assess the hazards 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 directing and controlling an operation in regard to safety.

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 clients undertaking abseiling activities.

Standard operating procedures (SOPs)

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

Technical expert

A person who has professional credentials such as a high level, nationally recognised qualification, or extensive knowledge, skills, and experience. They advise auditors and operators on technical tasks, including reviewing activity practices.

Section 1: Introduction

This guideline is split into 11 sections.

In Section 1 you will find:

- an explanation of the scope of this guideline
- a description of the New Zealand abseiling sector
- an introduction to the legislative context for abseiling activities in New Zealand
- an explanation of the purpose of this guideline and the SupportAdventure website
- information on how to use this guideline to build your standard operational procedures and pass safety audits.

Section 2 is about the hazard management process. Sections 3 through 10 provide abseiling-specific safety recommendations, and section 11 gives information about reviewing your safety systems.

1.1 Scope of this guideline

Abseiling referred to in this guideline includes:

> Activities where abseiling is the primary purpose[1] of the activity and is provided in a guided or instructed[2] 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. Alternatively, abseiling is referred to as rappelling.

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

> 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 risks, hazards, and techniques.

[1] Abseiling is a component of many activities, eg rock climbing, mountaineering, 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 sector good practice.

[2] 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.

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

Activities associated with taking clients 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

1.2 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 particularly common. It is however a component of other adventure tourism activities such as canyoning and caving.


Photo: Outdoor Recreation Management

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. Full On was a New Zealand company offering abseiling activities on youth development programmes throughout the world for up to 20,000 people per year.

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.

There are several abseiling specific instructor qualifications; although many staff providing abseiling will have their abseiling competence verified as part of a qualification in a broader activity.

1.3 The legislation

Commercial abseiling operations are subject to the Health and Safety at Work Act 2015 and the Health and Safety in Employment (Adventure Activities) Regulations 2011 (the Adventure Activities Regulations).

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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 Adventure Activities Regulations cover activities where:

- the recreational or educational experience the participants have is the main purpose
- the participants are guided, taught or otherwise assisted to participate in the activities
- the design of the activities deliberately exposes the participants to a risk of serious harm that must be managed by the operator of the activity
- failure of the operator's management systems (such as failure of operational procedures or failure to provide reliable equipment) is likely to result in serious harm to participants, or participants are deliberately exposed to dangerous terrain or dangerous waters.

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

For more information, see the SupportAdventure website.

1.4 Purpose of this ASG & the SupportAdventure website

This Abseiling Activity Safety Guideline (referred to as *the guideline*) aims to provide practical recommendations for commercial abseiling operators in New Zealand to actively manage the safety of the abseiling activities they provide.

The SupportAdventure website provides practical guidance for adventure activity operators on developing good practice safety management systems. It includes 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 and manage hazards.

An investigation into an accident may look at how well an operator followed this guideline. However, hazards may be managed in ways other than those recommended in this guideline and achieve the same level of safety or better. See the following section for information on how to use this guideline to build safety into your standard operating procedures.

1.5 Use this guideline to build 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) for each activity you provide.

This guideline outlines good practice safety recommendations that are specific to abseiling. Conduct a site specific hazard 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 expert or other competent person. An operator will need to be able to justify why they use a different method from the guideline.

This guideline gives examples to explain hazards and other concepts. The examples are not exhaustive – think of other examples that could apply to your specific activity.

It is essential that, alongside site specific assessments and the use of this guideline, guides and instructors conduct on-going dynamic hazard assessment and management.

The responsibility for making safe decisions remains with the operator.

1.6 Use this guideline to help you pass safety audits

The Adventure Activities Regulations require abseiling operators to pass independent safety audits. Following this guideline will help operators to do this.

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

- the general standards and requirements for all operators
- that there are relevant technical standards and requirements for each specific adventure activity.

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: Hazard Management Process

This section looks at the following steps in the hazard management process:

- identifying and assessing hazards
- managing hazards
- managing the hazard of drugs and alcohol
- using competent persons
- incident reporting and learning.

Hazard management processes need to be driven by a positive safety culture. Apply hazard management processes to all operational situations including new activities, standard activities, and when there are changes to equipment or hazards.

Hazard management involves both a scheduled and dynamic approach to identify, assess, manage, communicate and record hazards in every part of an operation.

For an explanation of the terms *practicable steps, significant hazard,* and *serious harm,* see Appendix 1.

2.1 Identifying and assessing hazards

Identify significant hazards both systematically and dynamically. The systematic part of identifying hazards should use a variety of methods such as:

- inspecting sites physically
- consulting with other users
- reviewing standard operating procedures
- reviewing past incident reports and lessons learned.

Assess all hazards to identify which ones are significant. Align assessment and rating systems with current good practice and take into account the nature and context of the activity.

2.2 Managing hazards

Manage hazards according to the 'eliminate, minimise' hierarchy of action. Due to the nature of abseiling many hazards cannot be eliminated, and can only be minimised.

Hazard management should reduce the risk of harm to acceptable levels. What these acceptable levels are will depend on the nature and context of the activity, client ability and on current good practice.

Managing hazards includes monitoring them for changes in their significance. A higher level of management, such as moving from minimising to eliminating a hazard, may be necessary if a hazard increases in its likelihood to cause serious harm. For example, a change in stability of an abseil site, such as an increase in loose rocks after a rain event, may mean that the activity should be moved to another site.

2.3 Managing the hazard of drugs and alcohol

The Adventure Activity Regulations explicitly require operators to manage the drug and alcohol-related risks in their workplaces, starting with an assessment of the operator's risk. Auditors will expect to see an assessment of the activity and personnel risks, a policy to manage those risks, and evidence that it is being implemented.

For guidance on preparing a policy, see WorkSafe's Guidance for Managing Drug and Alcohol-Related Risks in Adventure Activities.

2.4 Using competent persons

Use suitably competent people to identify, assess, and manage hazards.

Ensure the competent person is familiar with the operator's safety management system, client market, relevant site specific information, and has access to historical information on site hazards and incidents.

2.5 Incident reporting and learning

Report, record, and analyse all incidents and concerns that affect safety or have the potential to affect safety. This is done to enable learning and to help stop the incident from happening again. Act on anything you learn.

Incident reporting systems need to be used effectively. Induction and on-going training are vital, but are only a part of ensuring that this happens. The system must be openly and regularly used, particularly by senior staff, to have any chance of success.

