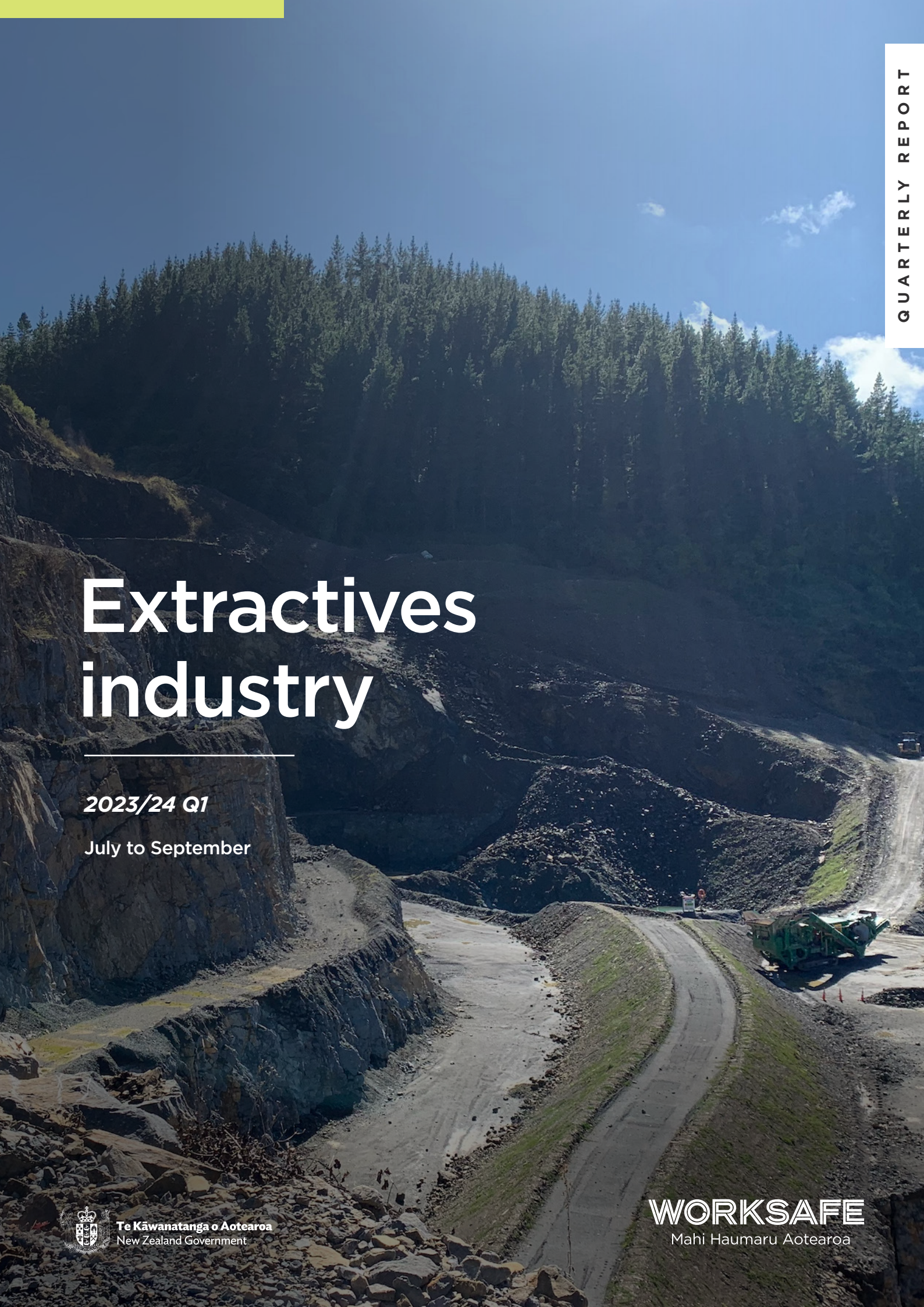
QUARTERLY REPORT

Extractives industry

2023/24 Q1

July to September



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.

I recently attended the Australasian Tunnelling Conference in Auckland, and one takeaway from the conference was the advancement in technology in that sector. Many of the papers presented focused on new or significantly improved methods of work. These were not papers on theoretical ideas – in fact the majority were updates on actual experiences where the technology had been implemented in the field.

The types of innovation and new technology that was presented covered a large range of topics, and I am not going to talk about any of them in particular. The point I took away from the conference was that all our industries are in a period of rapid technological change, and the method or machines we used yesterday or today will not be the machines and methods we will be using tomorrow.

While the primary drivers for many technological improvements are often productivity, by the nature of the new technologies being designed to deliver predictable positive outcomes and reduce the risk of unwanted outcomes, safety is normally improved as well. Of course, for many of the technological advancements that are being made, safety was the primary objective.

These technological advancements bring responsibilities and challenges to operators.

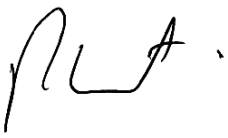
Firstly, there is an obligation to keep yourselves aware of the new technology, and this requires you to be actively keeping yourselves updated on what is available. This research can be through reading, searching the intranet, subscription to groups, visiting other operations and suppliers, or attendance at conferences. The obligation requires more than just passively waiting for someone to come in the gate and tell you.

After you are aware of these new options you then need to monitor how they are performing and be willing to accept when the advancements are no longer theoretical or experimental, but in fact have become proven and reliable options for your workplace.

And when considering these options, it is important when thinking in terms of Health and Safety outcomes whether the technology has become a 'reasonably practicable' step. That is no longer best practice but is quickly becoming good practice or the industry standard.

These types of decisions will likely be required more and more. The rate of change has the potential to be staggering as artificial intelligence assisted research and development takes effect. So just keeping up with knowledge of the changes will be a challenge, notwithstanding the adoption of new machinery and supporting systems all have financial implications for businesses. It is this early awareness of what technology is likely to be required that will be critical to ensure operators are able to plan financially for purchase and for practical implementation at their operations.

We recognise that keeping up will be difficult and picking the winners of the new technologies will have some risk associated with it. This requirement to keep up will also apply to the regulator, who will need to evaluate what innovations brings the best Health and Safety improvements, and we will also need to make judgements on when technology is no longer unproven but is in fact a reasonably practicable step. As a regulator we will give as much early advice as we can as we see what other operations are doing.



Paul Hunt
Chief Inspector Extractives

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1.0
Industry profile

IN THIS SECTION:

1.1 Operations

3

Metalliferous opencast mines
Includes one mine under rehabilitation

20

Coal opencast mines
Includes one mine in care and maintenance and one mine under rehabilitation

7

Metalliferous underground mines
Includes two mines under care and maintenance and two operating tourist mines

1

Coal underground mines
Includes one tourist mine under care and maintenance

6

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

2

Coal exploration
Two operational coal exploration projects

67

Alluvial mines
Number of mines that have been verified (57) or have notified of an Appointed Manager to WorkSafe (10) (includes 2 iron sands mines)

989

Quarries
Number of quarries that have been verified (840) or have notified of an Appointed Manager to WorkSafe but not yet verified (149)

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 1,097 active operations in New Zealand as at the end of September 2023.

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

796

Metalliferous opencast mines
505 FTEs employed by mine operators and 291 FTEs employed by contractors

886

Coal opencast mines
732 FTEs employed by mine operators and 154 FTEs employed by contractors

484

Metalliferous underground mines
305 FTEs employed by mine operators and 178 FTEs employed by contractors

0

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

367

Tunnels
296 FTEs employed by mine operators and 71 FTEs employed by contractors

4

Coal exploration
3 workers employed by mine operators and 1 worker employed by contractors

563

Alluvial mines
Number of workers is known for 43 of the 67 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 761 of the 989 quarries that are verified and/or have notified of an Appointed Manager. The total number of workers has been extrapolated for the remaining 228 operations

There were 6,283 Extractives FTEs in New Zealand as at the end of September 2023. 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 fourth quarter that quarrying operations and alluvial mining operations were required to submit quarterly reports to WorkSafe. Quarterly reports were provided by 8 alluvial mining operations (12%) and 201 quarries (20%). 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 Q1 2023/24, reported to WorkSafe in the quarterly reporting. The hours are separated into Employees and Contractors.

