

Alluvial Gold Code of Practice





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2.1 Foreword

This Code of practice sets out the safety requirements for alluvial gold mining. This Code should be read in conjunction with Health and Safety at Work Act 2015 and the health and safety at opencast mines, alluvial mines, and quarries Good Practice Guidelines.

3.1 Purpose

The purpose of this Code is to provide safety information for alluvial gold mining. It is intended as a practical guide to any persons in alluvial gold mines. Everyone needs to be able to recognise potential hazards and act accordingly. It applies to all alluvial gold mining operations and provides expectations for: >developing a health and safety management system >hazard management, >selecting and implementing controls for alluvial gold mining and emergency management. This code is for persons conducting a business or undertaking (PCBU), operating in the extractives industry, any person in a safety critical role in the extractives industry, the extractives operator, and anyone else involved in managing risks related to alluvial gold mining. This includes workers and other persons at the mining operation.

4.1 Structure of this Code

This Code identifies the risks associated with the alluvial gold mining industry. These are outlined in Section 13.1 to Section 22.1.

The Code is structured to identify and address the risks associated with each activity and responsibilities of the Mine Manager and Mine Operator included in the Mining and Quarrying Regulations 2022.

Examples are provided for explanatory purposes; they are not prescriptive and are intended to highlight possible methods based on known industry practices and real-world examples. The examples presented in this Code are not an exhaustive list of all measures that can be implemented to control risk – there may be other ways to control the risk.

5.1 Scope

This Code covers alluvial gold mining operations, in so far as they relate to carrying out works in an alluvial gold mine, using associated equipment and machinery, and personnel working in or near to the alluvial mine site.

This Code sets out minimum requirements in respect of the following matters: 14.1 General Excavation, 15.1 Excavating Beneath Water, 16.1 Cleaning a Pond, 17.1 Machinery, Plant and Equipment, 18.1 Hazards around Fuel or Fuel Trailers, 19.1 Traffic Management., 20.1 Excavators Working on Pads, 21.1. Tips and Dumps, 22.1 Worker Health.

The content of this Code does not exempt any person from compliance with any statutory requirements in respect of the Health and Safety at Work Act 2015 and subsequent

6.1 Acknowledgments

MinEx Health & Safety in NZ Extractives

WorkSafe New Zealand

Safe Work Australia

Risk Assessment (20/11/14) SRL and West Coast alluvial gold representatives

West Coast alluvial gold representatives

7.1 Interpretation

The Health and Safety at Work Act 2015 (HSWA) and Health and Safety (Mining and Quarrying) Regulations 2022 (MOQO) contain definitions that should be used in conjunction with this Code. These include:

Alluvial gold mining – the process of extracting gold from creeks, rivers, and streams.

Hazard – Is something that can cause harm to the health and safety of anyone on site

Risk – The chance, high or low, that any hazard will actually cause somebody harm

Risk controls – Are actions that are taken in response to a risk that has the potential to cause accident or harm in the workplace

Risk assessment – Is the process of identifying hazards, risk assessing them, putting in place risk controls and monitoring the success of these controls

Principal hazard – Any hazard arising at any mining operation that could create a risk of multiple fatalities in a single accident or a series of recurring serious health fatalities

Principal hazard management plan – A detailed written plan for managing principle hazards identified on site

Principal control plan – A plan detailing systems and processes in place at the mining operation to manage principle hazards.

8.1 Glossary of Abbreviations used in this Code

GRWM – Health and Safety at Work (General Risk and Workplace Management) Regulations 2016

HSWA – Health and Safety at Work Act 2015

HSMS – Health and Safety Management System

MOQO – Health and Safety (Mining and Quarrying) Regulations 2016

MMP – Mine Management Plan

PHMP – Principal Hazard Management Plan

PCP – Principal Control Plan

PCBU – Person Carrying out a Business or Undertaking

RA – Risk Assessment

9.1 Legislative Requirements

Under HSWA, all extractives operations must identify, assess and control risks to health and safety. The MOQO regulations require the development of principal hazard management plans (PHMPs) and principal control plans (PCPs) for principal hazards. However, these regulations only apply to alluvial mining sites employing more than 4 workers.

There are a number of risks relating to alluvial gold mining. Whether these are principal hazards or not, alluvial mines must manage risks to health and safety arising from them under HSWA's primary duty of care.

The practices detailed in this Code are to address accessing, selecting, and implementing controls for risks relating to alluvial gold operations.

10.1 Introduction

Alluvial gold mines contain health and safety risks. If something goes wrong, workers can be seriously and/or fatally injured. A health and safety management system will provide the structure, organisation, and paperwork needed to reduce health and safety risks at an alluvial gold mine. It will also help with decisions about what risk controls are to be used.

Duty holders who have a role in managing the hazards at alluvial gold mines are persons conducting a business or undertaking (PCBUs), designers, manufacturers, importers, suppliers and installers of plant, substances or structures, and officers.

Workers, including contractors, and other persons at the workplace also have duties under the Health and Safety at Work Act, such as the duty to take reasonable care for their own health and safety at the workplace.

A person can have more than one duty and more than one person can have the same duty at the same time.

This is a guide that will help you develop a health and safety management system for your mine site. WorkSafe recommends that alluvial mine and quarry operators also follow a systematic approach of developing PHMPs and PCPs to manage risks to health and safety.



11.1 Health and Safety Management System

All mining and tunnelling operations must have a health and safety management system (HSMS). The management of hazards is an essential part of the HSMS and an alluvial gold mining operational plan would support the HSMS.

There are different ways you can put together a safety management plan. The size of the plan must be proportionate to the size of your site. This means having a plan that is user friendly and meets the legislative requirements. A plan is not difficult to put together and the following sections will help guide you in the content that is required.

A HSMS should be developed by the alluvial gold mining manager. Their role is to:

- develop, document, implement and maintain the HSMS;
- make sure the HSMS is easily understood and used by all workers, and;
- engage with workers when preparing and reviewing the HSMS.

11.1.1 Content of a Health and Safety Management Plan

A health and safety plan is made up of a number of sections that will work together. There must be a systematic approach to hazard management and this joins all of the systems of the plan together into one good working document. The regulations stipulate what needs to be in a health and safety management system (HSMS). The basic components that make up this health and safety management system are listed below.

[Click here to download your own Health and Safety Management Plan template.](#)

Table 1 Examples of what is needed in the health and safety plan with examples of documentation

What is needed	Some questions to consider	Examples of documentation
Company Policy	How do we keep the site and our workers safe? What is our commitment to health and safety?	A one or two-page policy that is signed by the health and safety representatives, or on small sites, by the company directors and all workers.
How we will manage our hazards and risks	How do we identify hazards and risks? What do I do if I find a new hazard? What type of hazards are there in my work site? What will we do in an emergency?	A hazard register Risk assessment template Hazard identification template Health and Safety meetings Tool box meetings Standard Operating Procedures Emergency Response Plan
How to report accidents	How do we report an accident or near miss? What form do I use?	Accident register Accident reporting form Process for reporting of accidents
How to report an emergency	How do we alert others to an emergency? How do we know what to do? Where are our first aid kits and fire extinguishers kept?	Emergency Response Plan Training register First aid kits and fire extinguishers register

What is needed	Some questions to consider	Examples of documentation
The staff structure	How do we fill appointments? What role do our permanent and temporary workers have? What training do our staff need if they are in an acting role?	A training register with workers names and details of training and when they next need further training
Monitoring and Auditing	Do we carry out daily checks of our machines? How do we monitor the mine?	Prestart check sheets Workplace inspections using a check sheet Toolbox meetings Health and safety meetings
How we communicate	How do we keep our workers informed of the hazards? How do I participate as a worker in health and safety?	Health and Safety meetings and recording the meeting Minutes are displayed in the office

12.1 Hazard Management

Hazards and risks must be identified, assessed and managed in order to meet our legal obligations. Duty holders need to apply the hierarchy of controls set out in the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 (GRWM). PCBU's must apply the hierarchy for substances hazardous to health. The PCBU must try to eliminate risks so far as is reasonably practicable. If elimination is not reasonably practicable, the risk must be minimised, so far as is reasonably practicable.

The Health and Safety at Work Act refers to significant hazards and the Regulations refer to principal hazards.

- A significant hazard is a hazard that is an actual or potential cause or source.
- A principal hazard is defined in Reg 65 of the Regulations. A principal hazard is any hazard that could create a risk of multiple fatalities at a mining operation, either in a single incident or a series of recurring incidents in the case of worker health hazards.

While alluvial gold mines employing 4 workers or less are not legally required to determine principal hazards, WorkSafe highly recommends you follow the guidance given for principal hazards, where risks at your operation could result in multiple fatalities. They will either be one of ten hazards specified in the MOQO regulations, or any other hazard identified during the risk appraisal that meets the definition.

Planning involves identifying the hazards, assessing the risks and determining control measures in consultation with all relevant persons involved in the work.

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 appraisal	is a process to identify hazards at the mining operation.
Risk	is the combination of the harmful consequences, and the likelihood that it could occur. The combination of these two factors forms a risk rating in a risk assessment.
Risk assessment	is a process to assess the inherent risk of harm to workers from the identified hazards and to identify the controls required to manage that risk.

There are **four basic hazard and risk management** steps:

1. Identifying the hazards (carefully scope the area that you are looking at). Can any of these hazards be eliminated?	2. Assessing the risks from each hazard. What can happen if exposed to this hazard?	3. Developing risk controls to reduce either/both the likelihood and/or the consequence.	4. Monitoring the effectiveness of the risk controls. Regularly reviewing the risk controls so that we can take advantage of new knowledge and new technologies.
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12.1.1 Identifying the Hazards

Involve a team of workers with a range of expertise and experience, including health and safety representatives (if you have a person or person(s) with this role), in these processes.

Hazards and the resulting risks must be effectively identified. A combination of methods that are outlined below may provide the best results. This can be done using:

- Risk assessments and task and process analysis (step by step on how the job will be done);
- Walking around the work site;
- Inspections of the workplace and writing these down;
- Inspections of plant and machinery and writing these down;
- Talking with workers informally and at toolbox meetings or health and safety meetings;
- Worker health monitoring for exposure to dust or noise;
- Previous incidents, accidents and investigations, and;
- Industry guidelines / Associations and publications such as the WorkSafe Health and Safety at Opencast Mines, Alluvial Mines and Quarries guidelines.

