APPROVED
CODE OF PRACTICE

Emergency Preparedness in Mining and Tunnelling Operations

AUGUST 2016

New Zealand Government

WORKSAFE
NEW ZEALAND | MAHI HAUMARU AOTEAROA

ACKNOWLEDGEMENTS

WorkSafe New Zealand (WorkSafe) would like to thank the members of the industry working group for their contribution to the development of this code.

NOTICE OF APPROVAL

The code of practice for *Emergency Preparedness in Mining and Tunnelling Operations* sets out WorkSafe New Zealand's expectations in relation to identifying and controlling the work health and safety risks arising from mining and tunnelling operations, in order to help PCBUs and workers achieve compliance with the Health and Safety at Work Act 2015, the Health and Safety at Work (Mining Operations and Tunnelling Operations) Regulations 2016 and the Mines Rescue Act 2013.

WorkSafe New Zealand developed the code with input from unions, employer organisations, other key stakeholders and the public.

Together with the right attitudes and actions of PCBUs and workers focused on improving health and safety practices at work places, the code will contribute to the Government's targets of reducing the rate of fatalities and serious injuries in the workplace by at least 25% by 2020.

Accordingly, I Michael Allan Woodhouse, being satisfied that the consultation requirements of section 222(2) of the Health and Safety at Work Act 2015 have been met, approve the code of practice for *Emergency Preparedness in Mining and Tunnelling Operations* under section 222 of the Health and Safety at Work Act 2015.

Hon Michael Woodhouse
Minister for Workplace Relations and Safety
2 August 2016

FOREWORD

As the Chair of the Board of WorkSafe New Zealand, I am pleased to introduce this approved code of practice for *Emergency Preparedness in Mining and Tunnelling Operations*.

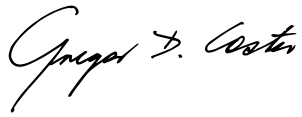
It was developed with input from our social partners, industry and public consultation.

This approved code of practice will help duty holders comply with their requirement to provide healthy and safe work for everyone who works in this industry. It will also help make sure that other people do not have their health and safety adversely affected by the work conducted.

A healthy and safe workplace makes good sense. An organisation with health and safety systems that involve its workers can experience higher morale, better worker retention, increased worker attraction and – most importantly – workers who return home to their families, healthy and safe, after they finish their work.

Organisations benefit from having less downtime from incidents and higher productivity. An organisation known for its commitment to health and safety can benefit from its improved reputation.

We must all work together to make sure that everyone who goes to work comes home healthy and safe. By working together, we'll bring work-related harm down by making sure that all work conducted is healthy and safe work.



Professor Gregor Coster, CNZM
Chair, WorkSafe New Zealand

TABLE OF CONTENTS

TABLES

FIGURES

KEY

C **Coal**

M **Metalliferous**

T **Tunnels**

U **Underground mines**

01/

INTRODUCTION

IN THIS SECTION:

The legislation that applies to this section is:

Health and Safety at Work Act 2015

***Section 22** Meaning of reasonably practicable*

***Section 30** Management of risks*

***Section 222** Approval of codes of practice*

***Section 226** Use of approved codes of practice in proceedings*

***Part 2** Health and Safety duties*

***Part 3** Worker engagement, participation and representation*

Schedule 3:

***Clause 1** Interpretation – mine operator*

***Clause 2** Meaning of mining operation*

***Clause 4** Meaning of tunnelling operation*

***Clause 8** Power of health and safety representative to give notice requiring suspension of mining operation*

***Clause 9** Power of health and safety representative to require mining operation to stop in case of serious risk to health and safety*

***Clause 11** Competency and experience requirements for exercise of powers under clauses 8 and 9*

***Clause 19** Functions and powers of industry health and safety representatives*

Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016

***Regulation 55** Risk assessment*

***Regulation 60** Engagement*

***Regulation 105** Emergency management control plan*

***Regulation 109** Worker participation practices must be documented*

***Regulation 114** Mine operator must investigate reported hazard*

***Regulation 115** Mine operator must inform mine worker of result of investigation*

***Part 3** Health and safety management system*

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

***Regulation 14** Duty to prepare, maintain and implement emergency plan*

The Health and Safety at Work Act 2015 (HSWA) is New Zealand's key work health and safety law. It sets out the health and safety duties that must be complied with.

Health and safety regulations sit under HSWA. They expand on duties under HSWA and set standards for managing certain risks and hazards.

Approved codes of practice (codes) set out WorkSafe New Zealand's (WorkSafe) expectations about how to comply with legal duties under the Act and Regulations. In this code, these are the:

> Health and Safety at Work Act 2015 (HSWA)
> Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016 (the MOQO Regulations)
> Mines Rescue Act 2013.

See WorkSafe's special guide *Introduction to the Health and Safety at Work Act 2015* for more information on health and safety law.

1.1 WHAT IS THE PURPOSE OF THIS CODE?

This code sets out WorkSafe's expectations for managing emergencies in mining and tunnelling operations. It provides information on:

> the content of the emergency management principal control plan (emergency plan)

> developing an emergency plan

> responding to an emergency

> testing, practising and reviewing an emergency plan.

This code is for the mine operator, the site senior executive (SSE), the New Zealand Mines Rescue Service, emergency services, and anyone else at the mining or tunnelling operation involved in emergency preparedness. This includes workers and other persons at the mining or tunnelling operation.

1.2 WHAT IS THE LEGAL STATUS OF THIS CODE?

This code has been approved under HSWA. It can be used in court as evidence of whether the law has been complied with. Courts may use this code:

> as evidence of what is known about emergency preparedness and its risks

> to decide what is reasonably practicable for preparing for emergencies.

Following the code might not be the only way of complying with HSWA and the Regulations. Other practices can be used as long as they provide a level of work health and safety equivalent to or higher than in this code, and comply with HSWA and the Regulations.

For more information about the hierarchy of the legislation and the relationship with other guidance documents see WorkSafe's special guide *Introduction to the Health and Safety at Work Act 2015*.

1.3 HOW TO USE THIS CODE

1.3.1 INTERPRETING THIS CODE

Table 1 shows the terms used to describe requirements in this code.

TERM	DEFINITION
Must	legal requirement that has to be complied with
Needs to, or content written as a specific direction (eg 'Make sure the...')	a practice or approach that has to be followed to comply with this code – WorkSafe's minimum expectation (subject to the legal status of this code described in section 1.2)
Should	recommended practice or approach, not mandatory to comply with HSWA or this code
May	permissible practice or approach, not mandatory to comply with HSWA or this code

Table 1: Requirements in this code

1.3.2 LEGISLATION

At the start of each section, the legislation that applies is listed in a box. For the full text, see the applicable legislation at: www.legislation.govt.nz

1.3.3 TERMS USED IN THIS CODE

This code uses the terms 'mining operation' and 'tunnelling operation' even though the definition of 'mining operation' in HSWA includes a tunnelling operation. This is to emphasise that parts of the code apply to both mining and tunnelling operations.

'Tunnel operator' is used in this code to emphasise the role of the person responsible for the tunnelling operation. It has the same meaning as 'mining operator' under HSWA.

1.3.4 MINING OR TUNNELLING OPERATION TYPES

This code applies to all mining or tunnelling operations. Where content is specific to a particular mining operation it is illustrated as follows:

C **Coal**

M **Metalliferous**

T **Tunnels**

U **Underground mines**

Where applicable, and provided it does not contradict the legislation or requirements of this code, refer to BS 6164 *Code of Practice for Health and Safety in Tunnelling in the Construction Industry* (or any subsequent standard which supersedes this standard) for good practices in the construction of tunnels.

1.4 ROLES AND RESPONSIBILITIES

HSWA defines the roles and responsibilities of different duty holders. These include persons conducting a business or undertaking (PCBUs), officers, workers and other persons at workplaces. See WorkSafe's special guide *Introduction to the Health and Safety at Work Act 2015* for more information.

Schedule 3 of HSWA and Part 2 of the MOQO Regulations set out the specific mining sector-related roles including mine operator, mine worker, SSE, safety critical roles, and industry health and safety representative.

All mine or tunnel operators must appoint an SSE and a mine manager. The SSE is responsible for health and safety management, and the mine manager is responsible for the daily running of the mine or tunnel operation. Depending on the type of mining or tunnelling operation and the particular principal hazards, other safety-critical roles are required.

1.5 WORKER ENGAGEMENT, PARTICIPATION AND REPRESENTATION

All mining and tunnelling operators must, so far as is reasonably practicable, engage with workers. Mine and tunnelling operations must also have effective worker participation practices, regardless of the size, location, hours of operation, or method of mining.

A safe workplace is more easily achieved when everyone involved in the work:

> communicates with each other to identify hazards and risks

> talks about any health and safety concerns

> works together to find solutions.

1.5.1 DUTIES UNDER HSWA AND THE MOQO REGULATIONS

All PCBUs have worker engagement and participation duties under HSWA. Mine and tunnel operators have extra duties under the MOQO Regulations, as follows:

> The SSE must engage with workers and health and safety representatives (HSRs) when preparing and reviewing the health and safety management system (HSMS), including principal control plans (PCPs) and principal hazard management plans (PHMPs).

> Mine and tunnel operators must document worker participation practices.

> If a worker reports the existence of a hazard, the mine or tunnel operator must:

  – make sure the report is investigated

  – promptly advise the worker of the result of the investigation.

1.5.2 HEALTH AND SAFETY REPRESENTATIVES

A health and safety representative (HSR) is a worker elected by the members of their work group to represent them in health and safety matters.

An industry health and safety representative (industry HSR) may be appointed to represent underground coal mine workers. An industry HSR is appointed by a union or by a group of underground coal mine workers. They must meet the competency and experience requirements for an HSR at a mining or tunnelling operation (see MOQO Regulation 110). As well as the functions and powers that all HSRs have, an industry HSR has additional functions and powers.

Details of the appointment, removal or resignation of the industry HSR must be provided to WorkSafe. WorkSafe issues an identity card to the industry HSR.

Trained health and safety representatives and industry HSRs can issue a notice to suspend or stop a mining operation if they believe on reasonable grounds there is a serious risk to health and safety.

1.5.3 FURTHER INFORMATION ABOUT WORKER ENGAGEMENT, PARTICIPATION AND REPRESENTATION

For more information on worker engagement, participation and representation see WorkSafe's website and:

> good practice guidelines *Worker Engagement, Participation and Representation*

> interpretive guide *Worker Representation through Health and Safety Representatives and Health and Safety Committees*.

When reading the guidelines replace the following terms with the extractive industry terms:

> replace 'PCBU' with 'mine or tunnel operator'

> replace 'work group' or 'members of a work group' with 'a group of mine workers who are represented by a health and safety representative' or 'mine workers in a mining or tunnelling operation'

> replace 'business or undertaking' with 'mining or tunnelling operation'.

1.6 HEALTH AND SAFETY MANAGEMENT SYSTEM

All mining and tunnelling operations must have a health and safety management system (HSMS). It is part of the mining or tunnelling operation's overall management system. The emergency management PCP is an essential part of the HSMS.

The SSE must:

> develop, document, implement and maintain the HSMS

> make sure the HSMS is easily understood and used by all mine workers

> engage with mine workers when preparing and reviewing the HSMS.

1.7 HAZARDS AND RISKS

The PCBU must eliminate risks to health and safety, so far as is reasonably practicable. If it is not reasonably practicable to eliminate risks, they must be minimised, so far as is reasonably practicable.

The SSE must ensure that there are processes in place to:

> identify hazards (appraise risks) at the mining or tunnelling operation

> assess the risks of injury or ill-health to workers from the hazards

> identify the controls required to manage the risks.