Feedback to workers who report incidents and reporting to officers are other key components of the system.

To encourage responsible reporting, take care to think of reporting and recording separately from the incidents themselves. Avoid penalising people for reporting incidents. Good reporting and recording should be seen as positive behaviour alongside whatever faults may have led to an incident.

For more information on hazard management processes, see:
www.supportadventure.co.nz/safety-management-plans/hazards

For more information on incident reporting, see:
www.supportadventure.co.nz/safety-management-plans/incidents

Section 3: The Abseiling Environment

Most likely abseiling serious harm injuries are caused by falling from height or being hit by falling objects. Focus hazard 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 hazard management processes, and for guides and instructors to conduct ongoing dynamic hazard identification, assessment, and management.

This section identifies good practice hazard management strategies for dealing with the following key aspects of abseiling environments:

- General exposure to edges and the risk of falling from height.
- The risk of being hit by falling objects.
- The risk of cliff face collapse.
- The effects of extreme temperature on people.
- The effects of weather and other natural events on people and abseil structures.
- The risks of high and rising water levels.
- The risk of being swept into the sea.
- The risk of public use of the abseil site without adequate supervision.
- Changes to the hazards of an abseil site.

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

> Some of the other most likely hazards to contribute to falls from height are associated with operational aspects of abseiling (see Section 5), and with anchors or equipment (see Section 9).
>
> The most likely abseiling serious harm injury involving multiple people is the collapse of a purpose-built abseiling structure (see Section 4).

3.1 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 clients waiting to participate or who have finished the abseil. For information on the risk of falling from height associated with operational aspects, see Section 5.

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. This will often include establishing safe zones and communicating these clearly to clients. Ensure supervision systems are suited to the risk – follow the supervision recommendations in Section 8 and give particular consideration to 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 clients and staff[3] or attach them to a safety point when, in the opinion of a suitably qualified person:

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

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

- how close people are to the edge
- how much the surface slopes downward
- how unstable or slippery the surface is
- the ability of the client and staff member
- the ability of the client to follow instructions.

3.2 Falling objects

Falling objects can be a significant hazard of abseiling 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 – see the following section.

Natural objects

Assess, monitor and manage the abseil site for the likelihood of falling natural items. Ensure that hazard 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 hazards should be based on the associated risk. Options 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 clients know to move quickly out of fall zones once they finish the abseil
- ensuring staff and clients 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 hazards involved with human-related objects falling from above should be based on the associated risk. Options include:

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

- placing loose abseiling equipment back from the edge or attaching it so that it cannot fall
- ensuring clients 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 client with a lanyard
- wearing helmets
- ensuring clients know to move quickly out of fall zones, particularly once they finish the abseil
- ensuring staff and clients have agreed protocols for falling objects such as yelling 'rock' and not looking up
- ensuring the fall zone is clear of bystanders.

3.3 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.

3.4 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 clients struggling to safely participate and becoming hypothermic or hyperthermic.

Strategies for managing this should be based on the associated risk. Options 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 clients are clothed for the expected temperatures
- minimising the time clients 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.

3.5 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 client abseiling and other clients 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-related injuries such as lightning strikes.

3.6 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 running these activities are well aware of the associated risk and causes of high and rising water levels for the abseil site they work, and how to monitor, plan for, and react to high and rising water levels should they occur.

Strategies for managing hazards associated with high and rising water levels should be based on the associated risk. Options include ensuring that guides and instructors know:

- local catchment areas and associated dangerous weather patterns – consider 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 (most up to date and most accurate) 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 these, and any associated activity cancellation parameters.

3.7 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 hazards associated with being swept into the sea should be based on the associated risk. Options 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.

3.8 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.

3.9 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 4.2 and section 9.3.

Section 4: 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 9.

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


Photo: Outdoor Recreation Management

This section looks at two key aspects of structure design and build. It identifies significant hazards and good practice for managing those hazards. 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), which 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 all 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.

4.1 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 5, 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 client belayers. Abseiling activities should focus safety management strategies on preventing falls by following the recommendations in Section 5 of this guideline.

Guidance on assessing pre-existing abseiling structures for structural integrity and abseiling suitability can be found in Appendix 2.

4.2 Maintenance, testing, and inspection

For information on anchors and general use and emergency equipment, see Section 9, and for information on ensuring the safety of staff working at height, see Section 7.

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 assessment
- 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.

Proof testing abseiling structure top anchors

Through-bolted engineered anchors do not require testing and, in fact, should not be tested. However, they do require maintenance and periodic inspection by a competent person in accordance with the designer's specifications and based on factors such as anchor type, frequency of use, environmental exposure, age, and expected wear and tear.

Proof test other top anchors as per the recommendations relevant to abseiling structures in AS 2316.1-2009 section 2.7.1 (a), and ensure that:

- testing is done with certified and calibrated equipment, and by a competent person – for routine testing this person may be involved in the day-to-day operation of the site
- test loads are 50% of the strength limit state capacity of the anchors, eg for a two-point, load-sharing abseiling anchor rated to 22KN, each point should be tested to 6KN[4]
- proof test loads are applied gradually, with an axial pull and held for at least two minutes – a positive test will show no signs of the anchor yielding or reduction of the load applied.

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

[4] These recommendations are based on engineering advice.

Section 5: Providing the Abseil Activity

This section looks at managing the risk of serious harm associated with abseiling. The most likely serious harm injuries are associated with falling from height and the incorrect attachment to, or use of, the abseiling or belaying system. Focus hazard management strategies on these risks.

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 resulting operational areas are:

- Choosing one or two ropes.
- Hazards common to all abseiling.
- Using lanyards.
- Using clients to belay.
- Long abseils.
- Abseils using guided lines.
- Multi-pitch abseiling.
- Client self-belayed abseiling.
- Abseiling in waterfalls or into water.

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 3), and with anchor or equipment failure (see Section 9).

The other most likely serious harm injury is associated with impact from falling objects (see Section 3).

The most likely abseiling serious harm injury involving multiple people is the collapse of a purpose-built abseiling structure (see Section 4).

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 or structure, and with clients who are waiting to participate or have finished participating, see section 3.1.

5.1 Choosing to use one or two ropes

Use an abseil system suited to the expectations and competence of clients and to the abseil activity, site, and route. When choosing which system to use, consider the information in this section and the activity-specific information in the following sections.