Consider all situations and work activities which may lead to or have the potential for harm from exposure to hazards. It can be easy to overlook some hazards as they are routine hazards that we do not give a second thought to.

This can be done by:

- Checking 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.
- Looking back at your accident and ill-health records – is there a trend in the accidents that have happened or is there a new hazard that has not been managed?
- Take account of non-routine operations (e.g. maintenance, cleaning operations or changes in production cycles).
- Remember to think about long-term hazards to health (e.g. high levels of noise or exposure to harmful substances).

Hazards can be categorised in various ways:

- biological - bacteria, viruses, insects, plants, birds, animals, and humans, etc.;
- chemical - dependent on the physical, chemical and toxic properties of the chemical;
- ergonomic - repetitive movements, improper set up of workstation in the office, etc.;
- physical - radiation, magnetic fields, pressure extremes (high pressure or vacuum), noise, etc.;
- psychosocial - stress, fatigue, violence, etc.;
- safety - slipping/tripping hazards, inappropriate machine guarding, equipment malfunctions or breakdowns, kinetic energy, thermal energy, nip points.

12.1.2 Assessing the Risk from each Hazard

There are a number of categories that hazards can fit into. These categories all have potential harm, so it is important to consider how these relate to your work site. Below are examples of what potential harm could arise from the hazard.

Table 2 Examples of categorised hazards

Hazard	Example	Potential harm
Biological	Task involves drinking of untreated water or contaminated water, exposure to Legionella	Stomach upsets, unwellness, giardia, animal urine and faeces, human waste
Chemical	Tasks involving refuelling of machinery/plant, working in confined spaces, exposure to hazardous substances	Spillage, failure to identify confined space hazard, ingestion, inhalation, injection, inadequate storage and handling and decanting, exposure standards for chemicals
Ergonomic	Tasks involving sustained or awkward postures, high or sudden force, repetitive movements or vibration	Musculoskeletal disorders such as damage to joints, ligaments and muscles
Physical	Tasks involving working the trommel in noisy or dusty conditions, working in heavy machinery in noisy conditions, working in extreme weather conditions where dust is produced	Hearing damage or loss, headaches, sore eyes, eye strain
Psychosocial	Tasks involving working long hours without a shift change or repetitive use of the same machine or under the influence of drugs or alcohol	Fatigue, inattention could result in an accident, physical or psychosocial impairment, inability to make good decisions, stress
Safety	Tasks involving working around fixed/stationary plant in motion and working around trommels (land or floating) in action	Entanglement, pinch points, working around unguarded equipment in motion, loose clothing, jewellery or long hair, working alone, overloading the trommel (tip over), working around or over water (falling into the pond), uneven ground surfaces, geotechnical

12.1.3 Developing Risk Controls

Once you have identified a hazard or hazards, it is important to undertake a risk appraisal. A **risk appraisal** is where you have a process in place to identify hazards and this process is used to develop, implement and maintain your health and safety management system.

This process can be a simple document such as recording this information in the hazard register or at some sites, a hazard identification form is completed first and this information is transferred to the hazard register. This is dependent upon the size of your site. Smaller operations tend to only have a hazard register. In all cases, this register must be available to all workers and contractors at your site. Keep an up to date copy in your office or work building.

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. Again, this is dependent upon the size of your site.

A risk assessment will help you determine:

- how severe a hazard is;
- whether existing control measures are effective;
- what action you should take to control it, and;
- how urgently action needs to be taken.

A risk assessment should be carried out when:

- there is uncertainty about a hazard that may result in injury or illness;
- the work activity will involve a number of different hazards;
- new hazards are introduced and there is uncertainty over how these will interact with other hazards;
- changes at the mine site that may impact on the current risk controls;
- new workers or people are at the work site
- new plant is introduced to the work site, and;
- high risk work activities such as screen mesh changes, using explosives etc.

A risk assessment will help you to reduce either/both the likelihood and/or the consequence.

[A risk assessment](#) will help you to document and risk assess these hazards. In this template you will write down each step of the job with the hazards that you have identified. Both of these tools will set roles and responsibilities and make sure that the controls are monitored.

Each hazard must be assessed to determine the initial level of risk using a risk table, assessing the likelihood and consequence. By risk ranking twice, before controls and then again after controls are put into place, you will have a better grasp on how effective the controls will be. Discuss this as a group and don't be surprised if there is a debate about the score.



12.1.4 Controls

Once the hazard(s) is assessed, how you will control these hazards is important. This is carried out using the hierarchy of control:

Elimination – this should always be the first option; to permanently remove the sources of hazard e.g. equipment, substances or work processes

Substitution – this involves replacing the hazard or risk for one that presents a lower risk such as using a loader instead of an excavator

Isolation – means removing a person from the risk, although the hazard still exists, such as remotely controlled equipment

Engineering – means changing set-ups, buttons or guarding

Administration – means the development of processes, written procedures, training, information and supervision

Personal Protective Equipment – As a last resort, Personal Protective Equipment can be used to provide a physical barrier between the worker / person, and the risk

To further reduce the risk more controls may also need to be implemented if the rating of the hazard is still very high or the hazard cannot be easily controlled. These must be written into the Risk Register and follow the hierarchy of control to determine what the controls will be.

Most effective



Least effective

12.1.5 Monitoring the Effectiveness of the Risk Controls

Regularly review the risk controls so that we can take advantage of new knowledge and new technologies.

Monitoring of the risks and their control measures are needed to ensure they are efficient and effective. This can be done in a number of ways, including:

- Systematically reviewing the Risk Registers every 12 months or earlier if an accident happens
 - When a new piece of equipment is purchased
 - Talking with contractors / customers
 - Equipment and electrical checks
 - Regular maintenance of equipment and plant
 - Checking current and new legislation
 - Reviewing incident and investigation information
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13.1 Selecting and Implementing Controls for Alluvial Gold Mining

Managing risks is important for all work-related health and safety. There are specific identified risks associated with alluvial gold mining that require appropriate control measures to manage these risks.

The examples presented are not an exhaustive list of all measures that can be implemented to control risks – there may be other ways to control risk. Planning involves identifying the hazards, assessing the risks and determining control measures in consultation with all relevant persons involved in the work.

The information gathered should be documented. This will help assist with future planning and will clearly assign roles and responsibilities.

14.1 General Excavation Works

Before any excavation, a appraisal of ground conditions should be undertaken by a competent person to determine all factors likely to affect ground stability, and any limitations that should be imposed on excavation design. Such appraisals or assessments should be reviewed and revised where necessary when a material change has occurred in the ground conditions or the excavation methods change. For example, if water has access to material, especially if washed, this will decrease the materials strength.

Following a ground conditions appraisal, a design should be prepared, setting out measures to control ground instability. This should be documented. Where an existing design has already been proved, it may be used as the basis for new excavation design, where the ground conditions at both sites are similar.

Excavation work should be carefully planned before work starts so it can be carried out safely.

Edge protection, barriers, warning signs and other suitable controls should be placed around any water filled excavation to keep people away from hazardous zones. These controls should be moved as the excavation progresses and hazardous area changes.

There are risks to consider before excavating. There is potential for:

- a person or machine to fall into an excavation;
- a person being trapped by the collapse of an excavation;
- water entering the excavation and causing collapse or in-rush;
- fall or dislodgement of earth or rock;
- previous disturbance of the ground may make the area unstable, and;
- a person working by an excavation being exposed to an airborne contaminant.

14.1.1 Controlling Risks

The table below lists examples of potential hazards associated with excavating along with examples of control measures.

Table 3 Examples of potential hazards and examples of control measures

Examples of potential hazards	Examples of control measures
Ground collapse	<p>The depth and type of excavation is assessed before works start including identifying any historical workings, taking into account an awareness of the landform (e.g. old forestry block or old gold claim)</p> <p>Restricting access to the work site with a safety exclusion zone</p> <p>Good communication (e.g. RT's) using a staged approach with the right machine for the task</p>
Water in-rush	<p>Pumps or other dewatering systems to remove water and prevent build-up or baling out of water using machinery</p> <p>Water management includes redirection of water away from the face</p> <p>inspections and monitoring of the site</p>
Fall or dislodgement of earth or rock	<p>Do not overreach with an excavator</p> <p>Placement of the machine away from the face to create a safety exclusion zone</p> <p>Batters are appropriate to the height of the face</p> <p>Standoff distances and catch berm at the toe of the pit wall and dump where space permits</p> <p>Water management includes redirection of water away from the face</p> <p>Bunding and benching</p>
Previous disturbance of the ground	<p>Determine the nature of the ground and working environment and any historical workings before works start and communicate this to all persons</p>
Airborne contaminants	<p>Personal protective equipment (i.e. dust masks), enclosed cabs with air conditioning, keep doors and windows closed when vehicle is operational, check filters on a regular basis and replace and clean them as needed</p> <p>Monitor the weather conditions.</p> <p>Applying water to roadways and haulage roads using a water cart, use longer distances between vehicles to reduce driver dust exposure Keep workers away from areas where dust is being put into the air, so far as is reasonably practicable (e.g. where excavation is taking place).</p>

To manage the risks, it is important to consider:

- the type of excavation (shallow or deep excavation, area etc.);
- soil properties including variable soil types, stability, cohesion, presence of groundwater effect of exposure to the elements;
- the nature of the ground and working environment (trees, ponds, voids, soil profile);
- local weather conditions;
- static and dynamic loads near the excavation;
- presence of groundwater;
- management of other traffic and ground vibration;
- type of equipment to be used and methods;
- defining a safety exclusion zone and escape route;
- including the range of possible methods of carrying out the work (size of excavator, dozer etc.), and the means of entry into and exit from the excavation (over a waterway, over tree stumps), if applicable.

15.1 Excavating beneath Water

Excavation work beneath water carries additional risks because there are hidden risks in the water that are not always visible to the operator.

