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Health and Safety Management System Template

A health and safety system template for quarry operations

MinEx

Contents

1 Using This Template

Quarries contain health and safety risks. If something goes wrong, quarry workers can be seriously or fatally injured.

Structure, organisation and some paperwork is needed to reduce health and safety risks at a quarry. A health and safety management system provides this and helps with decisions about what risk controls are used.

This document provides the outline of a health and safety management system. Following the guidelines and completing the templates so they apply to your quarry, will provide the management system you need to safely manage your quarry. If you already have a management system, you can use this document to identify gaps, and fill these gaps using these templates.

The Template has a section for each part of your management system. Each section includes:

1. Guidelines
These explain what is needed in each part of your management system. There is background information, followed by specific directions for developing each part of your system.

2. Recommended Actions
These provide recommendations for actions that are needed to develop this part of your management system. They are shown in blue text boxes.

This Template has been designed to work alongside the Health and Safety at Opencast Mines, Alluvial Mines and Quarries Good Practice Guidelines (2015)[1] prepared by WorkSafe. The Good Practice Guidelines give direction on the risk controls that should be used. There is also a Pocket Guide[2] available.

3. Template Forms Including Sample Forms and Checklists
You can adapt these for your quarry. They are available as a separate Word file. You can use these in either soft or hard copy. They are shown in brown text boxes.

It is important that you use these templates as a starting point only. You need to ensure that these are carefully adapted to your quarry. You also need to ensure that your workers, supervisors and contractors are all involved with you, as you use these templates to further develop your health and safety management system.

This Template is intended to help you develop a system, so that you can be confident that your risk controls are being identified, implemented, followed and reviewed.

This document is intended as a reference and resource document. When you are developing or improving your management system, you should go the sections that you have chosen to work on. It has been designed to work through in order. However, the sections on involving workers (Section 5) and controlling hazards and risks (Section 7) are also good starting points. All sections will need to be addressed at some time.

MANAGING A QUARRY SAFELY

The most important things you need to do to manage your quarry safely are:

- Talking to, and listening to your workers, particularly for managing your hazards and risks and developing your management system.
- Making sure that you identify your hazards have robust controls for their risks, and that these are regularly reviewed.
- Supervising your operations, including contractors.
- Regularly checking plant and equipment to ensure it can operate safely.
- Making sure everyone (including yourself) gets the right training, and is competent for their job.

[1]http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/opencast-alluvial-mines-and-quarries/mines-and-quarries-gpg.pdf/view

[2]http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/quarry-essentials-pocket-guide

2 What Are Our Legal Requirements

2.1 Requirements in Acts and Regulations

Quarry operations must comply with all the following legal requirements.

The Health and Safety at Work Act 2015	Sections 22, 30-34, 36, 37: PCBU Duties	A PCBU has the primary duty and must ensure, so far as is reasonably practicable, that the workplace, is without risks to the health and safety of any person. If it is not reasonably practicable to eliminate risks, they must be minimised so far as is reasonably practicable. This duty applies to everyone in the workplace, including employees, contractors, as well as visitors and members of the public. Reasonably practicable, means taking account of: • *the likelihood …* • *the degree of harm …* • *what is available and what is known, or should be known, about how to eliminate or minimise the risk* • *Cost, but only if it is grossly disproportionate to the risk.* Businesses must consult with other businesses that may have overlapping responsibilities. More than one business may have responsibilities on a worksite. Businesses can't contract out of their responsibilities.
The Health and Safety at Work Act 2015	Section 44: Officer Duties	Officers have a responsibility to take due diligence to ensure their businesses are meeting their duties. The requirements for due diligence include: • To keep up to date knowledge of health and safety • To understanding of the operations and its hazards and risks • To ensure appropriate resources and processes to manage health and safety • To ensure for appropriate processes for getting information about incidents, hazards, and risks • To ensure processes for complying with the Act (that is, a health and safety management system) • To verify that the business is complying with the Act.
	Section 45: Worker Duties	Workers are any people who are working at a workplace, and include both employees and contractors. • Take reasonable care for own health and safety. • Take reasonable care to not adversely affect the health and safety of other persons. • Comply with any reasonable instruction. • Co-operate with any reasonable policy or procedure.

The Health and Safety at Work Act 2015	Sections 58-61: Involving Workers	Businesses must have worker participation practices, regardless of the size. You are required to engage with workers on issues which will or are likely to affect health and safety, and have practices that provide reasonable opportunities for workers to participate effectively in improving health and safety.
	Sections 25, 56: Notifying WorkSafe Following Serious Incidents	Businesses must notify WorkSafe as soon as possible, if a "notifiable event" occurs. A notifiable event is a death, a serious injury or illness, or specified types of serious near misses. Serious injuries or illnesses are those that will usually require immediate hospital treatment. Serious near miss incidents are usually those that could have resulted in serious injuries, illnesses and death such as explosions or the collapse of plant or structures.

One of the important changes in the new legislation is that its requirements are described as "managing risks" rather than "managing hazards". These will be discussed further in Section 7. It is important to understand the difference:

- A hazard is a situation that poses a threat to health.
- A risk refers to likelihood and consequences. It is the combination of the likelihood that the hazard may lead to injury or illness, and the potential consequence of the injury or illness.

Health and Safety at Work Regulations 2016	Regulations 5, 6: Hierarchy of Risk Controls	All hazards must be identified. The risks from these hazards must be eliminated or reduced as far as possible, using the following hierarchy: • Substituting the hazard with something reduces risk. • Isolating the hazard to prevent any person coming into contact with it. • Implementing engineering controls that provided fixed controls. • If a risk then remains, minimise the remaining risk by implementing administrative controls. • If a risk then remains, minimise the remaining risk by providing suitable Personal Protective Equipment (PPE).
	Regulations 10-12: Facilities	You must provide suitable and sufficient numbers of facilities to provide for the health and safety of everyone at your quarry. Facilities are those that are necessary for the wellbeing of your workers, such as washing, toilet, rest and changing facilities, and somewhere clean to eat and drink during breaks.
	Regulation 13: First Aid	You must provide access to a first-aid kit.

Health and Safety at Work Regulations 2016	Regulation 14: Emergency Response Plan	You must have an emergency response plan.
	Regulation 21: Remote and Isolated Work	You must provide a system of work that includes effective communication with the worker.
	Regulations 28-42: Exposure and Health Monitoring	If workers are exposed to health hazards such as noise and dust, then you have to monitor their exposure, and provide health monitoring as required.
	Regulations 43-48: Young People in Workplaces	There are several restrictions on the work that young people (aged 16 or under) can carry out.

All of these legal requirements from the Health and Safety at Work Act and Regulations should be covered in your health and safety management system. They have all been covered in the following Guidelines and Templates.

Some of these requirements will be covered in specific parts of your management system. For example, these Guidelines include specific sections on involving workers in health and safety, and training.

Other requirements will be covered in your system of managing hazards and risks. For example, your system will need to include controls for managing remote work and for reducing the risks of health hazards like noise and dust.

Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016	Regulations 14, 16, 21: Quarry Manager	The business must appoint a quarry manager to manage the quarry and supervise health and safety on every day on which any quarry worker is at work. The manager of a quarry must hold a certificate of competence. This must be as an A-grade quarry manager, except when: • A quarry in which explosives are used and not more than four workers usually work at any one time. The manager may then hold a certificate of competence as a B-grade quarry manager. • A quarry in which no explosives are used. The manager may hold either a certificate of competence as a B-grade quarry manager, or a certificate of competence to manage that specific quarry.

Hazardous Substances and New Organisms Act 1996[3]	Part 6: Control of Hazardous Substances	All hazardous substances (including petrol, solvents, industrial chemicals), are required to have approval under the HSNO Act. When a substance is approved, controls are applied that are designed to manage any risk from using, storing, transporting and disposing of the substance. Controls are based on specific regulations made under the Act, or codes of practice approved by Environmental Protection Authority (EPA). Regulations have been developed for each class of hazardous substance. Controls are rules put in place to prevent or manage the adverse effects of hazardous substances. Examples include: • Hazardous substances must be appropriately packaged and labelled. • People handling certain hazardous substances in the workplace must wear personal protective clothing. • Sites storing large quantities of liquid hazardous substances must have signage and secondary containment (bunding) in place. • Certain highly hazardous substances must be under the control of an approved handler.

[3]These requirements will soon be transferred into new Health and Safety Regulations.

2.2 Guidelines and Standards

From time to time, the Government will also publish good practice guidelines[2] or codes of practice. Standards New Zealand also publishes standards, that may be applicable to parts of quarry operations. It is not compulsory to comply with these. However, these will generally be accepted by courts as the default way to comply with the general requirements of the Act and Regulations. Therefore, if you choose a different approach, you will need to ensure that you are still achieving the same standard in terms of reducing health and safety risks.

The Health and Safety at Opencast Mines, Alluvial Mines and Quarries Good Practice Guidelines (2015) were prepared by WorkSafe with help from our industry organisations including the Aggregate and Quarry Association (AQA) The Institute of Quarrying New Zealand (IOQNZ) and MinEx, as well as from unions. It contains practical guidelines on how to manage many of the common hazards and risks found in quarries. It provides the basis for many of the risk controls you will need to use for your quarry.

WorkSafe has also produced Guidelines for the extractive sector on air quality[4].

There are other WorkSafe guidelines and good practice documents applying to some of our specific hazards such as work at height, and working with plant and equipment. These are listed in the references at the end of this document.

Some hazards have WorkSafe exposure standards[6], such as dust and chemicals. If quarries generate levels of exposure that create health risks, then these should be tested by a competent person. This is to accurately assess the risk and to check the relevant exposure standard is not being exceeded. WorkSafe has also provided a guideline on noise[7].