The risk appraisal could identify principal hazards; these are hazards that can create a risk of multiple fatalities in a single accident, or a series of recurring accidents, at the mining or tunnelling operation. 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.

Unless hazards are identified and risks assessed properly, no amount of risk management will ensure a safe place and system of work. Unidentified risks can lead to serious consequences.

1.8 EMERGENCY MANAGEMENT PRINCIPAL CONTROL PLAN

If the risk appraisal identifies one or more principal hazards, an emergency management PCP (emergency plan) must be produced. The mine or tunnel operator must provide sufficient resources to implement the emergency plan and ensure equipment is in operational condition and regularly inspected.

The SSE must make the emergency plan available to all workers and give a copy to the emergency services. Emergency plans for all coal mining operations, underground metalliferous and tunnelling operations over 150 metres long must be given to the New Zealand Mines Rescue Service.

If the risk assessment does not identify principal hazards, the mine or tunnel operator must produce an emergency plan under regulation 14 of the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016.

02/

WHAT IS EMERGENCY PLANNING?

IN THIS SECTION:

An emergency is an unplanned or unexpected event that requires urgent action to protect the health, safety and welfare of workers or other people. Emergencies occur when controls for hazards fail.

Emergency planning involves developing strategies to re-establish controls, or put new controls in place. An emergency plan enables a mining or tunnelling operation to respond in a pre-planned way to protect the health, safety and wellbeing of workers and other people.

2.1 THE PLANNING PROCESS

A clear process for developing an emergency plan means the right information and processes are included and the plan is practical, relevant and up-to-date. Use a risk management approach for the emergency planning process, as reflected in HSWA. Figure 1 shows the emergency planning process.

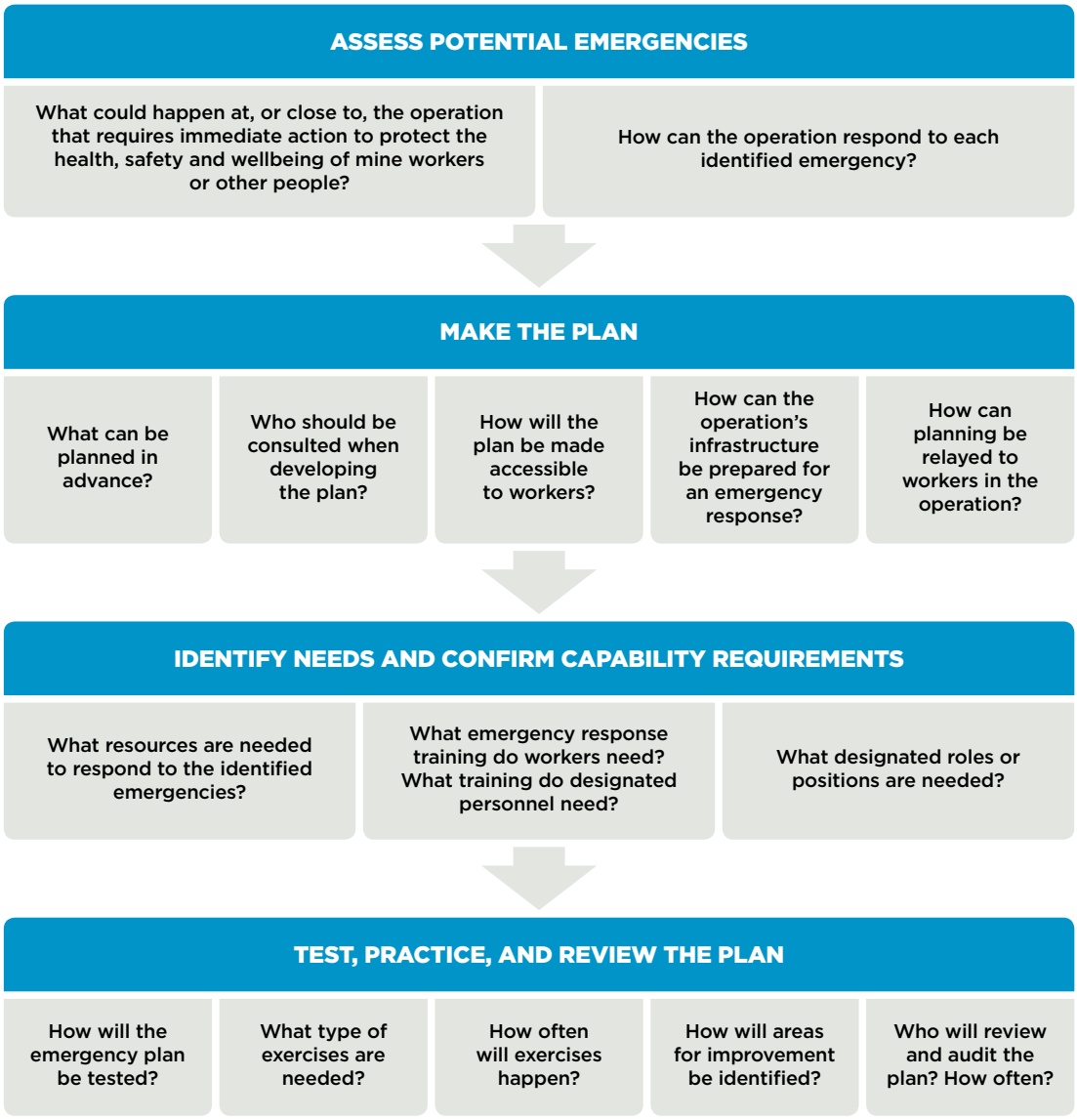


Figure 1: Emergency planning process

2.2 KEEP THE EMERGENCY PLAN SIMPLE AND PROPORTIONATE TO THE OPERATION

Make the emergency plan as simple as possible and proportionate to the size and type of operation. Make sure the emergency plan is easy to follow and makes it clear what actions are required by workers. The plan needs to explain what to do in each potential emergency, including procedures to follow.

Involve workers in the emergency plan's development, especially if they have experience of emergencies. They can help identify emergencies and the response procedures needed.

Keep the emergency plan in a place where it is accessible to all workers. Keep a copy of procedures where they are likely to be used.

2.3 EMERGENCY INCIDENT LEVELS

Emergency incidents are classified according to their severity, complexity and the scale of the response required. This is shown in Table 2.

Level 1 (Incident level)	> Site level > Managed by an onsite incident controller, usually the most senior or capable mining representative at the time of the incident > Managed through the emergency plan and trigger action response plans (TARPs)
Level 2 (Local level)	> Could result in significant injury or a single fatality > Requires an incident management team > Short-term response operation, usually estimated to be less than four hours but determined during risk assessment by the operator > External support may be brought into the incident management team, for example WorkSafe or police > Managed through the emergency plan, action plan and TARPs
Level 3 (Major incident)	> Major incident, could result in multiple injuries or fatalities, trigger significant national interest or both > Longer-term response operation, usually estimated to be more than four hours but determined during risk assessment by the operator > Requires strategic advice and additional resources the operator cannot provide > In underground mining or tunnelling operations the Underground Mines Emergency Protocol will be activated

Table 2: Levels of emergencies

Incidents can escalate from level 1 to level 2 and level 3. This could happen immediately or over a long time, depending on the nature of the incident. Each level's response is triggered by trigger action response plans (TARPs) described in the emergency plan.

2.4 USE THE COORDINATED INCIDENT MANAGEMENT SYSTEM

Base the emergency plan on the agreed national incident management system. This is currently the Coordinated Incident Management System (CIMS), which sets out the principles used to manage and coordinate emergency incidents. It provides a structured approach to managing incidents of any scale and describes how to:

> coordinate, command and control responses to incidents

> structure the incident response

> manage the relationships between different emergency functions.

CIMS is available on the Ministry of Civil Defence and Emergency Management website: www.civildefence.govt.nz

Figure 2 is a basic CIMS structure showing the functions of the incident management team. Level 2 or 3 incidents require more complex command structures. The *Underground Mines Emergency Protocol* applies to level 3 (major) incidents in underground mines or tunnels.

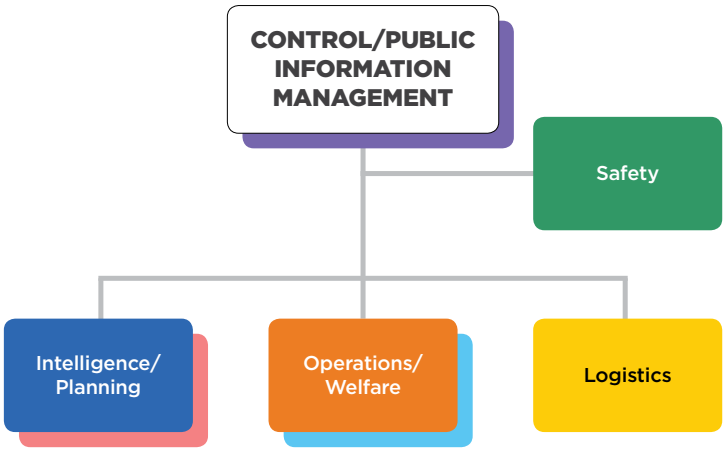


Figure 2: CIMS incident management team

2.5 THE UNDERGROUND MINES EMERGENCY PROTOCOL

The *Underground Mines Emergency Protocol* (the protocol) is a CIMS-based protocol for managing major incidents in underground mining or tunnelling operations. It includes details on establishing the roles and responsibilities of emergency response agencies and the lines of authority for decision-making and communication.

The protocol applies to all level 3 emergencies in underground mines and tunnels. Level 1 and 2 emergencies can escalate to level 3, so the protocol's principles should be followed for other emergencies. See section 8 for more information on the protocol.

03/

ASSESS POTENTIAL EMERGENCIES

IN THIS SECTION:

The legislation that applies in this section is:

Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016

***Regulation 54** Risk appraisal*

***Regulation 55** Risk assessment*

Emergencies can occur in all mining and tunnelling operations. The risk varies with the size and type of operation, as well as the controls in place. Make sure that the controls to prevent and deal with emergencies are appropriate to the level of risk.

Make sure there are processes in place for the timely collection of appropriate information to appraise hazards and assess risks, whether new or existing, that could result in emergencies. Involve a team of workers with a range of experience and expertise, including health and safety representatives, when appraising and assessing hazards and risks.

3.1 IDENTIFY WHAT COULD CAUSE INJURY OR ILL-HEALTH AT THE OPERATION

Identify hazards at the mine or tunnelling operation. This is called the risk appraisal. Look at the whole of the mining or tunnelling operation at a high-level.

A good risk appraisal will uncover all hazards on and near the site. For example, fire could affect operations in or near an area of bush or forest and flooding could affect operations near to a river.

Refer to other risk assessments and incident investigations at the mine or tunnelling operation that relate to emergencies, in the emergency plan. Principal hazard management plans (PHMP) must include a description of the emergency preparedness for the principal hazard they relate to. Use this information; record it in the emergency plan, with a reference to the PHMP, so that only the most up-to-date information is followed in an emergency.

3.2 WHAT IS THE WORST THAT CAN HAPPEN?

The hazards identified in the risk appraisal must be assessed to determine their risk of causing injury or ill-health. This is the risk assessment.

Consider the credible worst-case scenario when assessing each hazard. Determine how that could affect workers or other people near the operation, and how they might need to respond to prevent or minimise injury or ill-health.

The key focus area should be where there is potential for mine workers or other people to suffer permanent or fatal injuries.

Assess the identified potential emergencies for the most practical response, having regard to the resource and capability within the operation, its size and the inherent risk of injury or ill-health.

