QUARTERLY REPORT

Extractives industry

2023/24 Q3

January to March

Te Kāwanatanga o Aotearoa
New Zealand Government

WORKSAFE
Mahi Haumaru Aotearoa

About this report

This quarterly health and safety performance report has been prepared by WorkSafe New Zealand to provide extractives-specific information to mining, tunnelling and quarrying operations in New Zealand.

The information is derived from a variety of sources but the predominant source is industry itself, through notifiable incident reporting and quarterly reporting.

The report also contains information on the activities of the regulator, as well as commentary on industry performance and focus areas for regulation.

Operators should use the information presented in this report to assist them in improving safety management systems and undertaking risk assessments at their sites.

Foreword

Our mission is to transform New Zealand's health and safety performance towards world-class. To achieve this requires the commitment not just of WorkSafe New Zealand, but of businesses, workers and a wide range of other players in the health and safety system.

Most of you probably realise that we always need to wait until the middle of the quarter following the quarter we report on to prepare each Industry report. The operations prepare and send in their quarterly reporting numbers, and only after we have all the numbers can we process them into data for inclusion in this report.

This quarter we were further delayed as we rely on certain data reporting tools, which are currently being updated within WorkSafe. We decided not to include some data, such as ACC injury costs, as this was just not available for this report.

The IT work going on, and the feeling of constant change occurring within my own organisation, WorkSafe, made me think about the Quarry Conference I recently attended, which was set up around the potential of Artificial Intelligence (AI) to influence our industry. I think I came away from the conference thinking that this was potentially a change that would be relevant to me in many more ways than just our industry.

Wherever we look it seems there are new technologies and potential advances on the 'horizon'. I think that this may have always been the case, but what is now obvious is that the 'horizon' is much closer than it used to be. From concept, to prototype, to full industry implementation will not take the same time as we are used to.

I do admit it is hard to decide what AI or other technological advances are the ones to follow and stay informed about.

What I have started to do is to think about what AI led changes will have the most significance from a safety perspective.

If you consider the hierarchy of controls, the use of autonomous equipment seems to offer a step change in safety by taking workers away from the most hazardous areas of any mining or quarrying operation.

As well as autonomous trucks and diggers becoming much more available there are many tasks where robotics can also remove workers from higher risk areas of work.

And it is not that AI will replace workers, in fact more sophisticated equipment might result in higher productivity with a flow on effect of creating more jobs than previously, and almost certainly will require more diverse types of workers.

Another area which will impact on safety is the use of AI to supercharge predictive maintenance systems. The capacity of these smarter systems to evaluate large numbers of variable inputs about machinery status and then make decisions is already here. The prevention of unplanned failures is often directly related to incidents involving workers.

Where I also see potential is in the more general assessment of risk. Why would a risk assessment process not include some process which includes AI review or input. As systems at work start monitoring more and status data, the idea that an AI system can look at a situation, then be asked how to undertake a task the safest way, seems to be something that could occur now.

Of course, there will be many discussions required before understanding how to implement AI input into risk assessment processes at an operational level. The regulator will also need to be having discussions – for instance, understanding who is responsible for AI decisions if they go wrong.

The final point is that those considerations about how to use AI, and the identifying of all the opportunities it brings, will need to occur now.

Paul Hunt
Chief Inspector Extractives

CONTENTS

tables

figures

1.0
Industry profile

IN THIS SECTION:

1.1 Operations

3

Metalliferous opencast mines
Includes 1 mine under rehabilitation

18

Coal opencast mines
Includes 1 mine in care and maintenance

8

Metalliferous underground mines
Includes 1 mine under care and maintenance and 2 operating tourist mines

1

Coal underground mines
Includes 1 tourist mine under care and maintenance

4

Tunnels
Does not include tunnels that notified commencement but did not begin operating in the quarter

10

Coal exploration
7 operational coal exploration projects and 3 suspended coal exploration projects

74

Alluvial mines
Number of mines that have been verified (62) or have notified of an Appointed Manager to WorkSafe (12)

Includes 2 iron sands mines

1,004

Quarries
Number of quarries that have been verified (865) or have notified of an Appointed Manager to WorkSafe but not yet verified (139)

An important aspect of understanding the health and safety performance of the extractives industry is to understand its makeup in terms of the number and scale of operations and the number and competency of workers involved.

There were 1,122 active operations in New Zealand as at the end of March 2024.

Active mining operations include those that are operating, intermittently operating, under care and maintenance, or undertaking rehabilitation, as well as tourist mines. Active quarries and alluvial mine numbers include operations that have been verified as actively or intermittently operating (that is, visited by WorkSafe), or have notified WorkSafe of an appointed manager.

1.2 People

598

Metalliferous opencast mines
535 FTEs employed by mine operators and 63 FTEs employed by contractors

817

Coal opencast mines
662 FTEs employed by mine operators and 155 FTEs employed by contractors

540

Metalliferous underground mines
434 FTEs employed by mine operators and 107 FTEs employed by contractors

0

Coal underground mines
0 FTEs employed by mine operators and 0 FTEs employed by contractors

326

Tunnels
240 FTEs employed by mine operators and 86 FTEs employed by contractors

2

Coal exploration
16 workers employed by mine operators and 19 workers employed by contractors

649

Alluvial mines
Number of workers is known for 50 of the 74 alluvial mines that are verified and/or have notified of an Appointed Manager. The total number of workers has been extrapolated for the remaining 24 operations

3,183

Quarries
Number of workers is known for 780 of the 1,004 quarries that are verified and/or have notified of an Appointed Manager. The total number of workers has been extrapolated for the remaining 224 operations

There were 6,115 Extractives FTEs in New Zealand as at the end of March 2024. The numbers of workers will also vary from quarter to quarter. Changes in the number of quarry and alluvial mine workers largely reflect the changes in the number of active operations verified by inspectors. Part of those verifications includes determining the number of workers at each operation.

Note: Typically >95% of mining operations and tunnelling operations submit quarterly reports to WorkSafe, and the numbers of workers are reported directly from these figures.

This was the sixth quarter that quarrying operations and alluvial mining operations were required to submit quarterly reports to WorkSafe. Quarterly reports were provided by 18 alluvial mining operations (24%) and 268 quarries (27%). That is the reason for the significant difference between the extrapolated numbers of workers and the actual number of workers reported for these sectors in Figure 2. WorkSafe will continue to extrapolate numbers of workers for quarries and alluvial mines until the reporting percentage has improved.

Figure 1 shows the total hours worked in Q3 2023/24, reported to WorkSafe in the quarterly reporting. The hours are separated into Employees and Contractors.

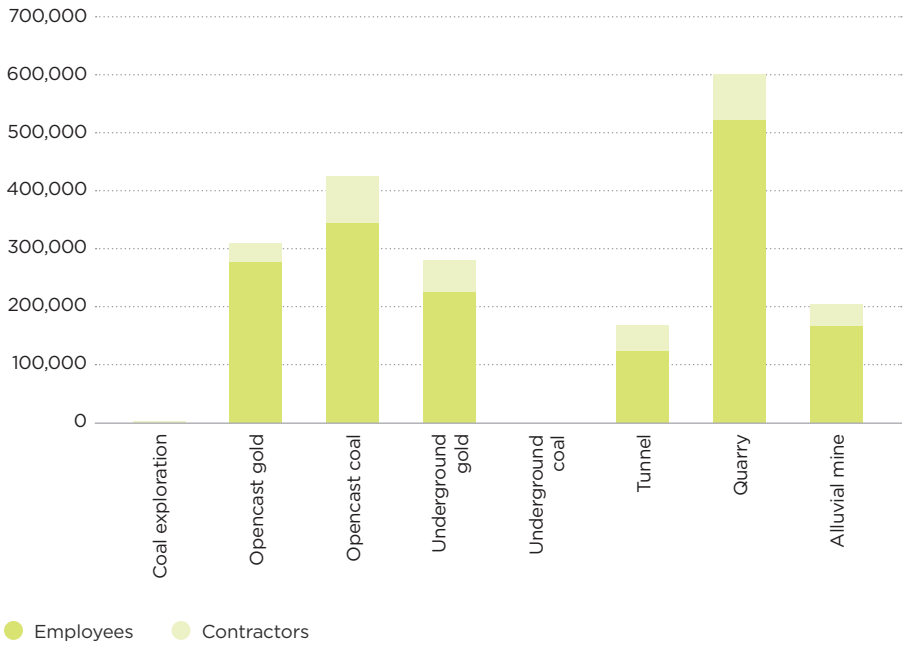


FIGURE 1:
Total hours worked by sector 2023/24 Q3

Figure 2 shows the number of Full Time Equivalents (FTEs) calculated from total hours worked that were reported to WorkSafe in quarterly reports for Q3 2023/24. The hours are separated into Employees and Contractors.