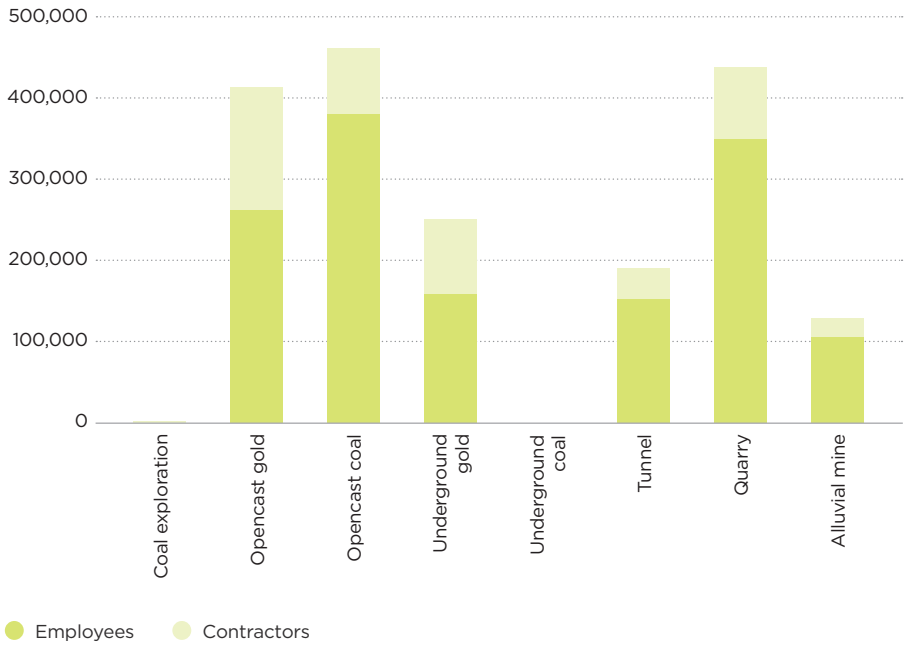

FIGURE 1:
Total hours worked by sector 2023/24 Q1

Figure 2 shows the number of Full Time Equivalents (FTEs) calculated from total hours worked that were reported to WorkSafe in quarterly reports for Q1 2023/24. The hours are separated into Employees and Contractors.

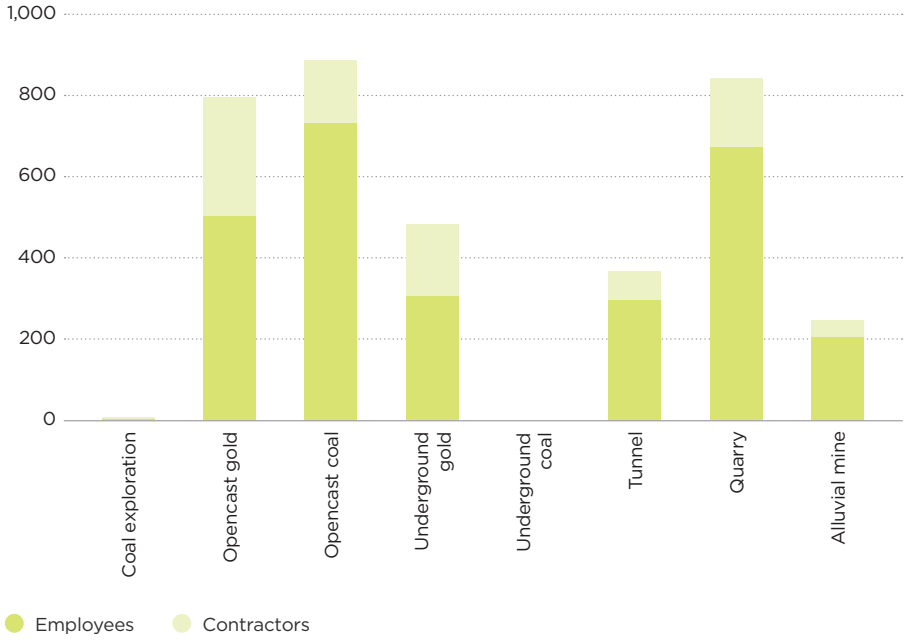

FIGURE 2:
Number of FTEs by sector 2023/24 Q1

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).

Every year about half of the BoE Board members' two-year term finishes, and a selection process is conducted to fill the vacant roles. Often existing Board members seek re-selection and for that reason there are only one or two changes to the previous Board in most years. This year was unusual in that several long-term Board members chose retirement rather than being available for re-selection. This resulted in a requirement to select five new members at a minimum. The total number of vacancies was seven.

After interviews and a selection process conducted by industry representatives, the final selection provides a good balance of experienced Board members and new persons. The selection also met the requirements of the Act for the type of experience and knowledge that must be represented on the Board; a mixture of representation from:

1. mining and quarrying operations
2. health and safety inspection
3. mining and quarrying education, and
4. mining and industry training.

The Board members from 14 February 2024 will be:

- Paul Hunt – Chair (current)
- Bernie O'Leary (current)
- Fiona Bartier (re-selected)
- Brian Bouzaid (current)
- Mark Pizey (current)
- Tim Kennedy (re-selected)
- Liz MacKenzie (new)
- Andrew Weir (new)
- Andy Allen (new)
- Ed Ayre (new)
- Mathew Vandy (new)

The BoE web site details will be updated following the first BoE meeting of 2024 with photos and bios of the new BoE Board members.

What I would also like to do is acknowledge those Board members who retired this year. Several have given long service, and their considerable contribution to the Industry competency framework should be acknowledged, those retiring are:

Dinghy Pattinson, who is well known in the mining industry, completed a short tenure as a Board member, during which he was a very active and productive Board member. He resigned after taking a role at WorkSafe as an Inspector. After consideration he felt that it was best that an active industry person would better represent the independent nature of the Board. WorkSafe already has one designated member – The CI Extractives who is appointed to chair the Board, and this was felt to be the custom and practice. It may well be that Dinghy decides to be considered again if circumstances change.

Matt Mules ably represented the tunnelling industry during a period of significant changes to the CoC framework. During the introduction of the SWI, which included the need to transition from Tunnel CoCs through to separate Tunnel and Metalliferous CoCs, Matt was able to keep the BoE well informed on the tunnelling industry requirements and opinion.

Garth Elliot has been a BoE Board member for several terms, representing workers in the Extractives Industry. Garth has long been a strong advocate for workers' rights in the industry generally, and in his role as a BoE Board member has actively ensured that competency in the industry is continuously improving to ensure the improvement of the health and safety at sites for all workers.

Michelle Crompton and Steve Bell have also resigned – both were original members of the first BoE Board appointed, and therefore their contribution to the Extractives competency framework has been immense. First developing and implementing the original framework, and then contributing to the ongoing development of the framework and other BoE activities for over 10 years is significant contribution to the Extractives industry that all of us should appreciate.

Michelle Crompton was the go-to authority on training organisations and gave explanation to the Board on the changing world of Industry Training Organisations.

Steve Bell comes from a long career in the coal industry, which he has recently extended into tunnelling and related civil projects. Steve provided the BoE with insight into the 'on the ground' requirements for competency and what CoC holders really should understand and be able to do. He had been mine manager for many years and brought the 'coal face' to the meetings to ensure the competence framework was practical.

It has been an extremely busy few years for all five of the departing BoE Board members (and all Board members!) and we thank them for their contribution, and in this instance make a special thank you to very long serving Michelle and Steve.