Two-rope systems

Two-rope systems are the most common forms of abseiling systems. They involve an abseil line plus an independent belay rope attached to the abseiler and usually managed by the guide or instructor. They will usually belay from the top and occasionally from below.

Two-rope systems have the benefit of enabling simple rescues and enabling the belayer to have ultimate control of the abseiler's descent. Other factors to consider include:

- rescue scenarios include the option of lowering the client on two lines or discarding the abseil line and lowering the client on the belay line
- there is less chance that a sharp edge will result in a fall from height – two ropes would need to fail rather than one
- there are two ropes to rig and manage when setting up and operating the abseil, and for some activities this can impact on 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 line. Belaying may involve another person performing a bottom belay (fireman's belay) or the abseiler belaying themselves using a prusik or other 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 5.5.

Self-belayed abseiling requires a high level of competence and has a number of other unique hazards. It occurs with competent clients in longer instructional courses with skills-based outcomes – see section 5.8 for more information.

Single-rope systems are more susceptible to cutting by 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 client back up
- careful consideration needs to be given to the time required to effect a rescue in order to manage the risk of suspension trauma
- bottom-brake belay systems require a competent person (often a trained client) to perform the task of bottom belayer and a guide or instructor to remain at the top of the abseil to manage rescue scenarios
- the abseiler requires a higher level of competence than those using two-rope systems – the guide or instructor has less control of the abseiler's descent

An advantage is there is only one rope to manage and rig when setting up and operating the abseil.

5.2 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 clients 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 associated 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 client abseiling 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, client body position, and options to practice
- client following incorrect abseil route – harmful pendulum falls
- top-heavy clients – possibility of inverting
- abseiling at speed – losing control, rope burn, and any sudden stop loading anchors and equipment
- abseiler stuck on the rope or route, including stuck on a ledge
- abseiling off the end of the rope

- no guide or instructor at the bottom of the abseil, making it difficult for the client to communicate with the guide or instructor and difficult first aid management.

Managing the other hazards

Include strategies for managing hazards in technical systems, client management, and client 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 9 and:

- provide clients 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 client, such as rigging a figure 8 with an extra wrap to increase friction
- use a locking carabiner to attach the abseil device to the client
- 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 3.1 – 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 as per the recommendations in section 8.3
- ensure the abseil system is releasable or includes another options for recovering the abseiler in a stuck abseiler scenario, eg a hauling system or lowering using another rope
- ensure clients have a safety backup system while abseiling, usually a belay by a guide or instructor on a separate rope:
  - if using one rope and clients to bottom-brake belay, follow the recommendations in section 5.4
  - if allowing clients to use a self-managed belay system, follow the recommendations in section 5.8
- 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 sections – for more information on supervision, see Section 8
- 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 client's abilities, particularly around ease of weighting the rope while maintaining the correct abseiling position and options for practicing

abseiling techniques before hanging vertically – use setups with a high focal point for abseils that begin with a short transition from horizontal to vertical.

Client management

Supervise clients as per the recommendations in Section 8.

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

- the decision to allow a client 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 client performing the skills required and has confidence that in both normal and adverse conditions the client will perform the skills correctly
- the initial weighting of the client's abseil setup is backed up by another form of safety such as the client being attached to the anchor by a lanyard
- 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 clients exposed to edges.

Client briefing

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

Instruct clients 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 clients on how to detach from the rope and how to communicate with the guide or instructor if there is a problem.

5.3 Using lanyards

Lanyards (or cows' tails or anchor chains) are commonly used to manage exposure to edges by containing clients in a safe place or guarding against falls, particularly when accessing the top of an abseil site and when preparing to abseil. Lanyards are not to catch a fall but are used in conjunction with safety lines and anchors to prevent a fall.

This section assumes the operator is using either traditional lanyards[5] involving two carabiners and two lengths of webbing or rope clipped to one safety line, or a single length of webbing or rope attached to a safety line by one carabiner.

Lanyard use may be managed by a guide or instructor, or be self-managed by the client. Self-managed refers to the client managing the attachment process themselves. It involves the risk of clients completely detaching their lanyards, losing their balance, and falling from height. Self-

[5] 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.

management requires appropriate supervision, some client technical skill, and a high level of task focus. Follow the recommendations in this section and ensure the risk of client error is managed.

It is uncommon to use lanyards in conjunction with vertical travel for abseiling activities, eg when it is likely that the client will climb above the point where the lanyard attaches to the safety line, or when falls could generate fall factors outside the force absorption capacity of the lanyard. If using lanyards 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 lanyards.

Identifying the hazards

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

- placement of anchors or safety lines not adequately protecting people from falls
- carabiner gates opening accidentally
- in the event of a fall, high peak forces impacting on people and equipment.

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

- not understanding the consequence of incorrect lanyard use
- insufficient training or supervision
- being distracted or not focusing on the task
- incorrect attachment of lanyard to safety line
- not being able to reach clip and unclip points.

Managing the hazards

Include strategies for managing hazards in technical systems, client management techniques, and client 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 clients – easy-on, easy-off.
- Lanyard 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.
- Ensure that self-managed lanyards have at least two independent points of attachment, and use simple and consistent systems to identify clip and unclip points.

Client management

Supervise clients during the unclipping and re-clipping of lanyards to safety lines as per the recommendations in this section and Section 8.

When safety is self-managed, directly supervise clients attaching and re-clipping lanyards to safety lines unless:

- the client 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 – for information on staff competence, see Section 7
- the guide or instructor has previously taught or observed the client 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 client understands and accepts the increased responsibility indirect supervision places on them.

Direct supervision techniques could include visual checks of clients doing carabiner 'squeeze tests'.

When safety is self-managed and the guide or instructor is supervising indirectly, use indirect supervision level 1[6] unless at least two of the following hazard management strategies are used:

- buddy checks at re-clipping points
- three lanyard clips rather than the usual two
- 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 clients and using them as per the recommendations in section 7.4 – use adults and ensure they are trained and verified as competent in supervising and checking the points below under 'client briefing'.

Client briefing

If lanyard use is managed by the guide or instructor, brief the clients 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 lanyard attachments to the safety line above waist height.

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

- stress the additional responsibility self-managed use places on them, the importance of correct and diligent lanyard 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'.

