ASG

Activity Safety Guideline

Mountain Biking

Document Explaination

The Mountain Biking Activity Safety Guidelines are written for commercial mountain biking operators and safety auditors as a benchmark for current good practice.

There are two components to the guidance

1. Adventure Activity Safety Guidelines - Core Principles
2. Activity Safety Guidelines for Mountain Biking Operators

These two documents have been developed concurrently and together make up the Mountain Biking ASG, however the Adventure Activity Safety Guidelines - Core Principles are generic factors that underpin all adventure activity delivery.

Feedback from some in the industry was for a document with a more pursuit specific focus, paired with a generic core material that could, in the future be shared with other adventure activities. This approach is a pilot, a decision on whether to develop other activity safety guidelines using this strategy may be made by future ASG working groups based on industry response to these documents.

Both documents have been combined here to ensure they are used together by Mountain Bike Operators.

We recommend that operators read the Core Principles before the Mountain Bike specific material.

The Support Adventure website provides guidance for adventure activity operators on developing good practice safety management systems. It includes information and examples for developing a safety management plan.

These guidelines should be used in conjunction with the information on the Support Adventure website.

Both documents in the Mountain Bike ASG have been written to follow a similar structure to the *Safety Audit Standards for Adventure Activities*. The aim is to contextualise and operationalise this WorkSafe publication and allow the reader to easily map sections from one document to the other. Both documents should be read alongside the *Safety Audit Standards for Adventure Activities*.

ASG

Activity Safety Guideline

Core Principles

July 2019 Version 1

Preface

This Adventure Activity Safety Guideline – Core Principles is published by Skills Active Aotearoa with support from WorkSafe.

Development of the guideline occurred alongside the development of the Activity Safety Guideline for Mountain Biking Operators. Feedback from some in the industry was for a document with a more pursuit specific focus, paired with generic core material that could, in the future be shared with other adventure activities. This approach is a pilot, a decision on whether to develop other activity safety guidelines using this strategy may be made by future ASG working groups based on industry response to these documents.

The Adventure Activity Safety Guideline – Core Principles is a web-based document and will be reviewed and updated from time to time. 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 wide variety of activities provided by these sectors is referred to broadly as adventure activities and includes activities provided by adventure tourism operators and outdoor education centres.

More information about adventure activity safety guidelines can be found on the Support Adventure website at http://www.supportadventure.co.nz/

Skills Active, the mountain bike activity safety guidelines working groups have made every effort to ensure that the information contained in this guideline is reliable. We make no guarantee of its accuracy or completeness and do not accept any liability for any errors. We may change, add to, delete from, or otherwise amend the contents of this publication at any time without notice.

Document Control

Version 1

Change	Where
Original document	Not Applicable

Acknowledgements

A large part of the content of this document has been drawn directly from the existing activity safety guidelines. The compilers of this document acknowledge the significant contribution that previous activity safety guidelines developers have made. We also recognise the extensive consultation that this content has had.

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- operators and auditors who reviewed this version.

Other publications

This guidance contains adventure tourism and outdoor commercial sector information published on the Support Adventure website.

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Contents

1 Introduction

The Safety Audit Standard for Adventure Activities, published by WorkSafe, sets out the standards and requirements that adventure activity operators in New Zealand must comply with to reduce risks when providing adventure activities.

The Safety Audit Standard specifies:
· the general standards and requirements for all operators
· that an operator's SOPs must conform to good practice for the activity.

The Adventure Activity Safety Guidelines - Core Principles document has been written to follow a similar structure to the Safety Audit Standard. The aim is to contextualise the Safety Audit Standard and allow the reader to easily map sections from one document to the other.

Adventure Activity Safety Guidelines – Core Principles document should be read alongside the Safety Audit Standard.

The Adventure Activity Safety Guidelines - Core Principles are written for commercial operators and safety auditors as a benchmark for current good practice.

Additional information and useful templates are available on the Support Adventure website. Operators are strongly advised to be familiar with all the information held on this website http://www.supportadventure.co.nz/

This document is not a legal requirement but rather a set of guidelines that will assist operators to meet current good practice.

This document has been developed concurrently with the Activity Safety Guideline for Mountain Biking Operators and should be considered collectively. However, the Adventure Activity Safety Guidelines - Core Principles are generic factors that underpin all adventure activity delivery.

The activity specific document, provides specific guidance for Mountain Biking. It should always be read in conjunction with this generic document.

The key components of the Safety Audit Standard and these guidelines are represented in this diagram.

The underlying purpose of this initiative is to assist operators to develop robust safety management systems and embed a strong culture of safety. The end goal is a thriving sector that consistently provides safe and enjoyable adventure experiences.

"The challenge for outdoor leaders is to operate in a safe manner without compromising the excitement, uncertainty and achievement of genuine adventure experiences. Risk should never be sought for its own sake but it is integral to the adventure experience. Finding the proper balance between safety and risk is the primary tasks of an outdoor leader and any outdoor programme. Continually managing risk and working to minimise the consequences of an accident should one occur are essential to this process. This does not mean eliminating risks altogether; it means preparing to deal with risks".

Martin B. Et al. Outdoor Leadership: Theory and Practice Human kinetics 2nd Ed 2017

2 Definitions

These guidelines assume the reader has technical knowledge related to their specific activity, so only terms that may be unique to this publication, or used in a specific way, or that could otherwise be open to interpretation are included here. Many of these definitions have been taken directly from the Safety Audit Standard.

For the purposes of this document the following definitions apply:

Activity	Adventure activity as defined in regulation 4 of the Health and Safety at Work (Adventure Activities) Regulations 2016.
Ancillary services	As defined in the Safety Audit Standard: Services provided by an operator to participants that supplements and support the operators adventure activities. Note: Ancillary services should be included in an operator's safety management system. Safety audits against the standards will review only those ancillary services which involve a serious risk to health and safety (such as, for example off road transport to or from an adventure activity).
Good practice	As defined in the Safety Audit Standard: Range of actions currently accepted within the adventure and outdoor sector to manage the risk of harm to staff, participants and visitors. Good practice should also reflect relevant standards recognised within the sector for the safe provision of adventure activities where these exist. This may include, but is not limited to: · activity safety guidelines · codes of practice or conduct · other recognised/approved guidelines · accepted professional practices.
Harm	As defined in the Safety Audit Standard: Harm is illness, injury, or both, and includes physical and mental harm caused by work-related stress.
Hazard	Something that increases the likelihood of a risk eventuating (sometimes described as risk factors). In adventure activities hazards can be usefully grouped into three categories: · Environmental · People · Equipment.
Incident	As defined in the Safety Audit Standard: An event that caused or could have caused harm to any person. Note: An incident that did not cause harm is also called a 'near miss', 'near hit', 'close call', 'near-accident', or similar.
Interested party	Person or organisation that can affect, be affected by, or perceive itself to be affected by a decision or activity (ISO 45001:2018).

Notifiable event	A notifiable event is defined in [section 25 of Health and Safety at Work Act](#) as meaning any of the following events that arise from work: · death of a person · a notifiable injury or illness · a notifiable incident
Notifiable injury or illness	Notifiable injury or illness has the meaning defined in [section 23 of Health and Safety at Work Act](#), which includes (in part): (a) Any of the following injuries or illnesses that require the person to have immediate treatment (other than first aid) (i) The amputation of any part of their body (ii) A serious head injury (iii) A serious eye injury (iv) A serious burn (v) The separation of their skin from an underlying tissue (e.g. de-gloving) (vi) A spinal injury (vii) The loss of a bodily function (viii) Serious lacerations (b) An injury or illness that requires, or would usually require, the person to be admitted to hospital for immediate treatment (c) An injury or illness that requires, or would usually require, the person to have medical treatment within 48 hours of exposure to a substance (d) Any serious infection to which the carrying out of work is a significant factor. (e) Any other injury or illness declared by regulations to be notifiable.
Notifiable incident	Notifiable incident is defined in [section 24 of Health and Safety at Work Act](#) as meaning an unplanned or uncontrolled incident in relation to a workplace that exposes a worker or any other person to a serious risk to that person's health and safety arising from an immediate or imminent exposure to: · an implosion, explosion or fire · an escape of gas or steam · an escape of a pressurised substance · an electric shock · the fall or release from a height of any plant, substance, or thing · the collapse or partial collapse of a structure · other items listed in the Act.
Operator	*As defined in the Safety Audit Standard:* A PCBU who provides an adventure activity to a participant. **Note:** 'Operator' includes but is not limited to a sole trader, company, partnership, trading trust, incorporated society and charitable trust. 'Operator' includes a person or other legal entity that provides adventure activities as a contractor to sports or recreation clubs, and/or to associations representing sports or recreation clubs, and/or to registered schools or tertiary education providers – that is, the organisations that are not covered by the regulations as defined in regulation 4. 'Operator' includes a 'principal' as a person or other legal entity that engages any other person or other legal entity as a contractor to do any work for gain or reward.

Operation	As defined in the Safety Audit Standard: The business and organised action, process or manner of providing an activity or ancillary service.
Outdoor sector	New Zealand adventure tourism and outdoor education and recreation providers, support organisations and associations.
Participant	As defined in the Safety Audit Standard: Person who participates in an activity and is not staff.
PCBU	PCBU (Person Conduction a Business or Undertaking) has the meaning defined in section 17 of Health and Safety at Work Act.
Provide	'Provide' is defined in section 3 of the Regulations as meaning where an operator directly provides the activity in person, or indirectly provides the activity through an employee or other person.
Qualified	A person who holds a current nationally recognised qualification relevant to their role and the activity they are involved in.
Risk and serious risk	Risk is a potential event that could lead to harm. Serious risk is when the potential event could lead to harm that is a notifiable event.
Risk assessment	A process to identify risks and their associated hazards prior to undertaking an activity; includes assessing risks according to their potential severity of impact and likelihood of occurrence.
Risk disclosure	As defined in the Safety Audit Standard: Statement from the operator of the risks involved in participating in the activity and a statement from the participant on any issue that could affect safety such as health factors, fitness and water confidence.
Risk rating	The outcome of a risk assessment of the potential severity of harm of any identified risk and its likelihood of occurrence. The resultant Risk Rating would be expressed in a range.
Safety Audit Standard	Safety Audit Standard for Adventure Activities – Requirements for Safety Audit of Operators: March 2017.
Safety management system (SMS)	As defined in the Safety Audit Standard: Documented management system for directing and controlling an operation in regard to safety
Standard operating procedures (SOPs)	As defined in the Safety Audit Standard: Detailed, written information and instructions or plans for performing a particular activity or task (including ancillary services).
Situational awareness	The ability of an operator to identify, monitor, and make decisions on, a range of factors throughout an activity.

Staff	As defined in the Safety Audit Standard:
	Person or persons responsible for leading, guiding, instructing, supervising or supporting an activity, or otherwise taking responsibility for others within the activity.
	Note: This meaning is narrower than 'worker' as defined in Health and Safety at Work A. This guide retains the term 'staff' because 'worker' has a broad sense including some people who might not have delegated responsibility for providing adventure activities. For example, trainees and people gaining work experience are 'workers' but may not be appropriate for a safety-sensitive 'staff' role with responsibility for others during an adventure activity.
	Staff may be employees, contractors or volunteer workers. In most cases, staff will exclude trainees, people gaining work experience, accompanying adults, and others with only limited supervisory roles. Therefore, their safety will be managed as for participants in the activities.
Technical advisor	As defined in the Safety Audit Standard:
	Person or group of people that has professional credentials such as a high-level, nationally recognised qualification, or extensive knowledge, skills and experience to assist an operator with various technical tasks, including advising and reviewing the policies, procedures and practices relating to an activity.
	Note: An operator's technical adviser is not the same as the audit team's technical expert.
	An operator's technical adviser(s) may be contracted by, or closely connected to the operator. The credentials may be achieved by combining those of two or more people, who may be staff members. In contrast, technical experts are required to be fully qualified as an individual and they must be independent of the operator.
Top leadership	As defined in the Safety Audit Standard:
	Person or group of people associated with the operator's organisation who direct and control the operations at the highest level within the legal entity. Top leadership is equivalent to the 'officers' of a PCBU as defined in the Health and Safety at Work Act.
	Note: Top leadership has the power to delegate authority and provide resources within the operation, and is ultimately responsible for the operator's compliance with health and safety law and good practice.
	The form and nature of top leadership depends on the operator's legal status and the scale of the operation. It may include directors, trustees, board members, executive managers, or an owner/operator. It does not extend to any holding company or other form of separate ownership.

3 Overview – Safety Management System (SMS) requirements

3.1 A systems approach to risk and safety

These guidelines take a 'systems approach' to risk and safety. This means looking at all the factors that contribute to risk, rather than focusing only on what occurs during the activity itself.

Current research shows that incidents are often the result of a combination of decisions and actions by multiple parties, not just a single root cause. Decisions made long before an activity actually takes place – such as the type of equipment purchased, or the process for assessing and training leaders – can affect safety outcomes.

Safety management systems need to be forward-thinking and designed with the whole safety system in mind, not just the actions of an individual leader during a specific activity.

3.2 Context matters

Effective safety management in outdoor and adventure settings needs to be highly context-specific. In our natural environments there is a very wide range of possible combinations of participants, purpose, weather, local environmental factors, and other parameters. Some of these factors, such as weather, can change rapidly, necessitating rapid and dynamic responses.

Further, each provider will have unique structure, purpose, size, philosophy, activity leader requirements and operating environments. Because of this, safety management cannot be a 'tick the box' exercise, nor can it take a 'one size fits all' approach across all providers. Instead, it must be flexible, adaptive and highly responsive to the specific circumstances of the individual activity.

Each provider needs to consider how to apply these guidelines to their own unique contexts. This may mean that individual providers also need to address areas not identified in these guidelines.

3.3   Risk management process

The risk management process involves the 'systematic application of management policies, procedures and practices to the activities of communicating, consulting, establishing context, and identifying, analysing, evaluating, treating, monitoring and reviewing risk' *(ISO 31000 Risk Management).*

The key organisational components in this process include:

• **Safety Management System (SMS).** A management system is a set of interacting elements within an organisation to establish policies and objectives, and the processes to achieve these objectives.

An **SMS** is a management system that is focused on safety. The interacting elements of your SMS could include processes, tools, people and approaches. Your SMS will be documented, but it is much more than what you put on paper – it is the actual things that you do to keep your staff and participants safe". (ISO 21101 Adventure tourism - Safety management systems – A practical guide for SME's).

• **Standard Operating Procedures (SOPs).** These identify risks for specific activities and describe how they will be managed.

How the provider structures this material is largely driven by the operational needs of the organisation. The diagram below reflects the requirements for an SMS as outlined in the Safety Audit Standard and illustrates the interdependent relationships between them.

SAFETY MANAGEMENT SYSTEMS

| SMS POLICY | LEADERSHIP + MANAGEMENT | HAZARD MANAGEMENT | STANDARD OPERATING PROCEDURES | EMERGENCY PREPAREDNESS | INCIDENT MANAGEMENT | DOCUMENT CONTROL | CONTINUAL IMPROVEMENT |

At an operational level a SMS is likely to integrate all these components across a variety of management tools. These are combined together to create a system that ensures information is communicated effectively to and from all staff, participants and other interested parties.

A few examples of the range of documents an SMS might include are:
· safety goals, guiding principles and policy statements
· an operations manual that is on the staff intranet
· a guide handbook that is issued to all guides
· a crisis management plan that sits next to every phone
· signs that provide safety information to customers around the site
· a complaints procedure that sits on the organisations website
· forms and templates that are easy for staff to access, fill out and file.

The Support Adventure website has excellent tools and templates to assist with developing a SMS.

Top Tip:

A diagram that clearly shows the structure and all components of your SMS is a key tool for communicating your system.