Michelle Crompton | Steve Bell | Matt Mules | Kevin (Dinghy) Pattinson | Garth Elliot

FIGURE 3: Retiring BoE Board members

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

TOTAL NUMBER OF ORAL EXAMS HELD Q1 JUL–SEP 23	TOTAL PASSES	SUCCESS %
17	12	70.5

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 Q4 2022/23.
Note: We no longer report Life Time CoCs.

COC TYPE	TOTAL COCs RENEWED Q1 Jul–Sep 2023	TOTAL NEW COCs ISSUED Q1 Jul–Sep 2023	TOTAL NUMBER OF CURRENT COCs
A Grade Quarry Manager	2	1	298
B Grade Quarry Manager	8	9	445
A Grade Opencast Coal Mine Manager	0	0	80
B Grade Opencast Coal Mine Manager	0	0	56
A Grade Tunnel Manager	3	0	39
B Grade Tunnel Manager	1	0	84
Site Senior Executive	3	2	56
First Class Coal Mine Manager	0	0	15
First Class Mine Manager	0	0	20
Coal Mine Deputy	0	0	31
Coal Mine Underviewer	0	0	22
Mechanical Superintendent	1	0	24
Electrical Superintendent	1	0	22
Ventilation Officer	0	0	4
Mine Surveyor	0	0	13
Site Specific	0	0	5
Winding Engine Driver	0	0	0
Total	**19**	**12**	**1,214**

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 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
Number of notifiable events	20	18	20	21	23
Number of operations that notified events	11	9	11	10	9

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

Eighteen individual mines and tunnels from a total of 39 reported notifiable events in the past 12 months.

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

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

Forty-seven individual quarries and alluvial mines from a total of 1056 reported notifiable events in the past 12 months.

Figure 4 shows the number of notifiable events reported to WorkSafe by sector from October 2021 to September 2023.

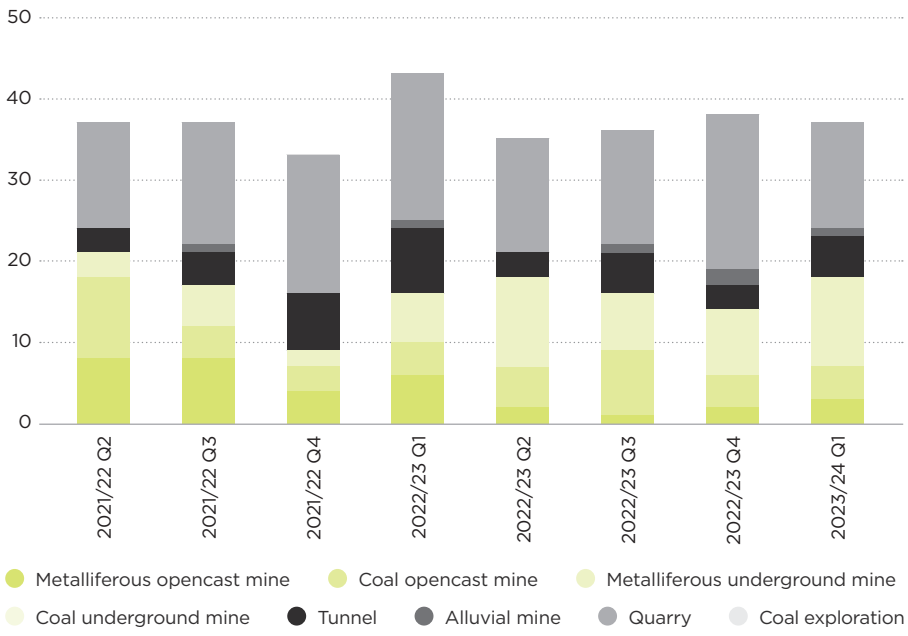

FIGURE 4: Notifiable events by sector

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 fourth 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 October 2020 to September 2023. 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 3.1. 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.

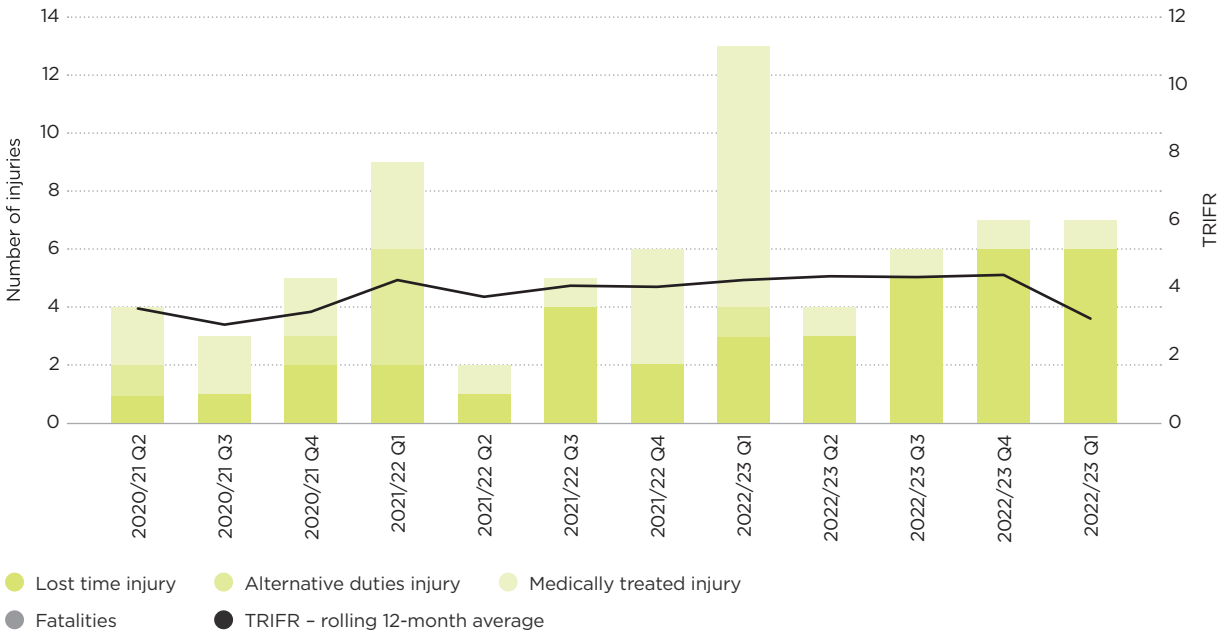

FIGURE 5: TRIFR

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 1 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).

Figures 6 and 7 show the number of injuries resulting in more than a week away from work (WAFW), and the sum of the claims costs for those WAFW injuries for the mining and quarrying sectors from January 2021 to May 2023. It is important to note that the number of WAFW injuries for previous quarters may increase over time as ACC can grant claims up to 12 months after an injury has occurred. The claims costs for WAFW injuries for previous quarters will also continue to increase over time as the true costs of those injuries are realised. It may take two years or more for the true costs to be realised. The average cost of extractives sector WAFW injuries between January 2021 to May 2023 was over $20,696 per injury.