2.3 Developing a Register of Legal Requirements

- The health and safety management system described in these Guidelines will enable you to meet your general legal requirements.
- To meet your specific health and safety legal requirements you should develop a Register of Legal Requirements. This should list requirements such as the Quarry Manager qualifications, requirements for storing hazardous substances, requirements to meet the exposure standards for dust and noise, and requirements from WorkSafe guidelines and codes of practice for work at height, operating plant and machinery, (including qualification requirements for operators).
- A template for a Register of Legal Requirements follows.

[4]Health and Safety at Opencast Mines, Alluvial Mines and Quarries Good Practice Guidelines 2015 (http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/opencast-alluvial-mines-and-quarries/mines-and-quarries-gpg.pdf/view)

[5]http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/air-quality-extractives-industry-acop/emergency-preparedness-in-mining-and-tunnelling.pdf

[6]Workplace Exposure Standards and Biological Exposure Indices (2016) http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/workplace-exposure-standards-and-biological-exposure-indices/workplace-exposure-standards-and-biological-indices-2016.pdf

[7]A Message to Employers on Preventing Hearing Loss http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/hearing-loss-a-message-to-employers-on-preventing/noise-hearing-loss-preventing.pdf

2.5 Template for A Register of Legal Requirements

Legal Requirement	Reference	How We Comply ...
Quarry Manager Qualifications	Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016 Regulation 14	See Section 6 (Training) of these Guidelines
Hazardous Substances	Approved Code of Practice for the Management of Hazardous Substances in a Place of Work http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/acop-moshh/moshh-ac.pdf	See Section 7 (Hazards and Controlling Risks) of these Guidelines
General Requirements • Facilities • First Aid • Emergency Response	Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 Regulations 10-12,13,14	See Section 7 (Hazards and Controlling Risks) of these Guidelines
General Requirements • Remote, Isolated Work • Health Hazards • Young People	Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 Regulations 21, 28-42, 43-48	See Section 7 (Hazards and Controlling Risks) of these Guidelines
Guidelines	Health and Safety at Opencast Mines, Alluvial Mines and Quarries: Good Practice Guidelines 2015. http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/opencast-alluvial-mines-and-quarries/mines-and-quarries-gpg.pdf/view	See Section 7 (Hazards and Controlling Risks) of these Guidelines These Guidelines will contain the risk controls that you need to manage your hazards and their risks.
Work at Height	Best Practice Guidelines for Working at Height in New Zealand http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/best-practice-guidelines-for-working-at-height-in-new-zealand/working-height.pdf	See Section 7 (Hazards and Controlling Risks) of these Guidelines
Plant and Equipment	Safe Use of Machinery Best Practice Guidelines http://manufacturing.worksafe.govt.nz/assets/guides/guide-safe-use-of-machinery.pdf	See Section 7 (Hazards and Controlling Risks) of these Guidelines
Noise	Approved Code of Practice for the Management of Noise in the Workplace. http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/acop-%20noise-in-the-workplace/workplace-noise-acop-pdf	See Section 7 (Hazards and Controlling Risks) of these Guidelines
Noise	Australian/New Zealand Noise Management Standard AS/NZS 1269, 1-3, 2005 – Occupational Noise Management	See Section 7 (Hazards and Controlling Risks) of these Guidelines
Dust	A Guide to Respiratory Protection http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/respiratory-protection-a-guide-to/RespiratoryProtection.pdf	See Section 7 (Hazards and Controlling Risks) of these Guidelines

3 Health and Safety Policy

3.1 Guide to a Policy

Your health and safety management system needs a policy giving your company commitment to improving health and safety. This provides a starting point for your system.

Your policy should be developed with your workers. It then becomes an agreed statement of your commitment to everyone's health and safety. It provides an opportunity to discuss important aspects of health and safety management, such as:

- A commitment to continual improvement of risk controls.
- The need to reduce risks to every worker that comes to the quarry, including contract workers and drivers for customers.
- You and workers working together on health and safety.
- You leading by example and committing to provide safe plant and equipment.
- Workers committing to following the health and safety rules.

To enhance commitment to the policy it is good practice for it to be signed by health and safety representatives or, on small sites, by all the workers.

3.2 Developing a Policy

- A template for a Health and Safety Policy follows.
- Use this as a starting point for discussing your health and safety commitments with your workers and contractors.
- Write these commitments up as a Policy, and put this on your notice-board.

3.3 Template for a Policy

- We are committed to providing a healthy and safe place for all workers.
- We will take all reasonable actions to prevent illness and injury to workers by:
  - Addressing training needs in the use of safe work procedures.
  - Supplying proper supervision and enforcement of safe work procedures.
  - Supporting injured workers so that they can rehabilitate and return to work as soon as practicable and reasonable.
- We will consult and cooperate with all workers and contractors to put in place the H&S policy.
- We will provide opportunities for worker participation.
- We will ensure that everyone at our quarry is aware of their responsibility to contribute to a healthy and safe workplace.

4 Who Is Responsible for What?

4.1 Guide to Health and Safety Responsibilities

All tasks to manage health and safety have to be allocated. The allocated tasks must fit within the level of authority, skills and knowledge of each manager, supervisor and worker.

You need to record the responsibilities for each position to ensure that everyone at the site is aware of and understands their roles. Record the management structure for your operation, including all responsibilities and accountabilities.

4.2 Allocating Responsibilities

- A template for the Quarry Manager List of Responsibilities follows.
- Use this as the starting point for discussing your health and safety responsibilities with your workers and contractors.
- Allocate responsibility according to ability, and ensure a back-up is nominated for critical safety responsibilities in case of absence. Once these responsibilities have been agreed upon, record them.
- Involve employees through the site safety meetings in the development of their responsibilities. They may cover areas that you have missed, or may highlight the need for sharing of some roles.
- Include a relevant schedule of responsibilities in the kits that are issued to each worker upon induction.
- When allocating responsibilities, explain each item and ask for feedback to make sure they understand.
- Ensure that health and safety responsibilities are listed in job descriptions.
- Keep a record of how health and safety responsibilities have been allocated.

4.3 Template for Responsibilities

Quarry Manager

- Ensure, as far as is reasonably practicable, the health and safety of all workers.
- Develop, document, implement, and maintain a health and safety management system that enables compliance with the Health and Safety at Work Act 2015 and the Health and Safety at Work (Mining and Quarrying Operations) Regulations 2016.
- Identify all hazards and ensure there are risk controls that reduce the risks as far as is reasonably practicable.
- Implement and maintain a management structure.
- Train workers so that they are competent to perform their duties.
- Provide for adequate planning, organisation, leadership and control of operations.
- Provide adequate supervision, inspection and control of operations.

5 Involving Workers

5.1 Guidelines

You need to provide opportunities for workers to participate effectively in health and safety. Everyone has a role to play in making sure workplaces are healthy and safe. Workplaces are safer when workers have a say about health and safety matters. Make it clear to your workers that you value and support their involvement in health and safety.

Workers are directly affected by any risks created by operations and are often in the best position to know how a job is done and how it affects them. They can provide practical solutions to improving work health and safety. You should develop a culture that supports workers who raise health and safety concerns. This requires building trust with workers.

Developing high-trust relationships takes time. You must be willing to listen to workers' concerns about health and safety and should respond to them promptly, even if only to explain why no action has been taken. The response should be given directly to the worker who reported the problem. All workers should be informed about the problem and the response.

If there is a health and safety committee, you should provide a representative who is senior enough to ensure that any concerns raised are dealt with quickly and appropriately.

Workers can refuse to do work they believe is likely to cause them a serious injury. Workers must be aware that they have the right to refuse to work and understand what that means.

Your arrangements for involving your workers should be developed with them. For larger sites, this may include a committee or health and safety representatives. For smaller sites, your arrangements may be informal.

Employers, unions and employees are expected to act in good faith. This is a requirement of the Employment Relations Act 2000. When workers and you interact with each other honestly, openly and with mutual respect, this reduces the risk of conflict and problems.

It can be useful to keep records. These can be brief and simple. They could be handwritten (eg in a work diary) or saved electronically. They should cover:

- When a discussion took place
- Who engaged with whom
- What health and safety matters were discussed
- Any problems identified
- What decisions have been made – and why
- What is going to happen next – for example, who will take action and by when
- When an action has been completed.

WorkSafe has published Good Practice Guidelines on worker participation in health and safety[8]. These contain more details, particularly on the legal requirements for involving workers on larger sites.

[8] http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/hswa-good-practice-guides/worker-engagement-guide/worker-engagement-guide.pdf

5.2 Including Worker Involvement in Your Management System

- Organise a meeting with all your workers and discuss what you want with regard to involving them in health and safety management.
- When you have agreed on this with your workers, meet with your main contractors and customers that load out from your site. Invite them to also come to some of your site meetings.
- Ensure that these processes are described in your health and safety management system.
- A template for keeping meeting records follows.

5.3 Template for Keeping Meeting Records

Site Safety Meeting Record

Date .....

Attendees: .....

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Minutes

1. Matters arising from the previous meeting.

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2. Review of hazards identified, including from workplace inspections.

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3. Review of incidents and near misses.

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4. Review of MinEx safety alerts.

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5. New items.

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6. Review of Record/s, Procedure/s, Job Safety Analysis (JSA), if required.

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6 Training

6.1 Guide to Health and Safety Training

The basic aim of health and safety training is to ensure workers understand the principles of good health, accident and incident prevention and safe behavior, so that they will apply these principles to their work. Some training needs to be specific to the task or role of the worker.

There are four areas of training and competency that are required.

- The requirements for quarry managers contained in the Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016[9].
- Health and safety training for quarry supervisors and workers.
- Training for specific qualifications that workers need to carry out their tasks.
- Inductions for quarry contractors and visitors.

The need for health and safety training at work is continuous. As circumstances at work change, there will always be the need to ask the questions:

- How does this change affect health and safety?
- What health and safety instruction and training do I need to provide now?