04/

MAKING THE PLAN

IN THIS SECTION:

The legislation that applies in this section is:

Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016

***Regulation 60** Engagement*

***Regulation 104** Consultation with emergency services*

***Regulation 105** Emergency management control plan*

4.1 WHAT TO CONSIDER WHEN DEVELOPING AN EMERGENCY PLAN

No two emergency plans will be identical. The risks at individual mining or tunnelling operations dictate what is required in the emergency plan. When developing the emergency plan consider matters such as:

> nature of the work at the operation
> nature of the hazards that could result in emergencies
> size and location of the workplace
> number of mine workers at the operation
> operational hours and days
> ability of workers to raise, acknowledge and respond to an alarm
> activities undertaken near to the site
> location of old underground workings
> surrounding environment
> number of mining or tunnelling operations the SSE is appointed to.

The emergency plan needs to include everything that can reasonably be anticipated to happen in an emergency. There are many aspects of an emergency that can be planned for, but some unexpected events could happen. Develop procedures for all parts of the emergency plan that require action by mine workers or other personnel.

Include parallel planning in the emergency plan, where practicable. The best procedures can fail and it is important to have a backup plan. For example, mobile plant in a metalliferous mining operation could have an inbuilt fire suppression system. It is possible the suppression system will not work or be able to put the fire out, so have other firefighting capability and a procedure to withdraw mine workers to a place of safety.

4.1.1 PROCESSING PLANTS

Emergencies in processing plants are different in nature to other areas of a mining or tunnelling operation, because of the wide range of activities. They may include:

> autoclaves
> cyanide use
> refrigeration systems
> pressure vessels
> hired equipment.

These facilities need to be included in the mining or tunnelling operation's emergency plan. The Hazardous Substances and New Organisms Act 1996 (HSNO) may cover processing plants, depending on the substances used. See WorkSafe's website and the Environmental Protection Authority's website for more information about hazardous substances.

4.2 CONSULTATION

Workers must always be involved when preparing and reviewing the emergency plan. They can help identify hazards, possible emergencies and the response procedures needed, especially if they have first-hand experience of emergencies. See section 1.5 and WorkSafe's website for more information on worker engagement.

All agencies that will be part of emergency response at the mine or tunnel need to be involved in developing the emergency plan. Consult in good faith and consider the agencies' advice when developing, reviewing and testing the plan.

Emergency services must be consulted when developing the emergency plan. All mining and tunnelling operations must consult the:

> New Zealand Fire Service
> New Zealand Police
> ambulance service provider.

The New Zealand Mines Rescue Service must be consulted by:

> all coal mining operations
> underground metalliferous mining operations
> tunnelling operations over 150 m long.

It is good practice for above ground metalliferous mining operations to consult the New Zealand Mines Rescue Service.

4.2.1 ALL EMERGENCY SERVICES

Provide the following information to all emergency services:

> site address
> GPS coordinates for the:
  - site
  - helicopter landing zone
> operating hours and shift rotation
> availability of mobile phone coverage
> other methods of external communication at the site
> most likely scenarios for major emergencies
> a map of the site showing:
  - the incident control point for large-scale emergencies
  - how to access the site if it will be secured
> emergency equipment required
> hazards on the site.

Underground mining or tunnelling operations over 150 m long also need to provide information about:

> the maximum number of people allowed underground at one time
> equipment underground for use in an emergency.

Emergency services personnel who are likely to attend an emergency should attend a site familiarisation session at the operation where practicable.

4.2.2 THE NEW ZEALAND POLICE

Consult the New Zealand Police on:

> how to set up the designated incident control point
> the emergency services muster point
> inner and outer perimeters
> the crisis management team's role, if the mining or tunnelling operation has one
> where families should go in a large-scale emergency.

4.2.3 MINES RESCUE SERVICE PROVIDER

Underground mining or tunnelling operations over 150 m long must consult the New Zealand Mines Rescue Service.

Mining or tunnelling operators may have a written agreement with a mines rescue team from a nearby mine operation to be the primary mines rescue provider. In this situation, consult the primary mines rescue provider in addition to the New Zealand Mines Rescue Service.

It is good practice for above ground operations to consult the mines rescue provider.

Consult on the development, review and testing of emergency plans.

4.2.4 AMBULANCE SERVICE PROVIDERS

Consult the ambulance service provider on:

> the first aid equipment that is required
> first aid training for workers, including the need for advanced first aid training
> location of the helicopter landing zone
> access to and within the operation, and any constraints
> whether they will enter the tunnel or mine if the emergency is underground.

Take the following into account during consultation:

> possible emergencies
> likely injuries
> distance and travel time to the mining or tunnelling operation.

Underground mining or tunnelling operations over 150 m long should also seek advice about the ability and availability of ambulance crews to go underground to tend to casualties.

4.2.5 NEW ZEALAND FIRE SERVICE

Consult the New Zealand Fire Service on:

> the firefighting systems and equipment required, to ensure compatibility
> the location of firefighting equipment
> whether New Zealand Fire Service personnel will enter the tunnel or mine if the emergency is underground.

Take the following into account during consultation:

> possible emergencies
> any specialised equipment that may be required
> distance and travel time to the mining or tunnelling operation.

4.2.6 DISTRICT HEALTH BOARDS AND MEDICAL CENTRES IN REMOTE AREAS

Advise the local district health board if there is potential for a large-scale emergency or mass casualties and the nature of the possible injury or ill-health, for example, chemical injuries. This is so they can plan and prepare.

In remote areas the best medical assistance close to the mining or tunnelling operation could be from a medical centre, which needs to be consulted and advised.

4.3 TRAINING

The SSE must make sure that workers are trained in the emergency plan, and keep training records. Training needs depend on:

> likely emergencies
> number of shifts or hours worked
> designated roles
> emergency equipment and resources
> accessibility to parts of the operation, such as underground
> response capability of surrounding emergency services
> the size and nature of the operation.

Assess the resources and positions required and make sure that appropriate workers are trained and competent to fulfil their roles and use any infrastructure or equipment required. This is critical to the success of the emergency plan and first response.

Knowledge and skills needed in an emergency could be different to those needed in a worker's normal day. Identify knowledge and skills gaps and provide the appropriate training, for example, CIMS training for an incident controller or incident management team member.

Some training is site-specific, such as:

> how to secure the site
> who to allow on site in an emergency
> how to contact managers off-site or after hours.

All operations must have trained first aiders. This could range from a single first aider to several highly qualified medics. The number and their level of training depends on the:

> size and type of operation
> risks workers are exposed to
> likely time for emergency services and support to arrive.

Operators must train workers in firefighting. Make sure that training is appropriate and suitable for the type and size of operation.

Train workers in first response and make sure the training is structured, so it is targeted and maintains competencies in the core disciplines required.

05/

EMERGENCY PLAN: ALL MINING AND TUNNELLING OPERATIONS

IN THIS SECTION:

The legislation that applies in this section is:

Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016

Regulation 105 Emergency management control plan

5.1 AVAILABILITY OF THE NEW ZEALAND MINES RESCUE SERVICE AND OTHER EMERGENCY SERVICES

The emergency plan must account for the availability of the New Zealand Mines Rescue Service and other emergency services. Consider how far emergency services, including the mines rescue provider, are from the site, and how long it will take to reach the mining or tunnelling operation. Include plans for sustaining life, utilising first responders, while waiting for emergency services to arrive.

5.2 WHAT TRIGGERS THE PLAN?

The emergency plan needs to specify what triggers the emergency plan. It could be triggered by the call 'emergency, emergency, emergency', a siren, three short blasts on an air horn or methods identified during risk appraisal and assessment. Use the most appropriate trigger depending on the site environment and location of workers. Develop responses to triggers identified in the risk assessment, such as an unexpected unavailability of one or more of the emergency escapeways, into trigger action response plans (TARPs).

5.3 COORDINATION AND CONTROL OF EMERGENCIES

The emergency plan must set out how emergencies will be coordinated and controlled; this should be as simple as possible. Have a single person in overall charge of operations; this is normally the manager but other arrangements can be considered.

The emergency plan must identify other incident control roles, who will fill them, and who will fill roles if designated personnel are not available.

The emergency plan should support CIMS principles in case a larger response is required.

5.3.1 IDENTIFY THE PEOPLE OR ROLES WHO WILL HAVE EMERGENCY MANAGEMENT RESPONSIBILITIES, AND THE DETAIL OF THE RESPONSIBILITIES

Emergency management roles vary depending on the size and type of operation. Identify persons or positions and their responsibilities during an emergency in the emergency plan.

CIMS provides two models that need to be implemented, depending on the level of the emergency:

> seven positions

> four positions, where some roles are combined.

The SSE needs to establish who, from the operation's staff or contractors, will carry out emergency roles. Document these decisions so, regardless of the time or day of the incident, sufficient resources are on site to establish an immediate incident management team.

The incident management team includes an Incident Controller who is supported by a minimum of three other positions, as shown in Figure 3.

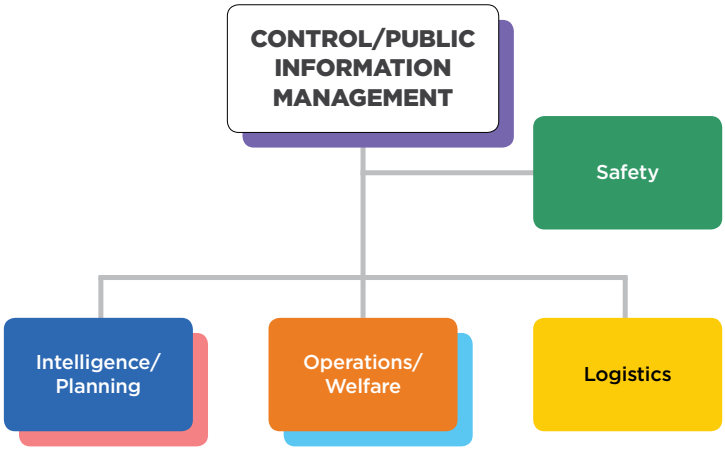


Figure 3: CIMS incident management team

In larger incidents individual persons carry out the intelligence/planning, operations/welfare and public information management roles.

A brief description of each role is as follows:

> **Mine Incident Controller** – coordinates and the controls the response.

> **PIM (Public Information Management)** – develops and delivers messages to the public directly and through the media, and liaises with the community if required.

> **Intelligence** – collects and analyses information and intelligence related to context, impact and consequences; also distributes intelligence outputs.

> **Planning** – leads planning for response activities and resource needs.

> **Operations** – provides detailed direction, coordination, and supervision of response elements on behalf of the control function.

> **Welfare** – coordinates the delivery of emergency welfare services and resources to affected individuals, families/whānau, and communities.

> **Logistics** – provides personnel, equipment, supplies, facilities, and services to support response activities.

For further information, refer to the *New Zealand Coordinated Incident Management System*.

5.3.2 SUPPORT ROLES

Regardless of the size of the incident or emergency, other support roles will be required, for example administrative support and a safety officer. These positions may not need to be established at the start of an emergency, but as required. Identify these positions in the emergency plan, they may include:

> coordinating the emergency response

> alerting and liaising with rescue, emergency, and regulator personnel, for example WorkSafe specialist health and safety inspectors, and regional or district council workers

> accounting for people at the site at the time of the incident

> controlling emergency supplies

> providing and maintaining facilities, plans and other information to rescue personnel

- transporting casualties, rescue workers and supplies
- operating communication systems
- informing and consulting with worker representatives, families and next of kin
- communicating with media
- firefighting and site emergency response teams
- gate sentries
- first aiders
- control room operator
- messengers to liaise with personnel without access to transmitting communication systems
- liaising with workers trapped underground or trying to make their escape
- meeting workers as they make their way from underground to the surface.