There are risks to consider before excavating beneath water. There is potential for:

- a person to fall into the water and drown;
- a machine to unintentionally enter the water;
- a person being trapped in a machine by the failure of a slope or bench;
- a person becoming trapped in their machine where no escape route is defined;
- limited visibility if the machine is not well maintained;
- machine failure if the machine is not fit for purpose;
- inadequate communication to cause workers to engage in work activities unsafely, and;
- a person working near to the water could be struck by a falling object.



15.1.1 Controlling Risks

The table below lists examples of potential hazards with examples of control measures.

Table 4 Examples of potential hazards and examples of control measures

Examples of potential hazards	Examples of control measures
Risk of drowning or falling into the water	Life vest, emergency procedures, communication, job planning with a defined escape route Screen cutter Good hazard management controls Seat belts are not to be worn when carrying out this activity Experienced people, trained people
Machine unintentionally entering the water	Job planning with a defined escape route Tracks should face the excavation, or be no more than a 45° angle, with track motors facing away from the face Competent experienced persons using the right machine for the job Working methods should be based on the geotechnical assessment of the material being excavated allowing for any variation of submerged materials Use of light rigs when working at night time No safety grills or bars on the front window - seat belts not used when doing this task - cabs have a glass hammer in the cab to break the glass in event of emergency
Failure/Collapse of a slope or bench	Working bench is even with an escape route The water level is even with the bench height Tracks should face the excavation, or be no more than a 45° angle, with track motors facing away from the face Awareness of the nature of the ground and any hidden hazards and physical dimensions of the working bench Move as the excavation progresses and the hazardous area changes Competent experienced persons using the right machine for the job Regular inspections are carried out
Unstable or uneven work area with no escape route defined	Working area shall be kept flat and clear of equipment or material to enable a rapid exit in the event of instability of the face
Limited visibility	Make sure windscreen is clean with windscreen water available The front edge of the bench should remain visible to the operator at all times
Machinery failure	Fit for purpose machinery Pre-start inspections and defect reporting prior to start of work Reactive and preventative maintenance Guarding in place Experienced people, trained people
Inadequate communication	Good communication between the excavator and floating plant operator to stop feed if required Audible warning device Using hand signals Experienced people, trained people
Pedestrians accessing floating platforms	Boats or walkways should be used to access floating platforms. These should be secured before accessing the platform The person accessing the platform must wear a self-inflating life preserver Under no circumstances are excavator buckets to be used to access floating platforms.

To manage the risks, it is important to consider:

- type of equipment to be used and the method to be used;
 - the nature of the ground and working environment (hidden hazards);
 - the physical dimensions of the excavation including, slope, depth, height of free faces, width of the bench, position of catch berms;
 - local weather conditions;
 - static and dynamic loads near the working bench;
 - management of other traffic and ground vibration;
 - defining an escape route;
 - how you will communicate between the excavator and floating plant operator;
 - what warning devices you will have in place;
 - how often inspections will be carried out, and;
 - what to do in the event that something is not going to plan.
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16.1 Cleaning a Pond

Cleaning a pond of silt or for other purposes carries risks. These risks are additional to general excavation risks. There is potential for:

- an excavator to undermine the bench while digging the pond where a worker could drown or fall into the water;
- an excavator could be pulled into the water when a large volume of material is excavated where a worker could drown or fall into the water;
- an excavator being operated by an inexperienced and untrained worker could undermine the pond;
- machine failure if the machine is not fit for purpose;
- inadequate communication to cause workers to engage in work activities unsafely.



16.1.1 Controlling Risks

The table below lists examples of potential hazards with examples of control measures.

Table 5 Examples of potential hazards and examples of control measures

Examples of potential hazards	Examples of control measures
Risk of drowning or falling into the water	Life vest, emergency procedures, communication, job planning, Screen cutter Good hazard management controls Seat belts are not to be worn when carrying out this activity Experienced people, trained people
Inexperienced people could undermine the pond and the excavator could be pulled into the pond	Experienced people, trained people can only undertake this work Good hazard management controls
Machinery failure	Fit for purpose machinery Pre-start inspections and defect reporting prior to start of work Experienced people, trained people Regular inspections ROPS, no safety grills or bars on the front window - seat belts not used when doing this task - cabs have a glass hammer in the cab to break the glass in event of emergency
Inadequate communication	Good communication between the mine manager and operator Audible warning device

To manage the risks, it is important to consider:

- type of equipment to be used and method to be used;
- the nature of the ground and working environment (hidden hazards);
- the physical dimensions of the pond;
- local weather conditions;
- management of other traffic;
- defining an escape route;
- what warning devices you will have in place;
- how often inspections will be carried out, and;
- what to do in the event that something is not going to plan.



17.1 Plant and Equipment

All sites use plant in their day to day workplace activities. If the hazards associated with machinery or plant are not safely managed, then serious injury and/or death can occur. Plant includes machinery, equipment, appliances, containers, implements and tools and any components or anything fitted or connected to those things. Plant also includes items as diverse as lifts, cranes, computers, machinery, conveyors, forklifts, vehicles, power tools and mobile plant.

There is potential for:

- falling objects or material to injure someone;
- a person to become entangled or trapped in a machine;
- a blockage being cleared by an inexperienced or untrained worker could result in an accident or injury;
- maintenance work being carried out by an inexperienced or untrained worker;
- collision between machinery and other vehicles;
- a person to fall from height when working on a machine;
- a person being exposed to electrical overhead hazards;
- a person being exposed to electrical hazards with mobile or fixed plant;
- a person to slip, trip or fall when walking or moving around the machine on unstable ground;
- new, leased or hired machinery to be introduced to the site that is unfamiliar and introduces new hazards to the site and to workers, and;
- working alone or remotely.

17.1.1 Controlling Risks

The table below lists examples of potential hazards with examples of control measures.

Table 6 Examples of potential hazards and examples of control measures

Examples of potential hazards	Examples of control measures
Clearing vegetation – trees could fall onto people or machinery	<p>During times of extreme weather, vegetation clearing is suspended</p> <p>Restricted access work area - traffic cones, signage or bunds used to delineate area if necessary</p> <p>Communications of clearing work is discussed through pre-start or toolbox meetings</p> <p>Indicators such as old spoil heaps, tailings and old records (local knowledge) etc. are identified when completing site assessment prior to commencing clearing operations</p> <p>Supervisor monitors work quality and area housekeeping</p> <p>Pre-start inspections and defect reporting prior to start of work</p> <p>RT communications between excavator operator and other personnel</p> <p>No pedestrians allowed within the operating range of equipment (swing arc) without first establishing positive communications</p>
Falling objects or material	<p>Visitors are kept away from the site operations</p> <p>Experienced workers, trained people</p> <p>On the trommel, skirting is installed around the hopper to protect personnel on the floating platform</p> <p>Exclusion zone under the conveyor or hopper</p> <p>Personal Protective Equipment is worn and replaced when worn or torn</p>
Entanglement or trapped by machinery	<p>Guarding is in place, pre-start inspections and defect reporting prior to start of work</p> <p>Experienced workers, trained workers</p> <p>Personal Protective Equipment is worn and replaced when worn or torn</p> <p>Emergency procedures are in place</p> <p>Manage fatigue including hours of works and carrying out repetitive tasks</p>
Potential blockages being cleared by inexperienced or untrained workers	<p>Isolation of plant before maintenance, cleaning or inspections</p> <p>Experienced workers, trained workers</p> <p>Safety exclusion zone with good housekeeping</p> <p>Emergency procedures</p> <p>Inspections</p> <p>Specific training and assessment of their training and ongoing review of their training needs</p>
Maintenance work to machinery being cleared by inexperienced or untrained workers	<p>Safe operating procedures, isolation procedures</p> <p>Prestart warning systems, emergency stops, emergency procedures</p> <p>Risk assessments</p> <p>Inspections are carried out</p> <p>Locking pins or locking bars are used</p> <p>Certified chains are used for lifting work</p> <p>Follow equipment and operational manufacturer's instructions/manuals</p> <p>High pressure hydraulic hoses manufactured by "hose doctor" contractor</p>

Uncontrolled movement of vehicles	<p>Call up areas, two-way radios, site road rule</p> <p>Fit for purpose machinery</p> <p>Well maintained roads, speed limits, good secure site taking into consideration locked gates, signage and fencing</p> <p>No pedestrians allowed within the operating range of equipment (swing arc) without first establishing positive communications</p> <p>Inspections are carried out</p>
Collision between machinery and vehicles	<p>Separation of light and heavy vehicles where possible and the work area and road design are planned well - such as separation from workshop(s) and other buildings</p> <p>Good line of sight</p> <p>Rotation of tasks between operators to reduce fatigue</p>
Falling from heights	<p>Good lifting procedures with job planning</p> <p>Unstable surfaces are covered to provide a good working surface</p> <p>Safe and adequate access is available</p> <p>Personal protective equipment is provided and worn</p>
Electrical hazards such as overhead lines or services	<p>Maintain a safe distance from site operations with good positioning of stockpiles and plant</p> <p>Use site operational management plans and source location plans if unknown or unsure of their location</p>
Electrical hazards around mobile plant or fixed plant	<p>Annual test and tag</p> <p>Cables are positioned away from mobile plant wherever possible, inspection of equipment prior to use</p> <p>Registered electricians used for electrical works</p> <p>Safe operating procedures, isolation procedures</p> <p>Experienced workers, trained workers</p>
Persons walking around the site could slip/trip/fall on unstable ground	<p>Good housekeeping, put tools away when not in use</p> <p>Plan the job with operators</p> <p>Personal protective equipment is provided and worn</p>
New machinery or hire or leased machinery	<p>Training on new machinery is obtained, operation manuals are available and accessible, integration with other machines is considered before purchase</p> <p>Good traffic management controls</p> <p>Commission of new machinery by supplier to give training to people with appropriate documentation in place</p> <p>If you have hired or leased machinery, you should also consult the person who owns the plant about potential hazards, because you both have responsibility for ensuring, so far as is reasonably practicable, the plant is safe and without risk to health and safety</p> <p>Where vehicles are hired, determine who is responsible for maintenance and inspection during the hire period and make this clear to all parties</p>
Working remotely or alone could result in a person being unable to self-evacuate, and unable to self-rescue from a fall into water	<p>No working alone on the mine site or around water (always two people on the site over the day)</p> <p>Experienced people with local knowledge</p> <p>Good communication system RT or cell phone or alternative</p>

To manage the risks, it is important to consider:

- type of equipment to be used and method to be used;
- the equipment is used in accordance with the original equipment manufacturers requirements;
- all plant is isolated before commencing any maintenance works;
- all workers are trained, and regularly retrained, in site isolation procedures;
- the nature of the ground and working environment (hidden hazards);
- management of other traffic;
- ensuring good housekeeping and that safety exclusion zones are in place;
- what warning devices you will have in place;
- how often inspections will be carried out including pre-starts and workplace inspections;
- how lone workers will be managed or those working remotely, and;
- what to do in the event that something is not going to plan.