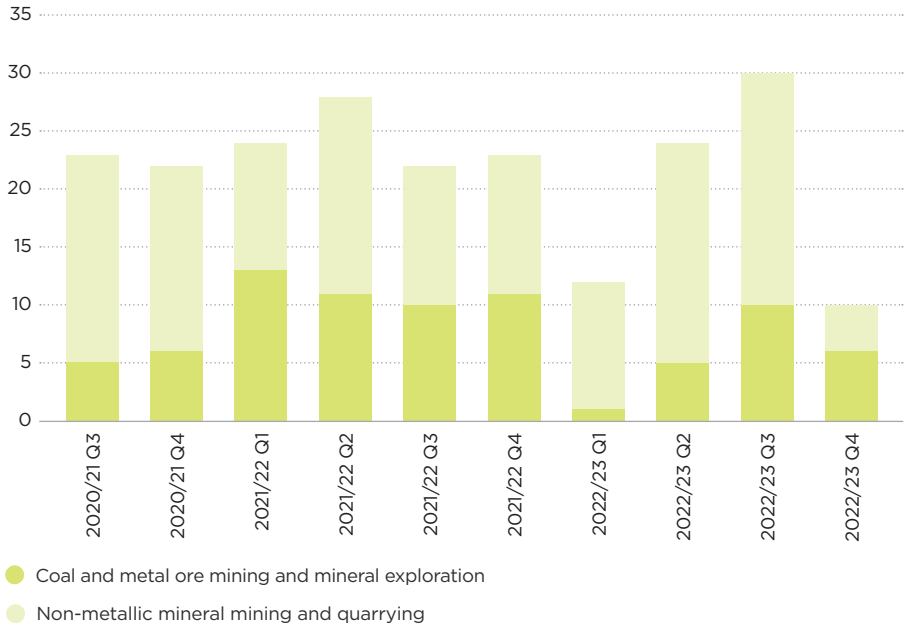

FIGURE 6:
Number of injuries resulting in more than a week away from work

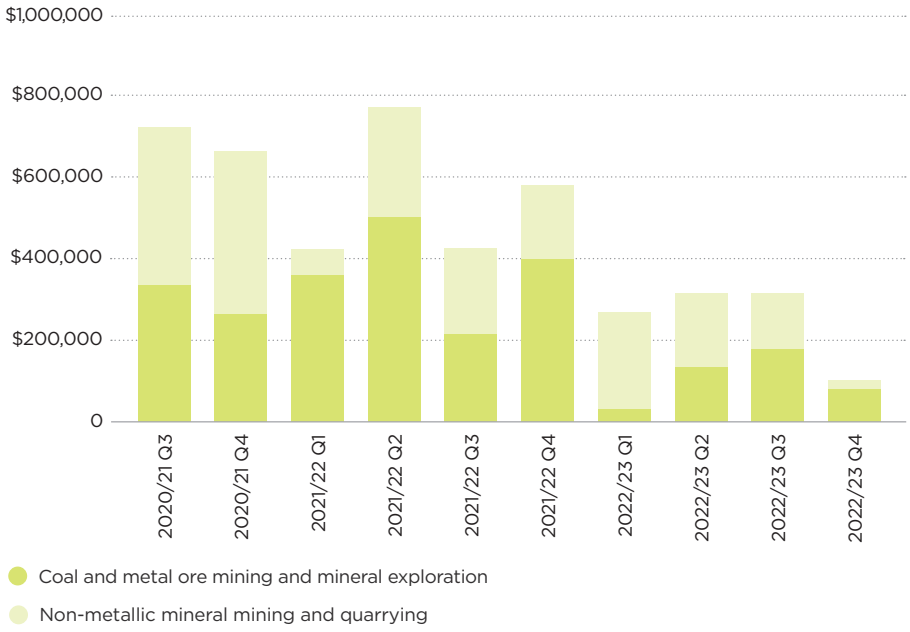

FIGURE 7:
Sum of claims cost (excluding GST) for injuries resulting in more than a week away from work

The data for these graphs comes from our System for Work-related Injury Forecasting and Targeting (SWIFT) database. It includes ACC data on approved work-related injury claims that resulted in more than a week away from work (WAFW). There is an four month lag applied to the data to allow time for the claim information to stabilise, so data for the past quarter is not yet available. While SWIFT data draws on ACC data, differences in counting criteria mean it may not match ACC counts, and should not be considered official ACC data.

2.3 Types of events

Figure 8 shows the notifiable event categories for events notified to WorkSafe in the previous 12 months. The data shows that 45% of notifiable events in the past 12 months have occurred in relation to vehicles and plant (32%), and fire, ignition, explosion or smoke (13%). These two categories are broken down in more detail in the following section. A further 15% of notifiable events in the past 12 months occurred in relation to ground, geotechnical and other structural failures.

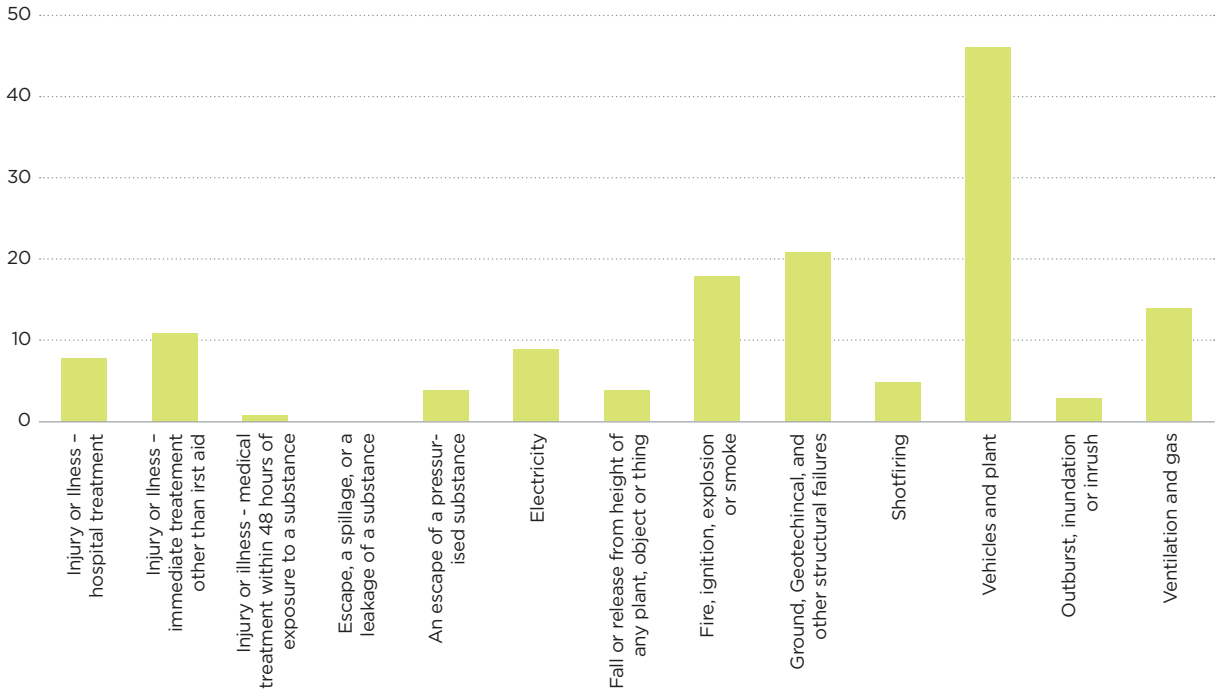

FIGURE 8: Notifiable event categories for the previous 12 months

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 9 and 10 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, 72% involve fires on plant, mobile plant or in buildings associated with mining or tunnelling activities, 11% involves spontaneous combustion, 6% involves the underground ignition of any gas or dust and 11% 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 (35%), overturning of mobile plant (40%), breach of a safety berm or windrow (7%), and unintended movement or brake failure (18%).