When designating roles and establishing a command structure consider:

- the competencies and training required for workers to carry out designated roles
- what to do if the designated person on a shift cannot be contacted
- who is in charge, if supervisors on shift are of equal seniority
- when does a designated person relinquish the function to a more senior person
- the debrief needed after an emergency, which could include providing and encouraging people to attend critical incident stress and trauma counselling
- how to maintain emergency response coverage 24 hours a day, seven days a week, including relief for key people in a prolonged emergency
- fatigue management for all people involved.

5.4 COMMUNICATIONS

5.4.1 COMMUNICATION SYSTEMS IN EMERGENCIES

Include procedures for internal and external communications, who will use them and how, in the emergency plan. Make sure that communication systems allow:

- every person in or about the mining or tunnelling operation to be notified if an emergency occurs
- every worker, or work group, to communicate with the control room
- the control room operator, or designated person, to get enough detail to know where all people are, and to relay the appropriate action to be taken.

Examples of communication systems include:

- two-way radio
- emergency evacuation sirens
- mobile telephones
- mobile satellite phones for more isolated areas
- stench gas.

The plan needs to include ways of eliminating or reducing the risk of communications being cut-off during an emergency, such as:

> burying cables:
  - where there is a risk of explosion
  - in single entry headings over 200 m with a risk of roof collapse
> using fire resistant cables where there is a risk of fire
> using redundant lines
> secondary and tertiary communication methods, for example satellite phone or radio.

5.4.2 PROMPT NOTIFICATION OF ALL RELEVANT EMERGENCY SERVICES, INCLUDING THE NEW ZEALAND MINES RESCUE SERVICE

List the contact details of all relevant emergency services, including the mines rescue provider and any other specialist emergency response personnel, in the emergency plan. Include phone numbers and where relevant, roles within an organisation. Only include names if the most up-to-date information is always available.

Develop a procedure for contacting the emergency services and include it in the emergency plan. Identify who is responsible for contacting emergency services and produce a script to follow when contacting them. The script should contain the following information:

> name and location of the mining or tunnelling operation, including GPS coordinates
> type of emergency
> where on the site the emergency is and where the emergency services should go
> emergency services required
> whether anybody is injured or missing.

Keep the script next to the telephone that will be used.

The *Underground Mines Emergency Protocol* applies to all level 3 incidents in underground mining and tunnelling operations. In these emergencies, the designated person should contact the Police by dialling 111 and follow the script:

> *We have a major underground mining emergency at xxx Mine site. Please activate the Underground Mine and Tunnelling Operations Emergency Protocol standard operating procedure.*

Keep the script next to the telephone that will be used. The police have a standard operating procedure they follow to contact all the other emergency services, including the mines rescue provider, and WorkSafe.

The mine or tunnel operator must notify WorkSafe as soon as possible after activating the emergency plan. See section 10 for more information on notifying WorkSafe.

5.4.3 GIVING TIMELY NOTICE, INFORMATION AND WARNINGS TO ANYONE WHO MAY BE AFFECTED BY AN EMERGENCY

The emergency plan must describe how the operation will provide notice, information and warnings to anyone who may be affected by an emergency. Plan for:

> developing a call tree to notify the right people with the right information at the right time

- determining how and when:
  - to contact neighbouring properties and the wider community
  - to contact key workers who are not present
  - status updates will be communicated
- how and when next of kin will be notified, considering the:
  - severity of injuries
  - location of next of kin
  - nature and scale of the emergency.

Notify next of kin and communicate with the media in consultation with the police. Record emergency contact details for all mine workers and keep them up-to-date in the HSMS.

5.5 ISOLATING AN AREA AFFECTED BY AN EMERGENCY

The plan needs to include procedures for isolating areas affected by an emergency from the rest of the operation. Isolation methods depend on the type of operation and emergency. Likely methods include:

- barriers to block access to unsafe areas
- posting sentries at the gate to stop vehicles entering an area
- firebreaks to prevent fire spreading to other parts of the operation or to surrounding areas offsite
- electrical isolation.

Develop clear procedures to communicate where the emergency is to mine workers and to keep them away from the area.

5.6 LOCATING AND ACCOUNTING FOR PEOPLE DURING AN EMERGENCY

There must be a system in place to accurately locate and account for all mine workers and visitors in an emergency. This needs to be documented in the plan and may include:

- sign-in registers
- worker tag boards
- radio frequency identification (RFID) tags.

When selecting a system consider:

- the size, type and duration of operation
- the number of workers
- when visitors are likely to be at the operation
- working and shift times
- likely risks.

Underground mining and tunnelling operations should not rely on one system, but have a backup system in case the first fails. While this could include CCTV at the portal, do not use it as the primary system; searching through footage is time consuming and will not provide workers' names.

5.7 FIREFIGHTING

The mine or tunnel operator must provide firefighting equipment that is suitable for extinguishing any potential fire, or containing it sufficiently to evacuate workers to a place of safety. Firefighting equipment must be compatible throughout the mining or tunnelling operation. Install water mist firefighting suppression systems in tunnelling operations.

Show the location of firefighting equipment on a map, which is easily accessible to workers, for example on the emergency board.

Ensure firefighting equipment is compatible with equipment used by the mines rescue provider or fire service designated in the emergency plan.

Develop procedures or TARPS for firefighting in the emergency plan. They should be simple and easy to follow and include:

> parallel plans and procedures in case firefighting fails

> fires in trucks and other vehicles, on the surface and underground.

Consider what training is required and train enough workers to provide a firefighting resource for all shifts. Training should be frequent enough that workers are able to follow the procedure without having to refer to it. Workers should only fight fires if it is safe to do so.

5.8 EVACUATION

Evacuate workers and other people from any part of a mining or tunnelling operation to a place of safety, if there is an imminent risk of injury or ill-health. Triggers that may require emergency evacuation include, but are not limited to:

> fire

> smoke or other fumes underground

> roof or ground fall

> inundation or inrush of water into a mine or tunnel

> misfire

> major chemical spill in a processing plant, or chemical store.

5.8.1 EVACUATION PROCEDURES

Include clear procedures for evacuating workers and other people in the emergency plan. Make sure the procedures are precise and accessible to all workers and include the:

> triggers that prompt the evacuation

> route to be taken

> designated assembly area.

Include processes in the emergency plan to ensure all people are evacuated safely, for example:

> first response

> self-escape

> aided escape

> aided rescue.

Identify hazards that might arise because of the emergency, and assess how they could affect workers evacuating the operation.

5.8.2 COMMUNICATIONS DURING EVACUATION

Describe communication systems and procedures that provide consistent, timely and clear directions and information in the emergency plan. Good communications aid an effective, coordinated and orderly evacuation or withdrawal. Communication systems need to be proportionate to the size and complexity of the operation, and be based on the emergency command structure.

5.8.3 TRANSPORT FROM THE SITE

Include details of how people will be transported from the site to a place of safety in the emergency plan. Include transport of sick and injured workers; walking is not an acceptable option for them. Factors to consider when planning transport include:

> possible injuries to workers or other people
> the distance from the site to the nearest ambulance facility, hospital or medical centre
> driving conditions around the mining or tunnelling operation
> the location of family members in a major (level 3) emergency.

5.8.4 WITHDRAWAL

Withdrawal to a place of safety is a precautionary measure to be taken if there is reason to believe failure of controls leading to a risk of injury or ill-health is likely. Withdrawal should be included in the emergency plan so workers can understand its relationship with emergency evacuation. Set triggers for withdrawal TARPs; these may include:

> oxygen, or other gas, level alarms
> smoke alarms
> detection of ground movement
> weather warnings
> failure of the main ventilation fan for less than 30 minutes
> other events determined by the risk appraisal and assessment.

5.9 FIRST AID AND RESUSCITATION

The legislation that applies in this section is:

Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016

***Regulation 105** Emergency management control plan*

***Regulation 124** Crush injuries and rescue of trapped persons*

***Regulation 125** Treatment and transport of sick and injured mine workers*

***Regulation 126** Resuscitation equipment*

Mining and tunnelling operators must provide first aid and resuscitation equipment and facilities. Develop first aid and resuscitation procedures, including raising the alarm if resuscitation is needed. Make sure there are workers trained and qualified to follow the procedures. The first aid and resuscitation response required depends on the size and type of operation, and potential emergencies identified in the risk appraisal and assessment. When assessing first aid needs consider:

> the size and type of mining or tunnelling operation
> hazards at the mining or tunnelling operation
> the nature of injuries that could be suffered in credible worst-case scenarios for all hazards identified
> medical emergencies that could occur
> how long the ambulance service provider will take to arrive at the site where casualties are being treated
> the level of first aid needed to minimise injury or ill-health, or sustain life before emergency services arrive.

5.9.1 CRUSH INJURIES AND RESCUE OF TRAPPED PERSONS

The sooner trapped or crushed workers are reached and treated the greater the likelihood of survival and of minimising injuries. The equipment and training needed to treat crush injuries and rescue trapped persons depends on how:

> far the operation is from the nearest emergency services, especially the fire service and ambulance provider
> long it will take them to reach the operation
> likely causes of crush injuries and trapped persons.

An operation close to a fire station with a response time of 10 minutes and that has heavy lifting equipment may need to provide stabilisation equipment such as rated chocks and blocks.

Underground operations and surface operations with a longer response time may need to provide stabilisation equipment and lifting equipment, including:

> lifting bags
> rated chains or strops
> shackles.

All equipment needs to be fit for purpose, including weight rating. All workers using such equipment, including emergency services, need to be appropriately trained.

5.9.2 TREATMENT AND TRANSPORT OF SICK AND INJURED MINE WORKERS

The equipment required for treatment and transport of injured workers depends on the likely response times for emergency services.

Provide sufficient first aid and trauma kits to deal with medical incidents that might happen at the operations. There needs to be a designated place for administering first aid, including for setting fractures. This may be a first aid room in surface operations or locations set aside and identified as such underground.

Agree a casualty handover point with the ambulance provider. When identifying this consider:

> ambulance provider response time, including helicopters
> access to the operation, including security
> impact of weather conditions.

Make sure there is equipment for transporting casualties; this may be a vehicle that can be adapted quickly to fit and secure a basket stretcher.

5.9.3 RESUSCITATION EQUIPMENT

The equipment and training needed depends on the risks identified. Provide a defibrillator and, for operations with a risk of an oxygen depleted atmosphere or risks from gases with toxic effects, make sure oxygen therapy is available.

5.10 PREPARE INFRASTRUCTURE FOR AN EMERGENCY

The legislation that applies in this section is:

Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016

***Regulation 213** Plans of mining operation*

***Regulation 217** Details to be included in plans*

***Regulation 218** Plan showing firefighting, rescue and emergency facilities to be posted*

5.10.1 EMERGENCY STATION AND BOARD

Prepare a designated emergency station. This is a single area where a trauma kit, copies of the emergency plan, TARPs and operation maps are kept. It is normally close to an emergency board and is easily accessible to all workers and emergency services.

Emergency boards provide a single rapid access point for critical emergency equipment.

They may include:

> incident report forms
> thresholds for level 1, 2 and 3 incident escalation and the appropriate response
> emergency contacts, including company, local mines, contractors, power, utilities and WorkSafe
> GPS for the site-dedicated helipad and site access point
> duty card
> copy of TARPs
> site maps
> emergency access keys
> CIMS incident management team folders and vests.

5.10.2 INCIDENT CONTROL POINT OR CONTROL ROOM

Prepare the incident control point, or control room, for large emergencies. This is a room or space that is large enough to accommodate the number of people needed to manage

the emergency. It should be separate from normal operational control areas to prevent interruptions or disturbance during an emergency. It needs good communication systems and plenty of whiteboard space. Involve the emergency services who will respond to an emergency for advice on this when consulting on the emergency plan.