18.1 Hazards around Fuel Tanks or Fuel Trailers

Static electricity can become a huge threat especially when working on or around fuelling operations. If there is a discharge of static electricity while fuel is being dispensed, there is possibility of an explosion or fire.

There is potential for:

- static electricity causing a fire, explosion and/or injury to a person;
- an injury to a person carrying out hot-works if they are inexperienced or an untrained worker;
- exposure to diesel particulate which is a carcinogenic, and;
- an environmental event if there is an unintentional fuel spill onto land or water.

18.1.1 Controlling Risks

The table below lists examples of potential hazards with examples of control measures.

Table 7 Examples of potential hazards and examples of control measures

Examples of potential hazards	Examples of control measures
Static electricity	<p>Follow the Hazardous Substances Regulations</p> <p>Put containers on level ground before filling (never on a tailgate or in the tray of the vehicle)</p> <p>Use the correct approved containers to store fuel in</p> <p>Emergency procedures are in place</p> <p>When refuelling with petrol, must ensure motor is off and cool to prevent fires</p> <p>No smoking when refuelling</p>
Hot work activities	<p>Hot work permits, make sure the tank is isolated or battery leads removed</p> <p>Fire extinguishers located handy to the works</p> <p>Flashback arrestors are fitted to gas welding equipment, personal protective is supplied and worn</p> <p>Experienced workers, trained workers to carry out hot works</p>
Chemical exposure with diesel particulate matter	<p>Wear the right personal protective equipment</p> <p>Refuel in the open air</p> <p>Experienced workers, trained workers</p>
Environmental damage	<p>Auto stop on fuel nozzles</p> <p>Use a mat when refilling, wear the right personal protective equipment</p> <p>People are trained to know what to do if there is a spill</p> <p>Follow the resource consent conditions</p> <p>Spill kits are available and fully stocked, fire extinguishers, emergency plan, bunded refuelling areas</p> <p>Mobile plant goes to the fuel bay (where available)</p> <p>Excavators are fuelled in pit when no other HV equipment is operating</p>

To manage the risks, it is important to consider:

- where refuelling will take place;
- all operators are trained in the use of fuel;
- an emergency spill procedure is in place to ensure that any waterways and other infrastructure is protected;
- how often inspections will be carried out including pre-starts and workplace inspections, and;
- what to do in the event that something is not going to plan.





19.1 Traffic Management

Even if the site is small or has only a limited number of people working on site, communicating how you are managing traffic hazards and risks in the work site is necessary. The size of your traffic management plan will be proportional to the size of your site and how many people and vehicles are present.

There are risks to consider when working around traffic. There is potential for:

- a person being crushed by a vehicle;
- vehicles rolling over or going off edges;
- ground failure onto or below vehicles;
- uncontrolled movement of vehicles;
- collision between vehicles;
- vehicles contacting overhead power lines, or other structures;
- tyres exploding on vehicles, and;
- road conditions may change quickly or over time due to conditions such as weather requiring a change in your traffic management plan.

19.1.1 Controlling Risks

The table below lists examples of potential hazards with examples of control measures.

Table 8 Examples of potential hazards and examples of control measures

Examples of potential hazards	Examples of control measures
A person being crushed by a vehicle	<p>Pedestrian routes and intersections should be clearly marked, unobstructed and well maintained</p> <p>Use signs to give advance warning to pedestrians and plant operators and to indicate who must give way</p>
Vehicles rolling over or going off edges	<p>Use windrows/bunds and maintain them</p> <p>Inspections of the site</p> <p>Inductions</p> <p>Wear seatbelts</p> <p>Make sure vehicles are not overloaded</p> <p>Observe the speed limit(s)</p>

Ground failure onto or below vehicles	Daily mining inspections Bunding, edge protection and ramps
Uncontrolled movement of vehicles	Two-way radios Site road rules with speed limits, signage etc. Fit for purpose machinery Pre-start inspections and defect reporting prior to start of work Well maintained roads Inspections are carried out Visitors are escorted on site at all times
Collision between vehicles	Separation of light and heavy vehicles where possible Work area and road design is planned with a good line of sight Rotation of tasks between operators to reduce fatigue
Electrocution via contact with live wires or underground cables	Qualified contract electrician is used Reporting damage when noticed Signage is clear and visible when used for overhead lines Plan of where cables are in the mine plan Check activity under overhead power lines Prevent contact by not carrying out work where there is a risk of contact or close approach to wires, rerouting roads, underground or divert lines. If this cannot be done, use signage, flags, do not work or approach within 4 metres unless you have approval from the line's owner Workers are trained, inducted to the work site, truck drivers and other people are inducted Emergency response plan
Tyres exploding on vehicles	Pre-start inspections and defect reporting prior to start of work Ensure vehicles are not overloaded No hot works near tyres or rims Correct inflation of tyres. Note: Must be done when tyres are cold and by an appropriately trained person using approved safety precautions Keep roads in good condition with inspections Train workers in pre-start checks, develop a procedure for safety critical defects such as how deep does the cut in a tyre need to be before they should be replaced Wearing personal protective equipment such as eye protection and overalls
Road surface could become slippery in wet conditions or dusty in dry conditions	Pre-start inspections and defect reporting prior to start of work Ensure vehicles are not overloaded Keep speed down and drive to the conditions

To manage the risks, it is important to consider:

- the design and layout of the site;
- define a point of entry and exit;
- the plan needs to be proportionate to your system and size of the site;
- gates and any fencing need to be secure;
- how you inform people of the traffic management plan;
- what to do in an emergency;
- where signs should be placed as well as any barriers (permanent and temporary);
- how will contractors and visitors be managed on site, and;
- who will carry out the inspection of the plan to make sure it is working effectively.



20.1 Excavators Working on Pads

Working pads are established as the site is developed.

There are risks to consider when constructing a suitable pad for the excavator to sit upon. There is potential for:

- vehicles rolling over or going off edges;
- ground failure onto or below vehicles;
- falling into an excavation;
- collision between vehicles in the area;
- undermining the pad, and;
- poor construction processes for the pad could cause it to fail.

20.1.1 Controlling Risks

The table below lists examples of potential hazards associated with excavators working on pads, including examples of control measures.

Table 9 Examples of potential hazards and examples of control measures

Examples of potential hazards	Examples of control measures
Vehicles rolling over or going off edges	<p>Experienced workers, trained workers</p> <p>Keep doors shut</p> <p>Use ramps</p> <p>Inspections are carried out</p> <p>Inductions of new workers</p> <p>Good effective communication systems</p> <p>Wear a seat belt</p>
Ground failure onto or below vehicles	<p>Inspections are carried out</p> <p>Use the right material for the job</p> <p>Experienced workers, trained workers</p>
Falling into an excavation	<p>Visitors are kept away from the site operations</p> <p>Experienced workers, trained people</p> <p>On the trommel, skirting is installed around the hopper to protect personnel on the floating platform</p> <p>Exclusion zone under the conveyor or hopper</p> <p>Personal protective equipment is worn and replaced when worn or torn</p>
Collision between vehicles in the area	<p>Two-way radios, site road rules,</p> <p>Pre-start inspections and defect reporting prior to start of work</p> <p>Well maintained roads</p> <p>Inspections are carried out</p> <p>Good effective communication systems</p> <p>Audible system</p>
Undermining the pad	<p>Experienced workers, trained workers</p> <p>Pre-start inspections and defect reporting prior to start of work</p> <p>Job planning and communication</p> <p>Emergency response plan</p>
The pad could fail if not constructed correctly causing injury to people	<p>Incompetent material is separated</p> <p>Experienced workers, trained workers</p> <p>Safety exclusion zone</p>

To manage the risks, it is important to consider:

- the design and layout of the site;
- what to do in an emergency, and;
- who will carry out the inspection of the plan to make sure it is working effectively.



21.1 Tips and Dumps

The establishment of a tip head or dump is an activity carried out frequently as the site is developed.

There are risks to consider when developing an area as a tip head or dump. There is potential for:

- vehicles rolling over or going off edges due to inadequate bunding or windrows;
- wet or incompetent bunds;
- material being difficult to manage at the tip heads that could cause a slippery or dry surface;
- poor compaction of the dump area;
- poor maintenance of the dump and equipment could cause failure;
- poor management of vehicle movements could result in a collision or injury;
- tip head slumping could cause vehicles to roll over or tip over the edge;
- excessive surface water can cause a slippery surface;
- working in the hours of darkness or with inadequate lighting can reduce visibility, and;
- poor material segregation or poor dumping sequence could result in a vehicle collision.

21.1.1 Controlling Risks

The table below lists examples of potential hazards associated with operating tips and dump heads with examples of control measures.