4 Leadership and management

This section covers:

- Leadership commitment
- Safety goals and objectives
- Legislation, standards, codes of practice and guidelines
- Roles, responsibilities and authority
- Communication
- Staff induction and training

4.1 Leadership commitment

Leaders (boards and management) are in a unique position to influence attitudes to and practice of health and safety in their organisation. Leaders set the conditions in the organisation, they control the resources and they have a huge influence on the culture. All these components contribute to determining the level of commitment to safety and health in an organisation.

The commitment of top leadership and the involvement of staff in the development and continual improvement of an organisation's SMS are the single most important factors in its effectiveness.
Driven and sustained by committed leaders, a positive safety culture is characterised by full buy-in to organisational systems and procedures, with every individual taking personal responsibility for the welfare of their participants, other team members and themselves.

Top leadership should demonstrate their commitment to safety by:
- setting safety goals and objectives
- ensuring roles, responsibilities and authority are clearly defined and communicated
- ensuring there are effective mechanisms and pathways for communication
- ensuring adequate staff induction and development.

4.2 Documenting the SMS

Each organisation will have its own approach to looking after people, both staff and participants. It must decide what the scope of its SMS is and what must be covered. This will require thinking about:
- the organisation's purpose
- the issues it faces
- the needs and expectations of interested parties.

The scope of your SMS will include at least:
- your operating locations
- all of your adventure activities
- staff and other people who do work under your control.

The core of the SMS that evolves from these discussions should be a SMS policy document that clearly spells out the main policies and procedures crucial to safe and successful operation.

Sometimes this is described as the 'overarching' document – the one that sets out the organisational approach to safety. It is where the philosophy, goals and targets, responsibilities and commitment to a strong, positive safety culture are set down. It is the place to write what the organisation is trying to achieve, rather than prescribing in detail what has to be done and who has to do it.

This overarching document will be supported by more specific information, such as hazard management, standard operating procedures, emergency preparedness, incident management, document control and continual improvement.

The elements of the SMS will be in different formats and possibly different locations – electronic or printed documents, whiteboards in gear sheds, videos of training and assessment, signage and so on. They all need to be aligned to the overarching SMS policy document.

Regardless of the organisation's size or complexity, all SMS documents should have a logical structure, be up to date, comprehensive, clear and accessible. A large organisation (many activities and locations, numerous staff, lots of gear) is likely to have more to their SMS than a small organisation (two staff, one activity, two backpacks).

Regardless of size, the system needs to be appropriate and functional, and it must be part of everyday practice.

4.3 Health and safety goals and objectives

The health and safety policy will underpin and provide a framework for all the operational objectives. Objectives provide focus and clarity. They demonstrate that an organisation is looking forward, aiming to create a better safety environment and to enhance quality.

Top leadership has a responsibility to set and communicate a clear vision and direction for health and safety. Objectives should be specific, measurable, achievable, relevant and time specific. Development should include a plan for meeting these objectives and a mechanism to monitor and evaluate progress against them. Engaging staff in establishing the health and safety objectives and the implementation plan will encourage buy-in and help drive success.

4.4 Legislation, Standards, Codes of Practice and Guidelines

4.4.1 Legislation

Every adventure operator must identify and understand the legislation, standards, codes of practice, safety guidelines and similar requirements relevant to the safe management of their activities.

These must be used to inform the development of the organisation's SMS.

A wide array of legislation relates to organisation's operating adventure activities; these are not discussed here.

The Support Adventure website provides a comprehensive, **although not definitive**, list of relevant legislation, regulations and guidelines.

Interpretation of legislation can be difficult. If you need to please contact AAO@worksafe.govt.nz for assistance.

4.4.2 Standards, Codes of Practice and Guidelines

The following are documents and links that may provide direction when developing your SMS:

WorkSafe (under the heading Guidance for PCBUs)
- Safety Audit Standard
- Guidance for managing drug and alcohol-related risks in adventure activities.
- Adventure activity decision tree
- Understanding good practice in adventure activities.

Support Adventure.
- Activity ASGs
- SMS templates and forms
- A wider range of other resources.

Top Tip:

Monitoring legislation, standards and codes of practice to ensure the SMS remains up to date and consistent is critical and often under developed in an SMS. Ensure systems are in place to regularly scan this information, track changes and update policy and procedure to ensure your operation continues to comply with requirements.

4.5 Roles, responsibilities and authority

It is vital that responsibilities, accountabilities and roles are well defined and that all individuals within an organisation are aware of what is expected of them and the boundaries of their responsibilities. Usually health and safety responsibilities and authorities are outlined in job descriptions, contracts and performance agreements.

Good staff induction, regular staff appraisals and meetings, and ongoing training and development that encourage positive and constructive staff interaction will strengthen awareness of roles, responsibilities and authority.

Top Tip:

A tree of responsibility diagram in your SMS is helpful to communicate lines of authority.

4.5.1 Roles, responsibilities and authority when contracting other PCBUs

There may be times when an operator contracts a PCBU to provide services that augment their business, for example contracting a helicopter operation to deliver participants to the start of their adventure experience. There can be confusion over where the responsibly for participant safety sits and / or who holds responsibility for notification to WorkSafe or other regulators in the event of a notifiable event. For areas of overlap WorkSafe expects workplaces to be able to explain the steps they have taken to consult, cooperate and coordinate with other PCBUs, and the arrangements they have jointly made to control risks.

Workplaces are expected to:

- consult – about shared risks and how they will be controlled
- cooperate – the organisation that is closer to the work is likely to have more direct control and influence over the risk and should be supported accordingly
- coordinate – to ensure that either organisation's safety efforts aren't duplicated, or gaps aren't left. *E.g. who is responsible for providing and checking the safety equipment? Who is responsible for loading equipment and managing participants onto the vehicle? Who is responsible for delivering the safety briefing?*
- monitor the PCBU's efforts to ensure they are doing what has been agreed
- reserve the right to halt any event conducted by an external provider for safety or other reasons.

WorkSafe provides two generic fliers that assist with this issue.

- Health and Safety at Work Act Quick Guide to Overlapping Duties
- WorkSafe position on overlapping duties.

Top Tip:

Establish written agreements with contracted PCBU's that describes areas of overlapping duty and clearly delineates role and responsibilities. Ensure this is communicated to all relevant staff.

4.5.2 Other tools

WorkSafe, ACC and the Ministry of Business, Innovation and Employment (MBIE) have developed a joint initiative called SafePlus, providing a voluntary health and safety performance improvement 'toolkit' for businesses. SafePlus defines what good health and safety looks like above minimum legal compliance. It is a performance improvement initiative that is not a traditional compliance audit-type product.

Requirements for achieving good health and safety performance are organised into three core concepts: leadership, worker engagement and risk management – all underpinned by continuous improvement.

SafePlus clearly describes what leadership looks like in an effectively performing safety culture.

4.6 Communication

Effective and timely communication of safety information in an adventure activity organisation can be difficult simply because of the nature of the organisation and its operations.

Intrernal communication mechanisms must be in place to ensure staff can continue to be involved in reviewing and improving the SMS.

Managers and leaders must also make certain there are systems in place to ensure information gets to everyone who needs it. Strategies may include:
- websites and social media carrying safety information
- risk disclosure procedures
- customer feedback/complaints collection and sharing
- regular staff meetings
- progress reports on implementation of suggestions and requirements
- programme evaluation meetings
- notes from meetings being circulated and/or displayed
- safety information displayed on notice boards or walls
- staff are represented on safety management committee(s).

4.7 Availability of the SMS

Staff and other interested parties, including the safety auditor, must know what, how and where the various elements of the SMS are documented and stored. Interested parties, such as contractors, participants, land managers, governing authorities and, of course, all staff, will need to see how the system relates to them, and what their role is in the safe conduct of activities.

Other considerations include how to make the SMS available, what to make available, how to control the process of keeping the SMS up to date, and communicating changes.

There is more information on document control and continual improvement in later sections of these guidelines.

4.8 Staff induction and training

4.8.1 Staff induction

Newly appointed staff may have the technical skills to do the job, they may not necessarily understand their role in relation to your organisation-specific requirements.

Effective induction programmes ensure every new staff member is clear on their role and responsibilities and familiar with your organisation's requirements and procedures.

Before staff start work, they must be informed of, understand and acknowledge:
· hazards they may be exposed to while at work
· hazards they may create that could harm other people
· how they can minimise the likelihood of these hazards becoming a source of harm to themselves and others
· the location and correct use of safety equipment
· emergency procedures.

This also applies when you are creating a new activity or establishing a new activity area. Staff should be inducted into the activity and/or area as part of the ongoing training and assessment cycle.

Relying on written procedures or guidance notes does not take the place of a solid, practical induction and familiarisation programme.

One person should manage the induction process. This needs to be someone with the best overview of all the external and internal issues involved and with a strong technical ability.

Organisations should clearly identify situations where newly inducted staff are under supervision until deemed competent and situations where on going supervison is not be required. For example a new graduate might need direct or indirect supervision but an senior guide with 10 years of experience may not.

Top Tip:

Part of the induction (and any training) should take the shape of a history lesson: a review of previous incidents, what was learned from this, and what changes to procedures or requirements were made as a result. Consider including significant incidents that are known from comparable activities/situations. In many activity types, landmark events have already demonstrated the 'worst case scenario' that your team should be aware of.

4.8.2 Staff appraisal and ongoing training

Even if there is a thorough induction system, it is not good practice to leave staff entirely to their own devices to 'get on with it'. Periodic and scheduled monitoring, even of experienced and well-qualified staff, should take place, both from a training perspective and to ensure they are still doing what you expect them to be doing. In particular, it is an important means of ensuring that safety standards are being upheld.

An adventure activity leader's job is largely practical, so it is appropriate that the appraisal is based on observation of their practice. Most people who go through appraisal agree that it is a valuable opportunity for a two-way exchange of views and for identifying any development needs.

Training should be personalised, to address the needs of each staff member as identified in inductions and appraisals throughout the year or season. There should be clear links between appraisals, training pathways, and actual roles and responsibilities.

It's important to ensure support people, as well as your activity leaders, receive ongoing training and upskilling. Support people perform roles such as administration, non-activity supervision and emergency communications.

Often these support personnel are at a base area or the organisation's centre. Their ability to deal with requests from activity staff, management (and sometimes, participants) is crucial to the smooth and successful flow of activities.

During an emergency it is critical that support people correctly perform their part of the crisis response or emergency management plan. Without adequate training, the safety of leaders and participants could both be compromised.

4.8.3 Links and references

Legislation

http://www.supportadventure.co.nz/health-and-safety-act-and-other-legislation

Reporting notifiable events

https://WorkSafe.govt.nz/notifications/notifiable-event/what-is-a-notifiable-event/
https://WorkSafe.govt.nz/topic-and-industry/adventure-activities/guidance-for-pcbus/

Standards, Codes of practice, guidelines and other guidance.

http://www.supportadventure.co.nz/activity-specific-good-practice-information/activity-safety-guidelines
https://worksafe.govt.nz/publications-and-resources/

5 Risk and hazard management

5.1 Terminology

The terms "Risk" and "Hazard" are often confusing and some people use them to mean the same thing. This is not helped when the Health and Safety at Work Act offers no definition on risk and various international standards define the terms ambiguously.

Risk is defined in some references as the possibility of loss or injury, in other words a description of an undesired event (e.g. drowning). Other references define risk in a quantifiable term where it can be thought of as a product; Risk = the possible severity of harm x likelihood of occurrence.

While the Safety Audit Standard initially defines 'a risk' as a chance of harm, the full context indicates that operators should identify the various **potential events that could cause harm** in their activities as 'risks'.

To simplify this the following definitions will be used throughout these activity safety guideline documents:

A Risk – a **potential event** that could cause harm.

Hazard – A hazard is anything that increases the likelihood of the event happening. (sometimes described as risk factors). In adventure activities hazards can usefully be grouped into three categories:
· environmental
· people
· equipment.

Risk	Hazards
Fall from height / impact injuries or fatality.	20-metre-high cliff Slippery surface close to cliff edge Ground level obstacles (large rocks that are activity hazards) Slope leading to cliff edge Unsupervised novices Participants in Jandals

Risk Assessment - A process to identify risks and their associated hazards prior to undertaking an activity; includes assessing risk according to their potential severity of harm and likelihood of occurrence.

Risk Rating – The outcome of a risk assessment; usually expressed in a range (in this guide the range is low – extreme). See Appendix A: Risk analysis information.

The NZ Safety Audit Standard for Adventure Activities Version 1.1 2017 contains the following criteria:

5.1 Risk and hazard identification and assessment

The operator must implement a systematic process to:
· identify the reasonably foreseeable risks arising from their activities
· identify the reasonably foreseeable hazards that could give rise to risks in their activities
· assess each risk and hazard to determine whether it is serious.

The definitions above are consistent with the requirements of the Safety Audit Standard and should allow operators to understand and fulfil this requirement.

5.2 Risk and hazard identification, assessment and management

5.2.1 A systematic approach

Risk management is a systematic method of identifying, assessing, treating, monitoring and reviewing risks. It needs to occur throughout the design, planning, preparation and conduct of adventure activities.

Risk assessment is a part of this approach and involves the interrelated process of identifying hazards and associated risks and the assessing them to assign a risk rating prior to any controls being applied.

It is a common risk management practice to repeat risk assessment after controls have been put in place to assign a residual risk rating. This is done to determine whether the risk treatment addresses the risk in a way that leads to an acceptable outcome.

It is important to view risk management as a process that requires regular monitoring and review rather than a task that is ticked off as complete.

The following diagram provides an overview of the risk management process.

Risk Management Process
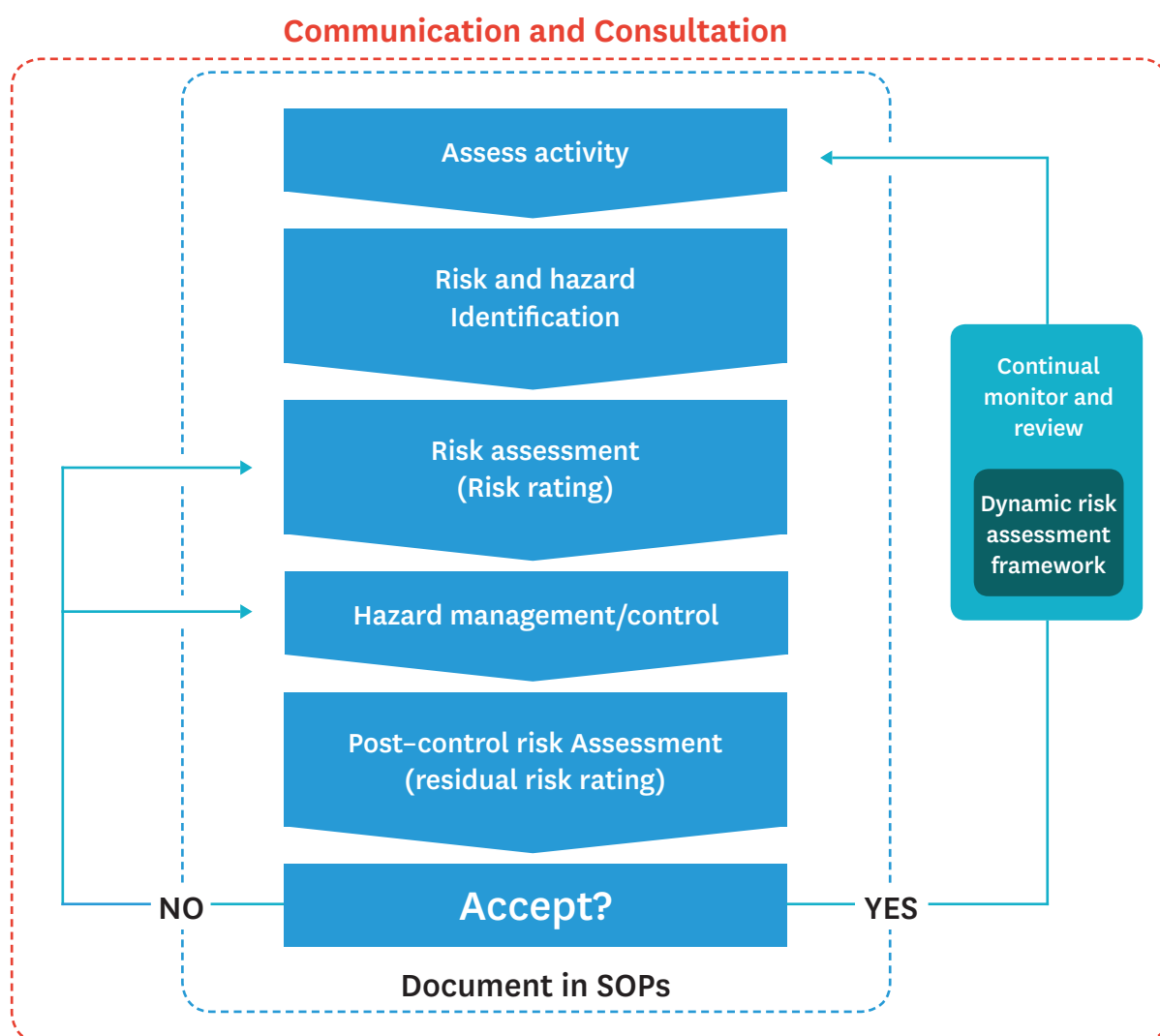
Where a new or changed system is adopted, the process should be completed again.