The control room should have access to all of the necessary communication methods and resources needed to manage an emergency. Designate responsibility for setting up and maintaining the control room in the emergency plan.

Define a staging area where emergency services can muster and be briefed. This should be between the inner and outer perimeters, but far enough from the incident control point so the incident management team is not disrupted.

5.10.3 SITE MAPS

Show the following on site maps, where applicable:

> exit routes from underground parts of the mining or tunnelling operation
> changeover stations and refuge stations for underground mining or tunnelling operations
> safe forward point
> inner and outer perimeters of the operation
> emergency services staging area
> incident control point
> locations of all emergency equipment, including:
  - first aid equipment, including defibrillator
  - resuscitation equipment
  - firefighting equipment
  - self-contained self-rescuer caches
  - recharge stations
> Locations of other equipment, including:
  - telephones
  - other communications equipment
  - boreholes.

The outer perimeter marks out the site. The inner perimeter marks out the area that is particularly hazardous, that only the rescue or recovery team should cross.

5.10.4 FIRST AID AND FIREFIGHTING EQUIPMENT

Place first aid equipment on the site so it is easily accessible. Provide signs at various places on the site, both on the surface and underground, indicating the location of emergency equipment.

Place fire extinguishers where they will be needed in the mining or tunnelling operation, for example inside trucks. Place copies of procedures and TARPs for immediate response close to where they will be needed.

06/

EMERGENCY PLAN: EXTRA REQUIREMENTS – UNDERGROUND MINING AND TUNNELLING

IN THIS SECTION:

The legislation that applies in this section is:

Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016

Regulation 105(2) Emergency management control plan

Regulation 166 Competent person at surface when mine workers underground

Regulation 168 Self-rescuers

Regulation 169 Training in the use of self-rescuers

Regulation 174 Navigational aids

Regulation 175 Communication systems

Regulation 176 Continued monitoring of atmospheric conditions underground during emergency

6.1 EQUIPMENT FOR RESCUE, RECOVERY OR ESCAPE

The emergency plan needs to include the equipment needed for rapid and continuous rescue in situations where there is:

> reduced visibility
> an irrespirable atmosphere
> an irritant atmosphere.

The amount and type of equipment required depends on the:

> nature of the hazards as identified in the risk appraisal and assessment
> size of the underground part of the mining or tunnelling operation
> distance from the nearest emergency services, including the mines rescue provider, and the time it will take to reach the operation.

Make sure that equipment is pre-checked and ready to deploy at all times. Tag equipment to show it is ready for use, and an expiry date where regular timetabled maintenance is required.

6.1.1 PERSONAL PROTECTIVE EQUIPMENT

Provide suitable personal protective equipment (PPE) for use in emergencies, including:

> self-contained self-rescuers to all workers and other persons
> spare self-contained self-rescuers at a ratio determined by risk assessment, but no less than 1.25 per worker in each changeover station
> cap lamps, including spares for support teams, unless suitable alternative lighting is provided, for example battery powered lights in tunnels
> other PPE identified in the risk assessment, for example:
  - breathing apparatus, depending on the nature of the mining or tunnelling operation, this may be compressed air breathing apparatus or closed circuit breathing apparatus such as BG4
  - PPE for use in firefighting.

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Breathing apparatus should be designed for rescue and last, with maintenance such as cylinder changes, until support is deployed from the surface. Make and store ice for BG4 breathing apparatus for use in an emergency.

Provide six-monthly training for workers who use compressed air breathing apparatus (CABA) on donning it and using the quick-fill system. Ensure workers have quarterly refresher training on its use. Every worker needs to don CABA and walk it out under stress, time pressure and limited visibility every year.

6.1.2 SELF-CONTAINED SELF-RESCUERS

All underground workers must carry self-contained self-rescuers at all times. Using CABA for self-escape does not change this requirement. Workers must be trained to use the self-contained self-rescuer, and have quarterly training on donning and changing it in conditions that simulate an emergency underground. Keep a record of the training given.

Every worker needs to don a real self-contained self-rescuer and walk it out under stress, time pressure and limited visibility on a roster as self-contained self-rescuers expire. Walkout tests allow workers to experience using self-contained self-rescuers, including breathing through them and dealing with operational difficulties that may arise. Use expired self-contained self-rescurers as they become available.

Self-contained self-rescuers of the same model and duration as those currently used, or intended to be used, at the operation that are close to their expiry date can be used for training and walkout tests. Real self-contained self-rescuers without canisters can be used for training in donning and changing.

Develop, and follow, a process to track and update the expiry date of self-contained self-rescuers. Test and review the process regularly and ensure it is audited by external parties.

6.1.3 FIRST AID EQUIPMENT

Provide first aid equipment and supplies that are suitable to tend to injuries that are likely at the operation, see section 5.7.

6.1.4 DECOMPRESSION CHAMBERS IN TUNNELLING OPERATIONS

Ensure that workers undergoing decompression or working in a pressurised environment can be evacuated safely. Make an evacuation chamber available for removing workers in an emergency. For more information on dealing with decompression chambers in an emergency see BS 6164.

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6.1.5 NAVIGATIONAL AIDS

There must be navigational aids to show pathways to:

> the surface
> changeover stations, refuge chambers and secure areas
> escapeways
> intake and return shafts
> first aid equipment.

Post signs every 50 m along escape routes to direct workers to the surface. Post signs at every intersection that direct workers to the nearest refuge chamber. Signs need to be green, reflective, and at a height where they can be clearly seen but are not susceptible to damage from underground vehicles.

There needs to be a green light on the outside of refuge chambers and changeover stations.

Keep laminated maps, showing escape routes and refuge chambers, at the top and bottom of every ladderway. Maps should show their location so that workers can identify the escape route.

Underground coal mining operations also need guidelines on escapeways.

Train all workers about the location and use of navigational aids.

6.1.6 DRILLING EQUIPMENT

A pre-planned and appropriately resourced ability to drill into a mine or tunnel after an emergency can:

> allow communications to be established
> provide food, water and air to trapped workers
> provide access for environmental monitoring.

Include the need for drilling in the risk assessment when developing the emergency plan. Arrange access to drilling equipment for use in an emergency that can drill:

> from the surface to an underground location
> to provide water pumping and gas detection holes after a flood and at other times it might be required.

Equipment needs to be suitable for the environment at the mine or tunnel and may include, but is not limited to:

> a heli-portable drilling rig that has been made intrinsically safe
> a heli-portable air compressor and associated hoses
> an intrinsically safe rig coring pump
> a heli-portable koomey unit
> drill pipes
> surface water supply pumps and delivery hosing
> a hydrant stand pipe
> multi-gas detectors
> mud tanks, rod baskets, strops, chains and bed logs
> hoses.

Include a drilling risk assessment in the emergency plan that ensures the safety of drill crew and associated personnel.

6.1.7 STORING EQUIPMENT

Store equipment in a well-maintained condition, according to the manufacturer's instructions. Clearly label operational and decommissioned equipment and store it separately. Do not store decommissioned equipment in the designated rescue area, room or station.

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Store breathing apparatus in well-maintained condition, according to the manufacturer's instructions, with straps fully extended, and ready for use. Ensure CABA cylinders are at least 80% of their maximum working pressure, or at the pressure specified by the manufacturer, when stored.

6.2 COMMUNICATIONS BETWEEN THE SURFACE AND UNDERGROUND

Workers must be able to communicate between the surface and underground in an emergency. This could be by verbal communication through radio or telephone. A simple yes/no tap code on communication devices enables workers using self-contained self-rescuers to provide basic information in response to prompts from the surface.

Provide communication systems where workers will be situated underground. Make communication systems available in changeover stations, refuge chambers and at quick-fill stations. This enables workers wearing self-contained self-rescuers or compressed air breathing apparatus to communicate verbally and share details of the emergency. This is particularly important for workers withdrawing from the face reaching the first changeover station or refuge chamber.

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Communication systems in underground coal mining operations must have:

> a backup power supply

> components underground that are safe to use in an explosive environment, unless in a shaft or drive that is not in coal.

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There must be a worker at the surface at all times that workers are underground who is competent to do the following tasks unsupervised:

> answer alarms

> isolate the electricity supply to the underground parts of the mine

> take action as outlined in TARPs if there is an emergency.

6.3 MINES RESCUE TRAINING

Every mining or tunnelling operation with 40 or more workers underground at any one time needs to use best endeavours to recruit, equip and train at least two full mines rescue teams of six personnel. Mines rescue teams need to be qualified in, or working towards, the National Certificate in Extractive Industries Underground Mines Rescue, or equivalent qualifications.

Mining or tunnelling operations with less than 40 workers underground at any one time should enter into a written agreement to use mines rescue teams from the nearest larger operation. Mines rescue teams will need to be given access to the mining or tunnelling operation for training and practice, at least twice a year.

Mine workers from two or more mining or tunnelling operations in a 50 km radius can make up two mines rescue teams and store all emergency equipment in a central location.

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6.4 CONTINUED MONITORING OF ATMOSPHERIC CONDITIONS UNDERGROUND DURING AN EMERGENCY

Underground coal mining operations must have a system that monitors atmospheric conditions underground during an emergency. This system must have:

- a backup power supply
- components underground that are intrinsically safe to use in an explosive environment, unless in a shaft or drive that is not in coal.

See WorkSafe's codes on *Ventilation in Underground Mines and Tunnels* and *Fire or Explosion in Underground Mines and Tunnels* for more information on atmospheric monitoring.

6.5 ESCAPEWAYS

The legislation that applies in this section is:

Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016

***Regulation 54** Risk appraisal*

***Regulation 55** Risk assessment*

***Regulation 138** Equipment for raising and lowering mine workers, coal, minerals or material*

***Regulation 170** Escapeways in underground coal mining operation*

***Regulation 171** Escapeways in underground metalliferous mining operations and tunnelling operations*

***Regulation 172** Additional requirements for escapeways in underground metalliferous mining operation*

***Schedule 1** clause 2 Transitional provision for escapeways in underground coal mining operation*

***Schedule 3** Standards for equipment for raising and lowering mine workers, coal, minerals and materials*

Mine or tunnel operators must provide adequate means of escape from underground. Identify the means of escape in the risk assessment required under regulations 54 and 55 of the MOQO Regulations. See section 3 for more information on risk assessment. The risk assessment must explain the reasons for the final choice and be kept as part of the HSMS.

Escapeways trafficable on foot must be provided; walkable escapeways should take precedence over vertical shafts where practicable.

Make sure that escapeways are suitable for the:

- size, layout and depth of the mine or tunnel
- maximum number of workers in the mine or tunnel at any time
- need for workers to escape in an emergency
- need for rescue workers to enter the mine or tunnel in an emergency.

During escapeway design, consider the use of emergency safety equipment, including:

- breathing equipment
- self-contained self-rescuers
- refuge chambers, changeover stations and secure areas
- wayfinding systems.

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6.5.1 ESCAPEWAYS IN UNDERGROUND METALLIFEROUS MINES

There must be adequate means of escape or refuge from the underground metalliferous mining operations. Make sure that escapeways are suitable for the:

> maximum number of mine workers likely to be in the mine at any one time

> need for mine workers to escape in an emergency

> hazards identified in the risk appraisal and assessment

> need for rescue workers to access the mine in an emergency.

Mine operators must carry out a risk assessment to identify the means of escape from underground. It must explain the reasons for the final choice and be kept as part of the HSMS.

There must be at least two outlets or shafts that lead to the surface in underground metalliferous mining operations, before stoping operations start. Include the secondary egress in the design stage of the mine, and put it in place as soon as practicable after drivage starts.