Table 10 Examples of potential hazards and examples of control measures

Examples of potential hazards	Examples of control measures
Vehicles could roll over or go off the edge of the tip head	<p>Good windrows and bunding in place</p> <p>Bunding is not used as a stop and truck trays are lowered prior to moving off to ensure that the tray does not take the top off the bund</p> <p>Bunding is established to at least half the height of the wheel of the largest equipment used</p> <p>Experienced workers, trained workers</p>

Wet or incompetent material may fail	<p>Bunds established using competent material</p> <p>Alluvial operations have loose gravel pit dump construction</p> <p>Compaction of the dump is achieved by trucks operating on the dump</p> <p>Dumps are constructed under the guidance of the Mine Manager (best practice for industry)</p>
Poor compaction of the dump area	<p>Dump surface is kept level and stable and continuously checked by dump truck operators when accessing the dump area</p> <p>Safe system of work and procedures to ensure the task can be carried out safely</p>
Poor maintenance of the dump or equipment could cause failure	<p>Speed restrictions on the dump</p> <p>One truck tipping at a time on the tip head</p> <p>Design access roads and other vehicle operating areas to acceptable engineering standards for the number and type of vehicles requiring access</p>
Collision between vehicles in the area	<p>Two-way radios, site road rules</p> <p>Pre-start inspections and defect reporting prior to start of work</p> <p>Well maintained roads</p> <p>Inspections are carried out</p> <p>Good effective communication systems</p> <p>Audible system</p>
Tip head slumping	<p>Option to dump short and push if required</p> <p>Workplace inspections of the tip head, amend plans as the site changes</p> <p>Consider the quantity, type, and rehabilitation of overburden</p>
Poor surface drainage	<p>Tip head is angled up to assist with drainage from the tip head</p>
Inadequate lighting/visibility	<p>Dumping occurs in daylight hour</p>
Poor material segregation or dumping sequence	<p>Experienced workers, trained workers</p> <p>Pre-start inspections and defect reporting prior to start of work</p> <p>Fit for purpose machinery</p> <p>Job planning, communication, emergency response plan</p> <p>Traffic cones and other delineation devices to restrict access to areas, two-way radios, site road rules</p> <p>Workplace inspections</p> <p>Good effective communication systems</p> <p>Audible system</p> <p>Restricted lift heights</p> <p>Seatbelts must be worn when operating equipment</p> <p>Roll over protection (ROPs) on trucks</p>

To manage the risks, it is important to consider:

- the design and layout of the tip or dump head;
- an experienced and competent person should design the tip or dump head;
- take into account other features and infrastructure at the site such as culverts, stockpiles, haulage roads, water bodies etc;
- consider any water drainage features that are needed for the life of the tip or dump head;
- who will monitor the placement of the material and the type of material being deposited;
- what to do in an emergency, and;
- who will carry out the inspection of the plan to make sure it is working effectively.



22.1 Worker Health

Managing the health and wellbeing of your workers is an important part of being a good employer. Good worker health will increase productivity, reduce sick leave, improve staff morale, and loyalty to the company.

To determine whether there are principal hazards that may have long-term effects on mine workers' health and require a Worker Health Control Plan, it is necessary to consider situations workers may be exposed to. A risk assessment would assist with this assessment of what hazards are present and controls that need to apply to adequately manage these hazards.

Worker health involves both physical and mental health. There is potential for:

- improper use of drugs;
- alcohol abuse;
- fatigue from long hours including night shift;
- exposure to biological hazards;
- exposure to hazardous substances;
- manual handling;
- physical and psychological impairment;
- vibration;
- exposure to noise;
- inadequate emergency management;
- exposure to extreme temperature (hot and cold), and;
- working alone.

22.1.1 Controlling Risks

The table below lists examples of potential hazards associated with workers health with examples of control measures. The list is not exhaustive and other techniques may be applicable.

Table 11 Examples of potential hazards and examples of control measures

Examples of potential hazards	Examples of control measures
Drug and alcohol abuse	Employment contracts include a clause which allows for testing for Drugs and Alcohol Persons who take prescribed medication must make this known to the employer
Hours of work (including travel time to and from sites, and shift work), sleep disruption, sleep deprivation and individual workload can reduce a person's capabilities that may impair their strength, reaction time, coordination, decision making or balance	Careful planning of tasks and their scheduling Working hours should be agreed which provide all workers adequate opportunity to manage fatigue Regular rest breaks and meal breaks Encourage good nightly sleep Share driver responsibilities

Legionnaire's disease (legionellosis) is a type of pneumonia caused by the legionella bacteria which may be found in water systems	<p>Appropriate control methods should focus on limiting the conditions that encourage growth</p> <p>Apply simple, low cost measures to reduce potential for exposure can be significantly reduced and appropriately controlled</p>
Hazardous substances (i.e. dust, silica dust, diesel particulates, welding fumes, chemicals and so on)	<p>Risk assessments</p> <p>If the degree of hazard or risk is not clear, the advice of an occupational health, occupational hygiene or occupational medical specialist should be sought</p> <p>Safety data sheets must be accessible</p> <p>Good competent workers</p> <p>Personal protective equipment</p>
Manual handling tasks	<p>Assess the manual handling tasks undertaken and determine whether they are necessary</p> <p>Use suitable lifting equipment</p> <p>Make the task as easy as possible for everyone involved and reduce the time people are required to carry out the task</p>
Physical and psychological impairment (violence/bullying)	<p>Keep the workplace healthy, build morale, identify and deal with stressors, and talk with workers</p>
Vibration from tools or equipment being used	<p>Pre-start inspections and defect reporting prior to start of work</p> <p>Job planning and communication to avoid the need for high manual effort to grip, push or pull equipment</p> <p>Personal protective equipment is worn (gloves)</p>
Noise can cause hearing loss	<p>Use low noise machinery</p> <p>Vibration isolation in vehicle cabs</p> <p>Using exhaust silencers</p> <p>Using enclosures around equipment such as on vehicle engines</p> <p>Fit for purpose equipment and plant (pre-starts)</p>
Inadequate emergency management	<p>Emergency Response Plan in place</p> <p>All workers are trained in emergency management</p> <p>All workers have first aid training</p>
Exposure to high temperatures or cool temperatures	<p>Personal protective equipment that is suitable for the climate</p> <p>Risk assessments</p> <p>If the degree of hazard or risk is not clear, the advice of an occupational health, occupational hygiene or occupational medical specialist should be sought</p>
Working remote or alone	<p>No working alone on the mine site or around water (always two people on the site over the day)</p> <p>Experienced people with local knowledge</p> <p>Good communication system RT or cell phone or alternative</p>

To manage the risks, it is important to consider:

- whether a health monitoring programme is required;
- whether exposure monitoring is necessary;
- how workers report a health concern and how this is managed with confidence;
- how personal protective equipment is provided and replaced, and;
- who will carry out the review of the drug and alcohol policy and implementation and review of the policy.



23.1 Repairs and Maintenance

23.1.1 Lock out and Tag out Procedure or “Isolation” Procedure

Before you carry out maintenance works to your machines, it is important to know how to isolate the energy and if you are not sure, check the original equipment manufacturers or suppliers’ instructions. This information can be found in the operation manual for the machine. Releasing stored energy is different to isolating a machine so make sure you know the difference.

Sometimes when you need to carry out non-routine maintenance, guards or safety features need to be removed. This is where you must have an alternative method to protect workers and a lock out and tag out system will protect workers from the increased risk of injury or exposure. This is often known as an isolation procedure.

If you do not have a lock out process to follow, develop a safe operating procedure for isolation as this will ensure you and your workers are doing the task safely and everyone will know their role in the work.

Standard Operating Procedure(s) must:

- be developed using a risk assessment;
- involve workers;
- details the steps to keep workers safe;
- reflect the way the job is actually done; be easy and practical to follow, and;
- be kept up to date.

To manage the risks, it is important to consider:

- who will be doing the work;
- what work is to be done;
- what hazards are visible now and any new hazards that may be introduced;
- how the work is to be done;
- what the emergency response plan is, and;
- how will the works be communicated to all workers?



23.1.2 Developing a Standard Operating Procedure

The table below lists examples of what is needed in a standard operating procedure with some questions to consider when developing the procedure.

Table 12 Examples of content of the standard operating procedures

What is needed	Some questions to consider
Who will be doing the work?	Is the person experienced? How do I check they are experienced? Who is responsible for our repair works? How will they be supervised?
What is the work that is to be carried out?	Will we use a risk assessment approach? Who will be involved in this risk assessment?
What are the hazards?	If new hazards are found, how do we communicate these? What specific safe work procedures and permits are needed such as isolation or lifting procedures? What if we find a new hazard once the job is started?
How is the work to be done?	How will safe access be maintained? How will we lift bulking materials or items? How will spills be controlled? How will we keep people away from the job site that are not involved in the work? Where will we store the old materials or tools? What is needed to properly clean up after the job? What start up precautions are needed, such as guards in place and all controls working properly? What other safety things do we need to consider?
Emergency Response Plan	Is our emergency response plan current? Do all people know the emergency response procedure? Do we need to induct any contractors or other persons to our emergency response plan?
How will the works be communicated?	Will we have a toolbox meeting? How will plant and machinery be made safe before and during the works? Do we need a follow up meeting after the work?

23.1.3 Working with Electricity

Mobile and relocatable equipment at alluvial mines must be assessed yearly against AS/NZS 3007 by a qualified mining electrical inspector under the Electricity (Safety) Regulations 2010. Most sites will engage a contractor for this work, so it is important that the electrician you use to perform electrical work is familiar with the Electricity (Safety) Regulations 2010.

They must be familiar with these Regulations and the requirement for them to certify all work they perform. Make sure all electricians are familiar with this Standard AS/NZS 3007:2013 Electrical Equipment in Mines and Quarries – Surface installations and associated processing plant.

To manage the risks, it is important to consider:

- that machinery must be properly grounded before use and all connections, switches and cables must conform to the Electricity (Safety) Regulations 2010;
- a register of your leads so that you can inspect your leads and make sure the tags have been signed by the electrician. Replace any damaged or fraying leads;
- using Residual Current Devices (RCD's);
- electrical substations should be kept clean and not used as stores and must be kept secure;
- wear personal protection equipment and make sure you know what is appropriate to wear (it will be in the manufactures specifications), and;
- treat batteries with caution.



24.1 Workplace Inspections

When conducting Workplace inspections, you should use a checklist to help identify hazards. Using the checklist and looking at all areas of the site is the best way to go about doing an inspection. Once hazards are identified, you will need to put controls in place to ensure workers are not exposed to the hazard.

24.1.1 Carrying out a Workplace Inspection

Anybody can do a workplace inspection. Ideally though, an inspection would involve an experienced worker from the area and at least one of the team should know the processes and technical information. The basic components that make up an inspection system are detailed below.