Typical times when you need to ask these questions are:

- Whenever you take on someone new at work – health and safety is an important part of induction training.
- Whenever you buy new machinery or equipment or new substances such as chemicals.
- Whenever people's jobs change.

Developing a training programme should include:

- Identify what skills, knowledge or competencies workers need to do particular tasks.
- Have an induction – to show new workers around the site and tell them about hazards, risk controls, and emergency procedures.
- Provide ways to train workers – for example, use external training providers or do on the job instruction.
- Make sure people only do work if they're trained or properly supervised.
- Keep records of workers training and instruction, and identify which job they can and can't do.

6.2 Regulatory Requirements for Quarry Managers

Quarry manager qualifications are available through industry organisations such as MITO[10]. MITO works with industry groups such as MinEx and the Institute of Quarrying NZ to develop these qualifications and training programmes.

Quarry manager training should cover many of the elements of health and safety management covered in this template, and in particular, how to manage hazards and risks. Training should also cover the knowledge and skills required to implement and apply risk management processes within a health and safety management system for a quarry, (as included in G2 risk management courses).

[9] http://www.legislation.govt.nz/regulation/public/2016/0017/latest/whole.html#DLM6732985

[10] https://www.mito.org.nz/

6.3 Health and Safety Training for Quarry Supervisors and Workers

The New Zealand Certificate in Mining and Quarrying (Level 2) is perfect for those entering the industry for the first time. This 40 credit qualification involves on and off-job training, providing graduates with the skills and knowledge to:

- Understand how health and safety is applied in the mining and/or quarrying industry.
- Be able to competently undertake safety-related tasks, under supervision.
- Demonstrate a foundation understanding and ability to safely complete entry-level tasks related to mining and/or quarrying operations and processes, under supervision.
- Communicate orally and in writing at a foundation level within their workplace to contribute to team performance.

MITO will provide distance learning and assessment resources to support learners through the programme, and arrange off job training courses for health and safety, first aid, and fire safety unit standards.

6.4 Specialist Competencies and Qualifications for Quarry Workers

The skills and competencies that will be required include:

- Work at height.
- Operation of plant and equipment.

These competencies are verified through various unit NZQA unit standard qualifications and licences, for example:

Work at Height Unit Standards

17600	Explain Safe Work Practices for Working at Height (One day course when conducted by itself).
23229	Use a Harness for Personal Fall Protection When Working at Height.
15757	Use, Install, and Disestablish Proprietary Fall Arrest System when Working at Height.
25045	Employ Height Safety Equipment in the Workplace.
15757	Use Fall Arrest Systems When Working at Height.

Wheels, Tracks & Roller Endorsements

Prerequisite - Full Class 1 licence (NZ car licence)

W - Is needed to drive any type of wheeled machinery, eg loader, bobcat, grader, motor scraper.

T - Is needed to drive any type of tracked machine, excavators, bulldozer, tank.

R - Is needed to drive any type of roller.

6.5 Induction Training

Induction training is intended to inform new workers, contractors and visitors about the basic safety requirements of the quarry. It should be at two levels:

- Basic induction for visitors and contractors who will always be escorted by a person from the quarry.
- More detailed induction for new workers and contractors who will not always be escorted by some one from the quarry.

The basic induction should include the following elements:

- The PPE requirements.
- The requirement to never leave your escort.
- The site's policies with regard to smoking.
- Using the site map, explain the operations, the hazards and the risk controls, and the location of telephones to make emergency calls.
- Also using the site map, explain the emergency procedures, alarms and evacuation points.
- Emphasise the need to report any incidents, including near miss incidents as well as uncontrolled risks.

The more detailed induction should include the items in the basic induction as well as:

- Follow instructions, obey all rules and never take chances. If you are unfamiliar with any aspect of your job, please ask your supervisor or the quarry manager.
- There will be zero tolerance to any drugs or illegal activities is strictly enforced.
- Only authorised and licensed workers may operate plant and equipment.
- If injured, even if the injury is minor, ensure early first aid treatment and that the incident is reported.
- The site's housekeeping requirements. Everything has its place, and when not used, everything in its proper place. Keep your work area clean and tidy.
- Use the correct tools and equipment for the task and use them safely. Adjust, alter and repair equipment only when authorised by the manager.
- Return all flammable goods to the hazardous goods store at the end of work each day.

6.6 Recommendations for your Training Programme

- Prepare a table for all your supervisors and workers (including yourself). List current competencies and qualifications, and objectives with regard to developing further competencies and qualifications.
- From this information prepare a draft training plan, that bridges the gaps between current and planned training.
- Ensure that you have a process that allows competencies to be developed following training.
- Ensure that these processes are described in your health and safety management system.
- A template for a training plan follows.

6.7 Template for a Training Plan

Type of training / development	Worker	Provided by	When	Completed
Supervision New Zealand Certificate in Mining and Quarrying (Level 2)				
Employ Height Safety Equipment in the Workplace				
Wheels, Tracks and Roller Endorsements				
Renew Induction Training for Contractors				
Health and Safety Awareness				

7 Hazards and Controlling Risks

7.1 Introduction to Hazard and Risk Management

This is the heart of your health and safety management system. The fundamental aim of your system is to eliminate hazards or reduce the risks associated with the hazards of your operations. All the other parts of the system are support to ensure that you are identifying hazards and implementing and reviewing risk controls, and to respond properly, if these controls fail and there is an incident or emergency.

7.2 What are Hazards and Risks

In general use, the terms "hazard" and "risk", are often used inter-changeably. In health and safety management, it is important that distinct definitions are used for each.

Hazard	A situation that poses a threat to health and safety. Includes: • Presence of stored energy that, when released, can cause damage. • Presence of hazardous situations, such as confined spaces. • Health hazards, such as the presence of dust, chemical or noise in the workplace. • "Pyscho-social" hazards such as the presence of stress or bullying in the workplace.
Risk	Is the combination of the likelihood that the hazard may lead to injury or illness, and the potential consequence of the injury or illness.

Hazards have the potential to lead to harm; either as the result of specific events, (incidents), or as a consequence of a long-term exposure (hearing loss, gradual process injuries, asbestos-related diseases).

Risk is the combination of the harmful consequences, and the likelihood that it could occur. The combination of these two factors is derived in a risk assessment.

Five basic hazard and risk management steps:

- Identifying the hazards (carefully scope the area that you are looking at). Can any of these hazards be eliminated?
- Assessing the risks from each hazard (consequence and likelihood).
- Developing risk controls to reduce either / both the likelihood and / or the consequence.
- Monitoring the effectiveness of the risk controls.
- Regularly reviewing the risk controls so that we can take advantage of new knowledge and new technologies.

7.3 The Approach to Hazard Management and Risk Controls

Managing health and safety hazards and controlling risks is an ongoing process that is triggered when any changes affect your quarry activities. You should work through the steps in these Guidelines when:

- Changing work practices, procedures or the quarry environment.
- Purchasing new or used equipment or using new substances.
- Planning to improve productivity or reduce costs.
- New information about risks becomes available.

- Responding to incidents including near misses.
- Responding to concerns raised by workers, health and safety representatives or others at the workplace.

It is also important to use the hazard management and risk control approach when designing and planning products, processes or places used for work, because it is often easier and more effective to eliminate hazards before they are introduced into your quarry by including safety features at the design stage.

7.4 Identifying Hazards

One of the most important aspects of your hazard management and risk control is identifying all the hazards in your quarry. A good starting point is to break down your quarry into specific areas and then walk around these areas and think about their hazards. In other words, what is it about the activities, processes or substances used that could injure your workers or harm their health?

When you work in a place everyday it is easy to overlook some hazards, so here are some tips to help you identify the ones that matter:

- **Check manufacturers' instructions** or data sheets for chemicals and equipment as they can be very helpful in spelling out the hazards and putting them in their true perspective.
- **Look back at your accident and ill-health records** - these often help to identify the less obvious hazards.
- **Take account of non-routine** operations (eg maintenance, cleaning operations or changes in production cycles).
- **Remember to think about long-term hazards to health** (eg high levels of noise or exposure to harmful substances).

To help with the next stages of hazard and risk management, you should use a list of common hazards to describe the ones that you have found. You should also identify when these occur at more than one place in your quarry.

List of Potential Hazards in a Quarry	
Loss of containment of hazardous substances	Working alone
Entering and working in a confined space	Using vehicles
Working around mobile plant	Stacking, racking and storage of materials
Working at height	Exposure to biological hazards
Working on or around water bodies	Exposure to asbestos
Working downstream of stored water	Exposure to hazardous chemicals
Working in excavations	Exposure to dust
Working around suspended loads	Exposure to sources of ignition
Working with plant and equipment	Exposure to sources of electricity
Lifting and carrying	Repetitive movements
Exposure to weather	Exposure to stress
Exposure to uncontrolled animals	Working while fatigued
Exposure to biomechanical hazards	Uneven and slippery surfaces
Exposure to violence and aggression	Using hand tools
Exposure to noise and vibration	

7.5 Assessing the Risks

A risk assessment involves considering what could happen if someone is exposed to a hazard and the likelihood of it happening. A risk assessment can help you determine:

- How severe a risk is.
- Whether any existing control measures are effective.
- What action you should take to control the risk.
- How urgently the action needs to be taken.

A risk assessment can be undertaken with varying degrees of detail depending on the type of hazards and the information, data and resources that you have available. It can be as simple as a discussion with your workers or involve specific risk analysis tools and techniques recommended by safety professionals.

7.5.1 When Should a New Risk Assessment be Carried Out

A new risk assessment should be done when:

- There is uncertainty about how a hazard may result in injury or illness.
- The work activity involves a number of different hazards and there is a lack of understanding about how the hazards may interact with each other to produce new or greater risks.
- Changes at the quarry that may impact on the effectiveness of risk controls.

Some hazards that have exposure standards, (such as noise), may require scientific testing or measurement to accurately assess the risk and to check that the relevant exposure standard is not being exceeded.