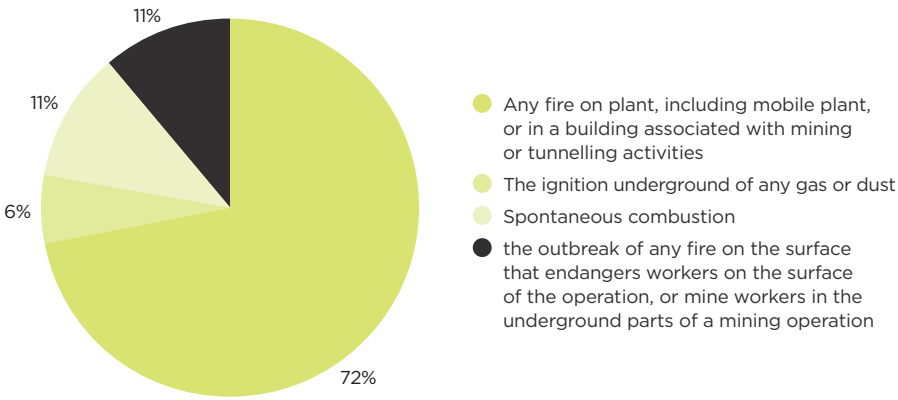

FIGURE 9: Fire, ignition, explosion or smoke-related notifiable event sub-categories

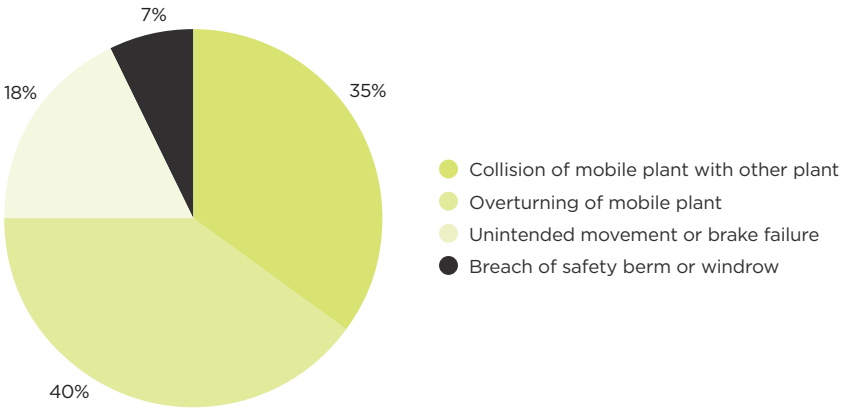

FIGURE 10: Vehicles and plant-related notifiable event sub-categories

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 46% of operations in the past 12 months, and quarterly reports were submitted by 100% 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 4.4% of operations in the past 12 months. The SWIFT data on WAFW injuries consistently shows higher numbers of injuries in the quarry sector, suggesting under-reporting of events. More accurate reporting from the quarry sector is expected when the requirements for reporting under Schedules 5 and 8 are implemented for quarries.

This was the fourth quarter that quarrying operations and alluvial mining operations were required to submit quarterly reports to WorkSafe. Quarterly reports were provided by 8 active alluvial mining operations (12%) and 201 active quarries (20%).

2.5 Regulator comments

Inspections

Inspections are an important activity that we use to educate, engage and, on occasion, issue enforcement to operators. For most operators, inspections are routine, and managers and other staff are familiar with the processes involved. For some of the smaller operators, where inspections are infrequent, the arrival of a WorkSafe inspector can be a reason for concern. It shouldn't be.

How is a site selected for an inspection?

As a regulator, we cannot be at every site every day, so we use a database to 'rank' the operations based on what risks we know are present on any site, and then use the rankings to determine which sites we visit, and how often we need to visit.

We list the risks based on what we know about the site from reports or have previously observed – including size of operation, number of workers, method of work, type of machinery, qualifications of the manager etc. We adjust a site profile when we inspect and we see additional hazards, or if other information is updated. The rankings will move around over time. Generally, our risk matrix results in large quarries or mines having higher risk rankings. And underground operations have higher risk rankings than surface operations.

High risk sites may be visited once a year or more, medium risk sites every couple of years, and low risk sites will only be inspected infrequently.

The other reason a site might be inspected is when an incident occurs (High Potential Incident – HPI), or a complaint about the site is received. Typically, WorkSafe visits about 60 sites a year to follow up on incidents or complaints.
Note: From time-to-time WorkSafe receive complaints related to mining, tunnelling or quarrying operations. These complaints come through various channels – sometimes direct to inspectors or sometimes through the WorkSafe formal notification process. If you raise a complaint, you will be asked to provide contact details as we do not accept anonymous concerns. However, your contact details will be kept confidential if you request this. There is no requirement for WorkSafe to report back to the person who raised the complaint.

The sites visited for HPI or complaint follow up will be a mixture of high, medium and low risk ranking sites, but often on the visit to review an incident or follow up on a complaint, a full inspection will also be conducted regardless of the annual risk based inspection schedule.

The inspection

Inspections are a way for the regulator to verify that the site is safe. But we recognise that an inspection is a sample point in time and that many potential hazards and associated risks may not always be obvious, so we focus very much on checking that all the required relevant components of the health and safety management system are in place and comply with the minimum legislative requirements. That the systems in place are adequate and proportionate for all the operation and the activities that take place continuously at the site, but also that there are systems in place to manage activities that only occur from time to time.

We need to check how well the plans are being implemented. This will involve walking around. We need to see that there is clear understanding from the workers on site about how to do things correctly. We rely very much on what evidence we are shown and what we are told in our conversations. We expect that if there are concerns that workers will raise them with us. Honesty is an important aspect of our inspections. We are very interested in talking to workers.

We will be interested in the actual health and safety performance on site. How is it being measured and what is the reporting and statistics telling the operator? How is the operator using the information? How is the information being shared across the site? Extractives inspectors believe that each site should understand what controls are in place to prevent serious harm incidents. That Managers, Supervisors and workers all have a role in ensuring these controls are always in place and if they become ineffective that this is identified immediately through the routine monitoring of everybody on site. WorkSafe develops confidence in operators when any worker is well informed and empowered to report and stop unsafe work on their sites.

Enforcement and debrief

The inspectors undertaking the inspection will debrief site management on their findings and issue any enforcement or recommendations required to ensure legislative compliance. A Mine, Tunnel, or Quarry Record Entry report (MRE, TRE, QRE) of findings will be prepared and provided to the operation. Findings and recommendations must be posted on notice boards for all workers to be able to access and read.

A follow-up inspection to verify the progress made by the operator on actioning the enforcement and recommendations outlined at the debriefing and in the Record Entry report may also be conducted.

Inspections should deliver value to a site, through delivering a professional assessment of site compliance with legislation. Operators should always actively engage with inspectors to derive the most from this interaction. As well as understanding the legislative requirements, the inspectors have visited many sites and will have practical examples of many different controls or systems for management of risks.

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 Q1

Table 5 provides a summary of high potential incidents notified to WorkSafe in Q1 2023/24. The summaries are an abridged version from the operator's notification report.

INCIDENT DATE	SUMMARY	CONSIDERATIONS
Jul 23	Contractor was excavating around the pump shed when contacted a low voltage underground cable 5cm below the surface.	– Job planning – Risk assessment – Electricity – Supervision
Jul 23	Excavator has slid off working bench and hit dump truck.	– Vehicles and plant – Job planning – Risk assessment – Supervision – Training
Jul 23	The operator backed up to tip his load when one of the wheels got stuck on a previous tipped load, causing the bin to lay over on the ground.	– Roads and vehicle operating areas – Job planning – Risk assessment – Supervision – Training
Jul 23	Loose material was being pushed over a cliff to the ground below where diggers were moving the material for bulldozers to shift to another part of the quarry. A big rock came down the cliff and smashed into the cab of digger damaging controls and fracturing leg.	– Ground or strata instability – Exclusion zones – Workplace inspection – Risk assessment – Supervision – Training
Jul 23	While excavating, an operator realised that an area of a previous blast was fractured and needed to be brought down, whereas previously it was thought that this area had not fractured and were solid. Due to the fact that this was picked up, the area was made stable, and all persons kept out to prevent any incidents.	– Ground or strata instability – Shotfiring – Workplace inspection – Risk assessment – Supervision – Training
Jul 23	A screen was being lifted by a merlo and a worker was supporting the screen against a barrier. The barrier needed to be removed so the screen could be taken out of the confined area. A final cut was made to the barrier causing the screen to swing around and have contact with the worker's right shoulder. The screen was chain blocked.	– Lifting – Exclusion zones – Risk assessment – Supervision – Training
Jul 23	Light vehicle was reversing out of a car park and a small wheel loader (stationary) was parked behind light vehicle and light vehicle reversed back and made contact with loader breaking tailight.	– Roads and vehicle operating areas – Risk assessment – Supervision – Training
Jul 23	During the lowering of segments held in a segment handler by the gantry crane, the segments have contacted the segment car.	– Lifting – Job planning – Fatigue management – Risk assessment – Supervision – Training