5.4 Clients belaying

Clients are sometimes used to bottom brake belay (fireman's belay) on abseiling activities, and very occasionally to belay from the top of the abseil site. Using client belayers exposes the abseiler to a

[6] Reactive indirect supervision may be acceptable if the guide or instructor has previously taught or observed the client performing the tasks required and has confidence 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.

higher risk of belayer error, and exposes the belayer to the risks of either falling from height or being hit by falling objects. Ensure these risks are managed.

Identifying the hazards

Factors to consider when identifying hazards for using clients to belay include:

- the belayer using incorrect belay technique
- the belayer being distracted or not focusing on the task
- the belayer using safety equipment incorrectly, such as harnesses and rope attachment systems
- loose items or fingers and hair becoming jammed in the belay device.

For information on using clients to bottom-brake belay for abseiling in waterfalls, see section 5.9.

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

Technical systems

When belaying from the top of the site, ensure the belayer is protected from falling as per the recommendations in section 3.1.

Client management

Supervise clients as per the recommendations in this section and Section 8.

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

Consider backing-up the belayer, particularly if the environment may be distracting or the belayer is new to the task. Options include using an additional person to back-up belay or the belayer using a prusik.

Directly supervise client 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.

Client briefing

Instruct clients 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.

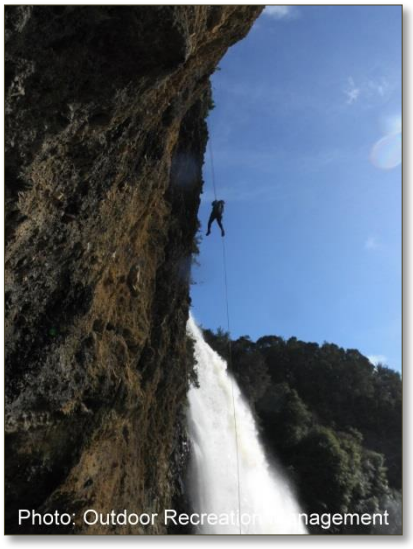
5.5 Long abseils

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 client 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 client
- heat build-up in the device causing rope-sheath damage
- 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 client's ability to abseil
- client spending a long time hanging in their harness, increased risk of suspension trauma
- ineffective bottom-brake belaying associated primarily with rope stretch.

Managing the hazards

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

Technical systems

Technical systems need to take into account equipment loadings, client ability, and the time a client spends hanging in a harness. Long abseils often use a single rope system – see section 5.1 for more information.

- If considering using bottom-brake belaying, test its effectiveness first – there have been fatal accidents associated with bottom-belaying long abseils. Other options include clipping into clients 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 signals such as rope tugs or whistle calls.
- 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 client 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 5.2.

Client management

Supervise clients as per the recommendations in Section 8.

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

Ensure clients 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 7.

Client briefing

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

Brief the client on:

- Information needed to negotiate the entire abseil route before they start the abseil, such as how to negotiate a ledge or overhanging section.
- How to manage the additional weight of the rope.
- Communication signals such as how to let the guide or instructor know when they are safely on the ground.
- The abseil device heating and that they should keep descending slowly and steadily, and not stop.

5.6 Using guided lines

Guided line abseils refer to those using an additional rope to track clients 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 hazards

Include strategies for managing these factors in technical systems, client management techniques, and client 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 angle is sufficient to track the client 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.

Client management

Supervise clients as per the recommendations in Section 8.

There are no additional client management recommendations for abseiling using guided lines.

Client briefing

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

5.7 Multi-pitch abseiling

Multi-pitch abseiling is when there are transfers from one abseil to another that expose clients and guides or instructors to edges and require attachment 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), require a high level of instructor or guide technical skill, and are not particularly common within the instructed or guided abseiling sector.

Identifying the hazards

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

- falling from height during change overs for one pitch to the next
- route choice or anchor sites not enabling safe client 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
- 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 hazards

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

Technical systems

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

Use sufficient equipment to enable safe setup of all anchors and client 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. Consider doing 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 clients if relevant.

Client management

Supervise clients as per the recommendations in Section 8.

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

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

Client briefing

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

5.8 Self-belayed abseiling

Self-belaying (using prusiks or another rope-grab device) requires skilled clients. It generally occurs on longer instructional courses with skills-based outcomes rather than in the guided abseiling sector. Client self-belayed abseiling involves the risk that clients will make an error and fall. Ensure this risk is managed.

Note: Although this guideline is focused on managing clients' abseiling, self-belaying is a technique most often used by guides or instructors. Ensure guides or instructors use a backup safety system when abseiling and that they are competent to perform the tasks within their role. For information on staff competence, see Section 7.

Identifying the hazards

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

- client not using the system correctly
- self-belay system not engaging or becoming locked or jammed
- client being incapacitated and therefore unable to work the self-belay
- system relying on one rope – for more information, see section 5.1
- using an inappropriate choice of self-managed system.

Managing the hazards

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

Technical systems

Ensure the risk of objects falling from above is extremely low – see Section 3 for more information.

Use a self-managed belay system that is aligned with client competence and the hazards of the route. Consider the ease of setup and of releasing the belay system once it has been locked. Common systems include a prusik used above or below the belay device, and shunts.

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


Photo: Whitireia Polytechnic

Client management

Supervise clients as per the recommendations in Section 8.

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

Client briefing

Brief clients on the additional risk and responsibility associated with self-belaying.

If using a prusik, ensure clients understand that over-gripping the prusik can stop it locking.

Instruct clients to control their speed and avoid abrupt locking.

5.9 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 client 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
- client bottom-brake belayers needing to assist with pulling the abseil line to move the abseiler out of the flow of the waterfall.

Managing the hazards

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

Technical systems

When clients 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 clients 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 client. Factors to consider include:

- the swimming ability of the client
- the likelihood of a client 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 client 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, 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 client bottom-brake belayers stand back from the waterfall, have stable footing, and have good visibility of the abseiler.

Client management

Supervise clients as per the recommendations in this section and Section 8.

Use client assessment and progressions to ensure clients 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 clients' swimming ability.

Client 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 clients on how to get clear of the rope.

Section 6: Site and Activity Management

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

6.1 Knowledge of the site and system

Use guides or instructors competent at the skills required to manage the abseiling activity – see Section 7.

Ensure that guides or instructors are familiar with the hazards of the site they are working 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 – particularly those that affect accessing and rigging the site's abseiling system
- the complexity of the abseiling activity such as simple single pitch abseiling compared with multi-pitch abseiling
- the competence of the guide or instructor.

6.2 Site monitoring

Monitor group safety with a suitable backup person and on-site monitoring.