5.2.1.1 Communication and consultation

Communication and consultation are fundamental to understanding and seeking input into the risk management process – for example consulting with land managers/Iwi, other users, other industry operators, client organisations, staff and or participants to understand their particular requirements and objectives.

5.2.1.2 Assess the nature and context of the activity

The process articulates the specific nature and context of the adventure activity – for example what does it involve, where and when will be delivered, what are the goals of the participants, why or how is this activity being used to meet these goals.

5.2.1.3 Risk and hazard identification

The desired outcome of the risk and hazard identification process is a list of various risks and associated hazards.

The audit standard is not prescriptive on how risks are identified, but it may be helpful to note the mechanism of harm and the worst reasonably foreseeable harm it would cause (e.g. fall from height / impact injuries or fatality). This is consistent with a risk being defined as a potential event causing harm.

Top Tip:

When identifying risks, it is valuable to research comparable activities and operations to identify any major incidents that have occurred. The lessons learned from historical events, may help to identify similar hazards in your operation.

Common hazards that an operator can be expected to manage are:

People factors

Unsuitable staff. This may be due to:
· health and fitness
· competence
    · group and risk management skills and experience
    · activity skills and experience
    · communication skills
    · knowledge of the operators SMS and SOPs for the activity.

Unsuitable participants. This may be due to:
· fitness
· skills
· medical condition or injury
· psychological factors (e.g. fear of heights)
· behavioural factors (e.g. inability to follow instructions).

Inappropriate supervision structures.
Hazards from other users (e.g. someone knocking rocks off a cliff above your position).

Equipment factors

Participants and/or staff not being suitably equipped for the terrain, environmental conditions and emergency situations.
Equipment not fit for purpose.
Equipment inadequately maintained.

It is important to identify factors beyond the immediate activity delivery. Systems-related decisions made days, months or years earlier can have an impact on activity delivery risk levels. For example, the competencies required for leaders, the way leader shortages or illnesses are managed; the way organisation ensures the purchase of appropriate equipment and the processes in place to monitor environmental changes.

5.2.1.4 Risk assessment

This guideline focuses on preventing death and other notifiable harm. While all hazards need to be managed it is acknowledged that there are some that are more likely to be associated with serious risk to people's health and safety than others.

Risk assessment involves evaluating the likelihood and severity of possible consequences of each risk. The outcome of this assessment is a risk rating.

There are multiple options for expressing consequences, likelihood and risk rating. An example of an approach to risk assessment is provided in Appendix A – Risk assessment information.

Risk assessment involves determining which hazards require management and prioritising the implementation of the treatment. These decisions are based on the risk rating and whether this level is acceptable.

5.2.1.5 Hazard management /controls

Hazard management involves adopting specific controls to mitigate risks that are not acceptable. Controls either eliminate or minimise the risk as shown in the table below. A combination of controls should be used if a single control is not sufficient for the purpose.

1. Can you ELIMINATE this risk?	*Completely removing the risk. If this is not possible, minimise by doing one or more of the following (a,b,c,d,e)*
2 .If this is not possible then MINIMISE the risk by:	
a. SUBSTITUTION &/or	*Use a safer alternative (e.g. activity or venue)*
b. ISLOLATION &/or	*Separating the people at risk from the hazard (e.g. barrier or lock out)*
c. implement ENGINEERING control	*Add physical safety features (e.g. guards) or technologies (e.g. auto belay*

If the risk still remains then manage with:	
d. ADMINISTRATION control &/or	*Establish a process to manage the risk (e.g. check lists, operating procedures, training, instruction, supervision)*
e. Using PPE (Personal Protective Equipment)	*Reduce the effect of the risk. Should only be used in conjunction with other more effective measures*
3. MONITORING and REVIEWING	*Once controls have been implemented, they must be regularly monitored and reviewed to ensure they are effective*

5.2.1.6   *Post-controls risk assessment (residual risk rating)*

The residual risk rating is the level of risk that remains after the controls have been put into place. Once controls have been put in place, an operator should do a follow up risk assessment to determine the effectiveness of the controls and assign a residual risk rating.

See Appendix A for Risk assessment information and the Support Adventure website for [information](#) and [tools](#) about Factors Likely to Accelerate Serious Harm (FLASH).

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

An example of how this process can be used is provided below.

Risk	Hazards	Risk rating	Controls	Residual risk rating
Participant falls / impact injuries or fatality	20 metre cliff. Slippery surface close to cliff edge Ground level obstacles (large rocks that are trip hazards) Slope leading to cliff edge Unsupervised novices Participants in Jandals	**Extreme**	Build a path 2 metres from cliff edge Build the path so that it avoids ground level obstacles Path cuts into the slope and provides a level platform Supervise novices on this section of trail Ensure all participants have suitable footwear	**High**

Top Tip:

Risk assessment tools are designed to focus operator energy on identifying the serious risks and the potential for a notifiable event.

5.2.1.7 Monitoring and review

Monitoring and review occurs throughout the risk management process to address new, changing or emerging risks. It is likely to include:
- legislation, standards, codes of practice and guidelines
- existing procedures
- incident reports
- activity, equipment, or environmental conditions
- client base.

Changes or shortcomings could lead to identification of new risks or increase the rating for a risk previously considered to be appropriately managed.

5.3 Drug and alcohol use

The Adventure Activity Regulations require operators to manage drug and alcohol-related risks in their workplaces. This must start with a clear drugs and alcohol policy in their safety management plan that states:
- an assessment of the level of risk posed by activities run by the operator
- an assessment of the level of risk posed by the nature of the operator's workplace
- how the operator will manage these risks
- the processes the operator will adopt if a staff member is found to be under the influence
- the processes the operator will adopt in relation to drugs and alcohol if a staff member is involved in an incident.

Top tip:

Adventure Activities take place in what is considered to be high risk environments. Good practice includes drug testing of key personal and a policy about this.

Refer to Guidance for managing drug and alcohol- related risks in Adventure Activities, available from the Work-Safe website, for more information.

https://WorkSafe.govt.nz/topic-and-industry/adventure-activities/guidance-for-pcbus/

6 Standard Operating Procedures (SOPs)

This section covers:
- Activity SOPs
- People – Staff and Participants
- Environment
- Trigger points
- Dynamic management of hazards
- Clothing and equipment
- Field communications
- Ancillary services

6.1 Activity SOPs

SOPs are the documented processes that an organisation has in place to ensure services and/or products are delivered consistently every time. SOPs describe operational practices and risk controls. Separate SOPs may cover operations such as human resources, finance, marketing and communication, for example.

Activity SOPs can be a key contributor to the effective and systematic management of safety for adventure activity operators. Like other workplace documents, they should be clear, concise, accessible and well communicated. They require regular review to remain current and to incorporate learning from any incidents.

SOPs should cover everything relating to the management of an activity. To comply with the Safety Audit Standard they must address each of the items covered in this section.

Top Tip:

Ensure resilience within your organisation by offering alternatives and contingencies and having built in flexibility and redundancy in your systems.

Operators must use suitably competent people to identify, assess and manage hazards.
Competence for this role includes familiarity with the operator's SMS, participant demographic, relevant site specific information, and an ability to draw on historical information related to site hazards and incidents.

6.2 People - staff

This section identifies good practice for two key areas of staff management:
- staff competence
- identifying and managing unsafe staff.

6.2.1 Staff competence

Staff competence is one of the most important components of an effective SMS.
The simplest meaning of competence is the ability of an individual to do a job to the required standard. Usually competence includes skills, knowledge, experience and behaviours.

There are three components to ensuring staff competence:
1. Clear and measurable descriptions of the tasks and responsibilities that each staff member needs to perform, and the skills, knowledge and behaviours needed to perform them.
2. A method of verifying competence against the competencies.
3. Using a suitable person to verify competence. This person should have a qualification or be a technical advisor in the skills to be verified. They should also be trained as assessors.

Qualifications provide an independent, robust, recognised and transferable means of measuring and demonstrating competence. Furthermore, qualifications contribute to quality, safety and professionalism. A qualification is confirmation that a person's performance has been compared with, and met, a common standard at a point in time. Once a qualification has been awarded, it is up to both the holder and the organisation they work for to ensure currency. While qualifications don't have an expiry date, registration with the providing body (e.g. Skills Active NZRRP, NZOIA) will. To maintain registration, individuals need to regularly provide evidence of current competency through a renewal or revalidation process.

Qualifications do not always equal job competence. They may not cover competencies that are specific and unique to an individual organisation. Operators need to ensure the safety responsibilities and competence requirements of each job within the operation are correctly identified. These jobs should include operations management, guiding and/or instructing.

Factors to consider when developing competency descriptors and requirements for a particular task/activity are:
· level of experience
· judgement and decision making
· criteria for a fit and proper person
· 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 participants and other staff
· rescue and emergency management skills, including first aid.

Employing qualified staff does not remove an operator's responsibility to measure, monitor and further develop competency in the contextual and practical setting of their organisation.

6.2.1.1 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 which are not covered by qualifications.

Using qualifications
Where a qualification matches a skill set needed for a job that carries responsibility for managing high levels of risk, it should be used. Operators should ensure they know which skills and knowledge a qualification actually measures and check these against those required for the job.

Verifying competence in skills not covered by qualifications
Ensure that skills or knowledge not covered by the qualification are verified by other suitable means — use 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 advisor in the skill to be verified who also understands national expectations on the standard of competence required. They should also be trained assessors.

Keep records of competence verification processes and results.

Establishing equivalency between qualifications
To establish equivalency of one qualification with another an operator should contact the benchmark qualification provider and enquire as to the process they recommend.

6.2.1.2 Recommendations for staff

Ensure that guides and instructors:
· hold the current Skills Active, NZOIA or other National Body awards corresponding to their job requirements, or
· hold an equivalent qualification, or
· are trained and verified as competent in equivalent skills by a suitable technical advisor, or
· are operating within the scope of their qualifications.

6.2.1.3 Recommendations for assistants

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 an assistant ensure that:
· tasks to be managed, safety responsibilities and required skills are clearly identified
· 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 participant supervision structures.

6.2.2 Identifying and managing unsafe staff

Identify any staff who are unable to perform safely tasks as required to fulfil the responsibility of their role. The staff member may not be competent by virtue of inadequate training and induction or they may be temporarily impaired. Impairment could be due to:
· alcohol
· drugs
· fatigue / medical condition or injury.

Management strategies should suit the significance of the risk and be outlined in the staff management aspects of the SMS. The Adventure Activity Regulations require that drug and alcohol hazards are addressed through an explicit drug and alcohol policy.
Initial management for dealing with an unsafe staff member should include removing the person from the role.

6.3 People - participants

This section identifies good practice for four key areas of participant safety management.

· Ensuring participants are suited to the activity
· Identifying and managing unsafe participants
· Informing participants about safety
· Supervision structures

6.3.1 Ensuring participants are suited to the activity

Assessment of participants to check they are suited to participate in the activity should happen before the activity begins and be ongoing throughout the activity.

6.3.1.1 Assessing participants

The safety management plan needs to clearly identify the participant abilities and characteristics to be assessed. Remember that staff other than instructors or guides may be involved in assessing participants (e.g. front of house staff). Participant assessment should be consistent across staff and should reflect the requirements of each activity.

Examples of factors to assess:
- fitness and physical ability
- developmental stage (e.g. minor vs adult, could have implications for equipment)
- ability to follow instructions safely. This could be impacted by:
    - language
    - phobias
    - behavioural characteristics - level of maturity, compliant, non-compliant
    - peer pressure
    - psychological factors e.g. confidence in the environment.
- religious or cultural expectations (food restrictions, prayer times, head wear, clothing)
- medical issues, particularly pre-existing injuries / illness / conditions
- nutrition and hydration (have they had enough food/ fluid to sustain energy levels for the activity)
- experience - a match against participant's skills and the technical skills required for the activity if appropriate (e.g. aquatic competency).

Information on managing participants with mixed abilities can be found at Support Adventure

6.3.1.2 Age restrictions

It is common practice for operators to require children under the age of 18 to have parental consent to participate in adventure activities – New Zealand law does not give clear guidance on this topic.

6.3.2 Identifying and managing unsafe participants

Identify any participants who may be unable to perform safety procedures as outlined in the safety instructions. Management strategies should suit the significance of the hazard and may include: sequencing the activity differently, directing the participant towards less risky activities, increasing supervision levels, or removing them from the activity.

Do not permit a person to participate in an activity if staff believe they are in such a state of impairment that they may be a hazard to themselves or any person on the activity.
Impairment could be due to:
- alcohol
- drugs
- fatigue, medical condition, mental state or injury.

6.3.3 Informing participants about safety

Managing safety is more effective if participants are well informed.

The SOPs should clearly outline the safety information to be provided to participants.

- Safety information should be delivered by a person who has been verified as competent to do so.
- Participants should have general risks disclosed to them prior to starting the activity.

- Things to include are:
  - that they are about to participate in a potentially dangerous adventure activity
  - the activity may be mentally and physically demanding
  - that following the instructions of the guide or instructor is critical to their safety and that of the group
  - mention of general hazards that cannot be avoided or place extra responsibility on the participant mention of specific methods of communication during the activity should direct verbal communication not be practicable, e.g. hand signals for water based activities
  - mention emergency procedures related to the activity.

- Throughout the activity, specific hazards and management strategies should be disclosed.

- Consider the participant group and make adjustments to delivery if necessary to ensure as best as practicable that they have understood the safety information. For example, participant's language, hearing or visual impairments, intellectual or psychological impairments.

- If participation is appropriate for children, ensure the pre-activity disclosure information is given to the correct people such as parents or teachers. This may mean the information needs to be delivered twice.

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, e.g. videos, pictures and diagrams, practical demonstrations, or written instructions in the client's language.

6.3.4 Supervision structures

Determining supervision structures is one of the most problematic issues in the outdoor sector. There is no simple answer applicable to all situations, although codes of practice, industry guidelines and qualifications will provide guidance on supervision structures.

Three main factors come into play when working out supervision structures:

- Environment – includes the weather and the terrain
- Activity leader – the leader's experience, competence, knowledge and judgement are critical to good, safe practice. Even if the leader is an expert, there are times when an activity may require two or more leaders for each group of participants
- Participants – their abilities and ages (minors, adults), their needs and expectations.

People involved in an activity who are not participants also need to be considered. They may be accompanying adults, teachers, workplace trainees, new staff members, senior students and so on. In some situations, they could be termed assistant leaders. In others, they would be classified as another participant.

Top Tip:

Keep in mind the worst case scenario – for example, in an emergency, a solo guided or instructed activity may mean that the group is unsupervised for extended periods. Will the participants be safe during this time?