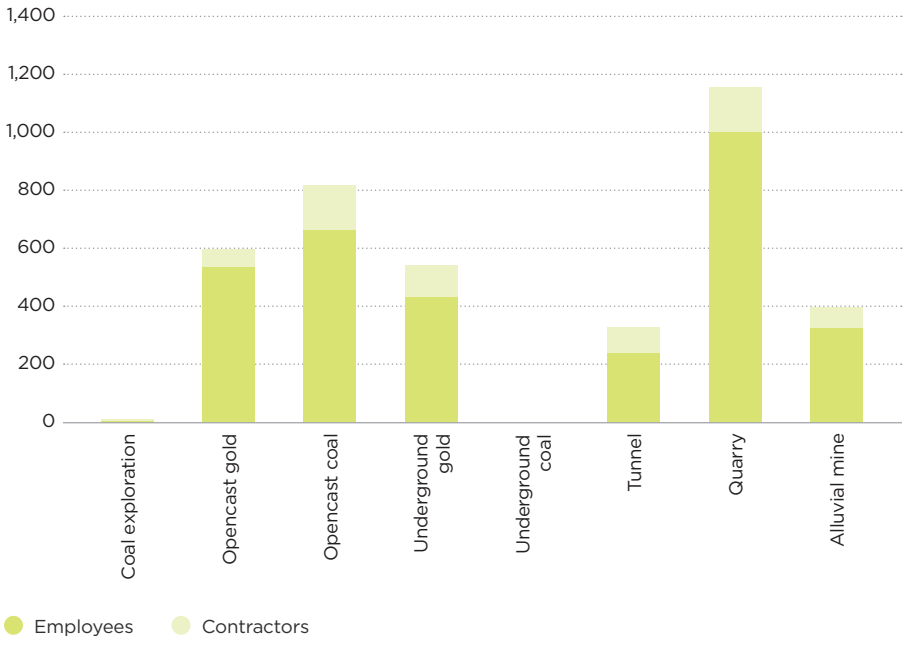


FIGURE 2:
Number of FTEs by sector 2023/24 Q3

1.3 Developing competence

WorkSafe has responsibility for setting competency standards in the Extractives Industry. Improving the competence of the people in the industry is one of the most important aspects of improving health and safety performance. WorkSafe appoints the New Zealand Mining Board of Examiners (BoE) to recommend competency requirements, conduct oral examinations and to issue, renew, cancel or suspend Certificates of Competence (CoCs).

The BoE would like to remind **all** applicants for renewal of CoCs that the preparation and presentation of CPD logbooks is very important. Currently the BoE has many renewal applications being processed that require the BoE Secretariat to go back to applicants to get additional CPD hours verified.

The expectations for each CPD logbook entry are:

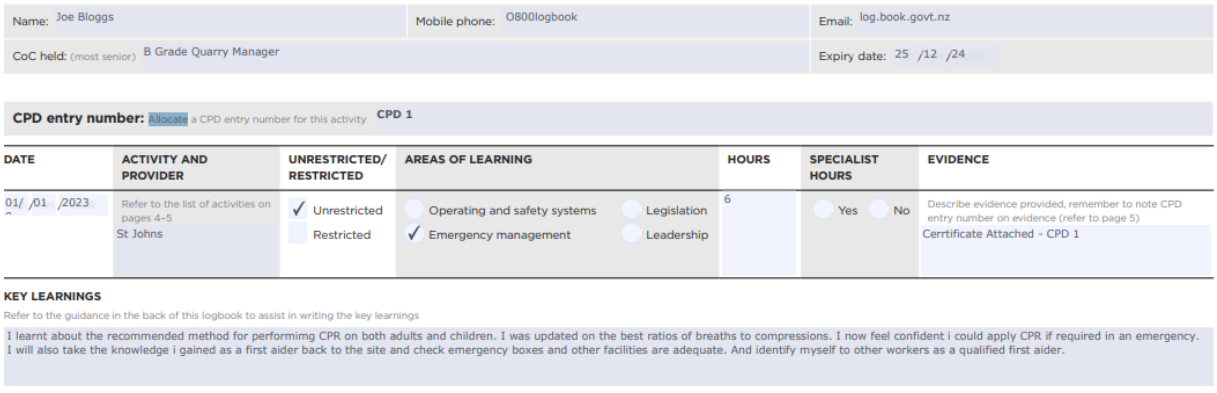
1. The logbook entry is identified with a unique number. In the example below we have used 'CPD 1'.
2. That the date the activity took place is clear – and matches the evidence.
3. That the hours claimed are clear on the evidence.
4. That the entry includes a good key learning.
5. That the evidence is attached and marked as being related to 'CPD 1'.
6. Also, that you understand and indicate whether hours are restricted or unrestricted. Or if they are specialist hours (This only applies to the specialist CoCs, so is not relevant to most CoC holders).

Note: A person requiring 120 hours of CPD may claim up to 20 restricted hours, or for those needing 60 hours they may claim up to 10 restricted hours. There has been some confusion about what evidence is required for some restricted activities. Evidence of reading industry publications may only be identification of the publication, and the learning you state on the CPD log entry. The BoE will make a judgement as to the reasonableness of the number of hours claimed.

Applicants can use the online CPD forms, either PDF or electronic.

These can be found at Continuing professional development

For your assistance we give a logbook entry example for a familiar activity as an example in Figure 3.



Name: Joe Bloggs | Mobile phone: 0800logbook | Email: log.book.govt.nz

CoC held: (most senior) B Grade Quarry Manager | Expiry date: 25 /12 /24

CPD entry number: Allocate a CPD entry number for this activity **CPD 1**

DATE	ACTIVITY AND PROVIDER	UNRESTRICTED/ RESTRICTED	AREAS OF LEARNING	HOURS	SPECIALIST HOURS	EVIDENCE
01/ /01 /2023	Refer to the list of activities on pages 4–5 St Johns	✓ Unrestricted Restricted	Operating and safety systems ✓ Emergency management Legislation Leadership	6	Yes No	Describe evidence provided, remember to note CPD entry number on evidence (refer to page 5) Cerrtificate Attached - CPD 1

KEY LEARNINGS

Refer to the guidance in the back of this logbook to assist in writing the key learnings

I learnt about the recommended method for performimg CPR on both adults and children. I was updated on the best ratios of breaths to compressions. I now feel confident i could apply CPR if required in an emergency. I will also take the knowledge i gained as a first aider back to the site and check emergency boxes and other facilities are adequate. And identify myself to other workers as a qualified first aider.

FIGURE 3: CPD logbook example

Table 1 provides a summary of oral exams conducted during the quarter.

TOTAL NUMBER OF ORAL EXAMS HELD Q3 JAN–MAR 24	TOTAL PASSES	SUCCESS %
6	5	83.33

TABLE 1: Oral exams conducted

Table 2 provides a summary of all CoCs issued during the quarter and the current number of CoCs in circulation at the end of Q3 2023/24.
Note: We no longer report Life Time CoCs.

COC TYPE	TOTAL COCs RENEWED Q3 Jan–Mar 2024	TOTAL NEW COCs ISSUED Q3 Jan–Mar 2024	TOTAL NUMBER OF CURRENT COCs
A Grade Quarry Manager	0	1	270
B Grade Quarry Manager	0	1	413
A Grade Opencast Coal Mine Manager	0	1	61
B Grade Opencast Coal Mine Manager	0	1	51
A Grade Tunnel Manager	0	0	37
B Grade Tunnel Manager	0	0	80
Site Senior Executive	0	1	55
First Class Coal Mine Manager	0	0	15
First Class Mine Manager	0	0	21
Coal Mine Deputy	0	0	30
Coal Mine Underviewer	0	0	20
Mechanical Superintendent	0	0	20
Electrical Superintendent	0	0	22
Ventilation Officer	0	0	4
Mine Surveyor	0	0	12
Site Specific	0	0	5
Winding Engine Driver	0	0	0
Total	**0**	**4**	**1,116**

TABLE 2: Certificates of Competence issued and in circulation

2.0 Health and safety performance

IN THIS SECTION:

2.1 Notifiable events

For all extractive operations, notifiable events are required to be reported to WorkSafe under S23(1), S24(1) and S25(1) of the Act, and under Schedule 5 of the Regulations. Notifiable events include any notifiable incidents, notifiable injuries or illnesses, or fatalities.