Outlets or shafts must:

> be accessible from all stoping operations

> be safe, accessible and useable

> provide entry and exit for mine workers, including casualties, rescue equipment and stretchers

> be separated so that an event affecting one escapeway will not affect the other.

Ensure that:

> vertical shafts and primary escapeways are free from fire hazards so far as is reasonably practicable

> ladderways over 60 m:
  - are ventilated with fresh air at all times, especially where there are fire hazards underground
  - are designed in a manner that is suitable for the fast, effective escape of the number of workers underground at any time
  - have platforms at least every 6 m for mine workers to take regular rest breaks while climbing
  - have equipment that prevents mine workers from falling while climbing
  - have fenced platforms so no one can fall more than the distance between adjacent platforms.

Any other shaft or slope less than 60 m deep, designated an escapeway, needs to:

> have securely fastened ladderways with suitable platforms

> be constructed to provide a place of rest.

The distance between platforms needs to be calculated by risk assessment, but needs to be be no more than 15 m.

When a single entry drive or shaft is being sunk, include a second means of egress at the design stage where practicable. This may include a culvert system or segregated heading. Conduct a risk assessment that includes entrapment and exit from working faces and single entry headings over 200 m.

6.5.2 ESCAPEWAYS IN UNDERGROUND COAL MINES

Underground coal mine operations must[1] have at least two separate roadways, shafts or outlets leading to the surface before in-seam development starts. One of these separate roadways, shafts or outlets is the primary escapeway and must be an intake airway that leads to the surface and is trafficable by vehicles.

Where practicable, new coal mining operations need to have twin intake airways leading to the surface from the relevant part of the mine before in-seam production starts.

Escapeways must allow for the passage of rescuers and rescue equipment, including stretchers.

An escapeway must have a suitable means of raising and lowering mine workers if it is:

> a vertical shaft deeper than 60 m, or

> a drive longer than 60 m and steeper than 15°.

Ensure that:

> vertical shafts and primary escapeways are free from fire hazards, so far as is reasonably practicable

> ladderways over 60 m:

  - are ventilated with fresh air at all times, especially where there are fire hazards underground
  - are designed in a manner that is suitable for the fast, effective escape of the number of workers underground at any time
  - have platforms at least every 6 m for mine workers to take regular rest breaks while climbing
  - have equipment that prevents mine workers from falling while climbing
  - have fenced platforms so no one can fall more than the distance between adjacent platforms.

Any other shaft or slope less than 60 m deep, designated an escapeway, needs to:

> have securely fastened ladderways with suitable platforms

> be constructed to provide a place of rest.

The distance between platforms needs to be calculated using risk assessment, but needs to be no more than 15 m.

When a single entry drive or shaft is being sunk, include a second means of egress at the design stage where practicable. This may include a culvert system or segregated heading. Conduct a risk assessment that includes entrapment and exit from working faces and single entry headings over 200 m.

6.5.3 ESCAPEWAYS IN TUNNELLING OPERATIONS

There must be adequate means of escape or refuge from the underground parts of tunnelling operations. Make sure that escapeways are suitable for the:

> maximum number of workers likely to be in the tunnel at any one time

> need for workers to escape in an emergency

> hazards identified in the risk appraisal and assessment

> need for rescue workers to access the tunnel in an emergency.

[1] New underground coal mining operations must comply immediately; existing operations must comply by 16 December 2024.

Tunnel operators must carry out a risk assessment to identify the means of escape from underground. It must explain the reasons for the final choice and be kept as part of the HSMS.

An escapeway must have a suitable means of raising and lowering tunnel workers if it is:

> a vertical shaft deeper than 60 m, or

> a drive longer than 60 m and steeper than 15°.

Any other shaft or slope less than 60 m, designated as an escapeway, need to:

> have securely fastened ladderways with suitable platforms

> allow for the passage of rescuers and rescue equipment, including stretchers

> be constructed to provide a place of rest

> be fenced so no one can fall more than the distance between adjacent platforms.

The distance between platforms needs to be calculated using risk assessment, but needs to be no more than 15 m.

6.5.4 MINE SHAFTS AND WINDING SYSTEMS

All shafts greater than 60 m used as escapeways must have equipment for raising and lowering workers that is suitable and ready for immediate use. This may be a winding system.

The standards in Schedule 3 of the MOQO Regulations apply to:

> vertical shafts deeper than 60 m

> slopes steeper than 15°.

6.5.5 ESCAPEWAYS AND POWER CRANES IN CONSTRUCTION SHAFTS AND TUNNELS

It might not be reasonably practicable to install winding systems in construction shafts, except in deep shaft sinking operations. Power cranes may be used instead. All cranes must comply with the Health and Safety in Employment (Pressure Equipment, Cranes and Passenger Ropeways) Regulations 1999, and the *Approved Code of Practice for Cranes*.

6.6 REFUGE CHAMBERS, CHANGEOVER STATIONS AND SECURE AREAS

The legislation that applies in this section is:

Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016

***Regulation 173** Changeover stations and refuges*

If workers are not able to escape from underground to the surface in an emergency, or self-contained self-rescuers are not sufficient to allow escape to the surface, mine operators must provide one or more of the following:

> changeover stations

> refuge chambers

> secure areas where workers are protected from injury or ill-health during an emergency.

The type, number and size of facilities required depends on the nature, complexity and size of the mining or tunnelling operation and the activities carried out underground. Provide the facilities, or combination of facilities, that will work best for the specific mine or tunnel operation.

6.6.1 MINIMUM REQUIREMENTS FOR CHANGEOVER STATIONS

Changeover stations used for workers to change their self-contained self-rescuers must:

> have an independent air line separate to the rest of the operation

> not allow contaminated air into the station.

Make sure changeover stations have a means of communicating with the surface, a green light on the outside and contain:

> spare self-contained self-rescuers

> first aid equipment.

6.6.2 MINIMUM REQUIREMENTS FOR REFUGE CHAMBERS

Refuge chambers provide self-contained facilities for workers to wait safely underground until rescued. Make sure refuge chambers provide sufficient means to sustain life, which may include:

> two separate means of communication that are, where practicable, protected from the potential effects of fire or impact from mobile equipment or fixed plant

> connection to the mine or tunnel's air supply

> an independent air line, if risk assessment shows it is necessary

> a means of ensuring breathable air

> environmental control – an air conditioning unit, with power supply adequate for 36 hours operation

> CO_2 scrubbers

> drinking water

> sanitation, including a chemical toilet

> short-term food supply, such as ration bars

> first aid equipment, including medical oxygen and trauma kits

> a green light on the outside

> a window, where practicable

> seats that allow for at least 50 cm per person

> a fire extinguisher

> secondary egress that opens inwards

> a white board, where space allows, and pens and paper

> a mine map

> a torch and batteries

> entertainment, such as playing cards.

6.6.3 MINIMUM REQUIREMENTS FOR SECURE AREAS

A secure area is a location in a mining or tunnelling operation that provides a breathable atmosphere that workers can:

> easily get to in an emergency

> remain at until external assistance is provided for escape.

Make sure secure areas have:

> a compressed air line that provides a pressurised atmosphere
> brattice, doors or barriers, capable of withstanding overpressure of 14 kPa, to keep smoke out of the secure area
> drinking water
> first aid equipment for tending to minor injuries
> communications with the surface
> suitable seating
> any other equipment necessary for the location and size of the mining or tunnelling operation.

6.6.4 MAXIMUM DISTANCE BETWEEN REFUGE CHAMBERS, CHANGEOVER STATIONS AND SECURE AREAS

The distance between refuge chambers or secure areas needs to be established by risk assessment. For all underground mining and tunnelling operations, except mechanised tunnel boring machine (TBM) operations, make sure that a worker does not have to travel more than 750 m to reach the first refuge chamber or secure area in an emergency.

In mechanised TBM operations, if operated so no workers or other persons can access the TBM when it is mining, the distance to the first refuge chamber or secure area may be more than 750 m if the risk assessment demonstrates this is acceptable.

There needs to be no more than 300 m to a secure area, if this is the only option provided at that operation.

Make sure there is no more than 1000 m between changeover stations, measured from the working face and throughout the mine to the surface.

It is likely that distances will be less than these maximums because of conditions in the mining or tunnelling operation. The risk assessment needs to consider the:

> gradient of the escapeway
> time a self-contained self-rescuer will last under walk out testing
> possible condition of the mining or tunnelling operation during an emergency, such as roof fall, fire or reduced visibility, and effects on the time taken to walk out
> effects of the credible worst-case scenario on the physical and mental condition of workers and other people
> impacts of isolation on the physical, mental and emotional capacity of workers when travelling between changeover stations
> maximum distance that a worker will travel to self-escape
> likely temperature underground in the credible worst-case scenario
> physical effects of wearing self-contained self-rescuers for any period of time
> fire suppression equipment, oils used and cables installed for TBMs.

Use walk out tests when calculating distances between refuges. Use a cross section of workers including the fittest and least fit at the operation, and use the self-contained self-rescuers issued at the operation. See section 6.1.3 for more information about walk out tests.

6.6.5 COMPRESSED AIR BREATHING APPARATUS AND QUICK-FILL STATIONS

Consider the following when assessing the use of compressed air breathing apparatus CABA and quick-fill stations:

- accessibility of CABA quick-fill stations and the distance from working areas while wearing self-contained self-rescuers
- construction and location of changeover stations and how they will survive a major event such as fire or explosion
- provide sufficient CABA sets and quick-fill stations for each section, panel or area, including persons passing through and shift changeovers
- walk out tests to determine the distance between quick-fill stations
- the total walking distance required for self-escaping from the mine or tunnel
- requirement for a fresh air base to allow for rest and rehydration.

6.7 SEALING UNDERGROUND COAL MINES IN AN EMERGENCY

The legislation that applies in this section is:

Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016

***Regulation 184** Facilities required for sealing*

***Regulation 185** Notice of intention to seal underground coal mining operation*

***Regulation 186** Sealing not to be done unless notified*

***Regulation 187** Emergency sealing*

***Regulation 188** Testing of inertisation equipment*

Procedures must be in place to seal an underground coal mine, or parts of an underground coal mine, if there is an immediate likelihood of an explosive atmosphere developing. Include a risk appraisal and assessment and make sure that emergency sealing manages any potential hazards identified. The SSE must notify WorkSafe of the intention to carry out emergency sealing as soon as practicable.

See WorkSafe's code on *Ventilation in Underground Mines and Tunnels* for more information.

07/

TEST, PRACTISE AND REVIEW THE PLAN

IN THIS SECTION:

The legislation that applies in this section is:

Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016

***Regulation 106(1)** Testing, etc, of emergency management control plan*

***Regulation 106(1)(b)** Provide training in the emergency control plan*

***Regulation 58** Periodic review of health and safety management system*

***Regulation 94** Review and revision of principal control plans*

***Regulation 95** Audit of principal control plans*

7.1 TESTING THE PLAN

The emergency plan must be tested regularly to ensure that it remains effective and all personnel involved are trained in its operation. The SSE must carry out regular practice drills, also known as exercises, involving all the emergency services. Exercises test the emergency plan and train workers in their emergency roles. They also help workers understand the controls in place to stop emergencies from happening.

7.1.1 EXERCISES

Exercises need to test every component of the emergency plan including:

> the accuracy of emergency contact details

> accounting for people on the site

> notifying all managers on or off site at different times of the day and night

> emergency services response.

Exercises should be realistic scenarios based on the hazards and emergencies identified in the emergency plan. If it is possible that a small-scale emergency could develop into a larger one, test the procedures to escalate the response.