Establish supervision structures for every activity and increase supervision levels when operational situations are less than optimal. Examples of these situations include:

- less experienced or confident staff
- less physically able, younger or less confident participants
- challenging environmental conditions
- remote locations.

The FLASH (Factors Likely to Accentuate Serious Harm) model developed by Dr Grant Davidson may be a useful tool to assist with decision making regarding the level of supervision required for activities of various risk ratings, and what could trigger the cancellation of any activity.

6.4 Environment

6.4.1 Natural events

Ensure guides and instructors are well aware of the risk of hazardous weather and other natural events 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, such as how to manage the safety of the people selecting safe waiting areas, and evacuation routes
· procedures for managing weather and natural-event-related injuries such as lightning strikes.

6.4.2 Extreme temperatures

If the temperature is particularly cold or hot it can result in participants struggling to safely participate and becoming hypothermic or hyperthermic. Strategies for managing this should be based on the associated hazards. 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 participants are clothed for the expected temperatures
· minimising the time participants are exposed to cold or heat e.g. using a shelter
· carrying and using extra thermal clothing, food, and heat sources.

6.5 Trigger points

Having defined 'trigger points' points can be particularly helpful as safety management controls because they help to reduce subjective decision making in critical situations.

Trigger points are particular circumstances and situations that cause an action to happen, for example:

· when ABC river levels are at X, all ABC river-based activities must be stopped
· when staff have worked seven consecutive days with groups they must have a day off
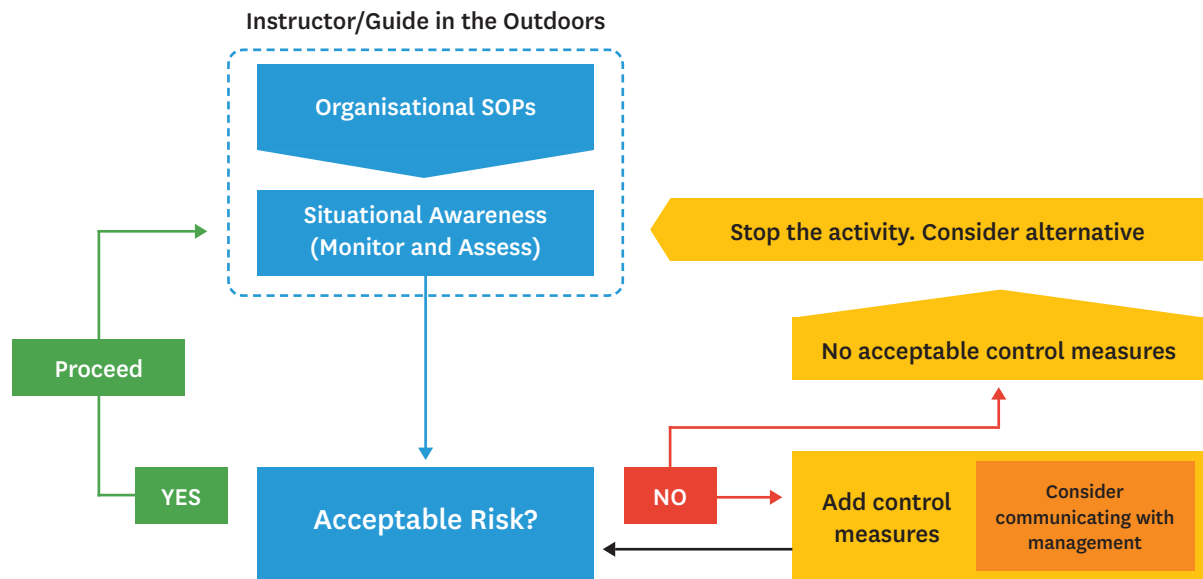· abseil ropes assigned to Y cave are replaced after 6 months of use.

Clearly described trigger points define the action to be taken in a specific situation. Trigger points can be set for people, environmental and equipment factors

6.6 Dynamic management of hazards

Hazards and risks can change over time, requiring dynamic (active) management if or when they occur.

This means that instructors and guides must have the skills to constantly be aware of and manage new and changing hazards as they are encountered.

The diagram outlines a process of dynamic risk assessment.

Instructor/Guide in the Outdoors

Organisational SOPs

Situational Awareness
(Monitor and Assess)

Stop the activity. Consider alternative

No acceptable control measures

Proceed

YES

Acceptable Risk?

NO

Add control measures

Consider communicating with management

There will be situations where a guide or instructor simply cannot reduce the risk level to something acceptable. In that case stopping the activity should always be seen by staff as an option and they should be trained to understand when this would be required and the procedures to follow.

Top Tip:

Depending on the situation and location, stopping an activity could mean either permanently eliminating the risk (e.g. not starting the activity) or minimising the risk (e.g. camping till the risk reduces, changing the route / activity).

Ensure staff know that this is an acceptable response.

6.7 Clothing and equipment

SOP's must specify the clothing and equipment that is required to ensure safety during the activity.

6.7.1 Suitable

Being 'fit for purpose' means clothing and equipment must be suitable for specific activities, and must be able to cope with emergencies. It should be serviceable and meet current, accepted practice or standards for the activity. Manufacturers' instructions or guidelines will have a bearing on whether the equipment is fit for purpose. Some activities will have clothing and equipment that must meet specific national or international standards or manufactures requirements, e.g. helmets, life jackets, ropes, etc. These will be detailed in the activity specific guidance.

Clothing and equipment must also be a suitable size, fit and reasonably comfortable for staff and participants.

6.7.2 Maintained

Staff and participant clothing and equipment that is supplied by the operation must be in good working order, clean and hygienic. Both scheduled maintenance and spot checks of clothing and equipment should be included in SOPs. Scheduled and systematic inspections and maintenance will ensure safe clothing and equipment supply. Procedures should also include requirements for retiring, or disposing of, clothing and equipment.

6.7.3 Sufficient

A range of sizes and types of gear should be available in good order to supply the maximum potential number of participants. For emergencies, clothing and equipment would be deemed sufficient if it could deal with the range of situations identified in risk assessments. Spare clothing and equipment, in case of damage or defect, should also be available.

6.7.4 Emergency equipment

For some activities, certain items of emergency equipment should be carried in case of a serious incident. This is particularly so if an injured person cannot reach immediate medical care and may need to stay put for a reasonable length of time. 'Sufficient' emergency equipment should include, as a minimum, a first aid kit, ground insulation, body insulation, an emergency shelter to cover both patient and carer(s), and an emergency communication device.

6.7.5 First aid kits

First aid kits should be appropriate to the types of activities and programmes offered. However, all first aid equipment should be:
- accessible
- appropriate and adequate for the activity and context
- maintained in a hygienic, safe and serviceable condition.

Procedures should itemise the process for checking first aid kits and ensuring sterile products are not contaminated, perishable medication is within its expiry date, and for disposal and replacement of contaminated or expired products.
Medication should be appropriately stored.

Suggestions for standard first aid kit contents can be found at www.supportadventure.co.nz/other-resources#firstaid

6.8 Field communications

Everyone involved in an activity should have a basic understanding of contact and communication procedures. Having all the information, and responsibility, held by one person is not good practice and can be dangerous in emergency situations.

The type of communication equipment used will depend on the context and the activity, the potential hazards and risks and the emergency response plan in place.

Communication equipment may include:
- mobile phone
- satellite phone
- two-way satellite texting device
- two-way radio (e.g. UHF radio)
- Emergency Position Indicating Radio beacon (EPIRB)
- Personal Locator Beacon (PLB)
- tracking devices
- emergency flares.

Good pre-activity briefings will help ensure everyone is aware of the communication equipment, requirements and procedures for that activity.

Specified calling times may need to be arranged prior to setting out, especially if the terrain and/or programme warrant it.

Certain devices may have "blind spots" where reception is poor and non-existent. If these are known, they should be documented and shared with all those involved with an activity. A map can be a useful tool for this.

Emergency response plans should build in back up communication plans to cover what to do if the planned communication tools don't work.

6.8.1 Activity monitoring

6.8.1.1 On activity staff

Ensure every activity has staff who are responsible for monitoring general safety during the activity and ensuring operating procedures are followed.

The designated leader should be an experienced staff member who the operator is confident will exercise good judgement under pressure.

6.8.1.2 Emergency and external support

Procedures for monitoring activity safety by a suitable back up person should be defined. A suitable back up person must be inducted into the relevant section of the SMS and cannot be taking part in the activity. This person is responsible for initiating an emergency response as per the procedures in the SMS.

Top Tip:

Having a person at base who can help out if things go wrong does not remove the responsibility for each individual staff member to manage the safety of participants within their supervision structure.

6.9 Ancillary services

The Safety Audit Standard defines ancillary services as

> *Services provided by the operator to participants that supplement and support the operator's adventure activities.*
>
> *Note: Ancillary services should be included in an operator's SMS. Safety audits against the Safety Audit Standard will review only those ancillary services which involve a serious risk to health and safety (such as, for example, off road transport to or from an adventure activity).*

Top Tip:

Good practice safety management includes a strong commitment to organisational safety culture. SMS should be inclusive of all activity within an operation, including all ancillary services, not just the activities audited under the Adventure Activity Regulations.

Transport is the most common ancillary service among adventure activity providers. The following points may assist with development of an SOP for transporting activity participants.

Policy and procedures could relate to:
- vehicle compliance
    - usage and limits (e.g. weight, passengers)
    - use of seat belts
    - speed limits
    - equipment (e.g. fire extinguishers, first aid kits, breakdown hazard signs)
    - breakdown and roadside assistance service procedures
    - maintenance of vehicles and roadworthiness checks
- driver competence, health and fitness (including fatigue management, defensive driver training)
- driver communications and mobile phone use
- site traffic management (e.g. safety at pick-up and drop-off points).

Top Tip:

Reversing a vehicle without visibility or assurance that the area around the vehicle is clear can lead to serious harm. Consider fitting cameras and or developing policy and procedure to mitigate this risk.

7 Emergency preparedness and response plans

7.1 Emergency response plan:

This involves developing clearly documented and practised procedures for a full range of emergencies, from incident management through to crisis response. Developing a plan is likely to involve:

- identifying possible scenarios
- determining response procedures
- communication and training.

The Safety Audit Standard states the procedures that must be included.

The operator must engage staff in the process of developing emergency plans. Other relevant parties may include local police and or other PCBU's.

Appropriately trained staff and suitable equipment must be available to manage each emergency scenario. Activity monitoring and communication procedures are key components of the SMS. They feature in both normal daily procedures and procedures for managing emergencies.

The emergency preparedness and response plans must be tested and reviewed periodically, reviewed after an incident or emergency and revised as required.

The most common method of testing emergency preparedness is to have a practice run. These are most effective if they appear to be real and staff are not prepared for them. Involving the emergency services and local rescue agencies listed in your response plan can also be helpful. If you decide to include external agencies during a practice run remember to include them during the planning and to notify them prior to the event so they are clear it is not a real emergency.

7.2 Accessing external emergency support

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

Emergency planning and procedures should consider factors that could affect the availability of suitable external emergency support.

These factors include:
- the ability to call for external support at any time during the activity
- the type of external emergency support required by each emergency scenario
- access and evacuation options
- capacity and ability of local rescue resources, e.g. community rescue agencies.

Top Tip:

Training with local rescue personnel helps to increase their awareness of site access and evacuation options and identify gaps in equipment and expertise.

7.3 Contingencies for limited access to emergency support

Where access to external emergency support is limited, groups may have to spend more time at the site of an emergency, and there is a risk that injured participants will spend considerable time without secondary emergency care.

Operators need to define strategies based on the risks associated with limited external emergency support. Options to consider include:
- informing participants of the risk of a prolonged wait for emergency support in the event of an incident, before starting out
- using experienced guides and ensuring they are competent to manage identified emergency scenarios for an extended time – such as by holding a first aid qualification that includes managing scenarios over a longer time
- considering accessibility when determining the supervision structure, assessing participants, and setting competence requirements for guides.

8 Incident management

8.1 Incident response and review

8.1.1 Incident response:

The Safety Audit Standard states that:

> *The operator must develop procedures for responding to incidents, including communicating and recording incidents internally and reporting notifiable events to the relevant authority.*
>
> *The procedures for recording and reporting incidents must be communicated to staff.*
>
> *Note: the procedures should identify which incidents are to be recorded in addition to notifiable events.*

An organisation is likely to incorporate incident response strategies in a range of procedures including:

- emergency response plan (see section 7)
- internal incident reporting, recording and review procedures
- reporting of notifiable events procedures.

8.1.2 Incident reporting and recording

All incidents and concerns that affect safety or have the potential to affect safety must be reported, recorded, and analysed internally. There must be clear and well communicated procedures for doing all of these. Incident reporting systems need to be used effectively. Induction and ongoing training are vital, but are only a part of ensuring that this happens. Systems must be openly and regularly used, particularly by senior staff, to have any chance of success.

Top tip:

To encourage responsible reporting 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.

8.1.3 Incident review:

The Safety Audit Standard states that:

> *The operator must establish a process for investigating and review incidents, understanding the underlying causes, identifying improvements to the SMS and analysing trends.*
>
> *Recommendations from incident reviews must be implemented and communicated to staff and relevant parties.*

Analysis will enable learning and help to prevent similar incidents from happening again by modifying procedures where required.

For more information on incident reporting and review visit Support Adventure

8.1.4 Reporting notifiable events

Section 56 of the Health and Safety at Work Act makes it a responsibility of a PCBU to notify WorkSafe, "as soon as possible" after becoming aware that a notifiable event has occurred "arising out of the conduct of the business or undertaking". This can be by phone, email or other electronic means and must be given by the fastest means possible in the circumstances.

What is a notifiable event?

A notifiable event is any of the following events that arise from work:

· a death
· a notifiable illness or injury or
· a notifiable incident.

A notifiable incident is a close call. It is the result of an unplanned or uncontrolled event that exposes staff and or participants to serious harm. Examples could include

· a camp stove exploding
· a camp fire getting out of control
· equipment falling from height (e.g. during rock climbing, high wire, high rope activities, caving)
· the collapse or partial collapse of a structure.

For the full explanation please see Section 24 of the Health and Safety at Work act 2015

Notifiable incidents do not include controlled activities that form part of the business or undertaking (e.g. the controlled release of water from a dam).

Deaths, injuries or illness that are unrelated to work are not notifiable events, for example:
· a diabetic worker slipping into a coma at work
· a worker being injured driving to work in his or her private car when the driving is not done as part of their work
· injuries that are triggered by a medical reason (e.g. injuries from a fall caused by a stroke).

For more information see the WorkSafe website.

An operator must ensure it has a process to enable this to occur and to keep records of each notifiable event for at least 5 years from the date on which WorkSafe was notified.

Section 55 of the Health and Safety at Work Act makes it a duty of a PCBU, who controls or manages a workplace at which a notifiable event has occurred, to take all reasonable steps to ensure the site where the event occurred is not disturbed until authorised by an inspector. This doesn't prevent actions to assist injured people or make the site safe for others, even if this causes disturbance of the site.

PCBUs have a duty to manage the health and safety of workers in the workplace and any other person who enters the workplace under the control of the PCBU. Thus notifiable events need to be reported to WorkSafe when those events involve workers and others under the control of the PCBU (e.g. participants being guided or instructed).

If in doubt about whether an event should be reported, discuss this with WorkSafe as soon as possible.

9 Document control

The Safety Audit Standard states that:

The operator must ensure that the documented information required for the SMS is:

- *readable, identifiable and traceable to the activity*
- *periodically reviewed and revised where necessary*
- *signed off as adequate by a competent and responsible person*
- *current and available at appropriate locations*
- *adequately protected from unauthorised modification deletion and publication*
- *removed from circulation if it is obsolete, or clearly marked that it is not to be used.*

Note: *obsolete SMS documents should be retained in archived form, that is, suitably identified and protected against damage, deterioration or loss.*

A lot of effort and time goes into developing a SMS. Once it is in place, there must be continual revisions, amendments and audits to keep it relevant and up to date.