The tables below show the number of notifiable events and the number of operations that notified events for the previous four years and for Q1, Q2 and Q3 of 2023/24 for mines and tunnels (Table 3) and quarries and alluvial mines (Table 4).

MINES AND TUNNELS	2019/20 QUARTERLY AVERAGE	2020/21 QUARTERLY AVERAGE	2021/22 QUARTERLY AVERAGE	2022/23 QUARTERLY AVERAGE	2023/24 Q1	2023/24 Q2	2023/24 Q3
Number of notifiable events	20	18	20	21	23	17	20
Number of operations that notified events	11	9	11	10	9	8	12

TABLE 3: Mines and tunnels – notifiable events and operations that notified events

QUARRIES AND ALLUVIAL MINES	2019/20 QUARTERLY AVERAGE	2020/21 QUARTERLY AVERAGE	2021/22 QUARTERLY AVERAGE	2022/23 QUARTERLY AVERAGE	2023/24 Q1	2023/24 Q2	2023/24 Q3
Number of notifiable events	18	16	14	17	14	20	20
Number of operations that notified events	15	12	13	15	14	19	18

TABLE 4: Quarries and alluvial mines – notifiable events and operations that notified events

Figure 4 shows the number of notifiable events reported to WorkSafe by sector from April 2022 to March 2024.

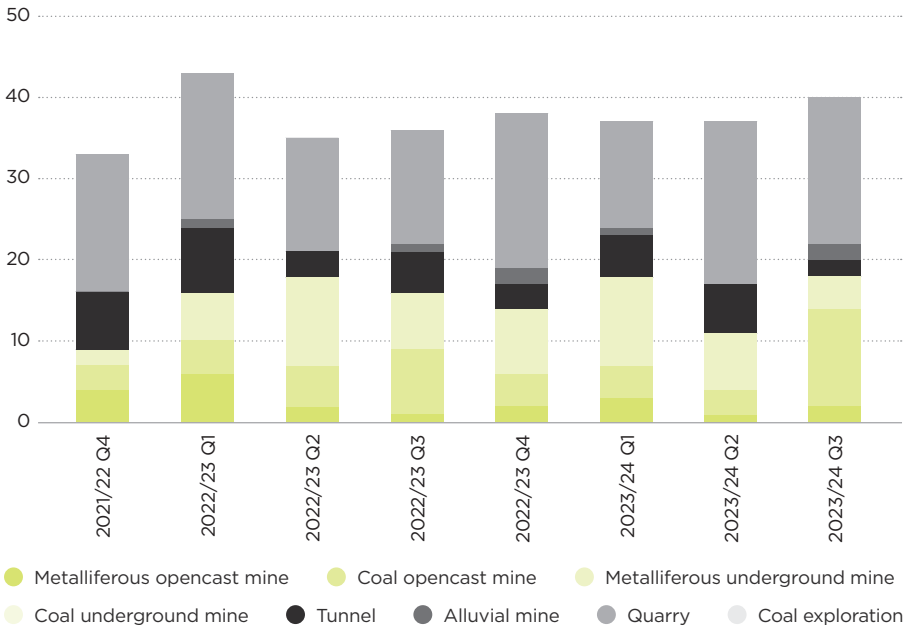


FIGURE 4: Notifiable events by sector

2.2 Injuries

Additional information about injuries is reported to WorkSafe in the form of Quarterly Reports and Records of Notifiable Events under Schedules 6 and 8 of the Regulations. This was the sixth quarter that quarrying operations and alluvial mining operations were required to submit quarterly reports to WorkSafe.

Figure 5 shows the number of injuries by injury type reported to WorkSafe from April 2021 to March 2024. The graph also shows the rolling 12-month average for the Total Recordable Injury Frequency Rate (TRIFR), the rate of recordable injuries that occurred per million hours worked. The current rolling 12-month average TRIFR is 3.8 Rates have fluctuated over past two years without any clear trend.

While TRIFR is not the only measure indicating the health of the industry, it is a useful indicator of how workers are being injured and should be interpreted in conjunction with other data such as notifiable event information.

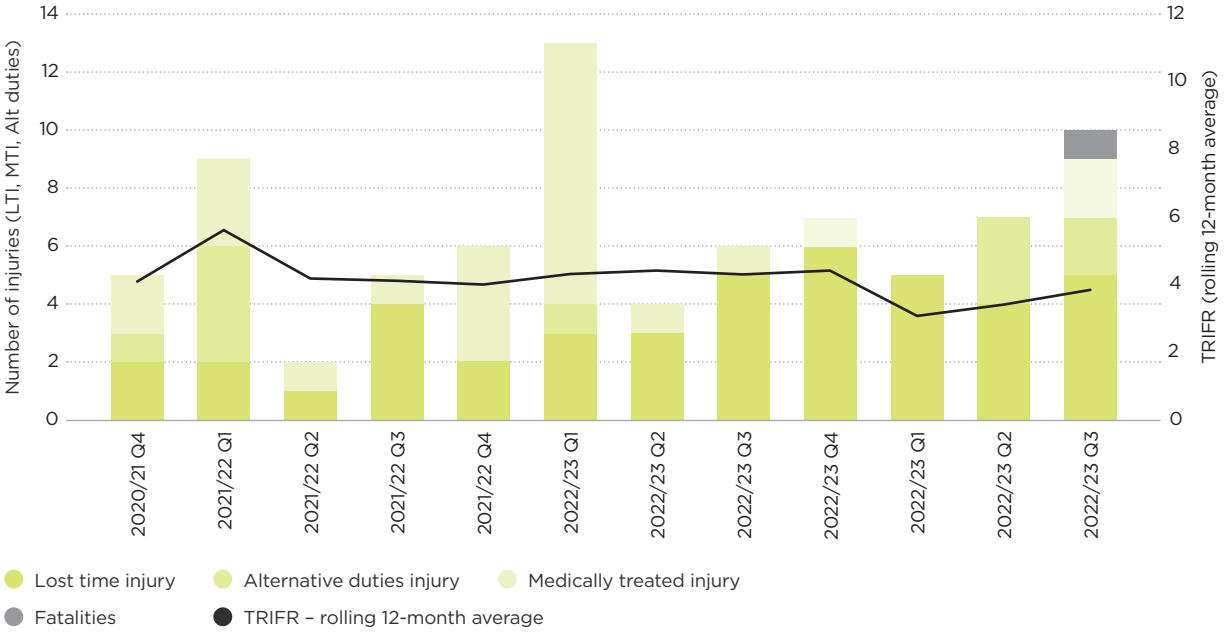


FIGURE 5: TRIFR

The following injury definitions are taken from Schedule 8 of the Regulations:

- **Lost-time injuries** are events that involved injury or illness of a mine worker that resulted in the inability of the worker to work for one day or more (not including the day of the event) during the reporting period (whether the worker is rostered on that day or not).
- **Alternative duties injuries** are events that involved injury or illness of a mine worker that resulted in the worker being on alternative duties during the reporting period.
- **Medical treatment injuries** are work-related injuries to mine workers that required medical treatment during the reporting period but did not require a day lost from work or alternative duties (other than the day of the event).

2.3 Types of events

Figure 6 shows the notifiable event categories for events notified to WorkSafe in the previous 12 months. The data shows that 42% of notifiable events in the past 12 months have occurred in relation to vehicles and plant (31%), and fire, ignition, explosion or smoke (11%). These two categories are broken down in more detail in the following section. A further 10% of notifiable events in the past 12 months occurred in relation to ground, geotechnical and other structural failures.