7.5.2 How to do a Risk Assessment

- Work out how severe the harm could be by considering what type of harm (injury) could occur, how many people are exposed, could a small event escalate.
- Work out how the harm could occur. Ask "… if this happens, what could happen next?"
- Work out the likelihood of harm occurring. Consider how often the task is carried out, how often are people near the hazard, how close to people get?
- Put the risk into one of the following categories:

Critical	The level of harm is potential serious or fatal injuries to one or more people, and there is an almost certain likelihood that this could happen. If a risk is assessed as critical, work should be stopped immediately, and not start again until further risk controls have significantly reduced the likelihood.
High	The level of harm is potential serious or fatal injuries to one or more people, and there is a high likelihood that this could happen.
Moderate	The level of harm is potential serious or fatal injuries to one or more people, and there is a low likelihood that this could happen, or the level of harm is minor injuries and there is a high likelihood.
Low	The level of harm is minor injuries and there is a low likelihood that these could happen.

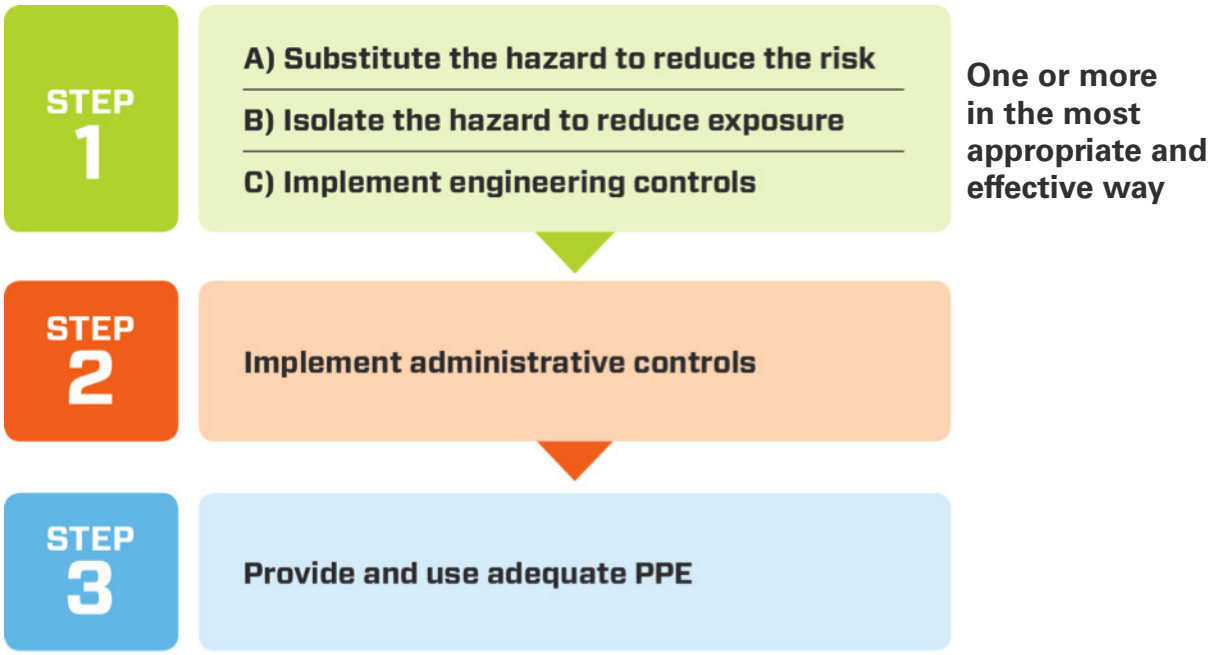
7.6 Risk Controls

There are many ways to control risks. Some control measures are more effective than others.

You must consider various control options and choose the control that most effectively eliminates the hazard or minimises the risk in the circumstances. This may involve a single control measure or a combination of different controls that together provide the highest level of protection that is reasonably practicable.

Some problems can be fixed easily and should be done straight away, while others will need more effort and planning to resolve. Of those requiring more effort, you should prioritise areas for action, focusing first on those hazards with the highest level of risk.

The ways of controlling risks are ranked from the highest level of protection and reliability to the lowest as shown below. This ranking is known as the hierarchy of risk control. The Health and Safety at Work Regulations require you to work through this hierarchy when managing risk (see page 4 of these Guidelines).



Where there is a risk of serious or fatal injuries / illnesses, these hazards are described as significant. If there is a high likelihood that these will occur, the risks are critical. Where there are critical risks, then risk controls must be developed to a high standard:

- There is a greater need to try and eliminate the hazard.
- If the hazard cannot be eliminated, risk controls need to be robust and reviewed regularly. They should include engineering controls that isolate workers from the hazard.
- Risk controls for significant hazards must be consistent across all your operations, including contracted work. To achieve this, you can use WorkSafe Guidelines and Codes of Practice, as your minimum risk controls.

You must aim to eliminate health and safety risks. Where elimination is not reasonably practicable, you must reduce the risk following the hierarchy of risk control.

You must consider the current status of risk controls for critical risks as a priority when planning in the long-term or short-term (e.g. deciding on capital expenditure needs, setting training and development plans, determining safety equipment or expertise when undertaking a job etc.).

There are a number of tools and techniques that are used to help with developing and implementing risk controls. WorkSafe approved codes of practice or guidelines set out ways of controlling risks. Other sources of risk controls are:

- When Regulations require some hazards or risks to be controlled in a specific way – these requirements must be complied with.
- There are well-known and effective controls that are in use in the particular industry, that are suited to the circumstances in your workplace. These controls can simply be implemented.

The Health and Safety at Opencast Mines, Alluvial Mines and Quarries Good Practice Guidelines (2015) contain practical guidelines on how to manage many of the common hazards and risks found in quarries. Applying these controls to your specific operations provides the most effective risk controls and may mean that risk assessments are not required.

Despite best efforts, there is the potential for risk controls to fail. Recovery controls must be established for all significant risks. Recovery controls may include:

- Cut off level switches, explosion proof doors or walls etc.
- Man down alarms.
- Evacuation plans.

The cost of controlling a risk may be taken into account when working out what is reasonably practicable, but it cannot be used as a reason for doing nothing.

The greater the likelihood of a hazard occurring and / or the greater the harm that would result, the less weight should be given to the cost of controlling the risk.

If two control measures provide the same levels of protection and are equally reliable, you can adopt the least expensive option.

Cost cannot be used as a reason for adopting only administrative controls and PPE when there are more effective controls available that can change the risk through substitution, engineering or isolation.

7.6 Monitoring

The following will help you monitor your risk controls to make sure they remain effective:

- Accountability should be clearly allocated to ensure procedures are followed and maintained. Supervisors should be provided with the authority and resources to implement and maintain control measures effectively.
- Maintenance of plant and equipment – This will involve regular inspection and testing, repair or replacement of damaged or worn plant and equipment. It includes checking that any risk controls are suitable, and are set up and used correctly.
- Risk controls, particularly lower level controls, depend on all workers and supervisors having the appropriate competencies to do the job safely. Training should be provided to maintain competencies and to ensure new workers are capable of working safely.
- Information about hazards, such as plant and substances, may be updated by manufacturers and suppliers and should be checked to make sure risk controls are still relevant. New technology may provide more effective solutions than were previously available. Changes to operating conditions or the way activities are carried out may also mean that risk controls need to be updated.
- Risk controls are more effective where there is regular review of work procedures and consultation with your workers and their representatives.

It is not always practical to remove the hazard altogether. Where hazards and their risks are controlled only, one way of measuring how successful the risk controls have been is to monitor the effect on worker's health. An example is dust and lung function testing, which can be performed by a GP. Monitoring health following exposure to the hazards should never be seen as a control in itself but only as an indicator of the effectiveness of the controls you have put into place.

Another form of monitoring people's health is to ensure that workers remain fit to perform their tasks where their health may directly impact on the health and safety of others. An example would be the health of the drivers of heavy vehicles. Workers should be made aware of and consent to health monitoring from the start of their employment.

Health monitoring also has a positive benefit for workers because it can provide early warning of medical conditions that can be treated before they become a problem.

To ensure that health monitoring gives accurate results, a baseline health assessment at the start of employment should be carried out. This identifies pre-existing conditions, and allows subsequent testing to demonstrate whether the worker's health is worsening as a result of workplace hazards. In the case of work which requires the use of hearing protection, a baseline hearing check should be considered necessary.

7.7 Review

The risk controls that you put in place should be reviewed regularly to make sure they work as planned. Don't wait until something goes wrong.

A review is required:

- When the risk control is no longer effective in controlling the risk.
- Before a change at the quarry that is likely to lead to new risks that the control may not effectively control.
- If a new hazard is identified.
- If workers ask for a review because they have evidence that the risk control is not effective.

You may use the same methods as in the initial hazard identification step to check controls. Consult your workers and their health and safety representatives and consider the following questions:

- Are the risk controls working effectively in both their design and operation?
- Have the risk controls introduced new problems?
- Have all hazards been identified?
- Have new work methods, new equipment or chemicals made the job safer?
- Are safety procedures being followed?
- Has instruction and training provided to workers on how to work safely been successful?
- If new information becomes available, does it indicate current controls may no longer be the most effective?

If problems are found, go back through the risk management steps, review your information and make further decisions about risk control. Priority for review should be based on the seriousness of the risk. Control measures for serious risks should be reviewed more frequently.

7.8 Maintenance

One of your most important risk controls is maintaining plant and equipment in a safe working condition.

Controls, emergency stops, access and guarding systems should be maintained in full functional order. Priority for this should be no less than for maintaining any other part of a machine. Machines that are designed to function automatically should be maintained in this condition to avoid the need

for operators to intervene manually and place themselves at risk. Modifications and repairs should be conducted by a qualified person and documented.