Practise the most likely emergencies and life preserving, escape and rescue scenarios most frequently. Workers should frequently practise procedures that will save their, or other's lives. Test other aspects of the emergency plan regularly, but not at the expense of the lifesaving components.

Practise aspects of the emergency plan that will always be used, such as contacting all managers both on and off the site and accounting for people, during all exercises.

Conduct a major exercise to test the full emergency plan and the incident management every year and one involving multi-agency response every three years. This could be a full-scale exercise or a table top exercise, depending on the availability of emergency services and supporting agencies.

Carry out smaller exercises at least every three months so that the emergency response of everyone involved becomes second nature. Conduct exercises with workers' prior knowledge, for training purposes, and without so they gain experience and learn how to control their response to stress.

7.1.2 LEARNING FROM EXERCISES

Hold debriefs with all personnel involved in the exercise, including workers and managers, union representatives and health and safety representatives. Debriefs should allow all personnel involved to discuss what worked well and what did not, in a no-blame culture.

Debriefs might identify areas for improvement in the plan, for example:

> poorly written procedures
> equipment in the wrong place
> insufficient training.

Update the plan and make sure that improvements are made.

7.2 REVIEWING THE PLAN

The SSE must review the emergency plan at least once every two years after it was made. The review determines whether the controls continue to be suitable and effective in managing the risks associated with emergencies.

The emergency plan must also be reviewed after:

> an emergency
> a material change in the management structure or key personnel that could affect the emergency plan
> a material change in plant used or installed that could affect an emergency or create a new one
> the occurrence of any event specified in the emergency plan requiring its review.

Review the emergency plan after:

> an exercise that identifies failings in the emergency plan or its implementation
> each audit of the emergency plan and other PCPs or PHMPs, if they identify non-conformance that affects the emergency plan
> an improvement or prohibition notice is served that affects the emergency plan.

When reviewing the emergency plan, also review the risk assessment used at the start of the emergency planning process. Existing risks could have changed or there could be new risks, so controls might need to be changed or added.

During the review, the SSE should take into account any relevant information gathered in:

> routine risk appraisals and risk assessments
> monitoring and inspections by the mining or tunnelling operator or WorkSafe
> reviews of TARPs and incidents or near misses
> input from workers and in the case of underground coal mining operations, industry health and safety representatives.

The emergency plan and any supporting documents might need to be revised and re-issued after the review. Consult the emergency services about changes to the emergency plan. Tell workers about any updated documents, and train or re-train them if necessary.

The mine or tunnel operator must keep records relating to the review and revisions of the PHMP from the last seven years and for at least twelve months from the date the operation is abandoned. Records must be provided, on request, to an inspector, health and safety representative or industry health and safety representative.

7.3 AUDITING THE PLAN

The mine or tunnel operator may carry out internal audits of the emergency plan, from time to time. Develop a structured internal audit programme that reviews how workers comply with relevant operational procedures and support plans. This can be done through inspection, spot checks and documentation review.

The mine or tunnel operator must ensure that an independent external party audits the emergency plan at least once every three years from the date it was made. The external audit includes desktop and site verification examining the adequacy, implementation and compliance with the emergency plan.

The final audit report includes the findings of the audit, recommendations for corrective action, review mechanisms, and outlines who is responsible.

Keep records of the audit, and associated risk appraisals, for at least 12 months from the date the mining or tunnelling operation is abandoned. Ensure details of audits and the risk appraisals are available to WorkSafe, a health and safety representative or an industry health and safety representative.

08/

EMERGENCY RESPONSE

IN THIS SECTION:

8.1 PREPAREDNESS AND RESPONSE CAPABILITY

Mining and tunnelling operations must be ready and capable to respond to an emergency as detailed in the emergency plan. Table 3 shows the conditions at a mining or tunnelling operation that is prepared for an emergency. If the mining or tunnelling operation does not meet these conditions, it is not ready and capable to respond to an emergency.

ASSESSMENT	PLANNING
> Potential emergencies identified through risk assessment > Potential emergencies assessed for credible worst-case scenario > Potential responses to emergencies assessed	> Emergency plan prepared, understandable and readily accessible > Emergency plan underpinned by the risk assessment > Procedures and duty cards established > Command structure in place > Evacuation plans in place > Warning systems in place > Equipment and facilities in place > Emergency services consulted
TRAINING	**PRACTICE**
> Training in emergency response undertaken, including first aid and firefighting > Specialist training in use of certain equipment carried out > Appropriate personnel trained in CIMS > First response team trained > Sufficient mine workers trained in mines rescue > Mine incident controller registered for the mining or tunnelling operation*	> Plan tested > Communication systems tested > Warning systems tested > Command structure tested > Accounting for workers tested > Contacting managers in an emergency outside work hours tested > Exercises conducted regularly > Multi-agency practice > Self-contained self-rescuer training conducted and on a regular refresher cycle*

Table 3: Emergency preparedness

8.2 FIRST RESPONSE

The nature of first response depends on the:

> type and extent of the emergency

> risk appraisal and assessment

> time for external assistance to arrive

> proximity to emergency services

> size and nature of the mining or tunnelling operation.

First response needs to be described in the emergency plan, based on the mining or tunnelling operation's specific characteristics. See section 6.3 for details about the number and size of mines rescue teams.

* Underground mining or tunnelling operations.

8.3 CONTROL ROOM

The control room operator or communicator needs to understand their role in a major emergency. It is likely to include:

> initiating TARPs

> maintaining a log of any information received and transmitted

> handling all emergency response calls.

See section 5.10.2 for more information on setting up the control room.

8.4 COMMUNICATIONS

8.4.1 COMMUNICATION FROM INCIDENT POINT TO CONTROL ROOM

The control room operator, or nominated person, needs to record important information when they are notified of an emergency, including:

> name of the person notifying of the emergency

> location of the emergency

> brief details of what happened

> who is involved

> the extent of injuries and damage

> actions taken so far

> planned actions

> help and resources needed

> whether a person is available to stay at the phone to relay further information

> any other relevant information.

This could be recorded in a card or annotated log book system. It could be critical to the early stages of the emergency response. Make sure all people at the mine or tunnel site are trained and know the dedicated emergency number, who to contact and what information to provide. Include the information that needs to be requested or gathered in a TARP, along with 'what to do next'.

8.4.2 COMMUNICATION WITH THOSE WHO MAY BE AFFECTED

To ensure a timely first response, inform all affected persons about the emergency. This may be done using:

> emergency systems programmed to automatically trigger alarms and start electronic communications

> emergency telephone number

> two-way radios, telephones or other communication systems

> non-verbal communication such as cap lamp signals or stench gas to signal workers to take refuge.

8.5 RE-ENTRY TO ANY PART OF A MINE OR TUNNEL DURING OR AFTER AN EMERGENCY

Re-entry during an emergency can be a high risk, and should be avoided unless life is at stake. Incident management teams need to be satisfied it is appropriate to deploy a team underground. Base decisions to deploy a rescue team underground on risk assessment. The level of risk is related to the emergency event.

Conditions underground can change in the time between the incident management team's decision to effect a rescue operation, and the rescue team deploying underground. Rescue teams need to be sure it remains appropriate to go underground; use the dynamic risk assessment in Figure 7 to help decide. Rescue workers might need to act quickly, so the decision-making process should be logged in short form rather than by lengthy paper-based risk assessment.

STOP	> What is the nature of the emergency? > What are the inherent hazards for an emergency of this kind? > Are the principal hazards stable or controlled and monitored? > What is the purpose for re-entering the mine or tunnel? > Will re-entering the mine or tunnel achieve a positive outcome?
THINK	> How long have conditions underground been monitored and is the information reliable? > Is it necessary to re-enter the mine or tunnel for rescue or recovery? > Is there safe access and a safe environment? > Are the rescue workers competent to re-enter the mine or tunnel? > Is the correct equipment and PPE available?
ACT	> Has a clear plan been provided to rescue workers? > Is the correct PPE and equipment being worn/carried? > Are there triggers in place to abandon re-entry with an adequate escape strategy? > Are there adequate systems and backup systems in place (eg communication)? > Is the control room operator contactable from underground?
REVIEW	> Following re-entry, review the dynamic risk assessment. > Were the inherent risks and hazards properly considered? > Was decision-making proportionate to the life or property at risk underground? > Was the purpose of the re-entry and tasking clear? > Were personnel adequately prepared for emergency situations that could have arisen?

Figure 4: Dynamic risk assessment

09/

MAJOR INCIDENTS IN UNDERGROUND MINING OPERATIONS

IN THIS SECTION:

The legislation that applies in this section is:

Mines Rescue Act 2013

Part 2 Emergency response

Major underground mining emergencies have the potential to cause multiple fatalities, raise significant national interest, or both. They are level 3 emergencies that must be included in the emergency plan, and are managed under the *Underground Mines Emergency Protocol* (the protocol).

9.1 UNDERGROUND MINES EMERGENCY PROTOCOL

The protocol is a CIMS-based, multi-agency protocol issued by WorkSafe that provides direction for managing major underground mining emergencies. It provides high-level guidance on managing level 3 underground mine or tunnel emergencies in New Zealand. It includes details on establishing the roles and responsibilities of emergency response agencies and the lines of authority for decision-making and communication.

All mining or tunnelling operations covered under the protocol need to plan for its activation in a major emergency. This means it is critical that underground mining or tunnelling operations have a CIMS-based emergency plan.

The protocol sets out a command structure and identifies roles for the different agencies in the emergency response. The individual agencies work as a combined team but each retain their own command structure. Figure 8 shows the protocol position structures.

9.2 THE INCIDENT MANAGEMENT TEAM

The incident management team is an essential part of emergency response. Designate roles in the incident management team in the emergency plan. The incident management team should be flexible, so it is suitable for the complexity of the emergency.

Small mining or tunnelling operations might not have sufficient personnel for all the roles in the incident management team. Inform the emergency services if this occurs and plan to fill the roles with workers from:

> emergency services

> New Zealand Mines Rescue Service, or the mines rescue provider for the operation

> other mining or tunnelling operations.

Enter into written agreements to ensure this happens. Include contact details of all members of the incident management team, or single points of contact for emergency services and other supporting agencies, in communication systems.