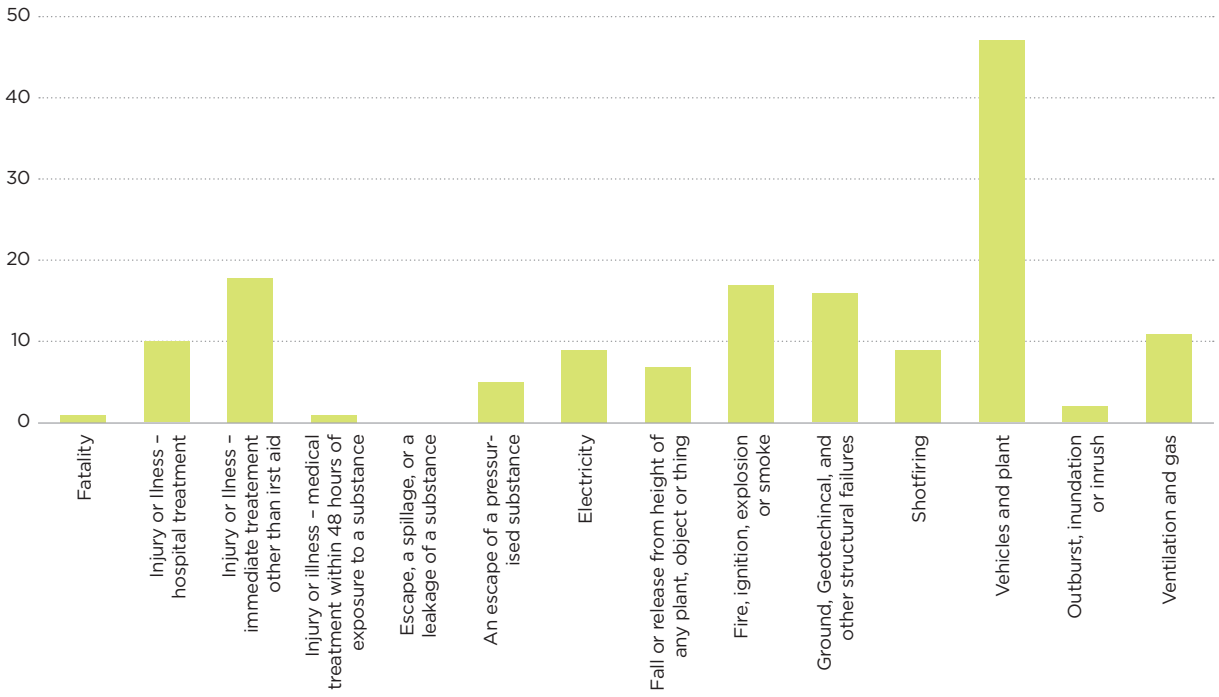


FIGURE 6: Notifiable event categories for the previous 12 months

2.4 Extractives sector focus areas

Where there is a high frequency of notifiable events in any Schedule 5 category, we have broken these events down in more detail to identify key focus areas. We will target our inspections to ensure that operators have adequate controls in place to address these risks.

Figures 7 and 8 break down the two largest notifiable event categories in the past 12 months into the corresponding Schedule 5 sub-categories. The data shows that for notifiable events related to fire, ignition, explosion or smoke, 82% involve fires on plant, mobile plant or in buildings associated with mining or tunnelling activities, 6% involves spontaneous combustion, 6% involves the underground ignition of any gas or dust and 6% involves the outbreak of a fire on the surface or underground. The vehicle and plant-related notifiable events involve collision of mobile plant with other plant (26%), overturning of mobile plant (48%), breach of a safety berm or windrow (7%), and unintended movement or brake failure (19%).

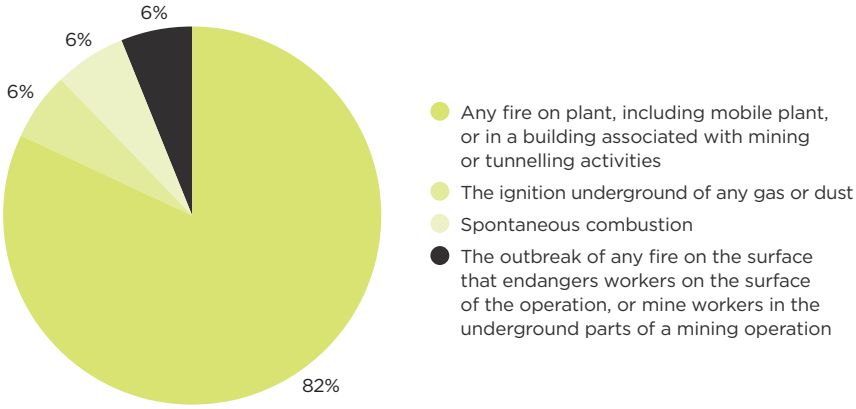


FIGURE 7:
Fire, ignition, explosion or smoke-related notifiable event sub-categories

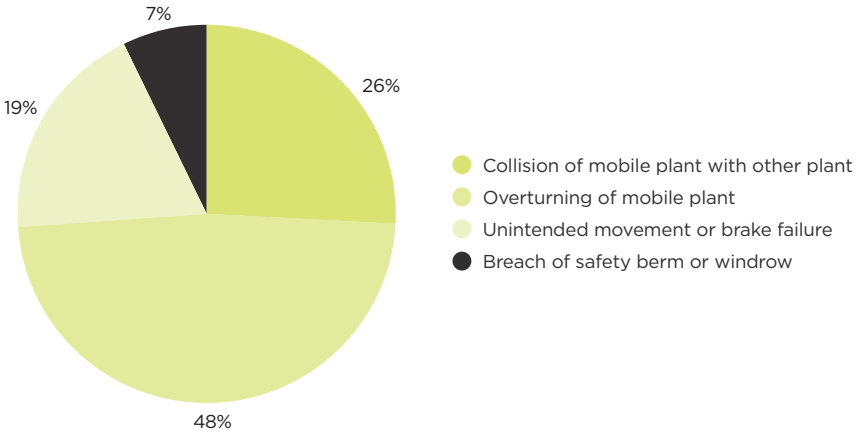


FIGURE 8:
Vehicles and plant-related notifiable event sub-categories

Consistency of reporting

Mining and tunneling data are received from a high proportion of those operations and are considered to be accurate. Notifiable events were reported by 45% of operations in the past quarter, and quarterly reports were submitted by 91% of operations this quarter.

Quarrying and alluvial mining data are received from a much lower proportion of those operations and are likely to be less accurate. Notifiable events were reported by just 1.8% of operations in the past quarter.

This was the sixth quarter that quarrying operations and alluvial mining operations were required to submit quarterly reports to WorkSafe. Quarterly reports were provided by 18 active alluvial mining operations (24%) and 268 active quarries (27%).

2.5 Regulator comments

As a general reminder to all Operators and workers, we have provided a summary for all workers of what they have a right to expect when going work. It is the responsibility of Operators to provide a safe workplace.

Worker health and safety rights and responsibilities

AS A WORKER YOU HAVE A RIGHT TO:

Work in a healthy and safe environment

There are things at work that might hurt you or make you sick. The business you work for, or the business that controls where you are working, is responsible for managing its work-related health and safety risks

Get appropriate training before you start work

The business you work for must make sure you have been trained to carry out your work in a healthy and safe way. Make sure you understand the risks and how to keep yourself and others healthy and safe at work.

Work with safe machinery, vehicles, tools and equipment

The business needs to make sure that the tools, equipment, vehicles and machinery you use at work are safe for you to use and in good working condition.

Stop or refuse to carry out dangerous work

You have the right to stop work, or refuse to carry out work, if you believe that doing the work would expose you, or anyone else, to a serious health or safety risk. If you have stopped work, you need to let your manager know as soon as possible.

Access to health and safety information

The business you work for must provide you with information about staying healthy and safe at work, in a way that you can understand.

Personal protective equipment (PPE)

In most cases the business you work for must provide you with personal protective equipment (PPE) if it's needed to keep you safe and healthy, for example, hard hats, earmuffs and safety glasses. Your business should train you in how to properly use, clean and maintain your PPE. The business you work for cannot charge you for PPE. You can voluntarily provide your own PPE but this must be checked and approved by your business.

Speak up you are the eyes and ears of your business

Telling your business about your ideas, experiences or concerns and those of your fellow workers helps keep you and others safe. Your employment or contract can't be terminated if you report or act on a health and safety concern. It's against the law for anyone to discriminate or take other negative steps against you because you've spoken up about health and safety at work.

Be given a chance to have a say

You must be given reasonable opportunities to express your views and contribute to decision making on health and safety at work. This includes decisions about: your health monitoring, conditions at your workplace and information and training for workers.