INCIDENT DATE	SUMMARY	CONSIDERATIONS
Aug 23	Cladding was being removed from the side of a building using a suction cup device. The cladding has been released and fallen to the ground and then continued to fall into the adjacent wet well of the pump station shaft.	– Lifting – Falls from height – Job planning – Plant and structures – Risk assessment – Supervision – Training
Aug 23	Light vehicle was reversing out of a drive and operator has misjudged the alignment of the drive and made contact the wall with the back corner of the tray of the ute. When the tray has contacted the wall it has made contact with the electrical trailing cable that was powering the jumbo at the face of the drive. The cable has been damaged and tripped out.	– Vehicles and plant – Electricity – Supervision – Training
Aug 23	Dump truck emptying bins on return to the plant had not completely lowered tray hoist. Truck hoist connected with plant. No injuries.	– Vehicles and plant – Plant and structures – Risk assessment – Supervision – Training
Aug 23	Underground Loader has made contact with an electrical cable.	– Vehicles and plant – Electricity – Supervision – Training
Aug 23	Excavator having track repairs. Operating a Port-a-pac to remove a pin from the track. The operator of the port-a-pac applied pressure to the pin with the Port-a-pac. The pin did not move. The operator stopped applying pressure using the remote controller. He approached the port-a-pac to turn it off and the push pin released under pressure and struck the operator in the groin.	– Release of pressure – Exclusion zones – Job planning – Risk assessment – Supervision – Training
Aug 23	Engine coolant hose split. Hose was located at the front of engine, coolant from the leak was then forced and sprayed over the engine bay by the engine fan which was in close proximity to the leak. Small area of sprayed coolant has contacted the protective lagging edge on the exhaust side of turbo causing small flame which then self extinguished.	– Fire or explosion – Vehicles and plant – Mechnical
Sep 23	Jumbo operator was marking up the face to bore a cut when his foot has fallen through a hole in the floor. The hole was around 300mm square and was to the side of a CRF plug that had been placed in to the floor to protect from a void in the floor.	– Ground instability – Voids – Risk assessment – Workplace inspection – Supervision – Training
Sep 23	Material from an historic stope has flowed out into the connecting tunnels. No personnel were in the area at the time and the material was discovered by personnel entering the area.	– Inundation and inrush – Risk assessment – Supervision – Training
Sep 23	Jumbo backing out of drive uphill, did not see light vehicle behind him and has made contact pushing light vehicle approx 2m before identifying an issue.	– Vehicles and plant – Supervision – Training
Sep 23	In the workings of the underground mine, as charge up personnel were preparing to charge the face, a slab of rock has slid from the face.	– Ground instability – Risk assessment – Workplace inspection – Supervision – Training

INCIDENT DATE	SUMMARY	CONSIDERATIONS
Sep 23	Caught arm in conveyor – broke arm and cut tip off finger.	– Guarding – Lock out tag out – Risk assessment – Job planning – Supervision – Training
Sep 23	Excavator operator was mechanically scaling the top of the wall to release material and reshape when he noticed the material starting to release. He went to move the excavator away on his exit path when it auto downrated it's engine due to an oil pressure failure and failed to move. Subsequently the material collided with the side of the excavator causing some damage and distress.	– Ground instability – Risk assessment – Workplace inspection – Supervision – Training
Sep 23	Worker driving ute exiting the quarry has made contact with the road berm and rolled the ute – no injury.	– Roads and vehicle operating areas – Risk assessment – Supervision – Training
Sep 23	While driver was tipping off aggregate with trailer, trailer tipped over.	– Roads and vehicle operating areas – Risk assessment – Supervision – Training
Sep 23	Front two rings of a stope shot did not fire. Approximately 62kg of ANFO, six detonators and six boosters may have not initiated. Cannot safely gain access to close proximity to determined if 100% initiation has occurred. The closest rings to the brow have fired, the two furthest away out in the stope have possibly not.	– Shotfiring – Risk assessment – Workplace inspection – Supervision – Training
Sep 23	During lowering of segments in the shaft by gantry crane, the load has lowered further than planned, and made unintended contact with the segment car.	– Lifting – Job planning – Risk assessment – Supervision – Training

TABLE 5: High potential incidents – 2023/24 Q1

Table 6 and Figure 11 shows the number of high potential incidents per quarter during the last two years for all extractives operations.

QUARTER	Q2 OCT-DEC 2021	Q3 JAN-MAR 2022	Q4 APR-JUN 2022	Q1 JUL-SEP 2022	Q2 OCT-DEC 2022	Q3 JAN-MAR 2023	Q4 APR-JUN 2023	Q1 JUL-SEP 2023	TOTAL PREVIOUS 12 MONTHS
Number of high potential incidents per quarter	23	28	20	27	22	22	21	24	**89**

TABLE 6: High potential incidents per quarter

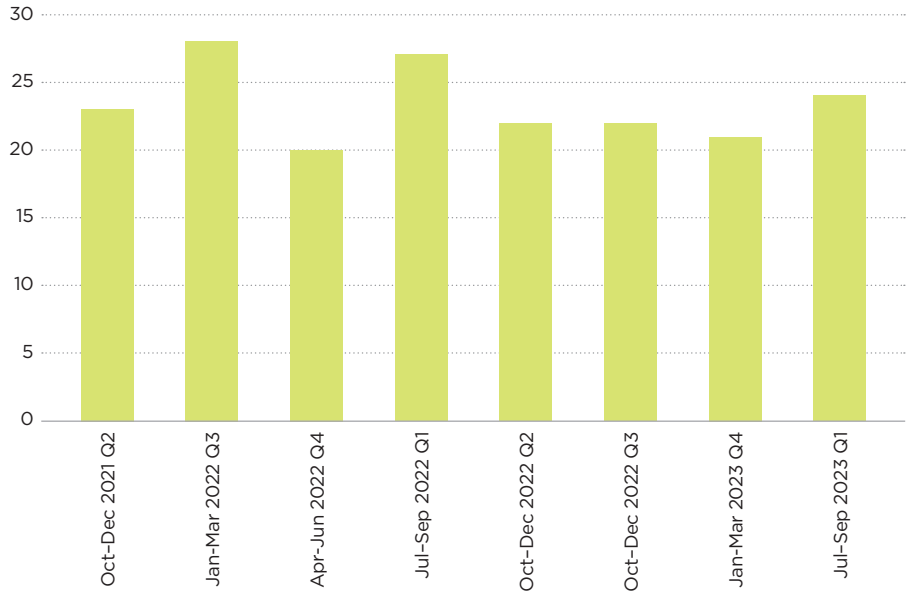

FIGURE 11:
High potential incidents per quarter

2.7 High potential incidents – investigation outcomes

High potential incident case study – sudden release of energy

Aug 23	Excavator having track repairs. Operating a Port-a-pac to remove a pin from the track. The operator of the port-a-pac applied pressure to the pin with the Port-a-pac. The pin did not move. The operator stopped applying pressure using the remote controller. He approached the port-a-pac to turn it off and the push pin released under pressure and struck the operator in the groin.

TABLE 7:
High potential incident – investigation outcomes case study

THE INCIDENT

A track press supplied by a contractor was being used by employees to remove the master pin on an excavator track that was being shortened due to being stretched.

A track press is a hydraulic tool used to press and remove pins, bushings, and other undercarriage components from heavy-duty equipment such as excavators, bulldozers, and track loaders.