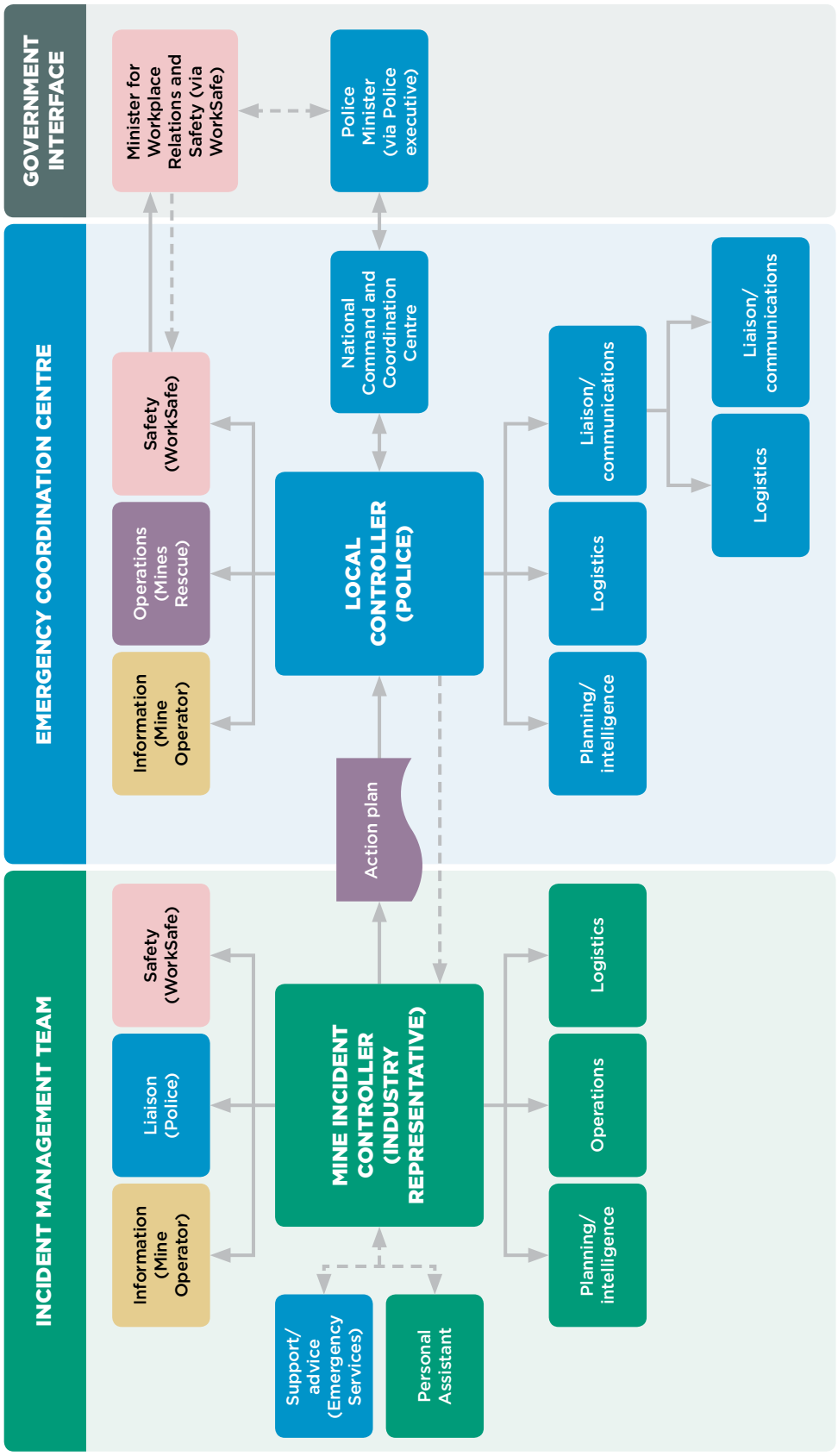

Figure 5: Underground Mines Emergency Protocol position structures and communication process

9.3 THE MINE INCIDENT CONTROLLER

The mine incident controller has authority to make decisions in an emergency, including appointing members of the incident management team. The operator, SSE and workers must comply with reasonable decisions made by the mine incident controller. No person, or group of persons, such as the crisis management team, may wilfully obstruct or resist the mine incident controller in the performance of their functions.

For level 3 emergencies managed under the protocol, the Chief Inspector Extractives at WorkSafe appoints the mine incident controller, and can replace them during an emergency. For level 1 and 2 emergencies, the mine or tunnel operator appoints the mine incident controller.

Mine incident controllers must be qualified and appointed from the register maintained by WorkSafe in consultation with the New Zealand Mines Rescue Service. If there is no registered mine incident controller at the operation, document this in the emergency plan and contact WorkSafe.

9.4 THE CRISIS MANAGEMENT TEAM

Mining or tunnelling operations may have crisis management teams for major incidents. The crisis management team's main role is to assist with providing resource for the rescue or recovery operation, as requested, and to provide a company presence alongside police when the situation is called for.

During a major emergency, send a member of the crisis management team to the emergency coordination centre to act as liaison between the two components. The crisis management team should not interact externally before consulting with police. This includes:

> releasing media statements
> talking to media or family members
> approving or seeking to approve any course of action taken by the incident management team
> obstructing recommendations and formal requests made by the mine incident controller.

The crisis management team should work to free up financial resource. If the mine or tunnel operator is a multi-national company, the crisis management team should also keep the international head office updated.

10/

NOTIFICATIONS AND NOTIFIABLE EVENTS

IN THIS SECTION:

The mine or tunnel operator must inform WorkSafe about particular work activities and notifiable events within specified timescales. For more information on notifications see WorkSafe's special guide *Introduction to the Health and Safety at Work Act 2015*.

10.1 NOTIFIABLE EVENTS

The legislation that applies in this section is:

Health and Safety at Work Act 2015

***Section 23** Meaning of notifiable injury or illness*

***Section 24** Meaning of notifiable incident*

***Section 25** Meaning of notifiable event*

***Section 55** Duty to preserve sites*

***Section 56** Duty to notify notifiable events*

***Section 57** Requirement to keep records*

Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016

***Regulation 225** Declaration of notifiable injury or illness and notifiable incidents*

***Regulation 226** Record of notifiable events*

***Regulation 228** Investigation of notifiable events*

***Schedule 5** Injuries, illnesses, and incidents declared to be notifiable events under Act*

***Schedule 6** Particulars of notifiable events*

The mine or tunnel operator must notify WorkSafe if a worker dies or a notifiable incident, illness or injury occurs as a result of work activities at the mining or tunnelling operation. Notifiable injuries, illnesses and incidents are specified in HSWA and the MOQO Regulations.

See WorkSafe's website and special guide *Introduction to the Health and Safety at Work Act 2015* and fact sheet *What Events Need to be Notified* for more information about:

> notifiable events, illness and injuries
> how to notify WorkSafe
> what information to provide
> what to do after a notifiable event, including not disturbing the site
> record keeping.

Notifiable events specific to emergencies include:

> the emergency plan being initiated other than during a planned exercise
> any emergency escape equipment, including self-contained self-rescuers or other breathing apparatus, being used except during training
> any emergency equipment or breathing apparatus fails, whether in use or training
> an emergency evacuation of all or part of the mining or tunnelling operation
> unplanned unavailability of one or more emergency escapeways from an underground mining or tunnelling operation
> one or more workers are trapped or unable to leave their place of work in the mining or tunnelling operation.

11/

GLOSSARY

TERM	EXPLANATION
Autoclave	A pressure chamber used for industrial processes that require elevated pressure and temperatures.
Compressed air breathing apparatus (CABA)	A device worn by rescue workers, firefighters and others to provide breathable air in a non-respirable atmosphere.
Control room	A place at a mine or tunnel where all emergency information and communication is centralised.
Health and safety representative (HSR)	A health and safety representative (HSR) is a worker elected by the members of their work group to represent them in health and safety matters, in accordance with subpart 2 of Part 3 of HSWA.
HSWA	The Health and Safety at Work Act 2015.
Industry health and safety representative	An industry health and safety representative (industry HSR) that may be appointed to represent underground coal mine workers. The representative is appointed by a union or by a group of underground coal mine workers. An industry HSR must meet the competency and experience requirements for an HSR at a mining operation prescribed by or under regulations made under HSWA (see MOQO Regulation 110). In addition to the functions and powers conferred on other HSRs, an industry HSR has additional functions and powers. See HSWA Schedule 3, Part 1.
Koomey Unit	A unit that provides hydraulic pressure to the blow out preventer on a drilling rig.
Mining operation	Under HSWA, a mining operation means: (a) the extraction of coal and minerals and the place at which the extraction is carried out; and (b) includes any of the following activities and the place at which they are carried out: (i) exploring for coal: (ii) mining for coal or minerals: (iii) processing coal or minerals associated with a mine: (iv) producing or maintaining tailings, spoil heaps, and waste dumps: (v) the excavation, removal, handling, transport, and storage of coal, minerals, substances, contaminants, and wastes at the place where the activities described in subparagraphs (i) to (iv) are carried out: (vi) the construction, operation, maintenance, and removal of plant and buildings at the place where the activities described in subparagraphs (i) to (iv) are carried out: (vii) preparatory, maintenance, and repair activities associated with the activities described in subparagraphs (i) to (iv); and (c) includes— (i) a tourist mining operation: (ii) a tunnelling operation.
MOQO Regulations	The Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016.
Old workings	Workings, or any part of workings, of an abandoned or suspended mine operation that are above, below or within 200 m of a mining operation, including roadways, voids and goafs created as part of the abandoned or suspended operation.
PCP	See Principal control plans.

TERM	EXPLANATION
PHMP	See Principal hazard management plan.
Principal control plan	A plan required under regulation 92 of the MOQO Regulations. The plan documents systems and processes in place at the mining or tunnelling operation to manage hazard, and the measures that are necessary to manage principal hazards.
Principal hazard	Any hazard arising at any mining operation (including a tunnelling operation) that could create a risk of multiple fatalities in a single accident or a series of recurring accidents at the mining operation in relation to any of the following: i. ground or strata instability: ii. inundation and inrush of any substance: iii. mine shafts and winding systems: iv. roads and other vehicle operating areas: v. tips, ponds, and voids: vi. air quality: vii. fire or explosion: viii. explosives: ix. gas outbursts: x. spontaneous combustion in underground coal mining operations. It also includes any other hazard at the mining operation (including a tunnelling operation) that has been identified by the site senior executive under MOQO Regulation 66 as a hazard that could create a risk of multiple fatalities in a single accident, or a series of recurring accidents at the mining operation. See MOQO Regulation 65.
Principal hazard management plan	A plan required under regulation 66 of the MOQO Regulations. The PHMP describes a principal hazard and sets out the controls used to manage it. A PHMP must be prepared for each principal hazard identified at the mining or tunnelling operation. MOQO Regulations 68, 69 and 70 cover what needs to be included in a PHMP, and requirements for reviews, revisions and audits.
Processing plant	Where coal or mineral ore is treated, crushed, washed or otherwise processed to produce a saleable product.
Radio Frequency Identification (RFID) Tag	A tag that identifies mine workers to show who is in the mine. They are usually attached to a mine worker's lamp, self-contained self-rescuer or vehicle. Their use can be extended to show the physical location of mine workers.
Safe forward point	A safe area used mainly as a meeting place for personnel or for final briefings before deployment of rescue personnel.
Self-contained self-rescuer	A device that provides oxygen to the wearer during escape in an emergency. It produces oxygen and absorbs CO2 through a chemical reaction.
Tag board	A system at surface for accounting for mine workers underground.
Trigger action response plan (TARP)	Trigger action response plans set out the response required when observed conditions change.
Tunnelling operation	An operation (including the place that it occurs) involving extraction of fill with the purpose of creating a tunnel or shaft, or enlarging or extending any tunnel or shaft. It excludes certain tunnelling operations set out in MOQO Regulation 6.

12/

FURTHER INFORMATION

LEGISLATION

Health and Safety at Work Act 2015
Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016
Health and Safety at Work (General Risk and Workplace Management) Regulations 2016
Hazardous Substances New Organisms Act 1996
Health and Safety in Employment (Pressure Equipment, Cranes and Passenger Ropeways) Regulations 1999

These are available at: www.legislation.govt.nz

WORKSAFE DOCUMENTS

Approved code of practice *Ventilation in Underground Mines and Tunnels* (2014)
Approved code of practice *Fire or Explosion in Underground Mines and Tunnels* (2014)
Approved Code of Practice for Cranes (2009)
Special guide *Introduction to the Health and Safety at Work Act 2015* (2016)
Good practice guidelines *Worker Engagement, Participation and Representation* (2016)
Interpretive guidelines *Worker Representation through Health and Safety Representatives and Health and Safety Committees* (2016)
Fact sheet *What Events Need to be Notified* (2016)
Underground Mines Emergency Protocol (2013)

These are available at WorkSafe's website: www.worksafe.govt.nz

FURTHER INFORMATION

British Standards Institution. (2011). *BS 6164 Code of Practice for Health and Safety in Tunnelling in the Construction Industry* (British standard). London, United Kingdom: Author.

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