Health and Safety Representatives (HSRs) and Health and Safety Committees (HSCs)

You can ask your business for an HSR or an HSC, to help workers and the business work together to improve health and safety. You can also choose to join a union. For more information see the Worker Engagement, Participation and Representation good practice guidelines available on the WorkSafe website: worksafe.govt.nz

Be provided with:

- Toilets and hand-washing facilities.
- Clean drinking water.
- First aid facilities.
- A place to have a meal break in reasonable comfort and shelter.

Understand what to do in an emergency. Your employer is required to ensure you know what to do in an emergency, for example how to escape if there's a fire or what to do if an earthquake occurs

As a worker you have a responsibility to:

- Take reasonable care of your own health and safety.
- Take reasonable care that what you do or don't do does not adversely affect the health and safety of other people.
- Cooperate with any reasonable workplace health and safety policy or procedure that your business has.
- Comply with any reasonable instructions given by the business you work for.

What can you do if you have a health and safety concern?

- Tell your manager or your Health and Safety Representative.
- Ask a workmate or community member to raise the concern on your behalf.
- Contact your union, who can act on your behalf.
- Contact WorkSafe on 0800 030 040.
- Search 'concern' on our website worksafe.govt.nz

2.6 High potential incidents

A high potential incident at a mine, quarry or tunnel is an event, or a series of events, that causes or has the potential to cause a significant adverse effect on the safety or health of a person.

High potential incidents – 2023/24 Q3

Table 5 provides a summary of high potential incidents notified to WorkSafe in Q3 2023/24. The summaries are an abridged version from the operator's notification report.

INCIDENT DATE	SUMMARY	CONSIDERATIONS
Jan 24	We have had a transporter drop off a dozer and the escort operator has moved out of the road into the off side of the transporter. The two operators have had a discussion of their intention to travel to the next location and have walked back to machines. Operator of the transporter has moved before the escort has got into position and has side swiped the L/V with the operator in the ute. No injury to anyone.	– Job planning – Roads and vehicle operating areas – Risk assessment – Supervision – Training
Jan 24	Police communication reporting fatal incident. Self-employed loader operator fell on their head and lost consciousness. **Note**: Cause undetermined because loader operator was alone at the time of the incident.	– Lone work
Jan 24	It appears the loader operator has driven over his windrow while going into drop their trailing off and again on the way back you can see multiple tyre marks on the picture. They were reversing back when they randomly turned right resulting in the loader sliding down the bank then hitting the material at bottom making the loader trip up on its side. The operator was taken to hospital for a check-up there was nothing wrong. However while at the hospital they underwent a drug test resulting in finding of cannabis and opium.	– Job planning – Roads and vehicle operating areas – Risk assessment – Supervision – Training – Fit for work
Jan 24	While inspecting the sump pump the intake hose burst and spilled hot water over the operators body, causing second degree burns to the back and lower abdomen.	– Job planning – Isolation – Release of pressure – Risk assessment – Maintenance – Supervision – Training
Jan 24	Workers had finished high wall benching for the day and were in the process of completing their post operational checks when they noticed a small run of material at the southern edge of the benching works moving up the edge of the bench above the work area. The run has developed into slip that looks to have occurred between two unknown geological features the slip is about 80t. The work area is on hold until we come up with a plan with the geotechnical engineer.	– Ground or strata instability – Workplace inspection – Risk assessment – Supervision – Training
Jan 24	While temping the adjacent drilled out shot area a small length of Pyrocord has been found on the nearby area from the shot that had gone off on the previous month.	– Explosives – Workplace inspection – Risk assessment – Supervision – Training
Feb 24	40t ADT overturned on to left side while on haul road while carrying waste.	– Roads and vehicle operating areas – Risk assessment – Supervision – Training
Feb 24	A safety chain used to join adjoining wagons and rail cars together to prevent unintended separation has fallen down during travel of the train, and caught on a rail sleeper, causing the rail car and a following wagon to derail. There were no injuries and no workers in the immediate line of fire.	– Roads and vehicle operating areas – Risk assessment – Supervision – Training
Feb 24	Incident cable bolter vs loader. Loader parked access drive, lights off, operator in cab. Cable bolter has trammed into level and not seen loader parked in access drive. Loader operator has seen cable bolter coming down drive. loader operator assumed cable bolter was going into ore drive on out bye side of loader. No injuries reported. Minor damage to underside of rail cable bolter (hydraulic hose and some cabling). No damage to loader.	– Roads and vehicle operating areas – Risk assessment – Supervision – Training
Feb 24	While descending a road the truck operator of haul truck applied the retarder but that did not function, then the service brake and that also did not function. They then applied the emergency brake and brought the vehicle to a stop.	– Roads and vehicle operating areas – Maintenance – Risk assessment – Supervision – Training

INCIDENT DATE	SUMMARY	CONSIDERATIONS
Feb 24	The operator reports dropping mobile phone onto the floor and reaching to pick it up without stopping the machine (ADT). They then hit a tree.	– Roads and vehicle operating areas – Risk assessment – Supervision – Training
Feb 24	A contractor was dumping a load of cleanfill at the bottom of the quarry on solid ground with a truck and trailer. The trailer was on a slight angle, but the driver did not perceive this as enough of a slope to cause any issues and proceeded dumping. The trailer bin overturned when it was hoisted half way up. No other vehicles or people on site at the time.	– Roads and vehicle operating areas – Tips, pond and voids – Job planning – Risk assessment – Supervision – Training
Feb 24	While traveling down road from the go bay, the operator of a haul truck lost traction of their vehicle on the corner adjacent to main sump and spun out.	– Roads and vehicle operating areas – Risk assessment – Supervision – Training
Feb 24	Moving overburden material an ADT operator reversed into place to dump the material. The sun was preventing clear visibility, and they proceeded to reverse up onto a previously made higher ramp, and the ADT tray slowly overturned, landing on it's side.	– Roads and vehicle operating areas – Risk assessment – Supervision – Training
Feb 24	Operator loaded material on the truck, taken the truck down the hill off tip on site. Reversed the truck on uneven ground or unstable ground, as they started to tip, it forced one the wheels down into the dirt and forced the truck to tip over. No injury to worker.	– Roads and vehicle operating areas – Tips, pond and voids – Job planning – Risk assessment – Supervision – Training
Feb 24	Crush injury between two light vehicles.	– Roads and vehicle operating areas – Job planning – Risk assessment – Supervision – Training
Feb 24	The truck was driving up the hill fully loaded as he got to the top of the hill he ran out of revs. As they changed down gears the truck came to a stop. They applied the foot brakes however the truck slid backwards down the haul road. As the truck started to pick up more speed the driver turned the truck into the inside bank causing it to roll onto its side.	– Roads and vehicle operating areas – Risk assessment – Supervision – Training
Feb 24	Machine operator noticed column separation in a blast hole, booster and detonator had initiated but due to slit plug the top third of blast hole causing desensitisation.	– Explosives – Workplace inspection – Risk assessment – Supervision – Training
Mar 24	Fall of fibrecrete from decline backs immediately adjacent to stoping activity. Proximal stoping is believed to have cause some ground movement and loosening of the fibrecrete in the backs of the decline. No rock has fallen, however in the order of 30kg of fibrecrete has failed and fallen to the ground post stope blasting, exact time has not been identified, but believed to be not at the time of the blast. Shift supervisor has noticed the failed material on the floor of the decline on regular rounds. They proceeded to clear the mine, one surveyor working below, barricade the area and notify the mine superintendent and mine manager.	– Ground or strata instability – Workplace inspection – Risk assessment – Supervision – Training