Equipment that is solely or mainly health and safety equipment should have a high priority for maintenance. These include:

- All personal protective equipment.
- Guards, emergency stops.
- Air filters and air conditioners in dusty or hot work environments.
- Steering, brakes, tyres, seats, seat-belts and controls on mobile machines.
- Windows.
- Dust seals.

Checklists should be prepared and used to check and confirm condition mechanical integrity, and correct operation. These should include all tasks and scheduled inspection times. They should be based on machinery and equipment manufacturer recommendations and your own experience. The use of these checklists will provide information for operators, supervisors and you. These checks should be undertaken by the operator at the start of each shift before operating the equipment. If unsafe, the equipment should not be used until repaired.

7.9 Repairs

Unplanned maintenance activities often present a greater risk of injury than the normal operation of plant and machinery. For this reason, greater control and supervision is required. It would be an advantage to have a plant breakdown procedure or checklist. Questions to be asked include the following:

- What level of competency is required for to work to be undertaken?
- Who is responsible for repairs?
- Who will supervise?
- How will communication and consultation with employees occur?
- How will plant and machinery be made safe?
- What procedure will be used for hazard identification, risk assessment and risk control?
- What specific safe work procedures and permits will be used, e.g. lockout, hot work, confined spaces?
- How will safe access be provided, e.g. fixed access, scaffolding, elevating work platforms?
- How will heavy or bulky items be moved e.g. cranes, fork lifts, trolleys?
- How will services be provided e.g. light, compressed air, electricity, water, ventilation?
- How will spills of flammables, combustibles or pollutants be controlled?
- What emergency equipment will be required e.g. fire extinguishers, breathing equipment, rescue harness, first aid kit?
- How will pedestrian and vehicle access be controlled?
- What facilities will be needed for temporarily storing tools, parts and scrap?
- What will be needed to properly clean up after the job?
- What start-up precautions will be needed e.g. all guards replaced, all adjustments made, all controls working properly, all emergency stops operational, observation and close supervision?
- Will there be wider safety implications for the operation?

One of the most practical parts of any safety management system is scheduling and recording maintenance activities. The use of mobile and fixed plant presents some of the greatest hazards at the site. All plant should be inspected and serviced using service manuals and known safe methods.

7.10 Other Procedures

7.10.1 Standard Operating Procedures

Standard operating procedures (SOPs) are detailed, written instructions designed to provide consistency in the way a job is undertaken. SOPs must:

- Be developed using a risk assessment.
- Involve workers.
- Detail the steps necessary to keep workers safe.
- Reflect the way the job is actually done.
- Be easy and practical to follow.
- Be up to date.

7.10.2 Permit to Work

Some tasks require work that is subject to a critical risk that cannot be reduced by eliminating or isolating the hazard. In these situations, there needs to be a robust process that ensures that risk will be reduced as far as is practicable. This process requires a person with authority and knowledge over the asset on which work is required, to independently assess the plans for that work. That person must independently authorise it, on the basis that the work will be carried out safely, and there are no conflicts with other operations or work on the asset.

A specific permit for that work is then issued by the independent authoriser, before the work is started. The independent permit issuer must check the proposed risk controls before giving authority for the work to proceed.

7.10.3 Managing Change

A health and safety change management process is only as good as worker's ability to recognise when something is a change to which the process needs to be applied. Good training and awareness is fundamental to achieving this. In a health and safety context, change includes:

- Organisational changes (new workers, experienced workers leaving, changes to management).
- Activity changes (changes to processes, equipment, infrastructure, software).
- Material changes (new chemicals or hazardous substances).
- Changes to the health and safety management system (e.g. standard operating procedures).

Changes to critical risk controls must be appropriately assessed and authorised.

7.11 Recommendations for Developing Your Hazard and Risk Register

- Identify the hazards that are present on your quarry from the list of hazards in the list in Section 7.4.
- Prepare a Hazard and Risk Register using the following template.
- Include:
  - The hazard category
  - The location where this hazard occurs
  - The risk (critical, high, moderate, low)
  - The risk controls
  - Any procedures relevant to this task.
- Fill in details of your existing risk controls.
- Use the following templates for the SOPs and JSAs that describe your risk controls.
- Schedule a series of meetings with your workers and contractors. Choose one significant hazard category for each of these meetings. With the help of the WorkSafe Guidelines, confirm the controls that you are going to use.
- Where these controls are engineering controls, obtain costs and include these in budgets for future work. If the risk is high, consider implementing the additional engineering controls as soon as possible, and ensure there are other procedural controls in place, in the interim.
- Where these controls are procedural, prepare standard operating procedures.

7.10 Templates for a Hazard and Risk Register, Standard Operating Procedure and Job Safety Analysis

Hazard and Risk Register				
Hazard	**Locations of Hazard**	**Risk Level**	**Risk Controls**	**Managing Risk Controls**
Using Explosives	See Site Plan	High	Carried out by independent contractor according to requirements of WorkSafe Good Practice Guidelines (pages 71-89), (see contract conditions)	Monitoring contractor and contractor reports
Ground Instability in Excavations	See Site Plan	High	Competent and qualified excavator operators Carried out according to the requirements of the WorkSafe Good Practice Guidelines (pages 90-100)	Inspections
Mobile Plant	See Site Traffic Management Plan	High	Competent and qualified mobile plant operators Site Traffic Management Plan Carried out according to the requirements of the WorkSafe Good Practice Guidelines (pages 130-146)	Review licenses of contractor and customer drivers Inspections
Noise	See Site Plan for areas of operating plant	Medium	Hearing protectors complying with *AS/NZS 1270 Acoustics – Hearing protectors*, issued to all workers and a requirement for contractors	Inspections

Hazard and Risk Register
Standard Operating Procedure: Tipping Purpose To ensure that all tipping operations are carried out according to the requirements in the WorkSafe Good Practice Guidelines, Pages 102 – 116. Responsibilities Hazards and Risks Risk Controls (Include diagrams) Other Related SOPs Inspections

Job Safety Analysis		
Task Description:		
JSA number	Date	Team Members
Issuer		

Task	Task Description	Hazards	Risk Level	Risk Controls	Inspections

8 Planned Projects and Improvements

8.1 Guide to Health and Safety Planning

An annual safety improvement plan will set out your objectives and targets for improvement over the next year.

The plan should be based on prioritising improvements in how you manage your biggest risks. It should be developed in a meeting with your workers. Any objectives or targets which were not achieved in the previous year can be rolled over to the next.

Specific targets can include:

- Improvement of plant or equipment.
- Training goals.
- Improved reporting of near miss incidents.
- Improving how you use some of your processes such as Job Safety Analyses.
- Improving communication with contractors and customers with regard to safety on the site.
- Specific projects such as obtaining noise measurements.

8.2 Recommended Process for Health and Safety Planning

- Schedule annual meetings at which you review your previous year health and safety performance, your risk reviews and results of inspections and audits.
- Identify necessary improvements in engineered risk controls as capital improvement items.
- Identify other health and safety activities, particularly with regard to training and competency. List these activities, and ensure that schedules and responsibilities are included.
- Prepare the Annual Health and Safety Plan using the following template.

8.3 Template for an Annual Health and Safety Improvement Plan

Objectives	Completed by	When	Result achieved	Sign off	Date
• Complete guarding project for crusher					
• Review traffic management plan					
• Supervisor to complete Level 2 Certificate					
• Develop new induction training					
• Introduce new equipment inspection checklists					
• Increase the number of near miss reports by 20%					

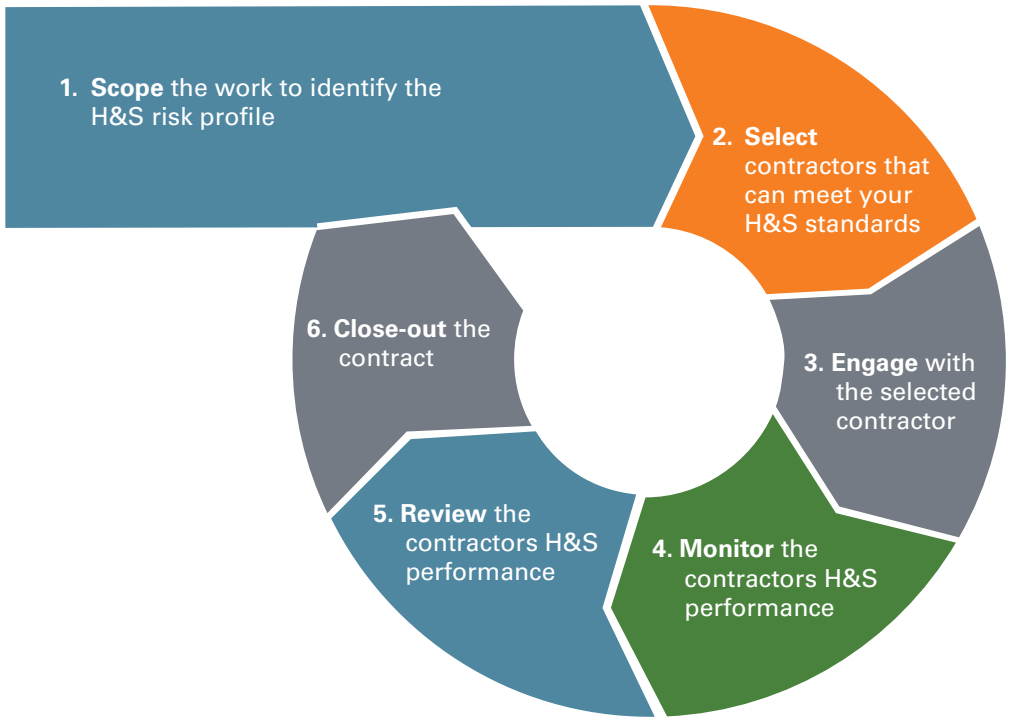
9 Managing Contractors

9.1 Guidelines for a Contractor Management System

Quarries may use contractors to undertake some or all of the activities on site. In addition, there will be customers who collect products from the quarry. The requirement to provide training and supervision and ensure competency to use plant and equipment applies equally to both in-house and contracted workers and to customers. You must fully induct contractors and customers on the quarry's processes relevant to where they will be working, and make sure they follow safe working practices.