The mechanics using the track press were experienced and one had operated this particular press intermittently over 15 years. The track press was an old model; the date when the track press was purchased is unknown but it is likely to be at least 40 years old.

The forklift had been set up close to 90° to the tracks. An appropriately sized force pin to match the track master pin had been taken from the track press storage box that had also been supplied. The track press was lined up on the track master pin so it could be removed from the track links. The push pin appears to be a kingpin from a truck, approximately 260mm long. A king pin on a truck connects the steer axle to the steering knuckle, supporting the steering geometry and allowing the wheel ends to turn the vehicle.

The piston rod cap on the track press had a flat surface. The force pin was aligned by hand between the piston rod cap head and the master pin. It was held until pressure on both surfaces held the pin in place. The mechanic had taken the remote controller and stepped away from the track press before applying force pressure with the remote controller. The remote controller is on a lead and the handpiece has a ‘deadman switch’. He has applied pressure to the force

pin by operating the remote controller. While he was applying pressure, he was monitoring the pressure gauge, he stopped applying pressure to the track press with the remote controller. What happened next is unclear. He heard a crack.

The crack could have been the master pin moving (it appears to have moved slightly) or the force pin moving on the master pin or both. Before he had time to react to the crack, he was struck by the force pin as it was projected through the air hitting him in the groin.

FIGURE 12:
Photograph of incident

THE INVESTIGATION IDENTIFIED

- The track press was old and there were no clues to recognise that parts were missing, or the piston rod cap had been modified.
- The guide plate had been removed at some point in time.
- Failure to identify it was unsafe to hold a forcing pin in place with pressure only.
- Failure to identify it was unsafe to align the forcing pin without a guide plate.
- The forcing pin is not retained on the piston rod cap. It is not screwed in or retained in a cup.
- The forcing pin was long, approx. 260mm, increasing the probability of a flying projectile. The guide plate had been removed.
- Pin was not a pin tooled for the track press.
- The head of the track pins is rounded off, not making a good mating surface with the forcing pin.
- Poor implementation of risk control has led to unexpected incident.
- JSA did not identify the risk of solid projectiles. It did identify the risk of burst hydraulic hoses.

REGULATOR COMMENTS AND RECOMMENDATIONS

Having the correct tooling to carry out maintenance tasks is essential to ensuring a safe work environment. It is paramount that suitable procedures, as described by the original equipment manufacturer are available and adhered to or developed through a robust risk assessment process.

Tooling must be:

- fit for purpose and used as per its intended design
- persons must be trained, and procedures be available for its use
- tooling must be maintained in accordance with OEM guidelines and have an inspection regime in place
- inspected and checked as the tooling is brought onsite to ensure it is safe to use
- tooling must not be modified from original equipment manufacturers design.

High potential incident case study – failure to maintain adequate exclusion zone

Jul 23	Loose material was being pushed over a cliff to the ground below where diggers were moving the material for bulldozers to shift to another part of the quarry. A big rock came down the cliff and smashed into the cab of digger damaging controls and fracturing leg.

TABLE 8:
High potential incidents – case study

REGULATOR COMMENTS AND RECOMMENDATIONS

When working at the top of a face, always create an adequate stand-off distance/ exclusion zone near the toe.

When planning work, it is important to consider how each activity could impact on others working in any area, not just the immediate vicinity.

3.0 Regulatory insights

IN THIS SECTION:

3.1 Examination of Operations

Regulation 222 sets out the requirements for site examinations of all Extractives Operations and the actions that must be taken if hazards are identified during site examinations.

Site examinations must be carried out by a competent person. Depending on what is being examined and the hazards that might be present, the competent person and required skills, knowledge, and experience to do the examination may vary. For example, the competent person for pit examinations might be different to the competent person for vehicle examinations.

There must be a written procedure in the site's health and safety management system that details how site examinations will be conducted, including:

- what will be checked during each examination
- a timetable for the examinations
- how the findings of site examinations will be recorded
- the process for taking actions if a hazard is identified during the examination.

What needs to be examined, and when?

- All areas where workers will be present must be examined before the start of each working shift, and at suitable times during the shift.
- Every accessible area of the operation must be examined at least weekly.
- Every vehicle must be examined at least weekly.
- Fixed and mobile plant must be examined before it is started (that is, prestart checks)

What if a hazard is identified?

The competent person must, so far as is reasonably practicable, take steps to eliminate, isolate, or minimise any significant hazard identified during the examination.

All plant examined must be safe or made safe, that is, any unsafe plant should be locked and tagged out until it can be fixed.

Tip inspections (regulation 121)

A written record of all defects discovered during a tip inspection must be made.

The manager of the operation must be informed of any defects that need immediate rectification.

A written record of actions taken to remedy tip defects must be made.

What if my site is suspended?

Weekly examinations are required for suspended operations.

Priscilla Page
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 9 shows the range of assessments undertaken in Q1 2023/24 by sector.

		ASSESSMENTS	MINE	TUNNEL	ALLUVIAL MINE	QUARRY
Proactive	Site-based	Targeted assessments				
		Regulatory compliance assessments				
		Site inspections	7	7	3	32
		Targeted inspections	3			
	Desk-based	PHMP/PCP review		3		
		Mine plan review	4	1		
		High risk activity	3	2		
Reactive	Site-based	Concerns – inspection				2
		Notifiable events – inspection	6	3		9
	Desk-based	Concerns – desk-based				1
		Notifiable event – desk-based	18	8	1	2

TABLE 9: Proactive and reactive site and desk based assessments conducted in Q1 2023/24

Figure 13 shows the number of proactive and reactive site- and desk-based assessments undertaken by the regulator in Q1 2023/24. This quarter 57% of our activities were site-based, and 63% of activities were proactive.

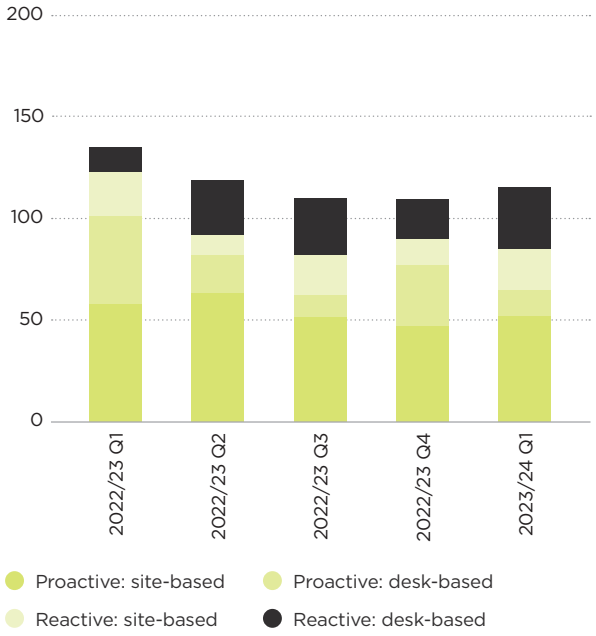

FIGURE 13:
Proactive and reactive site and desk-based assessments

Figure 14 shows the number of assessments undertaken by the regulator in Q1 2023/24 by sector. This quarter, 40% of our assessments were for quarries, 36% for mines, 21% for tunnels and 3% for alluvial mines.