Document control becomes easier if all documents (including appendices and supporting documents) are clearly labelled and referencing is consistent with the document names. Things that assist with this are:

- document names that clearly identify and differentiate them from other documents
- version control number in the title
- use of page numbering
- use of footers with title, version number and date
- reference to control of printed copies (e.g. not deemed a controlled document once printed).

It is also important to have clear procedures to control the different elements. Here is a list of some document control procedures and considerations:

- distribution – what is to be seen, read and analysed; authorised users; how it goes out and when; who sends it out; checking that it has been seen
- access – who can see what; how people get the information; readily accessible at all locations; numbers of authorised copies
- copyright of contents and inclusions
- storage – where various documents are kept (electronic and print); back-up copies; off-site copies; format compatibility as software applications change; retrieval; preserving legibility; length of storage (legal or commercial reasons); archiving requirements/space
- management of changes – responsibility of person who signs off changes; how changes are recorded (version control); date-stamping; recalling old versions; preventing use of obsolete information
- disposal – getting rid of outdated documents; who authorises deletion; how it is done.

Top Tip:

A simple way to keep track of and connect all elements of the SMS is to create a section that lists.
- appendices
- supporting documents and other items
- who must have access
- who is responsible
- where they are stored
- when and how they are to be checked and updated.

10 Continual improvement

ISO 21101: Adventure Tourism – Safety management systems – A practical guide for SME's (2016) defines continual improvement as a recurring activity to enhance performance. What this means is that you need to always be looking for opportunities to improve skills, processes and procedures, tools and equipment to get better results.

Continual improvement underpins a strong safety culture and should be thought of as the "way of doing things" within your organisation. It leads to enhanced safety performance and is likely to increase your reputation as a reliable provider of safe activities.

The Safety Audit Standard identifies two key components of continual improvement:

- Internal review of the SMS
- Internal review of adventure activities

Regular internal and external safety system reviews or audits are a crucial part of running a safe operation. Reviews are needed to ensure the SMS is still appropriate, easy to use and meeting its objectives.

Reviews should check that:

- safety systems and procedures align with the recommendations in these guidelines, relevant legislation and codes of practice, and industry good practice
- everyone in the operation understands and is following the agreed safety systems and procedures.

Responsibility for ensuring that reviews take place must be clearly assigned, but everyone in the operation should be part of the process.

Records must be kept of the review process and the results, and any relevant learning must be shared with staff.

10.1 Internal review of the SMS

This is when top leadership revisits the SMS and evaluates it against the safety goals and objectives. The internal review needs to specifically assess whether the systems continue to be suitable, adequate and effective for the operation.

The SMS review should draw on other reviews that have occurred within the last year, including:

- internal reviews of adventure activities
- audit findings
- performance evaluations
- technical advisor reports
- key themes and trends of incident, accidents and near misses.

Part of the review must include a check that actions resulting from other reviews have been incorporated into the SMS.

10.2 Internal review of adventure activities

Scheduled internal reviews of adventure activities provide an objective and impartial assessment of whether the SMS continues to meet the SAS.

Planning for internal review of adventure activities should include:

- a schedule - what you intend to review and how often you intend to review it. Before and after the busy season are often good times to schedule reviews
- a plan for each review; including scope (activity, processes, location) and criteria (the standard you will be review against)
- who is responsible
- the technical advisors required (if any)
- documentation of the output (notes, evidence and reports of results)
- communication of the outcomes to staff and other relevant parties
- implementation of actions that are a result of the review.

Along with scheduled reviews operators must also review their adventure activities in response to specific triggers these include:

- audit findings
- proposed changes to adventure activities provided
- changes to the environment in which the activity is conducted
- changes to key staff
- incidents and emergencies
- changes to legislation, standards, activity safety guidelines, codes of practice or similar legislation
- identification of a new relevant hazard or risk.

Internal adventure activity reviews need to provide an impartial appraisal and at the same time be conducted by people with current competence in the activity. Ideally reviewers should not be responsible for design or operation of the area under review. This can be difficult to achieve especially within small operations. Strategies that can help are:

- peer review of the initial audit
- sampling records at random
- working with other local operators and assisting each other by exchanging staff for reviews.

Operators need to support staff who carry out internal adventure activity reviews so that they feel safe communicating review results to top leadership, even if they are not positive.

11 Appendix A – Risk assessment information

This appendix provides more detail about risk analysis discussed in Section 5: Risk and hazard management.

11.1 What is risk analysis?

This guide defines 'a risk' as a potential event that could cause an illness, injury or death.

Risk analysis is about understanding the likelihood of a particular risk occurring, and the potential severity of the consequences (the degree of harm) if it does occur. Estimating the likelihood and the expected consequence allows a risk rating to be determined and then evaluated.

There are a wide variety of Risk Rating Models available, the following is an example that could be applied. The key factor is to ensure that the model selected is reflected throughout the SMS.

11.1.1 Assessing likelihood

An example of a likelihood scale is:

Likelihood Levels	Description
Almost Certain	Expected to occur at least once during the task or activity
Likely	Could occur during the task or activity
Possible	It's conceivable it could occur, but only expected infrequently
Unlikely	It's conceivable that this could happen, although only in unusual circumstances
Rare	It's only conceivable that this could happen in exceptional circumstances

11.1.2 Assessing severity

An example of a consequences scale based on injury to people is:

Severity Levels	Description
Insignificant	No injury or very minor injury or illness that does not require First Aid. Temporary stress or embarrassment. Minor or no damage to facilities or equipment. Little or no environmental, financial, reputational or operational impact.
Minor	Injury or illness requiring only First Aid (No permanent disability). Stressed beyond comfort level. Wants to leave activity. Isolated and quickly repaired damage to facilities or equipment. Some environmental, financial, reputational, or operational impact.
Moderate	Injury or illness that requires medical treatment or hospitalisation (with no permanent disability). Very distressed. Requires on-site counselling or support. Does not want to participate in activities. Damage to facilities or equipment resulting in temporary inability to use it. Localised environmental, financial, reputational, or operational impact.

Major	Serious injury or illness to one or more people, resulting hospitalisation and possible permanent disability. Therapy or counselling by a professional may be required. Sustained or extensive damage to facilities or equipment. Extensive environmental, financial, reputational or operational impact.
Catastrophic	One or more fatalities. Post-traumatic stress disorder. Long term counselling / therapy is likely to be required. Loss of facilities or equipment. Significant and widespread environmental, financial, reputational or operational impact.

The descriptors and definitions used for both of these scales should be defined, and can be customised to suit the context.

11.1.3 Risk rating matrix

The risk rating matrix combines the two scales for likelihood and consequence to produce a qualitative description of the risk rating. Examples of the risk rating descriptors are low, medium, high and extreme.

There is a direct relationship between the likelihood of something occurring, the consequences and the risk rating. For example, if a risk has a possible likelihood of happening and the consequences when it happens are major the risk rating will be high.

This table shows an example risk rating matrix.

Likelihood of injury/harm	Severity of injury/harm →				
	Insignificant	Minor	Moderate	Major	Catastrophic
	No/Minor injury	First Aid	Medical Treatment	Extensive injury	Fatalities
Almost certain	Medium	Medium	High	Extreme	Extreme
Likely	Low	Medium	High	Extreme	Extreme
Possible	Low	Medium	High	High	Extreme
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Medium	High

The risk rating descriptors and their position within the matrix can be customised to suit the context. The descriptors can help determine the priority by which risks are managed – for example, extreme or high risk ratings should be a higher priority to control or treat than those classified as low or medium.,

There are many different versions of the Risk Rating Matrix. There are also other methods of analysis, consider and select the most appropriate method for your organisation.

The critical factor is consistency, ensure you clearly communicate the method you are using and apply it consistently.

If purchasing risk management software, ensure that the risk rating matrix included lines ups with the matrix you have used to evaluate activities throughout your SMS and SOPs.

ASG

Activity Safety Guideline

Mountain Biking Operators
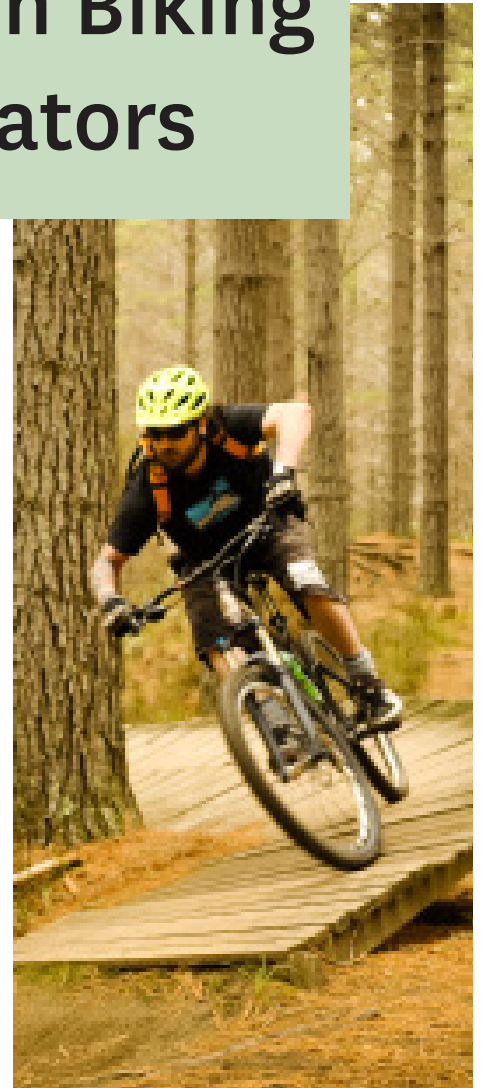
Preface

The Activity Safety Guideline for Mountain Bike Operators is published by Skills Active Aotearoa ltd. The guideline was developed in association with experts from the mountain biking sector and other relevant technical experts.

The guideline is a web-based document and will be reviewed and updated as required.

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 on the Support Adventure website

Skills Active and the mountain bike activity safety guidelines working groups 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 Skills Active www.skillsactive.org.nz with the support of WorkSafe New Zealand and NZRA.

Document Control

Version 1

Change	Where
Origonal document	Not Applicable

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Other publications

This guidance contains adventure tourism and outdoor commercial sector information published on the Support Adventure website.

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Contents

1 Introduction

The *Safety Audit Standards for Adventure Activities*, published by WorkSafe New Zealand sets out the standards and requirements that adventure activity operators in New Zealand must comply with to reduce risks when providing adventure activities.

Safety audit standards specify:
· the general standards and requirements for all operators
· that an operator's SOPs must conform to good practice for the activity.

The Mountain Biking Activity Safety Guidelines are written for commercial mountain biking operators and safety auditors as a benchmark for current good practice.

There are two components to the guidance:
1. Adventure Activity Safety Guidelines - Core Principles
2. Activity Safety Guidelines for Mountain Biking Operators

These documents are not a legal requirement but rather guidelines that will assist operators to meet current good practice.

These two documents have been developed concurrently and together make up the Mountain Biking ASG, however the Adventure Activity Safety Guidelines - Core Principles are generic factors that underpin all adventure activity delivery and could be used to guide practice in the absence of an activity safety guideline.

The Support Adventure website provides guidance for adventure activity operators on developing good practice safety management systems. It includes information and examples for developing a safety management plan. These guidelines should be used in conjunction with the information on the Support Adventure website.

Both documents in the Mountain Bike ASG have been written to follow a similar structure to the *Safety Audit Standards for Adventure Activities*. The aim is to contextualise and operationalise this WorkSafe publication and allow the reader to easily map sections from one document to the other. Both documents should be read alongside the *Safety Audit Standards for Adventure Activities*.

2 Definitions

These guidelines assume the reader has access to the Adventure Activity Safety Guidelines – Core Principles so only terms that are unique to this publication, or used in a specific way, or that could otherwise be open to interpretation are included here. For the purposes of this document the following definitions apply:

Mountain Biking	Is riding a mountain bike on unsealed surfaces and purpose built mountain bike trails and may involve manoeuvring through, around and over obstacles.
Mountain Bike	Is a bicycle that has been designed for off road use that includes off road tyres, front and rear brakes and "mountain bike"/ "straight bar" design handle bars.
Mountain Bike Park	A commercial mountain bike operation that charges for the use of mountain bike trails. This includes two types of operations, those: • just offering a trail network • running a lift accessed gravity park.

While its preferable to prevent incidents if possible, mountain biking is by its nature a risky activity and it is reasonable to expect that some riders will fall off and be injured. Recent studies have shown that people can have serious injuries while mountain biking regardless of the grade of trail. This information has led the writers of these guidelines to avoid using trail grading as part of the mountain biking definition.

Unless there is specific and reliable information showing a significantly lower level of risk than average, any mountain bike activity is likely to expose participants to serious risk that the operator must manage as part of their health and safety duties.

Some off road riding may be lower in risk than mountain biking as that term is understood by mountain biking enthusiasts. Lower risk riding that is not "real" mountain biking might be better described with words such as scenic trail, rail trail or off road trail.

3 Context

Since the early 2000's mountain biking has become an international main stream sport. Competitions like Crankworks World Tour and the Red Bull Rampage have helped to promote the sport worldwide, increasing the demand for style specific equipment and excellence in trail design and build. Ski fields now cater for mountain bikers during the off season and recreational participation rates continue to increase steadily. International tour operators who offer guided mountain bike trips are also starting to appear on the market. In this context, New Zealand is an emerging market with a growing international reputation.

There have been remarkable advances in mountain bike technology, design and geometry. Clear styles of riding have emerged. Clearer criteria and increased professionalism in trail building are being demanded.

Most regions in New Zealand now have access to purpose-built single track mountain bike trails. The concept of using shuttles, chair lifts and gondolas for uphill access has further increased the popularity of the sport and the demand for bigger and better parks in New Zealand.

E- mountain bikes are now entering the NZ market. The major brands offer high end, high performance mountain bikes. The use of e-bikes allows less fit, time poor, those with physical limitations and ageing mountain bikers to more easily enjoy an experience that once may have been considered too challenging.

A mountain bike Code of Conduct has been well adopted by the NZ mountain bike sector however with the increasing numbers of riders conflicts inevitably arise. Key areas of concern are shared trails, illegal trail building, ensuring that international operators are meeting NZ's legal requirements, land access and consent issues. With the growth in e-mountain bikes potential conflicts are possible between powered and pedal mountain bike users.

Currently some international operators are slipping under the radar and are failing to gain the required consents to operate and are unaware that they are subject to NZ Health and Safety Legislation. As this type of operation increases issues may arise.

3.1 Purpose of this guide

This guideline aims to provide practical guidance for adventure tourism and commercial operators providing mountain biking, to actively manage safety of this activity. The guidance is based on industry experts' current recommendations for good practice safety management.

Following this guidance will help operators to meet their legal requirements to take all practicable steps for identifying and managing primary hazards under New Zealand Health and Safety legislation and particularly the Adventure Activity Regulations 2016.

This guide is not intended to cover all eventualities nor is it a "how to guide" or a training guide for start-up operators. It is expected that operators and auditors have an in-depth understanding of the principles of leadership, group management and outdoor safety management and are, or have access to, a technical mountain bike advisor.

This guideline aims to operationalise and contextualise the Safety Audit Standards for Adventure Activities.

3.2 Audience

This guide has been written specifically for operators providing mountain biking within the adventure tourism and commercial outdoor sector. It is expected that it will also be used by safety auditors and regulators.

Although not the primary audience these guidelines may be useful for organisations who provide:
· rail trail rides
· scenic rides
· bike hire
· mountain bike rides for school students
· mountain bike competitive events.

3.2 Generic content

This document provides direction that relates specifically to mountain biking. There are a number of sections included in the Adventure Activity Safety Guidelines - Core Principles that are not included here as there is no additional mountain biking specific information. In these cases the generic information described in the Adventure Activity Safety Guidelines - Core Principles should be applied.