Some of your contracts will be for one-off projects, for example an overhaul of your crushing plant. Others will be for regular work that is out-sourced, such as placing and detonating explosives. One of the techniques for large projects is to "ring-fence" an area inside your control, with the contractor taking primary responsibility for managing health and safety within that area, using its own health and safety management system.

Managing contractors requires six steps:



Scope
Scoping involves identifying the hazards and the risks associated with the work, so that this information can be passed on to contractors and customers. You should also instruct contractors and customers about the risk controls that affect them that are required in your quarry.

Select
You will need a process that lets you know which contractors are competent to carry out projects / work in you quarry. You may have a list of preferred, competent contractors. You may ask tendering contractors to provide information and references that allow you to assess their competency to meet your risk controls. You may also interview them, and / or visit other operations where they have been carrying out similar work. In any case, it is important that you satisfy yourself that the contractor is capable and committed to working safely on your site.

Engage
Once you have selected the contractor, you need to ensure that the risk controls for its work has been documented in a health and safety plan or a JSA. (You could also have a JSA for load-out of product, so that customers are following your risk controls when they are on-site). Both contractors and customers need to be clear about your incident reporting and emergency management processes. The arrangements for inducting workers (and customer drivers) onto the site need to be communicated.

Monitor
You need to monitor the contractor's health and safety performance to ensure it is following your risk controls and working safely. Monitoring should complement rather than duplicate the monitoring carried out by the contractor. Monitoring will include:

- Regular meetings to review any health and safety issues.
- Regular inspections and observations.
- Investigating and responding to incidents.
- Conversations with workers.

Review
Before the contract is finished, you should review the contractor's performance with them. If the contract is for regular work, you should carry out a review every 12 months.

Both you and the contractor need to understand if your requirements have been adequately met, what problems arose during the course of the contract, and whether these were resolved. You need to review any incidents and trends, any non-compliance with your requirements, and any opportunities for improvement.

This should occur in a meeting with the contractor. Before the meeting, you should ensure that you have all relevant information available, so that you can talk about actual performance. You need to be clear with the contractor about any changes that would be needed before you would hire it again.

Where contractor health and safety performance has been unsatisfactory, you can work with the contractor to improve performance. In these situations, you should increase monitoring and review frequency to ensure compliance to improvement plans.

Close-out
Before closing a contract, you should make sure:

- The work is completed according to the contract specifications.
- The area has been left safe.
- Relevant documents have been received (e.g. certificates of compliance, as-built drawings etc.)

9.2 Recommendations for Managing Your Contractors

- Develop a checklist for engaging contractors, (see following example). Include what you need to tell the contractor about your hazards and risk controls, and what you expect from the contractor.
- Develop a checklist for monitoring contractors. Include what you need the contractor to tell you, and what you expect from the contractor.
- Develop a checklist for reviewing contractors. Include what you need to check when the contract is nearly complete and what you will discuss with your contractor during the review.
- Develop a checklist for the close-out of a contract. Include what you need to decide on, with regard to being satisfied that the contract has been completed to your satisfaction.

9.3 Templates for Contractor Management Checklists

Contractor Assessment Form		
Contractor:		
Contractor to answer yes or no to the following items.	Yes	No
Details of key staff and the organisational structure responsible for the management of the contract work.		
Reference to include written policies and safe work procedures, including emergency procedures, incident report forms etc.		
All hazards identified with the associated work.		
Methods of hazard identification including checklists and other methods used.		
Details of risk assessment and control measures.		
List of instruction, training and experience of the contractor employees.		
Types of records that will be kept and who are to keep them.		
State monitoring of work requirements and safety requirements that will be used.		
Provision of own PPE to site standards and state by whom and how it is to be inspected.		
Details of proposed safety meetings and means for resolution of safety issues.		
A process for the inspection of machinery supplied and used for the contract work, and how this process is monitored.		
Copies of all relevant inspection certificates or records.		
Copies of all relevant competency tickets/licences held by contracted workers. [This includes drivers licences, machine tickets etc.]		
Evidence that all workers fitness level is adequate to complete the work contracted to carry out on the …….. .		
Comments		
Contractor Signature	Date	

10 Checks and Inspections

10.1 Guidelines for Inspections

Inspections are one of the best tools for finding problems and fixing them before incidents occur. This is how you monitor your risk controls.

A well-managed inspection schedule should:

- Confirm site rules and processes are followed.
- Identify potential problems that were not anticipated during hazard identification and work planning.
- Identify equipment deficiencies such as normal wear and tear, abuse, or misuse.
- Identify effects of changes in processes or materials.
- Identify inadequacies in risk controls.
- Providing information to you.
- Demonstrate management commitment through being visible.

Inspections are hard to beat as ways of showing employees that their health and safety is important. The two broad categories of inspections are 'planned' inspections and 'informal' inspections. Both are important.

10.2 Planned Inspections

Pre-shift inspections should be conducted by a competent site manager or supervisor. Regular, planned inspections of plant (fixed and mobile), vehicles, buildings, yards and operations are needed to pick up and deal with risks before they result in incidents.

What's to be inspected, how often, what do you need to look for, who's doing the looking and what has to be done with the information collected will make up your inspection programme.

Here are some steps to use when developing a formal inspection plan:

- Using a site plan, divide the site up into manageable chunks.
- Allocate the role of conducting inspections to competent people.
- Create a General Workplace Inspection List.
- Once you have developed your inspection list, review it with other employees. This will ensure that all the areas of the operation have been included on the form, and the people doing the inspection are made aware of what to look for. Keep adding to this list as new situations arise.
- Decide the frequency of these inspections. If one area is quite hazardous, (e.g., crushers or conveyors), the inspection frequency should reflect this and be conducted more often than in other areas. Most operations conduct inspections at least monthly.
- Ensure the person conducting the inspection is sufficiently knowledgeable about required processes and technical information.

Here are some key points that will help make inspections more effective.

- Refer to a map and checklist.
- Record the positive as well as the negative.
- Look for off-the-floor and out-of-the-way items.
- If something is wrong, take immediate action, even if it is a temporary measure.
- Determine the basic causes of unsafe actions and conditions.

10.3 Informal Inspections

Informal inspections can be conducted by you or supervisors at any time. They allow you to:

- Talk with workers where they are working.
- Get worker feedback on risk controls and their effectiveness.
- Actively follow up on improvements.
- Share knowledge of risk controls.
- Learn from workers.

Informal inspections are not intended to check conformity to a specific safety requirement. Rather, their aim is to allow you and workers to have conversations about how effectively risks are being controlled and how we can improve.

10.4 Developing An Inspection Process

- Develop a schedule of areas / items that should be regularly inspected (see following example).
- Develop some inspection checklists, (see following examples).
- Develop a schedule for carrying out inspections.
- Develop a process for follow-up and recording of the results of inspections.

10.5 Templates for Inspection Checklists

List of Work Areas to be Inspected in a Quarry	
Work occurring in a confined space	Use of light vehicles in the quarry
Work occurring around mobile plant	Stacking, racking and storage of materials
Work occurring at height	Work occurring on uneven or slippery surfaces
Work occurring on or around water bodies	Work occurring with potential exposure to noise and vibration
Work occurring at excavations	Work occurring with potential exposure to dust
Work around suspended loads	Work occurring with potential exposure to sources of ignition
Work with fixed plant and equipment	Work occurring with potential exposure to sources of electricity
Work using hand tools	Use of heavy mobile plant in the quarry

Workplace Inspection Checklists	
Area being Inspected	Date of Inspection
Persons inspecting	

Legend – record in results column	✓ = Standard met	✗ = action required	**N/A** = Not applicable to this site

Item	Observation	Result	Comments/Actions
1.0	**Buildings and Structures**		
1.1	Buildings and Floors - No building damage - No floors damaged/dirty - Aisles width, safe & free from obstruction - Stairs to approved standard		
1.2	Lighting - No lights out/broken - Sufficient lighting - No glare - Windows clean and undamaged		
1.3	Ventilation - Natural air flow and air extraction - Mechanical (include air conditioners, fans etc). - Filters clean/inspected - No build-up of hazards or flammable material		
1.4	Work environment - Dust exposure managed - Spillage adequately managed - Noise exposure areas signposted - Housekeeping		
1.5	Amenities - Hygienic toilets/urinals - Hygienic kitchen/lunch room - Fridge and cooking appliances clean - Hygienic showers/change rooms - Adequate supply of drinking water		
1.6	Emergency - Exits identified - Exit doors and equipment unobstructed - Evacuation plan in place - Fire extinguishers - Emergency lighting		
1.7	Storage and Stacking - Adequate shelving - Neat & tidy - Segregated or labelled - Safe Working Load (SWL) on shelving - Heavy items on lower level		

Item	Observation	Result	Comments/Actions
2.0	**Housekeeping**		
2.1	Wastes (eg oil, scrap steel) - Adequate disposal/collection - Sufficient bins - Bunding/storage of container area		
2.2	Aisles and Storage - Good demarcation / not worn - Not cluttered/obstructed - Access to emergency equipment and exits		
2.3	Plant and Yard - No redundant plant - No redundant material - Tidy		
2.4	Colour Coding - Used - Uniform code (ie to Australian Standard (AS) or guidelines) - Maintenance		
3.0	**Electrical Safeguarding**		
3.1	Portable Electrical Equipment - Identified and on register - No damaged cables/plugs - Earthing - Current inspection tag (> 32v) - Appropriate storage - No visible damaged to tools or electrical leads		
3.2	Earth Leakage - Complete coverage - Tested regularly by competent person - Documentation - Inspection tag		
3.3	Electrical Installations Safe - Electrical equipment safe - Wiring safe - Unauthorised access to switch gear/sub-stations restricted - Welders have Voltage Reduction Device (VRD) - No exposed wires - No damage to protective sheath/cable guide or conduit		
4.0	**Mechanical Safeguarding**		
4.1	Machine Guarding - Guards in place - All nip points guarded - Not loose, broken or inadequate		
4.2	Lock-out System - Switches lockable - Tags/locks available		