Backup monitoring

Ensure there is a suitable backup person for abseiling conducted at more remote locations or by a sole guide or instructor.

The person providing backup monitoring is responsible for initiating emergency response as per the procedures in the operator's safety management plan. Ensure they are as contactable as practicable while the activity is underway.

Note: the backup person should not be involved in the abseiling activity.

On-site monitoring

Ensure every site has a guide or instructor who is responsible for monitoring general site safety and ensuring the activity follows the operator's standard operating procedures.

This person should be an experienced guide or instructor who the operator is confident will exercise good judgement under pressure.

Note: This does not remove the responsibility for each individual guide or instructor to manage the safety of clients within their supervision ratio.

6.3 Communication systems

Communication systems need to cover communication between those at the abseil site and those monitoring the activity or other external emergency support, and where relevant between guides or instructors running the abseiling activity.

Communicating with external support

Ensure each abseiling site has a primary communication system, and that a backup system is available if the primary system is likely to be compromised. Compromising factors could include getting wet or being hit by rock fall.

The primary system should be the most effective option practicable, and ideally be two-way. Examples of communication systems include:

- access to nearby landlines
- a cellular phone
- a satellite phone
- handheld radios
- two-way texting devices – be aware there can be delays in sending and receiving texts
- one-way devices such as personal locator beacons.

Where a communication device is used that relies on coverage, ensure that guides or instructors and back-up personnel are aware of coverage areas and blind spots.

Difficulty in communicating with external support can be a significant hazard if abseiling activities are run in remote areas. See Section 9 for information on contingencies for limited access to external emergency support.

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.

Section 7: Staff

Incompetent staff are a significant hazard, and using competent staff is one of the mainstays of ensuring safety. This section looks at key aspects of staffing your operation:

- Safety responsibilities and competence.
- Verifying competence.
- Staff competence.
- Using assistants.
- Staff working at height.
- Identifying and managing unsafe staff.

7.1 Safety responsibilities and competence

Ensure the safety responsibilities and competence requirements of each job within the operation are correctly identified. These jobs should include operations management, and guiding and instructing.

When identifying a job's competence requirements, factors to consider include:

- levels of experience and judgement
- personal technical skills, including equipment knowledge
- risk management, group management and leadership skills
- ability to operate in accordance with standard operating procedures
- familiarity with and understanding of the operational environment
- ability to communicate safety requirements/directions clearly to the client
- rescue and emergency management skills, including first aid.

Note: Ensure the number of staff with first aid qualifications, and the type of qualifications they hold are suitable for the likely first aid scenarios of the abseiling activity.

7.2 Verifying competence

It is the responsibility of the operator to ensure that staff are competent. This section looks at how to use qualifications to verify skills, and how to verify those skills that are not covered by qualifications.

Using qualifications

Current qualifications are a credible way to measure competence. Where a job carries responsibility for managing high levels of risk and a qualification matches a skill set needed for that job, it should be used.

Operators should ensure they know which skills and knowledge a qualification actually measures. The operator should then check these against those required for the job. Ensure that skills or knowledge not covered by the qualification are verified by other suitable means.

Verifying competence in skills not covered by qualifications

Verify competence in skills not covered by nationally recognised qualifications using a measure that suits the degree of safety responsibility associated with the skills.

Use a suitable person to verify competence. This person should have a qualification to do so, or be a technical expert in the skill to be verified who also understands national expectations on the standard of competence required.

Keep records of competence verification processes and results.

Establishing equivalency between qualifications

When establishing equivalency of one qualification with another (or parts of a qualification), an operator should contact the benchmark qualification provider and enquire what process they recommend.

Qualifications currently under review

Qualifications on the New Zealand Qualifications Authority (NZQA) Framework are currently being reviewed. The results of this review are likely to affect the abseiling sector's recommendations for verifying competence and will be included in this guideline as they become available. For more information on this review, see www.skillsactive.org.nz.

For more information on verifying staff competence, see:
www.supportadventure.co.nz/safety-management-plans/staff

7.3 Staff competence

This section identifies safety related responsibilities and technical competency recommendations for guiding or instructing abseiling. It specifically looks at:

- competence requirements
- recommendations for competence verification.


Photo: Whitireia Polytechnic

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.

It also does not 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 7.5.

Competence 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 clients to belay) under the indirect supervision of a guide or instructor with the 'Perform rescues' competencies (see below).

Relate the competencies in this table to a specific abseiling activity.

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

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 clients belaying, this also includes a jammed belay device and excessive slack rope in the belay system
	Apply the operation's overarching client emergency management process	Can apply the operation's overarching client emergency management procedures, including ensuring all clients 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 safety 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 clients

Purpose: To teach and assess client belaying skills.

Relate competencies in this table to a specific belaying activity.

Safety responsibilities	Safety functions	Safety competencies
Teach, assess, and monitor client belaying	Teach and assess client 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 clients as competent for a specified level of supervision	Can apply a process to sign-off clients as competent to belay under a specified level of supervision
	Monitor client 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

Key areas	Key safety functions	Key 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

Key areas	Key safety functions	Key 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

Recommendations for competence verification

Ensure that guides or instructors are competent to perform their roles and that competence is verified in line with the recommendations in this section and section 7.2.

There are two abseiling-specific qualifications and several broader qualifications that incorporate relevant competencies. Mountain Safety Council no longer offer qualifications.

Where guides or instructors are operating within the scope of the abseiling specific qualifications, ensure that:

- they hold the current qualification corresponding to their job requirements, or
- hold an equivalent qualification or a broader qualification that includes the technical competencies, or
- are verified as competent in equivalent skills.

Where guides or instructors are providing activities not covered by the abseiling-specific qualifications, ensure they are verified as competent in the areas required for their role as identified above in the Competence Requirements section. Verification options include using broader qualifications or in-house measures.

Abseiling-specific 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 protection.
- **Skills Active National Certificate in Outdoor Recreation (leadership) – 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.

The 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, fixed and placed protection anchors

(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) Alpine Trekking Guide and Hard Ice Guide
- New Zealand Outdoor Instructors Association (NZOIA) Rock 1 and Canyon 1
- Skills Active SRT Cave Guide certificate l.

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 Caving SRT Instruction certificate.