Table 13 Examples of what is needed in an inspection check sheet with examples of documentation

What is needed	Some questions to consider	Examples of documentation
Planned pre-start checks of all plant and vehicles	Daily pre-start checks before works start Do we want to use a paper-based check sheet or an application on the phone/tablet?	Pre-start books either using a paper-based system or an application on a phone or tablet
Planned mine checks of plant (fixed and mobile), vehicles, buildings, yards and operations	Daily checks of the site are needed Do we want to use a paper-based system or application on the phone/tablet? Who will do these checks? What do we do if something is not right? Where will the information be stored?	Workplace inspection check sheet Daily and weekly checks Using either a paper-based system or an application on a phone or tablet
Unplanned Checks	What if something outside of the checks happens such as a new hazard or a new piece of plant is introduced during the day? What if we have a breakdown or fault with our machinery? How do we document this?	Talking to workers Toolbox meetings Update documentation Using either a paper-based system or an application on a phone or tablet

25.1 Amenities and Worker Health

The size, location and nature of the workplace will vary in alluvial gold mining. Workplaces must be healthy and safe, so far as is reasonably practicable. You must provide suitable and sufficient facilities to ensure the health and safety of everyone at the site. Facilities are those that are necessary for the well-being of your workers, such as washing, toilet, rest and changing facilities, and somewhere clean to eat and drink during breaks.

Some sites are of a more permanent nature, with a workshop and associated buildings and infrastructure, and some sites will be of a temporary nature such as the use of a relocatable temporary building or open container or similar type building or structure. These temporary sites can be challenging and difficult to manage.

Regardless of the nature of your site, facilities must be sufficient to meet the needs of your workforce and take into account the:

- size, location and nature of your workplace
- number and composition of your workers
- nature of the work being carried out and workplace hazards.

PCBUs must ensure, so far as is reasonably practicable, adequate facilities are provided for workers at a workplace.

Facilities include:

- toilets
- drinking water
- hand-washing facilities
- eating and break facilities
- facilities for unwell workers to rest – if it is not reasonable for workers to leave the workplace if they become unwell.

Some workplaces will have additional facilities to consider and this does also apply to temporary activities.

Table 14 Facilities required and when you need to consider these facilities at your work site

Facility	When to consider
Showers	If a worker is doing work where they may need to wash their body
Changing rooms	If a worker's clothing becomes contaminated or wet
Lockers	If workers bring clothing to work that is not part of the work clothing
Seating	If it is reasonable for workers to perform work while seated, or rest at intervals while working
Floor drainage	If workers could become wet from a wet floor
Target ventilation or air extraction	If the worker performs work with airborne contaminants

25.1.1 Temporary Workplace

As a temporary workplace, facilities can be challenging, and this can apply to a significant number of alluvial gold mining work sites.

Table 15 Temporary Workplace(s) facilities with examples to consider

Facility	When to consider
Toilets	<p>Chemical toilets</p> <p>If access to nearby public or other organised facilities (e.g. at sport grounds) could be obtained or access to client facilities (if possible) could be obtained</p> <p>Toilets must be kept clean and tidy and be convenient to workers.</p>
Drinking water	<p>An adequate supply of clean drinking water⁷ must be readily available, and should be clearly labelled as drinking water</p> <p>A common drinking container should not be used</p> <p>Containers for drinking water should be kept clean and protected from contamination.</p>
Hand washing facilities	<p>Cold water, cleansing agents and suitable hand drying facilities must be provided at all work sites.</p> <p>Where chemicals are being handled, mixed or applied, showers or suitable cleaning agents may be needed.</p> <p>Additional emergency showers may also be required (refer to the safety data sheet).</p>
Eating and break facilities	<p>You must provide facilities for workers to have meals and rest periods in reasonable comfort and sheltered from the weather.</p> <p>Any facility used for shelter and meal purposes must not be used for the storage of tools, materials or petroleum products.</p> <p>Suitable rubbish disposing facilities should also be available.</p>
Facilities for unwell workers to rest	<p>Rest facilities, or if necessary, transport to home or medical assistance for employees who become ill at the place of work must be provided.</p>

26.1 Security

It is good practice to divert public out of the way of mines or quarries but where it is not possible, precautions should be implemented, based on a risk assessment of the route and the area around the site. The precautions should be reviewed regularly and will form part of your workplace inspections.

Table 16 Security measures with examples to consider

Security measures	Examples to consider
Access to site	<p>Controlled access to the site with a gate or barrier arms</p> <p>Worker-controlled areas such as a weighbridge may apply at larger sites</p> <p>Signage to alert people to stop before continuing into the site</p> <p>Escort visitors and contractors on site</p> <p>Inductions with contractors</p> <p>RT communications between workers</p> <p>Signage on the gate to warn site is hazardous and no entry without permission</p>
Barriers/Security	<p>Where risk of public access is low, hedges, trenches and mounds may be enough</p> <p>In areas where there is evidence of persistent trespassing which places them at significant risk, fences and barriers may be required</p> <p>Gates (lockable where required)</p> <p>Security cameras</p>
Signage	<p>Suitable signs warning people of the possible hazards at the site should be erected at entry points and, where necessary, along boundaries</p> <p>Any signs should be maintained in a legible condition.</p>



27.1 Emergency Management

Potential emergency situations need to be identified and emergency plans prepared including 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 types of emergencies to plan for may include:

- fire, explosion;
- medical emergency;
- rescues;
- incidents with hazardous chemicals;
- bomb threats, armed confrontations, and;
- natural disasters.

For the plan to be effective, it should be kept as **simple as possible, and proportionate to the size and nature** of the operation. If the work is low risk, emergency plans don't need to be long or complicated. In higher risk, larger operations and operations that carry principal hazards will require more complex plans, more trained personnel and more on-site equipment than small operations or lone workers.

Regardless of the size of the plan or the operation, the actions for workers to take in an emergency should be accessible and easy to follow. [Click here for template.](#)

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. The basic components that make up an emergency response plan are detailed below.

Table 17 Examples of what is needed in the emergency response plan (ERP) with examples of requirements

What is needed in the plan	Some questions to consider	Examples
Site location details	Where is the site located? Is the site easy to find or complicated such as a farmer's property or forestry block? Do we need to provide a map in the plan?	GPS coordinates, nearest medical centre, site address and site phone numbers including an alternative phone number if the principal phone is not working
Emergency contact details	Has someone been made responsible for specific actions in an emergency? How do they know what to do?	List the key personnel who have specific duties in the emergency response plan Fire wardens and first aid persons, company details are listed in the emergency response plan and is kept up to date Training and practice drills
Emergency Service details, and other important phone numbers	Contact phone numbers of emergency services and other important phone numbers are noted in the ERP How is the information displayed?	Fire, Police, Ambulance Poison Centre, Regional Council, WorkSafe New Zealand, business contact phone numbers are provided Information is displayed in the office or work building A nominated person keeps the information up to date

What is needed in the plan	Some questions to consider	Examples
Emergency Response Activation	<p>How is the emergency activated?</p> <p>Is the type of activation suitable for our site?</p> <p>Can people hear the activation easily?</p>	<p>Mechanism, for example a siren or bell alarm for alerting staff of an emergency.</p> <p>Or, by voice saying Emergency, Emergency, Emergency.</p> <p>Or, noise - a manually activated horn</p> <p>The test is regularly tested to ensure its effectiveness</p>
Evacuation procedure	<p>Have all emergencies been identified?</p> <p>Does the procedure allow for a quick and safe evacuation and include help with hearing, vision or mobility impaired people?</p> <p>How do we account for unaccounted people?</p> <p>Do lone workers know what to do?</p> <p>How do we secure the scene?</p>	<p>Types of emergencies that could happen are written down into the plan such as fire, serious accident, electrocution etc.</p> <p>Assembly point signage is visible, clear and easy to read</p> <p>The assembly point is easy to access</p> <p>Site sign in and out register or phone contact</p>
Map of the Site	<p>Where is the fire protection and first aid equipment kept?</p> <p>Do we have buildings to include in the plan?</p>	<p>Site plan shows the location of fire protection equipment, emergency exits and assembly points, emergency phones</p> <p>All exits, corridors and aisles readily accessible and kept clear of obstructions, buildings may require illuminated exit signs</p>
First Aiders	Who are the first aiders on site?	Trained first aiders with suitable first aid facilities such as first aid kits
Chemical spill	What do we do if a spill occurs?	Spill kits, follow consent rules or local council rules, trained people
Who sounds the all clear?	Is there a person who will release the scene?	WorkSafe New Zealand or the Police if a notifiable event
NOK (next of kin) and family contact	Who is the most senior person to do this?	Mine Manager or media liaison person
Advising neighbouring businesses about emergencies	Do we have a list of the neighbours and their contact phone numbers?	Up to date list of neighbouring property owners and their phone details
Post incident follow up	<p>Notifying the regulator</p> <p>Organising trauma counselling</p> <p>Evidence gathering and accident investigation</p>	<p>WorkSafe New Zealand</p> <p>Counselling services</p> <p>Documentation</p>



27.1.1 Small Operations and Lone Workers

Small operations and lone workers/operators have different needs to larger operations as there are not enough workers on site to manage an emergency in the same manner as larger operations. Taking the following actions could be sufficient:

- notifying emergency services of location and entry point to site
- providing GPS coordinates to emergency services and New Zealand Mines Rescue Service
- providing adequate means of communication
- maintaining up to date first aid certificates and providing adequate first aid material including bandages, splints, blankets and cage stretcher
- setting out a suitable place to land a helicopter
- providing a list of essential phone numbers to request assistance.

27.1.2 Training our Workers

Training helps people share knowledge and develop skills and is an important part of managing risks as it ensures control measures are properly used and maintained. All workers should know who is responsible for activating and coordinating emergency procedures and what they must do to keep themselves and others safe in an emergency.