4.3	Switches, Isolators, Valves & Controls - Labelled - Emergency stop buttons red		
4.4	Ladders, Handrails and Walkways - Stairways/landings toe-boards fitted - Stairways at least one handrail - Portable ladders inspected/tested		
4.5	Lifting Gear and Machinery - Safe working load marked - Safety latches in place		
4.6	Conveyor - Gears, pulley, shaft and nip points guarded - Drop guards to catch falling material - Emergency stop - Adequate access - Adequate cross overs		
5.0	**Gas Cylinders and Presure Vessels**		
5.1	Pressure Vessels - Relief (safety) valve operational - Drained & free of moisture - Red line on pressure gauges - Remote isolation		
5.2	Gas Cylinders - Cylinders stored vertically, secure - Equipment safe condition - Flashback arrestors used		
5.3	Connecting pipes fitting and hoses - In good condition, no leaks - Connecting pipes and lines labelled. - Safety clips used		
6.0	**Hazardous Substances**		
6.1	Chemicals and Substances - Products labelled - Safety Data Sheets (SDS) - Stored in bunds - Segregation distances		
7.0	**Mobile Plant and Machines**		
7.1	Condition of Vehicles/Plant - Daily check sheets available - No defective items - Operator competent - Isolated when unattended - Seat belts - Overhead guards, rollover protection where applicable - Fire Extinguisher - Flashing light/reversing alarm - Maintenance records		

8.0	**Handtools**		
8.1	Hand Tools Condition and Storage - No damaged or defective tools - No sharp edges, mushroomed ends - No split handles - Stored correctly - Clean of oil & grease		
9.0	**Ergonomics**		
9.1	Operators Work Environment - Body posture adeqaute - No lifting and twisting - Standard colour coding - Accessibility (switches, levers, ladders) - Seats/chair/workstations condition - Adequate lighting - Ladders approx. 70 degree angle - Walkway width is adequate		
10.0	**Personal Protective Equipment**		
10.1	Head Protection - Area identified – sign - Hard hats provided - Being worn		
10.2	Footwear - Provided - Correct for task - Being worn		
10.3	Protective Clothing - Suitable clothing for task - Provided and maintained		
10.4	Eye and Face Protection - Area identified – signs - Equipment provided - Worn correctly - Prescription glasses to standard		
10.5	Hearing Protection - Area identified – signs - Equipment provided - Worn correctly		
10.6	Other PPE - Safety harness & lanyards - Hand protection (gloves etc). - Respiratory equipment - Sun protection, Sunscreen - Sun hat or attachment - Insect repellent - Welding PPE		
11.0	**Notices and Signs**		
11.1	Signs Posted - Appropriate signs displayed - To standard requirements - Visible and correctly located - Good condition		

11.2	Noticeboards and Displays - Conspicuous position - Up to date		
11.3	Warning Signs - No unauthorised entry - Procedure in case of fire - Procedure in case of electric shock		
12.0	**Fire Protection and Prevention**		
12.1	Extinguishing Equipment - Adequate number provided - Correct types for fire risks ie hydrants and fire extinguishers, sprinkler systems, foam equipment, fire station etc.		
12.2	Fire Equipment Locations - Location accessible - Signs and demarcated areas - Signs indicated type of equipment - Signs to standard - No equipment obstructed		
12.3	Maintenance of Equipment - All equipment on register - Inspection/service to standard - Tags/seals in place - Condition good		
12.4	Fire Fighting - Adequate persons trained - Available number of people on all shifts - Training and competency records		
13.0	**Entry and Exit**		
13.1	Control of Entry and Exit - Control signs (eg. person to report to office) - Secure fences and locked gates - Security checkpoint - Visitor record (time in/out)		
14.0	**Emergency Planning**		
14.1	Emergency Action Plan - Written emergency plan - Contact names/phone numbers - Site Plan		
14.2	First Aider and Facilities - Current first aider - Adequate first aid equipment - First-aid kits checked regularly - Stock items within use by date - Locations marked		

General Open Pit/Quarry Inspection	
Site being Inspected	Date of Inspection
Persons inspecting	

Legend – record in results column	✔ = Standard met	✘ = action required	**N/A** = Not applicable to this site

Item	Observation	Result	Comments/Actions
1.0	**Access Road**		
1.1	Road Condition - Wide enough for vehicles - Adequate passing areas - Graded surface, no spillage, pot holes - Camber 2-3%		
1.2	Signs - Access to site adequately sign posted - Mining/open pit hazard identified - Speed limits		
2.0	**Road, Ramps, Dumps**		
2.1	Go Line - Graded and free of obstructions - Vehicles parked at safe distance apart		
2.2	Windrows - Axle height of the largest tyred vehicle - Sufficiently wide enough to stop vehicle - Delineators clearly visible and reflectors clean		
2.3	Surface - Adequate width, passing areas - Well graded and free of spillage and pot holes - Free of standing water - No signs of cracking or collapse of edges - Dust suppression - No oil/diesel spillage - Traffic movement in accordance to procedures - Camber 2-3% - Less than 10:1 gradient		
3.0	**Drill & Blast**		
3.1	Patterns - Access restricted with signs, windrow or cones - Windrows in place around the face. - No unauthorised vehicles or personnel - Pattern marked - Dust control for drill rig - Drill rig orientation to face		

4.0	Working Area		
4.1	Walls - To designed angle - Scaled down - No cracks or over hangs - No loose material/fretting - Water seepage - Access ramp away from working face		
4.2	Berms - Adequate width ratio to wall height - Stable surface, no cracks - Drainage adequate		
4.3	Pit Surrounds - Drainage away from pit - Windrows adequate size (eg. 2m high x 1.3m base) - No environmental damage		

11 Incidents

11.1 What is an Incident

An incident is an event resulting in, or having the potential for injury or illness, or damage to machinery and equipment, or the possibility of injury or damage. An event that having the potential but not causing injury or damage is called a *near miss* incident.

11.2 Serious Incidents

As discussed in Section 2, Section 56 of the Health and Safety at Work Act requires you to notify WorkSafe as soon as possible, if a notifiable event occurs. Section 25[11] defines "notifiable event" as a death, a serious injury or illness, or specified types of serious near misses. Serious injuries or illnesses are those that will usually require immediate hospital treatment. Serious near miss incidents are usually those that could have resulted in serious injuries, illnesses and death such as explosions or the collapse of plant or structures.

Following a serious incident, the integrity of the scene must be preserved. Apart from the need to administer first aid to those hurt in the incident, and stabilising anything that could cause further harm, the scene should be cordoned off until initial investigations are completed and, where applicable, clearance to release the scene has been given by WorkSafe.

11.3 Incident Investigations

Incident investigation is a process of gathering facts and breaking them down by continually asking 'why'. Then you can identify the underlying causes, put controls in place and reduce the risk of that incident happening again.

Because incidents are rarely caused by a single factor, it is important to identify all the causes and put in the right controls. Human error may only be one small part of the cause, and process failure or poor risk controls may also contribute.

All significant incidents and near misses should be investigated. Significant incidents are those that resulted in serious injuries, or had the potential for a serious incident. The investigation should take place as soon as possible after the incident happens. Getting the investigation started quickly is important as crucial evidence can be disturbed or destroyed as time passes. Important information from workers involved in or witnessing the accident or incident may be lost if the investigation is not started as soon as possible.

Investigations should not be confined to the immediate scene. Information from safety records, procedures, manufacturers handbooks and government publications may indicate particular relevant issues.

You should appoint an objective and qualified person to conduct the investigation. This could be the manager and/or supervisor responsible for the area where the incident occurred, or someone external. Involving a worker or worker representative who knows the work area can help to identify the causes and corrective actions required.

The investigation should:

- Determine what happened.
- Identify the causes (why it happened).
- Identify the corrective actions to reduce the risk of it happening again.

[11] http://www.legislation.govt.nz/act/public/2015/0070/latest/whole.html#DLM5976880, Sections 23-25.

Follow-up to the incident includes recording the changes in work procedures and deciding who is responsible for completing the corrective actions.

Incident investigations are aimed at preventing future incidents; they are not about blame. This should be stressed to workers who are interviewed in an investigation, so that all relevant information can be gained.

11.4 Legal Privilege and WorkSafe

Following a notifiable incident, WorkSafe has the authority to request information from you. You need to provide this, even if it is incriminating, unless the information is protected by legal privilege.

Legal privilege basically protects communications between a lawyer and their client (or third parties) from being automatically disclosed (during the process of 'discovery') without the permission of the client.

You must regularly review all information requests received from WorkSafe during the course of an investigation. To carefully control document transfers as a result of information requests from WorkSafe, you should:

- Have a process whereby each document is carefully reviewed by yourself or your lawyer to ensure that WorkSafe is entitled to this information and that it actually meets the requested information before any document is released.
- Provide no additional information that has not been covered by a specific request. This applies particularly to printed email messages (which often contain cryptic language, and relevant issues can be preceded by historic messages which are at risk of being interpreted out of context).
- Establish a document register, with a duplicate file of all documents provided to WorkSafe under each request.

You should consult with a lawyer as soon as possible following a serious incident. If the lawyer advises that legal privilege is necessary, then the lawyer will advise on the process to follow with regard to managing documents and the investigation.