INCIDENT DATE	SUMMARY	CONSIDERATIONS
Mar 24	Injury to workers reported. They were working in the area where three concrete blocks where stacked. One of the three blocks tipped over. What is thought to have happened is from poor weather, the ground had been undermined which caused it to lean. Two out of three blocks fell and rolled towards them. One worker was hit in the back and flung out of the way. Then the other worker was hit as well and a block landed on their feet. The first worker got up and tried to help get the block off the other worker – they ended up using a machine to lift it off enough so the worker could pull their feet out. They went to A&E they were discharged from there and went home.	– Job planning – Risk assessment – Supervision – Training
Mar 24	While top loading material the digger has started to sink in soft material during loading, the operator has reversed out making contact with the rear of the digger and the tray of a dump truck causing minor damage to the handrail.	– Roads and vehicle operating areas – Risk assessment – Supervision – Training
Mar 24	No injury. Dump truck moved unexpectedly during live testing.	– Roads and vehicle operating areas – Job planning – Maintenance – Risk assessment – Supervision – Training
Mar 24	The digger tracked across the bench to help bulldozer on the next bench. When finished as they were tracking back across the bench the digger slid off the bench – the surface had become wet from moisture being mobilised after the machine tracked across it the first time. No injuries from the incident.	– Ground or strata instability – Job planning – Risk assessment – Supervision – Training
Mar 24	While descending a ramp the operator of a haul truck had a fatigue event and drifted off direction and ran over the lighting plant. They corrected their direction and, not realizing they had run over the lighting plant, continued to the dump and dumped the load. On returning they realized what happened and notified the supervisor.	– Roads and vehicle operating areas – Fatigue management – Risk assessment – Supervision – Training
Mar 24	Tramming underneath the powerlines, working in a digger, felt tracks slide, tried to anchor the digger, their reaction was to pull on the levers which then made the boom raised underneath the powerlines, making contact with the powerlines and then turned, which resulted in bringing the powerlines down.	– Electricity – Job planning – Risk assessment – Supervision – Training

TABLE 5: High potential incidents – 2023/24 Q3

Table 6 and Figure 9 shows the number of high potential incidents per quarter during the last two years for all extractives operations.

QUARTER	Q4 APR-JUN 2022	Q1 JUL-SEP 2022	Q2 OCT-DEC 2022	Q3 JAN-MAR 2023	Q4 APR-JUN 2023	Q1 JUL-SEP 2023	Q2 OCT-DEC 2023	Q3 JAN-MAR 2024	TOTAL PREVIOUS 12 MONTHS
Number of high potential incidents	20	27	22	22	21	24	22	25	**92**

TABLE 6: High potential incidents per quarter

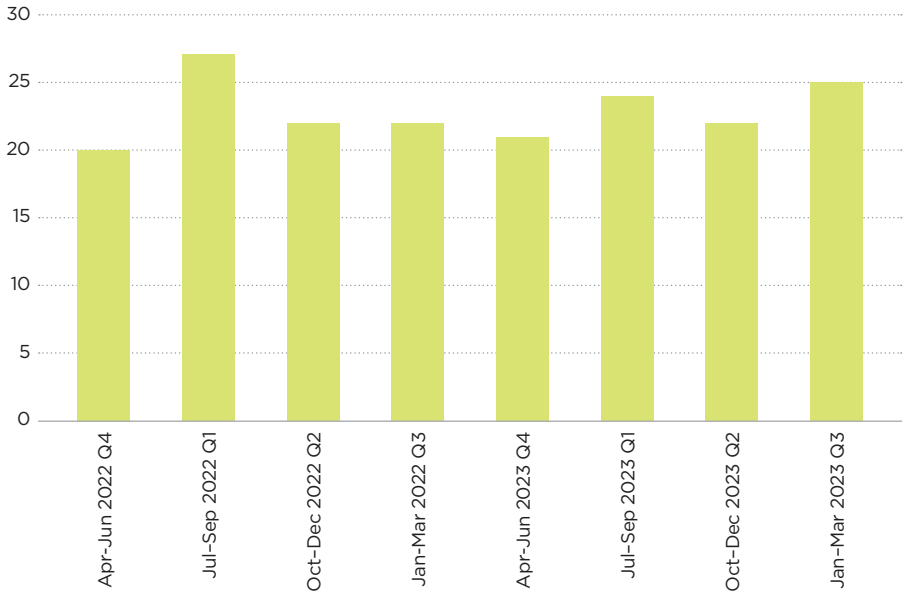


FIGURE 9:
High potential incidents per quarter

2.7 High potential incidents – investigation outcomes

High potential incident case study – hose burst causing second-degree burns

Jan 24	While inspecting the sump pump the intake hose burst and spilled hot water over the operator's body, causing second degree burns to the back and lower abdomen.

TABLE 7:
High potential incident – investigation outcomes case study

THE INCIDENT

While inspecting the sump pump the intake hose burst and spilled hot water over the operator's body, causing second degree burns to the back and lower abdomen. The intake suction hose became blocked while the pump was operating. Friction caused the water to heat up and pressure to build up. When the suction hose blockage was released, the cold water and hot water caused rapid expansion which over-pressured the intake of the pump and the hose burst while the operator was in close proximity to that area.

FINDINGS AND LEARNINGS FROM THE INVESTIGATION

The negative suction centrifugal pumps (diesel driven) are not fit for purpose to apply in dewatering the site's operational pit. These pumps have a very low tolerance to objects entering the suction point and tend to block on the non-return valve frequently, causing the pump to cavitate, in turn superheating the impellor housing contents.

The procedure to relieve this type of blockage was convoluted and had the tendency to place the operator near the intake and outlet side of the pump while executing this procedure. Although the hazard was identified on the outlet side, the hazard of release on the intake side was not recognised. This was the side that caused the burn injuries to the worker when it unexpectantly released due to pressure built up in the pump chamber.

A decision was made not to use negative suction centrifugal pumps in their pit at all and these have been replaced with submersible units driven off generator sets. This control is a substitution i.e. higher up on the hierarchy of control.

EMERGENCY RESPONSE

The operator assessed that the emergency response on site was largely as planned, and the first aid response was correct, timeous and effective. The first aider correctly diagnosed the burns and the immediate treatment required – the injured worker was placed in the local stream to cool the burns and was effectively treated for shock. The emergency services responded and were on site within 15 minutes after notification and arrived at the correct location.

Improvements identified by the operator regarding emergency response include:

- Hazard identification on site has been upgraded to include burns, and first aid preparedness must now include treatment for all types of burning events.
- Communication facilities on site are to be completed to ensure faster and more effective outside communication. A star link system has been installed to ensure satellite communication at all positions on site.
- The helicopter landing area to be designated with signs visible from the air.

FIGURE 10:
Incident scene showing burst hose

REGULATOR COMMENTS AND RECOMMENDATIONS

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 11 shows the emergency planning process.

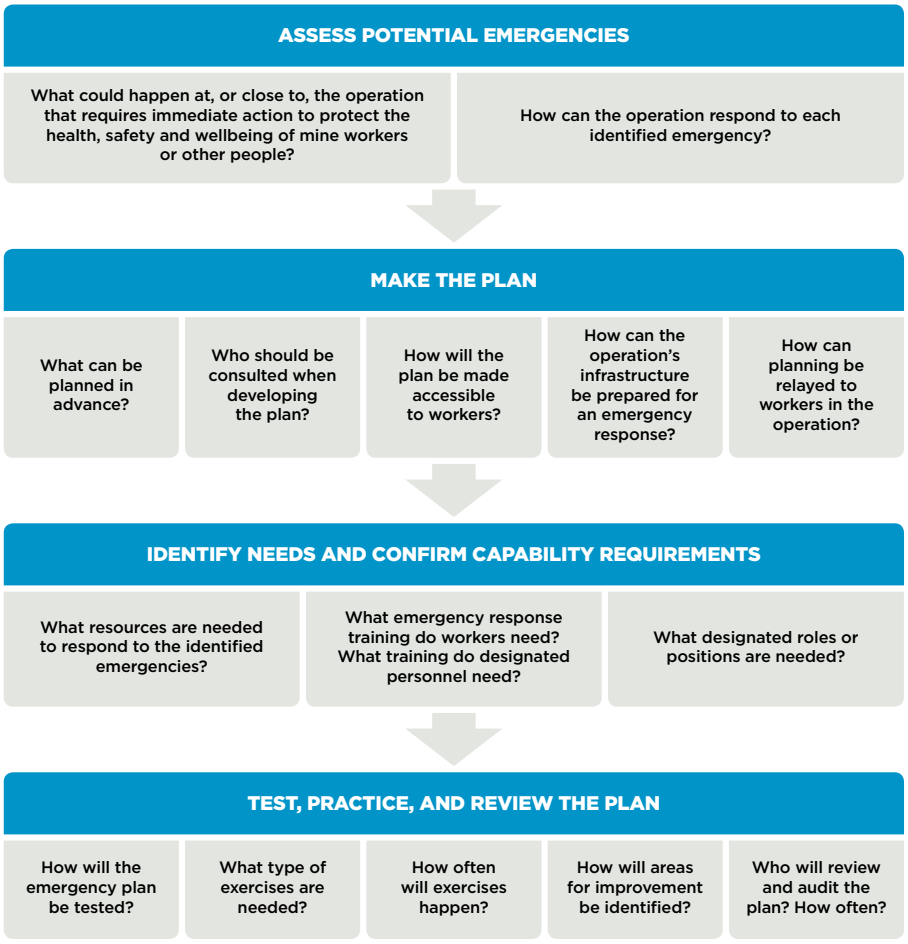


FIGURE 11: Emergency planning process

From: Emergency preparedness in mining and tunnelling operations – Approved Code of Practice (ACOP)

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.