3.3 Mountain bike grading

The New Zealand Mountain Bike Trail Grading System categorises trails on a scale of 1 – 6.
This system (described below) was developed by the Kennett Brothers in 2003 and is based on International Mountain Bicycling Association (IMBA) recommended good practice. It was endorsed by Mountain Bike NZ (MTBNZ) and adopted by the Department of Conservation. It quickly became the accepted trail grading standard in NZ and is widely used by New Zealand trail builders.

MTBNZ grading system

EASIEST	Easiest: Grade 1 Standard: Fairly flat, wide, smooth track or gravel road.
EASY	Easy: Grade 2 Standard: Mostly flat with some gentle climbs on smooth track with easily avoidable obstacles such as rocks and potholes.
INTERMEDIATE	Intermediate: Grade 3 Standard: Steep slopes and/or avoidable obstacles possibly on narrow track and/or with poor traction. There may be exposure at the track's outside edge.
ADVANCE	Advanced: Grade 4 Standard: A mixture of long, steep climbs, narrow track, poor traction and obstacles that are difficult to avoid or jump over. Generally exposed at the track's outside edge. Most riders will find some sections easier to walk.
EXPERT	Expert: Grade 5 Standard: Technically challenging. Giant climbs, narrow track and numerous hazards including dangerous drop-offs, sharp corners and difficult obstacles. Expect walking and possibly bike carrying.
EXTREME	Extreme: Grade 6 Standard: Downhill/free ride specific tracks. Extremely steep sections with large drop-offs and other unavoidable obstacles. May include man-made structures and jumps.

There is a level of regional variation in trail grading in NZ this is largely due to different topography, natural features, soil type etc. This gives each region a distinctive flavour or style of trail that adds to NZ's reputation as a mountain bike destination.

Mountain bike parks generally use a slight variation of these grade descriptors. Trail grade markers used in parks are similar to what is found in ski areas.

Mountain bike park grading system

	Easy Mostly gentle slopes with some features on smooth track with easy avoidable obstacles such as ricks and roots. Any and all jumps are rollable. Must have ridden a bike before.
	Intermediate Challenging riding with steep and avoidable obstacles both natural and man-made, possibly on narrow track and or with poor tractions Must be a competent mountain biker.
	Advanced Difficult riding on tracks with a mixture of narrow trail, poor traction and obstacles both natural and man-made that are difficult to avoid or jump. Obstacles may include but are not limited to gaps, step downs, tables. Must have advanced mountain biking skills.
	Expert: Highly difficult riding that is technically challenging. Trails may be narrow with numerous large obstacles, both natural and man-made. Expert mountain bikers only with very advanced bike handling skills.
	Pro line Includes mandatory jumps, elevated features and drops with no ride around. Highly advanced and experts only

Some parks are also starting to differentiate between flow and technical trails. Two different sets of skills are required for each. A rider may be comfortable on a grade 5/black diamond technical trail but will struggle on the same grade jump /flow trail.

Flow trails are usually machine cut and contain man-made features. Routes are enhanced with dirt jumps, ride on features such as rollers, table tops, wall rides and berms that create a smooth flowing ride. Riders tend to travel at greater speed and gain more flight time on the jump features. Injury rates on flow trails tend to be significantly higher than on technical trails because of this.

Technical trails tend to embrace the rugged shape of the terrain, utilising a majority of natural features. These routes are typically hand built and feature organic obstacles such as rocks, roots, logs, drops and jumps that require technical riding skills. Riders tend to travel more slowly as they negotiate the obstacles.

4 Leadership and management

Please note the section numbering in the remainder of this document maps to the Adventure Activity Safety Guidelines - Core Principles to enable easy reference.

4.4 Legislation, standards and codes of practice and guidelines

4.4.2 Standards, codes of practice and guidelines

Standards and codes applicable to mountain biking include:
- Outdoor Safety Code
- Leave No Trace principles
- Mountain Bikers Code of Conduct

Operators may also need to consider standards and codes of practice associated with:

Access:
- lease agreements with land managers (Crown Lease, LINZ, DoC, Iwi)
- memorandums of understanding (MOUs) with private land owners
- resource consent
- permission to guide or instruct within a mountain bike park
- permits from local councils for commercial activities.

Provision of uphill transport for example:
- Shuttle services:
    - passenger service licences
    - memorandums of understanding (MOUs) with contracted providers – helicopter and road vehicle clearly outlining areas of responsibility, policy and procedures.

Mountain bike parks:
- Cableways – Approved Code of Practice for Passenger Ropeways in NZ 1998
- Trail design and trail building:
    - NZ Mountain Bike Trail Design and Construction Guidelines
    - International Mountain Bicycling Association IMBA trail solutions
    - Whistler trail standards.
- Some built structures may require an engineer's report.

5 Risk and hazard management

The underlying principles of risk management are covered in Section 5 of Adventure Activity Guidelines – Core Principles (NZAAG).

The information in these sections should not be considered all-inclusive.

5.1 Risk and hazard identification, assessment and management

5.1.1 Mountain bike guiding and instructing

Accident Compensation Corporation records show that mountain biking injuries have increased significantly with the rise in popularity of the activity. Mountain biking involves off road riding over tracks with variable surface conditions. High speed and jumps during downhill sections correlate to a high incidence of life altering injury and the potential of death.

Regardless of speed and terrain mountain bikers tend to frequently fall off their bikes. Most falls result in relatively minor cuts and grazes. Abrasions on the outside of the knees, hips and elbows are common when a rider falls, especially on a hard surface.

The majority of serious mountain biking injuries occur during downhill riding, with the shoulder region, upper arm and wrist are most often injured. A broken collar bone and acromioclavicular joint sprain (shoulder separation) are two frequent mountain biking injuries. A fall could also result in a serious head injury; this makes a properly fitted cycle specific helmet essential.

Not all mountain biking injuries are traumatic. Overuse injuries can occur due to the repetitive nature of cycling. If the bike set up is incorrect for the rider, it is quite easy to suffer from back pain and knee pain.
The most likely sources of serious risk while mountain biking are identified in the table in Section 5.1.2. Safety management strategies for guiding and instructing should focus on preventing these from occurring.

The most likely risks and hazards associated with mountain bike guiding and instructing are also identified. Each risk has been given a risk rating and some common control measures have been identified. If needed the controls are described in more detail in Section 6: Standard Operating Procedures.

The risk rating matrix used is described in full Appendix A: Risk assessment information of the Adventure Activity Safety Guidelines - Core Principles document. The risk levels used in the following section are outlined in the table on the next page.

Risk levels

Extreme	Stop, look for alternatives! Unacceptable level of risk. A considerable potential for fatalities, serious injuries or illness, post-traumatic stress, loss of facilities or equipment. Significant widespread environmental damage. Significant financial, reputational, or operational impact.
High	Control to eliminate risk where possible. Action must be taken to eliminate or significantly minimise the risk. There is moderate potential for injuries, illness or stress requiring hospitalisation, therapy or counselling, damage of facilities, equipment, or localised environmental damage. Moderate financial, reputational or operational impact.
Medium	Control to minimise risk as far as reasonably practicable. Action must be taken to eliminate or minimise the risk. There is some potential for injuries, illness or stress requiring medical treatment, support, damage of facilities, equipment, or localised environmental damage. Some financial, reputational or operational impact.
Low	Continue and monitor Can retain the risk but need to be vigilant that the risk level does not rise. Minimal potential for injuries or illness (above those requiring simple first aid), stress or embarrassment, or any consequential damage to facilities or equipment, or the environment. Little to no financial, reputational, or operational impact

5.1.2 Risk and Hazard identification, assessment and management for mountain bike guiding and instructing

Risks/ Harm	Hazards	Risk Rating	Safety Controls	Residual risk rating
Injury Falling off bike while riding (people issue)	• Poor briefing /instructions • Rider not listening to or understanding instructions • Rider going too fast for skill and experience • Poor pre-ride assessment of rider skill • Poor trail choice for the rider • Group moving too fast for rider • Rider not following instructions / advice • Rider tired (poor fitness) • Rider low on energy • Rider well outside comfort zone (emotionally distressed) • Under the influence of drugs or alcohol	▮ (red)	Guide /instructor competence /experience • Safety and riding briefing knowledge • Group management skills • Communication/ instruction/ guiding skills • Dynamic risk management skills • First aid • Pre-ride suitability assessment • Pre-ride water and food check • Monitoring energy levels Policy to address participants under the influence of drugs and alcohol	Operator to assess after controls are in place
Injury Falling off bike while riding (environmental issue)	• Unknown / unexpected hazards on trail • Unskilled trail builders • Trail grading different to expected • Weather makes trail more difficult • Weather leads to uncomfortable riders (cold wet or too hot)	▮ (red)	Procedures to access current trail condition information prior to riding. • Guide /instructor competence /experience • Riding experience/ induction in area • Risk disclosure • Group management (this may include getting riders to walk sections) • Weather knowledge (including local weather) • Pre-ride check of rider equipment / clothing Policy around weather trigger points/ tolerances	Operator to assess after controls are in place

Risks/ Harm	Hazards	Risk Rating	Safety Controls	Residual risk rating
Injury Falling off bike while riding (equipment issue)	• Poor bike selection/ match for rider and or style of riding • Poor bike maintenance • Bike failure • No end caps on handle bars • Inadequate helmet • Inadequate clothing / footwear • Rider unfamiliar with bike set up (e.g. brakes pedals) • Failure to adjust seat height for downhill	■	Guide /instructor competence /experience • Pre-ride check of bike and rider equipment. • Instructions about features of bike and associated risks Procedure to ensure riders have adequate clothing and equipment prior to riding	Operator to assess after controls are in place
Injury Not riding	• Rider slips while walking steep/ exposed sections of trail • Rider walking is an unexpected hazard to other riders • Stopping in blind spots • Stopping in front of trail exits or blocking trail interactions	■	Guide /instructor competence /experience • Group management • Rider assessment and matching trail selection • Risk disclosure	Operator to assess after controls are in place
Injury Collision with other users	• Rider travelling too fast on shared trail • Rider travelling too fast at trail intersections • Riding the wrong direction on a single direction trail • Overtaking other riders	■	Guide /instructor competence /experience • Group management • Risk disclosure Procedure for management of riders on multi use and two-way trails	Operator to assess after controls are in place
Conflict with landowner due to: damage to land or property loss of injury to stock	• Poor group management • Poor environmental care	■	DoC – Mountain Bikers Code Develop policies and procedures in partnership with land/ livestock owners/ Iwi and other user groups where applicable.	Operator to assess after controls are in place

Risks/ Harm	Hazards	Risk Rating	Safety Controls	Residual risk rating
Medical emergency	• Pre-existing medical conditions not disclosed • Instructor / guide not aware of medical conditions • Rider's medication not available	🟥	Process to gather medical information from participants prior to ride and to share this with the guide / instructor Guide /instructor competence /experience • Communication with participant pre-ride • First aid qualified	Operator to assess after controls are in place
Late party return	• Bike failure • Riders slower than expected • Poor route choice • Poor time management • Incident or accident occurs	🟨	Supervision structure Guide /instructor competence /experience • Pre-ride check of rider, bike and equipment • Familiarity with the area • Alternative exit point (shorter) • Plan B	Operator to assess after controls are in place
Lost group member	• Poor instructions • Less than adequate group management • Group too large • Range of rider ability too broad • Trail selection inappropriate for some riders • Unsupervised riding	🟥	Supervision structures Guide /instructor competence /experience • Group Management • Pre-ride suitability assessment Policy for supervision structures Policy for unsupervised riding	Operator to assess after controls are in place
Guide/ instructor injured while riding with participants	Guide / instructor: • riding outside comfort zone • unexpected hazards • grade different to expected • fatigued / illness / injury • under the influence of drugs or alcohol	🟥	Supervision structures Guide /instructor competence /experience • Riding skills and experience Procedure for trail checks prior to riding with participants Policy for level of riding with participants (i.e. within Guide/ Instructors comfort zone) Policy for maximum working hours / days without a break Policy to address staff at work under the influence of drugs and alcohol Assistant or 2nd guide on remote trips	Operator to assess after controls are in place

Risks/ Harm	Hazards	Risk Rating	Safety Controls	Residual risk rating
Group without a guide/instructor	• Instructor guide injured	■	Procedure for informing participants about what to do if the guide or instructor is injured Assistant or 2nd guide on remote trips Guide to carry a locator beacon	Operator to assess after controls are in place
Hyperthermia/ Hypothermia/ Sunburn/ Dehydration	Weather can significantly change the participants experience and the safety of the ride. Key considerations are • Precipitation (type and volume) • Temperature (hot and cold) • Dryness and exposure to the sun • Wind (Impact on wind chill and tree fall) The impact of this is amplified by • Failure to check weather forecast • Inadequate clothing for weather • Lack of shelter from conditions • Insufficient water carried	■	Guide /instructor competence /experience • Weather knowledge (including local weather) • Pre-ride check of rider clothing • Pre-ride check of rider food and water • Trail selection that provides reduced exposure to conditions • Carry emergency shelter • Establishing weather trigger points or tolerances – e.g. for precipitation, wind chill and wind gusts in forests susceptible to wind damage • Consider environmental and equipment impact if trails are very wet • Some remote trails may be exposed to slips, avalanche and flooded water crossings that could isolate riders from egress and shelter. Consider strategies to manage this eventuality	Operator to assess after controls are in place

Risks/ Harm	Hazards	Risk Rating	Safety Controls	Residual risk rating
No ability to communicate with outside assistance.	• No communication device • Batteries flat • Blind spots (poor cell phone/ radio reception) • Inadequate contact information	🟥	Policy for type and number of communication devices required Procedure to ensure communication device is in good working order Location of blind spots communicated to staff who need to know Procedure to ensure up to date contact information is available to staff who require it	Operator to assess after controls are in place
Injury or loss of gear due to forest fire.	• Dryness • Wind speed and direction • Lightning • Type of vegetation	🟥	• Strategies to monitor comply with regional notifications and restriction if fire is a risk • Evacuation routes in case of fire	Operator to assess after controls are in place
Spread of pest species of flora	• dirty bikes being used in a variety of mountain bike areas	🟨	• Procedure to ensure bikes are clean at the beginning and end of a ride	Operator to assess after controls are in place

5.1.2 Risk and Hazard identification, assessment and management for mountain bike guiding and instructing

Risks/ Harm	Hazards	Risk Rating	Safety Controls	Residual risk rating
Customer injury due to Falling off bike while riding (people issue)	• Poor customer information • Poor rider judgement (riding beyond skill and experience) • under the influence of drugs and/or alcohol	▢ (red)	• Customer safety information and education • Bike Patrol staff competence • Policy and procedure to manage customers under the influence of drugs and/ or alcohol	Operator to assess after controls are in place
Customer injury due to Falling off bike while riding (environmental issue)	• Poor opening procedure • Poor grading • Poor trail building and maintenance • Unskilled trail builders • Unknown / unexpected hazards on trail • Trail grading different to expected • Weather makes trail more difficult	▢ (red)	• Procedure for opening the park • Trail building policy and procedure • Trail and hazard marking policy and procedure • Customers safety information and education • Bike patrol staff to monitor trails • Policy and procedure to clarify when trails require crash pads/ netting and/or other safety equipment	Operator to assess after controls are in place
Customer injury due to Falling off bike while riding (equipment issue)	• Bike failure • Poor bike maintenance • Inadequate helmet • Inadequate clothing / footwear • Inadequate protection for advanced and above trails • Rider unfamiliar with bike set up (e.g. brakes pedals)	▢ (red)	If the park provides rental equipment procedures for: • Maintenance • Replacement • Sizing and set up for the customer • Pre-rider checks If customer supplies their own gear: • policy around the type and condition of bike and other equipment permitted/ recommended while riding in the park Customer information and education	Operator to assess after controls are in place
Customer injury due to Slip or trip while not riding	• Rider slips while walking steep/ exposed sections of trail • Rider walking is hit by other riders	▢ (red)	• Customer information and education	Operator to assess after controls are in place