11.5 Developing Your System for Managing Incidents

- Develop an incident reporting form[12], (see following example).
- Develop an incident investigation form, (see following example).
- Identify a qualified person that you will use as an incident investigator, if needed.
- Develop a process for responding to serious incidents. Ensure that you understand which incidents require notifying to WorkSafe. Ensure that you have a solicitor that can advise you, immediately following a serious incident.

[12]If the event is a notifiable event, then WorkSafe will require it to be reported to them using the form found at http://www.worksafe.govt.nz/worksafe/notifications-forms/notifiable-events/forms/form-notifiable-incident.pdf

11.5 Templates for Incident Reporting and Investigation

Incident Reporting Form	
Where did the incident occur?	
Date and time?	
Brief description of what happened	
Was anyone injured? (Names, roles, injuries)	
What was the hazard? (see Table of hazards in Section 7).	
Were there any witnesses? (Attach witness statements)	
Have photos been taken of the incident scene? (Attach)	
Sign-off that any injured workers have received appropriate care and families informed	
Sign-off that it is safe to start work again	
Sign-off that a decision has been made with regard to whether an investigation will be carried out	
Incident Reported by (Date)	
Incident Report Signed off by Quarry Manager (date)	
Incident Reference	
Brief description of what happened	
What was the hazard? (see Table of hazards in Section 7)	
What were the risk controls that should have prevented this incident?	
Were there any worker errors or non-compliance with procedures that occurred leading up to the incident?	
Were there any job factors that contributed to the incident?	
Were there any environmental factors that contributed to this incident?	
Were there any systems or other organisational factors that contributed to the incident?	
What needs to happen to reduce the risk of this incident occurring again?	
Investigation Completed by (Date)	
Investigation Report Signed off by Quarry Manager (date)	

12 Emergencies

12.1 Discussion of Emergency Situations

Potential emergency situations need to be identified and emergency plans prepared and emergency drills to ensure that the plans work. Developing the plan begins with emergency assessment and these should be reviewed by the local emergency services.

The results of emergency assessment will show:

- How likely an event is to happen.
- What can be done to stop or prevent the event.
- What response is necessary if the event occurs.

The emergency assessment may result in a list that may include:

- Fire or explosion.
- Flood.
- Significant collapse of workings.
- Serious injury incident.
- Medical emergency (such as a heart attack).
- Hazardous material or chemical spill.
- Electrical incident.
- Mobile plant or vehicle collision.
- Illegal acts such as bomb threat or unauthorised entry.

At the planning stage it is important to include workers who may have had experience in emergency work, such as volunteer fire fighters, volunteer rescue service or first aiders. They can help identify emergencies and the response procedures needed. Other emergency events may be known from previous experience or local knowledge. You should also consult with local emergency service providers and provide them with briefing information about your quarry. Also look at other risk assessments that you have done such as safe work procedures.

The emergency response plan should have specific duties, responsibilities and authorities. Some of these are:

- Who reports the emergency.
- Who starts the emergency response plan.
- Who has overall control.
- Who establishes communication.
- Who alerts emergency personnel.
- Who orders evacuation and ensures that everyone is accounted for.
- Who is responsible and how are equipment isolations carried out.
- Who alerts external emergency services.
- Who provides first aid.
- Who advises the family of anyone who has been injured.
- Who sounds the all-clear.

To ensure good emergency response, you should:

- Develop an evacuation procedure.
- Develop procedures for emergency response for your specific major emergency events (e.g. flood, fire, explosion, medical).

- Install and maintain all necessary fire-fighting and emergency equipment.
- Train all emergency personnel as required.
- Appoint first aid officers.
- Have a site plan that includes exits, safe evacuation paths, location of fire-fighting and emergency equipment, emergency phones and evacuation assembly areas.

All workers should be trained and educated so they know what to do for their role and responsibilities in the event of an emergency.

There should be a schedule developed for training and refresher training for all workers for all emergency events identified. Six monthly emergency trials or evacuations are required under the Fire Safety and Evacuation of Buildings Regulations 2006 to be held and documented to make people aware of their immediate actions, how to raise the alarm, the position of fire-fighting equipment and the location of emergency assembly areas.

The emergency response plan should be reviewed (and where necessary revised) after an incident or emergency event.

12.2 Developing Your Emergency Procedure and Plan

- Develop an emergency response plan and emergency response procedure, (see following example).
- Allocate the responsibilities that are included in your plan and procedure.
- Trial your plan and review to check whether you need to change your plan or procedure.

12.3 Emergency Plan Template

Emergency Plan
An evacuation plan is posted at each work site to identify the whereabouts of emergency exits, fire extinguishers and assembly points.

In the event of an emergency caused by an earthquake, fire or other major event, all workers are to proceed as quickly as possible to the assembly area in front of the main office by the weigh bridge. Workers must then be accounted for by the Quarry Manager. Once all workers have been accounted for, wait for further instructions.

Under no circumstances is anyone to leave the area without receiving instructions from site coordinators.

When the emergency siren sounds, follow these Steps

1. Stop what you are doing and turn off any machinery (if it is safe to do so).
2. Leave the area by the shortest, most practicable route (closing any fire doors along the way).
3. Assist any injured people without placing yourself in danger.
4. Assemble in the assembly area by the office, or as directed by the supervisor.
5. Remain in the assembly area until you are told to leave or return to work.
6. Do not re-enter the workplace until the all clear is given.

Supervisors are responsible for ensuring that all personnel are present and identifying those who may be absent.

Nominated Site Co-ordinators

Production Supervisor	Tel
Senior Quarryman	Tel
Engineer	Tel

13 Document Controls

13.1 Guidelines for Controlling Documents

Documents are a key part of any management system and should be prepared, maintained, and stored to meet the needs of the site or business. Your document control system will be appropriate to the needs of each site and should have some basic version controls. Records can be kept in either paper or electronic form. Some of the documents that should be kept and maintained include:

Internal

- H&S Policy
- Annual Safety Improvement Plans
- Training records and certification of qualifications attained
- Hazard identification and risk assessments
- Monitoring data
- Details of incidents, complaints and follow-up action
- Hazard register
- Site maps
- HSNO safety data sheets (SDSs)
- Standard operating procedures, Job safety analyses and Permits to work
- Site rules
- Organisation charts
- H&S meeting minutes
- Inspection, calibration and maintenance activity
- Results of exposure monitoring
- Results of employee health monitoring.

External

- Legal requirements
- Improvement notices
- Supplier and contractor information
- Audits and reviews
- Letters from stakeholders and external organisations.

13.2 Developing a System to Control Your Documents

- All documents are marked with version, date and responsible person.
- All documents are regularly reviewed, updated as necessary and approved by the responsible person before issue.
- Current documents are available at all locations where needed.
- Outdated documents are promptly removed from all points of issue.
- All documents that need to be kept for legal or historical reasons are identified.

14 Definitions

Competent person	A person who is trained, qualified, experienced and skilled to do their job safely.
Contractor	Someone a person pays to do a job but who is not employed by that person.
Duty holder	A person who has a legal obligation in relation to health and safety.
Eliminate	Remove a hazard.
Hazard	Something that is an actual or potential cause of harm, including an object, activity or event.
Incident Register	A record of incidents that occur, including date, time, circumstances, and any follow-up action, investigation, etc.
Investigation	Gathers information about an incident to find out why the incident happened and how to stop it from happening again.
Isolate	Separate a hazard that cannot be eliminated. For example: remove a noisy machine to a place where no-one can hear it; remove non- necessary workers from a work zone when hazardous work is being done, such as chemical spraying.
JSA (Job Safety Analysis)	A step-by-step description of how to do a task, job or activity safely.
Minimise	Reduce the risk of a hazard occurring when workers are exposed to it, if eliminating or isolating it is not possible. For example, wearing personal protective equipment reduces the risk of exposure to bloodborne viruses.
Notifiable event	An event in the workplace that WorkSafe must be notified about. This includes the death of a person, a notifiable injury or illness (requiring immediate treatment or hospitalisation) and a notifiable incident (exposing people to a serious risk to their health and safety).
Occupational health	Occupational health focuses on protecting workers' physical and mental health and ensuring their wellbeing in the workplace. Identifying, assessing and controlling health risks can prevent ill health caused by workplace conditions.
PPE (Personal protective equipment)	Safety apparel, protective devices and equipment that protect the health and safety of persons.
Pre-start	A safety checklist that is undertaken prior to first use of machinery for that day or shift.
Risk	The possibility that death, injury or illness might occur when exposed to a hazard.
SOPs (Safe operating procedures)	Documented, often step-by-step, processes by which employees can perform each task or aspect of the operation.
SDS (Safety Data Sheet)	Information about how a product could harm you and how to safely store, use and handle the product.
Significant hazard	A hazard that could cause serious harm – depending on how often and how much the worker is exposed to the hazard. Some harm may not be obvious until months or years after a worker has been exposed to the hazard.
SWL (Safe Working Load)	The manufacturer's recommended maximum weight load for line, rope, crane or any other lifting device or component of a lifting device.
VRD (Voltage Reduction Device)	When a VRD is fitted to a welding machine it reduces the maximum unloaded open circuit voltage across the output terminals of the welder to a safe voltage. Normally this reduced voltage is about 12 Volts (AS 1674.2 2003 state this voltage must be less than 35 Volts DC and 25 Volts AC).
Worker participation	Any arrangement between an employer and workers (and unions where appropriate) that allows the participation of workers in processes relating to health and safety in the place of work, so that: (a) all persons with relevant knowledge and expertise can help make the place of work healthy and safe; and (b) when making decisions that affect workers and their work, an employer has information from workers who face the health and safety issues in practice.

15 Further Information

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http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/first-aid-for-workplaces-a-good-practice-guide/first-aid-2009.pdf

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http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/a-guide-to-developing-safety-management-systems-for-the-extractives-industry/developing-safety-management-systems-extractives-industry.pdf

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