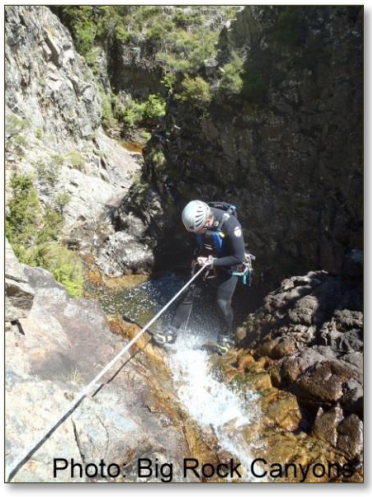


Photo: Big Rock Canyons

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.

7.4 Using assistants

It is common to use assistants such as teachers, parents, or trainee staff to assist with managing safety when abseiling. This involves the risk of hazards not being managed competently.

An assistant is responsible for managing some tasks within the guide or instructor role, but not all. Skills required will vary depending on the tasks to be managed.

When using assistants ensure that:

- tasks to be managed, safety responsibilities, and required skills are clearly identified and understood by the assistant and the guide or instructor
- the assistant is verified as competent in the required skills
- the assistant only manages the tasks for which they are verified as competent
- the competence of the assistant is considered when establishing client supervision levels.

7.5 Staff 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 6.

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.

7.6 Identifying and managing unsafe staff

Do not permit a staff member to guide or instruct, or undertake other safety-related tasks if they are in such a state of impairment that they may be a hazard to themselves or to any person on the activity. Impairment could be due to factors such as alcohol, drugs, injury, or fatigue.

Identify as a hazard any person who is unable to perform safety tasks as required to fulfil the responsibilities of their role. Management strategies should suit the significance of the hazard and be outlined in the staff management aspects of the operator's safety management system. The Adventure Activities Regulations require that drug and alcohol hazards are specifically addressed through an explicit drugs and alcohol policy.

Initial hazard management for dealing with unsafe staff should include removing the person from the role requiring performance of safety tasks. See also Section 8 for information on managing unsafe clients.

For more information, see WorkSafe's Guidance for managing drug and alcohol-related risks in adventure activities.

Section 8: Clients

This section looks at key aspects of managing client safety. It considers significant hazards they usually involve and identifies good practice for managing those hazards. The key aspects are:

- Ensuring clients are suited to the activity
- Informing clients about safety
- Supervising clients.

8.1 Ensuring clients are suited to the activity

Assess clients to check they are suited to participate in the abseiling activity. This should happen before the activity begins and be ongoing during the activity itself. This section looks at assessing clients, establishing age guidance, and identifying and managing unsafe clients.

Assessing clients

Use information gathered while assessing clients to inform activity options, client supervision levels, and safety management techniques.

Clearly identify what to assess in the operator's safety management plan. Staff other than guides or instructors, such as front-of-house staff or drivers, may be involved in assessing clients. Ensure client assessment is consistent across staff and reflects the requirements of the activity. Factors to consider when assessing clients include:

- fitness and physical ability
- psychological factors such as the ability and likelihood to follow instructions, fears and phobias, and confidence at height
- age
- medical issues, particularly pre-existing injuries
- the technical skills required for the activity.

Information on managing clients with mixed abilities can be found at www.supportadventure.co.nz and in the Mountain Safety Council Outdoor Safety Manual: Risk Management for Outdoor Leaders.

Establishing age guidance

There are no overarching age recommendations for abseiling in New Zealand. However, there are recommendations on the minimum age of client belayers – see section 5.4.

Establish minimum age guidance for each abseiling activity. Factors to consider include:

- the specific hazards of the abseiling activity
- the specific hazards of the abseil site
- whether the client fits the safety equipment
- the ease of site access and escape
- the ability to access external emergency support
- supervision levels
- experience and skill of guides and instructors.

Note: It is common practice for operators to require children aged under 18 to have guardian consent to participate in adventure activities. New Zealand law does not give clear guidance on this topic.

Identifying and managing unsafe clients

Do not permit a person to participate in an abseiling activity if they are in such a state of impairment that they may be a hazard to themselves or to any person. Impairment could be due to factors such as alcohol, drugs, injury, or fatigue.

Identify as a hazard any client who is unable to perform safety procedures as outlined in the safety instructions. Management strategies should suit the associated risk and include options such as increasing supervision levels or removing them from the activity.

See Section 7 for information on managing unsafe staff.

8.2 Informing clients about safety

Managing safety is more effective if clients are well informed, particularly on the risks and requirements of the abseiling activity. This section looks at key aspects of informing clients about safety:

- delivering safety information
- pre-activity risk disclosure
- general safety information
- using demonstrations and activity progressions.

Delivering safety information

Safety information should be delivered by a guide or instructor who has been verified as competent to do so. Ideally this person would be an experienced guide or instructor.

Ensure, as best as is practicable, that the client has understood the safety information. A safety information aid should be readily available to any client who has difficulty understanding the initial briefing, eg videos, pictures and diagrams, practical demonstrations or written instructions in the client's language.

Pre-activity risk disclosure

Before beginning the abseiling activity inform every client of the following information:

- abseiling is an adventure activity involving risk of serious harm or death. Clients should be aware that the abseiling operator cannot totally guarantee the client's safety
- the activity may be mentally and physically demanding and requires the client to be operating at height (emphasise these points to suit the particular activity)
- the client needs to follow the guide or instructor's instructions at all times and understand that this is critical to their safety and that of the group.

Mention significant hazards that cannot be eliminated or place extra responsibility on the client. 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 client-belayed abseils.

Inform clients of any difficulties related to escaping the abseil site and communicating with external emergency support.

Note: Abseiling activities often involve children. Ensure pre-activity risk disclosure information is given to the correct people, such as parents and teachers. This may mean the information needs to be delivered twice.

General safety information

Instruct clients in abseiling awareness and techniques. This may occur before and during the activity. Factors to cover include:

- awareness of and warnings about the hazards of the activity
- the importance of listening to the guide or instructor
- procedures for managing general exposure to edges and impact from falling objects, such as staying back from edges, how to use abseil site safety systems, and the location of safe zones back from edges and away from falling objects
- methods for maintaining body temperatures – for sites with a risk of hypothermia or hyperthermia
- emergency procedures for the site, such as staying where they are and waiting for instructions from the guide or instructor.

For parts of the activity involving a significant hazard, or requiring technical skill to participate safely, inform clients of:

- the hazard and warn of its dangers
- options for eliminating or minimising the hazard
- relevant communication systems such as the 'off rope' call
- the techniques required to negotiate the hazard or participate in the activity, such as procedures for use of technical equipment and performing technical actions.