Table 18 Examples of how we will inform our workers of the ERP with examples of requirements

What is needed in the plan	Some questions to consider	Examples of how we can do this
Information, training and instruction for workers	<p>How do our workers know what to do?</p> <p>Who is responsible for activating and coordinating the emergency procedures?</p> <p>What are the views of our workers?</p>	<p>Testing of the plan, training, first aid training, meetings,</p> <p>Getting feedback from our workers</p> <p>Ongoing training</p>

271.3 Testing and Review of the Plan

Testing can be a desktop exercise (e.g. sit down at a toolbox meeting, think of a scenario eg: fire, earthquake etc, and work through the plan), or perform a mock emergency such as a spill and test how well the plan works. If there are other businesses or undertakings that occupy the same workplace, testing could be coordinated. Following any testing, a review should be conducted with the relevant people in the workplace to identify areas for improvement or where the plan needs to be updated.

Table 19 Examples of how you can test the plan

What is needed in the plan	Some questions to consider	Examples
Testing of the plan	How many drills will we carry out? Did the drill go to plan?	3 monthly drills, documented in the office, update the plan (see below)
Review of the plan	Are there any work activities or physical workplace activities that have changed? Have we had an accident? Any new hazards or risks identified? Do we have new staff or have staff left? Are the contact details current?	Review the plan to make sure it is current annually (at a minimum) Review the plan “after” an accident A new piece of plant may mean the ERP will change Any changes need to be communicated with all workers and always consider their feedback ERP updated in the office

ABC Alluvial Gold Mine **Health and Safety Management Plan**

Health and Safety Policy

(Safety Policy can be laminated and displayed at the site)

We will provide a healthy and safe place for all persons on site.

We will take all reasonable actions to prevent illness and injury to workers by:

- Providing safe methods of work or procedures, and
- Training workers and provide supervision and enforcement of safe work procedures, and
- Providing fit-for-purpose, well maintained plant and equipment.

We will consult and provide opportunities for worker participation.

We will ensure that everyone at our mine is aware of their responsibility to contribute to a healthy and safe workplace.

Signed (Mine Operator): _____

Signed (Mine Workers): _____

Date: _____

Responsibilities

These are the responsibilities that a mine operator has under the legislation as the appointed Manager.

Mine Manager/Owner

- Ensure, as far as is reasonably practicable, the health and safety of all workers
- Develop, document, implement, and maintain a health and safety management plan that enables compliance with the Health and Safety at Work Act 2015 (HSWA) and the Health and Safety at Work (Mining and Quarrying Operations) Regulations 2016 (HSWR)
- Identify all hazards and ensure there are controls in place that reduce the risk to as low as reasonably practicable
- 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.

ABC Mine Record

Week ending:

Note:

(This form should be filled out each week the site is operating – Just record any activities that occur at the site)

Activities (Hazards identified/actions taken, new or irregular tasks, Inspections conducted)

Maintenance:

Plant serviced	Service type	Details

Induction/Training:

Date	Person inducted	Details

Mobile Plant pre-starts completed:

Excavator	Completed:	Yes	No
Front end Loader	Completed:	Yes	No
Bin Truck	Completed:	Yes	No
Other	Completed:	Yes	No

Name:

Position:

Manager:

Signature:

Date:

ABC Mine Workplace Inspection Checklist

Name of Site		Date and time	
Name of Person		Weather	

Item	Observation	Result x / ✓	Comments/Actions
1.0	SITE ENTRY AND PARKING		
1.1	Signage is adequate, clean and easy to read		
1.2	Traffic flow is working adequately		
1.3	Parking is adequate and visible to visitors		
2.0	AMENITIES		
2.1	Adequate facilities (water, toilet etc.)		
3.0	MOBILE EQUIPMENT		
3.1	Lights, horn, reversing beeper are working		
3.2	Steps and handrails are in good condition		
3.3	Seat and seatbelt are in good condition		
3.4	Cabin is clean and free of dust and dirt		
3.5	Pre-starts have been carried out		
4.0	CRUSHING AND SCREENING PLANT		
4.1	Guards are adequate and in place		
4.2	Emergency stop/lanyards are accessible and tested		
4.3	Adequate access to crushers and screens for maintenance		
4.4	Housekeeping, spillage, leaks are controlled		
4.5	Electrical cabinets are locked		
4.6	Portable electrical equipment is tested and tagged		
5.0	ROADS, RAMPS AND DUMPS		
5.1	Road condition: graded surface, no spillage, potholes		
5.2	Access to the site is adequately sign posted		
6.0	OPEN PIT/EXCAVATION		
6.1	Safety exclusion zone is in place		
6.2	Hazards are clearly identified		

Mobile Pre-start Checklist

(Completed each time you use the excavator)

Vehicle:		Date:	
Operator:		Service Hrs:	

Legend	✓ = Standard met	x = Action required	N/A = Not applicable to this site
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	M	T	W	T	F	S	S	Comments / Faults
Engine								
Radiator hose and clamps								
Radiator core condition								
Vee-belt condition & adjustment								
Fan hub bearings								
Oil / water leaks								
Air intake hoses and clamps								
Air cleaner indicator level								
Mountings								
Battery condition								
Drive Train								
Transmission oil leaks								
Wheel hub oil leaks								
Wheel nuts and locks								
Front and rear drive line condition								
Tyre condition/damage								
Vehicle System								
Steering linkages (refer OEM)								
Emergency steering (refer OEM)								
Articulation bearings & retainers								
Main frame cracks								
Air leaks								
Drain air tanks								
Hydraulic operation								
Hydraulic oil leaks								
Park brake operation (refer OEM)								
Service brake operation (refer OEM)								
Cab								
Seatbelt (fitted and working)								
Steps/grab rail								
General cab condition								
Lights (head, tail & dash)								
Warning lights & gauges								
Control linkages								
Air conditioner operation								

Pre-start Checklist (Processing Plant)

(Completed each time you start the plant)

Item:		Date:	
Operator:		Service Hrs:	

Legend	✓ = Standard met	x = Action required	N/A = Not applicable to this site
---------------	------------------	---------------------	-----------------------------------

	M	T	W	T	F	S	S	Comments / Faults
Check engine and hydraulic oil levels								
Leaks								
Check for hydraulic leaks								
Clean or change engine air filters								
Vee-belt condition & adjustment								
Check water coolant and top up as required								
Oil leaks								
Check grease nipples are working								
Check all rollers/ bearings are running freely								
Battery condition								
Remove loose material around belt rollers								
Check tracking of all belts								
Check tension on screens								
Check locking pins and wedges								
Check tail drum shafts and bearings linkages (refer OEM)								
Ensure conveyors are free of debris								
Ensure all guards are in place								
Check for air leaks								
Check skirting rubbers								
Operator initials								
Fault/Action Required	Assigned to						Completed Date	

Safe Operating Procedure for Isolation of Plant and Equipment

Objective:

The aim of this procedure is to ensure that all energy sources that supply power to plant or equipment have been rendered safe (isolated) prior to maintenance being conducted.

This procedure covers all energy sources on site:

Electricity	Batteries	Pneumatics (air)
Mobile Plant	Hydraulics	Motors (diesel & petrol)
Steam	Gravity	

Energy sources shall be isolated as follows:

All worker/s that undertake any maintenance task are to isolate the equipment they are working on before commencing the task.

Each worker must install his or her own lock and personal isolation tag. The name of the worker must be written on this tag before isolation.

1. Inform all persons in the work area that maintenance is to be conducted on the equipment and it will be isolated.
2. Locate the MAIN SWITCH, VALVE OR KEY of the energy source (always isolate the main switch as some stop / start devices do not provide adequate protection).
3. Turn the energy source completely off or remove the key.
4. Fit your lock and personal isolation tag to the main switch or valve.
5. Test for zero potential (dead) - go to the start button and attempt to start the equipment. If the equipment does not start on this test it is safe to start work.
6. When and only when the task has been completed, each worker is to remove his lock and personal isolation tag.
7. Locks and personal tags can only be removed by the person placing the tag. Any person who removes a lock or personal tag placed by another person faces immediate disciplinary action.

8. The SSE may remove a lock and personal tag placed by another person only after contacting the person who placed the tag and receiving the all clear to remove the tag.
9. In the event that the person who placed the tag is not contactable, the SSE will conduct a thorough examination of the plant / equipment to satisfy themselves that it is safe to remove the tag and that it is safe to operate.
10. When all locks and tags are removed and persons accounted for, the person responsible for the task shall test the plant / equipment for safe operation.

If an inspection is to be undertaken of plant / equipment and the person completing the inspection may come into contact with the energy source or moving parts, then the equipment must be isolated.

Worker/s are trained in isolation and issued with a copy of this procedure on induction.

Out of Service Tags

Out of Service Tags shall be placed on:

- Faulty or dangerous equipment, and;
- Equipment that is to be kept out of service for operational reasons.

Equipment that has been tagged Out of Service shall not be started or operated. An Out of Service Tag shall not be used as a substitute for a full isolation.

Do Not Operate Tags

Do Not Operate Tags shall be placed on:

- machinery that is currently being serviced

(This procedure should be followed whenever you are working on plant and equipment)

Emergency Response Plan STOP THINK ACT

Emergency – Life or Property – Dial 1 1 1

Fill out this form and display it at the site. This is your Emergency Response Plan (ERP)

Site Address and Coordinates	
Emergency Assembly Area	
Fire extinguisher and First Aid Kit	
Nearest Medical Centre	

Emergency Signal and Emergency Procedure

- Continual sounding of vehicle horns and or notification over Radio Telephone (where available), and/or alert others by shouting "emergency....emergency...emergency"
- Dial 111 for Emergency Services, Ambulance, Fire, Police
- Give details of emergency and service required
- Give the location including a rapid number if applicable
- Give a contact phone number
- Have personnel wait for the services at a prominent location upon arrival
- Report incident to management immediately (contact details below)
- In the event of an incident/accident or near miss onsite report to management immediately then complete the Accident report & Investigation form

In the event of:

Fire	Alert others of the fire by shouting or by radio telephone if available Only attempt to control a fire with extinguisher if it is safe to do so Otherwise evacuate to assembly area and call the fire service
Earthquake	If you are in your vehicle - remain in it If inside a building, stand next to a wall If outside - stand clear of overhead lines Evacuate to the assembly area. Call emergency services if required
Serious Accident Electrocution	Ensure personal safety first Only isolate power if safe to do so Contact emergency services Provide basic first aid until emergency services arrive, if safe to do so Evacuate to assembly area Secure accident scene

Guiding Emergency Services

A person is to instruct someone to meet emergency services at a prominent location upon arrival (where possible)

Contact Phone Numbers

Mine Operator		Police/Fire/Ambulance	111
Mine Manager		Power faults	0508 325 328
Operator		Emergency Spills BP	0800 805 111
Operator		National Poisons Centre	0800 POISON (764 776)
First Aiders are		Pollution Spills	0800 765588

Letter to Emergency Services

Date: _____

Dear Officers

I am writing this letter to inform your station of our extractive operation, and we are operating within your station zone. The attached page lists the following information:

1. name of operation and manager
2. type of operation
3. written directions to the operation, a map and site plan
4. contact telephone numbers and names
5. extraction taking place
6. plant and equipment used to win and process the product
7. the maximum number of persons that may be on site at the time of an emergency
8. equipment on site to assist in the event of an emergency

The site is open _____. When open the hours of operation are _____ to _____.