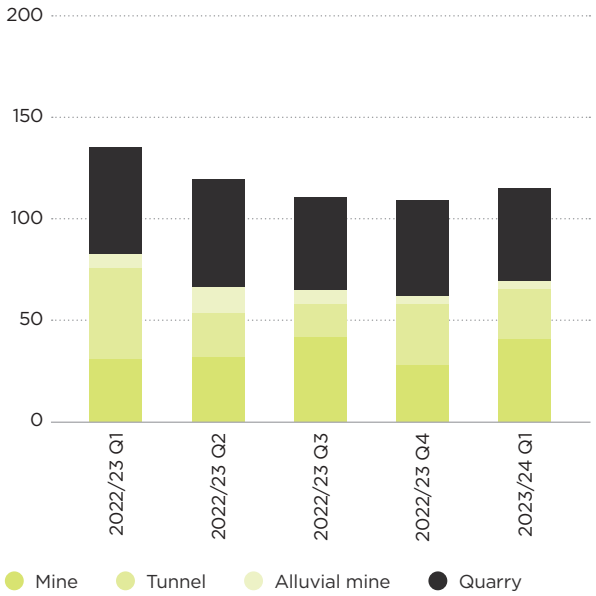

FIGURE 14:
Assessements by sector

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 15 and 16 show the number of enforcement actions issued in Q1 2023/24 by notice type and by sector. This quarter, a total of 71 enforcement actions were issued. Of those, 1% of were prohibition notices, 27% were improvement notices, 70% were directives and 1% were sustained compliance letters. The majority of the enforcement actions were issued to the mining (10%), tunnelling (10%) and quarrying (68%) sectors.

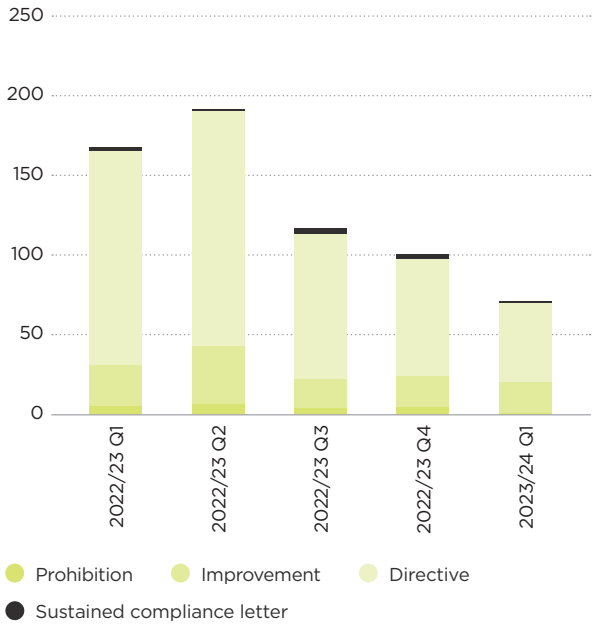

FIGURE 15: Enforcement actions issued by type

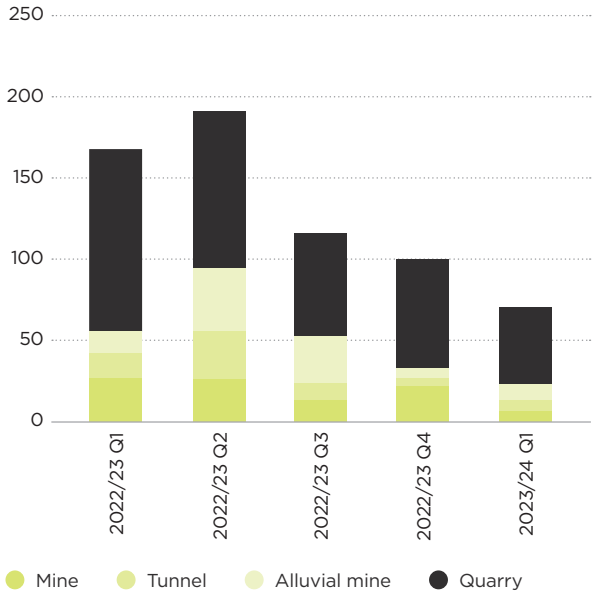

FIGURE 16: Enforcement actions issued by sector

Figure 17 shows the number of enforcement actions issued in Q1 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 (14%), guarding (25%) and safety critical role / CoC (14%).

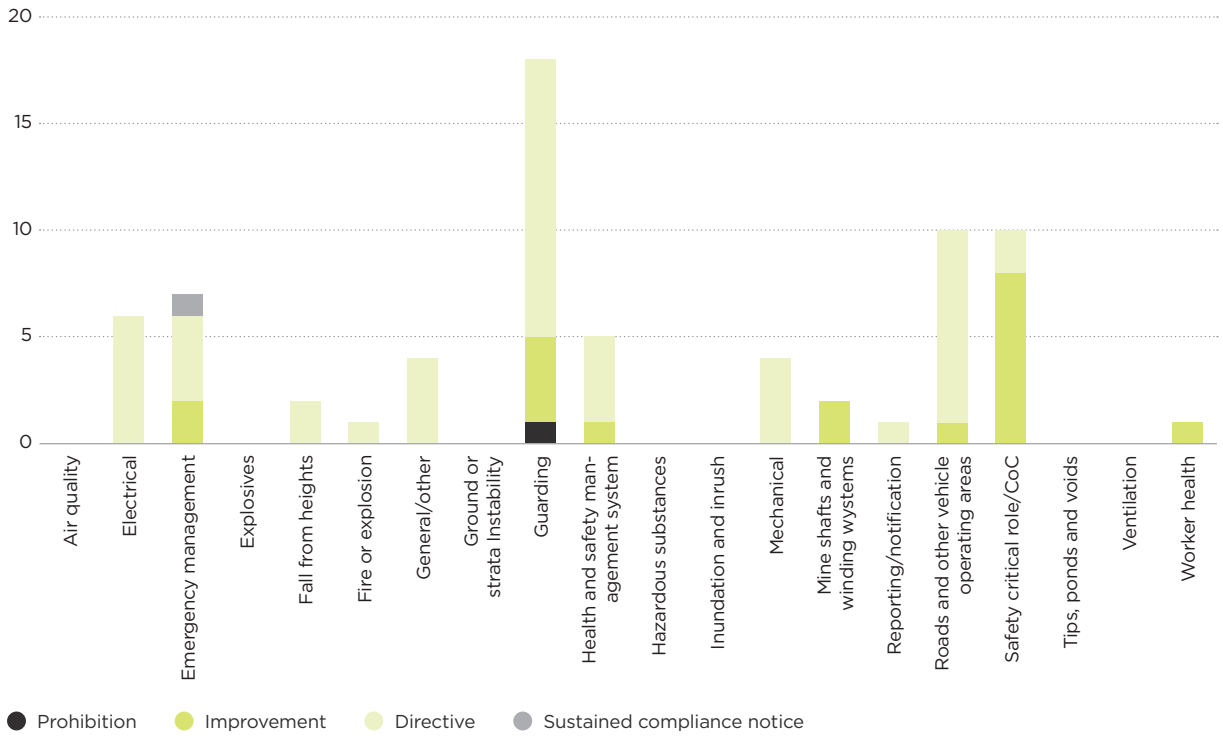

FIGURE 17: Enforcement actions issued by category 2023/24 Q1

Regulator activity comment

The number of inspections undertaken during Quarter 1 was slightly below plan due to the departure of two inspectors. Recruitment is currently underway to fill both roles and reestablish the full team. The number of completed inspections is forecast to be back on track by the end of Q2.

It is noted that enforcement actions are lower as well. The total reduction will be partly due to the reduced number of inspections, but it is noted that there has been less enforcement required per inspection. This potential trend will be analysed over the next quarter to determine if there has been a measurable compliance improvement, or this is just a result of normal fluctuations.

It was anticipated that compliance with the new regulatory requirements by quarries and alluvial mines would have improved after a year had passed since new requirements came into force. That operators would have made improvements to meet the new regulations and that inspectors would identify fewer non compliances on each inspection. Required enforcement at Quarries did reduce, but it is noted that required enforcement at mine sites also reduced.

The enforcement actions were distributed across similar categories to previous quarters. It should be of concern that there was an increase in the number of enforcement actions related to guarding. This is disappointing as adequate guarding is a basic requirement that should be well understood by industry.

Notes

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.

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