All Extractives 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 operation
- hazards at the 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.

3.0 Regulatory insights

IN THIS SECTION:

3.1 What are principal hazard management plans?

Last quarter, the requirements for A-Grade Operations were outlined, including the requirement to carry out an appraisal of the operation to identify principal hazards at the operation, and to ensure that there is a principal hazard management plan (PHMP) in place for each principal hazard identified.

What is the purpose of a PHMP?

The general purposes of a PHMP are to:

- identify the nature of the principal hazard at the operation
- describe the control measures that will be used to ensure that principal hazards are effectively managed.

A PHMP forms part of the overall health and safety management system (HSMS).

Considerations

Before a PHMP is prepared, operators should consider the matters below:

- relevant information
- nature and complexity of the operation
- intended audience
- identification of the hazards
- existing plans and procedures or generic documentation
- any relevant monitoring data.

Risk assessment

For each principal hazard identified a risk assessment must be carried out and controls developed to ensure, so far as is reasonably practicable, that the health and safety of workers are not put at risk by the principal hazard.

Worker engagement

PHMPs should be developed in conjunction with the workforce, including the appropriate health and safety representative, and all workers must understand the content (in plain English) of the PHMP that relates to the work they will undertake.

In the case of a new operation, where there are no workers during development of a PHMP, the workers should participate in a review of the PHMP that is completed within six months of the start of operations at the site.

What information needs to be included in a PHMP?

Regulation 68 outlines the content that must be included in all PHMPs:

- a description of the nature of the principal hazard
- how risk assessments will be conducted, and the results of any risk assessment completed
- the control measures to be implemented to manage the principal hazard and the risk of harm it presents
- how any specific requirements in the regulations (if any) will be complied with
- emergency preparedness
- the review and audit processes for the PHMP
- the roles, responsibilities and competencies required to implement the PHMP.

Specific PHMP requirements

The regulations also include specific requirements that must be included in PHMPs for certain principal hazards. These include:

- **Regulation 71**: Principal hazard management plans for ground or strata instability
- **Regulation 80**: Principal hazard management plans for roads and other vehicle operating areas
- **Regulation 81**: Principal hazard management plans for tips, ponds, and voids
- **Regulation 82**: Risk reassessment in relation to tips, ponds, and voids
- **Regulation 83**: Inspection of tips
- **Regulation 84**: Principal hazard management plans for air quality
- **Regulation 86**: Principal hazard management plan for explosives
- **Regulation 119**: Roads and other vehicle operating areas
- **Regulation 120**: Operation of mobile plant by authorised workers only
- **Reglation 121**: Defects discovered during inspection of tips
- **Regulation 122**: Explosives.

Can I copy a PHMP from another operation?

No. You can use a principal hazard management plan template structure to guide you, but never copy and paste a PHMP that you find elsewhere. This is because yours must be specific to your site and include input from relevant workers and stakeholders.

Priscilla Harris
Acting Deputy Chief Inspector Extractives

4.0
The regulator

IN THIS SECTION:

4.1 Our activities

The Extractives Specialist Health and Safety Inspectors at WorkSafe use a range of interventions to undertake their duties. Inspectors strive to achieve the right mix of education, engagement and where required enforcement. This section of the report includes a summary of the interventions used by the Extractives Inspectors during the quarter.

4.2 Assessments

Proactive assessments aim to prevent incidents, injuries and illness through planned, risk-based interventions. Reactive activities are undertaken in response to reported safety concerns or notifiable events. Assessments can be either site- or desk-based in nature.

For proactive site-based assessments, the objectives of each visit are agreed and the appropriate inspection tool is selected. Targeted assessments and regulatory compliance assessments can take several days on site with a team of inspectors attending. These multi-day inspections may be 'targeted' to assess the controls in place for a particular principal hazard (for example, WorkSafe has been targeting 'roads and other vehicle operating areas' as a result of the high number of notifiable events in this area), or they may involve a more general assessment of 'regulatory compliance'. Site inspections and targeted inspections are generally completed in a one day site visit but can also focus on specific topics.

As well as site-based assessments, the Inspectors spend considerable time undertaking desk-based assessments. Proactive desk-based assessments include the review of Principal Hazard Management Plans (PHMPs), Principal Control Plans (PCPs), mine plans, and high risk activity notifications. Responding to notifiable events and safety concerns may involve a site-based or desk-based assessment, or both.

Table 8 shows the range of assessments undertaken in Q3 2023/24 by sector.

		ASSESSMENTS	MINE	TUNNEL	ALLUVIAL MINE	QUARRY
Proactive	Site-based	Targeted assessments				
		Regulatory compliance assessments				
		Site inspections	13	6	11	36
		Targeted inspections	1	2		
	Desk-based	PHMP/PCP review	5	12		
		Mine plan review	32	4		
		High risk activity				
Reactive	Site-based	Concerns – inspection	2		1	3
		Notifiable events – inspection	10	2	2	11
	Desk-based	Concerns – desk-based	1			2
		Notifiable event – desk-based	14	2	1	8

TABLE 8: Proactive and reactive site and desk based assessments conducted in Q3 2023/24

Figure 12 shows the number of proactive and reactive site- and desk-based assessments undertaken by the regulator in Q3 2023/24. This quarter 55% of our activities were site-based, and 67% of activities were proactive.

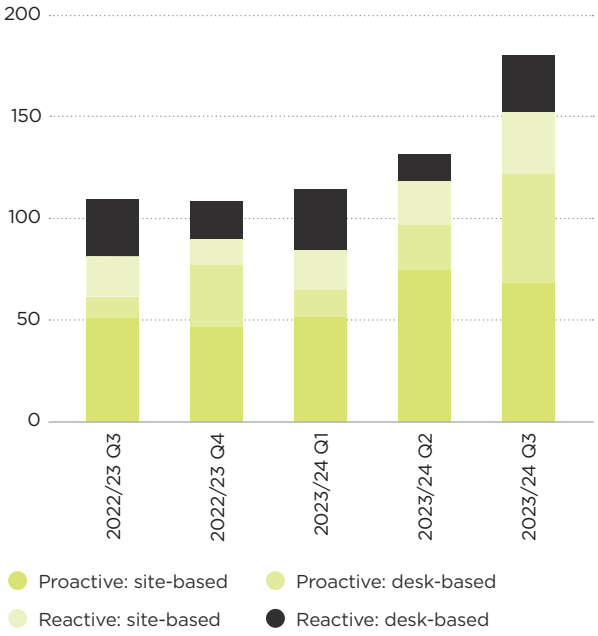


FIGURE 12:
Proactive and reactive site and desk-based assessments

Figure 13 shows the number of assessments undertaken by the regulator in Q3 2023/24 by sector. This quarter, 33% of our assessments were for quarries, 43% for mines, 15% for tunnels and 8% for alluvial mines.

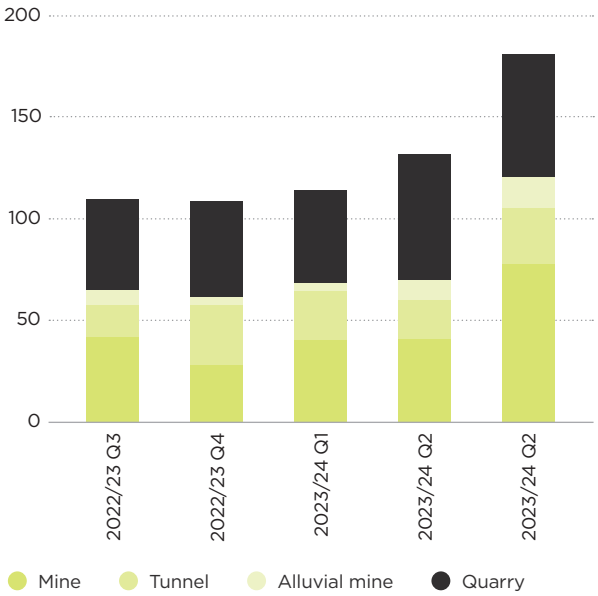


FIGURE 13:
Assessements by sector

4.3 Enforcements

Enforcement actions issued by WorkSafe include prohibition and improvement notices and directive letters. Enforcement actions are issued according to our Enforcement Decision Making (EDM) Model when health and safety issues are identified through assessments.