Risks/ Harm	Hazards	Risk Rating	Safety Controls	Residual risk rating
Customer/ staff injury due to Trail building or maintenance hazard	• Poor customer/ staff information around trail status • Customers/ staff not warned about maintenance work in progress. • Tools / trail building equipment on the trail and not clearly marked		• Policy for informing customers / staff of trail maintenance • Policy that outlines when trails undergoing maintenance must be closed and when they can remain open • Procedure for management of tools and equipment during trail maintenance on open trails • Procedure for opening trails once maintenance work has been completed	Operator to assess after controls are in place
Customer injury due to collision with vehicle	• Poor car park design / signage • Bikes on vehicle service roads within the park		• Policy and procedure to manage areas where bikes and vehicles may be in conflict	Operator to assess after controls are in place
Customer injury due to Collision with other users	• Rider travelling too fast at trail intersections • Riding the wrong direction on a single direction trail • Overtaking other riders • Riders stopping in blind spots • Riders stopping in front of trail exits or blocking trail interactions • Riders catching up with other riders • Riders pushing up trails to session a feature • Under the influence of drugs and/or alcohol		• Customer information and education • Hazard and trail signage • Trail design to minimise the risk of collision through good visibility at crossing points • Bike patrol staff to monitor trails • Policy and procedure to manage customers under the influence of drugs and/ or alcohol	Operator to assess after controls are in place

Risks/ Harm	Hazards	Risk Rating	Safety Controls	Residual risk rating
Staff injury while riding during working hours	• Inadequate direction regarding type and condition of equipment used for work. • Inadequate direction regarding the level of riding appropriate while at work • Inadequate direction regarding the trails that staff can ride during working hours • Inadequate communication to staff regarding status of trails on a daily basis • Confusion about when "at work" and when on a break.	■	• Policy and procedure for staff bikes and equipment • Policy and procedure for riding during work hours • Policy and procedure regarding communication of trail status to staff • Policy regarding what constitutes "at work" and what constitutes breaks	Operator to assess after controls are in place
Staff injured while building trails	• Repetitive trail work e.g. slapping in berms. • lifting heavy loads • Misuse of machinery /equipment • Collision with riders	■	• Trail building staff induction procedure to cover proper technique for all tasks and equipment • Policy and procedure for working with machinery • Policy and procedure for safety clothing and equipment for trail building (including communication devices and first aid supplies) • Strategies to minimise overuse and strain injuries	Operator to assess after controls are in place
Medical emergency	• Pre -existing medical conditions not disclosed • Riders medication not available	■	• Procedure to gather medical information from customers • Suitable first response for medical emergencies (Includes equipment e.g. AED and personnel available on site)	Operator to assess after controls are in place

Risks/ Harm	Hazards	Risk Rating	Safety Controls	Residual risk rating
Customer left in park after closing	• Poor customer information • Poor closing procedure	■	• Customer information and education • Procedure to sweep the park prior to closing	Operator to assess after controls are in place
Injury from smoke /fire	• Dry conditions • Spark/accelerant		• Customer information and education • Policy and procedure for prevention • Emergency evacuation plan	Operator to assess after controls are in place
Hyperthermia / Hypothermia/ Sunburn	• Poor customer information • Poor rider judgement • Poor staff clothing	■	• Customer information and education • Provide access to sunscreen • Staff to be provided with suitable uniform for all conditions • Policy and procedure to assess if conditions are suitable for customers to be riding and / or for staff to be working	Operator to assess after controls are in place
Dehydration	• Insufficient water available	■	• Customer information and education • Provide access to drinking water	Operator to assess after controls are in place

6 Standard Operating Procedures (SOPs)

There are multiple ways to manage hazards for an operation. In general, it is up to the operator to determine appropriate safety management strategies. However, when a specific approach is considered good practice, or when a standard has been collectively agreed, it has been included here to provide direction.

6.1 Standard operating procedures for mountain bike guiding and instructing

6.1.1 Activity SOPs

As mentioned in the Activity Safey Guidelines - Core Principles, Standard Operating Procedures are the documented processes that an organisation has in place to ensure services and/or products are delivered consistently every time. A component of the SOPs is to document operator's strategies to operationalise the hazard controls.
This section provides specific guidance on strategies to operationalise hazard controls listed in the table above for mountain bike guiding and instructing. These strategies are over and above the generic approaches described in Adventure Activity Safety Guidelines - Core Principles.

The level of competence of the staff member, the supervision structures and the clothing and equipment, required will be significantly influenced by the environment the staff member is working in. For example, within the defined and patrolled boundaries of a mountain bike park, where safety systems are managed by the overall operation of the mountain bike park, an instructor/guide may not need high first aid competence, could operate with higher ratios and carry less equipment than would be expected while operating in a remote backcountry mountain bike environment.

Operators who also manage trail building and /or a fleet of mountain bikes may find additional information in Section 6.2 Standard Operating Procedures for Mountain Bike Parks

6.1.2 People - staff

6.1.2.1 Guide / instructor competence

The competence requirements for Mountain Bike Guiding and Instructing are described within the New Zealand Certificate in Outdoor Leadership qualifications for mountain biking, administered by Skills Active Aotearoa, and the New Zealand Outdoor Instructors Association's mountain biking qualifications. Note that these include qualifications for assistant instructors and guides.

Mountain bike guiding and instructing staff should have their performance assessed against the competencies described in the NZ mountain bike qualification best suited for their role. The best way to do this is for staff to hold a qualification however this is not mandatory. If they do not hold a qualification, staff should be verified as competent in equivalent skills, knowledge and experience by a suitable technical advisor.

Skills Active Aotearoa:
- New Zealand Certificate in Outdoor Leadership (level 4) – Mountain Biking (Grade 2)
- New Zealand Certificate in Outdoor Leadership (Guiding) (Level 5) – Mountain Biking (Grade 4)
- New Zealand Certificate in Outdoor Leadership (Instruction) (Level 5) – Mountain Biking (Grade 4)
- New Zealand Certificate in Outdoor Senior Leadership (Level 6) – Mountain Biking (Grade 5)

New Zealand Outdoor Instructors Association (NZOIA):
- NZOIA Mountain Bike Leader
- NZOIA Mountain Bike Level 1
- NZOIA Mountain Bike Level 2

Depending on which qualification you use they can be gained in a variety of ways including:
- Workplace training and assessment via Skills Active
- Training and assessment from a polytechnic or PTE
- Training and/or assessment from NZOIA

For more information on these qualifications go to: www.skillsactive.org.nz and www.NZOIA.org.nz

Using qualifications
The onus is on the operator to ensure they know which skills and knowledge a qualification actually measures. The operator should then check these against those required for the job. Any skills, competencies, or knowledge not covered by the qualification should be verified by other suitable means.

Keep records of competence verification processes and results. For more information on verifying staff competence, go to section 6.2.1 Staff competence in the Adventure Activity Safety Guidelines – Core Principles or visit http://www.supportadventure.co.nz/safety-management-plans/staff

International qualifications

There are a wide variety of international qualifications on offer. There are too many for these to be discussed here. How the content and assessment strategies of these qualifications compares with the qualifications developed in New Zealand is also beyond the scope of this guideline. If operators elect to use an overseas qualification they will need to ensure it assesses similar skills, knowledge and experience to the relevant NZ qualification as listed above.

The Canadian based organisation PMBI (Professional Mountain Bike Instructors Association) operates in New Zealand and provides certificates on completion of training courses. While their training and resources are comprehensive operators should be aware that the certificates are awarded on attendance only and staff will still require competence assessment.

First Aid qualifications

A first aid qualification is necessary for all mountain bike instructing and guiding, the more remote the ride the more skill and experience is required. For example:

Mountain bike staff guiding or instructing participant's rides in green belt recreation areas and close to emergency services should hold an Outdoor First Aid Qualification. Where activities are run at locations with limited access to suitable external emergency response e.g. on remote trails and multi day trips, there is a risk that injured participants may spend longer without secondary emergency care. Guiding and instructing staff for these activities should hold a Pre-Hospital Emergency Care qualification.

Induction

Due to the variance in trail grades mountain bike instructors and guides should be inducted into and have completed pre-rides of routes / trails prior to using the terrain with a group.

Induction should also include how the riding/ grading within the operation differs from that in other regions and how to incorporate this information into the client briefing.

6.1.3 People - participants

6.1.3.1 Informing participants about safety

For generic information please refer to Section 6.3 in - Adventure Activity Safety Guidelines – Core Principles and the Support Adventure website.

The SOPs should clearly outline the safety information to be provided to participants.

Information to include will be specific each operation and should be drawn from the safety controls identified in the risk assessment process. The most likely risks and hazards associated with mountain biking and suggested controls are identified in the risk assessment table in the Section 5.

The key aspect to consider when preparing participant safety information are:
·   safety information for the activity
·   pre-activity risk disclosure
·   safe participation
·   specific hazards
·   emergency plan.

6.1.3.2 Supervision structures

SOPs should establish supervision structures that show the maximum number of participants a guide or instructor can supervise for every trip. This maximum is not a target nor is it recommended in all situations. Operators will need to carefully consider a range of factors when setting the most appropriate supervision structures for their trips.

For mountain biking these factors are likely to include but are not limited to
·   purpose of the ride
·   age of participants and type of group
·   ability
·   trail grades / style
·   within a mountain bike park or not
·   weather
·   duration of the ride – remoteness and time from medical assistance
·   experience of the guide / instructor
·   how well the guide / instructor knows the participants
·   first language of participants / guide.

With large groups riding together (e.g. ratio of 2:20) consideration should also be given to
·   impact on / safety of other users
·   group management on confined trails.

Number of guides or instructors	Guide or instructor skill level	Supervision structure
Sole guide or instructor	Guides or instructors who can operate independently and meet the competency requirements for their role as described in Section 6.1.2.1.	1:10
Sole guide or instructor Plus: • trainee instructor • trainee guide	As above for the guide or instructor Plus Leader / trainee Meet the competency requirements for a leaders as described in Section 6.1.2.1.	Can increase the supervision structure by 50%. i.e. if ratio is 1:10 a trainee guide would shift it to 2:15 (50% of 10 is 5. 10 +5 is 15)

For remote areas:
• there should be a minimum of two activity leaders. Two activity leaders can be either 2 x Guide/instructor OR a sole guide/instructor plus a trainee guide /instructor
• maximum group size including leaders is 12

Minors

There should be a minimum of one leader and one responsible person for activities involving minors.

Leader	Guides or instructors who can operate independently and meet the competency requirements for their role as described in Section 6.1.2.1.	Supervision structure 1:10
Responsible person	an adult competent to ride at the selected trails/ route able to provide support and backup to the guide with logistics and safety (e.g. ride at the back of the group)	

Consider which hazard management tasks a trainee guide or instructor is verified to perform unsupervised before factoring them into supervision levels.
For more information on establishing levels of supervision, go to: www.supportadventure.co.nz

6.1.3.3 Indirectly supervised riding

An instructional technique to increase a participant's opportunity to practice a skill is to have them ride laps on a trail while the instructor waits at a set position and provides feedback. Operators should have management strategies for this activity.
Factors to consider include:
·   competence of instructor / guide
·   position of instructor / guide
·   time riders are out of vision
·   ways to monitor riders
·   length and grade of the trail being used for laps
·   briefing
·   emergency procedures.

6.1.4 Environment

6.1.4.1 Weather triggers and tolerances:

Weather hazards where tolerances can be set for mountain biking include:
·   precipitation (type and quantity and duration)
·   wind
·   dryness
·   temperature.

In most mountain bike parks there will be trails that are best avoided in certain conditions. Tolerance levels can be set for these trails so that staff know when not to ride them with groups. Weather triggers could be:
·   high winds leading to tree fall
·   high intensity rain leading to clay being dangerously slippery
·   long periods of heavy rain leading to excessive mud – and riding causing damage to trail and wear on bike
·   long periods of heavy rain, increasing the risk of landslides and flooded stream crossings
·   dryness leading to extreme fire risk.

6.1.5   Clothing and equipment

6.1.5.1   Participant equipment

All trips

Staff and participants should have:
·   a mountain bike appropriate for selected ride, right size for the rider and be adjusted to fit
·   a mountain bike that is in good working order, including:
    ·   all running gear fitted to the bike must work
    ·   two working brakes (however jump bikes with one may be acceptable if appropriate for the ride)
    ·   brakes must be set up on the side the participant is used to
    ·   seat posts after adjustment do not exceed the manufacturers specific maximum height
    ·   handle bars ends are fitted with end caps/ plugs
·   a helmet designed for cycling (meets NZ standard for bicycle helmets AS/NZS 2063:2008)
·   helmets must be correctly fitted unless an appropriate exception for wearing a helmet is applicable
·   fitting of helmets should consider the safety implications of:
    ·   head gear worn under the helmet (e.g. a Hijab)
    ·   the impact of hair and the method hair is controlled or styled (e.g. dreadlocks, sikh turban)
·   Clothing suitable for the ride and expected weather conditions
·   covered footwear that suit the pedals on the bike
·   some method of carrying spare or surplus clothing and snacks and enough water to maintain hydration and energy demands of the ride.

Depending on the risk and hazards of the ride, operators may also consider requiring/ providing:

- gloves
- elbow pads
- knee pads
- eye protection
- adjustable seat post
- body armour
- full face helmet
- neck brace.

The last three items should be required for both staff and participants when guiding or instructing on advanced or above flow trails.

Guide and instructor equipment

Equipment requirements for guides or instructors are the same as those for participants, with the addition of:

- clothing sufficient to enable participation in emergency response, e.g. additional thermal layers
- tools and spare parts appropriate to the ride – See Appendix A for suggestions
- a light source that can be helmet mounted in case of emergency
- trail map and navigation aid (e.g. GPS)
- communication device (See Section 7.4.5 Field Communication).

In general equipment should be with the instructor/ guide at all times, however this may vary if equipment is easily available via vehicle support.

6.1.5.2 Emergency equipment

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

Accessibility of emergency equipment

Ensure that trip emergency equipment is suitably available and accessible. The nature of the ride and the equipment will determine whether it is carried in a backpack or cached at sites along the ride or a "base" area.

General first aid supplies and emergency equipment

Ensure that first aid supplies are suitable for the identified first aid possibilities of the trip. Suggestions for outdoor first aid kit contents can be found at www.supportadventure.co.nz
First aid contents specific to mountain biking are:

- mouldable splint (e.g. SAM splint)
- heat retention such as space blankets
- compression bandage.

Ensure that emergency equipment is sufficient and suitable for managing group safety and chosen for identified emergency possibilities The following items should also be considered:

- emergency shelter, ground insulation, high energy food, and additional thermal clothing
- a backboard or stretcher stationed strategically or at base
- emergency communication device.

6.1.5.3 Equipment maintenance

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.
An "M check" is a useful approach to pre-ride inspection

Regardless of the method used an inspection should be systematic and include the following:
- brakes work effectively, are within reach of the index finger and are on the side the participant is used to
- wear indicators on the brake pads are clearly visible and /or sufficient brake pad material is present
- wheels are straight, true and with no loose or damaged spokes
- wheels are firmly attached
- tyres are not worn and are at an appropriate pressure
- headsets and handlebars are suitably tightened to prevent movement
- handle bar grips and plugs are fitted and secured
- pedals are intact
- saddles are attached and secure
- appropriate parts are lubricated
- power assist e- bikes
    - electrical systems are maintained as per manufacturer instructions
    - battery has sufficient charge to cover the expected distance of the activity

Any issues identified should be corrected before the bike is used again.

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 punctures and crashes.

6.1.6 Field communications

6.1.6.3 Emergency and external support

Ensure the instructor or guide in charge of the trip has a mechanism to contact a backup person to:
· log intentions
· notify of safe return from the ride
· initiate emergency response if required.