We would also like to extend an invitation to all station officers to visit the site for an inspection of the operation and review emergency procedures. We hope this information may assist officers in the event of an emergency and we look forward to further communication with your station.

I may be contacted by telephoning _____ for further information or to arrange a site visit.

Yours sincerely,

Notice to Emergency Services and neighbours

Use this form to advise emergency services or neighbours of your activity in the event that you may need their help. Useful for one-man sites.

Details of Mine Operations:	
Type of Operation:	
Location:	
Site Manager:	Contact Number:
Employee(s):	Contact Number(s):
Maximum number of people on site:	
Type of Work Undertaken:	
Plant and Equipment on site:	
Emergency equipment:	
Hazardous Substances on site:	
Special Information:	
Signed by Mine Operator:	Date:

Report of an accident/incident or near miss

Particulars of incident				
Date:		Time:		Location:
Type of incident (please circle below)				
Injury	Illness	Environmental	Notifiable event	Other:
Reported by:			Phone:	
Role in the event:			Email:	
The injured person				
Name:			Address:	
Age:		Phone:		
Witness(s)				
Name:			Phone:	
Name:			Phone:	
Name:			Phone:	
Describe the incident: (space overleaf for diagram if needed)				
Describe any illness or injury: What part of the body is affected and how?				
Describe any property damage: What damage was caused and how?				
Analysis: What do you think caused or contributed to the incident?				

Report of an accident /incident or near miss

Prevention: What action has been taken to prevent a reoccurrence?	
Have all preventative actions been reviewed by the Directors, and implemented? Yes No	
Director Signature:	Date completed:
Treatment:	
A & E Hospital:	Doctor:
Type of treatment provided:	
Notification and investigation WORKSAFE PHONE: (0800) 030-040 (24 hours)	
WorkSafe NZ advised by:	Date:
Investigation conducted by:	Date:
Risk Register updated by:	Date:

Diagram:

In the event of a notifiable event, you must complete an incident investigation and submit it to WorkSafe NZ

ABC Mine Training Plan

Name of person	<i>Example: D SMITH</i>	Employment start date	<i>02/02/20</i>
Position	<i>Mine Manager of ABC Mine</i>	Reporting to	<i>K SMITH</i>

Name of Course / Job Task	Qualification Gained	Date Completed	Worker Sign-off	Manager Sign-off	Refresher / Review Date
<i>Supervision B grade Mine Manager Certificate of Competency</i>	<i>New Zealand National Certificate</i>	<i>03/11/15</i>	<i>JSMITH</i>	<i>KSMITH</i>	<i>SSMITH</i>
<i>Certificate of Competency as a Mine Manager</i>	<i>WorkSafe CoC</i>	<i>03/11/16</i>	<i>JSMITH</i>	<i>KSMITH</i>	<i>03/11/21 5-year renewal</i>
<i>First Aid Training</i>	<i>6400, 6401, 6402</i>	<i>03/11/19</i>	<i>JSMITH</i>	<i>KSMITH</i>	<i>03/11/21 2 yearly refreshers</i>
<i>Employee Equipment in the Workplace</i>					
<i>Wheels, Tracks and roller endorsements</i>					
<i>Induction training</i>					
<i>Health and Safety Awareness</i>					

ABC SITE SAFETY RULES

Thank you for visiting our site

While you are visiting our mine, we are responsible for your health and safety.

These site rules summarise the work practices that apply to our mine.

1. The person responsible for your supervision is _____
2. A first aid kit is located _____ and _____ is trained in first aid
3. In the case of an emergency, go to _____ and follow the emergency procedure
4. You can only visit those areas as directed by the company representative
5. You must wear personal protective equipment (PPE) as indicated by the signs on site or as indicated by this safety plan
6. You must report to _____ when you arrive on site (ph: _____)
7. Please be aware of mobile plant at all times
8. Our company policy on children entering the site is _____
9. Please be aware of and stay away from any excavation or water body
10. If you see any hazards on site please report them immediately to _____

It is a good idea to have a written set of site rules like this one to give to visitors and new people to site etc.

Health and Safety Staff Meeting

Meeting taken by:	
Date:	Location:
Staff Present:	Signature:
Name:	
Topics Discussed:	
Matters Arising to be Addressed:	
Next Meeting:	

Risk Assessment - SAMPLE

ABC COMPANY Mine	Scope of works: Example: To remove a damaged guard and replace with a new guard				Author D.Smith	Date 01/01/20			
Reviewed by	Print name	Signature	Date	Revision #	Approved by	Date			
Mine Operator	J Smith	JSMITH	01/01/20	1	K Smith	01/01/20			
Mine Manager	D Smith	DSMITH	01/01/20	1	Signature: KSMITH				
Review and monitoring	Example: at completion of works, monthly, six monthly, annually		Date for Review:	10/01/20	If there is a change in work practice, hazard management or an incident, the risk assessment will be reviewed immediately.				
Supporting documents (tick)		Permits to work and/or induction to the site (tick)			Basic personal protective equipment (tick)				
Traffic management plan	Safety data sheets	Induction to the work site ✓	Hot works	Hard hat ✓	Hi-vis ✓	Safety boots ✓			
SOP ✓	Lock out padlock and out of service tags ✓	Lifting plan	Other:	Gloves	Safety glasses ✓	Ear muffs			
Equipment required (tick)									
Crowbar	Hammer	Tool kit ✓	Other: New Guard	Signage	Spill Kit				
Spade	General tools	Grease gun		Comments					
Hazard Controls: Eliminate, Substitute, Isolate, Engineering, Admin, PPE - Consequence (C) + Likelihood (L) = Risk Ranking Score									
What is the Hazard?	What can the Hazard do?	Risk Ranking Before Controls		Controls for the Hazard	Further Actions and/ or Controls Needed	Risk Ranking After Controls			
		C	L			C			
						L			
						Risk Score			
Screening Plant	Caught in machine if the machine was intentionally started while guard is removed for replacement	5	4	20 C	The plant is shut down and locked out Competent workers, trained workers Safety exclusion zone around the plant Job planning and communication Wear the right personal protective equipment	5	3	15 H	Communication Training

Risk Assessment

Consequence			
Economic	Safety	Environment	Score
More Than \$500,000 Prosecution or significant restrictions on operational activities against company Negative publicity	Multiple fatality (e.g. fatal) Loss of life, permanent disability or multiple serious injuries	Toxic release onsite/office with detrimental long-term effects	5 - Catastrophic
More than \$100,000 and less than \$500,000 Prosecution against the company Negative publicity	Extensive injures or single fatality Serious injury (injuries) requiring specialist medical treatment or hospitalisation	Infringement fine, Abatement Notice, off site release entering private property or storm water, major negative effects or cultural significance	4 - Major
More Than \$10,000 and less than \$100,000 Major enforcement against company	Medical treatment (e.g. Hospitalisation or short or long-term disability)	Adverse inspection report, onsite release requiring outside help to clean up. Damage to items of ecological or cultural significance	3 - Moderate
More than \$1,000 and less than \$10,000	Minor injury requiring First Aid treatment (e.g. minor cuts, bruises, bumps) One week off work	Onsite release requiring containment	2 - Minor
Minor damage, waste, re-work or vandalism of asset or product. < \$1,000	No treatment required	On site release immediately cleaned up < 1 litre	1 - Superficial

Risk Assessment

Likelihood - Select a category from the table below					
Consequence Select a category from the Consequence table on page 57	1 – Rare	2 – Unlikely	3 – Possible	4 – Likely	5 – Almost Certain
	Will occur in exceptional circumstances	Not likely to occur within the foreseeable future, or within the project lifecycle	May occur within the foreseeable future, or within the project lifecycle	Likely to occur within the foreseeable future, or within the project lifecycle	Almost certain to occur within the foreseeable future, or within the project lifecycle
5 - Catastrophic	Med (5 M)	Med (10 M)	High (15 H)	Critical (20 C)	Critical (25 C)
4 - Major	Low (4 L)	Med (8 M)	Med (12 M)	High (16 H)	Critical (20 C)
3 - Moderate	Low (3 L)	Med (6 M)	Med (9 M)	Med (12 M)	High (15 H)
2 - Minor	Very Low (2 VL)	Low (4 L)	Med (6 M)	Med (8 M)	Med (10 M)
1 - Superficial	Very Low (1 VL)	Very Low (2 VL)	Low (3 L)	Low (4 L)	Med (5 M)

Assessed Risk Level	Actions to Consider
Very Low	Undertake the activity with the existing controls in place and continue to monitor.
Low	Additional controls may be needed. Continue to monitor.
Med	Controls will need to be in place before the activity is undertaken. Continue to monitor.
High	Mitigate and implement controls to that reduce threat to medium level or below. Full risk assessment and work method procedures are required to be prepared before any works proceed. Continue to monitor.
Critical	All practical steps should be taken to Eliminate the risk. Where elimination is not practical, develop a detailed hazard or risk assessment with controls to that reduce threat to medium level or below. Full risk assessment and work method procedures are required. Continue to monitor.

Health and Safety Management Plan - Template

28.1.1 Click www.minex.org.nz/assets/COP-HSMP-Template.docx for your own template to edit and use.



Health and Safety in NZ extractives

www.minex.org.nz