Figures 14 and 15 show the number of enforcement actions issued in Q3 2023/24 by notice type and by sector. This quarter, a total of 106 enforcement actions were issued. Of those, 5% of were prohibition notices, 27% were improvement notices, 61% were directives and 7% were sustained compliance letters. The majority of the enforcement actions were issued to the alluvial mining (22%), mining (32%) and quarrying (38%) sectors.

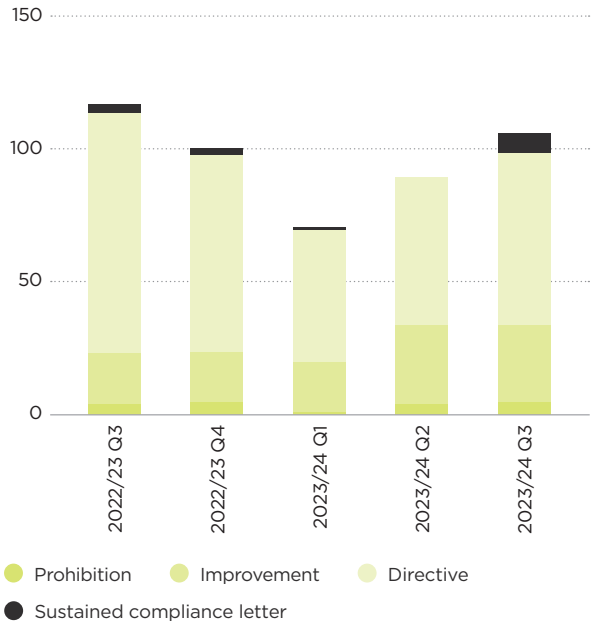


FIGURE 14: Enforcement actions issued by type

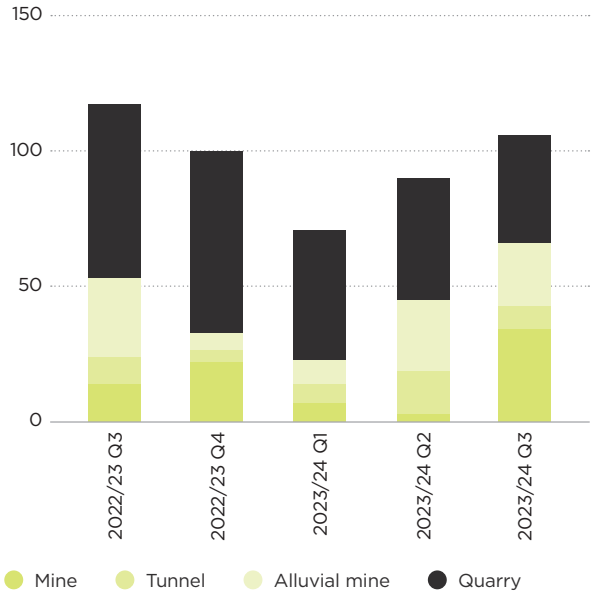


FIGURE 15: Enforcement actions issued by sector

Figure 16 shows the number of enforcement actions issued in Q3 2023/24 by category, and provides an indication of the key areas of concern to our inspectors. This quarter, the majority of enforcement actions were issued for health and safety issues relating to roads and other vehicle operating areas (25%), guarding (24%) and safety critical role/CoC (8%).

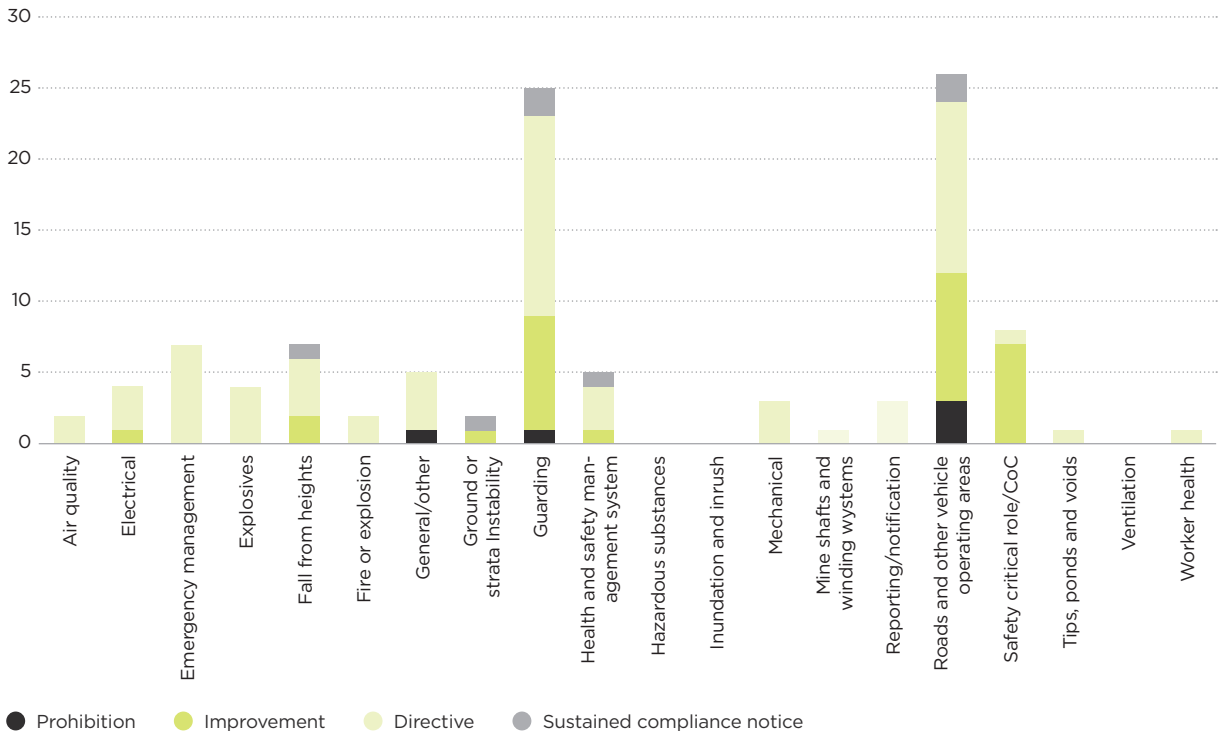


FIGURE 16: Enforcement actions issued by category 2023/24 Q3

Regulator activity comment

The number of inspections undertaken during Quarter 3 increased from the previous quarter, and the Inspectors, for several reasons, are now likely exceed the number of inspections planned for the full 2023/24 year. There was a proportionate increase in enforcement action taken. Noting enforcement activity in the Mining sector did increase significantly. This increase in enforcement was related to the response to notifiable events.

As stated last quarter, the two categories where the regulator is issuing most enforcement are consistent. 'Guarding' and 'Roads and other vehicle operating areas'. That enforcement issued for guarding remains high is seriously concerning. Guarding is a simple requirement with very good guidance and standards available for operators to use to ensure that sites are compliant. Inspectors will have no tolerance for non-compliance. Where it creates a risk of immediate harm to workers, equipment will not be permitted to be used until it meets the requirements. To avoid any disruption, we advise operators to undertake self-assessments on their plant and ensure that operations all have only safe machinery operating.

Disclaimer

WorkSafe New Zealand has made every effort to ensure the information contained in this publication is reliable, but makes no guarantee of its completeness.

It should not be used as a substitute for legislation or legal advice. WorkSafe is not responsible for the results of any action taken on the basis of information in this document, or for any errors or omissions.

ISSN 2703-3392 (online)

Published: August 2024

PO Box 165, Wellington 6140, New Zealand

worksafe.govt.nz

WSNZ_4739_AUG 24

ISSN 2703-3392 (online)

WORKSAFE
Mahi Haumaru Aotearoa

PO Box 165, Wellington 6140
0800 030 040 **worksafe.govt.nz**