  Note: for guidance on points to cover for specific activities, see Section 5
- applicable emergency procedures or self-rescue techniques.

Using demonstrations and activity progressions

Use demonstrations and activity progressions where practicable, particularly for more difficult activities. These help ensure clients are prepared and fully understand what they are required to do.

8.3 Supervising clients

This section looks at establishing a supervision system, establishing levels of supervision and parameters for sole instructing or guiding.

Establishing a supervision system

Some abseil activities or sites may require an overarching supervision system to help manage risks associated with clients being exposed to edges and falling from height, and instructors or guides making errors associated with factors such as fatigue or task repetition. Develop a supervision system based on the associated risk.

Factors to consider when assessing the risk include:

- the hazards of the activity and site
- the number of people exposed to the risk of falling from height at any one time, including those accessing the abseil and those waiting at the top or bottom of the abseil site
- the number of guides or instructors needed to adequately supervise clients
- the number of clients being put through the abseil and over what time period
- the amount of time a guide or instructor is working in the safety role
- the complexity of the safety management system – including the equipment
- the competence of the guide or instructor
- the likelihood that clients will follow instructions
- client safety responsibilities and competence

Ensure there is a staff member at the site responsible for managing the supervision system. This person should be an experienced staff member who the operator is confident will exercise good judgement. For more information on site and activity management, see Section 6.

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' or safety calls (such as 'safety on' and 'safety off') at crucial safety moments such as before the client 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 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 as per the recommendations in section 3
- using buddy checks, checklists, and simple and consistent systems where there is a risk of instructor error due to fatigue or repetition.

Establish supervision levels as per the recommendations in the next section.

Establishing levels of supervision

Using suitable supervision levels is a crucial aspect of an effective supervision system. Establish a maximum number of allowable clients and minimum client supervision levels for every abseiling activity and site.

There are no overarching recommendations for supervision levels or 'ratios' for all abseiling activities. There are, however, activity specific recommendations on factors such as technical actions and ages requiring direct supervision – for more information, see the activity-specific client management information in Section 5.

Increase supervision levels when operational situations are less than optimal. Examples of these situations include:

- guides or instructors who lack confidence or are less experienced
- clients who are less physically able, younger, less confident, or less likely to follow instructions
- activities that involve long wait times.

If using an assistant guide or instructor, consider which hazard management tasks they are verified to perform unsupervised before factoring them into supervision levels. For more information on assistant guides or instructors, see Section 7.

For more information on establishing levels of supervision, see:
www.supportadventure.co.nz/safety-management-plans/clients

Parameters for sole guiding or instructing

Many abseiling activities are sole guided or instructed. Sole guiding or instructing involves an increased risk of clients being inadequately supervised if the guide or instructor becomes incapacitated, or spending extended periods of time at the abseil site without help in an emergency scenario.

Inform clients how they can assist with managing these risks. Safety management strategies should be based on the associated risk. Options include:

- emphasising the heightened responsibility sole guiding or instructing places on them
- emphasising the importance of following instructions
- training them in what to do if the guide or instructor becomes unable to assist them, eg instructing them to stay where they are, training them in how to call for outside help, instructing the group how to get to a safe place, and supplying a map
- training them how to maintain body temperature and how to use and access shelter.

The increased risk of clients spending longer on the trip in an emergency scenario is also present at sites with limited access to external emergency support. Sole guiding or instructing at these sites may not be suitable. For more information, see Section 10.

Requirements for sole guides

Ensure that sole guides are experienced and verified as competent to manage the trip alone. Factors to consider include:

- their level of experience and ability in the skills required for leading the activity, including managing emergency scenarios
- their degree of familiarity with the hazards of that activity and site
- their degree of familiarity with the operator's standard operating and emergency procedures.

Section 9: Anchors and Equipment

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

This section considers significant hazards and identifies good practice for managing those hazards on key aspects of anchors and equipment:

- constructing anchors
- general use equipment
- emergency equipment
- equipment maintenance, testing, and inspection.

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.

This section does not consider purpose-built abseiling structures. For information on purpose-built abseiling structures, see Section 4.

9.1 Constructing anchors

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

For the purposes of this guideline, abseil anchors have been categorised as permanent, fixed or placed-protection anchors. This section looks at constructing permanent anchors, fixed and placed protection anchors, and using bolts. For information on proof testing bolts and other fixed anchors, see section 9.3.

Permanent anchors

Construct permanent anchors as per the recommendations in Section 4 and 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[7].

[7] Additional information on safety margins, fixed and placed anchor construction, and bolting in the natural environment is available through the New Zealand Alpine Club (NZAC), New Zealand Mountain Guide Association (NZMGA), New Zealand Outdoor Instructors Association (NZOIA), New Zealand Speleological

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

- if using metal picket anchors, ensure the metal is verified as strong enough to hold the required loads and is an anticorrosive steel

  Note: Traditional star pickets or fencing standards/waratahs do not meet these requirements.
- 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
- 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 the use of webbing or rope as a hazard requiring monitoring within the operator's hazard management system.

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 track, 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 does not exceed 20° to the surface in which the bolt is installed. For more information, see AS/NZS 1891.4.

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 also be found in AS/NZS 4488 and AS/NZS 1891.4.

9.2 General use equipment

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

This section looks at key areas of general use equipment:

- selecting equipment
- client equipment
- guide or instructor equipment
- life-bearing ropes.

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, client ability, and environmental conditions.

Client equipment

This section looks at client equipment recommended for all abseiling. Some abseiling activities will require additional client equipment – see the activity-specific information in Section 5.

Correctly fit equipment as per the manufacturer's instructions. Check equipment for fit as suitable throughout the activity, such as before using harnesses.

Ensure all abseiling clients 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 sit 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 client 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 clients[8], with the addition of:

- a descent device suited to the abseiling 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 or similar
- 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 client 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 (lanyard clip in), or instructor or guide cliff-top safety

  Note: If using dynamic lines for belaying very heavy clients 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 9.4.

9.3 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 4.

[8] For information on equipment for staff working at height see Section 7.

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 of 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
- 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)[9].

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.

9.4 Emergency equipment

This section includes information on the accessibility of emergency equipment, and general emergency equipment and first aid supplies.

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.

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

Emergency equipment and first aid supplies

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 abseil activities may involve rescues requiring raising the abseiler to safety or using pick off techniques.