The backup person should not be on the ride and should be as contactable as is practicable while the ride is underway.

As a precaution for a solo instructor/ guide becoming incapacitated all participants should be informed of emergency contact information and procedures. It may be useful for the solo instructor/ guide to carry a laminated sheet with emergency contact information and procedures and show participants where this is carried during the pre-ride participant brief. A locator beacon may also be worth considering in some locations.

6.1.8 Ancillary services

6.1.8.1 Support transport (bus, vehicle with trailer, helicopter, small plane)

The use of a support transport to aid and assist a group during the activity may be useful or necessary and the hazards and risk associated with transport operations need to be managed.

In most cases responsibility for safety while being transported will sit with the transport provider. However, it is the mountain bike operator's responsibility to ensure the transport providers systems comply with laws, regulations or requirements and processes ensure staff are suitably competent.

The mountain bike operator has a responsibility to communicate and collaborate with the transport provider to ensure participant safety and who is responsible when. Often the transition between ride and getting into transport can be a grey area where neither takes charge. This should be considered and decisions made on who is responsible.

Memorandums of understanding between the operators will help to clarify where safety responsibilities sit.

Specific advice on good practice for managing hazards related to transport provision is outside the scope of this guide.

6.2 Standard operating procedures (SOPs) mountain bike parks

6.2.1 Activity SOPs for mountain bike parks

The following section provides additional guidance specific to mountain bike parks that will augment the information provided earlier in this document and in the Adventure Activity Safety Guidelines - Core Principles and will assist with the development of SOPs for mountain bike park operators.

Please also refer to Section 5.1.3 Risk and hazard identification, assessment and management for mountain bike parks.

6.2.2 People - staff

6.2.2.1 Staff competence

Mountain bike parks are likely to employ a wide range of staff, including customer service and business administration teams, patrollers and lift operators. While all of these roles are likely to contribute to the safety management of the mountain bike park in some way, there are roles that are more likely to have a direct impact. This section provides competence guidance for these roles.

Please also refer to Section 6 1.2 above.

Lift operations

Lift operators should have knowledge and skills to operate lifts and perform daily operating procedures for a lift department at the mountain bike park.

A qualification that provides a useful measure of these competencies is the NZ Certificate in Mountain Facility Operations (level 3) Lift Operations (www.skillsactive.org.nz).

The key competencies for this qualification are:
- apply appropriate safe working procedures and practices, including identifying and responding to risks and hazards, to promote a culture of safety within a mountain facility operations department
- apply communication skills and customer service techniques to work collaboratively to respond to the needs of mountain facility customers
- safely operate surface and aerial lifts and maintain a safe lift station for safe loading and unloading
- manage queuing, crowd control and lift access to meet individual user's diverse needs and the mountain bike park requirements

Trail construction and maintenance

One of the key factors leading to mountain bike injuries is poor trail building; employing suitably experienced and competent trail building staff can significantly reduce the number of accidents within a mountain bike park.

In 2017 ACC led a NZ mountain bike standards working group meeting. An outcome from this meeting was the establishment of a working group to develop NZ Mountain Bike Trail Design and Construction Guidelines. NZRA is assisting with this project and it is expected to be completed 2018/ 2019. The guide is intended for trail builders, contractors, local bodies, clubs etc. to clarify and detail technical expectations and tolerances at each trail guide level and type.

Until the NZ guide is published, good industry practice is to use the following standards developed in Canada.
- International Mountain Bicycling Association (IMBA) trail solutions
- Whistler Trail Standards

Good industry practice is for staff with trail building and maintenance responsibility to have competence and experience to the level described in these documents.

Patrollers

Mountain bike patrollers should hold a Pre-Hospital Emergency Care qualification or equivalent skills and knowledge.

Other competencies include:
- mountain Biking skills appropriate for patrolling at the mountain bike park
- understanding of mountain bike park emergency response systems
- confidence in their responsibility within the operator's SOPs including stopping an activity if they see fit
- ability to:
  - provide emergency care as first responder for emergency situations common to the mountain bike park environment
  - apply hazard management and maintain mountain bike park trail safety
  - open mountain bike trails and contribute to the startup of the mountain bike park
  - close mountain bike trails and contribute to end of day close of the mountain bike park
  - identify evolving trail hazards in relation to grade of trail
  - interpret and apply weather information for the mountain bike park
  - demonstrate professional behaviour while undertaking daily mountain bike patrol duties
  - demonstrate specific knowledge of the mountain bike park for patrolling.

Equipment rental, maintenance and repair

Mountain bike rental, maintenance and repair is considered an ancillary service and not discussed fully in this guide. However suppliers do have duties under HSWA and must ensure that gear is fit for purpose and all necessary information is provided.

Some mountain bike parks do provide and repair mountain bikes. There are two qualifications published on the NZ Qualifications Framework (NZQF) related to bicycle servicing they are:

Qualification	Recommended for:
New Zealand Certificate in Bicycle Servicing (Level 3)	The purpose of this qualification is to provide those new to, and already within the bicycle industry, with the knowledge and skills required to work as a services technician or bicycle assembler within a bicycle workshop.
New Zealand Certificate in Bicycle Mechanics (Level 4)	The purpose of this qualification is to provide bicycle service technicians with the knowledge and skills to operate as a bicycle mechanic within a bicycle workshop/retail environment.

For more information on these qualifications, including graduate profiles, experience prerequisites etc. go to: www.nzqa.org.nz and the providers who have consent to assess.

Operators may find that mountain bike specific competence requirements for their business can be developed through internal training and assessment.

6.2.2.2 Staff riding in work hours.

It is likely that a passion for mountain biking is one of the factors that attracts staff to employment with a mountain bike park. While operators often wish to encourage this enthusiasm, having a staff member injure themselves in a break can have a significant impact on the business. Operators should have systems in place to manage this.

Consider specifying areas where staff are permitted to ride and areas that are out of bounds during a working day. This could be role or skill specific.

For staff who ride for work it is sometimes difficult to differentiate what is work time and what is a break.

A policy that clearly stipulates what constitutes work riding and what is free riding will help define where an operator's responsibility starts and stops. However, this is often difficult to clarify, some operators within the ski industry have found the simplest solution is to use staff in uniform as the defining factor. If a staff member is in uniform, they are representing the company and they need to comply with the rules for staff at work. Mountain bike park operators may also find this solution useful.

For example, behaviour requirements for staff riding while in uniform could include:
- being an ambassador for safe riding in the park
- riding conservatively and below the level of their ability
- lift operation staff may be restricted to designated trails or green runs only
- patrollers may be able to go anywhere
- customer service staff may only be able to ride during their breaks (out of uniform) and are only permitted in the jump park on their days off.

6.2.3 People - participants

6.2.3.1 Customer Information and education

It is the parks responsibility to ensure all unsupervised riders (those without instructors or guides) have access to the information that will permit them to make informed decisions to manage their safety.

All trails must be clearly marked and use a recognised system to grade the trails in the park.
Entry points and trail intersections must be clearly marked with signs showing trail name and grade.
A trail map must be provided that matches the trails found in the park.
Closed trails must be clearly marked as such.

Keep in mind that young people may be riding in the park unsupervised so information needs to be suited to both adults and children.

Communication methods need to be appropriate to the park but could include:
- information and map boards with permanent information
- information boards where information can be frequently updated
- customer brochure maps, these could be paper, water proof paper cloth (e.g. mankies)
- risk disclosure forms that customers sign
- information printed on the customer's pass.

Type of information should include:
- general guidance on how to interpret the signage in the parks, where they can find information and what different signs mean
- general risk disclosure
- trails open and closed
- trail condition and hazards
- weather forecast
- emergency contact information
- emergency response contact number (this should be on the map, on bill boards around the park and/or on the entry pass)
- safe riding code
- unacceptable actions / behaviour and the consequences
- changes to trails.

6.2.4 Environmental hazards:

As mentioned in the staff competence section above one of the key factors leading to mountain bike injuries is trail engineering and signage. This section provides guidance to mountain bike park operators on good practice for trail construction, grading, maintenance and signage.

6.2.4.1 Trail construction and grading

Until a NZ Trail Building Guide has been introduced and adopted good practice is to:
- use a recognised trail grading system
- ensure that trails are built to the criteria and fit within the grading system
- ensure the guests are informed of the grade of each trail and what that means for the specific mountain bike park.

6.2.4.2 Trail Maintenance and sustainability

Due to rider and weather impact, trails are likely to change rapidly and regular maintenance will be required to maintain the style and grade of riding.

Good practice is to develop a procedure to decide:
- if change to the trail or signage is required
- what changes are required
- who signs off on the proposed changes
- who checks the changes once completed
- how a trail is re-opened after changes have been made – this will include what information customers need before riding the changed trail.

Park operators should keep records of trail maintenance completed as a document of regular safety management. These records can also be a useful aid when calculating the cost of each trail.

Developing weather triggers / tolerances for the park or for particular trails may help to reduce the amount of damage of trails and save significantly on repairs.

6.2.4.3 Trail signage

First time customers to the mountain bike park need to be able to navigate around the park safely and easily. Clear trail and hazard signs along with the trail map and information boards are the primary tools park operators have to ensure this is possible.

The trail map needs to be current and match the trail names and grades found within the park. Maps should also provide a key to all other safety signs found in the mountain bike park.

The entry to all trails should have:
· trail identifier name / number / code
· trail grade that is consistent with the style and grade of the trail.

Hazards that are not typical for the grade and type of trail should be clearly marked.
Hazards may include:
· trail crossings
· features that are out of the ordinary flow or change the flow of the trail.

For example, in a jump trail each jump would most likely not be marked but if there is an unexpected drop in the middle of it the drop would change the flow of the ride and could be marked
change of trail or new trail.

Hazard signage should be well within stopping distance of the hazard. That is, allow the rider to see the sign and safely stop to inspect the feature before they ride it (or not).

6.2.4.4 Opening and closing procedures and trail checks

Opening procedures and trail checks

All mountain bike parks should have strategies to ensure that trails are safe for riding before they are opened. Policies and procedures should provide a high level of confidence that trails are in good condition for the customers. They will differ depending on the type and size of the park. In large parks not all trails can be checked, so trails are prioritised based on:
· level of risk
· level of use
· grade.

Some trails may be opened without being checked these are likely to be:
· low risk
· low use
· low grade
· trails with good visibility where customers can easily see more than 20 metres ahead at all times so would be able to see hazards and stop.

Standard opening procedure will change and take longer after a significant weather event that has potentially damaged or created hazards on the trail network.

> **Top Tip:** Consider riding trails that provide opportunities to visually clear other trails

Regular trail checks

Good practice is for mountain bike park operators to develop procedures to ensure all trails get ridden on a regular basis. Frequency may be based on the level of risk being managed. Factors to consider are:
· situations that lead to change (e.g. weather, high use)
· grade of the trail
· age of the trail (new trail still bedding in).

Closing procedures and trail checks

Closing the mountain bike park requires a procedure to ensure all customers are safely out of the park before it is closed. A sweep of all trails at the end of the day is a reliable way to do this. This may incorporate the use of park staff and regular customers. This also provides an opportunity to check the trails at the end of the day and collecting information that will be useful prior to opening the following day.

Parks with designated car parks and one point of entry can also ensure everyone is safely out of the park by checking that the car park is empty.

6.2.5 Clothing and equipment

Section 6.1.5 above provides guidance for mountain bike park operators who provide rental equipment to customers, or provide bikes for staff use while at work.

6.2.5.1 Participant equipment

Recreational riders have a wide range of bikes and equipment, some of which may not be appropriate for use within the park.

Good practice for mountain bike park operators is to develop a policy and procedure to inform guests of the recommended equipment for the park, including information on recommended bike features such as suspension and disc brakes. There may also be a need for certain trails, such as Pro Lines, to have mandatory equipment requirements before users are permitted to ride the trail, such as full face helmets. These recommendations and/or requirements must be clearly communicated to guests.

6.2.5.2 Staff equipment

Staff who are required to ride for their job should have a bike that is fit for purpose and all other safety equipment appropriate for the role they are required to do.
Their equipment needs to be in good working order. Their bike should undergo a daily pre-ride check and have regular maintenance.

Operators should develop policies stipulating protective equipment for the type of riding staff are required to do. For example, riders working on advanced plus trails may require a full face helmet and neck brace.

6.2.8 Ancillary services: Lift operations

Industry standards for aerial and surface ropeways are specified in the Approved Code of Practice for Passenger Ropeways in New Zealand published by Occupational Safety and Health Service, 1999; and must be carried out as required under the Health and Safety in Employment (Pressure Equipment, Cranes and Passenger Ropeways) Regulations 1999, and its subsequent amendments.

7 Emergency preparedness and response plans

7.2 Mountain bike parks

Good practice within mountain bike parks is to provide a medical first response. This should include:
- staff competent to provide pre-hospital emergency level of care
- equipment appropriate to the injuries commonly sustained in the park
- staff and equipment to stabilise a patient prior to being transferred to definitive care
- medical response staff who:
  - are ready to ride and are positioned to provide a rapid response
  - carry a two-way communication device that permits rapid transfer of information between key staff and if required emergency services
  - can quickly respond to calls for assistance
  - carry medical supplies

- an extraction plan that is likely to involve:
  - established procedures developed in partnership with local emergency services
  - a map showing trail reference points for staff and emergency services
  - on longer trails consider placing labeled markers at regular intervals so customers can better pin point their location.

8 Incident management

8.2 Mountain bike parks

A strong culture of incident reporting, recording and analysing can significantly aid hazard reduction within a mountain bike park.

Incident information can indicate trends and identify trail "hot spots" that need to be addressed. Tools to collect this type of information include:
- area map showing locations where incidents occurred
- an incident database.

When repeat incidents are seen on a feature, causation should be attributed to more than rider error. Once identified, "hot spots" should be addressed immediately. This may mean closing the trail until a solution has been found and changes have been made.

Once a "hot Spot" has been identified a systematic approach to evaluating the feature can be applied. This commonly involves looking at these key factors:
- speed – the steepness of the trail leading up to the feature needs to be examined
- frequency of features – how close together are the features and is it appropriate for the grade of trail
- visibility and predictability of the feature – can you see the feature in time to react and is it consistent with the flow of the trail
- ability of the rider – who is the trail designed for / intended for and who is riding the trail.

Using this approach assists to identify the areas where change can be made to reduce the number of incidents around a feature. This could include changing the trail or changing the grade.

Data collection may reveal that a double black trail has a high number of intermediate riders using it. A solution may involve changes to signage and additional strategies to deter riders who do not have the skills for the demands of the trail.

8.3 Notifiable events and obligations to report

Mountain biking by its nature is a hazardous activity, recreational riders understand that if they fall off it's likely to hurt and it's possible they will break something. The faster they go the higher the chance of serious injury.

In general notifiable events are only those related to work. This means that a customer in a mountain bike park who is not being guided or instructed is classified as a recreational rider and it is not notifiable if he / she has a fall that results in a significant injury while riding a well-marked and maintained trail. If however a piece of workplace equipment (e.g. a wheel barrow left on a trail) is related to the incident it would be considered notifiable.

Mountain bike park operators do not need to report notifiable events involving recreational users as long as they are not work related.

It is good practice to keep accurate records of where recreational accidents are occurring in the park and the severity of these incidents. In this way "hot spots" that need management can be identified in order to reduce the frequency and severity of injury.

This approach is consistent with the approach used by snow sport operators in reporting notifiable events to the regulator and in identifying "hot spots" for increased management control.

11 Appendix A

Tools and Repair kit suggestions
- Pump
- Tyre boot
- Tyre plug
- Tyre levers
- Spare tube
- Lube
- Allen keys
- Chain breaker
- Quick links
- Multi tool
- Pliers
- Adjustable spanner
- Spoke tool
- Shock pump
- Handle bar end plugs / stopper caps
- Cable ties
- Duct tape
- Hanger and brake pads for guides bike