[9] These recommendations are based on engineering advice.

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 activities, 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/safety-management-plans/equipment

Section 10: Emergencies

Develop clearly documented and practised procedures for the full range of emergencies relevant to the operation, from incident management to crisis response.

Train staff and ensure that suitable equipment is available to manage each identified emergency scenario. For information on staff competence, see Section 7; for information on emergency equipment, see Section 9.

Site and activity monitoring and communication procedures are key components of your safety management system. They feature in both normal daily procedures and procedures for managing emergencies. They are addressed in Section 6.

Accessing external emergency support

Ensure that suitable external emergency support is available as soon as is practicable and within a planned period of time, ideally within daylight hours. Specify this period of time in the operation's emergency procedures.

When conducting emergency planning and developing emergency procedures, consider factors that could impact on the availability of suitable external emergency support. These include:

- the ability to call for external support from the site
- the type of external emergency support required by each emergency scenario
- site access and evacuation options
- capacity of local rescue resources such as rescue agencies and other abseiling operations.

Contingencies for limited access to emergency support

Where abseil sites are at locations with limited access to suitable external emergency response, injured clients may spend longer without secondary emergency care. This risk needs to be managed based on the associated risk. Options to consider include:

- informing clients of the risk of a prolonged wait for emergency support in the event of an accident
- using more experienced guides or instructors and ensuring they are competent to manage identified emergency scenarios for an extended period of time, such as by holding a first aid qualification that includes managing scenarios over a longer period of time
- finishing activities early in the day to allow time for an overdue trip response and rescue
- considering accessibility when determining guide or instructor to client ratios, when assessing clients, and when setting competence requirements for guides or instructors
- taking extra care and considering excluding avoidable higher risk activities, such as choosing less challenging routes to access abseil sites
- training with or informing local rescue response personnel on site access and escape routes
- having resources available such as additional first aid equipment to manage an injured client for longer periods of time.

For more information on developing procedures for emergency management, see: www.supportadventure.co.nz/safety-management-plans/emergencies

Section 11: Safety System Reviews

Regular internal and external safety system reviews or audits are a crucial part of running a safe abseiling operation.

Abseiling operations are required by the Adventure Activity Regulations to undergo an external audit before beginning operating, and at regular intervals as defined by the WorkSafe Adventure Activities Audit Standard.

Conduct an internal (possibly external) safety system review after an incident that caused serious harm, or might have caused serious harm.

Schedule internal reviews as part of the yearly safety routine – before and after the busy season are often good times. Reviews should check that:

- safety systems and procedures are aligned with the recommendations in this guideline and are at or above sector good practice
- the safety management plan accurately reflects the operator's systems and procedures
- everyone in the operation follows the agreed safety systems and procedures.

One person should have responsibility for ensuring that reviews take place, but everyone in the operation is responsible for being part of the process.

Record the process and the results, and share any relevant learning with staff and other abseiling operators.

For more information on safety system reviews, see:
www.supportadventure.co.nz/safety-management-plans/checking-your-systems

Appendix 1: Health and Safety Terms

The guideline uses several terms you need to understand to be sure you comply with the health and safety legislation. This appendix looks at those terms, and what they mean for managing hazards.

All practicable steps

The health and safety legislation states that you must take all reasonably practicable steps in the circumstances to safely provide adventure activities, considering:

- the nature and severity of any injury or harm that may occur
- the likelihood of that harm occurring
- how much is known about the potential harm and the measures for eliminating, isolating or minimising the hazard from which the harm may arise
- the availability and cost of those measures.

Note: The 'circumstances' are those that an operator knows about, or ought reasonably to know about, taking into account good practice and knowledge throughout the adventure and outdoor sector.

The operator is responsible for balancing the likelihood and seriousness of potential harm against the cost, effort, and effectiveness of measures.

Where there is a risk of serious or frequent injury or harm, a greater cost in the provision of safeguards may be reasonable. If there are significant hazards and the measures are too expensive, unavailable, or ineffective, the only reasonable safeguard might be to cancel the activity.

Any judgement of whether a safeguard was reasonably practicable will take into account good practice and knowledge throughout the sector.

For more information on the Health and Safety at Work Act 2015, see:
Health and Safety Act Made Easy.

Hazards and significant hazards

The Act says an adventure activity operator must take all practicable steps to systematically and regularly identify, assess, and manage significant hazards. Hazards that are not significant also need to be managed and this process may be applicable to those hazards too.

'Hazard' describes a danger or a potential source of danger. It is anything that does or could cause harm including harm due to exposure to the hazard over time. So a hazard may be:

- always present, such as a sharp edge that may injure or snag a client or equipment
- potentially present, such as water levels that might rise after rain, or guide fatigue.

'Significance' is a combination of the likelihood of the potential harm and the seriousness – how bad the harm could be if it occurs, even if it is unlikely to happen.

The Act defines 'significant hazard' as a hazard that does or could cause:

- serious harm; or

- harm due to exposure over time; or
- harm that does not usually occur or become apparent until a significant time after exposure to the hazard.

Note: A hazard may include a person's behaviour including the effects of drugs and alcohol use, and physical or mental fatigue.

For more information on hazards and hazard management, see:
www.supportadventure.co.nz/safety-management-plans/hazards

Serious harm

Harm is illness, injury or both, and includes physical and mental harm. Serious harm is death, or harm of a kind defined to be serious for the purposes of the Health and Safety at Work Act 2015. The Act does not give a simple definition of serious harm, but gives examples including:

- death
- conditions that result in permanent loss of bodily function, or temporary severe loss of bodily function such as eye injuries or bone fractures
- loss of consciousness from lack of oxygen
- harm that requires hospitalisation for 48 hours or more.

Hazards that could result in harm other than serious harm also need to be managed. The most common minor injuries associated with climbing on artificial structures are sprains due to poorly managed landings, soft tissue injuries associated with a lack of warming up before climbing, poorly managed climbing and pre-existing injuries. Managing the hazards associated with these injuries reduces the likelihood of both minor injuries and serious harm.

To read the health and safety legislation definition of serious harm, click here.

Appendix 2: 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. This appendix describes good practice for undertaking these checks.

Checking design and build

Proof of design and build suitability may be achieved via manufacturers' instructions, building consents or engineer's 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.

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 4 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 is in order to mitigate 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.

Managing areas with limited access for inspection

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.